Comments to the Rogue River-Siskiyou National Forest

Regarding "Appropriate Management Response"

from

The Western Institute for Study of the Environment

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Executive Summary

The purpose of this document is to request that the Rogue River – Siskiyou National Forest prepare an Environmental Impact Statement (EIS) before altering or amending their Forest Plan to include unprepared fire, known as Wildland Use Fires.

We believe unprepared fires can have significant effects upon natural resources and the human environment. The National Environmental Policy Act requires the preparation of Environmental Impact Statements before the U.S. government engages in activities that might have significant effects.

The EIS process aids in revealing, analyzing, and public discussion of the potential effects before they happen. That is a beneficial process, as well as required under federal law.

This document is a statement of our rationale for requesting an EIS process. We present this document to the Rogue River – Siskiyou National Forest so that they might understand and comply with federal law.

On March 5, 2008, the RR-SNF issued a Notice on their website here:

http://www.fs.fed.us/r6/rogue-siskiyou/news/2008/03-05-2008-fs-seesks-public-comment-appr-mgmt-response.shtml

The Notice requested public comment "regarding a proposal to amend the Forests' Land and Resource Management Plans to allow for the full range of **Appropriate Management Response** strategies for the management of wildland fires."

This document consists of our public comments pertaining to and in fulfillment of the RR-SNF request.

The RR-SNF proposes implementation of a program called "Appropriate Fire Management Response'" abbreviated by the acronym AMR. AMR specifies two basic types of fires to be managed: wildfire managed for protection

objectives, and wildland use fires to be managed for resource benefit objectives.

The first type of fire is the standard kind and well understood. When an "unplanned ignition" occurs, such as from lightning strikes, untended campfires, etc., the standard response is to implement a rapid initial attack and follow-up fire suppression tactics designed to contain, control, and extinguish the fire.

The second type of fire is termed "wildland use fire" and occasionally "wildland fire used for resource benefit." Wildland fire use, or WFU is a new concept that involves allowing "naturally ignited" (i.e. lightning-ignited) fires to burn without containment, control, or extinguishment.

Currently WFU has not been approved for the RR-SNF. The purpose of the AMR revision is to add WFU to the RR-SNF Fire Management Plan (FMP) and by extension to their Land and Resource Management Plans bundle.

The proposed addition of Wildland Fire Use (WFU) to the Appropriate Management Response (AMR) of the RR-SNF Land and Resource Management Plans (LRMP) is a major Federal action that will result in impacts and fire effects that are difficult to predict because the location, timing, and fire management choices made by the RR-SNF are unknown.

We maintain that WFU fires will have significant effects and impacts on resources and the human environment, and therefore their inclusion requires preparation of an Environmental Impact Statement. In addition, the fact that WFU is used "for resource benefit" indicates that WFU has significant impact and effects on resources. NEPA is clear that significant effects require an EIS, whether or not those effects are characterized as detrimental or beneficial

We maintain that the proposed modification of the fire management direction for Wildland Fire Use in the Appropriate Management Response ***will indeed*** have very significant and intense effects upon society as a whole (both human and national), the affected region, the affected interests, and the locality, both short- and long-term. The proposed action will:

- negatively affect public health and safety;

- impact the unique characteristics of the geographic area including natural, historic, and cultural resources and ecologically critical areas, including but not limited to threatened and endangered flora and fauna, historical/cultural values, water quality, air quality, climate change, public recreation, public scenery, and local, state, and national economies;

- result in highly controversial effects on the quality of the human environment;

- involve highly uncertain, unique, and unknown risks to the human environment;

- will establish a precedent for future actions with significant effects and represents a decision in principle about a future consideration;

- is related to other actions with cumulatively significant impacts;

- will adversely affect districts, sites, highways, structures, and objects listed in or eligible for listing in the National Register of Historic Places and will cause loss or destruction of significant scientific, cultural, and historical resources;

- will adversely affect endangered and threatened species and their habitats that have been determined to be critical under the Endangered Species Act of 1973; and

- threatens a violation of Federal, State, and local law and requirements imposed for the protection of the environment.

The adoption and implementation of the proposed WFU amendment to the RR-SNF LRMP **will** lead to more Biscuit fires. The Biscuit Fire (2002) burned 500,000 acres on the RR-SNF and resulted in massive environmental impacts.

The intention of the US Forest Service is to allow lightning-ignited fires to burn unimpeded. When lightning strikes, instead of rapid initial attack and full suppression, functionaries of the RR-SNF will delay fire response while mulling over the "resource benefits" that will **not** occur. Fires will be allowed to burn without containment, control, or extinguishment.

Those fires will erupt into canopy fire storms and lay waste to hundreds of thousands of acres. It has happened before. Their intention is to let it happen again.

Resources will **not** be benefited. Instead, resources will be incinerated.

In this document we have detailed the predictable and preventable impacts to flora, fauna, historic/cultural resources, water and watersheds, air and airsheds, carbon emissions, fire suppression costs, public and worker health and safety, local economies, and recreation opportunities. In addition, significant impacts will occur to

- Soils
- Hydrology
- Transportation networks
- Social resources
- Fisheries
- Invasive and noxious weeds
- Insects and disease
- Wilderness and roadless areas
- Wild and scenic rivers
- Scenic quality
- Short-term and long-term productivity
- Irreversible and irretrievable commitment of resources
- Wetlands and floodplains
- Farmland, rangeland, and private property
- Energy sources
- Civil rights and environmental justice

Those impacts will be immediate and will also accumulate over the long-term. We have provided ample proof and reference to hundreds of peer-reviewed reports, studies, and testimonies that support that contention.

The National Environmental Policy Act requires the preparation of Environmental Impact Statements before the U.S. government engages in activities that might have significant effects on the environment.

The EIS process aids in revealing, analyzing, and public discussion of the potential effects before they happen. That is a beneficial process, as well as required under federal law.

This document is a statement of our rationale for requesting an EIS process. We present this document to the Rogue River-Siskiyou National Forest so that they might understand and comply with federal law.

In addition to the discussions in the body of this document, we present a list of references and two Appendices containing whole texts of research studies pertaining to the impacts of fire on the environment.

Fire effects of the Eldorado National Forest

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I. Statement of Purpose

The purpose of this document is to request that the Rogue River-Siskiyou National Forest prepare an Environmental Impact Statement before altering or amending their Forest Plan to include unplanned, unfought fire, known as Wildland Use Fires.

We believe unplanned, unfought fires can have significant effects upon natural resources and the human environment. The National Environmental Policy Act requires the preparation of Environmental Impact Statements before the U.S. government engages in activities that might have significant effects.

The EIS process aids in revealing, analyzing, and public discussion of the potential effects before they happen. That is a beneficial process, as well as required under federal law.

This document is a statement of our rationale for requesting an EIS process. We present this document to the Rogue River-Siskiyou National Forest so that they might understand and comply with federal law.

Fire effects on the Deschutes National Forest

II. Introduction

Who We Are

The Western Institute for Study of the Environment (W.I.S.E.) is a non-profit 501(c)(3) corporation organized exclusively for educational, and scientific purposes, including the delivery of original scientific articles, reviews of scientific articles and books, original literature, and case study reports to the public via a website on topics related to promoting the proper management of the environment. In addition, W.I.S.E. organizes special events with guest speakers, awards banquets, field tours, and symposia.

W.I.S.E. is a collaboration of environmental scientists, practitioners, and the interested public. We provides a free, on-line set of post-graduate courses in environmental studies, currently fifty Topics in eight Colloquia, each containing book and article reviews, original papers, and essays at http://westinstenv.org.

The Principal Author of this document is Michael E. Dubrasich, the Executive Director of W.I.S.E. Mr. Dubrasich is a professional consulting forester who has extensive experience in, and makes frequent use of, the Rogue River – Siskiyou National Forest for research and recreation. W.I.S.E. membership includes wildlife biologists, forest historians, retired and active US Forest Service employees, and others who also have extensive experience in, and make frequent use of, the Rogue River– Siskiyou National Forest for scientific research and outdoor recreation. We foresee serious injury to our legitimate private and economic interests within the jurisdiction of the RR-SNF should the major Federal actions described in this document occur.

The Rogue River – Siskiyou National Forest

The Rogue River-Siskiyou National Forest (RR-SNF) is a United States National Forest located on both sides of the border between the states of Oregon and California. The formerly separate Rogue River and Siskiyou National Forests were administratively combined in 2004. The Rogue River-Siskiyou National Forest ranges from the crest of the Cascade Range west into the Siskiyou Mountains, covering almost 1,800,000 acres (7,300 km^2). The RR-SNF is administered by the USDA Forest Service.

The Issue At Hand

On March 5, 2008, the RR-SNF issued a Notice on their website here:

http://www.fs.fed.us/r6/rogue-siskiyou/news/2008/03-05-2008-fs-seeks-public-comment-appr-mgmt-response.shtml

The Notice requested public comment "regarding a proposal to amend the Forests' Land and Resource Management Plans to allow for the full range of **Appropriate Management Response** strategies for the management of wildland fires."

This document consists of our public comments pertaining to and in fulfillment of the RR-SNF request.

The full text of the RR-SNF Notice:

> **Forest Service Seeks Public Comments on Appropriate Management Response**
>
> MEDFORD, OR, March 5, 2008 – Rogue River-Siskiyou National Forest land managers are seeking public comments regarding a proposal to amend the Forests' Land and Resource Management Plans to allow for the full range of Appropriate Management Response strategies for the management of wildland fires.
>
> Appropriate Management Response encompasses the spectrum of possible responses to unplanned fires. Aggressive fire suppression actions would take place where private property or natural resources are likely to be damaged and less intense responses could be considered where resource benefits are more likely.
>
> "The goals of Appropriate Management Response are to allow more acres to be affected by fire where we believe it will benefit forest health, obtain desired ecological conditions, and reduce the risk of damage over the long term" said Scott Conroy, Rogue River-Siskiyou National Forest Supervisor.
>
> Appropriate Management Response encompasses a range of possible responses to unplanned fires, from monitoring (watching

the fire burn to ensure objectives are being met) to full suppression (putting the fire out). The same fire may have objectives for protecting values and infrastructure as well as for resource benefits.

Land managers evaluate several criteria before deciding on how to respond to a fire. Where resource benefits are part of the management objectives, fire managers establish boundaries and define weather conditions under which the fire will burn.

"Land managers throughout the West have learned over the last forty years that there are ecological benefits of having fire on the landscape as it can provide for a renewal of the Forest. It is a natural cycle of life in a forest," said Conroy.

Managers would base their response to an unplanned fire on the conditions and situations present at the time of the fire. Part of all of a fire may be managed aggressively where damage to private property, forest developments, or natural resources is likely. Areas where the fire is meeting Forest Plan goals and objectives could be managed less intensively if conditions allow.

Land managers evaluate several criteria before deciding on how to respond to a fire. Where resource benefits are part of the management objectives, fire managers establish boundaries and define weather conditions under which the fire will burn.

Where a fire threatens life, property, or resources, it is suppressed.

In response to all fires, the Forest Service emphasizes firefighter and public safety and recognizes the need to avoid or prevent damage to property or resources.

The agency is seeking public comment on issues to be considered in amending both of the Forests' Land and Resource Management Plans to allow for the full range of Appropriate Management Responses for the management of wildland fires. Specifically the agency is proposing to amend both documents to:

- modify fire management direction for Appropriate Management Response;

- provide Standards and Guidelines that are consistent with federal fire policy and direction; and
- replace outdated fire terminology and direction in the current Forest Plans.

The agency would like to hear any comments, concerns, ideas, or issues the public may have regarding this Proposed Action by April 4, 2008. The Forest Service would review all input and anticipates publishing an Environmental Assessment in May 2008.

Comments regarding this project may be sent to Rob Budge, Deputy Fire Staff-Fuels, Rogue River-Siskiyou National Forest, P.O. Box 520, Medford, Oregon, 97501; FAX (541) 779-3098 or electronically to comments-pacificnorthwest-rogueriver-siskiyou@fs.fed.us.

Please include the name of the project, "Appropriate Management Response" in the subject line. For further information, or questions please contact Rob Budge at phone (541) 858-2434 or by e-mail at rbudge@fs.fed.us.

The NEPA Legal Authority

The Notice indicates that the US Forest Service "anticipates publishing an Environmental Assessment in May 2008. " An Environmental Assessment (EA) is

> ... a concise public document for which a Federal agency is responsible that serves to:
>
> Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.
>
> Aid an agency's compliance with the Act when no environmental impact statement is necessary.
>
> Facilitate preparation of a statement when one is necessary.

> Sec. 1508.9(a), the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 et seq.), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977). Source: 43 FR 56003, Nov. 29, 1978, unless otherwise noted. NEPA § 102, 42 U.S.C. § 4332. (see Appendix A).

The Necessity of Preparing an EIS

We maintain that an Environmental Impact Statement *is* necessary in this case.

The RR-SNF is allowed under law to prepare an EA to make a preliminary determination as to whether the proposed action will have a significant effect upon the environment. If the EA establishes that the agency's action ***may*** have a significant effect, then an EIS must be prepared (NEPA § 102, 42 U.S.C. § 4332.)

We maintain that the proposed modification of the fire management direction for Wildland Fire Use in the Appropriate Management Response ***will indeed*** have very significant and intense effects upon society as a whole (both human and national), the affected region, the affected interests, and the locality, both short- and long-term. The proposed major Federal action will:

- negatively affect public health and safety;
- impact the unique characteristics of the geographic area including natural, historic, and cultural resources and ecologically critical areas, including but not limited to threatened and endangered flora and fauna, historical/cultural values, water quality, air quality, climate change, public recreation, public scenery, and local, state, and national economies;
- result in highly controversial effects on the quality of the human environment;
- involve highly uncertain, unique, and unknown risks to the human environment;

- will establish a precedent for future actions with significant effects and represents a decision in principle about a future consideration;

- is related to other actions with cumulatively significant impacts;

- will adversely affect districts, sites, highways, structures, and objects listed in or eligible for listing in the National Register of Historic Places and will cause loss or destruction of significant scientific, cultural, and historical resources;

- will adversely affect endangered and threatened species and their habitats that have been determined to be critical under the Endangered Species Act of 1973; and

- threatens a violation of Federal, State, and local law and requirements imposed for the protection of the environment.

About This Document

The main body of this document, ***Comments to the Rogue River-Siskiyou National Forest Regarding "Appropriate Management Response"*** includes an explanation of what the RR-SNF is proposing and the various significant impacts and effects that will result from adoption of that proposal. Also included is a list of references and various supporting documents in the Appendices.

Fire effects on the Siskiyou National Forest

III. Wildland Fire Use

Appropriate Fire Management Response

The RR-SNF proposes revision of a program called "Appropriate Fire Management Response'" abbreviated by the acronym AMR.

> All unplanned wildland fire ignitions require an Appropriate Management Response (AMR). The AMR, which can range from aggressively suppressing a wildland fire to managing an incident as a wildland fire use event, is guided by the strategies and objectives outlined in the unit Land and Resource Management Plan reflecting land and resource values, management goals and objectives. The unit fire management plan (FMP) outlines fire management activities and procedures to accomplish those objectives.
>
> From Northern Rockies Multi-Agency Coordination Group.2007. Appropriate Management Response Summary for the Northern Rockies Final v. 7_21_07 (see Appendix A).

AMR specifies two basic types of fires to be managed: wildfire managed for protection objectives, and wildland use fires to be managed for resource benefit objectives:

> The Federal Fire Policy requires all wildland fires from unplanned ignitions to be managed for either protection objectives (wildfire) or resource benefit objectives (wildland fire use). Under current policy, a single fire cannot be managed for both objectives concurrently.
>
> From Roundsaville, Marc, Lyle Carlile, Mike Wallace, Timothy M. Murphy, Brian McManus, and Dan Smith. 2007. Memorandum: Clarification of Appropriate Management Response. National Fire and Aviation Executive Board., June 20, 2007 (see Appendix A).

The first type of fire is the standard kind and well understood. When an "unplanned ignition" occurs, such as from lightning strikes, untended campfires, etc., the standard response is to implement a rapid initial attack and follow-up fire suppression tactics designed to contain, control, and extinguish the fire.

Standard fire suppression is the norm and the existing program under the RR-SNF Land and Resource Management Plans. Containing, controlling, and extinguishing forest fires have been seen to have significant value to public resources and adjacent private lands. The mission of the USFS from inception in 1905 has been to suppress forest fires.

The second type of fire is termed "wildland use fire" and occasionally "wildland fire used for resource benefit." Wildland fire use, or WFU is a new concept that involves allowing "naturally ignited" (i.e. lightning-ignited) fires to burn without containment, control, or extinguishment.

Currently WFU has not been approved for the RR-SNF. The purpose of the AMR revision is to add WFU to the RR-SNF Fire Management Plan (FMP) and by extension to their Land and Resource Management Plans bundle.

> Section III. Wildland Fire Management Strategies
>
> Wildland Fire Use
>
> a. There are currently no approved wildland fire use prescriptions on Federal Lands in this FPU. When approved, they will be a part of this FMP. …
>
> Wildland Fire Use to meet Resource Objectives: Fires which are managed within prescription parameters, fire behavior effect objectives and under the parent document and approved fire use plan. Fire use plans for defined areas may be developed and submitted to a primary jurisdictions' agency administrator for consideration and approval. Upon approval, the fire use plan and area designation will be incorporated into this FMP.
>
> Currently there are no approved wildland fire use prescriptions for any areas on Federal Lands within this FPU, where this type of activity is most likely to take place. These plans are forthcoming and will be a part of this FMP.
>
> From USDA Forest Service. Southwest Oregon Fire Management Plan. September 2004 (see Appendix A).

The stated objective of WFU is to obtain "resource benefits."

> "The application of the appropriate management response to naturally ignited wildland fires to accomplish specific resource management objectives in predefined areas designated in Fire Management Plans." –Wildland fire use as defined in the federal Wildland Fire Management Policy.
>
> From Zimmerman, G. Thomas and Richard Lasko. The Changing Face of Wildland Fire Use. 2006. Fire Management Today, Volume 66, No. 4 (see Appendix A).
>
> The objective of a wildland fire use project is to obtain resource benefits, whereas a wildfire is to be extinguished at the most efficient cost.
>
> From Roundsaville, Marc, Lyle Carlile, Mike Wallace, Timothy M. Murphy, Brian McManus, and Dan Smith. 2007. Memorandum: Clarification of Appropriate Management Response. National Fire and Aviation Executive Board, June 20, 2007. (see Appendix A).

The WFU is a novel, new idea:

> Wildland fire use outside of wilderness areas is relatively new. Prior to 2004, only a few forests (mostly in Arizona and Utah) had authorized WFU outside of wilderness areas.
>
> From Sexton, Tim. Forest Service Wildland Fire Use Program Is Expanding. 2006. Fire Management Today, Volume 66, No. 4 (see Appendix A).

The WFU has never been a part of the RR-SNF fire management strategy, nor included in the RR-SNF Land and Resource Management Plans (LRMP). The purpose of the EA specified in the March 5 2008 Notice is to evaluate the impacts and effects of the new inclusion of WFU into the existing LRMP.

This is important, so we are going to repeat it. **The purpose of this document is to request that the RR-SNF evaluate the effects and impacts of the new inclusion of WFU into the RR-SNF AMR and LRMP**.

We maintain that WFU fires is a major Federal action that will have significant effects and impacts on resources and the human environment, and therefore their inclusion requires an EIS.

The fact that WFU is the primary alteration proposed to the RR-SNF LMRP is not only specified in the definitions of AMR and WFU cited above, but is also indicated in the Notice itself:

> Appropriate Management Response encompasses a range of possible responses to unplanned fires, from monitoring (watching the fire burn to ensure objectives are being met) to full suppression (putting the fire out). The same fire may have objectives for protecting values and infrastructure as well as for resource benefits (see page 3 above).

"Watching the fire burn" is not suppression; it is WFU.

In addition, the fact that WFU is used "for resource benefit" indicates that WFU will have significant impact and effects on resources, in the estimation of the USFS as well as others. NEPA is clear that significant effects require an EIS, whether or not those effects are characterized as detrimental or beneficial:

> "Significantly" as used in NEPA requires considerations of both context and intensity:
>
> (a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.
>
> (b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

> Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
>
> From Sec. 1508.27, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 et seq.), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977). Source: 43 FR 56003, Nov. 29, 1978, unless otherwise noted (see Appendix A).

This is the crux of the matter at hand. The RR-SNF proposes an action (really an unknown number of future actions) in the form of WFU that will have significant effects upon the forest and natural resources and on surrounding properties, communities, habitats, watersheds, and airsheds.

Those significant effects must be evaluated through the NEPA process of drafting an Environmental Impact Statement, together with all the public involvement the EIS process entails. The public must have a suitable opportunity to evaluate and comment upon WFU in the RR-SNF.

The outcome or finding of the proposed EA must be to conduct a full EIS process. That is what the law requires and the public desires. Any other outcome that fails to evaluate the effects on the human environment and restricts public involvement is extra-legal and undesirable.

Fire effects on the Deschutes National Forest

IV. WFU Implementation Uncertainties

The proposed addition of Wildland Fire Use (WFU) to the Appropriate Management Response (AMR) of the RR-SNF Land and Resource Management Plans (LRMP) will result in impacts and effects that are difficult to predict because the location, timing, and fire management choices made by the RR-SNF are unknown. The AMR is a generalized program that may be implemented in various ways.

Locale

The proposed amendment to the AMR is Wildland Fire Use (WFU). WFU fires are lightning-ignited; that is, their place and date of origin are unknown ahead of time and unpredictable. In order to address this uncertainty, AMR calls for establishment of Maximum Manageable Areas (MMAs). If lightning ignites a fire within an MMA, that fire is then eligible for WFU status.

The imposition of an MMA on the RR-SNF is implicit in the Notice issued by RR-SNF on March 5, 2008:

> Land managers evaluate several criteria before deciding on how to respond to a fire. Where resource benefits are part of the management objectives, fire managers establish boundaries and define weather conditions under which the fire will burn (see page 3 above).

The MMA mapping exercise is of the moment, arbitrary, capricious, and non-specific.

> MMAs have no size limitations. MMAs are designed to be consistent with the set of circumstances surrounding each fire situation. … MMAs now have much greater flexibility in their application. They are not a strict prescription element and can be changed in response to changing fire situations.
>
> From Parks, Jacquie M. 2006. True Story: A 4-Million Acre "Mega" Maximum Manageable Area. Fire Management Today, Volume 66, No. 4 (see Appendix A).

MMAs are typically vast in extent. They have no size limitations. One MMA in Region 1 encompasses 4 million acres on six National Forests, the Bitteroot, Salmon-Challis, Payette, Clearwater, Nez Perce, and Boise NFs (Ibid). In 2007 over a million acres of those forests were allowed to burn in the largest and most devastating fire catastrophe in Idaho since 1910.

Furthermore, MMAs are typically adjusted *at the time of the fire*. There is no guarantee that projected MMA boundaries will be adhered to while the WFU fire is burning. During the Warm Fire (2006) on the Kaibab NF, the MMA was adjusted four times, while the fire was burning.

> On the afternoon of June 8, 2006, a lightning storm swept across the Kaibab Plateau. One of the high voltage, sky/earth exchanges set a tree on fire south of Jacob Lake. Kaibab National Forest fire crews could have responded immediately. The terrain is flat and roads crisscross the area. The Kaibab has, or used to have, one of the best firefighting teams in the Nation.
>
> But that is not what happened. Instead, the leadership of the Kaibab N.F. chose to let the fire burn. They named it the Warm Fire, and designated it a Wildland Use Fire, a whoofoo. Whoofoos are designated Let It Burn wildfires. A whoofoo is an accidental fire in an accidental place on an accidental date that the USFS could put out, but chooses not to.
>
> When a whoofoo is designated it is assigned a Maximum Manageable Area. This is the area the whoofoo is to be contained within, for purposes of "mitigating risk" and "meeting resource objectives." The Warm Fire MMA was originally 4,000 acres and bounded to the north and east by Highway 67.
>
> After the lightning struck, the Warm Fire smoldered in duff and crept around for a few days. On June 10 it was reported to be 2 acres in size. Then the wind picked up a little, and the Warm Fire spotted across Hwy 67 on June 13. Even though the spot fires were outside the MMA, they were allowed to burn. The Warm Fire jumped Hwy 67 again four days later and grew to 750 acres.

> By daylight on the 18th, the Warm Fire had grown to over 3,000 acres. Then it doubled overnight to 6,000 acres on the 19th. Even though the whoofoo was now half-again bigger than the original MMA, and had crossed the imaginary boundaries in many places, the Kaibab N.F. kept the whoofoo designation and Let It Burn.
>
> By the 22nd the Warm Fire had grown to over 10,000 acres. Still the whoofoo designation was clung to. The strategy was to simply expand the MMA. MMA's are arbitrary, after all, and not subject to any kind of NEPA, ESA, NFMA, or other legal process. There is no legal controlling authority over whoofoos. The Kaibab N.F. felt they had the legal wherewithal to whoofoo whatever they liked, whenever they liked, and without any public review or input. Tragically, the lack of public oversight led to exorbitant costs and losses. …
>
> As a result of those violations, nearly 60,000 acres of priceless, heritage forests were incinerated, at a cost-plus-loss of $70 million or more, (it is difficult to appraise the value of priceless objects). …
>
> From Dubrasich, M.E. 2007.Back to the Rim: the story of the Warm Fire. Western Institute for Study of the Environment (see Appendix A).

Timing

Because WFU fires are lightning-ignited, there is no way to predict when they will occur with any degree of accuracy or precision. The decision to implement a WFU is made in response to the lightning fire when it is ignited, not ahead of time.

There is no opportunity for public input into the decision to implement a WFU because time is of the essence. The decision is made within hours or even minutes after the lightning strikes. That is not the case with prescribed fires or any other forest management treatment undertaken on the RR-SNF. Prescribed fires and other treatments are generally subject to the NEPA process which includes EIS preparation, public notice and consultations.

For actions that may significantly impact or effect the human environment, NEPA requires the project sponsor to notify potentially interested and affected parties and consider their concerns in project planning and decision-making. Interested and affected parties may include local (city or county) planners and government officials, nearby landowners, affected tribes, local watershed groups, irrigations districts, and state and federal fish and wildlife agencies, and individuals who use or enjoy the public domain. Techniques to involve the public include mailings, public notices, public meetings or workshops, Internet postings, radio advertisements, stories or ads in the local newspaper, and one-on-one meetings with interested parties.

None of these provisions can be undertaken when the decision space is hours or minutes. The public is in effect excluded from expressing their concerns or contributing important information when the WFU decision is made.

Lack of Agency Accountability

The decision to declare a WFU fire is a spur-of-the-moment choice made by unknown, unnamed employees of the RR-SNF. There is no accountability or consequences that accrue to the decision-makers, regardless of the outcomes of the WFU fire.

The decision format in WFU implementation is a complex decision tree model specified in the "Wildland Fire Use Implementation Procedures Reference Guide" (2005 Guide) promulgated by the Wildland Fire Leadership Council and the National Fire and Aviation Executive Board (NFAEB).

The table of contents for the WFU Procedures Guide is:

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> From Harbour, Tom, Lyle Carlile, Phil Street, Larry Hamilton, Edy Williams-Rhodes. 2005. "Wildland Fire Use Implementation Procedures Reference Guide" (2005 Guide – Revised March April 2006. National Fire and Aviation Executive Board (NFAEB). (see Appendix A).

The decision tree includes numerous choices and judgments that may significantly impact any and all natural and human resources on the RR-SNF. The procedure requires employees of the Forest to make rapid decisions at the time of first detection of the fire. The burden of evaluating the potential compound effects of the fire is beyond any one person or group of persons to make with any degree of accuracy. Wildfire is, after all, unpredictable.

The procedure fails to account for prior findings or Records of Decision that may constrain WFU. In the case of the Warm Fire (2006) on the Kaibab National Forest, a prior court-ordered Decision Notice was ignored.

> The principal crime was the abrogation of the 2005 Decision Notice for the Wildland Fire Use amendment to the Kaibab N.F. Forest Plan. The Decision Notice specifically prohibits wildland fire use fires

(whoofoos) in the mixed conifer forest on the North Kaibab Ranger District. Yet the Warm Fire was allowed to burn as a whoofoo in the prohibited mixed conifer zone.

The 2005 Decision Notice amendment constitutes a legally binding judicial order wherein the USDA Forest Service agreed to act in compliance with the Final Environmental Impact Statement validating the Kaibab N.F. Land Management Plan of 1996. - From the Environmental Assessment, Biological Assessment and Evaluation, Biological Opinion and Decision Notice associated with the amendment 4, August 2000, Kaibab National Forest.

In the Kaibab N.F. Fire Management Plan dated Oct. 14, 2005, the Decision Notice is acknowledged:

Use prescribed fire and wildland fire use as resource management tools where they can effectively accomplish resource objectives. Wildland fire use is allowed on all of the forest except for the mixed-conifer forest type on the North Kaibab R.D. The Decision Notice for the Wildland Fire Use amendment to the Forest Plan removes this option for the mixed-conifer habitat on the North Kaibab R.D. due to the concerns with the Mexican Spotted Owl habitat.

The prohibition on whoofoos was placed on Ecosystem Management Area #13, and includes elevations raging from 7,000 to 9,000 feet on the Kaibab Plateau. Forest species present in this zone include ponderosa pine, Douglas-fir, true firs (Abies sp.) and Engelmann spruce. EMA #13 is 268,719 acres. It constitutes less than 18 percent of the 1.6 million acre Kaibab National Forest. Whoofoos are legally allowed on the other 82 percent of the Kaibab N.F., but not in EMA #13.

The whoofoo portion of the Warm Fire was within the MSO critical boundary of EMA #13. The wildfire or “suppression” portion of the Warm Fire was almost entirely in protected MSO habitat (we use the word “protected” euphemistically).

The Warm Fire was designated and managed as a whoofoo in a prohibited zone in direct defiance of the legally binding Decision Notice and Forest Plan EIS. That is a Federal crime. The Kaibab N.F.

> Forest Supervisor, Mike Williams, is signatory to the 2005 Decision Notice. Mr. Williams was also the final authority that approved the Warm Fire Wildland Use Fire in the prohibited zone. Mr. Williams personally violated a court-ordered, binding contract that he himself signed, and a multi-million dollar environmental catastrophe resulted.
>
> From Dubrasich, M.E. 2007.Back to the Rim: the story of the Warm Fire. Western Institute for Study of the Environment (see Appendix A).

In complete irony, the Forward to "Wildland Fire Use Implementation Procedures Reference Guide" (2005 Guide) includes the following:

> Prior to implementing wildland fire use under the standards in the 2005 Guide, local units must have ensured compliance with National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA) and Endangered Species Act (ESA) requirements.
>
> From Harbour, Tom, Lyle Carlile, Phil Street, Larry Hamilton, Edy Williams-Rhodes. 2005. "Wildland Fire Use Implementation Procedures Reference Guide" (2005 Guide – Revised March April 2006. National Fire and Aviation Executive Board (NFAEB). (see Appendix A).

Yet no WFU implementation has ever "ensured compliance" with any of those Federal laws. Indeed, those laws have been repeatedly violated by WFU fires.

Again, the purpose of this document is exactly that: to insist that the RR-SNF ensures compliance with NEPA, NHPA, and the ESA. That means creation of an EIS together with the full NEPA process, including public involvement. That compliance cannot be ensured in split-second, uninformed, un-consulted decision making by unknown government employees at the time of a lightning-ignited fire.

V. Probable Significant Impacts/Effects on Flora

The effects of fire on forest vegetation are significant. In fact, fire has the most significant impact of any forest disturbance agent short of volcanic eruptions. The RR-SNF proposes to "watch" forest fires burn rather than containing, controlling, and extinguishing them. Those will be actions that will have significant impacts on forest vegetation that will last decades and perhaps hundreds of years.

Destruction of Old-Growth Preserves

Besides the general agreement that fire has significant effects on forest vegetation, the forests of the RR-SNF are particularly noted to be *at risk* from wildfire. The Forests of the RR-SNF are well-known to contain old-growth stands, otherwise known as Late Successional Reserves (LSRs), that are protected by judicial order from human-caused disturbance. Allowing wildfires to burn unchecked in such stands is a direct violation of the Northwest Forest Plan, also known as the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl.

Furthermore, unchecked wildfires will destroy the very vegetation values that are protected. From the testimony of Dr. K. Norman Johnson and Dr. Jerry F. Franklin, December 13, 2007, Hearing of Subcommittee on Public Lands and Forests of the U.S. Senate Committee on Energy and Natural Resources:

> We will lose these forests to catastrophic disturbance events unless we undertake aggressive active management programs. This is not simply an issue of fuels and fire; because of the density of these forests, there is a high potential for drought stress and related insect outbreaks. Surviving old-growth pine trees are now at high risk of death to both fire and western pine beetle, the latter resulting from drought stress and competition. …
>
> Without action, we are at high risk of losing these stands—and the residual old-growth trees that they contain—to fire and insects and the potential for these losses is greatly magnified by expected future climate change. Historically, much of the loss of old growth

trees and forests has come during time of drought. The expected longer and more intense summer drought periods with climate change will put additional stress on the forests here. The stress on old growth trees will be especially severe where they are surrounded by dense understories. …

Furthermore, it is critical for stakeholders to understand that active management is necessary in stands with existing old-growth trees in order to reduce the risk that those trees will be lost.

Activities at the stand level need to focus on restoring ecosystems to sustainable composition and structure—not simply to acceptable fuel levels. Objectives of these treatments need to include: Retention of existing old-growth tree populations; shifting stand densities, basal areas, diameter distributions, and proportions of drought- and fire-tolerant species

To conserve these forests, we need to modify stand structure (e.g., treat fuels) on one-half to two-thirds of the landscape. This level of restoration will create a matrix of more natural and sustainable forest, which has a greatly reduced potential for stand-replacement fire and insect mortality, interspersed with islands of dense stands. These interspersed dense stands will provide habitat for species like the Northern Spotted Owl that utilize such areas. In fact, an approach that results in restoring conditions on the majority of the dry forest landscapes is the only way in which sustainable habitat for Northern Spotted Owls can be provided. …

Recognition that such areas should receive early attention is recent; there has been a tendency to think that stands with numerous old-growth trees should be left alone or, at least, be of much lower priority for treatment. The reality is the opposite! Forests that still retain substantial numbers of old-growth trees should be priorities for treatment because these are irreplaceable structures that are at great risk from uncharacteristic wildfire and bark beetle attack. Hence, reducing the potential for accelerated loss of these old trees should be at the top of the agenda.

Many areas that characteristically had frequent, low-frequency fire regimes no longer do, due to the accumulation of branches and

> dead trees on the forest floor and the loss of fine fuels (that used to carry these fires) to grazing. Reversing these effects will be needed.
>
> Prescribed fire is a useful tool in forest restoration but is not sufficient alone—mechanical silvicultural activities typically will be required. Difficulties exist in safely dealing with the build-up in fuel; in many cases harvest is required to help reduce fuel loads. In addition, the uncertainty of a burn program, due both to smoke and safety issues, makes it difficult to base a forest management program for a large area solely on prescribed fire.
>
> From Johnson, K. Norman and, Jerry F. Franklin. 2007. "Forest Restoration and Hazardous Fuel Reduction Efforts in the Forests of Oregon and Washington". Testimony of December 13, 2007, Hearing of Subcommittee on Public Lands and Forests of the U.S. Senate Committee on Energy and Natural Resources. (see Appendix A).

A Lack of Preparatory Forest Restoration Treatments

The proposed addition and implementation of WFU fires on the RR-SNF means that lightning fires that ignite on unpredictable dates and in unpredictable locations will burn in unprepared forests.

If the RR-SNF had an active forest restoration program and had treated fuels and stand overstocking across landscape-scale tracts, then random fire might not cause significant damage. But the RR-SNF does not have such a program, or at least has not implemented such. Most forest acres on the RR-SNF are untreated and unprepared to receive fire without significant mortality of all sizes and ages of trees. The forests of the RR-SNF are not in fire-resilient condition, as Johnson and Franklin pointed out.

Drs. Johnson and Franklin are not first to sound this alarm. In 2002 Dr. Wallace Covington testified that catastrophic fires are destroying "what should be a healthy legacy for future generations." From his testimony before the U.S. Senate:

> Although scientists have long foreseen the increase in fire size and severity in ponderosa pine ecosystems, the scale of the fires we

have seen so far this year is staggering. Years of neglect are coming home to roost. The Rodeo/Chediski fire in Arizona consumed 469,000 acres and is Arizona's largest wildfire to date. Prior to the 1960s a fifty-acre crown fire was considered a "large fire". In addition, the fire behavior these fires are exhibiting make suppression efforts exceptionally challenging—demonstrating that there are limits to our ability to fight them. The Heyman Fire in Colorado and the Rodeo/Chediski Fire in Arizona are major wakeup calls to all of us. …

Clearly, we have to do something quickly on a larger scale to reverse the trend of exponentially increasing fire suppression costs, increases in fire severity, and destruction of what should be a healthy legacy for future generations. Thus far, the National Fire Plan has not resulted in the implementation of large-scale, comprehensive restoration treatments that are required to prevent catastrophic fire. In addition, implementation must focus on the greater landscape as well as the wildland/urban interface to achieve success. …

Fire alone in the unnaturally dense forests that dominate so much of the West today is inadequate. Without thinning, prescribed burning is an exceedingly dangerous way to get the amount of thinning done that is needed and it can lead to increased mortality, especially among old growth trees. Furthermore, the probability of a prescribed fire escaping its planned burn area is increasingly likely as fuels continue to accumulate. …

The fires of this year, and the past several decades, have forged a consensus that the problem of catastrophic wildfire is severe. Almost everyone agrees that restoration is the most scientifically rigorous and environmentally and economically reasonable way to proceed. …

We are at a fork in the road. Down one fork lies burned out, depauperate landscapes—landscapes that are a liability for future generations. Down the other fork lies health, diverse, sustaining landscapes—landscapes that will bring multiple benefits for generations to come. Inaction is taking, and will continue to take, us down the path to unhealthy landscapes, costly to manage.

> Scientifically-based forest restoration treatments, including thinning and prescribed burning, will set us on the path to healthy landscapes, landscapes like the early settlers and explorer saw in the late 1800s.
>
> From Covington, William Wallace. 2002. Testimony regarding the Wildland Firefighting and National Fire Plan, before the US Senate Energy and Natural Resources Committee, Tuesday, July 16, 2002 (see Appendix A).

Forest Conversion

Wildfires in unprepared (unrestored) forests often crown and become canopy fires that kill all or most of the trees. That phenomenon can lead to conversion of forests to brush fields.

Last Fall noted forest scientist and professor emeritus Dr. John A. Helms reiterated the dangers that our national forests face from uncontrolled wildfire. From his testimony before the U.S. Senate:

> The amount of fuels in a forest can reach 15-70 tons per acre (Sampson 2004) and this fuel loading cannot be removed by prescribed burning without incurring substantial risk. Therefore some preliminary mechanical treatment is required. …
>
> After a wildfire, a prompt assessment is needed of post burn conditions to determine the likelihood that desired vegetation of diverse species will become established. The desired mix of vegetation cover needs to be defined and the timeframe in which preferred conditions of tree cover, habitat, and soil cover should be attained needs to be identified. Experience has shown that those areas likely to become brushfields or have high potential for erosion need to be promptly planted to return them to forest conditions. Brushfields often have conifer seedlings underneath them, but it can take 50-100 years for the trees to overtop the brush and form a forest canopy. …

> Because wildfires are increasingly devastating and costly there is an urgent need to address forest condition problems and societal impediments to mitigation. …
>
> Overly-dense national forests need to be thinned, which would not only reduce hazards of wildfire but would also enhance wildlife habitat and water yields. …
>
> National forests are owned by the people who necessarily must have a say in how their forests are managed. In addition, treatments under any policy or plan must conform with current laws and regulations. …
>
> Healthy forests and their associated wildlife habitats and watersheds are priceless assets providing the nation with critical values and uses. The sustainable management and conservation of forests is crucial to societal welfare. When forests are allowed to become overly dense the trees lose vigor and become susceptible to insects, disease, mortality, and fire. …
>
> The argument that forests, especially national forests, should be left unmanaged and that "nature knows best" is understandably appealing. However it does not recognize that the condition of our national forests is far from "natural". …
>
> From Helms, John A. 2007. Responses to Questions for the Record Following the September 24, 2007, Hearings by the Senate Committee on Energy and Natural Resources, October 3, 2007. (see Appendix A).

The Biscuit Fire (2002) on the Siskiyou N. F. was the largest fire in Oregon's recorded history. It had significant impact on old-growth forests; it destroyed them and converted them to permanent fire-type brush. From the testimony of Michael E. Dubrasich, Executive Director of the Western Institute for Study of the Environment, submitted to the U.S. Senate last December:

> National Forests in Oregon are at extreme risk from catastrophic fire. The Biscuit Fire of 2002 destroyed nearly 500,000 acres of heritage forests, principally in the Siskiyou N.F. The B&B Fire of

2003 and adjacent fires of the last ten years have destroyed nearly 150,000 acres of the Deschutes N.F.

These and numerous other fires of the past 15 years have decimated old-growth stands and converted priceless, heritage forests to brushfields. Multi-cohort old-growth stands are the preferred habitat of northern spotted owls and other old-growth associated species. Catastrophic fires destroy old-growth habitat and they have been implicated in the continuing decline of Threatened and Endangered species populations in Oregon—plant and animal, vertebrate and invertebrate.

If we continue on the present course, we will lose many more millions of acres of heritage, old-growth forests and the habitat they provide to important wildlife species. We will continue to lose thousands of private homes each year to escaped federal fires.

National Forests across the state of Oregon are in a condition of unnatural density. Fires in forests overburdened by dense fuels tend to become stand-replacing. That is, most trees are killed by such fires, including old-growth trees.

Historical analyses based on pioneer journals, oral histories, and empirical investigations of stand age structures provide strong evidence that most forests in Oregon were open and park-like in prior centuries. Frequent, regular, seasonal fires maintained trees at wide spacing, overtopping grassy understories.

Historically, fires in such stands were NOT stand-replacing. Instead, regular, frequent, seasonal fires gave rise to conditions that allowed trees to grow to great ages. Without frequent light fires, trees do not grow very old. The actual historical development pathways for many (if not most) of our forests involved frequent light fires, not stand-replacing fire.

Nowhere is this more apparent than in the Biscuit Burn and in other burns of the last two decades in Oregon. Typically, the forests that have been destroyed by catastrophic fires were strongly multi-cohort with older cohort trees of 150 to 600 years of age. Also

> typically, the vegetation that arises after the fire is sclerophyllous brush with a few, even-aged conifer germinants.
>
> It is clear that the new forests will be nothing like the old forests. In fact, it is probable that the new forests will burn again after 15 to 50 years of new fuel development. We know from reburned areas such as the Silver Burn (1987) within the Biscuit Burn (2002) that the new "forest" is loaded with highly flammable brush. The few conifer germinants grow slowly and are killed in the subsequent fire. After reburns no conifer seed sources are left, and the new "forest" becomes a permanent, catastrophic fire-type shrubfield.
>
> Historical analyses also provide strong evidence that the regular, frequent, seasonal fires of the past that sustained old-growth forests were anthropogenic (human-set). Indian burning for a variety of subsistence purposes gave rise to and maintained open, park-like forest structures. In the absence of Indian burning, or modern equivalents thereof, our forest structures have deviated from historically sustainable conditions.
>
> Today's forest fires in dense fuels are catastrophic and stand-replacing. The historical forest development pathways of the past were different. They must have been different because they gave rise to open, park-like forests with old trees, not permanent fire-type brush.
>
> From Dubrasich, Michael E. 2007. Testimony Regarding Forest Restoration in Oregon submitted to the US Senate Subcommittee on Public Lands and Forests of the Senate Committee on Energy and Natural Resources, for inclusion in the Record of the Hearing regarding forest restoration and hazardous fuels reduction efforts in the forests of Oregon and Washington, held Thursday, December 13, 2007. (see Appendix A).

Forest scientists investigating the effects of fire on thinned and unthinned forests concluded the effects of fire were indeed significant, and more so in untreated stands:

> Effective fuel treatments may increase native plant richness and inhibit post-wildfire establishment of non-native species.

> Wildfire consumption of canopy cover and surface litter was significantly correlated to decreases in native plant species and increases in non-native plant species, at least in the first post-fire year. While we found some evidence that fuel treatments themselves may also promote non-native species, the effects of severe wildfire were more significant.
>
> From Omi, Philip N., Erik J. Martinson, and Geneva W. Chong. 2007.Effectiveness of Pre-Fire Fuel Treatments. Final Report JFSP Project 03-2-1-07. Joint Fire Science Program. (see Appendix A).

One of the most respected forest scientists in America, Dr. Thomas M. Bonnicksen. Ph.D. (author of *America's Ancient Forests–From the Ice Age to the Age of Discovery*. 2000. John Wiley and Sons), wrote:

> Misguided attempts to "save" our forests by leaving them alone and letting them burn are accelerating their decline and endangering thousands of people at the same time. …
>
> The problem is that many forests are too crowded with trees. Anyone with a trained eye or who knows forest history can see that. In forests throughout the Sierra Nevada, for instance, history tells us that roughly 50-70 trees stood per acre in a relatively open mosaic. Today 500-700 trees per acre often stand on public forestlands in the Sierra, upwards of 1,000 trees per acre in some areas. Unnaturally dense forests provide fuel for unnaturally intense and large wildfires. More trees mean more fuel, which translates to bigger, hotter, more damaging fires. …
>
> Too many trees is also the reason that catastrophic fires have become more common in recent years. With an abundance of dead, dry trees in the forests, fires burn hotter than natural. They can easily jump 8-lane highways and blow right through or around fuel breaks. Intensely hot fires create strong winds and can hurl firebrands, or bits of burning trees, up to a mile away. There is nothing natural about a 200-foot wall of flames racing across the landscape. …
>
> Historically, forest fires were generally low-intensity affairs. Fires might cover large areas, but flames stayed close to the ground with

relatively modest temperatures. Today's infernos sometimes tower above the ground and reach 3,000 degrees F, hot enough to melt metal. They can travel 20 miles in a day and sterilize soils. …

Today's high-intensity crown fires, however, often leave in their wake devastated moonscapes of dead trees and baked, eroding soils. …

So, the Forest Service started letting some fires burn, even though they were often catastrophic. Since 1980, the size of wildfires on national forests has doubled and it may double again if we let forests keep getting thicker. By 2005, two-thirds of America's national forests were at significant risk of severe wildfire. That's more than 130 million acres.

The forests we would leave to nature are not natural, so the fires that burn them are not natural either. Such "hands-off" attitudes, often inspired by the myth of the pristine forest, lead to inaction that fosters the kind of catastrophic fire that can erase forests from the landscape for centuries. …

Wildfires are increasingly high-intensity crown fires that burn hotter than their historic predecessors. …

A relatively lifeless moonscape can frequently replace a dense forest after a catastrophic fire. High-intensity blazes can eradicate virtually all vegetation on a site and sterilize the soil, altering wildlife habitat for centuries if the land is not replanted (studies show the vast majority of severely burned public forestland is not reforested). …

Fire, however, is simply destructive. In New Mexico's Cerro Grande Fire, 20 Mexican spotted owl nesting sites were lost. Between 1999 and 2002, the USDA Forest Service identified 11 California spotted owl nesting sites as lost to wildfire. In 2002, the Biscuit Fire destroyed tens of thousands of acres of critical spotted owl habitat in Southern Oregon and Northern California, including 49 known nesting sites. Unless we thin and manage forests, more habitat loss lies ahead. …

> With more trees on the landscape, wildfires burn hotter across larger areas. The extra fuel—unharvested trees and dense brush in overgrown forests—makes fires harder to put out. Furthermore, wildfires near heavily populated areas can prove more difficult and costly to fight. These fires pose the greatest threat to human lives and must be battled to the fullest extent possible.
>
> From Bonnicksen, Thomas M. 2007. Protecting Communities And Saving Forests–Solving the Wildfire Crisis Through Restoration Forestry. Published by the Forest Foundation. (see Appendix A).

The RR-SNF proposes to "watch" forests burn in WFU fires rather than containing, controlling, and extinguishing them. The effects of implementing that proposal will be more than significant; they will be devastating to our priceless, heritage forests. Moreover, the managers of the RR-SNF are well-aware that the effects of WFU fires will completely alter forest vegetation.

Fire-related Effects

Besides the effect of incineration, wildfire attracts pathogenic insects such as bark beetles to forest stands, even to trees that were not killed by proximate wildfires.

In Appendix A we present 18 studies of bark beetle infestation following forest fires. The list is by no means complete but reflects the wide concern and ample interest in post-fire mortality of green trees following wildfire. Typically, some degree of crown scorch and cambial damage has been found to be positively associated with post-fire beetle attack in most conifers. Trees that are burned to charcoal are not attacked, but trees that experience mild to severe fire damage often are.

It is well-known that bark beetles can contribute to delayed tree mortality following wildfire. Most recent studies are concerned with quantifying the phenomenon and building predictive models that relate post-fire mortality to degree of scorch or fire girdling, because the fact that beetles attack fire-stressed trees is universally known and accepted (Thies et al 2006).

Bark beetles do not kill fire-stressed trees directly. Instead they carry fungi and infect the trees they bore into. The transplanted fungi grow and fill the

tracheids (water vessels) in the trees. It is the fungi that are often the direct pathogenic organisms.

Rare Plants

There are today over 200 plant and animal species that exist or used to exist (within their historical range) on the RR-SNF that have been declared threatened and endangered, or have received special status under the Endangered Species Act of 1973, as amended through the 108th Congress.

> There are at least 205 plant and animal species with special conservation status (Threatened, Endangered, Candidate, or Special Species) that occur in, or have historic ranges that included the Rogue River-Siskiyou National Forest. The current fire regimes on the RR-SNF are outside the historic range of variability, which included frequent, low- to moderate- intensity fires most likely of anthropogenic origin. Modern lightning-ignited fires are generally higher in intensity and may have adverse impacts on species with special status.
>
> From Brenner, Gregory J., compiler. 2008. Potential adverse impacts of wildland fire on plant and animal species with special status (Threatened, Endangered, Candidate, or Special Species) that occur within the jurisdiction of the Rogue River–Siskiyou National Forest. Western Institute for Study of the Environment.

Protected plant species include:

- Large-Flowered Woolly Meadowfoam - *Limnanthes floccosa* ssp. *grandiflora*
- Cook's desert-parsley - *Lomatium cookii*
- Gentner's fritillary - *Fritillaria gentneri*
- Siskiyou mariposa lily - *Calochortus persistens*
- Clustered Lady's Slipper Orchid - *Cypripedium fasciculatum*
- Forked Spleenwort - *Asplenium septentrionale*
- Bug-on-a-stick, hump-backed elf, elf cap moss - *Buxbaumia aphylla*
- Silver hair moss, fabronia moss - *Fabronia pusilla*
- 11 species of lichens

- 66 species of fungi

Many of these are forest species, and some are epiphytic (meaning they grow above the ground surface, using other plants or objects for support). As such they are often associated with trees and especially old-growth trees, and are at risk from catastrophic, stand-replacing fires.

The Endangered Species Act prohibits the Federal government from

> … any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under section 1533 of this title or result in the destruction or adverse modification of critical habitat proposed to be designated for such species.
>
> From the Endangered Species Act of 1973 as amended through the 108th Congress. ESA § 4:Title 16, Section 1533.

Public Law 100-478, enacted October 7, 1988, (102 Stat 2306) prohibits damage or destruction of endangered plants on Federal lands.

Rare plant species typically require a particular set of environmental conditions, or microhabitat, in order to grow. The specific microhabitat requirements of rare plants increase their susceptibility to endangerment when their particular habitats are altered. Isolated local populations of rare plants can be at heightened risk and have been negatively affected by habitat disturbances. Wildfire is a major disturbance that may impact the legally protected plant species of the RR-SNF.

The consultation process under Section 7 of the ESA now includes the requirement that Federal agencies prepare biological assessments in cases where the Secretary of the Interior has advised that a listed species may be present. Before wildfires are allowed to roam unchecked across the RR-SNF, the US Forest Service must evaluate the risks that WFU fires pose to protected plant species. Federal agencies are required to consult with the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) to:

> … insure that any action authorized, funded, or carried out by such agency… is not likely to jeopardize the continued existence of any [listed] species or result in the destruction or adverse modification of [critical] habitat of such species." ESA § 7(a)(2).

The RR-SNF does not seem to be cognizant of the burden the law places upon them in respect to protecting rare plant species and valued vegetative ecosystems such as old-growth forests.

From the RR-SNF Notice of March 5, 2008:

> "Land managers throughout the West have learned over the last forty years that there are ecological benefits of having fire on the landscape as it can provide for a renewal of the Forest. It is a natural cycle of life in a forest," said Conroy.

The term "forest renewal" implies killing all live trees, including the old-growth trees, and replacing them with new conifer germinants or whatever sprouts back after the catastrophic, stand-replacing fires.

There is no law among the many that direct and control the US Forest Service that calls for "forest renewal." That is not a legal directive, not the will of the U.S. Congress, and not the will of the citizenry of the U.S. Such pronouncements from the RR-SNF are ominous. They assert a purpose that does not exist, as well as indicating that their proposed amendments to the RR-SNF LRMP will have significant effect and impact on our public forests.

We add that forests do not have "life cycles." Forests are not butterflies. Forests do not go through life stages and then die. Forests are perennial and perpetual. The RR-SNF is acting without legal or scientific guidance. This is all the more reason that an Environmental Impact Statement must be prepared and a full NEPA public involvement process must be implemented. Scientists, resource professionals, and the affected public must have the opportunity to voice objections and apply rational forest science, or massive catastrophes will ensue.

Note: Provisions of the Endangered Species Act, some of which are cited in this document, may be found at the following sections of the United States Code

ESA § 2:Title 16, Section 1531
ESA § 3:Title 16, Section 1532
ESA § 4:Title 16, Section 1533
ESA § 5:Title 16, Section 1534
ESA § 6:Title 16, Section 1535
ESA § 7:Title 16, Section 1536

ESA § 8:Title 16, Section 1537
ESA § 8A:Title 16, Section 1537a
ESA § 9:Title 16, Section 1538
ESA § 10:Title 16, Section 1539
ESA § 11:Title 16, Section 1540
ESA § 12:Title 16, Section 1541
ESA § 15:Title 16, Section 1542
ESA § 17:Title 16, Section 1543
ESA § 18:Title 16, Section 1544

Fire effects on the Deschutes National Forest

VI. Probable Significant Impacts/Effects on Fauna

The effects of fire on wildlife are significant. Wildfire has impacted birds, mammals, reptiles, amphibians, fish, insects and mollusks in habitats across the West, perhaps for thousands of years. The RR-SNF proposes to "watch" forest fires burn rather than containing, controlling, and extinguishing them. Those are actions that will have significant impacts on wildlife on the RR-SNF.

When Federal agencies undertake actions that may have significant effects, those agencies are required to prepare an Environmental Impact Statement that analyzes alternatives and their impacts.

Unchecked wildfire can enter into and destroy wildlife habitat and thereby reduce populations of Threatened and Endangered Species listed under the Endangered Species Act of 1973 as amended through the 108th Congress.

> SEC. 2. (a) FINDINGS.—The Congress finds and declares that—
> (1) various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation;
> (2) other species of fish, wildlife, and plants have been so depleted in numbers
> that they are in danger of or threatened with extinction;
> (3) these species of fish, wildlife, and plants are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people;
> (4) the United States has pledged itself as a sovereign state in the international community to conserve to the extent practicable the various species of fish or wildlife and plants facing extinction …
>
> From the Endangered Species Act of 1973 as amended through the 108th Congress. ESA § 3(6).

Therefore, the RR-SNF is required to obey that law, and NEPA, and prepare an EIS with full public participation in the process as mandated by Congress before committing to or implementing any actions that might harm wildlife.

T&E and Special Species

There are over 200 plant and animal species with special conservation status (Threatened, Endangered, Candidate, or Special Species) that occur in, or have historic ranges that included the Rogue River-Siskiyou National Forest. The current fire regimes on the RR-SNF are outside the historic range of variability, which included frequent, low- to moderate- intensity fires most likely of anthropogenic origin. Modern lightning-ignited fires are generally higher in intensity and severity and may have adverse impacts on species with special status.

> Southwest Oregon has exceptional floristic diversity and complexity in vegetative patterns (Whittaker 1960, Stebbins and Major 1965). The diverse patterns of climate, topography, and parent materials in the region create heterogeneous vegetation patterns more complex than that found in the Sierra Nevada or the Cascade Range (Sawyer and Thornburgh 1977). Because of this diversity and the mixing of floras from the Cascade/Sierra Nevada axis and the Oregon/California coastal mountains that intersect here the area is thought to be of central importance in the long-term evolution and development of western forest vegetation (Whittaker 1961, Smith and Sawyer 1988).
>
> Natural and human-induced fires have always been part of the region, and the flora and fauna have adaptations that allow them to survive, and in some cases benefit from fire regimes with frequencies ranging up to several centuries. Over the past several thousands of years the vegetation over most of the area was subjected to burning by Paleo-Indian people, which, over time, altered the naturally-occurring ecosystems (Lewis 1973, 1990, Stewart 2002, Lalande and Pullen 1999, Boyd 1999, Bonnicksen 2000, Carloni 2005, Lake 2005).
>
> Several fire history studies describe fire regimes in parts of southwest Oregon over the last few centuries (Agee 1991; Wills and Stuart 1994; Taylor and Skinner 1997, 1998, 2003; Stuart and Salazar 2000; Skinner 2003a, 2003b; Sensenig 2003, Fry and Stephens 2006). These studies suggest a general [historical] fire regime of frequent, low- to moderate- intensity fires.

> Judging from the evidence of, for example, fire scars in tree trunks and changes in the composition of plant and animal species, it is apparent that European settlement in the region drastically changed both the natural and Native American fire regimes and in much of the region, has greatly increased the frequency and extent of intense fires (Teensma 1987, Ripple 1994, Boyd 1999, Sensenig 2003, Kay 2007).
>
> Most native flora and fauna and natural ecosystems are not adapted to the current fire regime and are rapidly being altered and degraded by it, probably irreversibly. Those may include at least 205 species with special conservation status that occur in, or have historic ranges that included the Rogue River – Siskiyou National Forest (Table 1). There is considerable scientific evidence which shows that under the current fire regime, many ecosystems do not have time to recover from one catastrophic burn before the next fire occurs. As a result, the populations of many species that occur in the area are in decline or at risk of decline from catastrophic fire.
>
> The impact of fire on these species is not well quantified, but considerable evidence exists that documents the general impacts catastrophic fire has on these plants and wildlife. Management policies that allow wildland fire to burn unchecked can have a significant impact to species that live where these fires occur.
>
> From Brenner, Gregory J. compiler. 2008. Potential adverse impacts of wildland fire on plant and animal species with special status (Threatened, Endangered, Candidate, or Special Species) that occur within the jurisdiction of the Rogue River – Siskiyou National Forest. 2008. Western Institute for Study of the Environment.

Among the animal species that may be significantly impacted by WFU fires on the RR-SNF are:

- Northern Spotted Owl - *Strix occidentalis caurin*a
- Fisher - *Martes pennanti*
- Marbled Murrelet - *Brachyramphus marmoratus*
- Coho salmon - *Oncorhynchus kisutch*
- Siskiyou Mountains salamander - *Plethodon stormi*
- Foothill yellow-legged frog - *Rana boylii*

- Northwestern Pond Turtle - *Actinemys marmorata marmorata*
- Mardon skipper - *Polites mardon*
- Oregon silverspot butterfly - *Speyeria zerene hippolyta*
- Siskiyou short-horned grasshopper - *Chloealtis aspasma*
- Crater Lake Tightcoil - *Pristiloma arcticum crateris*
- Oregon Shoulderband - *Helminthoglypta hertlieni*
- Chace Sideband - *Monadenia (Shastelix) chaceana*
- Blue-Gray Taildropper - *Prophysaon coeruleum*

The Endangered Species Act requires the Federal government to protect listed species.

> SEC. 4. (b) (8)(d) PROTECTIVE REGULATIONS.—Whenever any species is listed as a threatened species pursuant to subsection (c) of this section, the Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation of such species. The Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants, with respect to endangered species; except that with respect to the taking of resident species of fish or wildlife, such regulations shall apply in any State which has entered into a cooperative agreement pursuant to section 6(c) of this Act only to the extent that such regulations have also been adopted by such State.
>
> From the Endangered Species Act of 1973 as amended through the 108th Congress. ESA §§ 4(a)(3), 4(b)(2).

The Endangered Species Act also requires the Federal government to carry out consultations when listed species might be jeopardized by Federal agency actions.

> SEC. 7. (a) (2) Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or

> threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. In fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available. ESA § 9(a)(1) (Ibid).

The dangers to Threatened, Endangered, Candidate, or Special Species from unchecked wildfires have been well-documented. We examine a few of the rare animal species occurring on the RR-SNF and a small portion of the pertinent documentation.

Northern Spotted Owls

Northern Spotted Owl - *Strix occidentalis caurina*

A medium sized, chocolate brown owl with dark eyes, the northern spotted owl is a nocturnal "perch-and-pounce" predator that captures its prey (primarily small forest mammals) with its claws. Like most owl species, the spotted owl nests in the tops of trees or in cavities of naturally deformed and/or diseased trees. Spotted owls primarily mate for life and may live up to 20 years.

Northern spotted owls live in forests characterized by dense canopy closure of mature and old-growth trees, abundant logs, standing snags, and live trees with broken tops. Although they are known to nest, roost, and feed in a wide variety of habitat types, these owls prefer older forest stands with variety: multi-layered canopies of several tree species of varying size and age, both standing and fallen dead trees, and open space among the lower branches to allow flight under the canopy. Typically, forests do not attain these characteristics until they are at least 150 to 200 years old.

Current Status: The spotted owl was listed as endangered on June 26, 1990 (USFWS 1990b). The northern spotted owl (*Strix occidentalis caurina*) inhabits structurally complex forests from southwest British Columbia through the Cascade Mountains and

coastal ranges in Washington, Oregon, and California, as far south as Marin County. Many of the populations of spotted owls are declining, especially in the northern parts of the species' range.

Threats: Important threats to the spotted owl include loss of habitat quality and quantity as a result of past activities and disturbances, and ongoing and projected loss of habitat as a result of fire, logging and conversion of habitat to other uses. More specifically, threats to the spotted owl included low populations, declining populations, limited habitat, declining habitat, inadequate distribution of habitat or populations, isolation of provinces, predation and competition, lack of coordinated conservation measures, and vulnerability to natural disturbance (USFWS 1992b).

Declining habitat was recognized as a severe or moderate threat to the spotted owl throughout its range, isolation of populations was identified as a severe or moderate threat (USFWS 1992b). "Currently the primary source of habitat loss is catastrophic wildfire..." (Courtney et al. 2004).

On June 1, 2006, a panel of seven experts was assembled to help the spotted owl recovery team identify the most current threats facing the species. Six of the seven panelists were experts on the biology of the spotted owl, and a seventh panelist was an expert on fire ecology. The panelists ranked the threats by importance in each province. Among the 12 physiographic provinces, the more fire-prone provinces (Eastern Washington Cascades and Eastern Oregon Cascades, California Cascades, Oregon and California Klamath) scored high on threats from ongoing habitat loss as a result of wildfire (USFWS 2006b, 2007).

Analysis: Many historical sites of NSO occurrence are no longer occupied because spotted owls have been displaced by barred owls, timber harvest, or severe fires (USFWS 1992c, Thomas et al. 1993). Recovery Action 25 of the 2007 Draft Recovery Plan recommends identifying high-value spotted owl habitat that has a high risk of loss due to wildfire, and to focus habitat management activities on the reduction of ladder fuels and fuel loading. The reduction of fire risk may be an important part of achieving recovery (USFWS 2007).

In 1994, the Hatchery Complex fire burned 17,603 hectares in the Wenatchee National Forest in Washington's eastern Cascades, affecting six spotted owl activity centers (Gaines et al. 1997). Spotted owl habitat within 2.9 km (1.8 mile) of the activity centers was reduced by 8 to 45 percent (mean = 31 percent) as a result of the direct effects of the fire and by 10 to 85 percent (mean = 55 percent) as a result of delayed mortality of fire-damaged trees and insects. Direct mortality of spotted owls was assumed to have occurred at one site, and spotted owls were present at only one of the six sites 1 year after the fire.

More than 50 percent of the spotted owl critical habitat that was removed or downgraded because of fire can be attributed to the 1999 Megram fire that burned in north-central California and the 2002 Biscuit fire that burned in southwestern Oregon and northern California (USFWS 2007). Loss of habitat due to fire is a primary cause of spotted owl population decline (USFWS 2006b, 2007) and represents a significant impact to this endangered species. …

Seventy different fires contributed to the loss of habitat as a result of natural disturbances, with the amount of loss from individual fires ranging from 66 to 113,667 acres. Only 14 of 70 fires resulted in losses of suitable nesting and roosting habitat that exceeded 1,000 acres. In general, the Oregon Klamath Province suffered the highest losses of habitat from natural events, all of which were due to wildfire. Ninety-six percent of habitat loss in this province can be attributed to the Biscuit fire that burned approximately 113,667 acres of habitat on three administrative units of the Rogue River basin in 2002 (USFWS 2004b)."

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The Biscuit Fire in 2002 on the RR-SNF destroyed 49 known spotted owl nesting sites.

In 2003, the B&B Fire burned 92,000 acres on the Sisters Ranger District of the Deschutes NF. In 2002 the Eyerly Fire burned about 24,000 acres on the Sisters Ranger District and the Warm Springs Indian Reservation. At least 18 of the 24 known spotted owl nests in the Sisters District were destroyed by those fires.

Since then the Black Crater Fire (2006) burned 9,400 acres, the Puzzle Fire (2006) burned 6,150 acres, the Lake George Fire (2006) burned 5,740 acres, and the GW Fire (2007) burned 7,500 acres on the Sisters RD. It is undetermined how many additional nesting sites were destroyed.

The destruction of spotted owl habitat by fire invariably leads to EIS preparation for analysis of forest recovery efforts. We maintain that an EIS should be prepared **before** fire ravages spotted owl stands.

Marbled Murrelet

Marbled Murrelet - *Brachyramphus marmoratus*

The marbled murrelet is a small robin-sized diving seabird that feeds primarily on fish and invertebrates in near-shore marine waters. It spends the majority of its time on the ocean, roosting and feeding, but comes inland up to 80 kilometers (50 miles) to nest in forest stands with old growth forest characteristics (large trees in multistoried stands with moderate to high canopy closure). These dense shady forests are generally characterized by large trees with large branches or deformities for use as nest platforms.

Current Status: Marbled murrelets range along the Pacific coast from Alaska to California; the southern end of the breeding range is in central California. Currently, breeding populations are not distributed continuously throughout the forested portion of the Pacific Northwest due to the substantial loss and modification of nesting habitat (older forest) and mortality from net fisheries and oil spills. The Washington, Oregon, and California population segment was federally listed as threatened in September 1992. Critical habitat was designated for the species in May 1996. It is

listed as endangered by California and as threatened in Washington and Oregon. It also is federally listed as threatened in Canada (USFWS 1992a).

Threats: The primary threat to the marbled murrelet population is the loss and modification of nesting habitat in old growth and mature forests through commercial timber harvests, wild fires, and wind storms

Analysis: It is necessary to produce and maintain well-distributed populations because of the murrelet's vulnerability to environmental fluctuations and catastrophes and because of the species' slow reproductive rate, which inhibits its ability to rebound from adverse impacts. Random environmental events and catastrophes can adversely affect the viability of threatened populations (Raup 1991, Shaffer 1996, Meffe and Carroll 1996).

Fire and catastrophic windstorms can remove large amounts of murrelet nesting habitat. For example, the Columbus Day windstorm in 1962 blew down an estimated 11.2 billion board feet of timber in the Oregon and Washington Coast Ranges (Lucia 1967), much of which was likely murrelet nesting habitat. Since the 1840s, the Oregon Coast Range has experienced a series of large scale fires that destroyed extensive amounts of older forest throughout Conservation Zone 3 (Ripple 1994). It is likely that these fires, in conjunction with harvest of old growth timber in the same area during the same period, led to a dramatic decline in the Zone 3 murrelet population.

As a consequence of such widespread habitat loss and the subsequent reduction in the range and vigor of the species, the murrelet is now more vulnerable to environmental fluctuations and catastrophes that the species otherwise would probably have been able to tolerate. Chance events, such as catastrophic fire, could cause or facilitate the extirpation of the entire listed species or one or more of the Zone populations (Lande 1993, Ralph 1994, Ralph and Miller 1995). (Ibid).

Siskiyou Mountains salamander

Siskiyou Mountains salamander - *Plethodon stormi*

The Siskiyou Mountains salamander (*Plethodon stormi*) is a member of the family Plethodontidae, the lungless salamanders and the genus *Plethodon*, the Woodland Salamanders. These animals respire entirely through their skin, complete their entire life cycle in terrestrial environments and are found on the forest floor in moist microhabitats. Like other *Plethodon* they are slim and elongate with relatively short legs. The Siskiyou Mountains salamander along with the Del Norte salamander (*P. elongatus*) composes the *elongatus* group of western *Plethodon* (Brodie 1970).

Current Status: State and federal agencies consider the Siskiyou Mountains salamander as a vulnerable species due to its rarity and vulnerability to a variety of anthropogenic disturbances. It is listed by the U.S.D.A. Forest Service, Regions 5 and 6 as Sensitive, and by the U.S.D.I. Bureau of Land Management, Oregon as Sensitive. This species is not known on BLM lands in California. In addition the species is listed by California State as Threatened; Oregon State as Sensitive-Vulnerable species; and by the U.S. Fish and Wildlife Service as a Species of Concern. The Natural Heritage Program ranks this species as ORNHIC List 1, Globally imperiled (G2G3Q), California State Critically imperiled or imperiled (S1S2), Oregon State imperiled (S2). Management of the species on Forest Service Region 6 and Oregon BLM lands follows Forest Service 2670 Manual policy and BLM 6840 Manual direction.

Threats: Habitat loss, degradation, and additional fragmentation of discrete populations are all potential threats to this species. Activities that may pose threats to this species are those that disturb the surface microhabitats and/or microclimate conditions. Typically these involve actions that remove canopy and/or disturb the substrate. Removal of canopy overstory may cause desiccation of the rocky substrates and loss of the moss ground cover, a microhabitat feature of Siskiyou Mountain salamander sites. Disturbing the substrate can result in substrate compaction and deconsolidation of the stabilized talus, which reduces or eliminates

substrate interstices used by salamanders as refuges and for their movements up and down through the substrate. Examples of the types of activities that may cause impacts include: certain types of timber harvest and associated road construction, rock quarry management and construction, and prescribed as well as wildland fire. As the majority of known sites occur on Federal lands, wildland fires on these lands may create the highest potential threat to the species (Clayton et al. 2005).

Analysis: Wildland fire is a primary threat to this species (Clayton et al. 2005). Other activities, such as prescribed fire, trail construction, and chemical applications may pose somewhat lesser or localized threats to the species and do not likely pose a threat to species persistence.

Impacts to Siskiyou Mountains salamanders from either natural or prescribed fire are unstudied, however, given that fire suppression in recent years has resulted in an increased risk of large stand replacement fire in the region, large fires that remove overstory from suitable habitat may be of highest concern for this species (an example of this is the Biscuit Fire). Although the Siskiyou Mountains salamander has persisted in a fire disturbance landscape, there is concern that the intensity of the local fire regime has changed and when burned may have adverse effects on the species. The relatively recent historical fire regime in the area was one of high frequency and low intensity fire, which consisted of very frequent underburning of the forest in the summer and early fall and few stand replacement events, at least at the lower elevations (Agee 1993). At higher elevations, longer fire return interval and high intensity fire occurred historically and likely resulted in more stand replacement events (Agee 1993). The effects of a more intense level of fire disturbance due to fire suppression and fuel loading is of concern in that stand replacement fire represents a higher potential for disturbance to flora and fauna. In particular, relative to salamander habitat, it removes overstory canopy that serves to moderate surface microclimates from extremes (e.g., high temperatures and low moisture).

Recent federal management strategies emphasize fuel prescriptions to remove the unnaturally high fuel loading. Fuel reductions include

various combinations of understory thinning, slashing, piling, and/or prescribed burning. Most prescribed burning occurs in the moister and cooler time of the year to avoid escapement risks and smoke concerns. Spring/winter burning may increase the chance of direct mortality of Siskiyou Mountains salamanders during a time of year when they are active above the surface and vulnerable to fire. In addition these types of fuels reduction activities may contribute to the long-term persistence of the species by reducing the potential for stand replacement fire, which likely has a higher potential for adverse effects to the species than the fuels reduction activities may have (Clayton et al. 2005). (Ibid).

Foothill yellow-legged frog

Foothill yellow-legged frog - *Rana boylii*

The foothill yellow-legged frog is among the first-described ranids endemic to western North America (formerly *R. boylei*). The "*boylii*" group of western ranids seems to have diverged from other ranids about 8 million years ago (Macey et al. 2001).

Current Status: State and Federal agencies classify the foothill yellow-legged frog as a potentially vulnerable species due to its restricted distribution and vulnerability to a variety of anthropogenic disturbances. It is listed by the: USDA Forest Service, Region 6 and Region 5, as Sensitive; USDI Bureau of Land Management, Oregon, as Sensitive; Oregon State as Sensitive-Vulnerable; US Fish and Wildlife Service as a Species of Concern; NatureServe as Globally Vulnerable (G3, at moderate risk of extinction due to a restricted range), Oregon State imperiled/rare (S2S3, uncommon or threatened but not immediately imperiled), and List 2 – taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon. Management of the species follows Forest Service 2670 Manual policy and BLM 6840 Manual direction.

Threats: Disturbances such as mass wasting events (i.e., landslides), flood events, and wildfire may adversely affect this frog. Additionally, loss of connectivity among habitat patches is a concern from several of these disturbances due to the likely limited

mobility of these animals among watersheds and consequent population isolation (Olson and Davis 2007).

Analysis: The effects of fire on these frogs can be severe. Pilliod et al. (2003) cited both positive and negative effects of fire and fire suppression activities on western amphibians. Low-intensity fires likely have no adverse effect on this species. It is also possible that historic fires may have reduced streamside vegetation providing sunny areas for frog basking, a potential benefit to frogs. Fire suppression may increase riparian shading, a potentially adverse effect for these animals.

The effects of a more intense level of fire disturbance due to fire suppression and fuel loading is of concern in that stand-replacement wildfire represents a more catastrophic disturbance to flora and fauna, and potentially aquatic habitats (Olson and Davis 2007).

In particular, relative to foothill yellow-legged frog habitat, intense fires remove overstory canopy that serves to moderate surface microclimates from extremes (e.g., high temperatures), and reduces standing green trees that may supply streams with future down wood. Increased landslide potential post-fire is a concern for sedimentation of stream habitats. The large spatial scale of recent more severe fires may be more extensive than the historic fire regime. (Ibid).

Mardon skipper

Mardon skipper - *Polites mardon*

The Mardon skipper is a small (20-24 mm; <1 inch), tawny-orange butterfly with a stout, hairy body. The upper surface of both wings is orange with broad dark borders. From below, the wings are light tan-orange with a distinctive pattern of light yellow to white rectangular spots.

Mardon skippers complete one life cycle annually. Adults (in southern Oregon) emerge in June and July for a month-long flight

period. After mating, females deposit their eggs into native bunchgrass where they hatch after 6 to 7 days. Larvae feed on fescue grass (*Festuca* sp.) for about 3 months and pupae hibernate through the winter.

Current Status: The Mardon skipper butterfly is a candidate species. The historical range and abundance of Mardon skippers is not precisely known because no studies were conducted prior to 1980. Historically, Mardon skippers have been collected from three counties in Washington (Thurston, Klickitat, and Yakima); two counties in Oregon - Klamath and Jackson; and Del Norte County in California. The Mardon skipper is now known from 37 sites located in four geographic areas: southern Puget Sound and the Mt. Adams area in Washington; the Siskiyou Mountains in southern Oregon; and Del Norte, California. All these sites are small; most supporting less than 50 individuals. There are 3 sites in the Cascade Mountains, located between Soda Mountain and Fish Lake (Mattoon et al. 1998). Populations in southern Oregon occupy small (less than 0.25-4 ha (0.5-10 ac)) high-elevation (1,372-1,555 m (4,500-5,100 ft)) grassy meadows within mixed conifer forests.

Threats: The major threat to this species is the loss of a large percentage of the original prairie grasslands upon which it depends. These grassland and savanna landscapes are threatened today by forest encroachment, native and non-native plant invasions, development, recreational activities, grazing, agricultural practices, and fire. In addition to loss of habitat, the butterflies are threatened by insecticides, control practices for invasive plants, military training, fire, and recreational activities.

Analysis: Small, isolated populations of sedentary insects, such as the Mardon skipper, are vulnerable to fire (Black et al., 2002). Their grassland habitat persisted partly because of repeated, patchy, low intensity fires. However, large-scale, high-intensity fires would be detrimental through direct mortality of individuals and damage to habitat because of the continuous, rather than patchy distribution of the burn. Large portions of the Pierce County Mardon skipper site (one of three extant south Puget Sound sites) burned homogeneously in June 2003. This unseasonably early and

unusually large and intense spring fire likely killed all Mardon skipper larvae encountered at this site.

Large-scale, high intensity fires in the Rogue-River – Siskiyou National Forest could eliminate the isolated populations of the Mardon skipper in the region. (Ibid).

Oregon silverspot butterfly

Oregon silverspot butterfly - *Speyeria zerene hippolyta*

The Oregon silverspot is a medium-sized, orange and brown butterfly with black veins and spots on the dorsal (upper) wing surface, and a yellowish submarginal band and bright metallic silver spots on the ventral (under-side) wing surface.

The life history of the Oregon silverspot revolves around its obligatory host plant, the early blue violet (*Viola adunca*). Females oviposit up to 200+ eggs singly amongst the salt-spray meadow vegetation near the violet host plant, usually in late August and early September. Sites with good sun exposure are favored.

Current status: Oregon silverspot butterfly was listed as a threatened species with critical habitat in October 1980 (USFWS 1980). This species occurs at disjunct sites near the Pacific coast from Del Norte County, California, north to Long Beach Peninsula, Washington. The species has been extirpated from 11 localities and is currently known to occur at only 6 sites. Populations of Oregon silverspot butterflies are declining or below historic levels at all sites.

Threats: Habitat destruction is unquestionably the reason for the threatened status of this butterfly today. It should be noted, however, that as colony size is reduced by habitat loss, restricted genetic variability and/or catastrophic events can ultimately cause the extinction of these small populations.

Analysis: Presence of charcoal in soil samples indicates that fire, primarily set by Native Americans, was an important factor that

maintained Oregon's coastal grassland communities and their endemic species (Ripley 1983). The timing, extent, and frequency of fires in the area prior to European settlement is not well documented. Most fires likely occurred in late summer and early fall, although some may have occurred in January or February during short dry periods that are typical at that time of year. Some reduction in frequency of coastal fires as early as the 1850's has been documented, but fires continued to be frequent until the early 1900's. Severe fires in 1845 and 1910 converted substantial portions of Mt. Hebo from forest to grassland. Since then, fire frequencies on the Oregon Coast have been greatly reduced and the extent of coastal grasslands has declined dramatically (Ripley 1983).

Catastrophic fire and lack of proper management have caused a decline in available habitat for this threatened species and represents a significant impact (USFWS 1982). (Ibid).

Siskiyou short-horned grasshopper

Siskiyou short-horned grasshopper - *Chloealtis aspasma*

The Siskiyou short-horned grasshopper is known from only a few sites in southwest Oregon. Females lay eggs in the pith of elderberry stems in the summer (Foster 1974). The eggs hatch the following year. Juvenile stages forage in open meadows near the ground. Juveniles look similar to the adults except the wings are much shorter and the individuals are smaller.

Current Status: The Siskiyou short-horned grasshopper is considered a Species of Concern by the US Fish and Wildlife Service. *Chloealtis aspasma* distribution is in two general areas, one from southern Oregon, near the California border and the other in Benton County. The type locality is in the Siskiyou Mountains of Jackson County, Oregon (Sec13 T41S R1E) where specimens were collected on a ridge between 5,000 and 5,800 feet elevation in a treeless summit bald covered with an almost impenetrable brushy scrub through which were scattered grassy areas (Rehn and Hebard 1919). This species has also been collected near Willow Lake, off

Highway 140, about 16 miles northeast of Ashland (Sec5 T37S R3E) in an old logged-over clear-cut area surrounded by mixed conifer forest (Foster 1974); in Woodruff Meadows near Abbott Butte 18 miles west of Crater Lake (Sec7 T31S R3E) at the border of forest and meadow (Fulton 1930)

Threats: Loss of habitat by encroaching forest overstory and by high-intensity fire.

Analysis: Forest logging and mild or low intensity fire appears to provide open habitat for the host plant, blue elderberry, thereby increasing local populations of *Chloealtis aspasma*. Planting or placing blue elderberry stems in open areas provides oviposition sites. High severity fire destroys the grasshoppers and host plants. Isolated populations are at risk from large scale catastrophic fires. (Ibid).

West Coast Coho Salmon

West Coast Coho Salmon - *Oncorhynchus kisutch*

The coho salmon, *Oncorhynchus kisutch*, is a species of anadromous fish in the salmon family. Coho salmon are also known as silver salmon or "silvers". The U.S. National Marine Fisheries Service has identified 7 populations, technically called Evolutionary Significant Units (ESUs), of coho salmon in Washington, Oregon, and California.

The Southern Oregon/Northern California Coast coho ESU includes populations that inhabit small coastal basins draining the Siskiyou Mountains from Cape Blanco to the Winchuck River near the state line and the Rogue River.

Current Species Status: The coho salmon were listed as threatened in 1997 (NMFS 1997) and affirmed as threatened in 2005 (NMFS 2005). The only historical data on coho abundance south of Cape Blanco is from the Rogue River. This information indicates that a major decline in abundance occurred in the Rogue Basin between 1900 and 1920. Over 70,000 adult coho, including

harvested fish, were present in the Rogue at the turn of the century, but only about 6,000 remained by 1920. Total abundance has remained at about 5,000 to 6,000 fish through the 1990s (ODFW 1995).

The National Marine Fisheries Service Pacific Salmonid Biological Review Team (BRT) (an expert panel of scientists from several Federal agencies including NMFS, FWS, and the U.S. Geological Survey) concluded that the naturally spawned component of the Southern Oregon/Northern California Coast coho ESU is ''likely to become endangered within the foreseeable future.'' Our assessment of the effects of artificial propagation on the ESU's extinction risk concluded that the within-ESU hatchery programs do not substantially reduce the extinction risk of the ESU in-total (NMFS 2004). Protective efforts, as evaluated pursuant to PECE, do not provide sufficient certainty of implementation and effectiveness to alter the assessment that the ESU is ''likely to become endangered within the foreseeable future.'' We conclude that the ESU in-total is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, and determine that the Southern Oregon/Northern California Coast coho ESU continues to warrant listing under the ESA as a threatened species (NMFS 2005).

Current coho populations in this group are located in basins around Cape Blanco, in the Winchuck, and in the Rogue Basin, particularly in the Illinois subbasin. Coho are very rare in the other coastal basins. Recent abundance information for populations outside of the Rogue River is not available, although none of the populations appear to have more than a few hundred fish each. Coho in the Rogue River have been monitored by seining at Huntly Park in the lower basin since 1979 and by counts at Gold Ray Dam in the upper basin since 1942. Abundance information provided by seining is not precise, but an estimated abundance trend can be made for the entire basin. Only one coho population is located above Gold Ray Dam.

Threats: Natural resource use leading to habitat modification can have significant direct and indirect impacts to salmon populations. Land use activities associated with logging, road construction, urban

development, mining, agriculture, fire, and recreation have significantly altered fish habitat quantity and quality. Associated impacts of these activities include: alteration of streambanks and channel morphology; alteration of ambient stream water temperatures; degradation of water quality; reduction in available food supply; elimination of spawning and rearing habitat; fragmentation of available habitats; elimination of downstream recruitment of spawning gravels and large woody debris; removal of riparian vegetation resulting in increased stream bank erosion; and increased sedimentation input into spawning and rearing areas resulting in the loss of channel complexity, pool habitat, suitable gravel substrate, and large woody debris (NMFS 2008).

Analysis: Natural disturbances and processes, such as fire and floods, can contribute to departures from the habitat standards that may reduce salmon survival (Rhodes et al. 1994). Wildfire can have a significant impact on forest soils and watershed processes. The extent of impacts is generally related to the intensity of the burn. In high intensity fires, soil organic matter that helps hold soils together is consumed, increasing the susceptibility of soils to erosive forces. Depending on the intensity of the fire and the severity of its effects, it can alter watershed soils by consuming the erosion-limiting litter layer at the top of soils and the binding organics within the soil. Condensation of volatized organics on soil surfaces can result in water-repellant soil conditions that lead to extreme runoff (Ice 2003). Perhaps the best documented change in sediment load from a wildfire is the Entiat Experimental Forest where a series of paired watersheds burned during intense fires in 1970 (Larson and Sidle 1980). The first year after the wildfires the annual sediment yields increased 7 to 20 times and in 1972 they experienced catastrophic sediment losses in conjunction with storms and debris torrents (Ice 2003).

Loss of soil structure and infiltration can combine to produce a dramatic acceleration in erosion, sediment transport, and deposition. This sequence can progress to cause in-channel debris torrents, severe channel scour, and deposition, including both fine inorganic and organic material and large wood (Ice 2003). Wildfires that extensively cover a watershed and consume both upland and riparian sites create conditions conducive to severe hydrologic

response. There is ample evidence that intense fires in many different forest types can result in severe impacts to riparian forests, as demonstrated during the 1910 Big Burn (Montana and Idaho); Yellowstone Wildfire (Montana); fires along the North Fork of the Boise River and Rabbit Creek (Idaho); and Tillamook Burn, Silver Fire Complex, Biscuit Fire, and B&B Fire Complex (Ice 2003). Impacts may persist for decades or more, affecting the relative suitability of habitats to various salmonids (Spence et al. 1996).

McGreer (1996) describes studies by Barrett of the 1910 and 1919 double burn in the 83,000 acre Cook Mountain area on the Clearwater National Forest in Idaho. Photographs taken between 1921 and 1941 show "…entire landscapes dominated by shrub fields and standing dead snags, nearly devoid of live mature trees. Of particular interest is a 1941 photograph of the North Fork of the Clearwater River; 21 years following the 1919 reburn of the 1910 fire. Only brush and occasional snags exist near the river, which was almost totally exposed to the sun."

During flood events, land disturbances resulting from fire may contribute sediment directly to streams or exacerbate sedimentation from natural erosive processes (CACSST 1988, CSLC 1993, FEMAT 1993). Judsen and Ritter (1964), the California Department of Water Resources (CDWR 1982), and the California State Lands Commission (CSLC 1993) have stated that northwestern California and southwestern Oregon have some of the most erodable terrain in the world. Several studies have indicated that, in this region, catastrophic erosion and subsequent stream sedimentation (such as during the 1955 and 1964 floods) resulted from areas which had been clear cut or which had roads constructed on unstable soils (Janda et al. 1975, Wahrhaftig 1976, Kelsey 1980, Lisle 1982, Hagans et al. 1986).

Incubating eggs and rearing fry both require channel substrates that are relatively free of fine sediment (Everest et al. 1985, Bjornn and Reiser 1991). Studies have repeatedly documented that increases in fine sediment in streams reduce salmonid survival, production and/or carrying capacity, salmonid populations are typically negatively correlated with the amount of fine sediment in stream substrate (Iwamota et al. 1978, USFS 1983, Alexander and

Hansen 1986, Everest et al. 1987, Chapman and McLeod 1987, Rinne 1990, Hicks et al. 1991, Bjornn and Reiser 1991, Scully and Petrosky 1991, Rich et al. 1992, Rich and Petrosky 1994). The negative correlation of salmonid survival and production to fine sediment has been mainly attributed to reduced survival-to-emergence (STE) and the loss of interstitial rearing habitat in channel substrate.

The rapid mineralization of organic matter, interruption of plant uptake processes, and removal of forest cover due to catastrophic fire can further negatively impact water quality, by increasing stream temperatures and nutrient concentrations (Ice 2003). Fires in upland areas and riparian zones alter vegetation cover, which in turn influences erosion and sediment transport, water infiltration and routing, the quantity of nutrients reaching streams, the amount of shading, and the input of large woody debris into the system (Wissmar et al. 1994). The loss of riparian vegetation can increase exposure to solar radiation, causing streams to warm.

Elevated water temperatures and water diversions have reduced usable rearing habitat in many natal streams. If rearing juveniles can actively avoid adverse temperatures and/or dewatered reaches and crowd into suitable habitats (limited thermal refuges, coldwater tributaries, headwater areas) density-dependent population controls can become prominent (Rhodes et al. 1994). Shifts in competitive advantage for food and space requirements among warm water tolerant and intolerant species or increased predation by warm water species on coldwater species under general increases in water temperatures adversely affect coldwater species by reducing growth rate, survival, and spatial distribution. The magnitude of effects of competition and predation is relative to the population densities of warm water tolerant vs. intolerant components of the community. The low population densities of many salmonid species make these temperature-mediated biological interactions a serious threat (Rhodes et al. 1994). (Ibid)

There are additional Threatened, Endangered, Candidate, or Special Species on the RR-SNF that we have not detailed in these Comments but that are also at risk and will be impacted by unchecked wildfires.

The impacts may be direct and/or indirect. Listed animals may be directly killed by WFU fires, or indirectly impacted through loss of habitat, disruption of prey bases or loss or forage or browse.

> Animals' immediate responses to fire are influenced by fire season, intensity, severity, rate of spread, uniformity, and size. Responses may include injury, mortality, immigration, or emigration. Animals with limited mobility, such as young, are more vulnerable to injury and mortality than mature animals.
>
> The habitat changes caused by fire influence faunal populations and communities much more profoundly than fire itself. Fires often cause a short-term increase in productivity, availability, or nutrient content of forage and browse. These changes can contribute to substantial increases in herbivore populations, but potential increases are moderated by animals' ability to thrive in the altered, often simplified, structure of the postfire environment. …
>
> Ambient temperatures over 145 °F are lethal to small mammals (Howard and others 1959),and it is reasonable to assume the threshold does not differ greatly for large mammals or birds. Most fires thus have the potential to injure or kill fauna, and large, intense fires are certainly dangerous to animals caught in their path (Bendell 1974; Singer and Schullery 1989). Animals with limited mobility living above ground appear to be most vulnerable to firecaused injury and mortality, but occasionally even large mammals are killed by fire. …
>
> Fire may threaten a population that is already small if the species is limited in range and mobility or has specialized reproductive habits (Smith and Fischer 1997).
>
> From Smith, Jane Kapler, ed. 2000. Wildland fire in ecosystems: effects of fire on fauna. Gen. Tech. Rep.RMRS-GTR-42-vol. 1. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 83 p. (see Appendix A).

For instance, woodrats are an important prey item for northern spotted owls. Even low-burning fires may kill woodrats, thus impacting the owls.

> Woodrats are particularly susceptible to fire mortality because of their reluctance to leave their houses even when a fire is actively burning (Simons 1991). Direct fire-caused mortality has been reported for large as well as small mammals, including coyote, white-tailed deer, mule deer, elk, bison, black bear, and moose (French and French 1996; Gasaway and DuBois 1985; Hines 1973; Kramp and others 1983; Oliver and others 1998). Large mammal mortality is most likely when fire fronts are wide and fast moving, fires are actively crowning, and thick ground smoke occurs. Singer and Schullery (1989) report that most of the large animals killed by the Yellowstone fires of 1988 died of smoke inhalation. (Ibid).

The implementation of WFU fires "for resource benefit" does not mean that those fires will in fact benefit resources. Terminology does not change the nature of fire; WFU fires burn just as any other wildland fires, consuming live and dead fuels, green trees, and habitat, and produce smoke and other effects to air and water.

The authors of the 2007 Draft Recovery Plan for the Northern Spotted Owl recognized that wildfires are a threat to spotted owls:

> Recovery Action 25: Within MOCAs [Managed Owl Conservation Areas] in the fire-prone portion of the Western Oregon Cascades (i.e., MOCA #22 and #17), Eastern Cascade provinces of Washington and Oregon, and Klamath provinces of Oregon and California, and California Cascades, manage stands in accordance with the appropriate LRMP standards and guidelines to reduce the risk of fire that causes habitat loss within MOCAs. When implementing actions to reduce fire risk in spotted owl habitat in MOCAs, evaluate fire risk and spotted owl habitat value at the landscape scale. Identify high-value spotted owl habitat that has a high risk of loss due to wildfire. Activities should focus on the reduction of ladder fuels and fuel loading, within targets established by underlying LRMPs or LSRAs, where available and applicable.

> From U.S. Fish and Wildlife Service. 2007. 2007 Draft Recovery Plan for the Northern Spotted Owl, *Strix occidentalis caurina*: Merged Options 1 and 2. Portland, Oregon. 170 pp. (see Appendix A).

However, they also included the following recommendation:

> Recovery Action 31: Outside of the MOCAs in the fire-prone provinces (see Recovery Action 25), based on plant association group and fire regime types, strategically (geographically and topographically) modify fuels and stand structure to assist in the suppression of wildfires to decrease the risk of wildfire spread into the MOCAs. **Wildfire does not include wildland fires for resource benefit (WFRB)**. (Ibid). (emphasis added).

Wildfires are wildfires, regardless of how they are designated. The effects of wildfires are not changed in any way because they are called "wildland fires for resource benefit (WFRB)." Moreover, the process of designating WFRBs (another name for WFU fires) occurs in the hours or minutes after a lightning-ignited fire is detected. There is no opportunity to evaluate the probable effects with any degree of certainty, study, or peer review. When a fire is designated WFU, there is no way to predict what areas that fire will or will not burn, or with what severity, or what the final impacts will be.

Once designated, WFU fires are monitored, not contained, controlled, or extinguished. They are "watched" as the March 5, 2008 Notice indicated. And as they grow, WFU fires become ever more difficult to contain, control, and extinguish. Wildfires are chain-reaction phenomena; they spread like wildfire. Their impact to wildlife also spreads and intensifies.

> Your NSO [northern spotted owl] review also reported that wildfire was a serious threat to the recovery of the NSO. We agree with your assessment and feel you have grossly under estimated the fire risk current vegetation represents and the effect of the current draft NSO guidelines plus other government policy and regulations.
>
> [Fires] can burn for days before resources are available. As a result the fires get large and the damaged habitat can be thousands of acres per Managed Owl Conservation Area(MOCA). This happens every year on multiple fires. The Biscuit Fire is a more extreme example so far. Aerial Resources were limiting on Timbered Rock

> Fire as well. At night they would get the fire under control, then the fire would quickly over run ground crews the next afternoon. Had aerial resources been available, the spread could have been stopped or at least slowed down till ground crews could widen the buffers.
>
> ... MOCA's will not be more resilient to fire under your recovery plan. If bold actions are not taken around the MOCA's, any large fire near MOCA's will likely damage the MOCA's and it will be a very long time till the damaged MOCA is functioning as NSO habitat.
>
> From Mckinley, Russ. 2007. Comments on the 2007 Draft Northern Spotted Owl Draft Recovery Plan. Boise Cascade Company, Medford, Oregon, June 1, 2007.

The addition of WFU designation and implementation to the RR-SNF LRMP will create predictable and preventable damaging impacts to wildlife. Those predictable and preventable significant effects must be evaluated through the NEPA process of drafting an Environmental Impact Statement, together with all the public involvement the EIS process entails. The RR-SNF has the legal responsibility to give the public the opportunity to evaluate and comment upon WFU on the RR-SNF.

Fire effects on the Deschutes National Forest

VII. Probable Significant Impacts/Effects on Historic/Cultural Resources and Values

The RR-SNF proposed amendments to their LRMP will engender WFU fires in unknown places at unknown times. Those fires will significantly impact historic and traditional Native American cultural sites within the boundaries of the RR-SNF. Therefore, in addition to compliance with NEPA and the ESA, the USFS must comply with the requirements of the National Historic Preservation Act (NHPA).

> Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Council [the Advisory Council on Historic Preservation (ACHP)] a reasonable opportunity to comment on such undertakings. The procedures in this part define how Federal agencies meet these statutory responsibilities. The section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties. …
>
> (c) Timing. The agency official must complete the section 106 process "prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license." This does not prohibit agency official from conducting or authorizing nondestructive project planning activities before completing compliance with section 106, provided that such actions do not restrict the subsequent consideration of alternatives to avoid, minimize or mitigate the undertaking's adverse effects on historic properties. The agency official shall ensure that the section 106 process is initiated early in the undertaking's planning, so that a broad range of alternatives may be considered during the planning process for the undertaking. …

> The agency official should plan consultations appropriate to the scale of the undertaking and the scope of Federal involvement and coordinated with other requirements of other statutes, as applicable, such as the National Environmental Policy Act, the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, the Archeological Resources Protection Act and agency-specific legislation. The Council encourages the agency official to use to the extent possible existing agency procedures and mechanisms to fulfill the consultation requirements of this part. …
>
> From 36 CFR PART 800 -- PROTECTION OF HISTORIC PROPERTIES (incorporating amendments effective August 5, 2004) Section 106, National Historic Preservation Act. (see Appendix A)

That the RR-SNF contains historic and traditional Native American cultural sites in an undisputed, well-known fact. Among the groups in residence at Contact were the Klickitat, Dakubeted, Chetco, Taltucuntude, Chasta Costa, Tututni, Gusladada, Sixes, Karuk, Shasta, Cow Creek, Takelma, Yurok, and Klamath. (Zybach, Bob. 2007. Precontact History and Cultural Legacy of Forest Research Sites in Southwestern Oregon. Oregon State University and USDA Bureau of Land Management Internet Report) (see Appendix A).

Native Americans utilized specific sites in the RR-SNF for acorn orchards, berry patches, camas fields, home sites, religious sites, gathering and collecting sites, hunting copses, and fishing sites. These were interconnected by a network of trail systems that date back many hundreds and even thousands of years (Ibid).

Using a sophisticated computer system and software (Idrisi GIS from Clark Labs, 2002), Dr. Ken Carloni modeled the most ergonomic (not too steep) and least cost (shortest) travel routes between ten known archaeological sites on the adjacent Umpqua National Forest. The model was field-validated, leading to on-the-ground discovery of the ancient trails and additional sites, including an ancient summer village.

The trail and homesite system in the Little River watershed is at least 2000 years old, and was used by Native Americans of the Yoncalla, Upper

Umpqua, Cow Creek, and Molalla Tribes. Similar trail systems and Native American use sites occur in the RR-SNF (Zybach 2007).

Strong historical development indications seen in modern vegetation species conditions and structures, together with archaeological artifacts, yield evidence of the validity and veracity of Dr. Carloni's computer-predicted trail and campsite system. Among the evidence is the presence of ancient meadows and remnant open, uneven-aged, park-like forests along the travel routes. Both types of vegetation are thought to have been maintained by anthropogenic fire (Indian burning).

In the same paper Dr. Carloni also reported strong evidence against climate as a controller of fire frequency prior to 1850. He compared precipitation history (derived from previous tree ring studies) and fire history (also from previous studies) with the ages of existing trees to see which factors (climate or fires) influenced tree recruitment, and whether climate history and fire history were correlated. They were not, according to his research:

> Fire scar frequencies from 1590 to 1820 show no relationship to precipitation. However, from 1850 to 1950 a significant negative correlation ($p = 0.005$) exists between climate and scar frequency. These results suggest that in post-aboriginal times [but not earlier] high rainfall years are associated with fewer fires than low rainfall years …
>
> Tree recruitment from 1590 to 1820 is [also] uncorrelated with yearly precipitation … [and] no correlation is evident between fire scar frequency and tree recruitment in the years from 1590 to 1820. From 1850 to 1939, however, dramatic positive correlations exist between fire scar frequencies and tree origins … This suggests that the recently observed short pulses of even-aged recruitment following wildfires (Pickett and White, 1985; Oliver and Larson, 1990; Bonnicksen, 2000) may be more of a post-aboriginal phenomenon.
>
> From Carloni, Ken. The Ecological Legacy of Indian Burning Practices in Southwestern Oregon. 2005. Doctoral dissertation, Oregon State Univ. (see Appendix A).

Instead, Dr. Carloni reported, Native Americans were a prime factor in ancient fire ignition. The landscapes encountered by Lewis and Clark were not pristine, untrammeled wilderness. Dr. Carloni summarizes:

> Intentionally or not, humans have been initiators of broadcast burning in nearly every habitat they have encountered worldwide (Pyne, 2001), and there is a long local history of burning for agro-ecological purposes in southwestern Oregon … A growing body of evidence documents the influence of Native Americans on their landscapes through the use of systematic landscape fire (Pyne, 1982; Boyd, 1986; Lewis, 1990; Robbins, 1997, LaLande and Pullen, 1999; Lewis and Fergeson, 1999; Williams, 2001; and others) …
>
> Pacific Northwest native societies were deeply integrated into their landscapes, and used a wide variety of materials collected over extensive areas (Lewis, 1993; Boyd, 1986; Beckham and Minor, 1992; Blackburn and Anderson, 1993; LaLande, 1995; Williams, 2001). But local material cultures persist only to the extent that key species and habitats on which they depend remain abundant, productive and resilient (Perlin, 1989; Diamond, 2005). Archaeological evidence from the Umpqua indicates that material cultures remained relatively unchanged for approximately 2000 years before contact (Isaac Barner, pers. comm., 2000) suggesting that the stewardship practices of recent peoples were sustainable …
>
> Historic Indian-set fires tended toward higher frequencies and lower intensities with regular intervals separating them relative to lightning sparked fires (Boyd, 1999; Lewis and Fergeson, 1999; Williams, 2001). (Ibid).

It was this recognition of the impacts on the landscape, of frequent, regular fires set by the ancient residents that led Dr. Carloni to his discoveries.

> Given the numerous historical reports of aboriginal burning in and near the Umpqua Basin, it is highly likely that the Indians of Little River were using landscape fire systematically for agro-ecological purposes as well. But if Indians were systematically burning forested landscapes, what ecological signals might we expect to observe?

> At the landscape level, we should find historic meadows, savannas and parklands located near archaeological sites and near the historic trails connecting them. It is reasonable to surmise that Indians would burn more extensively and more often around the areas where they spent the most time …
>
> The pattern of the modeled pathways fits the corridor, yard and mosaic pattern common to indigenous landscapes in many parts of the world (Lewis and Ferguson, 1999). It is also reflected in early sketches (see 2.16) and in the following quote from S.C. Bartrum, first Umpqua National Forest Supervisor, writing about conditions in 1899 on what is now the Umpqua National Forest: "There were no trails into the interior of the Reserve, only a very few short cattle trails close to the Reserve boundary line. There were of course the old Indian trails, indistinct and impassable in many places, routed to reach the apex of all high points, presumably for observation purposes regardless of location and grade, with grades varying from level to 35 or 40 percent, and some too steep for horse travel." (Ibid).

Similarly, it is highly likely that the Indians of the areas now within the RR-SNF used landscape fire systematically for agro-ecological purposes such as the creation and maintenance of berry patches, camas meadows, and Madia fields (Zybach 2002,, 2003, 2007). And similarly, landforms such as historic meadows, savannas, and parklands are historic and traditional Native American cultural sites. Medicine wheels and other Native American religious sites may be found within the RR-SNF (pers. comm. J. Neitling). Indeed, many of the old-growth trees on the RR-SNF show signs of Native American use as hearth trees and bark-peeled trees (Dubrasich and Tappeiner 1995, Keane et al 2006).

The historical (actual) forest development pathways on the RR-SNF were mitigated by human beings, and evidence of this can still be found in the field (Dubrasich, Tappeiner 1995). Dr. Carloni noted that many other researchers have also found strong evidence of human influence over forest development:

> Early descriptions of much of the forest as being in an open, park-like state (LaLande and Pullen, 1999) are consistent with the recent findings for stands in the Oregon Cascades and Coast Range

> (Tappeiner et al. 1997; Poage, 2000; Sensenig, 2002). Tappeiner et al. (1997) found early growth rates of old-growth trees to be more typical of trees grown at low stocking densities (100-120 trees/ha) than of trees currently growing in young, un-thinned stands (often >500 trees/ha). They suggest that periodic, low intensity fire was likely responsible for reducing stocking levels rather than self-thinning.
>
> Vestiges of these open stands and their connections to native management are often found near sites with documented aboriginal activity and are evidenced by (a) very large, old "relic" trees with highly branched "open grown" architecture imbedded in a matrix of substantially younger, even-aged cohorts (Fig 2.12), (b) annual rings from relic trees showing suppressed growth only as far back as the origin of the young even-aged cohort in which they are imbedded (pers. obs.), and (c) origin dates of the even-aged in-growth cohort that commonly post-date the period of Indian occupancy. (Ibid).

Dr. Carloni also noted that in the absence of anthropogenic fire, the vegetation has changed:

> A shift in the proportions of tree species across the landscape also suggests a change in fire intensity … and reveals a trend toward recruitment of more fire intolerant "avoider" species (Agee, 1993) (e.g. hemlock, true firs) in the 1820-1990 time span compared to the 996-1820 period. This analysis suggests a change from a high frequency, low intensity fire regime that favored "resistor" species (e.g. Douglas-fir and ponderosa pine) to one that now favors fire avoiders …
>
> While post-clearcut plantations are even-aged (and often single species), native stands in southwestern Oregon typically have a range of sizes and ages distributions … When an even-aged stand is defined as one in which 80% of the trees germinate within 3 decades, only 11 of the 180 stands in these two datasets are even-aged (6.1%) …
>
> While the age and spatial structure (and therefore fuel structure) of young stands in southwestern Oregon increases their risk of high

> severity fire, mature stands are also at increasing risk. Because of their open understories and lack of contiguous crowns, historic old-growth forests would have been highly resistant to high mortality crown fires. But during the last century and a half, many late seral stands have become thickly in-grown with a younger, shade intolerant conifer seedling cohort dating from the late 1800s through the present. (Carloni 2005).

The presence of uneven-aged or multicohort old-growth stands on the RR-SNF constitutes strong evidence that such stands were shaped by frequent, regular, seasonal, low-intensity fire set by the human residents of those landscapes for thousands of years. The old-growth trees are the result of human manipulation of the landscape.

The old-growth trees on the RR-SNF are in fact artifacts of the human occupation and use of Southwest Oregon for thousands of years.

Finally, Dr. Carloni provided some sage advice to land managers:

> Evidence that the indigenous people had an active hand in influencing the fire regimes that shaped their landscapes has important implications for current managers. Rather than a conversion of unmanaged land to managed lands, the changes witnessed in the last 150 years are more indicative of a change from one management regime to another, with a brief period of passive management in the late 1800s and early 1900s. The message to land stewards is clear: taking no action will not tend to return the landscape to aboriginal conditions …
>
> Landscape fires in southwestern Oregon have gone from (1) being regular, frequent, and of low intensity, to (2) being irregular, infrequent, and of high intensity … Increases in the time between fires and the intensity of the blaze have apparently also been accompanied by an increase in the size of fires …
>
> While it is no longer possible to "restore" the forest to aboriginal conditions, it is possible to emulate indigenous ecosystem dynamics. A return to a "corridor, yard and mosaic" pattern is still possible in a warming climate. While a return to native dynamics for its own sake is not a compelling reason to change current

> management, there are some important ecological and social reasons for doing so …
>
> Since material cultures often reflect their landscapes (e.g. bedrock mortars in acorn country; woven nets, weirs, and traps where salmon run), stable human cultures infer stable landscape resources. And since local material culture was stable for at least 2000 years in southwestern Oregon (Beckham and Minor, 1992), then the pre-Euro-American socioecological system represents the last known stable state …
>
> If we desire a predictable suite of ecosystem goods and services that are comparable (but not necessarily equivalent) to those available to native managers, then historic ranges of ecosystem conditions represent reasonable management sideboards. Given that the historic landscape of the Little River watershed is to a great degree the product of active aboriginal management, it will take active management on the part of land stewards to recreate and maintain analogous conditions. (Ibid).

And some sage advice to researchers, too:

> The history of a landscape is intertwined with the history of its peoples; one needs to know both before one can really understand either. (Ibid).

Dr. Thomas J. Connolly, Ph.D. repeats much the same advice:

> I am struck by what appears to me as an intellectual bias; derived not from intent but from the inevitable inertia developed within a particular field of study. For example, fire and vegetation histories are freely considered in terms of possible correlations to lightning strike history, solar flare activity, and other physical phenomena, while the exceptionally well-documented human influences on fire history are often regarded as too speculative for serious consideration. Our perceptions are limited by our understanding; there is much to be gained by developing a rich critical understanding and appreciation of the tools, models, and theories of other disciplines.

> From Anthropological and Archaeological Perspectives on Native Fire Management of the Willamette Valley. 2000. Thomas J. Connolly, Museum of Anthropology, University of Oregon Paper presented at the 81st Annual Meeting of the American Association for the Advancement of Science, Pacific Division (Symposium: Fire History in the Pacific Northwest: Human and Climatic Influences), June 11-14, 2000, Ashland, Oregon. (see Appendix A).

Native Americans utilized specific sites and left ecological conditions altered from what might be thought of as "natural." The alterations were not haphazard; instead they were well-considered and practiced modifications based on traditional ecological knowledge (TEK).

From Dr. Frank Lake, regional expert on historic Native American uses of the land and the cultural landscapes that resulted:

> The environmental condition of watersheds found in Northwestern California and Southwestern Oregon have been greatly altered over the last 200 years by anthropogenic, climatic, and biophysical influences. Changes in land management practices from that of indigenous peoples to private and public land managers modified culturally significant habitats, water quality, fish and wildlife populations, and the composition and structure of habitats of high tribal value. Additional landscape effects have resulted from changes in the use of fire, mining, American settlement, use of forests, shrubs and grasslands, logging, road construction, agriculture, and dam construction. …
>
> The landscape patterns of Indian burning are a cultural legacy (Kimmerer and Lake 2001). Changes resulting from the cessation of Indian land-use practices to that under the governance and management of Euro-Americans (Johnson 1999) have resulted in the modification of ecological processes (fire, nutrient cycling, and hydrology). For example, Kimmerer and Lake (2001) state: "Every ecosystem in North America has been affected in some way by a fire regime . . . manipulated by indigenous people. Much forest science, including ecological classifications of vegetation types, arose from observation of forest that were essentially in transition from conditions of indigenous fire management to post-colonial fire suppression. Our understanding of forest processes may thus be

> based on an anomalous, transitional landscape" (Kimmerer and Lake 2001:37).
>
> The landscape has become more prone to catastrophic wildfire as a result of the change in the occurrence and frequency of burning (Kimmerer and Lake 2001, Taylor and Skinner 2003). Patterns of Native American burning and wildfire include similarities and differences in sources and locations of ignition; locations and extent of fire boundaries; timing, frequency, seasonality, intensity, and specificity of occurrence of fires; and effects of fire on local human and wildlife populations (Walstad et al. 1990, Agee 1993). Taylor and Skinner (2003) in their report about research on historical fire regimes and forest structure in the Klamath Mountains acknowledge the change from frequent low to moderate severity fires to increased high severity fires. These authors conclude after analysis of fire scars of the fire record of 1628-1995 that there was an average period of two years between fires. Characterization position of fire scars relative to growth rings indicates that 76.2% of the fires burned mainly between mid-summer through fall, thus nearly a fourth of the fires occurred during other seasons. **Late winter-spring (dormant) season of burning is not characteristic of lightning ignition**.
>
> From Frank K. Lake. Traditional Ecological Knowledge to Develop and Maintain Fire Regimes in Northwestern California, Klamath-Siskiyou Bioregion: Management and Restoration of Culturally Significant Habitats 2005. Doctoral dissertation, Oregon State Univ. (see Appendix A). Emphasis added.

Allowing WFU fires ignited by lightning to burn in mid-summer in areas of RR-SNF thus alters the traditional, anthropogenic vegetation patterns established by Native Americans. The culturally modified landscape will be lost as a result. That is a tragic consequence that will ensue if the proposed amendments to the RR-SNF LRMP are adopted. It is also a violation of the National Historic Preservation Act (NHPA).

Lightning fires did not shape the forests and landscapes of the RR-SNF. Anthropogenic (human-set) fires did. From a recent report of a study comparing lightning-ignition frequency to anthropogenic fire frequency by Dr. Charles Kay:

> It is now widely acknowledged that frequent, low-intensity fires once structured many plant communities. Despite an abundance of ethnographic evidence, however, as well as a growing body of ecological data, many professionals still tend to minimize the importance of aboriginal burning compared to that of lightning-caused fires.
>
> Based on fire occurrence data (1970–2002) provided by the National Interagency Fire Center, I calculated the number of lightning fires/million acres (400,000 ha) per year for every national forest in the United States. Those values range from a low of <1 lightning-caused fire/400,000 ha per year for eastern deciduous forests, to a high of 158 lightning-caused fires/400,000 ha per year in western pine forests. Those data can then be compared with potential aboriginal ignition rates based on estimates of native populations and the number of fires set by each individual per year. Using the lowest published estimate of native people in the United States and Canada prior to European influences (2 million) and assuming that each individual started only 1 fire per year—potential aboriginal ignition rates were 2.7–350 times greater than current lightning ignition rates. Using more realistic estimates of native populations, as well as the number of fires each person started per year, potential aboriginal ignition rates were 270–35,000 times greater than known lightning ignition rates. Thus, lightning-caused fires may have been largely irrelevant for at least the last 10,000 y. Instead, the dominant ecological force likely has been aboriginal burning.
>
> From Kay, C.E. 2007. Are lightning fires unnatural? A comparison of aboriginal and lightning ignition rates in the United States. Pages 16–28 in R.E. Masters and K.E.M. Galley (eds.). Proceedings of the 23rd Tall Timbers Fire Ecology Conference: Fire in Grassland and Shrubland Ecosystems. Tall Timbers Research Station, Tallahassee, FL. (see Appendix A).

Numerous anthropologists, historic landscape geographers, forest historians, and forest scientists have recognized that anthropogenic fire was the principal disturbance agent across the entirety of North America for thousands of years. Another example:

Abstract: Indigenous and traditional peoples worldwide have used fire to manipulate their environment for thousands of years. These longstanding practices still continue and have considerable relevance for today's land managers. This discussion explores the value of documenting and understanding historic and contemporary fire use attitudes and practices of the varied cultural/ethnic groups that interact with land managers concerning fire and fuels management in the American Southwest. Current research with historic records and present-day communities is reviewed.

From Raisha, Carol, Armando Gonza´ lez-Caba´, and Carol J. Condie. The importance of traditional fire use and management practices for contemporary land managers in the American Southwest. 2005. Environmental Hazards 6 (2005) 115–122. (see Appendix A).

The fact of historic anthropogenic influences on our landscapes may not be widely understood by land managers or society at large, yet numerous experts have grasped the importance of anthropogenic fire.

> The last few decades, however, have seen significant changes in the ecological basis for defining nature, as well as wilderness "untrammeled by Man" (Botkin 1990). Where for almost a century, ecologists and environmentalists have viewed ecosystems as in perfect harmony with climax vegetation everywhere before the European settlers came to North America: "Early ecologists recognized the presence of disturbance but focused on the principle that the land continued to move toward a stable or equilibrium condition. Through the years, however, scientists have acknowledged that equilibrium conditions are largely the exception and disturbance is generally the rule. Natural forces have affected and defined landscapes throughout time (Federal Wildland Policy 1995: 1).
>
> Human activities have also influenced and changed ecosystems. Researchers today are tending to believe that the concepts of "nature," "natural," and "wilderness" are human constructs and that people have been part of ecosystems since before recorded time. People, in this contemporary notion, are part of ecosystems, have

evolved with ecosystems, have used parts and pieces of ecosystems for survival, and have changed portions of ecosystems for their needs:

No forests [shrublands or grasslands] are unaffected; humans have been a part of the ecosystem over the past ten centuries of major climatic change, so that all forests have developed under some kind of human influence, although its intensity has varied greatly over time and space. This influence must be accounted for as an important part of any study of forest structure and dynamics (Russell 1997: 129).

By the time European explorers, fur traders, and settlers arrived in many parts of North America, millions of acres of "natural" landscapes or "wilderness" were already manipulated and maintained for human use, although the early observers did not recognize the signs (e.g., Blackburn and Anderson 1993; Botkin 1992; Denevan 1992; Doolittle 1992; Lewis 1973 and 1982; Pyne 1995; Shrader-Frechette and McCoy 1995; Stevens 1860; Stewart 1954, 1955, and 1963; Whitney 1994; and Wilson 1992).

Early explorers and fur trappers often observed huge burned over or cleared areas with many dead trees "littering" the landscape, without knowledge of whether the fires were natural or Indian caused. Written accounts by settlers remain incomplete, although many noted that there was evidence of burned or scorched trees and open prairies or savannas with tall grasses in every river basin (e.g., Lorimer 1993; McClain and Elzinga 1994; Russell 1983; Stevens 1860; and Whitney 1994). The abundance of rich prairie land ("ready for the plow" without having to clear the land) was one of the primary reasons for settlers to head west to the Oregon Territory (including the current states of Oregon, Washington, and parts of Idaho) and California, and eventually to "back-fill" the Great Plains. Dennis Martinez noted that:

The North America that European peoples invaded and settled was not a “virgin” land undisturbed by people. There was no “pristine wilderness” here. Prairie and forest were to a large extent the creation of indigenous peoples. The main justification by Europeans

> *for genocide–that land was not used to its productive potential by its Native inhabitants–was false* (Martinez 1998: 13).
>
> From Williams, Gerald W. 2002. "Aboriginal Use of Fire: Are There Any 'Natural' Plant Communities?" IN: Wilderness and Political Ecology: Aboriginal Influences and the Original State of Nature. Charles E. Kay and Randy T. Simmons (eds.) The University of Utah Press, Salt Lake City, UT: 179-214. (see Appendix A).

Patch dynamics and natural mixed severity fire regimes are notions frequently heard these days, but they are little more than eco-babble. If the Chetco Nation landscape was subject to infrequent, lightning-ignited stand replacing fires since the Pleistocene, where did the uneven-aged, older cohort trees come from? How did open, park-like stands and savannas arise? Stand-replacement fires lead to even-aged thickets, very different from the historical forest conditions on the RR-SNF.

The Biscuit Fire killed many tens of thousands of acres of old growth trees. Entire Late Successional Reserves were destroyed. The former forest contained Douglas-firs, sugar pines, Brewers spruce, incense cedars, and ponderosa pines from 200 to 600 years old. How did those old trees get there in the first place? It was not from stand-replacing, mid-summer, lightning-ignited fires.

There have been human beings living in Southwest Oregon since the Pleistocene. Those people set fires every year for millennia. They did not fight fires, or prevent fires, instead they set them. Human beings torched most of the West every year, year after year, for at least 10,000 years, according to the best available science (Bonnicksen 2000, Stewart 2002, Pyne 1995, 2004, Carloni 2003, Zybach 2007, and many others). The ancient human mediation and human impact was not "natural" in any sense of that word. Thousands of years of annual fires induced a savanna/woodland, essentially a prairie with scattered trees. It was the elimination of aboriginal fires, not modern fire suppression, which allowed an incendiary thicket of young conifers to arise under the older cohorts.

Modern fires in dense thickets are stand-replacing. That is, they kill all the trees. Historic fires were far different. The ancient anthropogenic fires were light-burning, low-intensity fires that protected the larger trees and allowed individual trees to grow to very old ages.

The historic development pathways that led to the old-growth trees extant in the RR-SNF today were human-mediated. Abandoning the old-growth of today to stand-replacing fires is an alteration of the historical stand development pathways and as a result will not lead to old-growth stand development in the future (Dubrasich and Tappeiner 1995, Poage 2001).

The multi-cohort stand structure found on the RR-SNF is not limited to SW Oregon. From Flagstaff to Wenatchee, from the Oregon coast to Montana, multi-cohort stands are the norm in un-logged forests. Such forests have complex canopy structures, as well. Complex multicohort canopies are preferred habitat for many rare species, such as spotted owls (Dubrasich and Tappeiner 1995, Dubrasich et al 1997).

To abandon such forests to catastrophic fires is to destroy the existing complex and historical structures and replace them with fire-type chaparral. Even without fire the older cohorts are dying from moisture stress caused by the dense competition from the younger cohorts (Johnson and Franklin 2007). It may seem counter-intuitive, but our forests are getting younger every year as the older cohort, heritage trees succumb to insects and diseases (Dubrasich and Tappeiner 1995). Even without timber harvest spotted owl habitat is declining, as is the owl population. In the fourteen years since inception of the Northwest Forest Plan spotted owls populations have fallen by one third to one half (US Fish and Wildlife Service, Draft Recovery Plan for the Northern Spotted Owl, 2007, see Appendix A).

We have to understand that doing nothing is not going to protect or perpetuate old growth forests. Nor will allowing catastrophic fires to burn unchecked in fuel-laden forests save the old trees. Wilderness is a political designation, not an ecological condition. We have to come to grips with the reality of the "natural" history of our forests and the historical landscape development pathways that gave rise to our modern forests. We need to examine the forest dynamics that are occurring now, and decide what kind of forests we want our grandchildren to experience. If old growth, multi-cohort, spotted owl habitat forests are the desired future condition, then we have to manage stocking and fuels, and reintroduce frequent, non-catastrophic, low-intensity fire to achieve that condition. Otherwise we will continue to convert ancient forests to chaparral.

> Ecosystem management cannot succeed in promoting stewardship if it fails to recognize that humans are an integral and natural part

of the North American landscape. Ecosystem management has the potential for widening the gap between people and nature. Subdividing landscapes into ecosystems could create the false impression that ecosystems are real things. This illusion becomes more dangerous when people think that they live on the outside and nature exists on the inside of ecosystems.

Biologists developed the ecosystem model to describe physical, chemical, and biological interactions at a particular time within an arbitrarily defined volume of space (Lindeman 1942). They usually exclude people because the boundaries are sometimes drawn around small parts of the landscape, such as watersheds. Because management decisions come from outside, ecosystems appear as separate entities. Therefore, ecosystem management may reinforce the myth that nature exists apart from people if it does not explicitly state otherwise.

A corollary myth assumes that climate dictated the structure and function of ecosystems. On the contrary, climate provides either a favorable or unfavorable physical environment for certain plants to grow. It does not dictate which plants grow in that environment. Similarly, climate does not dictate human behavior. It only sets temporary limits. Human innovations in technique and technology can and do push back those limits. Therefore, climate is not the sole determinant nor even in many cases the dominate force in guiding the development of particular ecosystems. American Indians selectively hunted, gathered plants, and fired habitats in North America for at least 12,000 years. Unquestionably, humans played an important role in shaping North America's forest ecosystems.

Interpretations of the impacts made by indigenous people in North America are largely limited to what can be postulated in terms of paleontological, anthropological, and archaeological evidence. None of these approaches have been completely persuasive to skeptics who require more substantial and corroborative evidence before accepting the significance of the environmental changes induced over 12,000 or more years by hunting-gathering societies and, for the last 2,000 years, by indigenous farmers as well. Taken together, however, the evidence shows a clear and convincing

pattern of indigenous human influences on prehistoric, historic, and contemporary ecosystems.

In this chapter, we argue that the success of ecosystem management depends on understanding reciprocal relationships between native forests and indigenous peoples. Consequently, we concentrate on the development of forests prior to European settlement. Particular emphasis is placed on American Indians consciously and actively managing landscapes through the selective killing of animals, the cultivation of preferred plants, and the widespread manipulation of habitats with fire.

We also concentrate on what indigenous people did to survive and prosper. We believe it would be inappropriate to use today's ideas and values as standards for judging their actions. Therefore, our chapter focuses on the management practices of indigenous people that succeeded for them and maybe useful to us (Rides at the Door and Montagne 1996).

Finally, we argue that local knowledge and practices that followed European settlement provide analogues for reconstructing pre-European settlement conditions as well as for suggesting answers to contemporary management problems. Equally important, we believe that ecosystem management cannot succeed unless current human residents of forests become intimately involved in decisions that affect their lives and surroundings.

The romantic 20th century idea of a natural area or wilderness as a place without human influence became meaningless in North America when Paleoindians pushed southward between the continental ice sheets and perhaps along the Northwest coast 12,000 or more years ago. They found two unexploited continents with bountiful game. Their populations grew and by 11,200 years ago there may have been millions of Paleoindians living from coast to coast in both North and South America (Fiedel 1987, Roosevelt et al. 1996).

From Thomas M. Bonnicksen, M. Kat Anderson, Henry T. Lewis, Charles E. Kay, and Ruthann Knudson. 1999. Native American influences on the development of forest ecosystems. In: Szaro, R.

C.; Johnson, N. C.; Sexton, W. T.; Malk, A. J., eds. Ecological stewardship: A common reference for ecosystem management. Vol. 2. Oxford, UK: Elsevier Science Ltd: 439-470. (see Appendix A)

The best available science has found that forest structures are human- induced via anthropogenic fire. Open, park-like stands were the historical norm.

> Abstract: Diameter growth and age data collected from stumps of 505 recently cut old-growth Douglas-fir (Pseudotsuga menziesii (Mirb.) Franco) trees at 28 sample locations in western Oregon (U.S.A.) indicated that rapid early and sustained growth of old Douglas-fir trees were extremely important in terms of attaining large diameters at ages 100–300 years. The diameters of the trees at ages 100–300 years (D100–D300) were strongly, positively, and linearly related to their diameters and basal area growth rates at age 50 years. Average periodic basal area increments (PAIBA) of all trees increased for the first 30–40 years and then plateaued, remaining relatively high and constant from age 50 to 300 years. Average PAIBA of the largest trees at ages 100–300 years were significantly greater by age 20 years than were those of smaller trees at ages 100–300 years. The site factors province, site class, slope, aspect, elevation, and establishment year accounted for little of the variation observed in basal area growth at age 50 years and D100–D300. The mean age range for old-growth Douglas-fir at the sample locations was wide (174 years). **The hypothesis that large-diameter old-growth Douglas-fir developed at low stand densities was supported by these observations.**
>
> From Nathan J. Poage and John C. Tappeiner, II Long-term patterns of diameter and basal area growth of old-growth Douglas-fir trees in western Oregon. Can. J. For. Res. Vol. 32, 2002 (see Appendix A) emphasis added.

These can only have been the product of frequent, regular, seasonal anthropogenic fire. Further, only under anthropogenic fire regimes do individual trees survive to great ages.

Irregular lightning fire leaves hiatuses during which thickets of young trees invade. When the infrequent lightning fire finally occurs, all the trees die in

the ensuing conflagration. Depending on lightning fire alone as the principal disturbance agent will lead to short-lived thickets of trees, not old-growth.

The WFU fires proposed by the RR-SNF will alter the historical anthropogenic fire regimes and destroy the living old-growth trees. And they will prevent future old-growth from developing because the historical forest development pathways will have been altered.

Allowing lightning fires to burn unchecked in unprepared forests across the historic, cultural landscape that is the RR-SNF is not stewardship. Stewardship is the active participation of human beings in caring for our natural world. The motto of the US Forest Service is "Caring for the Land, Serving the People." Caring for the land is different than abandoning it to lightning fires. Caring for the land means tending it.

> The word tending, as in Tending the Wild, is meant to encapsulate the essence of the relationship that the indigenous people of California had with the natural world in pre-Columbian times. It also suggests the timeless wisdom inherent in this relationship, wisdom that we sorely need today. Tend means "to have the care of; watch over; look after." Thus the word connotes a relationship of stewardship, involvement, and caring very different from the dualistic, exploit-it-or-leave-it-alone relationship with nature characteristic of Western Society...
>
> Now that the book [Tending the Wild] is being published, it is my fervent hope that certain benefits will be realized. First, I hope that greater understanding of the stewardship legacy left us by California Indians will foster a paradigm shift in our thinking about the state's past — particularly with regard to wildland fire — and the necessity of prescribed burning in the management of the state's natural resources today. Second, increased appreciation for the diverse indigenous cultures of California could lead to collaborative projects that reestablish access to the land and maintain culturally significant plant resources for the perpetuation of native traditions [and landscapes]. Third, experiments and cross-disciplinary studies to … assess the degree to which particular ecosystems and plant species are dependent on indigenous disturbance regimes could be launched. Fourth I would like to encourage people to pursue studies in natural history and

ethnobiology, both of which emphasize tactile contact with and direct learning from nature and indigenous peoples. And fifth, we desperately need to foster a new vision of human-nature relationships and the place of humans in the natural world...

By the eighteenth century, wilderness areas in Europe had come to be viewed as places for self-renewal, where one could escape the hectic, burdensome life of the cities for the tranquility and purity of nature. The splendor and nobility of nature had become linked with God's creative energies and omnipotence. Coupled with this favorable view of wilderness was the idea of the noble savage—a kind of wild man uncorrupted by the vices of civilized life—who lived a simple, harmonious, unfettered existence in nature...

Many of the late-nineteenth-century Americans... including John Muir, were strongly influenced by Romanticism and its proponents. Muir and those with similar views responded to the destruction and exploitation of California's natural resources with a preservationist ethic that valued nature above all else but which defined nature as that which was free of human influence...

Muir was clearly troubled by the Indians he encountered, unable to fit them into his worldview...

Muir's view of California nature was a necessary counterweight to the view that had prevailed before—that nature was there to be used, exploited, and commodified—but it left us with a schizophrenic approach to the natural world: humans either conquer nature and destroy its integrity, or they visit it as an outsider, idealizing its beauty and largely leaving it alone. These seemingly contradictory attitudes—to idealize nature or commodify it—are really two sides of the same coin, what the restoration ecologist William Jordan terms the "coin of alienation"...

According to the Wilderness Act of 1964 (Public Law 88-577), wilderness is "an area where the earth and [its] community of life are untrammeled by man, where man himself is a visitor who does not remain, An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or

> human habitation, which is protected and managed so as to preserve its natural conditions and which … generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."
>
> [Yet] much of what we consider wilderness today was in fact shaped by Indian burning, harvesting, tilling, pruning, sowing, and tending…
>
> From Anderson, M. Kat. Tending the Wild: Native American Knowledge and the Management of California's Natural Resources. 2005. Univ. Calif. Press.(see Appendix A).

Native American voices must be heard. Ignoring or denying historical anthropogenic influences violates the law, and it also will destroy the very values that society holds most dear in regard to our forests.

Native American land managers are well aware of their heritage. Besides the examples given above, the following excerpts from Evergreen Magazine, Winter 2005-2006, entitled "Forestry in Indian Country: Models of Sustainability for Our Nation's Forests?" express expert modern application of traditional ecological knowledge:

> From A School of Red Herring by Gary S. Morishima, Technical Advisor, Quinault Nation:
>
> Tribes have been managing natural resource systems for thousands of years, but protecting tribal legacies for the future is no simple task. The resources that are essential to sustain tribal cultures are coming under relentless attack from a variety of economic and political forces … To a great extent, these threats stem from the introduction of an invasive species several centuries ago … Europeans.
>
> From Sovereignty, Stewardship, and Sustainability by Larry Mason, Project Coordinator for the Rural Technology Initiative at the College of Natural Resources, University of Washington:

Tribes are known to have been managers of natural resources for 10,000 years or more. In many areas of the United States, ecosystems found by early European settlers were not virgin wilderness untouched by the hand of man, but were instead forests altered through time by many generations of Natives that burned, pruned, sowed, weeded, tilled, and harvested to meet their requirements for firewood, fish and game, vegetal foods, craft supplies, and building materials. Periodic underburning not only produced desirable vegetative conditions but reduced fuel accumulations that might otherwise sustain intense fire. A severe fire in a tribal territory would have meant not only loss of property, resources, and lives, but also a long-term disaster for the well-being of the community.

From The Yakama's Prescription for Sustainable Forestry by Markian Petruncio, Ph.D., Administrative Forester, Yakama Nation, and Edwin Lewis, Forest Manager, BIA, Yakama Agency:

Forest restoration implies that a forest will be returned to a prior condition. Nineteenth-century forest conditions on the Yakama Reservation appeared to be more sustainable than present conditions. For example, open pine stands were maintained in a healthy condition by frequent, low-intensity fires. The forestry program [on Yakama Nation lands] is using historic species composition and stand densities as references for restoration of forest health. … The pathway to sustainable forestry requires proactive management.

From The Forest Is In Your Hands by Nolan Colegrove, Sr., Forest Manager, Hoopa Valley Tribal Council, Forestry Division:

We tended and managed the forest with many tools that were created from nature, but the most effective tool was controlled fire. … The tending of the forest with the use of fire produced annual crops which provided the daily necessities of the people; but what also occurred, by conducting low intensity burns annually for hundreds of years, was that the condition of the forest was healthy and in balance.

From Ecosystem Management and Tribal Self-Governance on the Flathead Indian Reservation, Montana by Jim Durglo, Forest Manager, Confederated Salish and Kootenai Tribes:

The Tribes understood that both Indian-lit and lightning fires shaped the forest. Here in the Northern Rockies, fire, more than any other factor except climate, shaped the structure of our forest. It determined the kinds and ages of trees, how close together they grew, and the number and types of openings that existed. … From the stories of elders, the historical accounts of early Europeans, and the findings of modern scientific research, we know that Indians have been purposefully burning in the area for at least 7,000 years.

From The Gift of Fire by Germaine White, information and education specialist for the Confederated Salish and Kootenai Tribes of the Flathead Reservation, Montana:

As Salish and Pend d'Oreille people, our view of fire was and is quite different from the modern western view. In our tradition, fire is a gift from the Creator brought to us by the animals. We think of it as a blessing, that if used respectfully and in a manner consistent with our traditional knowledge, will enrich our world. This belief explains our long tradition (12,000 years plus) of spring and fall burning …

On my last trip into the Bob Marshall Wilderness Area with one of our tribal elders, Harriet Whitworth, we followed the trails she had followed seventy years previous with her mother and grandmother, trails her family had followed for multiple generations. When we arrived at Big Prairie on the South Fork of the Flathead River, Harriet described what it was like when she was a little girl. She said it was a big, open, park-like area where there were enormous ponderosa pine trees, an abundance of grass, and many animals … [with] many clearings, a series of prairies in one place, and Harriet talked of how beautiful it was when she was a child.

Now there is only a little bit of a camp and small prairie or meadow left, and the big pine trees are crowded with Douglas-fir trees. Being there in that place and listening to the stories of how it used to look just a single elder's lifetime ago showed me in a vivid way what it means to exclude fire from the landscape.

> From Petersen, James, ed. Forestry in Indian Country: Models of Sustainability for Our Nation's Forests? Evergreen Magazine, Winter 2005-2006. (see Appendix A).

These insights have direct application to the RR-SNF. The presence of Native Americans and traditional ecological practices were brought forth by the late Henry T. Lewis, Ph.D. in a symposium held in 1989 in Medford. (Henry Lewis was the leading researcher of anthropogenic fire in North America during his lifetime.):

> To conclude my retrospective epilogue, three years ago I was asked to contribute a paper to a conference in southwestern Oregon. I explained to the symposium organizers that my original research on California had somewhat abruptly and artificially ended at the political boundaries of the state, and I had collected only a few references for their area of concern. I also mentioned that a comprehensive study had been carried out on the Willamette Valley of central Oregon by Robert M. Boyd (1986), though southwestern Oregon should have been included as a natural geographic extension and part of my earlier study.
>
> In my presentation to the conference I summarized my earlier research on California, northern Alberta, and northern Australia, emphasizing the kind of work that should and could still be done using published and archival sources on indigenous uses of fire in southwestern Oregon. To my pleasant surprise, several Native American participants at the conference pointed out that there were still older people who knew about and understood the techniques and consequences of traditional burning practices; I refer briefly to some of that information in the published version of that paper (Lewis 1990b:82-83). The comments of one participant at the conference, while talking about her background in the South Umpqua River region, are worth repeating here because they add directly to what I wrote about California twenty years ago:
>
> [That participant was Susan Crispen Shaffer, Chairman of the Cow Creek Indian Tribe. In Mrs. Shaffer's own words:]

> "Indians were the first environmentalists. Our ties to our Mother Earth are different than those of the people who came after us. We have always understood that we must protect the resources that sustain us. The fall burning practices to keep our forests clean were common. This was to keep the forest clear of fallen logs, underbrush, and other debris that collected. It also served the purpose of killing unwanted bugs and insects, harmful to the forest. By keeping the forest floor clean there was an assurance of plentiful food for the game animals which were the main food source for many tribes. It also provided a clear view of the animals for the hunters. Fish habitat was protected as well. In my Great-grandfather's diaries, he has many entries of burning. My Great-uncle [Bob Thomason] continued this practice and when the Forest Service came to the Tiller Ranger District here in the Umpqua National Forest in Douglas County, Oregon, their system was not to burn. Here was this old Indian fellow that they knew was continuing to do the burning – what to do with him? They ended up hiring him so that they could keep an eye on him! Some old timers maintain that he sometimes still had a little smoke going here and there!"
>
> "When I was a very little girl, I remember asking Uncle Bob, 'When do you do the burning?' His reply was always, 'When the time is right.' He would often go out in the field, away from the house and sniff the air, also wet his finger and hold it up (although there was no wind that I could perceive), and say, 'Not yet' or 'It's time.' I never knew on what he based his reasoning. The fires were set annually, but I'm sure on a rotating basis. As for the time of the year, it would appear that some burning was done in the early Spring, although the bulk of it was in the Fall, perhaps after the first rain, for even in aboriginal times the annual fires were recognized as a way to balance the ecology. After Fall fires, there was a quick greening, providing food for the forest animals."
>
> From Lewis, Henry T. In Retrospect. IN Blackburn, Thomas C. and Kat Anderson, eds. Before The Wilderness: Environmental Management by Native Californians, pp 389-400. 1993. Malki Press - Ballena Press (see Appendix A).

The RR-SNF proposed amendments to their LRMP will engender WFU fires in unknown places at unknown times. Those fires will significantly impact

historic and traditional Native American cultural sites eligible for listing in the National Register of Historic Places ("National Register") and impact Native American religious and cultural practices, as well.

Prior archaeological surveys, ethnographic work, oral histories, cultural impact assessments have amply demonstrated and documented that the RR-SNF is home to hundreds (perhaps thousands) of archaeological sites and traditional use areas.

In addition to compliance with NEPA and the ESA, the USFS must comply with the requirements of the National Historic Preservation Act (NHPA). The proposed amendments will encourage WFU fires that will have significant impacts on historic and cultural resources and values. Federal law requires NHPA consultations and public involvement before such impacts are realized.

Ancient hearth tree on the Deschutes National Forest

VIII. Probable Significant Impacts/Effects on Watersheds and Water Quality

If the RR-SNF implements WFU as they have proposed, significant effects on water quality, stream flow, forest hydrology, and riparian and aquatic conditions will likely result. Additional acreage will be burned, and additional impact will ensue.

The effects of fire on forest soils, water, and hydrology have been the subject of much scientific study over the last century. In 2005 the Rocky Mountain Research Station of the USDA Forest Service released a synopsis report entitled "Wildland fire in ecosystems: effects of fire on soils and water." From that report:

> This state-of-knowledge review about the effects of fire on soils and water can assist land and fire managers with information on the physical, chemical, and biological effects of fire needed to successfully conduct ecosystem management, and effectively inform others about the role and impacts of wildland fire. Chapter topics include the soil resource, soil physical properties and fire, soil chemistry effects, soil biology responses, the hydrologic cycle and water resources, water quality, aquatic biology, fire effects on wetland and riparian systems, fire effects models, and watershed rehabilitation. Keywords: ecosystem, fire effects, fire regime, fire severity, soil, water, watersheds, rehabilitation, soil properties, hydrology, hydrologic cycle, soil chemistry, soil biology, fire effects models. …
>
> The purpose of this volume, Effects of Fire on Soils and Water, is to assist land managers with ecosystem restoration and fire management planning responsibilities in their efforts to inform others about the impacts of fire on these ecosystem resources. The geographic coverage in this volume is North America, but the principles and effects can be applied to any ecosystem in which fire is a major disturbance process. The fire-related changes associated with different severities of burn produce diverse responses in the water, soil, floral, and faunal components of the burned ecosystems because of the interdependency between fire severity and

> ecosystem response. Both immediate and long-term responses to fire occur. …
>
> From Neary, Daniel G.; Ryan, Kevin C.; DeBano, Leonard F., eds. 2005. Wildland fire in ecosystems: effects of fire on soils and water. Gen. Tech. Rep. RMRS-GTR-42-vol.4. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 250 p. (see Appendix A).

Among the effects of fire on soil and water are (this is a *short* list):

- Changes in infiltration due to collapse of soil structure, increase in bulk density, removal of organic matter, reduction in soil porosity, clogged soil pores, and increased reaction to rainfall droplet kinetics

- Decrease in soil wettability (hydrophobia), concretion, increased water repellence, increases in surface flow, increase soil particle transport, rilling, gulleying, and increased erosion

- Substantial changes in stream water chemistry, solid and dissolved material transport, pH, bacteriological characteristics, sediment influx and transport, dissolved sulfates, nitrates, nitrites, chlorides, iron, and other cations, and turbidity,

- Increases and decreases in discharge rates and seasonal streamflows, peak flows including flash flooding, minimum flows, as well as total annual streamflows,

- Degradation of aquatic habitat, aquatic biota, spawning gravels, fish populations, cultural resources, and human health and safety.

The Zaca Fire (2007) in the Los Padres National Forest was directly responsible for excessive runoff and flash flooding in Santa Barbara, CA, this winter. This flash flood warning was issued by the National Weather Service on January 24, 2008:

> at 325 PM PST National Weather Service Doppler radar indicates moderate to locally heavy rain showers with isolated thunderstorms across Santa Barbara and southern Ventura counties. This activity will produce rainfall rates of up to 0.50 inches per hour as it moves

> quickly to the east at 35 mph. Total rain amounts of one-half to one inch will occur through 6 PM PST with activity turning to scattered showers by early evening.
>
> Excessive runoff from heavy rainfall will cause elevated levels on small creeks and streams… and ponding of water in urban areas… highways… streets and underpasses as well as other poor drainage areas and low lying spots.
>
> A flood advisory means river or stream flows are elevated or ponding of water in urban or other areas is occurring or is imminent…
>
> * Through Friday afternoon
>
> * periods of rain… heavy at times… with isolated thunderstorms will continue through late Friday afternoon. Rainfall rates of one half inch to one inch per hour are possible across the area any time through late Friday afternoon. This could lead to significant flash flooding and the possibility of debris flows in and around the recent burn areas.
>
> A Flash Flood Watch means that conditions may develop that lead to flash flooding. Flash flooding is a very dangerous situation. Persons living in or below the watch area should remain alert and follow directions of emergency preparedness officials. Evacuations should begin immediately without waiting for instructions if heavy flows of water or mud and debris are observed. You should monitor later forecasts and be prepared to take action should flash flood warnings be issued.

The Zaca Fire burned over 240,000 acres over a two month period, cost more than $120 million in direct fire suppression expenses, and was the most expensive fire in California history.

The Zaca Fire began as a WFU under the AMR guidelines of the Los Padres National Forest. This illustrates the dangers of WFU.

Another example: over 750,000 acres of the Idaho Batholith burned in 2007 in WFU's and non-suppression "suppression fires" within and without the Idaho

MMA (Maximum Manageable Area) designated for "Appropriate Management Response."

There were many terrible fires in the 2007 fire season. Okefenokee Swamp burned in the 386,722 acre Big Turnaround Fire. The Angora Fire in South Lake Tahoe incinerated 254 homes. Megafires raged across Oregon, Alaska, Montana, and Southern California.

The worst fires, however, the most destructive and most egregious fires of the 2007 Fire Season, were the dozens of fires that blackened the Boise, Payette, Salmon-Challis, and Nez Perce National Forests. The fire complex included the Rattlesnake, Raines, Loon, Zena, Profile, Landmark, Monumental, Krassel, and Trapper Ridge Fires, and a few dozen more. Those fires merged, for the most part, into one large blackened stain that stretches from the Gospel Hump Wilderness north of the Salmon River (main fork), southwardly up the South and Middle Fork watersheds, and over the top of the Salmon Mountains into the Middle Fork watershed of the Payette River 90 miles to the south.

Nearly two million acres of forests were impacted. The Rattlesnake Fire was close to 100,000 acres; the East Zone Complex over 275,000 acres; the Cascade Complex nearly 300,000; the Krassel WFU near 70,000 acres; and the Trapper Ridge WFU was over 20,000 acres, totaling 765,000 acres (1200 square miles) for just those particular fires. This winter the streams and rivers are running thick with sediment from erosion, burying the gravel beds where endangered salmon spawn.

The Idaho fires were directly atop the Idaho Batholith, a composite mass of granitic plutons covering approximately 15,400 square miles in central Idaho. Batholiths are made of granite and are prone to mass wasting. Not only is the parent rock easily weathered, batholitic (granitic) soils are highly erodable. Increased erosion after a fire results from removal by incineration of the ground cover, including the tree canopies that intercept direct rainfall. In addition, cooked soils have more water repellency, which reduces water infiltration, increases runoff, and thereby also increases erosion. Studies have shown that sedimentation in streams can increase by a factor of seven or more after a fire (see Gen. Tech. Rep. RMRS-GTR-42-vol.4 cited above).

The hydrology of the Idaho Batholith was severely impacted by let-it-burn fires that were anticipated but never evaluated by prior Environmental Impact Statements. The US Forest Service designated WFUs and MMAs, but those

designations were never made subject to the NEPA process or to public review and involvement.

The avoidance and eschewal of NEPA in designating the Idaho national forests as "Let-It Burn laboratories" led to the greatest single disaster to Idaho forests and watersheds in over 100 years.

We wish to avert a similar disaster on the RR-SNF (although it could be argued that such a disaster already occurred in 2002 with the Biscuit Fire).

The NEPA process is not merely a bureaucratic exercise in red tape. It was established by the U.S. Congress to forestall environmental catastrophes due to ill-conceived and poorly considered Federal actions. The imposition or adoption of WFU on the RR-SNF is exactly such an ill-conceived and poorly considered Federal action.

We insist that an EIS be written and subject to public review and substantive public involvement not merely to follow the letter of the law, but to embrace the spirit of the law.

We wish to prevent another Biscuit Fire on the RR-SNF. That is the ultimate purpose of this document.

Fire effects on the Deschutes National Forest

IX. Probable Significant Impacts/Effects on Airsheds and Air Quality

The RR-SNF proposes to allow lightning-ignited forest fires to burn as WFU fires. Forest fires produce smoke. If the RR-SNF amendments to their LRMP are accepted and implemented, significantly more smoke will be generated by the RR-SNF than under the current LRMP.

Clean Air Act Violations

Wildfires produce air pollutants including particulates, hydrocarbons, sulfur dioxide (SO2), nitrogen dioxide (NO2), ozone, carbon monoxide (CO) and lead (Pb), all regulated by the Clean Air Act.

Particulate matter, or visible smoke, is regulated through national ambient air quality standards (NAAQS) for Total Suspended Particulates (TSP). The standards for TSP cover a range of particles from 0 to 50 microns. Particulate matter of this size can remain suspended in the atmosphere for periods of a few seconds to several months. Suspended particulate matter is that portion of the TSP less than 10 microns in size (known as PM10) which is transported large distances downwind and can have the greatest impact on air quality. Impacts include significant deterioration of visibility, damage and soiling of properties, and human health effects (Sandburg et al 2002).

Ninety percent of smoke particles from wildfires are less than 10 microns (Ibid). Eighty two percent (82%) or smoke particles from wildfires are less than 1 micron (Ibid). Particles of this size can be trapped in alveoli in the lungs. Adults and children with asthma are seriously affected and their lives put at risk. Wildfire smoke has triggered public health alerts and advisories when particulate matter exceeds NAAQS thresholds. In addition to respiratory dangers, loss of visibility has been implicated in traffic accidents. (Ibid).

> Recent information also suggests that several subgroups within the population are more sensitive to PM than others. Children are more likely to have decreased pulmonary function, while increased mortality has been reported in the elderly and in individuals

> with cardiopulmonary disease. Asthmatics are especially susceptible to PM exposure.
>
> From Sandberg, David V.; Ottmar, Roger D.; Peterson, Janice L.; Core, John. 2002. Wildland fire on ecosystems: effects of fire on air. Gen. Tech. Rep. RMRS-GTR-42-vol. 5. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

The addition of more smoke to airsheds, as is likely if the proposed amendments are implemented, will have significant effects on the human environment downwind from the RR-SNF. The airshed includes numerous cities, towns, and communities such as Medford, Ashland, Grants Pass, Klamath Falls, and others.

Wildfires in 1987 and 2002 on the RR-SNF triggered public health and hazard alerts throughout Southwest Oregon. The Oregon Dept. of Environmental Quality has been designated by the U.S. Environmental Protection Agency to protect air quality in Oregon. The DEQ issues public health and hazard alerts when NAAQS thresholds are exceeded under Oregon Administrative Rules, Chapter 340.

> Another provision of the Clean Air Act with some applicability to wildland burning activities is the prevention of significant deterioration (PSD) provisions. … Historically, EPA has regarded smoke from wildland fires as temporary and therefore not subject to issuance of a PSD permit; whether or not wildland fire smoke should be considered when calculating PSD increment consumption or PSD baseline was not defined. (Ibid)

The amendments proposed by the RR-SNF involve "Appropriate Management Response." That includes Wildland Fire Use (WFU). The RR-SNF proposes to allow lightning-ignited fires to burn for weeks and months as WFU fires, rather than containing, controlling, and extinguishing those fires within hours or days. It is logical to assume that additional smoke from long-burning fires will be significant and have significant impact on air quality over long periods of time. Whether or not the EPA will consider long-term smoke generation to be in violation of the Clean Air Act is a matter of legal conjecture. EPA recently reaffirmed that States could exclude prescribed fire emissions from increment analyses provided the exclusion does not result in permanent or long-term air quality deterioration (EPA 1998). Long-term WFU

events are different than short-term prescribed fires and have yet to be considered in a Clean Air Act process. (Ibid).

> States are also expected to consider the extent to which a particular type of burning activity is truly temporary, as opposed to an activity that could be expected to occur in a particular area with some regularity over a long period. Oregon is the only State that has chosen to include prescribed fire emissions in PSD increment and baseline calculations. (Ibid).

Regional haze is another problem arising from WFU fires. Dense plumes of smoke an be transported by winds over hundreds of miles, degrading air quality, scenic values, and public health and safety across broad regions.

> In 1999, EPA issued regional haze regulations to manage and mitigate visibility impairment from the multitude of diverse regional haze sources (40 CFR Part 51).51). The regional haze regulations call for States to establish goals for improving visibility in Class I National Parks and wildernesses, and to develop long-term strategies for reducing emissions of air pollutants that cause visibility impairment. (Ibid)

Crater Lake National Park and numerous designated Wilderness Areas are directly downwind from the RR-SNF. Smoke from long-term WFU events will significantly affect air quality in those Class I protection areas. Lightning-ignited fires may be considered "natural" events, but allowing those fires to burn for weeks and months is another question.

Even in the case of natural wildfire events, when NAAQS exceedances are predicted States are required to prepare a natural events action plan (NEAP) to address human health concerns.

> A wildfire NEAP should include commitments by the State and stakeholders to:
> 1. Establish public notification and education programs.
> 2. Minimize public exposure to high concentrations of PM10 due to future natural events such as by:
> a. Identifying the people most at risk.
> b. Notifying the at-risk public that an event is active or imminent.

c. Recommending actions to be taken by the public to minimize their pollutant exposure.
d. Suggesting precautions to take if exposure cannot be avoided.

3. Abate or minimize controllable sources of PM10 including the following:
a. Prohibition of other burning during pollution episodes caused by wildfire.
b. Proactive efforts to minimize fuel loadings in areas vulnerable to fire.
c. Planning for prevention of NAAQS exceedances in fire management plans.

4. Identify, study, and implement practical mitigating measures as necessary.

5. Periodic reevaluation of the NEAP. (Ibid)

Generally natural events action plans (NEAP) require the application of best available control measures (BACM). Allowing wildfires to burn unchecked and uncontrolled is not BACM.

> The application of BACM is also a requirement of EPA's Air Quality Policy on Wildland and Prescribed Fires (EPA 1998) (see "Prior Work" section in chapter 1). EPA's BACM guidance includes basic smoke management program elements and emissions reduction techniques that can be used by land managers to minimize air quality impacts from fire. These program elements and emissions reduction techniques are fully documented in the Smoke Management Guide for Prescribed and Wildland Fire: 2001 Edition (Hardy and others 2001). …
>
> At least 24 methods within six major classifications have been used to reduce emissions from prescribed burning (Hardy and others 2001). These techniques include methods designed to minimize emissions by reducing the area burned; reducing the fuel load by reducing the fuel production, or fuel consumption, or both; scheduling burns before new fuels appear; and increasing combustion efficiency. Each of these methods has specific practices associated with it.

The use of WFU on the RR-SNF will increase area burned in areas where no fuel reductions have occurred. The WFU fires will be unscheduled in unknown locations and have no prior measures taken to increase combustion efficiency. Those probable impacts will be in violation of EPA guidelines as well as having a significant effect on the human environment.

Carbon and GHG Emissions

Recent studies have attempted to estimate and quantify the amount of air pollution generated by forest fires. Among those studies is the Forest Carbon and Emissions Model (FCEM) created by Dr. Thomas M. Bonnicksen, Ph.D. FCEM is a mathematical method (model) for estimating the amount of greenhouse gases (CO2, CH4, N2O) emitted by forest fires. FCEM requires minimum input of stand data, the number of acres burned, and the percent understory and overstory mortality. From those FCEM computes carbon stored and the emissions from fire combustion and from subsequent decay of dead wood.

FCEM is based on the (scientifically) reported biomass for various forest types and species, and the reported partitioning of that biomass into above-ground and below-ground components, as well as into trees and shrubs. Other components include equations that estimate the biomass lost to combustion and subsequent decay, the carbon stored in harvested trees, and the biomass stored in post-fire forest regrowth.

At this time FCEM (the beta version) is a deterministic model. That is, it outputs a value, not a range of probable values. However, by adjusting the inputs a user may generate a range of output values.

FCEM also provides a comparison of the output value to passenger car per year equivalents, megawatts of coal-fired power plant equivalents, as well as comparing them to total greenhouse gas emissions in California.

From FCEM Report No. 1

> FCEM is a Rapid Estimation Model (REM) that requires a minimum of input data. It fills the need for quickly estimating forest carbon storage, sequestration, and greenhouse gas (GHG) emissions. FCEM

is a deterministic biomass-based model that uses an Excel spreadsheet to compute estimates.

Forests and forestry are playing an increasingly important role in sequestering carbon and reducing greenhouse gas emissions, especially during a period of rising concerns about global warming. FCEM provides quick estimates to inventory carbon storage and assess the consequences of wildfires and insect infestations to climate change. This can help improve decision making when information is limited and budgets are restricted.

This version of FCEM applies to California. Future changes to FCEM could include expanding the list of species and vegetation types to other regions of the United States, updating equations and coefficients as scientific and technical information advances, and converting the Excel spreadsheet to a Windows program to enhance the model's flexibility and helpfulness to users.

This report [FCEM Report No. 1] provides an overview of FCEM, input requirements, and example applications and outputs. It also includes information on the structure of the model and lists scientific and technical references. …

The Angora Fire of 2007 blackened 3,100 acres of forest and destroyed 254 homes in the Tahoe Basin because most of the forest was so dense. Using pre-fire data for the forest, FCEM estimates that combustion emissions could have been lowered from 46.2 tons per acre to 12 tons per acre if the density of trees had been reduced from 273 per acre to the more natural density of 60 per acre.

A fire burning in the same forest after thinning would not have been catastrophic. It would have killed few large trees, covered less acreage, and left adjacent communities relatively unharmed. That is what could have been, but it also illustrates the opportunity that still exists to fight global warming and protect the rest of the Tahoe Basin as well as other forests and communities in California and the West.

Those who have not stood in the midst of flames 200-feet high, felt the overwhelming heat from a temperature more than 3,000 degrees Fahrenheit, and smelled the smoke and gases released, cannot fully appreciate a catastrophic wildfire. It is awesome and terrible, and firefighters who brave these conditions deserve our respect.

The catastrophic wildfires that ravage California each year don't resemble the historic fires that took place in these forests for millennia. Most natural fires didn't sweep across landscapes destroying whole forests as wildfires do today. The underlying cause of modern catastrophic wildfires is too many trees. The four forests burned by these wildfires were overcrowded with trees — with trees of all sizes intermixed to form a uniform mass of fuel spreading over the landscape. They averaged 350 trees per acre when 50-60 trees per acre would be natural. They also contained unnaturally heavy surface fuels composed of litter, duff, down dead wood, shrubs, and small trees that ranged from an estimated 25 to 40 tons per acre. Tree density, especially young trees growing under larger trees as ladder fuel, and surface fuels are the two most important contributors to the size and severity of wildfires.

Consequently, when the massive amounts of fuel in these forests burned, they released an estimated 9.5 million tons of greenhouse gases into the atmosphere just from combustion. That is an average of about 63 tons per acre. However, combustion is only part of the story because dead trees also gradually release CO2 as they decay. CO2 emissions from decay are generally three times greater than emissions from combustion because large quantities of wood and other plant material remain unburned after a forest fire.

Combining combustion and decay emissions, FCEM estimates that these four fires will emit a staggering 38 million tons of greenhouse gases into the atmosphere. The fires released one fourth of the gases during combustion, and post-fire decay will release the remainder during the next 100 years, most of it during the next 50 years.

To put these emissions from combustion and decay into perspective, they are equivalent to adding an estimated 7 million

> more cars onto California's highways for one year, each spewing tons of greenhouse gases out the tailpipe. Stated another way, this means 50 percent of all cars in California would have to be locked in a garage for one year to make up for the global warming impact of these four wildfires.
>
> The immensity of greenhouse gas emissions from just these four wildfires is a warning. Clearly, we must make every effort to reduce the amount of excess biomass in forests to prevent catastrophic wildfires. That means decreasing the number of trees by thinning to make them more resistant to crown fires, which will also restore the natural health and diversity of our forests. Reducing the number and severity of wildfires may be the single most important action we can take in the short-term to lower greenhouse gas emissions and fight global warming.
>
> From Bonnicksen, T.M. 2008. Greenhouse gas emissions from four California wildfires: opportunities to prevent and reverse environmental and climate impacts. FCEM Report 2. The Forest Foundation, Auburn, California. 19 p. (see Appendix A)

The various inputs for each of the forests involved were made, and the greenhouse gas (GHG) emissions and passenger car equivalents were estimated by the model:

> Table 5. FCEM estimates of greenhouse gas emissions from combustion by wildfire.
>
> Greenhouse Gases (tons/acre)
> Angora Fire: 46.2
> Fountain Fire: 53.4
> Star Fire: 76.7
> Moonlight Fire: 74.7
>
> Total Wildfire Greenhouse Gases (tons)
> Angora Fire: 143,129.0
> Fountain Fire: 3,196,172.2
> Star Fire: 1,240,688.5
> Moonlight Fire: 4,910,941.6

The emissions in Table 5 are large and difficult to interpret without comparisons. Therefore, Table 6 shows how many cars would be added to California's highways for one year, each spewing tons of greenhouse gases out of the tailpipe, to equal combustion emissions. Seen another way, it shows how many cars in total and cars per acre burned that would have to be taken off the road and locked in a garage for one year to make up for the global warming impact of these four wildfires.

Table 6. FCEM estimates of passenger car equivalents for combustion emissions by wildfire.

Passenger Car Emission Equivalents* for Combustion (cars/acre)
Angora Fire: 9
Fountain Fire: 11
Star Fire: 15
Moonlight Fire: 15

Total Wildfire Passenger Car Emission Equivalents for Combustion (cars)
Angora Fire: 28,166
Fountain Fire: 629,294
Star Fire: 244,284
Moonlight Fire: 966,880 (Ibid)

To add to this, the model uses a factor of 3.67 times the combustion emissions to account for subsequent CO2 emissions from post-fire decay, and compares those estimates to the total annual passenger car emissions in California:

Table 7. FCEM estimates of CO2 emissions from combustion and decay and passenger car equivalents by wildfire.

Proportion of Annual Passenger Car Emissions (%)
Angora Fire: 0.75
Fountain Fire: 17.19
Star Fire: 5.89
Moonlight Fire: 25.9 (Ibid)

The interpretation is that just one of the many fires in California last summer, the Moonlight Fire, has and will produce as much GHG's as a quarter of all the passenger cars driven in the state during the entire year.

The National Interagency Fire Center reported that 8,881 wildfires burned 1,059,923 acres in California last year. The Moonlight Fire (65,714 acres) was just one of those (about 6% of total acres). It is easy to compute that wildfires out-emitted all the cars in California in 2007 by a factor of 3 or 4 times.

Dr. Bonnicksen included these thoughts in FCEM Report No. 2:

> The catastrophic wildfires that ravage California each year don't resemble the historic fires that took place in these forests for millennia. Natural fires set by lightning and Native people were frequent and light, burning mainly surface fuels and igniting only scattered small groups of trees (Bonnicksen 2000, 2007). They didn't sweep across landscapes destroying whole forests, killing wildlife, destroying habitat, baking soils into hardened clay that can't absorb rainwater, and causing massive erosion as modern wildfires do today. Unlike the overcrowded and unhealthy forests we see now, most historic forests were open, diverse, and more resistant to catastrophic fires. …
>
> Clearly, we must make every effort to reduce the amount of excess biomass in forests to prevent catastrophic wildfires. That means thinning trees to restore the natural health and diversity of forests and to make them more resistant to crown fires. Reducing wildfires maybe the single most important action we can take in the short-term to reduce greenhouse gas emissions and fight global warming. (Ibid).

Allowing forest fires to burn unchecked and/or without full fire suppression efforts will have significant impacts of airsheds, human health, and possibly global climate change. The RR-SNF proposes to inflict said impacts by virtue of the WFU they wish to introduce to their LRMP. Those potential, even probable, impacts must be evaluated by the affected public prior to implementation. The National Environmental Policy Act mandates that potential significant impacts of federal actions by evaluated via EIS preparation and public involvement in that process.

X. Probable Impacts/Effects on Recreation and Scenery

The proposed amendment to the RR-SNF LRMP will result in more forest acres burned and more fires allowed to burn in the middle of summer. There is good chance those WFU fires will be at or near heavily used recreation areas such as the Pacific Crest Trail.

Many of the wilderness areas through which the PCT passes were on fire during the summers of 2006 and 2007. Detour routes were laid out, but many hikers chose to violate Federal law and brave the flames. Felonious fire dodging and flame running has become a new twist on the extreme sport of long-distance speed-hiking along the PCT.

Nearly every designated wilderness area from the Canadian border to the Mexican border has been aflame during the height of the recreation season in the past ten years. Innumerable campground and trail closures have resulted. The fires have also destroyed campgrounds and trails, rendering them unusable for years afterwards.

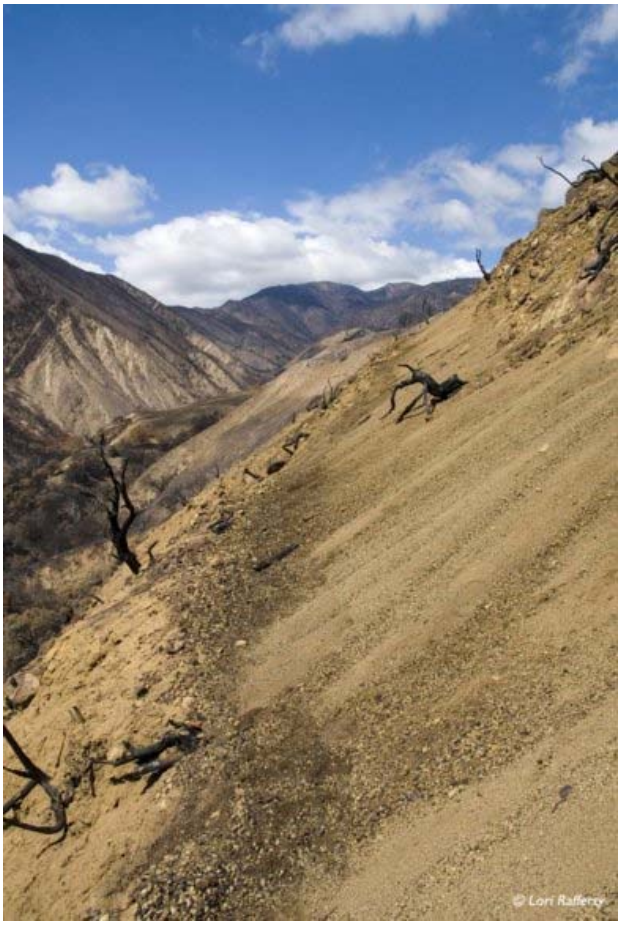
The Los Padres NF issued the following press release last October:

> USDA Forest Service - Los Padres National Forest, 10/04/07
>
> "The Zaca Fire burned in very steep and rugged terrain, and while there are islands of unburned vegetation, there are vast areas that are a moonscape now," Forest Supervisor Peggy Hernandez explained. "With the vegetation gone, there is nothing to hold the soil in place, so the land is very unstable. Dry landslides, rockslides and other erosion is occurring on a daily basis. We expect mudslides and flash flooding when the rains come. Out of concern for public safety, and to allow the watersheds to begin to heal, I will keep the burned area closed to public entry at least through spring 2008," she added.
>
> "The burned or otherwise disturbed soils are very vulnerable, especially to wheeled vehicles, until vegetation gets reestablished," said Hernandez. "We know people are anxious to get back into their national forest, but we are asking for their patience and cooperation."

> Preliminary surveys of the burned area show that many hiking trails have been severely damaged by the fire and are completely impassable. “Our volunteers are very anxious to get in there and help reestablish the trails. Unfortunately, it may be some time before the ground is stable enough to allow them to be rebuilt,” said Santa Barbara District Ranger Cindy Chojnacky.
>
> The Zaca Fire started on July 4, and burned approximately 240,207 acres before it was contained on September 2. It is the second largest fire in California’s recorded history and the largest in Santa Barbara County’s recorded history.

Allowing fires to burn unimpeded in the “back country” or the “middle of nowhere” has real and significant impacts on the recreational use of our national forests. When a proposed Federal action has likely significant effects, the proper and legally mandated process is to develop an EIS under NEPA guidelines.

Fire effects on the Pacific Crest Trail, Deschutes NF



Fire effects on trails of the Los Padres National Forest

XI. Probable Significant Impacts/Effects on Rural Economies

The effects of the proposed changes to the RR-SNF Land and Resources Management Plans (LCMP) consist of allowing unspecified lightning-ignited fires to burn in Wildland Use Fires (WFU). Those WFU fires will burn trees of all sizes, rendering them for the most part unfit for commercial timber harvest.

Commercial timber harvest is a mandated use of the National Forest System. Commercial timber harvest is required under the Organic Act, National Forest Management Act, and Multiple Use-Sustained Yield Act among other Federal laws. Destroying commercial timber with attendant hardships to local rural economies will be a significant effect of the proposed changes.

NEPA regulations require that significant economic effects of proposed Federal actions be evaluated with Environmental Impact Statements:

> Sec. 1508.8 Effects.
>
> "Effects" include:
>
> (a) Direct effects, which are caused by the action and occur at the same time and place.
>
> (b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, **economic**, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

> From the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 et seq.), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977). Source: 43 FR 56003, Nov. 29, 1978, unless otherwise noted (see Appendix A).

The RR-SNF is a major source of commercial timber for the local economy of Southwest Oregon. This fact remains true despite large reductions in the commercial log harvest on the RR-SNF over the last decade and a half.

> Primary manufacturers in the Pacific Northwest can be divided into four basic categories; Dimension, Sawmills, Grade Cutting Mills, Veneer Mills, and Chipping Facilities.
>
> - Dimension Mills cut a set of specific dimensions of lumber such as 2x4, 2x6, and 4x4 in varying lengths.A stud mill is a type of dimension mill.
> - Veneer mills turn a log on a lathe and produce the components for plywood and laminated veneer lumber.
> - Chip mills simply chip the whole log. These chips are used for manufacturing paper and can be used in the generation of electricity.
> - Grade Cutting mills do not concentrate on a specific dimension of lumber but rather seek to capture the highest grade of wood products from a log. These mills make products that are used in the manufacture of doors, window parts, paneling, industrial products, and appearance and/or structural grade framing material. One example of large log consumer products is the headers above doors and windows that need to bear a structural load.
>
> In order to meet consumer demand for renewable and sustainable wood products, we need to manage our forests to provide a variety of tree species, sizes and quantities. This type of management will also lead to improvements in forest health. …
>
> Just as it would be unwise for our government to encourage the agriculture sector to solely produce one agriculture commodity, say soy beans, it is equally unwise to adopt a policy that does not recognize the diverse demands and influences on wood products

markets. Just as you would diversify your own economic portfolio, so too should rural timber economies be diversified. If federal forest policy forces every mill to create the same, low-grade product, then downturns in the housing market such as we see today will have even more dire effects in Oregon and elsewhere in the West. …

The truth of the matter is that the entire industry, across all mill types, has modernized to remain competitive in the world marketplace, to more efficiently produce what consumers demand and to be good stewards of the land. The log supply in the last decade has been so critically short there is no room for inefficient mills anywhere, which is obvious if you look at the long list of sawmill closures. …

The 4th congressional district of Oregon … has the highest concentration of lumber and plywood manufacturing facilities in the United States. In this district there are approximately 34 manufacturing facilities. This is over half the mill capacity of Oregon.

Of those 34 mills a full 17 are designed for and need large diameter logs for their operations. There are also companies that rely on mills to manufacture larger logs into a quality of veneer that is then utilized at other manufacturing facilities. So, while some companies may rely primarily on small diameter logs at most manufacturing locations, they may also need the quality of material that comes out of these larger trees to produce products such as plywood.

Oregon's wood products industry needs a diverse mix of species and diameters to produce the products society demands. Since the Federal government manages over 50 percent of Oregon's forest, it has an important role to play in helping to meet these needs. Ignoring this reality has both economic and environmental consequences.

It wasn't logging that destroyed 25% of the Spotted Owl habitat in one year on the Rogue-Siskiyou National Forest in 2002. It wasn't logging that destroyed the "Last/Slick Creek Roadless Area" of the Umpqua National Forest that same year. It wasn't harvest that consumed over seventy-five percent of the Boulder Creek

> Wilderness on the North Umpqua. It wasn't logging that consumed over ten percent of the Umpqua National Forest in one summer. These lands had arbitrary lines drawn around them and were called "protected". Surely we understand that these lines are just that, lines on a map and do nothing to protect anything. If we are to truly protect something, then we must take action toward that end and empower the agencies to implement fuel reduction projects in the very stands of older forests we seek to protect.
>
> There are many things that we do require of our National Forests. We expect clean water, recreation, wildlife habitat, solitude, and some contribution to our local and national economies. These expectations often require different management approaches and won't be accomplished through a one-size-fits all forest management prescription.
>
> From Beck, Paul H. Timber Manager, Herbert Lumber Company, Riddle Oregon. "Old-Growth Forest Science, Policy, and Management in the Pacific Northwest Region" -- Testimony to the Subcommittee on Public Lands and Forests of the Senate Committee on Energy and Natural Resources, March 13, 2008 (see Appendix A).

In the absence of rapid initial attack on lightning-ignited fires, and in the absence of aggressive follow-up fire suppression designed to contain, control, and extinguish fires, commercial timber on the RR-SNF will be summarily destroyed, or under the best scenarios, significantly devalued.

That will have significant effect upon local economies. NEPA regulations make it crystal clear: when proposed actions are likely to impact the economy, at a minimum an EIS is required.

XII. Probable Significant Impacts/Effects on Fire Costs and Losses

The proposed alteration and inclusion of WFU into the AMR of the RR-SNF was driven by directives from the Washington Office of the US Forest Service. One of the principal concerns of the WO is "cost containment."

Cost Containment

The Northern Rockies AMR makes "cost containment one of their major goals:

> Cost Containment
>
> As part of the Northern Rockies normal operating procedures, the incident management teams have agreed to develop an attachment to the WFSA/WFIP validation process that will integrate the cost containment factors into our decision making processes. Required cost containment factors to address include:
>
> • accountability
> • sufficient and reliable information (situational awareness)
> • social/political factors
> • risk management
> • strategic and tactical decisions
>
> The most applicable aspects of the factors above will be included in the daily ICS-209 Incident Status Summaries to ensure accurate and timely information is shared with all. At the Northern Rockies Geographic Area level, 209s will be monitored to ensure that the strategic objective(s) are being met within a planned and reasonable cost. At the end of an incident management team assignment, a summary of the cost containment factors will be included in the close-out package and discussed with the hosting agencies.
>
> From Northern Rockies Multi-Agency Coordination Group. 2007. Appropriate Management Response Summary for the Northern Rockies Final v. 7_21_07.

Cost containment is bureaucratese for holding down fire suppression expenditures. Federal fire suppression expenditures have sky-rocketed in recent years. In 2006 and 2007 nearly $4 billion was spent on Federal fire suppression. Today approximately half the US Forest Service budget is spent on fire suppression alone.

The U.S. Government Accountability Office (GAO) has responded to growing fire suppression expenditures by issuing a series of reports. The latest was issued last February. Some excerpts:

> Our nation's wildland fire problems have worsened in the past decade. Appropriations for wildland fire management activities tripled from about $1 billion in fiscal year 1999 to more than $3 billion in fiscal year 2007, while, on average, the acreage burned annually by wildland fires has increased by approximately 70 percent since the 1990s. ...
>
> In 2007, GAO reported that the agencies had taken several steps to **contain wildland fire costs**, including developing new decision support tools to help officials select the most appropriate strategy for fighting wildland fires, but lacked clearly defined **cost-containment goals** and a strategy for achieving them. As a result, we believe managers in the field lacked a clear understanding of the relative importance agency leadership placed on **containing costs** and were therefore likely to select firefighting strategies without duly considering the **costs** of suppression. ...
>
> Our nation's wildland fire problems have worsened in the past decade. Appropriations for wildland fire management activities tripled from about $1 billion in fiscal year 1999 to more than $3 billion in fiscal year 2007, while, on average, the acreage burned annually by wildland fires has increased by approximately 70 percent since the 1990s. ...
>
> Land managers and incident management teams (specialized fire-response teams that include personnel to handle command, planning, logistics, operations, and finance functions) have a wide spectrum of strategies available to them when responding to wildland fires, some of which can be significantly more **costly** than others. These strategies range from **having a few personnel**

> **monitor a fire while allowing it to burn to achieve ecological benefits—a practice known as wildland fire use**—to mobilizing all available personnel and equipment to try to control the entire perimeter of a fire or otherwise suppress it as quickly as possible. In selecting a strategy for a particular fire, land managers are required to consider the **cost** of suppression, the value of structures and other resources threatened by the fire, and the potential ecological effects of the fire. The agencies use the term "**appropriate management response**" for a strategy that considers these factors. Recent reports by GAO and others, however, have identified barriers to the agencies increasing their use of less aggressive strategies, which often **cost** less. ...
>
> From Nazzaro, Robin M. Director Natural Resources and Environment. Wildland Fire Management: Federal Agencies Lack Key Long- and Short-Term Management Strategies for Using Program Funds Effectively. GAO-08-433T. United States Government Accountability Office, February 12, 2008 (see Appendix A). emphases added.

In this report the GAO ties WFU to AMR (see bold print above). WFU is seen (by the GAO) as a means to reduce fire suppression expenditures. That opinion was also displayed by the U.S. Department of Agriculture, Office of Inspector General in a 2006 report entitled Audit Report on Large Fire Suppression Costs (Report No. 08601-44-SF).

> To address **the need to optimize wildland fire use**, we recommend that FS:
>
> • Modify current policies to allow (1) concurrent management of wildland fires for both **WFU** and suppression, (2) transitioning between **WFU** and suppression, and (3) managing wildfire suppressions to accomplish fuel reductions.
>
> • Prioritize funding to accomplish staffing and training needed to **implement an expanded WFU program**.
>
> In its written response to the draft report, dated November 16, 2006, FS concurred with all of our findings and recommendations and stated its belief that our recommendations will assist FS as it

continues to improve its management efficiencies to save taxpayer's dollars while still providing safe and effective suppression of wildfires.

While the vast majority of fires occurring on FS lands (about 98 percent) are controlled and suppressed during initial attack, the small percentage that escape have enormous financial consequences, accounting for nearly 80 percent of the agency's suppression expenditures in 2003 and 2004.

FS has implemented policies and procedures designed to contain wildfire suppression expenditures and to increase accountability for its suppression operations. These include but are not limited to the following:

Emphasis on Cost Accountability: FS modified directives to specify that line officers are responsible for all aspects of fire management, including financial oversight of wildland fire incidents. Unlike other responsibilities, financial oversight cannot be delegated. Line officers are also directed to issue delegations of authority to the IC that includes suppression cost objectives. Incident Management Teams (IMT) in turn are evaluated on how well they **meet the cost objectives**.

Reducing Fuels With Fire: FS sought to better integrate fire as a natural process in the landscape by emphasizing the need for **increased wildland fire use (WFU). WFU involves allowing naturally ignited fires to burn in designated sections of the forests to help restore forest health and mitigate the escalating costs of fire suppression.**

In order to address the continuing accumulation of fuels and the increasing risk to humans, property, and natural resource values, FS needs to better integrate fire into the landscape by **modifying current policies that unduly restrict wildland fire use (WFU, a fire managed for resource benefits such as fuels reduction)** and by increasing the number of staff qualified to manage WFU events.

To allow greater flexibility and encourage using the most effective techniques possible in light of the restrictive policies discussed above, FS **encourages the use of "Appropriate Management Response" (AMR)**. Under **AMR**, FS officials have more latitude in making fire management decisions. For example, **using AMR,** a fire threatening a community can be aggressively suppressed on one side while it is **only monitored** on another side when moving toward a wilderness area.

Recommendation 5

In conjunction with other Federal wildland fire management agencies, modify current policy to allow FS managers to concurrently manage wildland fire incidents for both suppression and **WFU**. Agency Response FS will begin working with its Federal and State partners in an attempt to reach agreement and modify the current Federal Wildland Fire Management Policy to reflect the desire to move toward **Appropriate Management Response,** which allows multiple strategies to be used on a single fire. In addition, FS will review and modify its own policies to better reflect the principles of **Appropriate Management Response.** FS' estimated completion date for this action is April 30, 2007.

FS' **expansion of WFU**, together with the complexity of managing fire use in the growing WUI, will require an increased number of fire-use management teams in order to meet its objective of reducing hazardous fuels. The additional costs associated with such actions may be offset by the **savings that can result when WFU is selected rather than suppression**. FS has recognized these issues and is considering cross-training incident-management teams to add **WFU** functions to their fire suppression activities. According to FS, these dual-use teams would be able to transition between fire suppression and **WFU** (see finding 2). In addition, it may be more **cost-effective** for FS to train personnel in **WFU** who already possess many of the required fire management skills.

Recognizing the **need to control the cost of wildfire suppression**, FS has instituted several measures over the last several years that are designed to **make cost containment an**

important consideration when planning and carrying out firefighting activities.

The six **cost-containment** reviews we examined did not sufficiently focus on large cost drivers such as the reasonableness of the line officer's protection strategies and the effectiveness of the IMT's tactics, even though both factors are major components of a wildfire's total suppression costs. For example, one national review of a $21 million wildfire suppression operation noted that the unit's fire management direction allowed a greater range of suppression alternatives and **cost-containment** measures than those presented to the line officer. The review also noted that **WFU** was permitted in the unit's fire management plan and was a potentially appropriate response to the fire, but was not considered due to the unit's perception that regional policy prohibited fire use in that area.

Yet when the team evaluated the incident's **costs** with respect to strategic decisions, they did not address the **cost** implications of these identified issues. The review team also did not address the **cost effectiveness** of IMT tactics. In another case, a regional **cost-containment** review was conducted on a wildfire with total suppression **costs** of about $9 million.

The fire's wildland fire situation analysis (WFSA) estimated suppression **costs** of **$200 per acre**. According to the regional review, the fire brought a significant amount of political pressure on the forest supervisor and the incident commander to suppress the fire as quickly as possible due to the presence of State timber, giant sequoias, and the perceived threat to a number of small communities. In response to this pressure, the regional forester issued a letter emphasizing the need to throw "everything but the kitchen sink" at the fire. Accordingly, the fire was fought with much more intense tactics that involved larger and more aggressive use of suppression resources**.** As a result, FS spent about **$3,000 per acre** to contain it, or about 15 times the **per acre cost** estimated in the WFSA. The regional team reviewed the IMT's decisions and concluded that the high **costs** "were justified." The team did not, however, explain how or why the **costs** were justified, or address the effectiveness of the team's tactics. Further, since the regional forester's involvement in this incident impacted the team's

> objectivity, a national review should have been conducted. However, we found no evidence that it was.
>
> From Young, Robert W. Assistant Inspector General for Audit. Audit Report on Large Fire Suppression Costs. 2006. Inspector General, U.S. Department of Agriculture, Office of Inspector General, Western Region, November 2006 (Report No. 08601-44-SF). (see Appendix A). emphases added.

As should be abundantly clear from the above GAO and USDA OIG reports, the cost of fire suppression is the overriding concern in adoption of WFU. WFUs within AMRs are not being adopted because of vaguely stated and undocumented "resource benefits."

Yet WFU fires have significant impacts and effects of resources, including flora, fauna, historical and cultural resources, water quality and watersheds, air quality and airsheds, recreation opportunities and resources, and local economies.

Federal laws such as NEPA, ESA, and NHPA may not be overridden by "cost containment" concerns. Saving money is not a legal or legitimate excuse to abrogate Federal environmental laws.

This is important, so we are going to repeat it. **Saving money is not a legal or legitimate excuse to ignore or abrogate Federal environmental laws**.

Numerous court decisions over the life of NEPA, ESA, and NHPA make that abundantly clear. There are too many to cite, and this document is not a legal brief. However, should a legal brief become a necessary part of this process, rest assured that the case law demonstrating the legal impropriety of reducing budget outlays in defiance of environmental laws will take up volumes.

Cost-Plus-Loss

If the cost of forest fires were an overriding factor, then it must be pointed that WFU **does not** save money. The reason is that the costs of forest fires are much more than fire suppression expenses.

Almost since the founding of the US Forest Service in 1905, analysts have evaluated fire costs as suppression expenses plus the capital value of the resources destroyed. The cost of firefighting plus the lost value of whatever burned down is known as **cost-plus-loss** and is the standard parameter of forest fire cost accounting.

Federal fire suppression expenses were nearly $2 billion in 2006 and again in 2007, but we estimate losses at 100 billion board feet of merchantable timber with an economic value of $40 billion. Therefore total federal forest fire cost-plus-loss was approximately $44 billion in 2006 and 2007.

That valuation does not account for the loss of habitat, wildlife, watershed, and esthetic values. In many locations the U.S. Congress has deemed that those non-commodity values exceed the timber values. Therefore the 2006 and 2007 losses in non-commodities exceeded $44 billion, because those forests that were catastrophically incinerated also suffered huge degradation of habitat, wildlife populations, water quality and quantity, air quality, and attractiveness for recreation.

Nor does that valuation include the losses incurred on private property in the form of tree farms, ranches, rural homes, urban homes, and other private property destroyed by federal fires emanating from federal lands.

Nor does that valuation include the lives of over 30 forest firefighters lost in the line of duty.

Thus the $44 billion cost-plus-loss figure underestimates the true losses, which were priceless and irreplaceable.

The GAO and USDA OIG reports totally ignore cost-plus-loss and thus fail to provide the critical information that Congress and federal forest agencies need to evaluate true fire costs.

For the last fifty years, or more, fire cost analysis has focused on calculations of the economic utility of fire suppression. We fight fire to prevent fire from destroying valuable resources. The prevention of destruction is what is useful about firefighting. In every fire there is some potential destruction that could happen, so we seek to prevent it by controlling and extinguishing the fire.

The potential destruction can be accounted for as probable cost-plus-loss should firefighting fail to stop the fire. That is, should the fire not be contained within a given perimeter, how much bigger could it get and how much additional firefighting expenses and resource destruction would likely occur?

The mathematical calculation of probable cost-plus-loss (if suppression had failed) minus the actual cost-plus-loss (assuming suppression was successful) represents the economic utility of firefighting.

In short, the dollar usefulness of firefighting is the value of what was saved (plus probable expenses) minus the total sum value of what was lost plus actual expenses. The result of that computation is called the economic utility of firefighting. The general goal of firefighting expenditures is to maximize the economic utility.

No rational discussion of fire suppression costs can happen without reference to the economic utility of firefighting. Maximizing utility is the only rational reason we spend any money on firefighting at all.

The GAO and USDA OIG reports completely ignore economic utility. It is a very dangerous omission. The logic of the reports is fiducially incompetent and wrong, and following their recommendations will lead to steadily increasing catastrophic forest fire acreage and exponentially greater cost-plus-losses in the future.

To make matters worse, the USDA OIG report recommends reducing fire suppression costs per acre. This is illogical and incompetent in the accounting sense. Total costs, not costs per acre, are the problem. A small fire may be expensive to suppress per acre, and megafire suppression costs may be much less per acre, but overall megafires extract magnitudes more money from taxpayers and the Federal Treasury.

Similarly, the cost-plus-loss economic utility of firefighting must be calculated as total cost-plus-loss, not cost-plus-loss per acre.

Allowing fires to burn unchecked in ever expanding acreages may reduce cost per acre, but all the while total costs and total cost-plus-losses increase exponentially. The fiduciary logic of WFU is thus fatally flawed.

The USDA OIG report goes so far as to call for a national investigation of a USFS Forest Supervisor who, the report alleges, ran up costs of a fire to $3,000 per acre. Yet there is no analysis of the value of the resources, homes, communities, and lives saved by the actions of that Forest Supervisor.

The positive economic utility of the Forest Supervisor's decision-making was probably in the hundreds of millions, perhaps billions of dollars. The authors of the USDA OIG wish to see him investigated and sanctioned for that, and to send that message to all fire managers in the future. Fire managers are being told that their efforts to reduce total fire costs, cost-plus-losses, and potential cost-plus-losses will not be tolerated and punishments will ensue. Instead, fire managers are to let fires grow as large as possible to minimize costs per acre of fire suppression.

That policy will lead directly to larger fires, increased total fire suppression expenses, and increased resource losses. That is the opposite of what Congress and the Nation desire. At the root of that irrational policy are the fiducially incompetent methods of the USDA OIG report.

The USDA OIG report claims that WFU's have resource benefits, but they do not. WFU's do not reduce the fire hazard; they actualize it, which often results in more dead fuels than were on the site before the fire. WFU's do not select which trees to kill, but kill old-growth and young-growth trees alike indiscriminately. Beetle-caused mortality often follows WFU's, killing the few trees that survive the fires. Wildlife habitat for forest dwelling animals is often destroyed or severely damaged beyond recovery by WFU's. Water, air, heritage cultural sites, recreation, and local economies suffer as well.

WFU is a new name for an old practice formerly called prescribed natural fire. It was a prescribed natural fire that burned over a million acres in Yellowstone, our flagship national park, in 1988. Let It Burn policies led to the Biscuit Fire of 2003 and the Idaho fires of 2007, among many others. All were de facto WFU fires that blew up and became megafires that destroyed vast tracts of forests containing T&E species populations and habitat.

Flirting with WFU's may lead to a regional firestorm destructive beyond any disaster in U.S. History. If dozens of WFU's are burning uncontrolled across the West during an upcoming fire season, and concurrently a large windstorm arises, the wind-driven embers from those WFU's could set the entire western United States on fire in a matter of hours.

Such an event occurred in 1910 when 3 million acres burned in 36 hours. The Great Fires of 1910 burned mainly in sparsely populated Idaho and Montana but still destroyed six towns and killed 78 firefighters in a matter of hours.

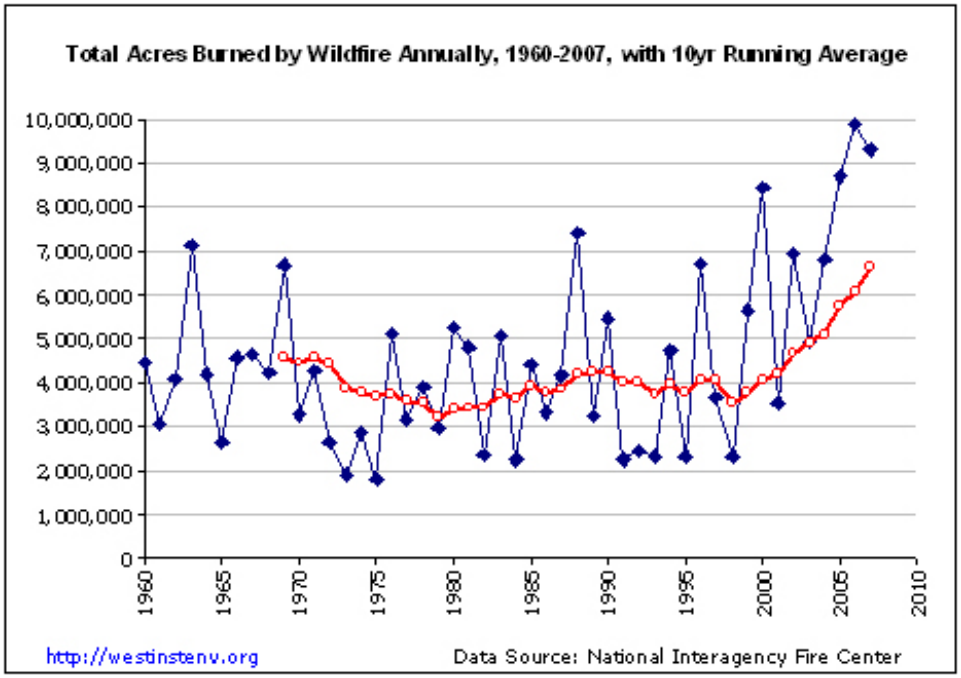
Windstorms are damaging enough to forests. When they carry fire they can devastate whole regions: forests, towns and all.

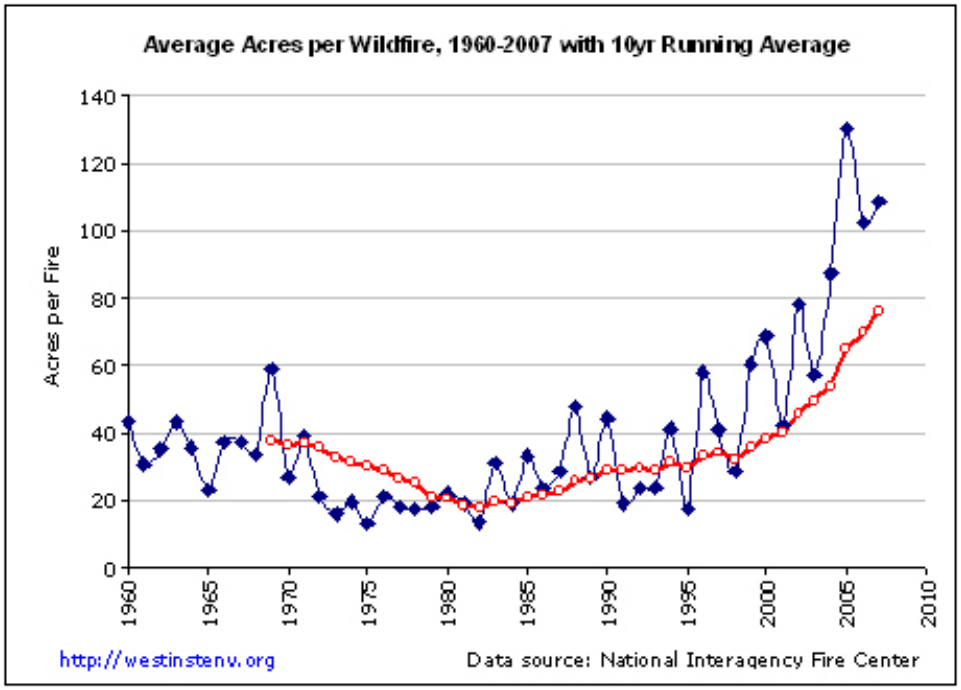
The GAO and USDA reports (which were accepted and implemented by the Washington Office of the US Forest Service) recommend larger fires and more WFU's that burn for extended periods. That policy is an invitation to regional holocaust.

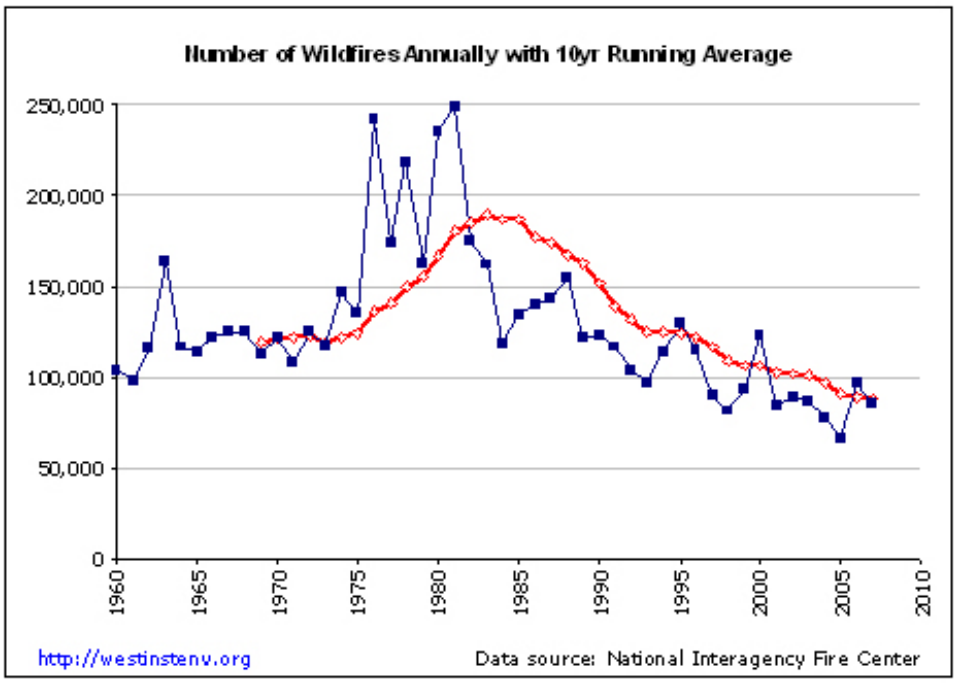
The principal author of this document pointed out all the above to the U.S. Congress in February of 2007 (see An Open Letter to the U.S. Senate Regarding Fire Suppression Costs in Appendix A). Those warning were ignored. As a result, Idaho suffered their worst fire season since 1910 with over 2 million acres burned in wildfires.

We point it out again, in the hopes that rationality in fire management policy will someday prevail. We also demand that RR-SNF make full disclosures in an EIS process, required by law, before they adopt and implement their proposed amendments to their LRMP.

Fire effects on the Eldorado National Forest


Total Acres Burned by Wildfire Annually, 1960-2007, with 10yr Running Average
10,000,000
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
http://westinstenv.org
Data Source: National Interagency Fire Center


Average Acres per Wildfire, 1960-2007 with 10yr Running Average
Acres per Fire
140
120
100
80
60
40
20
0
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
http://westinstenv.org
Data source: National Interagency Fire Center



Fire effects on the Deschutes National Forest

XIII. Probable Significant Impacts/Effects on Public and Fire Fighter Safety

In the March 5, 2008, Notice issued by the RR-SNF that precipitated the comments in this document appear the words:

> In response to all fires, the Forest Service emphasizes firefighter and public safety and recognizes the need to avoid or prevent damage to property or resources. (see page 3 above).

The question arises then, are WFU fires safer or more dangerous to firefighters and the public? Is it less hazardous to merely "monitor" lightning-ignited fires and watch them burn, or to fully engage them to contain, control, and extinguish such fires?

The Little Venus Incident

On July 18, 2006 a forest fire burned over a wildland fire use module at the Little Venus WFU Fire on the Shoshone National Forest. All 10 firefighters survived by deploying fire shelters: reflective, metallic, one-man tents.

Burnovers and shelter deployments are a big deal. Burnovers kill firefighters. Shelters are a last-ditch attempt to save lives, when all other measures have failed. Neither the firefighting community nor the greater community at large desire burnovers or shelter deployments, and when they happen, there are investigations.

The Little Venus Incident was investigated, and chief among the findings is the *Little Venus Fire Shelter Deployment Peer Review Report*, issued August 24, 2006. (see Appendix A). It is an exceptional document, very well-written and researched, and based on personal interviews of those involved.
From the Executive Summary:

> On July 18, 2006, 10 individuals assigned to the Little Venus Fire on the Shoshone NF as part of a fire use module were entrapped by the fire and deployed fire shelters. No significant injuries were sustained, no personnel were hospitalized and all personnel were safely evacuated from the fire. …

> The US Forest Service, Rocky Mountain Regional Office initiated a review of the circumstances surrounding the deployment. A Review Team consisting of Forest Service and Bureau of Land Management personnel was formed and reported to the Shoshone NF Supervisor's Office in Cody, Wyoming, on July 19, 2006. …
>
> From USDA Forest Service Shoshone National Forest. Little Venus Fire Shelter Deployment Peer Review Report, Rocky Mountain Region August 24, 2006.

What the Review Team found was a cascade of human errors that nearly killed 12 people and a packtrain of mules.

The incident in question occurred because a fire use module (FUM) team walked up a steep-sided canyon while the WFU fire was coming down it. They had no radio communication, because the ridgetop radio repeater system was not functioning. They left the trailhead in the afternoon as the wind was picking up, and marched up into the fiery unknown with a muletrain.

Their civilian packers, a man and his 14-year-old son, and ten mules went up the trail ahead of them. Neither packer had any fire gear. When they reached the fire front, the boy turned and rode his mule at a gallop back down the trail. One mule followed him. The adult packer grabbed the leads of others and rode down after.

The fire was bearing down on the FUM, and so was the boy, who scattered the team off the trail as he galloped through cursing and screaming, trailing a mule. One member of the team had already hightailed down the trail, found a shelter site, and deployed her fire shelter. The others were regrouping when the other packer and the other eight mules came stampeding right out of the flames.

The mules were entangled in their leads, and the nine remaining firefighters helped cut them free. This five-minute melee was later referred to as "the rodeo". Then the elder packer took off down the trail with the mules, and the nine firefighters deployed their fire shelters.

There were only eight working shelters (one was ripped at the seams). The unlucky firefighter used it as a tarp. After a short heat pulse, the team

redeployed at another spot, joined tents and improved the situation for the ninth man. Four of the shelters were "new generation." The others were the old kind.

The group of nine firefighters huddled in their shelters for an hour as the fire burned all around them and four "heat pulses" seared through. The tenth firefighter had deployed down the canyon, and she experienced five heat pulses over the course of an hour and a half.

Two hours after she first headed back down the trail, the isolated firefighter finally made radio contact with a helicopter. She believed that the other crew members were dead. A half hour later the other nine made radio contact, and fifteen minutes after that they joined up with the tenth firefighter.

The heli-base had been alerted by another firefighter on another part of the fire, who had heard the radio calls from the crew after they deployed and had driven his truck to the base to inform the fire managers (the communication system was down).

Two helicopters were sent aloft in strong winds. Neither dropped any water or rescued the crew, but they did eventually make radio contact.

The ten firefighters all walked out, dodging falling fresh snags, and discovered that the packers and mules had outrun the fire and were safe at the trailhead. The firefighters were given first aid for minor burns and oxygen for their smoke-seared lungs, but no one was hospitalized. Then the crew drove back to their motel.

From the *Little Venus Fire Shelter Deployment Peer Review Report*:

> The Little Venus Fire was located in the Washakie Wilderness, an area authorized for wildland fire use (WFU) in the Forest Plan. As a naturally ignited wildland fire in an area approved for WFU, the fire became a candidate. Forest staff initiated the Wildland Fire Implementation Plan (WFIP) (on file at Shoshone NF Forest Supervisor's Office) Stage I on June 23. The fire met criteria for management as a WFU and the decision was made to implement it as such by the Forest Supervisor. This instance marks the first wildland fire use event of this complexity on the Shoshone NF.

> Planning and implementation procedures for wildland fire use events are described in the "Wildland Fire Use: Implementation Procedures Reference Guide" (BLM/BIA/FWS/NPS/USFS 2005) which states: "Wildland fire use, based on the Federal Fire Policy direction, is a direct component of wildland fire management. It is a management action equal to wildfire suppression and thus, constitutes an emergency action. It receives consideration, management attention, and management policies equal to wildfire suppression, except for specific differences related to ignition source and management action success…" (Ibid).

The Shoshone NF had no experience with a major WFU. They were attempting to comply with national policy directives that encourage WFU fires. Just doing their jobs, they declared one with all the bureaucratic red tape involved, and handed it off to a Type 1 Fire Use Management Team (FUM).

The Unaweep FUM is normally a 7 person team, managed by the Bureau of Land Management (BLM) in Grand Junction, Colorado. At the time of the Little Venus Fire there were eight team members, including two trainees from the Payette NF, one from the White River NF, a BLM trainee from the Boise Smoke Jumper base, and four other BLM employees. Two Shoshone NF firefighters joined the FUM on the Little Venus Fire, bringing the total to ten. All were trained and experienced firefighters, which was a big factor in saving their own lives.

What is WFU duty like? The Peer Review Report was frank:

> On July 16, Unaweep was ordered for the Little Venus WFU. This assignment had all the ingredients of most Fire Use Modules' favorite type of assignment: The firefighters would be in timber country, in a wilderness area, in a cooler high elevation climate and the fire's location was fairly remote. They looked forward to a two week assignment in the rugged Washakie Wilderness area. (Ibid).

What it is that FUMs do, or are supposed to do?

> One of the purposes of Fire Use Modules is to support wildland fire use implementation for federal wildland fire management agencies. On wildland fire use assignments, module members carry out ontheground activities that range from monitoring fire behavior and

> weather to limited firefighting to check a fire's intensity or spread in certain areas. Modules frequently serve as field observers supplying maps and fire intelligence to fire behavior and resource unit personnel. On suppression incidents, modules may serve as fire crews building line and conducting complex burnout operations. Nationwide, fire use modules are valued for their high level of fire behavior monitoring expertise, and known for their ability to safely operate with little logistical support in very remote wilderness areas. (Ibid.)

Apparently FUMs "implement monitoring," although how they do that without communications is inexplicable. They allegedly have a lot of expertise at predicting fire behavior, too. Except in this case, apparently.

> Fire behavior was under predicted by the fire behavior analyst for the day of July 18, 2006, and the fire spread surprised most of the people involved. Current fire behavior models do not accurately reflect rate of spread in standing dead timber or in conditions of high winds and high probability of ignition which results in spread by spotting.(Ibid.)

Apparently their models are imprecise and inaccurate, and they cannot predict fire behavior to save their lives, so to speak.

The Peer Review Report presents a long list of lessons the firefighters learned for themselves from this incident. Most are fairly basic. One stands out:

> The focus on keeping costs low interfered with mitigating key safety concerns and this is unacceptable. Agencies must STOP fostering a culture of doing more with less. (Ibid).

Another "lesson learned" from the Little Venus Incident is that WFU fires are not safer for firefighters than suppression fires. Monitoring, or as the March 5, 2008, RR-SNF Notice put it, "watching" WFU fires, is a risky business. Small crews without backup, lookouts, communications, escape routes, or safety zones violate the fundamental safety rules of wildland firefighting.

The "cost containment" directive discussed the previous section is not oriented to firefighter safety. As a result, WFU fires are not the safest approach to wildland firefighting.

Public Safety

Nor are WFU fires safe for the general public. When a skeleton crew is "watching" a wildland fire, recreationalists have minimal warning signs that they may be entering a hazardous fire zone.

Our national forests, including the RR-SNF are used extensively during the summer by hikers, campers, and sightseers. Any number of citizens may be out and about on the RR-SNF on any given summer day. Although "civilians" may notice smoke plumes (and they may not) generally hikers and campers do not carry two-way radios tuned to firefighter frequencies.

On regular suppression fires firefighter teams are out in force. As they work to contain, control, and extinguish fires, personnel, trucks, helicopters, and air tankers yield warning signs that fire is in the area.

In contrast, some WFU fires may cover tens of thousands of acres and be manned by no more than a dozen firefighting personnel, generally on the ground in a tight group. The warning signs are far less.

Nor are WFU fires always in remote areas. Sometimes they are at the edges of national forest property, and sometimes over the boundary line and on private property. The "fire community" has developed an arrogance regarding WFU fires. If they are good for public land, then they must be good for private land, too. The trend is to allow WFU fires to roam wherever they please, even off the Federal Estate.

The principal author of this document received the following report from a landowner in New Mexico (she does not wish her name revealed, for reasons that should be clear):

> The fire was called the Skates Fire. They lit a back burn during high wind conditions. Stupid. Yes, it was a whoofoo [a WFU fire].
>
> They decided to bring the fire within ¼ mile of our property lines. I am not joking here. They put the smoke monitor miles away. I know of one person put in a nursing home that did not come out again due to the Skates Fire.

I forced them after the fire was out of control for 24 hours to suppress. I think I read that rule somewhere. I am not into suppression but when safety and private property is at stake, it makes sense to me not to burn.

The USFS agents were very pissed at me. There was a lot of slander in the local cafes later because I would not let them at 2 AM burn my land.

My horses were freaked out and one colicked that night. The USFS were rocketing the mountain. Burning my sliver of land would not help them, and the way they were burning I was worried they would burn all my fencing, hay, and barn, not to mention jumping the road.

I would not let them come on my land and they were pissed. I had two angry men yelling at me at 2 in the morning. They even had the gall to say, “See what Nature is going to bring you.” They were threatening and intimidating.

I know one of their names.

I was standing there with one very sick horse, two others panicked, a needle still in my pocket, plus the drugs, from giving my horses some tranqs to keep them calm. I had fought their damn fire since 3 PM it was now 2 AM, and they were going to burn my land without asking.

I called on my fire radio for the sheriff, and the USFS bullies backed off. They cut a fire line and left my land alone. I slept on the dirt in my horses’ pen to keep them safe and protect my land.

If I had not been there, or had not resisted, my land would have been ruined and my hayfield would have been an inferno.

I had met one of the firefighters at our Fire Dept earlier. He gave me a smile when I told the supervisors to get off my land. He later told me there was no reason or benefit to burn my hill. I do not understand the logic of burning so close to peoples’ homes. And why were the USFS agents so aggressive with me?

> The Skates Fire produced no benefit but lots of damage. I am an engineer with some fire training, but not an expert. I wonder if the USFS fire experts are anything like the USFWS wolf experts?
>
> Two days later there were people on my land from another National Forest. They prowled the hand-built fire line. It seemed like they were higher ups investigating what went on at my property. I again was not asked my permission to allow Federal agents to be on my land, although I do have signs.
>
> Later they started a rumor that because I would not let them burn my land, the fire got out of control. The truth is the fire blew 12 hours earlier, but this was not what they were saying in the restaurants. Luckily enough people know me and what really happened, so the USFS eventually shut up.
>
> There were lots of hard feelings about the Skates Fire. It was very mishandled. I would love to know if anyone got their butt chewed for making the decision to light a back burn with 70 mph winds and hot weather predicted for the next day. We nearly lost 8 homes. We fought hard to save them. We had fire brands falling just across the road, with some making spot fires that nearly caught other homes on fire.
>
> The USFS lit back burns that really made no sense. The places where the back burns were lit are still scarred. There were no homes to protect, so I'm not sure why the back burns were lit where they were. The initial fire did less damage than the back burns.
>
> Thank you for telling others about the Skates Fire.

Public safety is compromised when arrogant Federal employees attempt to extend WFU fires onto private property. The employees of the RR-SNF may or may not be so arrogant; there is no way of knowing ahead of time. What is clear is that the significant risk to private property owners from WFU fires has been realized elsewhere. The EIS process is about full disclosure, before Federal actions are taken. It is imperative that such a process take place before WFU fires are implemented on the RR-SNF.

XIV. Probable Significant Cumulative Impacts/Effects

The proposed amendments by the RR-SNF to add "Appropriate Management Response" to their Land and Resources Management Plan will not result in a one time effect. Instead, numerous WFU fires are contemplated for this fire season and all fire seasons in the foreseeable future. In other words, many untended, unfought fires will be allowed to burn in at unknown dates in unknown places on the RR-SNF in the years to come.

The effects of a single Let-It-Burn fire are significant. The effects of numerous such fires will accumulate and cause hugely significant effects over time to flora, fauna, historic and cultural resources, water quality and watersheds, air quality and airsheds, recreation, and local economies.

NEPA defines cumulative impacts thusly:

> Sec. 1508.7 Cumulative impact.
>
> "Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. …

NEPA is also clear in that the Act considers "impacts" and "effects" to be two interchangeable words that mean the same thing:

> Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. …

Effects and/or impacts may be direct or indirect:

> (a) Direct effects, which are caused by the action and occur at the same time and place.
>
> (b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

NEPA also calls for a process which evaluates the cumulative impacts, direct and indirect, that **may** result from reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions:

> "Environmental impact statement" means a detailed written statement as required by section 102(2)(C) of the Act. …
>
> The preceding quotes are from Sec. 1508.7, 1508.8, and 1508.11, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 et seq.), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977). Source: 43 FR 56003, Nov. 29, 1978, unless otherwise noted (see Appendix A).

In 1987 the Silver Fire burned 100,000 acres of the RR-SNF. Fifteen years later the Biscuit Fire burned the exact same ground and an additional 400,000 acres besides. Little or no forest recovery actions were taken following either fire. Instead, fire-type brush was allowed to grow and accumulate fine fuels on top of the dead coarse fuels left after the previous fires. It is reasonable to expect that in another fifteen years (in or near 2017) another catastrophic megafire will burn those same acres and more besides.

The RR-SNF has embarked on a program of forest incineration and repeat megafires. The addition of WFU into the AMR of the RR-SNF LRMP guarantees that megafires will haunt the RR-SNF for decades and even centuries to come.

The legacy to future generations will a former forest converted to fire-type brush that explodes periodically into holocausts of historic proportions. The old-growth forests of the RR-SNF are effectively doomed by such a plan, as are the threatened and endangered wildlife, the watersheds, the airsheds, the rural economies, recreation opportunities, public health, and public safety.

The cumulative effect of WFU fires and the general abandonment of the RR-SNF to un-management will be to destroy utterly the resources and values that the U.S. Forest Service was instituted to protect, maintain, and perpetuate.

There is a better way.

> Restoration forestry aims to bridge the environmental disconnect, reacquaint people with their forests and restore forests to their historic grandeur. Using history as a guide and modern science as its primary tool, restoration forestry acknowledges the many values people expect from forests, such as the need to keep forests biologically diverse and productive, and the importance of ensuring the safety of forest communities. It addresses the economic realities, ecological challenges and social demands of making forests great again.
>
> Restoration forestry will create beautiful, natural forests, and encourage productive use of resources that might otherwise go up in smoke. It sets forth a feasible way to provide abundant wildlife habitat, safe communities, clean air, sustainable energy, greenhouse gas storage to help address global warming and a dependable source of wood products. At the same time, it returns to the landscape forests that look and function much like they did hundreds of years ago.
>
> From Bonnicksen, Thomas M. Protecting Communities And Saving Forests–Solving the Wildfire Crisis Through Restoration Forestry. 2007. Published by the Forest Foundation. (see Appendix A).

Instead of abandoning the RR-SNF to incineration and megafire, active management to restore our priceless, heritage forests will protect, maintain, and perpetuate them and yield the resource goods, services, and values that society expects and demands.

The cumulative effects of unchecked wildfires are terrible, thoughtless wastes of precious resources. The proposed adoption of a program of unchecked wildfires will result in tragedies almost too horrible to contemplate.

It is time to break out of this vicious cycle of destructive megafires. It is time to adopt a program of forest restoration on the RR-SNF.

Simply halting the proposed amendments is not enough. An active program of forest restoration must be instituted on the RR-SNF as soon as possible.

That purpose is beyond the scope of this document. Unfortunately we are limited by circumstance to merely hamper further destruction. Be that as it may, we take this opportunity to constrain the adoption of destructive WFU amendments to the RR-SNF LRMP.

The cumulative effects of WFU fires are significant. When Federal actions are likely to result in significant effects, the law (NEPA, ESA, NHPA) requires an Environmental Impact Statement be prepared and the public be involved in substantive discussion of the proposed actions.

Fire effects on the Deschutes NF

XV. Conclusions

The Rogue River – Siskiyou National Forest proposes to "watch" lightning-ignited forest fires burn rather than to suppress them. Yet without rapid initial attack and aggressive suppression efforts, small forest fires can blow up into catastrophic megafires.

The terrible megafire consequences of delay and obfuscation have happened before. They have happened on the RR-SNF.

From "The Biscuit Fire: Consequences of Management Decisions" by Charles R. Mansfield, Ph.D.:

> The largest forest fire in the history of Oregon began on 13 July, 2002. A squall line with embedded thunderstorms, moved into Southwest Oregon from the Pacific Ocean and set several forest fires. These fires burned together and became what we know as the Biscuit Fire (1). Nearly 500,000 acres of forest, including all of the Kalmiopsis Wilderness Area, burned. The Biscuit Fire continued until the fall rains began. Many explanations have been for why fires such as the Biscuit Fire have become so large. Few of the proposed explanations can withstand close examination.
>
> The fire danger was very high but that is the normal condition for that area, at that time of year. The forests were dense, but that is a normal condition for a temperate rain forest. It is claimed that over aggressive fire suppression has caused the forests to become too dense. However, the main component of the Biscuit Fire started in an area destroyed by a 110,000 acre fire in 1987. Logging was not the cause because the Biscuit Fire started in a wilderness area that had never been logged. Lack of available firefighters was not the cause because at 8:00 MDT on the morning of the 13th, 110 Smokejumpers were available in the 48 contiguous states.
>
> Why then was this disaster allowed to develop? Two factors contributed to the size of the Biscuit fire. First, the main component was not detected on a timely basis. Second, the fire was not aggressively attacked although the fire danger was high. It is the thesis of the author that the root cause for these failures is

complex. Historical decisions by government officials, Congress and private organizations have had unintended consequences for the forests at every stage. …

When fire reports started coming in, a helicopter was launched to survey the conditions. This must be contrasted with older procedure where a jump ship would often be launched right behind a thunderstorm and the Smokejumpers would be dispatched from the air. Difficulties began to crop up very early in the game. Ground crews and equipment could not reach the Biscuit #1, Biscuit#2 and Sourdough fires because the roads had been closed. Bulldozers had to be contracted and trucked to the area to begin reopening the roads. Smokejumpers were ordered by the Incident Commander, he received a reply that none would be available for at least 48 hours.(15) No requests for Smokejumpers were received at any of the Smokejumper bases. Somewhere in the chain of command a decision was made not to employ Smokejumpers. In fact, the Biscuit fire had been ranked at around number 14 on the priority list for resources.

However, the records show that 110 jumpers were available in the 48 contiguous states at the start of business on 13 July. On the days following the start of the Biscuit fire there were 70 to 80 Smokejumpers available at the time of the daily staffing report.(16) The fires were beginning to spread rapidly and no effective attempt at control had been made except dispatching the Type II team sent to the Carter fire. At around midday on the 15th of July the Florence fire was discovered by accident. The Type 2 crew was dispatched late in the afternoon and began hiking toward the fire. At midday, a Smokejumper aircraft with eight Smokejumpers on board was patrolling the Umpqua NF. The jump ship ran low on fuel and had to land at Medford to refuel. While refueling, the Supervisory Smokejumper contacted Southern Oregon Dispatch by telephone and reported that no fires had been found on the Umpqua NF. He then requested further orders. The Smokejumpers were returned to their base at Redmond, Oregon.

In the early afternoon of the 16th the ground crew reached the vicinity of the Florence fire and deemed that the fire was too intense to attack. At that point in time, the fate of 500,000 acres of

> the property of the people of the United States was sealed. The Biscuit #1, Biscuit #2 and Sourdough fires became the Sour Biscuit fire. The Sour Biscuit fire combined with the Florence fire and was briefly called the Florence fire. The citizens of Florence, Oregon complained that the name was ruining their community image and the Florence fire begat the Biscuit fire.
>
> From Charles R. Mansfield, Ph.D. The Biscuit Fire: Consequences of Management Decisions 2004. Coyote Aerospace, Los Alamos, NM (see Appendix B).

The adoption and implementation of the proposed WFU amendment to the RR-SNF LRMP **will** lead to more Biscuit Fires.

The intention of the US Forest Service is to allow lightning-ignited fires to burn unimpeded. When lightning strikes, instead of rapid initial attack and full suppression, functionaries of the RR-SNF will delay fire response while mulling over the "resource benefits" that will **not** occur. Fires will be allowed to burn without containment, control, or extinguishment.

Those fires will erupt into canopy fire storms and lay waste to hundreds of thousands of acres. It has happened before. Their intention is to let it happen again.

Resources will **not** be benefited. Instead, resources will be incinerated.

In this document we have detailed the predictable and preventable impacts to flora, fauna, historic/cultural resources, water and watersheds, air and airsheds, carbon emissions, fire suppression costs, public and worker safety, local economies, and recreation opportunities. In addition, significant impacts will occur to

- Soils
- Hydrology
- Transportation networks
- Social resources
- Fisheries
- Invasive and noxious weeds
- Insects and disease
- Wilderness and roadless areas

- Wild and scenic rivers
- Scenic quality
- Short-term and long-term productivity
- Irreversible and irretrievable commitment of resources
- Wetlands and floodplains
- Farmland, rangeland, and private property
- Energy sources
- Civil rights and environmental justice

Those impacts will be immediate and will also accumulate over the long-term. We have provided ample proof and reference to hundreds of peer-reviewed reports, studies, and testimonies that support that contention.

The National Environmental Policy Act requires the preparation of Environmental Impact Statements before the U.S. government engages in activities that might have significant effects on the environment.

The EIS process aids in revealing, analyzing, and public discussion of the potential effects before they happen. That is a beneficial process, as well as required under federal law.

This document is a statement of our rationale for requesting an EIS process. We present this document to the Rogue River-Siskiyou National Forest so that they might understand and comply with federal law.

> [A note on the pictures: we have chosen to include in the body of this document photographs of fire effects from primarily national forests other than the Rogue River Siskiyou NF. For an excellent montage of before and after photographs of fire effects on the RR-SNF, please see **The Biscuit Fire: Consequences of Management Decisions** by Charles R. Mansfield, Ph.D. 2004. Coyote Aerospace, Los Alamos, NM in Appendix B.
>
> Photos on pages 1, 12, 59, 90, and 132 courtesy Bob Zybach and Nana Latham, B&B Complex Repeat Photography Grid Project. 2004. Oregon Websites and Watersheds Project, Inc. Photo on page 1 courtesy Charles R. Mansfield, Coyote Aerospace. Photo on page 103 courtesy Lori Rafferty, Los Padres NF. All other photos courtesy W.I.S.E.]

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