EVOLUTION AND IMPLEMENTATION OF A FIRE MANAGEMENT PROGRAM WHICH DEALS WITH HIGH-INTENSITY FIRES ON THE PAYETTE NATIONAL FOREST IN CENTRAL IDAHO

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ABSTRACT

Based on strong direction in the Forest Land Management Plan and in the Frank Church-River of No Return Management Plan, the Payette National Forest, in central Idaho, utilized the National Fire Management Analysis System (NFMAS), the flexibility designed in the current U.S. Forest Service Fire Policy, and comprehensive wilderness and nonwilderness fire management plans to manage both wild and prescribed high-intensity fires in complex ecosystems.

INTRODUCTION

Prior to 1978, the Payette National Forest fire program followed the National Forest Service direction which was known as the 10:00 AM fire policy. This policy stated that all new fire starts would be controlled by 10 AM the next day. The emphasis for all wildfire operations was totally on suppression, generally without regard to cost or resource values at risk. This policy sometimes led to aggressive fire suppression which was often in direct conflict with resource objectives. Revised national policies and land management planning has enabled fire managers to develop more flexible fire programs placing more emphasis on resource values, the natural role of fire in the environment, and evaluation of the cost of the suppression effort. It is now a program that responds more than ever to resource management objectives.

BACKGROUND

As a result of National Fire Planning in the early 1970s, the Agency received much higher funding in order to strengthen the number and types of fire resources. It was generally thought that increased funding would provide for increased success of the suppression effort resulting in less burned hectares. The theory of additional funding aiding the fire suppression effort was partially correct. More money did facilitate more organized and better trained crews and provided for additional and updated suppression equip-

ment, but was not overly successful in reducing burned hectares. During this same time period a handful of biologists and ecologists were stressing the importance of the role of fire in the ecosystem, while the majority of resource and fire managers were still emphasizing suppression of all fires. Policy modification in 1971 led to permitting lightning-caused fires to burn in designated wilderness areas under carefully specified conditions, where an approved fire management plan had been developed. These fires were classified as prescribed fires (from unplanned ignitions). However, the only wide use of prescribed fire was from unplanned ignitions and it was primarily for the disposal of logging residue.

TRANSITION

As the 1970s' decade was coming to an end, the aspects of fires' costs and benefits were being more objectively analyzed by all fire managers. In 1978 new national direction was enacted to provide better integration of fire protection needs into the forest land management planning process and help control suppression costs. The objective of wildfire suppression was changed from one of control of all wildfires by 10 AM to one of managing fire suppression costs and damages, consistent with land and resource management direction and values. This new policy also opened doors for increased use of prescribed fire, both from planned and unplanned ignitions, to meet resource objectives.

The following definitions of terms from the current fire policy will be used in the remainder of this document.

Appropriate Suppression Response—The planned strategy for suppression action (in terms of kind, amount, and timing) on a wildfire which most efficiently meets fire management direction under current and expected burning conditions. The response may range from a strategy of prompt control to one of containment or confinement.

Confine—To limit fire spread within a predetermined area principally by use of natural or preconstructed barriers or environmental conditions. Suppression action may be minimal and limited to surveillance under appropriate conditions.

Contain—To surround a fire, and any spot fires therefrom, with control line as needed, which can reasonably be expected to check the fire's spread under prevailing and predicted conditions.

Control—To complete the control line around a fire, any spot fires therefrom, and any interior islands to be saved; burn out any unburned area adjacent to the fire side of the control line; and cool down all hot spots that are immediate threats to the control line, until the line can reasonably be expected to hold under foreseeable conditions.

At the time of this writing the Forest Service Fire Policy is undergoing extensive national review. Therefore, it is conceivable that both the policy and nomenclature could change.

FOREST PLANNING PROCESS

Concurrently with the 1978 change in fire policy, the Payette National Forest was beginning its process of developing a Forest Land Management Plan (National Forest Management Act of 1976 and subsequent regulations for its implementation). The Act requires that the planning process fully integrates the various resource components of the management program, and that the criteria for designing and selecting alternatives be explicit. The planning process is an interdisciplinary, fully integrated approach to decision making. Issues and concerns are addressed by an intentionally broad array of management alternatives. The alternatives are evaluated against several explicit planning criteria in a process open to public scrutiny. The selected alternative is then converted into an annual operating plan and its implementation is monitored to ensure consistency with the planning criteria, standards and guidelines, objectives, and management area direction. The revised National Forest Fire Management Policy contains related changes—the fire management program must be cost effective and consistent with land management objectives. Minimization of fire program cost, plus the net value change in resource output, has been specified as the cost effectiveness criterion.

A National Fire Management Analysis System (NFMAS) for evaluating various aspects of a fire program was developed to assist fire managers in providing input to the forest planning process. This computer based analytical system is an integrated analysis, as opposed to strictly a fire management analysis. It is used as an evaluation of multiresource or multifunctional programs to develop the most cost-efficient program mix, a composition of inputs such as prevention, detection, initial attack forces, and fuel treatment projects to reduce hazards at specified program budget levels.

Fire and fuels input to a forest plan vary throughout the country. Some forests have very detailed and rather complex direction in their plans while others selected a more simplified approach. Public response to the Draft Payette Forest Plan showed that the proposed forest fire program was not a major issue or concern. With this in mind, the Payette Forest selected a general approach in hopes of providing a flexible system to apply to the decision-making process for fire evaluation (recognizing that fire is a very dynamic function juxtaposed with many other factors). Statements were developed that defined fire management goals and objectives, desired future condition, and standards and guidelines for the various aspects of the fire program. More specific standards were developed for individual management areas where necessary. Other processes used to assist the Payette Forest in developing input to the Forest Plan and specific fire management plans has been fire history studies throughout several forest management areas. These contracted studies provide historical fire and fuels data that assist managers

in establishing area-specific prescribed fire programs and projects for input to the Forest Plan.

The Forest Fire Action Plan is the latest document developed to compile the forest's fire information. This document provides the specific "how to" for implementing the direction and planning set forth in the Forest Plan. This more specific document will vary widely from forest to forest, but can be effectively used to isolate (either by reference or hard copy) an entire forest's set of fire manuals, guidelines, standards, fuels management direction, etc.

IMPLEMENTATION

Implementation of the first Fire Management Area (FMA) under the new policy began on Payette in 1979. It was a 31,600-ha area consisting of high elevation timber types. The historical fire occurrence in this area was only about seven lightning fires annually with most of these fires burning less than 1 hectare each. The objectives of establishing this FMA were to allow fire to return to its natural role in the environment, reduce long term suppression costs, reduce forest fuel build-ups, maintain natural and wildlife habitat succession mosaics, and provide fire managers an opportunity to "wet their feet" in managing a prescribed natural fire program. Much of this area is quite visible from one of the larger communities in central Idaho.

The area is under consideration for inclusion in the wilderness system and has the potential for high-intensity fires of somewhat limited size, due to fuel continuity, topographic barriers, and boundary constraints.

Flexibility of the new fire policy was demonstrated most dramatically during the 1985 fire season. The Savage Creek fire burned 4,905 ha of generally remote land but was interspersed with private ranches and available high value timber. The portion of the fire threatening private lands and suitable timber received a "control" suppression response. The head of the fire was not threatening private property or high value timbers and was spreading into high elevations, remote, undeveloped land adjacent to wilderness. This section of the fire was managed under a "confinement" strategy using more natural terrain as designated boundaries. These different strategies served several objectives for this fire: 1) reduced exposure of fire fighters to safety concerns, 2) reduced fire suppression costs by an estimated $2 million, and 3) reduced possible negative effects from suppression efforts on sensitive land types.

Another example of implementing the fire policy also occurred in 1985. At the same time the Savage Creek fire was burning, the French Creek fire escaped initial attack and eventually burned 5,900 ha within the main Salmon River drainage. Several large areas of high value ponderosa pine (*Pinus ponderosa*) and Douglas fir (*Pseudotsuga menziesii*) which were scheduled in the Forest Plan for future timber harvest were impacted by this fire. There were also sensitive watershed concerns just as there were with the Savage Creek

fire. This fire received a total control suppression strategy. An effective analysis process called an Escape Fire Situation Analysis (EFSA) was used by the District Ranger and Fire Management Officer to evaluate the best alternatives in order to arrive at the decisions that were eventually made. Their decisions were reevaluated on a daily basis over the approximate three-week period these fires burned.

In July of 1985, a second Fire Management Plan was signed and adopted on the Forest. It was different in that it was in the largest wilderness in the lower 48 states (Frank Church-River of No Return Wilderness, [FC-RONRW], approved by Congress and signed into law by President Carter, 1980). It involved two Forest Service regions, six national forest and twelve ranger districts and is 941,496 ha in size. Approximately 311,615 ha are within the boundaries of the Payette National Forest.

The Plan contains a flow chart process comprised of many elements including weather, fuels, available resources, hazards and risks, socio/political concerns, etc. (Figures 1 and 2) that is used to evaluate each new fire start. The purpose is to determine if the fire will be managed as a prescribed fire or wildfire. If a fire is managed as prescribed it will be accompanied by an incident plan which will include more detailed criteria than the initial review derived from the flow chart evaluation. If the fire does not meet the criteria to be a prescribed fire, it becomes a wildfire and the most appropriate suppression strategy is the action taken. This could be a strategy ranging from confine with monitoring only, to containment of certain areas of the fire, to total control, or combinations of the three. Generally we have used the least cost alternative when taking action on wildfires in the wilderness. An EFSA is also written as part of the wildfire evaluation process. This process allows the District Ranger and Fire Management Officer to address alternatives that include resource values, hazards, risks, and projected costs to determine the most appropriate long range action for a wildfire.

STATISTICS

During the years 1985 through 1988 the Payette portion of the FC-RONRW burned 7,700 ha from 35 lightning-caused prescribed fires. During the same period this area has burned 48,500 ha from 85 wildfires with over one-half of those hectares being burned during 1988. The vast majority of the wildfires over this time period were managed under a confinement strategy with monitoring only. In 1988 the Forest also managed a complex 6,000-ha fire outside of wilderness using a combination of control and confinement to meet fire and other resource objectives. In comparison, during the years 1980 through 1984 prior to implementation of the Wilderness Fire Plan, the FC-RONRW only burned 83 hectares from 56 wildfires. All of these fires received a full suppression response.

Fire suppression costs in wilderness are very high because they are areas

Figure 1

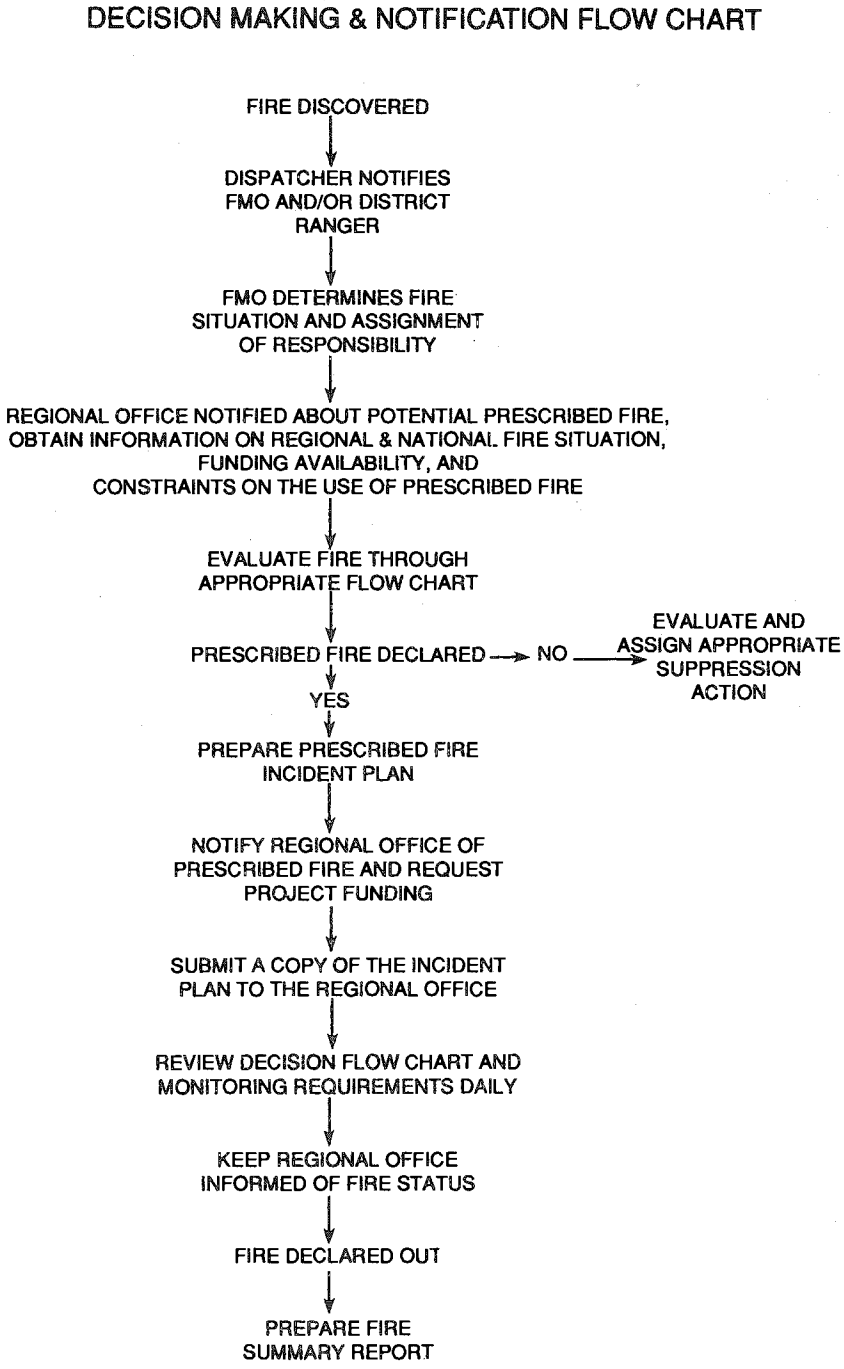
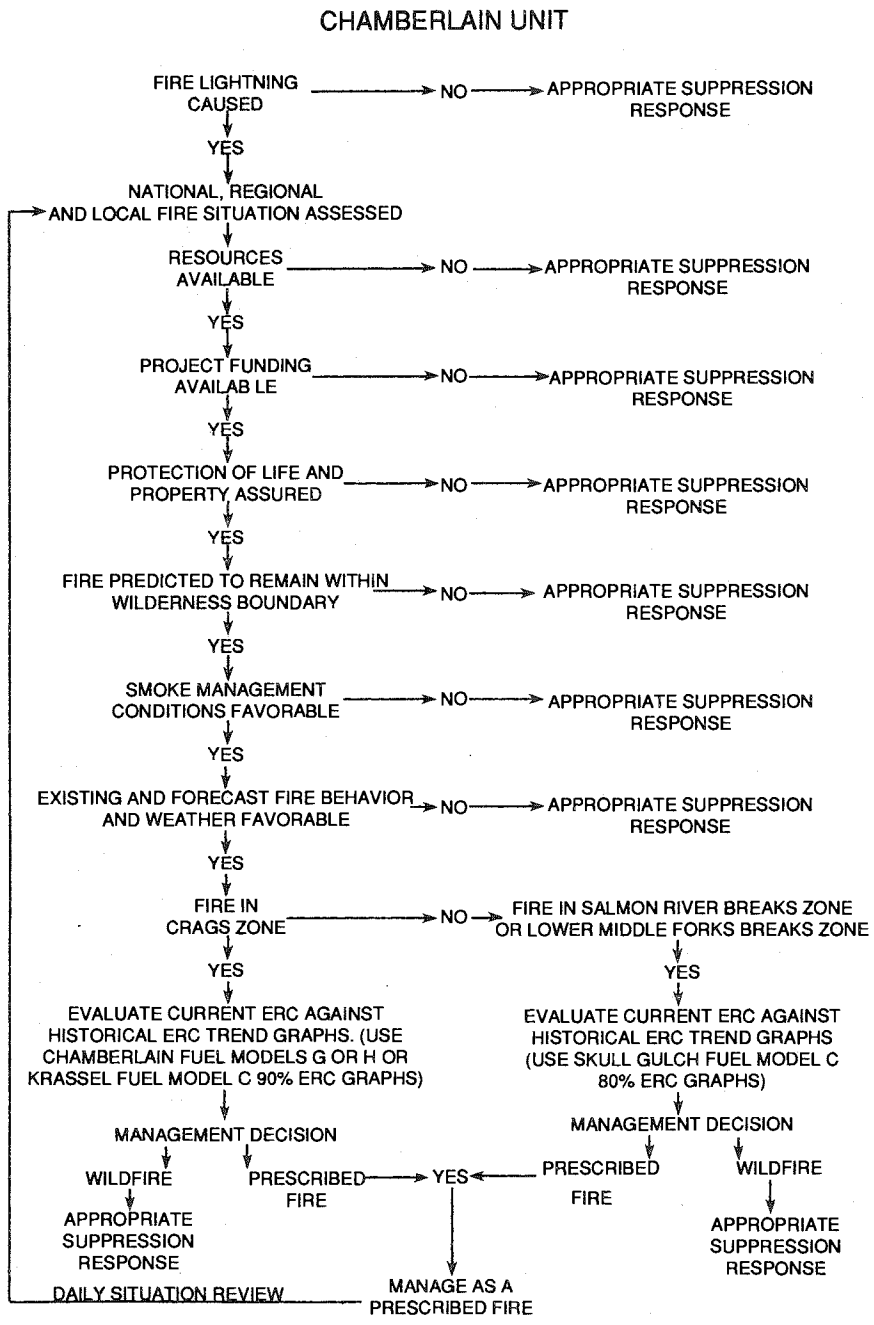

DECISION MAKING & NOTIFICATION FLOW CHART
FIRE DISCOVERED
DISPATCHER NOTIFIES FMO AND/OR DISTRICT RANGER
FMO DETERMINES FIRE SITUATION AND ASSIGNMENT OF RESPONSIBILITY
REGIONAL OFFICE NOTIFIED ABOUT POTENTIAL PRESCRIBED FIRE, OBTAIN INFORMATION ON REGIONAL & NATIONAL FIRE SITUATION, FUNDING AVAILABILITY, AND CONSTRAINTS ON THE USE OF PRESCRIBED FIRE
EVALUATE FIRE THROUGH APPROPRIATE FLOW CHART
PRESCRIBED FIRE DECLARED
NO
EVALUATE AND ASSIGN APPROPRIATE SUPPRESSION ACTION
YES
PREPARE PRESCRIBED FIRE INCIDENT PLAN
NOTIFY REGIONAL OFFICE OF PRESCRIBED FIRE AND REQUEST PROJECT FUNDING
SUBMIT A COPY OF THE INCIDENT PLAN TO THE REGIONAL OFFICE
REVIEW DECISION FLOW CHART AND MONITORING REQUIREMENTS DAILY
KEEP REGIONAL OFFICE INFORMED OF FIRE STATUS
FIRE DECLARED OUT
PREPARE FIRE SUMMARY REPORT

Figure 2


CHAMBERLAIN UNIT
FIRE LIGHTNING CAUSED
NO
APPROPRIATE SUPPRESSION RESPONSE
YES
NATIONAL, REGIONAL AND LOCAL FIRE SITUATION ASSESSED
RESOURCES AVAILABLE
NO
APPROPRIATE SUPPRESSION RESPONSE
YES
PROJECT FUNDING AVAILAB LE
NO
APPROPRIATE SUPPRESSION RESPONSE
YES
PROTECTION OF LIFE AND PROPERTY ASSURED
NO
APPROPRIATE SUPPRESSION RESPONSE
YES
FIRE PREDICTED TO REMAIN WITHIN WILDERNESS BOUNDARY
NO
APPROPRIATE SUPPRESSION RESPONSE
YES
SMOKE MANAGEMENT CONDITIONS FAVORABLE
NO
APPROPRIATE SUPPRESSION RESPONSE
YES
EXISTING AND FORECAST FIRE BEHAVIOR AND WEATHER FAVORABLE
NO
APPROPRIATE SUPPRESSION RESPONSE
YES
FIRE IN CRAGS ZONE
NO
FIRE IN SALMON RIVER BREAKS ZONE OR LOWER MIDDLE FORKS BREAKS ZONE
YES
YES
EVALUATE CURRENT ERC AGAINST HISTORICAL ERC TREND GRAPHS. (USE CHAMBERLAIN FUEL MODELS G OR H OR KRASSEL FUEL MODEL C 90% ERC GRAPHS)
EVALUATE CURRENT ERC AGAINST HISTORICAL ERC TREND GRAPHS (USE SKULL GULCH FUEL MODEL C 80% ERC GRAPHS)
MANAGEMENT DECISION
MANAGEMENT DECISION
WILDFIRE
PRESCRIBED FIRE
YES
PRESCRIBED FIRE
WILDFIRE
APPROPRIATE SUPPRESSION RESPONSE
APPROPRIATE SUPPRESSION RESPONSE
DAILY SITUATION REVIEW
MANAGE AS A PRESCRIBED FIRE

where access is difficult and suppression strategies must be developed around airborne resources. The use of prescribed fire from unplanned ignitions is the preferred strategy for most wilderness fires on the Payette when the predetermined prescription elements can be maintained. This is not always the case and some fires may burn out of prescription and be changed to wildfire status and managed under the most appropriate wildlife suppression strategy. Cost savings can be substantial if a confinement strategy can be used as opposed to control. In 1986 approximately 8,000 ha burned within the Payette portion of the FC-RONRW. Twenty-five of the total 34 fires were managed under a confine strategy. Regional office estimates of the savings using this strategy was over $7 million as opposed to having to control the same amount of hectares in wilderness. (It is recognized that some of the fires would not have escaped initial attack and would therefore not have burned the larger hectares.) Two fires in 1987 in the Wilderness escaped initial attack and were managed under confine and contain strategies rather than full control. Cost saving estimates totalled $1.7 million. And in 1988, only $250,000 were expended on five wilderness fires that burned over 42,000 ha. These costs included containment action and burnout operations for protection of private and Forest Service structures. One of these fires started on June 25, and the other July 11. These two fires burned out of prescription and were reclassified to wildfire status and managed accordingly.

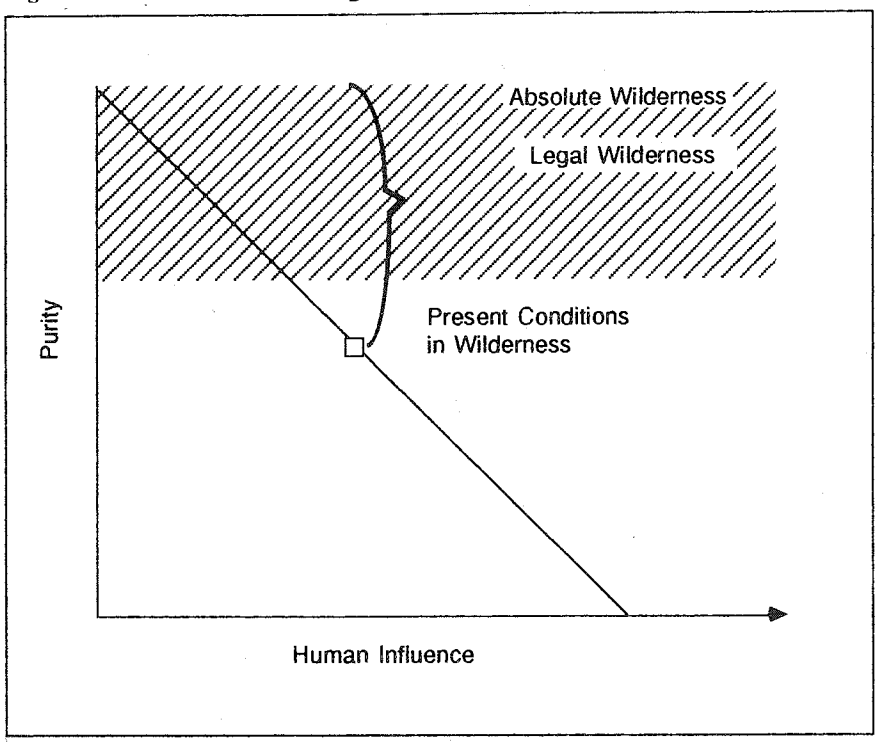
To date, most of the savings, from what we feel to be a progressive, highly successful fire management program have been derived from managing wilderness fires as prescribed fires and employing Escaped Fire Situation Analyses on those treated as wildfires. These analyses have resulted in suppression strategies more consistent with resource values and not the traditional "high-cost" suppression strategies. Completion of Forest Plans and Fire Action Plans will further improve the outlining of initial attack strategies and follow-up strategies on all National Forest System lands.

AN AGENCY DILEMMA

With the controversial fire season of 1988 and the political fallout which has occurred, it has forced both the Department of Interior and Department of Agriculture, which have agencies that have implemented prescribed fire programs and nontraditional suppression responses, to reevaluate their programs. This poses an interesting dilemma for the U. S. Forest Service concerning how to continue to manage fire in its wilderness areas. Forest Service policy states that "the goal of wilderness management is to identify these (human) influences. . . remedy them, and close the gap between the attainable level of purity and the level that exists in each wilderness." This is graphically displayed in Figure 3 in the Forest Service Wilderness Management Model. Basically, all management actions by the agency should be to improve "purity."

Figure 4 displays the current wilderness fire management situation and management options and risk as related to wilderness purity. It further iden-

Figure 3 - The Wilderness Management Model



tifies a number of considerations which enter into the decision-making equation and addresses the realities of trying to manage fire-dependent ecosystems. Fire deferral is an option, sometimes, but fire exclusion is definitely not an option. The bottom line is that it is a "pay me now or pay me later situation!"

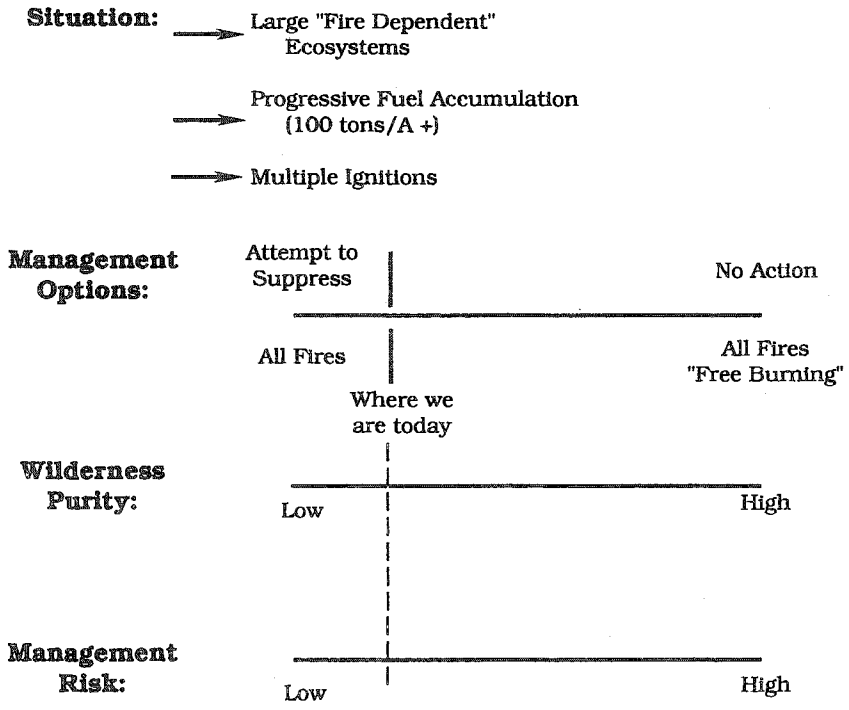
The extremely difficult management job is to continue to improve wilderness purity, when, at least in the political arena, the short distance we moved from our previous policy of attempting to suppress all fires seems to be unacceptable. As it relates to wilderness purity we have taken very little risk—we are on the low end of the scale. However, politically it seems to be viewed as too much risk.

One solution which has been offered to mitigate political and perceived unacceptable risk, from both within and outside the Forest Service, is the use of planned ignitions. Current policy does provide for this, but on a rather restrictive basis. The proponents feel that we could better control the timing and duration of fires and the impacts on users, as it relates to their ability to use an area, as well as the inconvenience of smoke production, both in and out of the wilderness.

As one might expect, there is a strong opposing view, from within and outside the agency. The opposing view, and rightfully so, cites this as being totally inconsistent with the Wilderness Act of 1964. They refer to the process of using planned ignition as "gardening with fire." This process would be highly

Figure 4

Wilderness Fire Management



Considerations: Biological/Ecological, Political, Emotional, Legal (Wilderness Act, Policy & Plan), Technological, Economical, and Sociological.

Fire Exclusion is not an option

Fire deferral is an option "Sometimes."

Bottomline: It is a "Pay Me Now or Pay Me Later" situation.

manipulative and most likely would do a poor job of "simulating" the natural fire process. It certainly would be managing wilderness for "management convenience" and would be diametrically opposed to the concept of "purity." It would be one more human influence that would compromise the randomness of a major natural process. The use of planned ignitions does have its place in wilderness fire management—in small areas, where the choice to use prescribed natural fires is unacceptable, because of the high risk of fire escaping the wilderness and moving into high value commodity resource areas or areas of human habitation. When this situation exists the process should be evaluated on a case-by-case basis and applied where no other acceptable alternative is viable.

No one really knows at this point where the national reviews will lead us, but it does appear evident that some changes will be made. Some of these changes appear to deal with mutually exclusive elements and reaching an acceptable solution will be no simple task.

SUMMARY AND CONCLUSIONS

The majority of alternative methods of managing fires on Payette have occurred in wilderness. However, we have identified, through the forest planning process, many areas throughout the forest where planned and unplanned prescribed fires may be used to accomplish resource management objectives. These vary from fuel reduction to range and wildlife habitat improvement. The Payette Forest has a large compliment of expertise in fire management. It has been this expertise that has allowed the forest to be creative with its fire program. Support from line officers, from the chief through district rangers, has been a significant part of the success of these new fire plans.

It needs to be mentioned that we have not come to where we are today without some reservations, lost sleep, and several "gut wrenching" fire situations. We are still establishing our comfort levels and educating and involving our public and forest users to allow fire to return to a more natural role in the ecosystem to meet land management objectives and utilizing alternative suppression strategies. It has not been by accident that we have received only minor negative response from the public and media for our implementation of the fire program over the past four years. The Payette Forest has been very aggressive through the forests' public affairs and fire management personnel in getting ahead of the media power curve. It is always our goal to provide them with straight-forward and up-to-date information about all aspects of the fires that are burning in and out of wilderness. High priority is given to this task prior to ignition and throughout the duration of fire activity. We recognize that our terminology surrounding the different types of fire classifications and suppression strategies can become muddled and confusing. We hope to simplify this during the next major fire planning effort, but in the interim it cannot be stressed enough to those using different fire strategies to educate your public and the media before they find some con-

troversial aspect of your policies. It is very difficult to catch up once you fall behind the public and media power curve!

We will continue to aggressively initial-attack the majority of fire starts on the Payette Forest. Our fire analysis demonstrates and justifies the need for the large and diverse array of firefighting resources that are supported on the Forest for protection of the high value commodity resources. However, over time, fuel in the forest must be managed or it builds up to the point where it becomes a major hazard, susceptible to large and perhaps unnatural fires. We cannot use timber harvest and other management practices on all areas in the forest to manage the fuels. The use of fire combined with other land management programs can enhance wildlife habitat; create that scenic mosaic; or reduce old growth, often insect infected, timber stands that are only high fuel volume for the next fire.

Any time fire is used as a land management tool some risks are involved. The type of program being managed on Payette National Forest is "high visibility-high risk." In a year of normal or high moisture, it may be difficult to achieve a desired objective. In a year of low moisture, fires may prove to be uncontrollable and burn beyond planned prescriptions. But if plans are thorough and your users and public are behind you and your decisions are based on sound documentation, you can have a successful program, even if some of the decisions prove to be less than correct. This is not an exact science! We feel it is important that we make the best decision we can for any given situation. However, the key to success for this kind of program is a sound decision-making process that is managed by highly qualified personnel, from the "go-no-go" decisions through subsequent management actions once the plan has been implemented.

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