Assessing implementation of forest plan monitoring and evaluation on the Helena National Forest: A case study

Edwin F. Glenn
The University of Montana

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ASSESSING IMPLEMENTATION OF FOREST PLAN
MONITORING AND EVALUATION
ON THE HELENA NATIONAL FOREST:
A CASE STUDY

By
Edwin F. Glenn
B. A., University of Alabama, 1980

Presented in partial fulfillment of the requirements
for the degree of
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Chairman, Board of Examiners

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>PROBLEM STATEMENT AND METHODOLOGY</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td>MONITORING AND EVALUATION</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>In Management Theory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In Public Administration</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>HISTORICAL PERSPECTIVE</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Forestry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The National Forests</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Conservation Movement</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>THE NATIONAL FOREST MANAGEMENT ACT</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Major Provisions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>USFS Regulations on Monitoring and Evaluation</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>THE FOREST PLAN OF THE HELENA NATIONAL FOREST</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>The Political Situation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Decision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Requirements for Monitoring and Evaluation</td>
<td></td>
</tr>
</tbody>
</table>
6. DATA FROM DOCUMENTS............................................. 43
   Review of the Reports
   Analysis of Selected Reports
   Summary
7. THE INTERVIEWS..................................................... 55
   Forest Service Personnel
   Local Interests
   The Public
   Summary
8. CONCLUSIONS AND RECOMMENDATIONS.......................... 63
SOURCES.............................................................................. 70
INTRODUCTION

The history of America is tied closely to the land we occupy. From the first colonists to Prudohoe Bay, we depend upon the land for our homes, our energy, our food, and often, our recreation. In the western United States, the government of the United States controls just over fifty two percent of the land. In Montana, the Forest Service controls roughly seventeen percent of the land, and nearly all of that is in the western third of the state.

Because of our close affiliation with the land and our dependence on it, we need to insure that its productive capacity is not impaired. The Forest Service planning process has given both forest managers and the public the opportunity to participate in the direction we want our land policy to take. Implementation of the Helena Forest Plan impacts more than nine hundred thousand acres of land near my home. Insuring that the safeguards and feedback systems of the Plan can provide information to me about the success of our land policy is the reason I chose this subject for my professional paper.
CHAPTER 1

PROBLEM STATEMENT AND METHODOLOGY

Problem Statement

The National Forest Management Act of 1976 (NFMA) required the Secretary of Agriculture to develop regulations creating the processes which led to management plans for each of the National Forests. Among the requirements of the act, all plans were to:

- insure research on and (based on continuous monitoring and assessment in the field) evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land;¹

Pursuant to Forest Service regulations implementing NFMA, monitoring and evaluation are required by the Forest Plan of the Helena National Forest. The Plan requires monitoring on forty eight separate resource elements. Are these monitoring activities being implemented? Are they on schedule? Do they lead to effective evaluation? Do they provide information to decision makers and the public, as they propose to do? Do they accomplish the goals set for them in the Forest Plan?
This paper will determine if monitoring and evaluation are being conducted on the Helena National Forest as required by the Forest Plan. However, this study does not attempt to determine if these processes will reveal impairment of the land.

Methodology

Answers to the questions asked above were developed in a five pronged manner. First, it was necessary to determine exactly what monitoring and evaluation activities are required. Success at this stage of the investigation required that monitoring and evaluation requirements be easily found and understood, thereby ensuring that decision makers and members of the public can determine what the forest staff is required to do. This information is found in the Monitoring Action Plan prepared by the Forest Planning Office. This document details specific activities to be carried out, and requires a March 1 annual reporting deadline for summaries of activities.

Next, the monitoring summary documents prepared by the forest staff were examined to compare their contents with the requirements of the Forest Plan. Success at this point was to be determined, first by the
accessibility of these documents, and secondly by the extent to which these documents contained the required information. This step was at the core of the study, because it would determine the extent to which the required activities were actually taking place. Monitoring which was not documented, reported, or accessible is of little use to decision makers or the public since it can have little impact on decision making or in helping determine the success or failure of forest practices.

At this point, I intended to analyze the evaluation reports to determine their compliance with requirements. Success at this point was to be determined by the extent to which the reports complied with the Decision Flow Diagram and other Forest Plan requirements. This step would ensure that information was analyzed at the proper levels and was flowing to the proper decision makers. However, I quickly learned that no such documents exist. All the evaluation which was conducted is included in the monitoring reports. Therefore, the analysis of the monitoring documents included examining any evaluation information which they contained.

Interviews and questionnaires were to be used to
determine the perceptions of forest personnel, local decision makers, and the general public concerning the monitoring and evaluation processes. I soon found that outside the Forest Service, few people had heard of monitoring and evaluation. Therefore, after determining Forest Service decision makers perceptions of monitoring and evaluation information, this step was used in a more general manner to determine public perceptions of Forest Service information provision. Success here was a two step process. First, Forest Service decision makers must see monitoring and evaluation as providing sufficient information for decision making. Secondly, public responses must include positive perceptions. The assumption I made was that positive public perceptions mean the Forest Service readily provides information, and when monitoring information is requested, then it will be readily provided.

The Forest Plan contains a list of goals for the monitoring and evaluation processes. The goals are to determine the answers to ten questions concerning the effects of management practices, compliance with management standards, effects of Forest Plan Implementation on nearby communities, etc. It would
have been easy to assume that meeting the requirements of the Forest Plan and Monitoring Action Plan would result in the accomplishment of the goals for monitoring and evaluation. However, in an effort to determine whether the goals were actually being met, I looked for evidence which might answer the ten questions as analysis of the documents took place. I also asked forest decision makers and staff whether they thought monitoring and evaluation are reaching the goals set for them.

This process of examining requirements, documents, and perceptions provided information which allowed me to answer the questions raised earlier concerning implementation of monitoring and evaluation on the Helena National Forest.

Michael Patton has observed that programs often look significantly different from the plans which bore them. Implementation evaluation seeks to determine how much different the program is from the plan.² This paper will help decision makers on the Helena National Forest determine how much of the monitoring and evaluation programs are being implemented and whether they are reaching the goals set out in the Monitoring
Action Plan and the Forest Plan. First, however, we will review the growing use of monitoring and evaluation, and the difficulties of carrying them out successfully.
Notes


In Management Theory

The study of management has always focused on better ways of reaching organizational goals. Early in this century, Fredrick Taylor was a leading proponent of scientific management. He thought there was one best way to do any task, and once the best way was discovered the task could be completed most efficiently.¹ Later, the famous Hawthorne experiments led to the human relations school and Douglas McGregor's Theory X and Y concepts.² Many other approaches have been suggested, but systems theory has provided a method of linking different aspects and theories into a unified approach to management theory.

A system may be defined as "any organized collection of parts united by prescribed interactions and designed for the accomplishment of a specific goal or general purpose".³ Feedback is a key concept in systems theory. As the system takes action toward its
goal, monitoring gathers information which is fed back to decision makers so that the results of the action can be evaluated and further action taken as needed. Thus, monitoring and evaluation are significant parts of any organization's efforts to reach its goals.

In Public Administration

The use of monitoring and evaluation, as specific documented practices, is relatively new to public administration. Surely, the bureaucrats of yesteryear had an intuitive notion of how well programs were working and would recommend change if they thought it necessary. However, through the 1960's and into the 1970's there was growing dissatisfaction with the inability of government to solve a wide range of social ills. Aware of the problem, public managers began to learn more about evaluation, and in 1974 Congress required the General Accounting Office to recommend methods of reviewing and evaluating government programs. Evidence of the growing importance of evaluation in public administration can be demonstrated with two textbooks. One book, published in 1967, devoted less than three pages to systems, feedback, and analysis. The other, from 1980, devotes a full
chapter, more than twenty pages, to the subject.\textsuperscript{8}

Monitoring and evaluation are very complex tasks. Data must be gathered from many sources, and then filtered, evaluated, and reported. The information produced should reduce uncertainty both about what the program is currently achieving, and its prospects for the future. However, the information gathered and reported may provide an incomplete, or inaccurate, picture of the program. It becomes very difficult to determine how much information is enough, and what parts to present to decision makers.\textsuperscript{9} As though this is not enough, information must be presented in a time frame that allows the decision maker the opportunity to act. Otherwise, the information can serve no productive purpose.\textsuperscript{10}

Aaron Wildavsky has found that evaluation must be "external, multiple, independent, and continuous."\textsuperscript{11} Organizations can be self-evaluating, as the Helena National Forest is attempting to be, but problems develop when organization programs and procedures are often changed.\textsuperscript{12} To ensure that evaluation is carried out correctly, and is used, it must be "reinforced" by other studies. Otherwise, bureaucratic inertia may
limit the organization's response to its own evaluation. Wildavsky found fundamental contradictions between the dogma required to smoothly operate a government program, and the skepticism needed to successfully evaluate it.\textsuperscript{13}

The problem is not methodology or reporting, it is trust.\textsuperscript{14} If the organization is structured so that employees feel secure in presenting problems to their supervisors and management, then self-evaluation has a chance. If employees do not trust their supervisors, and vice versa, then it is unlikely that self-evaluation will be effective. Employees must perceive the role of monitoring and evaluation to be a positive one, designed to improve the organization's capacity to reach its goals. Processes which appear to be simply methods of eliminating programs or personnel, or perhaps seem to be used to enhance a manager's image will not be effective. Another serious threat to evaluation can be the political environment. Decision makers do not operate in a vacuum. Evaluation must compete with other information for the decision maker's ear.\textsuperscript{15}

The humanist school of thought believes that employees can be interested in the goals and outputs of the organization.\textsuperscript{16} When management organizes work so
that the employees are given real opportunities to provide input, perhaps the employees can begin to trust management, and self-evaluation can take place. Wildavsky says, "...the self-evaluating organization would be open, truthful, and explicit."17

Generally, change comes slowly to bureaucracies. In exchange for stability and consistent patterns of behavior, they have given up spontaneity and intuition. The well known characteristics of bureaucracy work against an organization such as the Forest Service when it undertakes self-evaluation of its programs. Monitoring and evaluation are very difficult for even independent auditors and analysts to carry out effectively. It remains to be seen if the Helena National Forest can complete these tasks successfully.

In order to better understand the current situation on the National Forests, and the Helena National Forest specifically, background information about forest management, the conservation movement, and the National Forest Management Act is provided in the following chapters.
Notes


5. Henry, 186.

6. Ibid., 185.


12. Ibid., 224.

13. Ibid., 205-211.


17. Wildavsky, 234.
CHAPTER 3
HISTORICAL PERSPECTIVE

Forestry

Forestry can be simply defined as the "science of growing and caring for forests".¹ That definition can be expanded, however, to include production of "the largest amount of whatever crop or service will be most useful".² In light of the Forest Service slogan, "Land of Many Uses", forestry today might be defined as the science of producing whatever is desired from the forests.

Many of the original or native cultures of the world protected their forests and environments, often with religious overtones. The Bantu chieftains of southern Africa set up regulations if shortages of certain valuable trees became imminent.³ The Trobrianders of the southern Pacific had a very close association with the land and the forests.⁴ Many tribes of Native Americans were also very protective of their environment.⁵
The need to protect and nurture forests became important to Western Civilization as it expanded leading up to the Industrial Revolution. Perhaps England was so rich in wood, because of the elaborate rules and regulations the crown had imposed to protect the animals, timber and undergrowth of the forests. As early as 1299, the nobles were trying to remove royal protection of the forests from Edward I.

In Switzerland, the forests have been managed since the thirteenth century. The Black Forest of Germany, and others in France and Austria were among the first managed forests in the world.

When Europeans began coming to America, the forests were needed for housing and farming. The forest was cleared and all wood not used in building was burned. It was seen as a nuisance to be removed. As early as 1753, however, it was known that clearing land made it easier for the rains to silt up the rivers, and reduced the production of springs.

By 1873, the American Association for the Advancement of Science had become interested in forestry. Soon thereafter came the creation of the American Forestry Council, and in 1876 the appointment
of Franklin Hough to collect forest statistics for the Department of Agriculture. Forestry was first practiced in the U.S. at the Biltmore Estate in North Carolina, beginning in 1892.  

Foresters today follow many of the traditional techniques of forestry such as timber measurement, silviculture, and fire control. However, modern foresters are also required to be knowledgeable in many other areas: resource law, forest ecology, climatology, and recreation management, to name a few. As with every other part of modern society, forestry is becoming more technical and complex.

The National Forests

The U.S. Government's original policy of divesting itself of public lands led to the Northwest Ordinances, the Pre-Emption Acts, and The Homestead Act. Not until the 1870's did Congress differentiate between forestland and grassland. The Timber Culture Act, Desert Land Act, Free Timber Act, and the Timber and Stone Act all dealt with forestland separately from rangeland. By the 1890's the destruction of the Eastern Forests, the closing of the frontier, large Michigan and Wisconsin forest fires, and the growing realization of the
importance of forests in watersheds began to create concern in Washington D.C., and elsewhere.\textsuperscript{16}

The passage of the Creative Act in 1891 gave the President authority to set aside lands in preserves where no cutting was allowed.\textsuperscript{17} The Organic Act of 1897 defined the uses of the forest preserves as protecting forests, watershed flows, and providing for a continuous supply of timber.\textsuperscript{18} Later acts created the Forest Service, converted the preserves into National Forests, and provided for the purchase of eastern lands to add to the forest system. Currently, the National Forest System is made up of 155 national forests covering 190 million acres.\textsuperscript{19} Each forest is made up of units managed by District Rangers. These districts, in turn, are supervised by the Forest Supervisor.

The Forest Service has used monitoring and evaluation since it began to manage the forests. The "Use Book" which guided the Rangers in performing their duties pointed out that in seeking to ensure the regeneration of timber "the growth on similar areas which have been burned or logged affords the best guide."\textsuperscript{20} Described as study, program evaluation, or something else, monitoring and evaluation have long been
a part of the Forest Service.

The Conservation Movement

The growth of the conservation movement in the latter 1800's had a profound impact on America's land use policy. The creation of Yellowstone National Park in 1872 demonstrated the nation's growing desire to protect special areas from exploitation. By the early 1890's Congress was allowing the President to designate forest preserves, and in 1897 it passed the Organic Act. Inhabitants of the western states and territories opposed these moves which withdrew lands from private acquisition. The first director of the Forest Service, Gifford Pinchot, won over possible opposition with consummate logic. Westerners needed water, so Pinchot pushed for reclamation and irrigation projects. He won over ranchers and loggers by promising that the forests would be open for use and would improve under scientific management. By the turn of the century this combination of protection, improvement, and use was being called conservation. A term originally coined in discussing the conserving of spring run-off for later use, conservation quickly became the term used to
designate scientific management of resources.  

Prior to World War II, the wood products industry owned large reserves of private timber, and the Forest Service felt little pressure to increase timber production. But, the housing boom following the war produced increasing demands for timber, and timber companies which had drawn down their reserves during the war, clamored for increased timber harvests. Not only had domestic demand risen, but by 1974 the U.S. was exporting 4 billion board feet (bbf) annually. Annual national forest timber sales rose from 1.5 bbf in 1951, to 11.5 bbf in 1971. In order to reach timber production goals much of the harvest was clearcut. In just the years 1970-71 nearly 1,000,000 acres of national forest were clearcut.  

At the same time the Forest Service was increasing the timber cut more that seven fold, America was undergoing a tremendous boom in recreational activity. The Forest Service reports it had 92 million visitors in 1960. That figure nearly doubled by 1970 when 172.5 million visitor days were recorded. This growth in users of the national forests inevitably resulted in many people coming in contact with clearcut lands. In
combination with the growing awareness of the dangers of polluted air and water, the destruction of millions of acres of national forest must have had a heavy impact on the birth and growth of the environmental movement of the 1960's and 1970's. And this movement, in turn, had a heavy impact on legislation affecting the Forest Service, specifically, the National Forest Management Act.
Notes


4. Ibid., 60.

5. Pinchot, 24-25.


13. Ibid., 50.


19. Ibid., 44.

20. Pinchot, 274.


CHAPTER 4

THE NATIONAL FOREST MANAGEMENT ACT

Major Provisions

With the National Forest Management Act, passed in 1976, Congress exercised greater control over the management of the National Forests than ever before. The Act itself is primarily a series of amendments to previous laws including the Organic Act of 1897, the Multiple Use Act of 1960, and the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA).¹

The Act revised language in the Organic Act which had been held by the U.S. Fourth Circuit Court of Appeals to make clearcutting illegal. Among other things, it also made the concept of multiple use more clear, wrote into law non-declining, even flow timber harvesting, and mandated public participation in Forest Service decision making. It required the Secretary of Agriculture to inventory timber lands and provide for a schedule of replanting needed areas.²

The Forest Service was required to prepare
management plans by RPA. NFMA added increased public participation in the planning process. Also, the planning documents were required to be more organized and available to the public.\textsuperscript{3} Congressional intent seems to have included the desire to avoid problems with Forest Service practices by including public input in the decision making process. Of primary importance here, however, are the provisions NFMA made for monitoring and evaluation.

As stated earlier, NFMA requires the Forest Plans to include monitoring and evaluation processes to ensure that the productivity of the land is not permanently reduced. NFMA also requires the regulations promulgated by the Forest Service to include the gathering of much more information, such as obtaining inventory data and restocking needs. Therefore, the Forest Service has chosen to use the monitoring process to gather information about a broad spectrum of issues.\textsuperscript{4} For instance, information is to be gathered on the accuracy of data sources and the success of estimates about a variety of subjects such as building maintenance and costs of operation.\textsuperscript{5}

The passage of NFMA required the Forest Service to
undertake a massive program of planning in full view of public scrutiny. The regulations that were issued to implement NFMA are at the core of the planning process itself.

**USFS Regulations on Monitoring and Evaluation**

The revised final regulations were issued by the Forest Service effective November 1, 1982. While the rules had been issued earlier, the Presidential Task Force on Regulatory Relief required the Forest Service to review and revise some of the regulations. Thus many of the Forests, including the Helena National Forest, had been planning before the final revised rules were published.

Under the title "National Forest System Land and Resource Management Planning", USDA, Forest Service, Regulation, 36 CFR 219, is found the statement by the Forest Service concerning the steps each forest should take in creating its Forest Plan. Covered are items such as resource integration requirements, forest plan processes, timber resource sale schedule, and transition period. Under section 219.12(k) is found monitoring and evaluation:
At intervals established in the plan, implementation shall be evaluated on a sample basis to determine how well objectives have been met and how closely management standards and guidelines have been applied. 7

To be specifically included are requirements to produce information on a variety of concerns such as the cost of activities, comparisons of actual outputs and services with the planned amounts, compliance with a number of Forest Service standards, and monitoring activities themselves. 8

The Northern Region of the Forest Service, which includes the Helena National Forest, intends to use monitoring and evaluation in three ways. Implementation monitoring will help determine if the management activities required by the Forest Plan are being accomplished. Effectiveness monitoring will determine if those activities are effective in reaching Forest Plan goals. Validation monitoring will help determine whether or not the assumptions and data used in the planning process are accurate. When evaluated, this monitoring information will help the Forest Service determine how well they are doing in reaching their goals. 9

The Helena National Forest, as well as every other
Forest, was required, by law and regulation, to include certain specific monitoring and evaluation processes in its Forest Plan. We take up that topic next.
Notes


3. Ibid., 23.

4. Ibid., 7.

5. Ibid., 5.


7. Ibid., 43046.

8. Ibid.

CHAPTER 5
THE FOREST PLAN FOR THE HELENA NATIONAL FOREST

The Political Situation

The Helena National Forest was created by Presidential Proclamation on April 12, 1906.¹ A portion of the Forest was taken from the Lewis and Clark Forest Preserve, established February 22, 1897.² Surprisingly, each of these moves received very little response from the Helena paper, The Daily Independent. The concerns that were raised focused on the need for local residents to obtain timber and mining from the forests.³

As with other National Forests, the 1970's brought an increase in the production of nearly every forest resource. Between 1975 and 1980, recreation on the Helena National Forest increased by thirty five percent. Timber production averaged 16.8 million board feet of timber sold each year. 425 oil and gas leases had been issued, and 15,000 mining claims staked out.⁴

The location of the Helena National Forest, close to large populated areas, makes the political situation
very complex. Every possible interest seems to have been represented in the planning process including wilderness, logging, wildlife, recreation, visual quality, firewood, grazing, mining, and public access.

In 1980, the Forest Service began the public involvement portion of the planning process. This included contacting many people who had previously shown interest in forest issues, creation of a mailing list, and the holding of public meetings. A screening process was used to identify fifteen major concerns which were then discussed in a second round of public meetings beginning in May of 1982. These discussions, and further analysis, directed the Forest Service in the creation of eleven alternative plans. The Draft Environmental Impact Statement was based on these alternatives and from them the Draft Plan was selected.

The Drafts were released for public review in January of 1985. During the review period, 182 responses were received. Again, public meetings were held, as well as meetings with local interest groups. No new issues were identified in the responses to the Draft Plan.

The Forest Service made contact with more than
fifty businesses, sixty other organizations and fifteen elected officials in gathering input to the Plan. Groups included: the Western Environmental Trade Association which is an interest group composed of business interests in extractive resource industries; the Helena Forest Conservation Coalition which is a grouping of nine environmental and sportsmen organizations; and the Helena Indian Alliance identified areas of Native American historical or religious significance. Also contacted were the Area Planning Organization, the Montana Department of Fish, Wildlife, and Parks, the Bureau of Land Management, and the Bonneville Power Administration.  

The Decision

In his "Record of Decision", dated May 28, 1986, the Regional Forester outlined his reasons for choosing the selected alternative. His intent was to maximize net public benefit which is based on analysis of benefits which generate income, such as range lease fees, and benefits which do not, such as visual quality. Large areas of the Forest will be managed specifically for recreation. Winter habitat for elk will increase. And timber harvesting will rise as well. He also discusses
monitoring and evaluation processes. An annual monitoring program will be part of the Forest's annual work program. Monitoring information will be evaluated, and summaries prepared annually. These processes are to provide the public and the Forest Service with information concerning implementation of the Forest Plan.  

Dr. Gregg Cawley has suggested that perhaps Chief Forester McArdle was correct when he said that things are going OK if everyone is still arguing. If the Helena National Forest Plan is measured in this way, then perhaps it is the best which could be obtained. The Forest Plan was issued two years ago, and six appeals were made against it. Three appeals are still pending, having been referred to Washington, DC. Two are appeals by environmental groups and one from an industry group. Apparently, neither side of the issue has been totally satisfied. Thus, the result may have been fairly equitable.

From the Congressional viewpoint, the focus is now on implementing the Forest Plan. Though appeals are still pending, Senator Melcher's office and the Senate Agriculture Committee are interested in ensuring that
the activities spelled out in the plan begin to occur. While not a concern by either, the monitoring and evaluation processes are a major portion of Forest Plan Implementation.

The Requirements for Monitoring and Evaluation

The Forest Plan summarizes the monitoring requirements on pages IV 6-19. Listed for each resource element are the items to be monitored, data sources, responsible party, monitoring frequency, estimated cost, precision, reliability, frequency of reporting, and the variability which would initiate action. Many of the resource elements pertain to more than one management area. Monitoring for weed infestations, for instance, will be needed in twenty management areas.

This summary is useful because it provides those interested in the Forest with a quick reference to information about the monitoring program. However, to determine what practices will actually be followed in the monitoring process I had to ask forest planner, Art Howell, where the information could be found. He provided me with a lengthy memo that was prepared in the spring of 1987. This "Monitoring Action Plan" detailed
the actual studies the forest personnel were required to make and their reporting deadlines. For example:

**Resource Element**

**Element A1 - Actual use and developed recreation facilities condition.**

The Recreation Staff Officer, with consultation from District Recreation Specialists, will review Recreation Information Management (RIM) data sources annually. An analysis on trends from previous years, with appropriate comments, will be completed at the end of the use seasons and after reporting periods are done for RIM data input.

**Element C12 - Streamside Cover and Riparian Condition.**

The Fisheries Biologist will utilize the Cow/fish model to describe condition of fish habitat components on the South Fork of Crow Creek and Dry Creek. Two 1,000-foot sections will be evaluated on each of these streams between September 1st and October 15th each year. Data will be summarized in the monitoring document by March 1 of the following year.

District personnel will be involved in monitoring this element by working with the fisheries biologist as to where the monitoring will take place and bring any perceived problem to his attention.

District Range Conservationist will participate [sic] the Fisheries Biologist in production/utilization studies on the Trout Tarhead Allotment to determine grazing use on riparian areas and submit inspection notes to Recreation and Planning Staff Officers.

A few items on the memo differed from the requirements of the Forest Plan "due to monetary limitations."

Most affected by these cuts was the fisheries monitoring program, where reductions were made
in the number of samples required. For example, the Forest Plan requires thirty 1,000 foot sample sections for Resource Element C11, and the Monitoring Action Plan requires only ten samples. In the Forest Plan, Element C12, shown above, required sampling from twenty five 1,000 foot sections\textsuperscript{11}, instead of four.

The Monitoring Action Plan makes available information about specific monitoring requirements to interested parties and the forest personnel responsible for carrying out those activities. It should be the guideline along which forest personnel are able to focus their information gathering and reporting. The Planning Office intends to update and reissue the Monitoring Action Plan each year to ensure the responsible personnel are aware of the activities required of them.

The Resource Elements listed above, as well as those listed below in abbreviated form, received special scrutiny for this study.

Resource Element
A2 - Spectrum of dispersed recreation opportunities and uses.

RIM reports provide data, consultations with other forest personnel also provide information for trends and indications of use. Analysis done each year by District Resource personnel.
D5 - Permit Compliance.

District Range Staff will meet with permittees to determine grazing plans. Bills will be prepared and actual use reported in the Forest Service Range Analysis Management Information System (FSRAMIS). Copies of Plans, permittee correspondence, and field notes to be kept on file. Summary sent to Planning Staff by March 1.

E3 - Silvicultural Assumptions and Practices.

Timber Staff Officer will annually review data to compare Forest Plan assumptions with proposed timber sale program. Review cutting unit prescriptions—Environmental Assessment (EA) review. Review permanent growth plots and cruise data against Plan assumptions about Culmination of Mean Annual Increment (CMAI) and rotation age. Review cutting unit prescriptions relative to Plan's standards and guidelines. Sale review process and District silviculture reviews. Post sale reviews. Summary to Planning Staff Officer by March 1.

E5 - Size of Openings.

Timber Staff Officer will review specific EA's and timber sale contracts relative to cutting unit size and compare to Forest Plan standards.

F1 - Monitoring for compliance with Water Quality Standards.

Forest Hydrologist will review Bison Mountain and Strawberry timber sales. Install equipment in preparation for monitoring Hogum Creek Sale. Review Crow Creek and Trout Tarhead Allotments.

G1 - Mineral Activities.

Forest Geologist will assist Districts in inspecting ten operating plans. Review FMC drilling in Brown's Gulch to ensure stipulations protect soil, but are not unnecessarily restrictive.

P3 - Fuel Treatment Outputs.

Timber Staff Officer will review acres treated with projections in Forest Plan. Final report will be pulled from data base.
L2 - Road Management.
   Engineering Staff Officer will verify percentages of yearlong and seasonal road closures. Reporting deadline: March 1.

T1 - Verification of Unit Cost used in Forest Plan compared to on-the-ground cost.
   Planning Staff Officer will review unit costs for timber, range, and roads, as well as forest budget and compare with the Forest Plan Summary to Forest Planning Officer by March 1.

The forest staff is also required by the Forest Plan to evaluate the data gathered during the monitoring process. This evaluation is to be guided by the Decision Flow Diagram, shown in Figure I, which can be found on page IV-20 of the Forest Plan. The results of the evaluation should lead to one of the following: 1) continuing the management practice; 2) improving the application of the management practice; 3) modifying the practice by amending the Plan; 4) modifying the land management prescription by amending the Plan; 5) revising the schedule of outputs; 6) revising the cost/unit output; or 7) revision of the Plan. The Plan states that "The document resulting from the use of the Decision Flow Diagram constitutes the evaluation report." However, the Decision Flow Diagram begins with a finding of deviation in management practice or goal. Thus, if no deviation is noted, then no
FIGURE I
Decision Flow Diagram

Variability in within acceptable limits.

Variability exceeds acceptable limits.

Deviation of management practice or specified goal is observed.

First time (non-recurring) variation.

Continuation of practice would not result in serious consequences.

Deviation of practice results in unacceptable performance.

Management oriented practice or problem.

Application of management practice is unacceptable.

Continue practice.

Remedial action taken.

Continue oriented problem.

Continuation of practice would result in serious consequences.

Application of management practice is unacceptable.

Continue practice.

Remedial action taken.

Remedial action taken.

Continue oriented problem.

Design of management practice is ineffective in meeting goals and outputs.

Proposal correction or adjustment of present practice would not affect other resources or management direction.

Proposal correction or adjustment of present practice would not affect other resources or management direction.

Proposal correction or adjustment of present practice would not affect other resources or management direction.

Initiate and backfill as necessary.

Continue oriented problem.

Schedule can be adjusted to maintain flow of output within acceptable limits.

Adjustment made will have major effect on output flow. Will declare from output limits.

Continued output is insufficient to maintain quality or quantity of outputs.

Conclusion of output is insufficient to maintain quality or quantity of outputs.

Schedule of output affected by natural, catastrophic (fire, ice, etc.) or by inadequate budget.

Schedule cannot be adjusted to maintain flow of output within acceptable limits.

Adjustment made will have major effect on output flow. Will declare from output limits.

Output is too slow.

Initiate revision of the plan.

Output is too slow.

Initiate revision of the plan.

Transition to new plan.

Transition to new plan.

Transition to new plan.

Transition to new plan.

Transition to new plan.

Transition to new plan.

Transition to new plan.

Transition to new plan.

Transition to new plan.

Transition to new plan.

Transition to new plan.
evaluation report is required.

However, evaluation of the data is the reason it is gathered in the first place. And evaluation information reporting is required by the Monitoring Action Plan for many Resource Elements, such as C11 where it states, "Data will be collected and evaluated by the Fisheries Biologist. Findings will be summarized and documented in a monitoring report." Evaluation information should be included in the yearly summary of each Resource Element to help facilitate use of the information by decision makers.

The next chapter covers analysis of the documents produced by the forest staff in meeting the requirements of the Monitoring Action Plan.
Notes


3. Ibid.


5. Ibid., Appendix A, 1-4.


10. Ibid.

11. Ibid.

12. Ibid.


CHAPTER 6
DATA FROM DOCUMENTS

Review of the Reports

As discussed earlier, the Forest Plan of the Helena National Forest requires monitoring and evaluation of forty eight resource elements. These requirements are given direction by the Monitoring Action Plan. Each Resource Element represents some facet of resource production or protection, be it bull trout habitat, firewood removal, or production by the Forest as a whole. Monitoring reports on thirty six Resource Elements were on hand at the Planning Office for the monitoring year, 1986. By March 25, 1988, twenty one reports had been filed for the monitoring year, 1987.

All reports are kept in a file folder in the Forest Planning Office. However, they are available for use, and probably occasionally get misplaced. Also included in this folder are other reports not specific to a Resource Element. One such report discussed the activity of staff on the Helena District inspecting the
Strawberry timber sale. Another reported discussions between various wildlife interests concerning wildlife on the Helena Forest. While reports such as this may not be specific to monitoring and evaluation requirements as listed in the Monitoring Action Plan, they do provide important information.

The reports which were in the folder followed no particular format. Some listed only what was completed. Others included the results of analysis as well, while still others also reported that some monitoring requirements were not carried out. In the latter case, it was obvious just what activity was not completed. In some of the reports, I was left wondering if the requirements had been met and included in some other communication, or if the requirements had not been met at all.

Many of the reports listed by Resource Element which activities had been performed. Other reports made more general statements about the activities performed and left it to the reader to figure out which Resource Elements were being reported.
Analysis of Selected Reports

The contents of fourteen reports were scrutinized to determine the extent to which they conformed to the requirements of the Monitoring Action Plan. These reports were chosen because they represent a cross section of Resource Elements and diversity in reporting styles.

- Al Use and condition of developed recreation facilities.

Analysis of RIM reports and consultation with District personnel revealed that usage was down in 1986 on the Lincoln District, and level on the Townsend District. Condition reports on facilities were unavailable, though "indications" were that facilities were in "fair to reasonable" condition. There was no mention of the nearness of facilities to capacity. No data was available at all from the Helena District. Since there was data missing from the report, the writer might have given the reasons. There may have been a procedural reason the information was missing, and as such it may have required some change in this Elements monitoring timetable. As yet, no report has been filed for monitoring year, 1987, so no comparison can be made.
The information which was presented was clear and concise, providing a useful, though limited, picture of usage.

A2 Spectrum of dispersed recreation opportunities and uses.

This report should discuss the variety of recreation not requiring the use of developed facilities, which is available on the Forest. It should also discuss the usage of each. Some data on dispersed recreation was included in the Recreation Staff Officer's report for Element A1. That report found an increase in dispersed recreation on the Townsend District, and a small decrease on the Lincoln District. The only types of dispersed recreation discussed were hunting on the Townsend District and wilderness usage on the Lincoln District, and these were only mentioned briefly. The Recreation Staff Officer also stated that the other Resource Elements in Recreation were to be completed by the Districts.

No District report on this Element could be located for 1986. However, the Lincoln District included this Resource Element in their report for monitoring in 1987. While no mention was made of analysis, the District did
report that all RIM reports were completed.

Each District should have completed analysis of this type of recreation and reported their findings.

-C12 Streamside cover and riparian condition.

Conditions on Dry Creek were found to be fair in 1986, while those on the South Fork of Crow Creek were poor. Variability as listed in the Forest Plan for habitat suitability included a decline as measured by the cow/fish model, or a habitat suitability index of .6 as measured by the cow/fish model. The report did not state exactly what the cow/fish model results were, but it did recommend change in the utilization of streamside vegetation. Follow-up conversations with forest planners, the Fisheries Biologist, and district personnel have shown this to be an ongoing problem. Cattle allotments with riparian areas within them often show depletion of streamside vegetation and bank erosion.

The finding that the South Fork of Crow Creek's vegetation was in poor condition should have brought the Decision Flow Diagram into play as the situation was evaluated. There should have been an evaluation report containing some conscious management decision. There is
none. Instead, action is being taken on other streams with the same problems. Thus, monitoring and evaluation have provided information to decision makers, and assisted in their decision making. Unfortunately, the documentation of the South Fork of Crow Creek's evaluation was poor.

This report was informative. After a general discussion of the monitoring program, it detailed for each Resource Element the monitoring completed, the findings, and the recommendations. The recommendations included changes in the monitoring program itself, as well as changes in the management of Crow Creek as discussed earlier. This report was easy to follow and very informative.

-D5 Permit Compliance.

This Element should have been reported by each of the Districts. For the monitoring year, 1986, the Helena District reported meeting with thirty percent of the permittees, contacting the rest by phone or mail, completing all billing, and reporting all use. The report was very short and required no analysis.

The Lincoln District reported collecting all signed operation plans in 1987, but made no mention of the
other activities required. For this Element, actual use is an important item to summarize for the management team. This report should have included more information, or at least given reasons for the failure to complete the activity. There was no report from the Townsend District.

-E3 Silvicultural Assumptions and Practices.

This report was very good. It mentioned all the activities required and included analysis of each. The timber sale reviewed in 1986 was Sulphur Bar, on the Townsend District. It had cutting unit prescriptions which were being carried out. Some differences were noted however, and more project monitoring recommended. The Environmental Assessment covered the impacts observed.

Review of the permanent plots and cruise data was to be accomplished by the Measurement Specialist, but was not done. Cutting units were reviewed and all complied with the Forest Plan. The sale review process and District silvicultural review complied with the Forest Plan, but more project monitoring was recommended. Reforestation projects showed good returns.
This report was technical, but straightforward in its presentation. Interestingly, the 1986 and 1987 reports were almost identical.

-E5 Size of Openings.

Environmental Assessments and timber sale contracts were reviewed for the 1987 report. District staff were contacted. All complied with the Forest Plan.

Only one sale exceeded the Forest Plan, in 1986, and it had the proper documentation. These reports were very short.

-F1 Monitoring for compliance with Water Quality Standards.

The 1986 report was titled, "Water Resources Monitoring Report" and was very large. The Forest Hydrologist was able to summarize the data in a separate report which was easy to understand and probably very helpful to decision makers. However, it was difficult to tell which of the Resource Elements the report covered.

No mention is made of field review and documentation of the Strawberry or Bison Mountain Timber sales, nor is the Trout Tarhead Allotment mentioned. However, stream samples were taken on every District in
the Forest. Also accomplished were the preliminary activities towards installing monitoring equipment on Hogum Creek to monitor the timber sale there.

Normally, sediment levels fall as water levels fall. This report found that increased sediment levels, at times when they should be decreasing, were most likely caused by cattle on the sites monitored. His data on Jenkins' Gulch was very similar to that found in the Fisheries report on the South Fork of Crow Creek. No recommendations were made concerning management practices, though recommendations were made concerning specific tests which may be needed to ensure water quality.

The summary of water quality on the Helena National Forest indicates that it is good. The places where problems do exist are small, and the problems are contained at the site. The report also suggests coordination with the Districts to ensure specific questions they may have are investigated during the 1987 monitoring season.

-G1 Mineral Activities.

The Helena District report for 1986 included information on this Resource Element. Forty four
compliance inspections were carried out, as well as twelve reclamation inspections. The FMC drilling site was inspected with the Forest Geologist. No analysis was included.

The Forest Geologist also reported the inspection of the FMC drilling site. That report made no mention of the other activities under this element. The FMC drilling site was found to have complied well with the reclamation requirements. Some variance was noted, however, and further monitoring and assistance was recommended. No mention was made in either report concerning the possibility that stipulations might be overly restrictive.

-P3 Fuel Treatment Outputs.

These reports were filed for the 1986 and 1987 seasons. It was noted that the targets for 1986 were below Forest Plan estimates, due to low funding. The targets which had been set were exceeded. Planned targets for 1987 were also exceeded. No mention was made of how much deviation from the Forest Plan existed. Forest Plan variability requiring action should come into play at plus or minus twenty five percent. With this exception, the report included all required information.
L2 Road Management.

The Engineering Staff Officer reported that seasonal and yearlong road closure analysis confirms that new roads are closed yearlong after the sale. No mention was made of Forest Plan standards. His analysis was clear and the report concise. This report was for 1986 and no report for 1987 has been completed.

T1 Verification of Unit Cost used in Forest Plan compared to on the ground cost.

No report for this Resource Element has been located for either 1986, or 1987. However, discussions with the planning staff revealed that a 1986 report was developed and used. Unfortunately, they were not able to find it in time to be analyzed for this study.

Summary

Analysis of the documents produced by the forest staff indicates that many monitoring requirements are being fulfilled. However, the documentation available rarely contains all the information required by the Monitoring Action Plan, and in no document was a reason given for the missing information. The lack of evaluation reports is highlighted by the Fisheries
Report. Though the format of the report was clear and it provided good information, it did not report the extent of the problem, and no evaluation report was generated. Many of the reports contained no evaluation, and made no attempt to answer the questions which make up the goals for monitoring and evaluation.
CHAPTER 7
THE INTERVIEWS

Forest Service Personnel

Interviews were conducted with the District Rangers on the Helena National Forest to determine their perceptions of the monitoring and evaluation processes. Items specifically discussed were quantity, quality, and usefulness of the information gathered, and the methods of information gathering and reporting. Questionnaires were completed by Forest staff to determine their perceptions of the monitoring and evaluation processes.

Denis Hart is the District Ranger of the Helena District, Jerry Adelblue is District Ranger on the Townsend District, and Ron DesJardins is District Ranger on the Lincoln District. The responses I received were very similar. Each said the monitoring and evaluation activities were complex and difficult, and were improving.

They all made sure I understood that the Forest Service has done monitoring and evaluation since its
inception. Under a variety of different names, these processes have focused on one specific area at a time. They all liked the idea that monitoring and evaluation are becoming more integrated among the various resources of the Forest. Thus, information is readily available to determine the effects various management practices have on each other.

They were all looking forward to an increase in funding they expect to receive over the next few years. With it they should be able to hire enough staff to fully implement all the requirements of the Forest Plan. One Ranger was slightly concerned whether all the money could be spent in a cost effective manner, and he intends to use monitoring and evaluation processes to ensure that it is.

Each said the quality of the information was good, and expected it to get better. The processes for compiling and sharing the information were one point of concern, though they were judged adequate. Two believed increased usage of computer processing would help coordination, while one thought the computer might be part of the problem. One suggested that increased standardization would help by making reports more easily
understood. They all believe that these processes will improve over time as they learn what information is needed and when. One Ranger thought the March 1 deadline for reporting was not optimum. He suggested a deadline of December 31st or the end of the fiscal year saying that such a deadline would help reinforce in their minds that something was due. All agreed that monitoring and evaluation activities occurred which were not documented, but said this happened because monitoring and evaluation are continuing processes in land management. As such, monitoring and evaluation are done which are not specifically required in the Forest Plan, and hence documentation may not be required.

When asked about the sufficiency of the information gathered one said the jury was still out on the new systems. Another said yes, but questioned its availability when it is needed, and the third said that too much information is gathered, and expert filtration systems are needed to ensure only important and relevant information reaches decision makers. This is one area which concerned them all. They recognize that monitoring and evaluation are to provide information to them so that their decision making process can lead to
their Desired Future Condition of the Forest. The Lincoln District has been involved in the development of Integrated Resource Management computer models to help provide quality information about the effects of resource management. They believe these methods will increase the quality of data available to the decision makers.

Overall, these men feel the management systems they are developing will help them manage their Districts according to the standards set forth in the Forest Plan.

Questionnaires were distributed to thirty four Forest personnel to determine their perceptions of the monitoring and evaluation process. Twenty seven were returned. Most said that they liked doing monitoring and evaluation, but admitted some is not documented as it is done. They feel there are some things which need to be monitored, but aren't currently. Very few reported having lots of input into the planning of monitoring and evaluation; most reported little or no input. Virtually all replied that monitoring and evaluation are very important. No one said it was not important.

Many discussions were held with Forest Planner, Art
Howell. He was able to provide most of the necessary documentation when requested. He could not, however, be sure that all the required reports had been submitted in 1987. He told me that a conscious decision had been made not to use a standardized report form for reporting monitoring and evaluation activities. But, admitted that perhaps such a format is needed to ensure all the information gathered is clearly documented. He, also, made sure I knew that a budget increase was in the pipeline for the Helena National Forest. It will apparently be a demonstration of sorts, to see what impact full funding has on Forest Plan Implementation. In addition, he informed me that the Northern Region will soon begin having classes for personnel on monitoring and evaluation. He hopes these classes will help improve the staff's awareness of monitoring and evaluation requirements. Another upcoming event is the creation of the annual monitoring report mentioned in the Record of Decision.

All the personnel I contacted seemed very aware of the political implications of monitoring and evaluation. They recognize that this will be one of the ways Forest Plan Implementation is judged.
Local Interests

Conversations were held with twelve people from local organizations, including representatives from government, industry, and the conservation movement. This was done to ascertain their perceptions concerning the accessibility of data about the Helena National Forest. Nearly all said that information is available if a specific request is made. Most agreed that the staff is willing to provide information. Two were very upset with specific problems they had been involved with, implying that the staff had withheld requested or needed information. But, the most common word in these conversations was "helpful".

Government leaders said they maintained generally friendly relations with the Forest, though contact was minimal. The conservation representatives said contact was made more frequently, and though differences of opinion were often apparent, information was readily shared. However, business interests were split on the usefulness of the Forest Service. Some said they were very friendly and "upfront", and others said they were rarely helpful and often difficult to work with.
The Public

On two days, March 31 and April 4, I stood at the corner of Sixth Avenue and Last Chance Gulch in downtown Helena at noon and asked passersby the following: 1) If they had heard of the Forest Plan; 2) If they had heard of the monitoring and evaluation processes in the Plan; and 3) Had they ever requested or received information from the Helena National Forest? A total of twenty four people paused long enough to listen to at least the first question. Twelve had heard of the Plan, nine had not, and three said they assumed such a plan existed. Five said they had heard of monitoring and evaluation, ten had not. Seven had received or requested some information from the Forest Service.

Summary

Interviews with the District Rangers indicated that monitoring and evaluation are taking place on the Forest and provide quality information for their decision making. They believed improved processes would help communicate the monitoring and evaluation information which is generated. They agreed that the processes are not currently meeting all the goals of the Forest Plan.

The questionnaires completed by the Forest staff
provided insight into their perceptions of monitoring and evaluation. Conversations also indicated that many would rather be in the field, instead of completing documentation of their activities. Though personnel reported that monitoring and evaluation are very important, when combined with the earlier findings concerning poor documentation, these results help to explain why reports are not providing all the information required.

While the public and local decision makers seem unfamiliar with monitoring and evaluation, it is obvious that most expect the Forest Service to be generous with its information. Thus, while an Annual Monitoring Report has yet to be produced, it is likely that similar information has already been provided to the public on an ad hoc basis.
CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The staff of the Helena National Forest is, in large measure, meeting the monitoring and evaluation requirements of the Forest Plan. Thousands of hours are spent every year monitoring management activities and conditions on the Forest. They feel this process is important and many seem to enjoy it. In the introduction, I stated that ensuring the safeguards and feedback systems of the Plan can provide information to me about the success of our land policy is the reason I chose this topic. I am happy to report I have found these systems meet my needs.

The requirements for monitoring and evaluation are easily found and understood. However, many reporting documents were analyzed which did not contain all the necessary information. It is impossible to tell if the monitoring and evaluation were done at all. Many questionnaire responses referred to undocumented
activities. While it may be impossible to document all the monitoring and evaluation which occurs on the forest, that information which is not documented may never be of any use to anyone except the person who first gathered it. This underlying problem of documentation was a major finding of this study.

The other major finding was the total absence of evaluation reporting. In the case of the Fisheries Report on the South Fork of Crow Creek, there was no information relating the cow/fish findings to the Forest Plan. The results found the condition to be poor, and led the Fisheries Biologist to recommend changes in the utilization of streamside vegetation. This recommendation for change implies that the situation should have generated an evaluation report. Unfortunately, no system is available for such findings to generate the required report.

Both of these problems seem to be grounded in a lack of sufficient processes to handle the paperwork required. Other related problems, include failure to report by the March 1 deadline, an inability to locate completed reports, and an inability to ensure all reports are completed.
This paper has not attempted to determine if the Helena National Forest is equal to Wildavsky's concept of self-evaluation. Comparing Wildavsky's ideal organization with the Helena National Forest would be a good topic for further study. However, this paper has found that as predicted by Michael Patton, implementation is often different from the plan. My interviews suggest that the informal monitoring and evaluation activities carried out on a day to day basis are just as effective as the formal processes. The example was given to me of the Forest Engineer who must drive out to check the condition of a road and ensure it is closed. This is the part of the formal process. But, on the way he must travel miles of forest road, passing over culverts and through roadcuts. As he travels these roads, he is continually observing and evaluating the condition of the roads. This is part of the informal monitoring and evaluation processes which occur all the time.

The usage of the Water and Fisheries reports confirm that the information generated by monitoring and evaluation is used, but not necessarily as envisioned by the creators of the Forest Plan. While a Fisheries
evaluation report was not created as required, the information from the Fisheries Report and the water report did help decision makers. Though not changing management on the South Fork of Crow Creek, the Forest Service is attempting to change management practices on other nearby streams with the same problems. So, while not being used exactly as designed in the Forest Plan, the information is proving to be of value. I believe that the processes which have been created simply need fine tuning in order to accomplish the requirements of the Forest Plan.

This study has answered the questions raised in Chapter 1. Monitoring is being done. It is not on schedule, but is close. Forest Service decision makers feel this monitoring does lead to effective evaluation which enables them to do a better job. With the coming of an annual report, monitoring and evaluation should do a better job of supplying information to the public. While they have not answered many of the questions posed as their goals, monitoring and evaluation have provided information which will be helpful to others in answering those questions.
Recommendations

The problem of documenting activity and creating evaluation reports can be eased with a simple form on which monitoring and evaluation should be reported. The format might include headings as simple as: Date, Person Reporting, Resource Element, Annual Report (yes or no), Monitoring Activity, Analysis, and Within Forest Plan Variability (yes or no). If the results exceed variability, perhaps the back of the form, or a separate sheet, could be used as an evaluation report. Each step in the Decision Flow Diagram could be recorded there. While no one wants more paperwork, some type of standard format for reporting should help everyone involved ensure reports are understandable, and filed on time. The training which is planned should help Forest personnel become more aware of the need to document activities properly.

The planning staff might also consider changing the Monitoring Action Plan. They should eliminate the specific requirement to report by March 1 from Resource Elements which currently contain them. The reporting deadline should be clear enough when included in the directions which accompany the Monitoring Action Plan.
This could lessen confusion about when the reports are due, and perhaps help get them done on time. Also, the Monitoring Action Plan should require analysis on every item. It is not enough to simply gather data, it must be analyzed to determine the success or failure of management programs. This step should reduce the time decision makers need in order to understand and utilize the information.

It will be important for the Forest Supervisor's Office to ensure that the Planning Office has sufficient staff and funding to coordinate monitoring and evaluation. Unless someone is in charge of ensuring reports are filed and effective evaluation is being carried out there is a good chance that the current trends will continue.

Last, but certainly not least, when the monitoring and evaluation reports are submitted to the Planning Office a copy should be kept in a file or notebook, and not loaned out. This will assure that anyone who wants to review them at any time, be it the press, auditors, the public, or a staff person, has access to them all.

I believe these changes will help strengthen monitoring and evaluation processes on the Helena
National Forest. They will make communicating data easier and more responsive to the needs of decision makers and the public.
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