United States
Department of
Agriculture

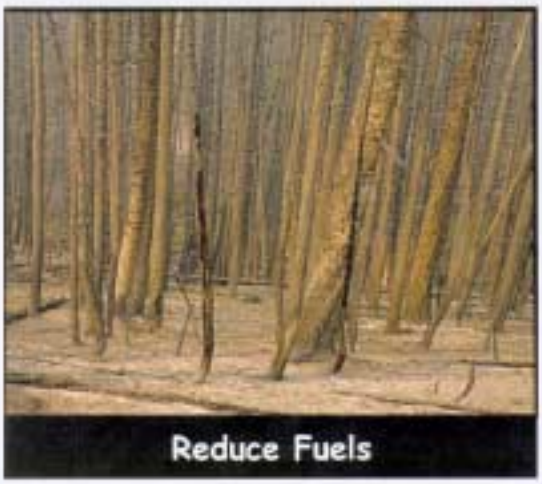
Forest
Service

Bitterroot
National
Forest

September
2001

Burned Area Recovery

Final Environmental Impact Statement



Reduce Fuels

Improve Watershed Conditions

Reforest Burned Lands

Volume 2

Response to Comments

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CHAPTER 4 – RESPONSE TO COMMENTS

Introduction

The Forest Service solicited comment From May 24 through July 31, 2001, on the Burned Area Recovery Draft EIS and its five alternatives. Some 2,444 responses from organizations, government entities, and private citizens were received and analyzed (for a description of the content analysis process, see Content Analysis Process below). Every comment and suggestion has value, whether expressed by one or a thousand respondents. All input was considered, and all relevant public concerns were captured in the content analysis process.

Demographics

The demographic tables below show who submitted comments, where the comments came from, their general affiliation with various organizations or government agencies, and the manner in which they respond.

Geographic Representation

Geographic representation is tracked for each response during the course of content analysis. Correspondence was received from 48 U.S. States and seven other countries. In addition, 225 responses revealed no geographic origin. Geographic data is provided in Table 4-1.

Table 4-1 - Geographic Representation of Response by Country and State

Country	State	Number of Responses	Number of Signatures
US	Alabama	8	12
	Alaska	6	26
	Arizona	30	42
	Arkansas	8	9
	California	108	149
	Colorado	31	34
	Connecticut	3	3
	District of Columbia	5	6
	Florida	13	15
	Georgia	5	5
	Hawaii	1	1
	Idaho	160	234
	Illinois	16	21
	Indiana	9	9
	Iowa	8	8
	Kansas	3	8
	Kentucky	4	4
	Louisiana	5	8
	Maine	9	10
	Maryland	7	7
	Massachusetts	3	4
	Michigan	8	21
	Minnesota	12	19
	Missouri	11	11
	Montana	1,422	2,983
	Nebraska	2	2
	Nevada	3	4
	New Hampshire	7	9
	New Jersey	4	4
	New Mexico	22	23
	New York	17	20
	North Carolina	22	23
	North Dakota	5	6
	Ohio	12	14
	Oklahoma	2	2
	Oregon	91	234
	Pennsylvania	13	13
	South Carolina	3	5
	South Dakota	4	4
	Tennessee	7	7
	Texas	23	28
	Utah	13	13
	Vermont	2	2
	Virginia	16	19
	Washington	47	77
	West Virginia	4	4
	Wisconsin	16	24
	Wyoming	5	5
Outside US*		7	11
	Unspecified Location	185	216
	Multiple Locations	17	Included in above
Total		**2,444**	**4,418**

* 1 response accounted for in “Multiple Location” total

Organizational Representation

Responses were received from various organizations and unaffiliated individuals as shown in Table 4-2. Respondents include government representatives, environmental groups, agricultural and wood products industries and associations, and place based organizations, as well as unaffiliated individuals and others. Organization types were tracked for each letter, email, or fax received.

Table 4-2 - Number of Responses/Signatures by Organization Type

Organization Type	Number of Responses	Number of Signatures
Business (my/our), Chamber of Commerce/Tourism Industry	6	214
County Agency, Government Association, or elected official	1	3
Federal Agency or elected official	3	3
Forest Service employee	2	2
Multiple Use/Lands Rights Organization	3	3
Other (Undefined Organization Type)	1	1
Place Based Groups	1	1
Preservation/Conservation Organization	37	53
Recreational Organization (non-motorized – hiking, xc-skiing)	2	3
State Agency, Government Association, or elected official	3	3
Unaffiliated Individual or Unidentifiable Respondent	2,340	4,086
University, professional society or schools	4	5
Wood Products Industry or Association	24	41
Multiple Organization Responses	17	Included in above

Response Type

Response types were tracked for each response received on the project. Responses were received in six different forms as shown in Table 4-3.

Table 4-3 - Number of Responses/Signatures by Response Type

Response Type	Number of Responses	Number of Signatures
Letter/Fax – with fewer than five signatures	1,470	1,649
Email – with fewer than five signatures	846	904
Petition – Any piece of correspondence with five or more signatures	9	1,736
Public Meeting Comment Form	60	65
Action Alert (includes non-government organization constituent guides)	3	3
Telephone transcript/Verbal Comments	56	61

Organized Response Campaigns

Responses from these campaigns are classified as “forms.” A “form” is an identical response submitted by 5 or more different respondents. All responses with matching information are linked to the form. If a response does not contain all of the information in a given form, the response is entered as an individual letter.

Table summarizes the issues presented in the twelve organized response campaigns for this project and the number of forms received. Of the 2,444 responses submitted during this comment period, organized response campaigns accounted for 1,724, (70.5%,) in the form of e-mail, postcards, newspaper coupons, and multiple letters.

Table 4-4 - Organized Response Campaigns

Form Number	Form Summary	Responses	Number of Signatures
1	Encourages the Forest Service to manage burned areas in accordance with current directives, regulatory mandates, and the best available science. Also shows specific concern for the protection of water quality resources.	15	15
2	Urges the development and selection of the Conservation and Local Economy Alternative, citing potential negative impacts of proposed Alternatives B, D, and E.	683	752
3	Encourages the Forest Service to salvage log as proposed in Alternative D or E, to best revive forest and local economic health while preventing future wildfires.	527	546
4	Supports the adoption of a plan that would allow natural processes to occur outside of the wildland/urban interface; discourages the harvesting of green trees and any harvesting in Inventoried Roadless Areas.	29	29
5	Encourages the Forest Service to select Alternative B before the burned timber loses any more value.	30	31
6	Supports the selection of Alternative B noting the potential benefits to local mills.	21	22
7	Promotes active management of green forests and harvest of burned timber.	50	51
8	Urges the development and selection of the Conservation and Local Economy Alternative, citing potential negative impacts of proposed Alternatives B, D, and E.	17	19
9	Strongly in favor of the quick implementation of Alternative D due to the potential positive impacts to local economy.	319	362
10	Respectfully urges the selection of Alternative D for overall short- and long-term ecosystem recovery. Notes the specific impacts and benefits of fuel-reduction activities. Discourages the amendment of the Forest Plan to raise snag retention levels.	21	21
11	Supports the Conservation and Local Economy Alternative with the belief that a “recovery” plan should not result in any environmental degradation.	6	7
12	Encourages the selection of Alternative D. Notes the State of Montana’s rapid salvage harvest and requests the Forest Service to begin harvesting immediately.	6	6
	Total	**1,724**	**1,861**

Content Analysis Process

Public comments on the Bitterroot Burned Area Recovery Draft EIS are documented and analyzed using a process called content analysis, which is a systematic method of compiling, categorizing, and capturing the full range of public viewpoints and concerns regarding a plan or project. Content analysis is intended to help the planning team to clarify, adjust, or use technical information to prepare the Final EIS. Information from public meetings, letters, emails, faxes, and other sources are all included in this analysis. It is important to understand that this process makes no attempt to treat comments as votes. Content analysis ensures that every comment is considered at some point in the decision process. A more detailed accounting of the content analysis methods used, results and a comprehensive list of public concerns can be found in the project file (PF Doc Content Analysis-8).

Comments were sorted and grouped into “Public Concerns.” Statements of public concern are concisely captured through main issue embodied in one or more public comments. Each public concern was given a number. At the end of the process, some public concerns were combined, so some numbers are skipped. After a public concern was identified, one or more sample quotes were selected to illustrate the details of the concern. In this Chapter, each public concern is identified with a number and bold text. The response is indicated below the sample quote.

Public concerns were divided into three main themes:

1. Planning Process and Policy,
2. Consideration of Alternatives, and
3. Affected Environment and Environmental Consequences (this section is broken out by resource).

Response to Comments

The Forest Service Environmental Policy and Procedures Handbook (FSH 1909.15) provides direction on responding to comments. Possible responses are to:

- Modify alternatives including the proposed action.
- Develop and evaluate alternatives not previously given serious consideration by the agency.
- Supplement, improve, or modify its analyses.
- Make factual corrections.
- Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons that support the agency's position.

Copies of all Letters from other Federal, State and Local Governments can be found at the end of this chapter.

Planning Process and Policy

Public comments on the Burned Area Recovery (BAR) project's **planning process** are focused upon compliance with laws, regulations, and policies governing the stated purpose and need; clarification of the document's language and intent; adherence to public involvement and scientific analysis requirements; and provision for adequate monitoring of effects.

2 The Bitterroot National Forest should decrease timelines for implementation to ensure maximum value of salvaged timber.

"We appreciate your plight. Your forest and your personnel have suffered enough. The analysis you have conducted is very thorough and has been completed quickly. However, the NEPA timelines you have had to meet are incongruous with both the need to expedite rehabilitation work and to capture the maximum value from dead and dying trees to be salvaged. We fully expect to see the usual appeals and litigation that will further delay any significant action on the ground. These delays will further reduce the value of any materials to be salvaged, perhaps to the point of no bids being offered." (Wood Products Association, Kalispell, MT - #21)

"Montanan's For Multiple Use is encouraged to see a reasonably sound proposal for cleaning up some of the fire-killed timber. It is just too bad that it has to be studied for almost a year before any proposed action is even put forward. By the time a FEIS is issued, Decision Notice, the inevitable appeals and lawsuits from the tax-exempt preservation groups, nothing will get done this summer or fall, and the timber deteriorates even further. Millions of dollars worth of timber lost in the process prescribed by Congress, which was intended to minimize adverse impacts or enhance the quality of the human environment (NEPA, 1502.1). The waste of public resources in this process should be a crime rather than a lawful process." (Multiple Use/Land Rights Organization, Columbia Falls, MT - #749)

Response:

The Bitterroot Forest has followed the laws and regulations that guide project planning on the National Forests in the most expeditious manner possible. These rules are designed to ensure resource protection and achieve sound and informed decisions on forest management. It can take a long time to work through the complex planning process.

3 The Bitterroot National Forest should not rely on the Social Survey to assess public opinion.

"We are glad to see the Forest Service attempting to obtain and use public opinion to help guide its policies. However, we do not believe that this survey was aimed at collecting information about the needs of the community. Instead, it appears that the survey was designed to lead to responses which are biased, and that the Forest Service is using these biased results to build political and public support for the extensive salvage sale already being planned as part of the Burned Area Recovery Plan. Several claims have been made in the local news media that the survey supports Forest Service management actions and proposed management actions. The flawed methods used in the survey and errors in summarizing the survey have resulted in the presentation of misleading public information. We request that the Forest Service correct this situation. We believe it is important for the Forest Service to properly portray the best, main-stream, forest and fire science to the public and the media. We request that the Forest Service use an appropriate needs-assessment approach, which is consistent with the process laid out in the National Environmental Policy Act, to assess public perception of needs." (Conservation Organization, Hamilton, MT - #22)

Response:

Much more information than just the survey will be used to make the final decision, notably, results of the environmental analysis, scientific information and comments from all over the country gathered during scoping of proposed actions and comments on the DEIS.

5 The Bitterroot National Forest should provide adequate opportunity for direct public interaction with Forest Service personnel.

"Several of our members attended the Darby Draft EIS public input meeting on June 7. The organization and facilitation of the meeting failed to provide an adequate opportunity for our members to provide input to the Forest Service. Only short, limited questions were allowed during the presentation and everyone who wanted to speak did not have an opportunity to speak. The public was then separated into groups with the result that our members ended up talking to other members of the public rather than the Forest Service. Several of the small groups were not adequately facilitated, and at least one broke down into a dialog between two members of the public with others in the group having almost no input. After the group meetings, the groups reported to the audience only the top two of their comments. There was no feedback on substantive comments from the Forest Service to the audience at the end of the meeting. The result is that

our members spent two hours in a meeting and additional time getting to and from the meeting with little or no interaction with the Forest Service. This is not effective public participation." (Preservation/Conservation Organization, Hamilton, MT - #53)

Response:

The format for the public meeting was changed after the meeting in Darby in response to some comments. The format was used in Darby because it had been successful at 12 previous meetings (based on exit critiques by the public) since the fire-recovery planning began last fall. Throughout the scoping and comment periods, provided a variety of different formats for public input have been provided. Opportunities through letter writing, e-mail, letters to the editor, public meetings, conversations with ID Team members and line officers, telephone calls, field trips, or visits to our World Wide Web site, people have been enabled to gather the information they need and to provide comments.

The comment period on the DEIS was extended 15 days to allow more time to comment on the project.

42 The Bitterroot National Forest should extend the comment period by 60 days to allow for a thorough assessment of the DEIS.

"The Ecology Center requests that you extend the public comment period for at least an additional 60 days . . . The Forest Service has never proposed an activity with the magnitude of this one on the Bitterroot National Forest - even the Forest Plan, with its much longer public comment period, did not propose such immediate and large scale management actions with implications for so many impacts, and the comment period on the draft Forest Plan lasted five months. Conservationists are still trying to assess the environmental impacts of the massive logging that is ongoing in the Sula State Forest, which is encompassed by the Project Area and the cumulative effects of which don't appear to be adequately discussed in the DEIS." (Conservation Organization, Missoula, MT - #152)

"The Alliance for the Wild Rockies requests that you extend the public comment period for an additional 60 days. The scale of this project combined with the depth of the DEIS necessitate careful and lengthy consideration; more so than most projects. As we are beginning to learn, this project stands to have significant ramifications for the Bitterroot National Forest and the surrounding ecosystems and communities. While we recognize and greatly appreciate the efforts on the part of you and your staff to answer questions and clarify the DEIS, we need more time to review this extremely large document. Making this analysis unique is the new information and research on fuels and fuel reductions. In light of this new science, the scope and size of the project and the length of the DEIS we believe that is very reasonable to give the public an additional 60 days to fully understand all aspects and impacts of this proposal." (Conservation Organization, Missoula, MT - #143)

Response:

A 15-day extension of the comment period was granted. There was also nearly an additional week following issuances of the DEIS and the publication of our Notice of Availability, which started the 60 day review and comment period.

43 The Bitterroot National Forest should improve monitoring, evaluating and reporting processes to facilitate public understanding of the Bitterroot Burned Area Recovery Plan DEIS implications.

"The fact that the Forest Service has not adequately monitored and evaluated the effects about 14 years of Forest Plan implementation also makes it hard for us to understand the implications of the proposed project. We find it difficult to understand the DEIS due to the Forest Service's laxity in carrying out its monitoring, evaluating, and reporting duties." (Conservation Organization, Missoula, MT - #152)

Response:

The Forest annually completes monitoring and evaluation reports. In response to the Fires of 2000, many resources were assessed for post-fire conditions and documented in the Burned Area Emergency Response reports. Post-fire conditions where also reviewed, documented and summarized, along with recovery recommendations and rationale in the Bitterroot Fires 2000 Post Fire Assessment. These reports are all available for public review. Monitoring plans presented in the DEIS have been strengthened in the FEIS.

47 The Bitterroot National Forest should amend its forest plan to incorporate the Federal Wildland Fire Policy.

"INTEGRATE FIRE INTO THE ECOSYSTEMS OF THE BITTERROOT NATIONAL FOREST. Amend the Forest Plan to formally adopt and actively implement the Federal Wildland Fire Policy. The first and highest priority is completion of a strategic fire management plan that will guide fire recovery activities, fuels management treatments, community fire education programs, and appropriate management responses to wildland fires. This will initiate a process of determining where prescribed burning may be applied and where natural fire can be allowed to burn without suppression activities. This responds to two issues: 1. Ecosystems need fire to play its natural role in the ecosystem. 2. Wildfires must not cause unwanted damage to homes and other structures." (Preservation/Conservation Organization, No Address - #23)

Response:

For the FEIS, this approach was considered but not given detailed study. Refer to Chapter 2 for rationale.

Amending the Forest Plan to incorporate the Federal Wildland Fire Policy is outside the scope of this project analysis. The current Forest Plan allows natural ignitions to be managed for resource benefit in wilderness and two management areas on a portion of the West Fork District. Management ignited fire is allowed outside wilderness. Allowing natural fires to burn in the suitable timberlands is clearly outside current Forest Plan direction. Implementing the Federal Wildland Fire Policy will take a Forest-wide analysis to determine when and where fire use plans are appropriate. This is most appropriately analyzed in conjunction with the Forest Plan revision, currently scheduled to begin in 2003.

75 The Bitterroot National Forest should manage resources for multiple-use.

"I do not think we should 'log it all' nor do I believe a word of what the Friends of the Bitterroot and others are saying about no management. I am out of the old school and think our National Forests are for 'use' as was the title of the first Forest Service manual, 'The Use Book' in 1906. These forests were designed to be used, not preserved, which is why Gifford Pinchot fought so hard transferring them from the department of the Interior to the Agriculture Department in 1905." (Individual, Missoula, MT - #600)

Response:

This commenter’s opinion is noted and will be considered in the decision.

77 The Final EIS should include details of the Bitterroot National Forest Social Survey.

"A survey made of the Ravalli County residents shortly after the fires were controlled showed that 87% of the residents supported ACTIVE management and 92% said 'doing nothing' was not an option. Why has the results of this survey not been used in your environmental document?" (Wood Products Industry/Association, Columbia Falls, MT - #1545)

"I respectfully suggest that the final EIS include the following items: Details of the Ravalli County residents' survey conducted by the University of Montana." (Individual, Seeley Lake, MT - #654)

Response:

A summary of the survey results as it applies to the analysis in the Burned Area Recovery Project was included in the Social Resource section of the DEIS. Information from this survey is also included in Social Resource section of the FEIS.

78 The Bitterroot National Forest should provide sufficient public involvement opportunities to adequately inform the public.

"Only two public comment hearings and field trips have been held by the Forest Service. This is too few to adequately inform and educate the public. In addition the locations of the comment hearings have ignored the large interest constituency of the forest in Missoula County and northern Ravalli County, especially Florence, Lolo and Missoula. Conservationists need time to gather information on a representative sample of the approximately 80 thousand acres proposed for 'treatment.'" (Preservation/Conservation Organization, Missoula, MT - #604)

Response:

Opportunities for public involvement during project planning are described in Chapter 2. Information and access to professionals on the Interdisciplinary Team to explain the EIS is available at the Forest Headquarters and district offices on the Bitterroot National Forest. The public has had ample opportunities to review the DEIS, or attend a public

meeting. There have been approximately four months of field-going weather since the project proposal was made public, when individuals could inspect the project on the ground. No organized field trips or public meetings are necessary for this activity to occur. However, public field trips to the fires were offered throughout the summer of 2001 as well as two field trips to project demonstration sites with the ID Team and line officers. The BNF has consistently made information available to the public following the 2000 fires. About two dozen public meetings have been held since the fall of 2000.

82 The Bitterroot National Forest should provide opportunities for scientific study of burned areas.

"These large fires of 2000 have given us the opportunity to learn much about fire ecology and forest dynamics. We should create the framework for extensive scientific study of this area in the years to come, such as happened after the Yellowstone fires of a decade ago. Through this science and a cautious and hands-off approach, we can create a much healthier and dynamic forest than that envisioned in the massive logging operation being proposed." (Individual, Davis, CA - #662)

Response:

Numerous scientific studies are currently planned or are already in progress throughout the burned area. Studies will be completed by the Rocky Mountain Research Station and universities, not the Bitterroot National Forest. A research framework was developed last winter in response to the fires and has been available on the BNF web site for several months. There will be about 230,000 acres of the burned area where a “hands off approach” will be taken and depending on the alternative selected, 0 to 73,000 acres where careful management would occur. Alternative G was added to the FEIS in part to address research issues.

83 The Final EIS should include maps that accurately identify proposed treatment areas.

"The cutting units maps provided with the DEIS issued for public review are extremely vague with no section numbers to refer to. The units would likely be nearly impossible to accurately locate on the ground using those maps provided with the DEIS. We have requested the larger-scale maps that are available by special request, but to our knowledge, as of this date they have not arrived. Those maps and other information need to be assembled before interested citizens can attempt to field check some of the proposed actions. This field work is necessary because, in our experience, there is often a question of the degree of reliability between the analyses disclosures and the on-the-ground conditions." (Preservation/Conservation Organization, Hamilton, MT - #603)

"This letter is in regards to the maps we just received here at the Ecology Center. As you recall, I first made this request for maps during the June 14th meeting when you met with several conservationists including myself. At that meeting the point was made that the maps provided with the 'Burned Area Recovery' Draft EIS were practically useless for navigating the forest and actually finding the proposed "treatment" units. You stated that better maps were available at the Sula District Office. In a telephone conversation with the 'Burned Area Recovery' Interdisciplinary Team Leader Stuart Lovejoy soon after that meeting, I again explained the problems with the DEIS maps, and requested maps that had all the units included in Alternative D, along with section numbers and lines, roads, topographic lines, and creeks. The idea, as I explained, was so we could use the maps and locate the proposed units. As interested members of the public, we need to be able to look at the precise units that you are proposing to be 'treated' so that our comments on the DEIS can be well informed. The three maps we received yesterday fall far short of actually meeting our needs. It is now clear that either officials at the Bitterroot National Forest don't want the general public to be able to see the proposed 'treatment' units without Forest Service officials having to show them, or the Forest Service itself has little idea of the locations of the vast majority of 'treatment' units proposed in the DEIS. Quite possibly, both. The clock is ticking toward the July 16 deadline for public comments. At this point, the record shows that the public is not being informed." (Preservation/Conservation Organization, Missoula, MT - #633)

Response:

It would be cost prohibitive to print all maps at large scales for inclusion in the EIS. The maps are at sufficient scale and provide enough detail to satisfy most reviewers. Maps in the DEIS and FEIS were/are available at larger scales upon request, as stated on the Map Envelope contents page. More detailed maps are also available in the project file for those who want to review them. They are much larger and more numerous than would be feasible to publish with the FEIS. Requests for information during the comment period were answered as soon as they were received. In addition, electronic GIS information was made available when requested.

108 The Final EIS should include weed management proposals to avoid a separate NEPA analysis.

"The DEIS states under future actions that herbicide spraying will take place in many areas across the forest in an attempt to control noxious weeds, but then informs the public that there will be an entirely separate Weed DEIS/EIS for the spraying. There is a question if this segmentation of the NEPA analysis is appropriate." (Preservation/Conservation Organization, Hamilton, MT - #603)

Response:

The NEPA analysis for Weed Control is being completed for selected sites across the entire Bitterroot National Forest, while the Burned Area Recovery EIS deals specifically with the area of the forest burned during the fires of 2000. The important question is the connection between the two projects and the effects that one might have on the other. The separation of these two NEPA projects is appropriate because they are not connected actions. The proposed action in the Weed Control EIS is not dependent on the selected alternative in the Burned Area Recovery EIS and vice versa. The cumulative effects of potential weed control are analyzed in the Burned Area EIS, and the effects of the selected alternative in the Burned Area Recovery EIS and the fires of 2000 will be considered in the Weed Control EIS.

124 The Bitterroot National Forest should streamline NEPA procedures for initiating active management as a response to natural disasters.

"The DEIS is way too redundant and voluminous ('encyclopedic' rather than 'analytic', NEPA 1500.4). The Montana Department of Natural Resources and Conservation (DNRC) got their MEPA analysis done and most of the timber was in the mills before a proposal was even put forward on the National Forests. Surely the Forest Service should be able to streamline and fast track the process for disasters such as the 2000 burn. After decades of experience, the Forest Service should know that making the EIS thicker and glossier will not make the decision more appeal and litigation proof." (Multiple Use/Land Rights Organization, Columbia Falls, MT - #749)

Response:

Refer to response to comment 2. The policies, laws and regulations guiding the Montana DNRC are different than those guiding the Forest Service. Much less land administered by the DNRC in Ravalli County was burned compared to the area of National Forest land burned, so the scope of the environmental analysis for the two Agencies is also different.

125 The Bitterroot National Forest should demonstrate that it values public involvement in decision making.

"I attended the community meeting in Hamilton. I was disturbed that you [Rodd Richardson] weren't even there. I also felt that the meeting was designed so opinions couldn't be voiced. Does public opinion matter to you?" (Individual, Missoula, MT - #596)

Response:

Refer to the response to comment 5. All comments will be considered in the decision. Forest Supervisor Rodd Richardson attended and spoke at the Hamilton meeting on June 14, 2001.

126 The Bitterroot National Forest should not allow political pressures to unduly influence decision making.

"I understand that managing the recovery plan must be a difficult job, and that there are conflicting interests. I am writing to you in hopes that, like Gifford Pinchot and Teddy Roosevelt, you will consider the future of all Americans as the greatest of all the different interest groups to be served by your actions." (Individual, Corvallis, MT - #1582)

INFLUENCE OF WOOD PRODUCTS INDUSTRIES

"Instead of listening to political pressures from loggers, please let the fate of the Bitterroot National Forest be left up to the people who know it best. The Burned Area Recovery DEIS should be an example of science, not politics." (Individual, Saint Louis, MO - #601)

INFLUENCE OF ENVIRONMENTAL ORGANIZATIONS

"The Forest Service needs to ignore as much as possible the dogmatic propaganda espoused by the paid lobbyist financed by tax exempt preservation corporations such as 'Friends of the Bitterroot.' These activists are not interested in reasonable solutions or compromise, only dogged pursuit of the 'no cut' philosophy on National Forest Lands. Even though 'no cut' means eventual destruction of all the resources they lead the public to believe they defend, no amount of

scientific evidence or actual observation of the destruction of watersheds, scenery, wildlife habitat, old growth, and human health and safety will cause them to support reasonable management." (Multiple Use/Land Rights Organization, Columbia Falls, MT - #749)

Response:

The National Environmental Policy Act (NEPA) and its implementing regulations require opportunities for public participation during planning. This is designed to give the public a voice in the management of their National Forests. Conflicting public opinion about natural resource management issues is common. The NEPA process can help identify those conflicts and balance environmental and social the issues to arrive at a decision that most people can support or accept.

Between the DEIS and the FEIS, alternatives have been added to more fully cover the range of opinions expressed during the comment period.

130 The Bitterroot National Forest should adhere to the necessary environmental analyses required by NEPA.

"The Burned Area Salvage Sale DEIS is woefully inadequate and does not even begin to meet the requirements of NEPA. The Forest Service has failed entirely to meet the requirements of 40 C.F.R. section 1502 regarding environmental assessments. Instead of the required 'hard look,' the agency has offered the public an unsubstantiated narrative that in no way meets the requirements of a DEIS. The analysis on which the Forest has relied on is inadequate, flawed and biased in a number of ways, rendering any potential decision arbitrary and capricious. Very little substantive, site-specific information is offered anywhere in the DEIS. The Burned Area DEIS is mostly a qualitative narrative of the Forest Service's predicted environmental consequences." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

CUMULATIVE EFFECTS ANALYSIS

"Despite this clear direction, the Burned Area Salvage Sale D.E.I.S. avoids the required analysis and ignores important contributors to cumulative effects. The cumulative effects sections in the Burned Area Salvage D.E.I.S. consist of nothing more than weak narrative statements of the Forest Service's opinion that are conveniently broken into separate geographic areas. The Forest Service avoids the required cumulative effects analysis by separating each analysis and ignoring the overall impacts of the proposed actions across the project area as a whole. Nowhere in the D.E.I.S. are the past, present or future projects that may contribute to cumulative impacts listed or even discussed in any greater detail than a casual reference. (Appendix A). Nowhere is any attempt made to quantify the cumulative impacts, especially glaring is the omission of any quantified analysis of cumulative watershed impacts using such standard measures as sedimentation, turbidity, water temperature, etc. Cumulative impacts are analyzed in context only of timber harvest, no attention is provided to other factors such as increased OHV use, increased risk of fire, grazing, firewood poaching, noxious weed infestations, etc." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

"A cumulative impacts analysis of effectiveness of the current DEIS alternatives and the [Forest Service home protection] grant program is required in the DEIS in order to assess the home protection issue identified in the DEIS." (Preservation/Conservation Organization, Hamilton, MT - #875)

Response:

See the response to comment 301 and 467.

Each resource identifies the areas used for cumulative effects analysis and explains why this is the appropriate area. In some cases, this is the geographic area and in other areas, the cumulative effects area was either larger or smaller than the geographic area, whatever is appropriate. Using the entire project area for cumulative effects analysis would indicate that there are no or few cumulative effects for certain resources (dilution of effects) and would therefore not be a good indication of the effects the project would have. Analysis areas and cumulative effects in the DEIS have been reviewed and the analysis supplemented in the FEIS where necessary.

In each resource section, activities that contribute cumulative effects are identified and analyzed (OHV, grazing, increased risk of fire, firewood gathering, and noxious weeds). Some activities do not have effects on some resources and are therefore not mentioned in the cumulative effects analysis.

Some cumulative effects from past, present and reasonably foreseeable activities were determined to be so small as to be unmeasurable, which is why they are not quantified, but are described qualitatively.

Home protection efforts are addressed in the FEIS, and are described as an element of Alternative G.

Additional watershed modeling and soil condition surveys have been conducted for the FEIS, which includes quantification of effects.

Additional cumulative effects analysis has been added to the Fire and Fuels section in the FEIS regarding home protection and ongoing grant programs.

159 The Bitterroot National Forest should take full responsibility for restoration of private property damaged by backfiring.

"The private property owners whose property was burned as a result of the backfiring should not be required to pay one red cent to restore their land or clean it up. The USFS destroyed it and the USFS should do the entire clean up and restoration at their expense. I realize as a taxpayer it is actually at my expense, however, these people are innocent victims of the carelessness on August 6th, 2000." (Individual, Conner, MT - #1110)

Response:

The Forest Service State and Private Forestry program has contributed heavily to post-fire recovery efforts on private property, primarily through the Bitterroot Interagency Recovery Team (BIRT). Activities proposed in the Burned Area Recovery EIS, are limited to the National Forest lands that burned in 2000.

171 The Bitterroot National Forest should select "The Conservation and Local Economy Alternative" because it promotes the natural recovery of burned areas.

"The Conservation and Local Economy Alternative promotes the natural recovery of these burned areas. Nature knows what it is doing, and knows exactly how to heal a burned forest without human intervention. (Again, it will save the Bitterroot National Forest big dollars to just let the forest do all the work.) Some tree removal may be necessary to protect homes in the future - but quite obviously you only need to remove the trees that are actually adjacent to the homes. The amount of wood in these trees comes nowhere close to the 280 million board feet recommended to be cut in the DEIS." (Individual, Corvallis, MT - #997)

"On behalf of the hundreds of members of the international Native Forest Network, I am writing to oppose the massive proposed salvage logging sale in the Bitterroot Mountains. I would like to support the Conservation and Local Economy Plan. I have seen what salvage logging can do to the land, on the Gallatin and Shoshone National Forests following the 1988 Yellowstone fires, and it was not a pretty sight. The western forests evolved with fire and dead trees. They did not evolve with machines and massive logging projects." (Preservation/Conservation Organization, Bozeman, MT - #892)

Response:

The comments are noted and will be considered in the decision.

200 The Bitterroot National Forest should not allow burned areas to recover naturally.

"While I respect the right of radical environmentalists to hold a different world-view and opinions, I also firmly believe that their thinking is wrong and the pseudo-science is flawed. A hands off and let nature heal itself course of action will not produce the desired results of ecosystem health and benefits for mankind. Nature tends to look good in some places because it is temporarily pleasing to the eye, contains a wildlife or bird species, or is just different from where man has had an effect. However, nature's way is one of gradual deterioration and periodic catastrophe. We have the responsibility to use our God given intelligence and good science to manage wild lands and resources for more than just esthetics. Esthetics may suffer in the short run in order to produce ecosystem health in the longer run. There is NOT evil in producing economic benefits. Those benefits result in escaping poverty, educations, curing diseases, longer and healthier lives, and the ability to expend funds to protect the environment. Wilderness and other areas where some of the multiple uses are prohibited are certainly appropriate for certain purposes specified in laws; but areas of a hands-off or super gentile approach should not be expanded to include the entire forest." (Individual, Missoula, MT - #1067)

Response:

Your comments are noted and will be considered in the decision.

201 The Bitterroot National Forest should employ the latest technology to aggressively manage burned areas for commercial and ecological benefit.

"The portions of this forest that are to be intensively managed for timber production should be reforested using the latest technology meaning herbicides, pesticides, fertilization and seed source. We can produce 5 times the biomass from the land if we manage it aggressively. . . . Intensive management to me means: raise trees for lumber for local mills;

provide and maintain open roads for public use; provide a food base for deer and elk; and have a low burn probability." (Individual, Stevensville, MT - #873)

Response:

Reforestation strategies used today do include the latest knowledge and technologies from cone collections, growing trees in the nursery, planting, controlling competing vegetation, limiting animal damage, etc.

Management on the Bitterroot National Forest is guided and directed by laws such as the National Forest Management Act, the Multiple Use Sustained Yield Act, The Wilderness Act, the Clean Water Act, The Clean Air Act as well as the Bitterroot Forest Plan. The reforestation strategy in the proposed action and other alternatives would aggressively reforest suitable timberlands that burned, in accordance with Forest Plan direction.

208 The Bitterroot National Forest should publish a full disclosure of project monitoring results three years after implementation of the management plan.

"Whatever direction the Bitterroot NF goes on this burned area, ICL urges a full monitoring report in three years with comparison of expectations and claims with actual results. The monitoring report should cover all major issues examined in the DEIS." (Preservation/Conservation Organization, Boise, ID - #1007)

Response:

For the FEIS, a comprehensive monitoring plan is presented. Results would be published when they become available. In addition, many independent studies on the effects of the fires and recovery activities are in progress. The results of the monitoring and research projects will be available to the public.

224 The Final EIS should retain the maps produced during the development of the Draft EIS.

"In reviewing the maps, I am pleased with the specifics addressed in identifying work locations and general treatments to be applied. Given this approach I believe forest technicians and professionals can now go to the field to apply specific treatments closely tailored to fit each specific site." (Wood Products Industry/Association, Victor, MT - #808)

Response:

These maps will be retained in the project file as long as needed.

260 The Bitterroot National Forest should address the implications resulting from the differences between the Bitterroot National Forest Plan standards and guidelines and OSHA regulations.

"OSHA regulations require that soft snags generally be felled for worker safety. This means vast portions of the forest will be depleted of standing soft snags. The results of the differences between Forest Plan standards and guidelines and OSHA regulations must be acknowledged and the implications addressed." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

OSHA requirements in helicopter units are addressed in the snag standard, as proposed for Forest Plan amendment in Chapter 1. Since the standard, as amended, addresses safety concerns there is no difference between the amendment and OSHA regulations. The snag standards were developed with wildlife needs and worker safety in mind, including specific ways to maintain snags while protecting workers

Snag retention for wildlife habitat is outlined in the Mitigation Measures and Management Requirements Section of the FEIS. These mitigation measures address distribution, shape, species size, placement and age of snags. Grouping snags is a method consistent with OSHA requirements, but retaining individual safe snags can also comply with the requirements, particularly where conventional logging systems are used. Meeting coarse woody debris and snag retention requirements would retain numerous standing dead trees; no clearcuts are proposed in any alternative.

The Wildlife report in Chapter 3 addresses snag retention, snag reductions resulting from activities, and affects on habitat for snag dependent and other wildlife species.

264 The Bitterroot National Forest should fully explain the rationale for extending the public comment period.

"The decision to grant an extension to the initial comment period is a classic example of how the Forest Service processes contribute to the additional damage/loss of value for no good reason that has been stated. The comment period

was adequate, a significant number of responses were received, and time was of the essence to meet the remaining timeline for publishing of the final EIS and planning and commencing the work to be done. I trust that you will fully explain all of the reasons for granting the extension in writing the final EIS." (Individual, Seeley Lake, MT - #1586)

Response:

The requests for a 60-day extension of the DEIS review period were not granted. There was a significant workload involved in identifying, describing and analyzing new alternatives in the FEIS, which is what was used to determine the final schedule for production of the FEIS. Extending the comment period by 15 days allowed more time for people to review the EIS, but the time allowed was determined with the final EIS schedule in mind. The extension of the comment period did not delay the completion of the FEIS.

267 The Final EIS should fully disclose the degree of scientific uncertainty regarding impacts to resources.

"The levels and kinds of uncertainty relevant to a decision should be fully and clearly identified and described in ways that are understandable to informed participants. According to sound scientific practice, the description of uncertainty should include: sample sizes, duration and geographic extent of studies, and estimates of precision associated with point estimates; the limitations and dangers of extrapolating results to other geographical areas, time periods; and assumptions used to deal with uncertainty in the analysis and modeling. All data that are used to calculate point estimates and intervals and are used in other ways to arrive at a decision should be disclosed. Those data should also be made available to all participants in a decision and open debate and discussion of alternative interpretations encouraged as a further means of ensuring that all uncertainties are identified. Because assumptions are also sources of uncertainty, the likely social, economic and biological consequences of their being invalid should be disclosed. Both the scientific uncertainties (knowledge gaps and precision of existing data) and management uncertainties (consequences of alternative actions) should be minimized. In order to minimize key uncertainties: research questions should be policy-informed and policy-relevant; data gaps should be identified through consideration of the concerns of all participants in the relevant management process; funding for research to reduce uncertainties and to monitor management and activities should be available and acknowledged as an inherent cost of activities and management; and publication should include communication to all relevant audiences, not just peer-reviewed scientific journals. 40 C.F.R. 1502.22 imposes three mandatory obligations on the agencies in the face of scientific uncertainty: (1) a duty to disclose the scientific uncertainty; (2) a duty to complete independent research and gather information if no adequate information exists (unless the costs are exorbitant or the means of obtaining the information are not known); and (3) a duty to evaluate the potential, reasonably foreseeable impacts in the absence of relevant information, using a four-step process. The DEIS fails to explicitly discuss the degree of uncertainty regarding resource impacts of the proposed project." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

We believe you may be confusing, or mixing several different process requirements and concepts that leads to an inaccurate conclusion. The referenced regulation (40 CFR 1502.22) does not specifically discuss uncertainty as implied in the comment. Instead they discuss agency requirements when faced with “incomplete or unavailable information.” It is important to note that these requirements apply commensurate with the degree the information pertains to “reasonably foreseeable significant adverse effects” and is “essential to a reasoned choice among alternatives.”

Uncertainty is only specifically discussed at 40 CFR 1508.27 where “significantly” is defined. This definition is used to test whether a proposal should be documented in an environmental impact statement (as is the case here).

The DEIS addressed the requirements for incomplete or unavailable information in several ways. The Chapter 3 introduction began the discussion with the recognition that, “There is less than complete knowledge about many of the relationships and conditions of wildlife, fish, forests, jobs and communities. The ecology, inventory and management of a large forest area is a complex science that continues to develop” and each following resource section discusses the information base, scientific research and literature, relevancy of the information, methodologies, and assumptions on which the assessment is based. Based on this and other comments, these discussions have been expanded and/or clarified for the FEIS.

Related to this comment please see comment 80 for further discussion on the extensive past and ongoing research program on the Bitterroot National Forest.

292 The Final EIS should disclose all quantitative empirical or modeling data in the cumulative effects analysis.

"The DEIS discloses little quantitative empirical or modeling data. This deficiency is particularly apparent for resources such as soil and water (which are at substantial risk of degradation due to post fire logging) despite the existence of valid modeling and empirical approaches to examine these resources. The failure to consider the landscape scale implications of applying largely untested fuel reduction treatments across a large portion of the Bitterroot National Forest is problematic. The project seemingly applies relatively homogenous fuel treatments across a complex mosaic of burn intensities and forest attributes. The landscape scale impacts to wildlife habitat, ecosystem services, and ecological integrity, are unknown." (University/Professional Society, Madison, WI - #1435)

Response:

Additional soil cumulative effects analysis is now provided in the FEIS, Chapter 3. Additional watershed modeling has also been conducted for the FEIS.

The proposed fuel reduction activities are not largely untested. These prescriptions have been applied on the Bitterroot National Forest and elsewhere. Nor are the prescriptions “homogeneous”. While the descriptions of proposed fuel treatments in Chapter 2 are generalized to a degree, stand level treatments would vary as described in the fuel reduction prescription for Alternative B. Appendix B also shows that each unit has an individual treatment that is designed to reach specific fuel goals based on fire intensity, VRU and post-fire fuel loadings.

The level of diversity or homogeneity of forest attributes, with or without fuel reduction, also warrants further discussion. The fires created new landscape patterns that would not be significantly altered by the proposed fuel treatments. Stands that survived the fires would still be fully stocked with live trees, even where salvage or intermediate harvest prescriptions are applied. Where fire severity was higher and resulted in more extensive tree mortality, salvage harvest of differing intensities, snags retained for wildlife and course woody debris (both scattered and in groups), and many areas where no fuel reduction would occur within the matrix of treated areas (RHCAs and other adjoining areas where no fuel reduction is proposed) would contribute toward more diverse conditions on the landscape. For more information, refer to the Forest Integrity discussion in Chapter 3’s Forested Plant Community report.

Effects on wildlife habitat and other resources are determined at a scale that is appropriate for the species or resource analyzed (species habitat requirements, drainages, etc.).

299 The Bitterroot National Forest should incorporate precautionary measures in the decision-making process for the proposed management action.

"Decisions must be made despite uncertainty. In such cases, decision makers should use the precautionary principle to discharge their duties. The Precautionary Principle: 'When an activity raises threats of harm to human health or the environment precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically.' Precautionary measures must: expand and not foreclose future conservation actions and options; err on the side of conservation, particularly avoiding Type II errors; avoid irreversible consequences; and shift the burden of proof to those who advocate a potentially harmful action. A precautionary approach to conservation problems for which there is limited scientific information should entail the review of all relevant scientific information and its interpretation in the context of ecological theory, making specific the link between data, theory and interpretation. This process produces qualified insights, which should clarify irreducible uncertainties in the scientific information." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

Suggestion for caution at the time of decision is noted.

Management activities and mitigation requirements within the alternatives are designed to reduce undesirable environmental effects. Please refer to the response to comment 267 for a discussion of incomplete or unavailable information and uncertainty. Chapter 1 also discusses uncertainty, as well as what is known.

301 The Final EIS should fully comply with the existing Bitterroot National Forest Land and Resource Management Plan standards.

"THE DEIS IS A PROGRAMMATIC DOCUMENT THAT VIOLATES THE FOREST PLAN AND FAILS TO PROVIDE A REASONABLE RANGE OF ALTERNATIVES. THE DEIS IS NOT COMPLIANT WITH THE FOREST PLAN. The Ninth Circuit Court has ruled that proposed actions must be in full compliance with the controlling

LRMP. (See Neighbors of Cuddy Mtn. et. al. v. USFS, 137F.3d 1372 (1998); FSF et. al. v. Morrison, 153F.3d 1059 (1998; and BMBP et. al. v. Blackwood, No. 98-35783; D.C. No. CV-98-98-AA (1998)) The 1987 BNF LRMP contains Plan Standards that control the management activities on this Forest. The Supervisor's DEIS partially acknowledges the Plan's Standards (DEIS at 1-5), and that he proposes 'Plan Amendments' that will enable him to not comply with the ones for Snags, Elk Habitat Effectiveness (EHE), Elk Winter Range Cover (TC), and Woody Debris (see DEIS at 1-14 to 1-18)." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

The DEIS and FEIS are site-specific analyses, which describe activities at the unit, road, stand, drainage, or stream level as appropriate. The FEIS analyzes site-specific impacts of these activities. It is not programmatic.

The DEIS and FEIS analyze a range of alternatives based on the issues raised during scoping and comments on the DEIS, including some that would not require any Forest Plan amendments. Alternatives were developed to respond to these issues so that comparisons of environmental effects could be considered in the decision. Additional alternatives are added and analyzed in the FEIS in response to comments.

36 CFR Part 219 National Forest System Land and Resource Management Planning says that activities must be consistent with the Forest Plan and that the Forest Supervisor may amend the Forest Plan after reviewing the objectives, guidelines and other contents of the Forest Plan (36 CFR 219.10 (f)).

305 The Final EIS should comply with all relevant state and federal legislation.

"Because of these flaws, DEIS does not comply with the mandates of NEPA. The DEIS also fails to adequately determine and disclose the alternatives compliance with state and federal laws related to aquatic resources or other management objectives, standards, and guidelines, such as those in the BNF Land and Resource Management Plan (LRMP). In aggregate, these flaws render the DEIS wholly defective for the purpose of disclosure of the effects of the alternatives or as a credible basis for making a reasoned selection among alternatives. Several of the action alternatives do not comply with NFMA, the CWA, and the ESA, due to their effects on forests, soils, streams, water quality, and WCT and BT, although the DEIS fails to disclose these impacts. These defects must be rectified. These manifold flaws are so severe that the BNF should prepare a DSEIS." (Preservation/Conservation Organization, Tucson, AZ - #1695)

"The Burned Area Recovery DEIS is more than just a misleading document, it is scientifically, administratively and legally insufficient. It is, in fact, an outright violation of Federal Law, as expressed in The National Environmental Policy Act of 1969 (NEPA), The National Forest Management Act of 1976 (NFMA), The Multiple-Use Sustained Yield Act of 1960, The Administrative Procedures Act, The Endangered Species Act, and The Clean Air Act. In addition, it violates regulations of the EPA, Forest Service regulations, and various sections of the Code of Federal Regulations governing Federal Agencies. The decision, if carried out, would create violations of various sections of the Montana Code Annotated, and the Constitution of the State of Montana, which states unequivocally, and in ways that have been upheld by the Supreme Court of Montana, that we are entitled to a clean and healthful environment." (Individual, Hamilton, MT - #1709)

Response:

Information has been added to the resource reports in Chapter 3 of the FEIS to clarify and more specifically address consistency with laws and regulations.

313 The Bitterroot National Forest should amend the Purpose and Need statements of the Draft EIS to allow consideration of reasonable alternatives that don't contain logging and prescribed burning objectives.

"The DEIS lists several 'purposes and needs' that were identified at least partly through surveying public opinion in recent months. Among them is the 'need' to reduce fuels in the forest, both in the burned and unburned areas. To call reducing fuels a 'purpose' or a 'need' of the forest management plan is to use circular logic. The DEIS, goes on to assess each of the alternatives for their effectiveness in meeting this and other 'purposes and needs.' This method automatically excludes alternatives that don't include logging and/or prescribed burning for the express purpose of fuel reduction from being chosen, since it is impossible for them to meet this 'need.' Fuel reduction is not a purpose or need; it is an action. The purpose or need that is underlying this action (or other possible actions) is to decrease the danger of catastrophic fire in the Wildland-Urban Interface (WUI) and to restore natural processes in the wildlands. If the Draft Environmental Impact Statement (DEIS) were to state this purpose and need in the latter format, all alternatives which address this

problem, including those which do so without relying on any logging or even prescribed burning, could then be compared to each other fairly." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

Purposes and needs for action were established following our assessment documented in "Bitterroot Fires 2000 An Assessment of Post-Fire Conditions with Recovery Recommendations." (USDA, 2000a)

Purposes and needs for fuel reduction are described in Chapter 1, and additional discussion is provided in the FEIS in response to public comment. The proposed action described in Chapter 1 is based on the stated purpose and need. Varying levels, locations, and methods of fuel reduction are evaluated in the FEIS alternatives. Alternative A and D do not include logging or prescribed burning. Alternative G limits fuel reduction to prescribed burning and manual methods only.

315 The Bitterroot National Forest should not base management decisions on public opinion.

"The method of choosing purposes and needs by surveying public opinion is not appropriate if the goal is to manage the national forests based on sound principles for forest ecology in order to maintain forest health. This method would only be appropriate if the goal is to do what the public wants the US Forest Service to do. Science, not public opinion, must guide the US Forest Service in its management of our national forests." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

Both the National Forest Management Act and the National Environmental Policy Act emphasize the importance of public involvement during project planning, so sensing public opinion using a variety of methods is needed. Public opinion is discussed in Chapter 1, but is not stated as, nor implied to be, one of the driving factors of the purpose and need. Science plays a strong role in the purpose and need, as referenced in Chapter 1.

324 The Bitterroot National Forest should not base management decisions on the reburn hypothesis.

"REBURN SPECTER UNSUPPORTED BY SCIENCE. The specter that future fires in the burned area will be more severe, which is central to the 'purpose and need' rationale for salvage logging presented in the DEIS, relates to a concept referred to in scientific literature as the 'reburn hypothesis.' The reburn hypothesis is simply that, a hypothesis. Recent research documents that there is no scientific evidence to support the reburn hypothesis. The 'Beschta Report' (1995) states, 'We are aware of no evidence supporting the contention that leaving large dead woody material significantly increases the probability of reburn.' Even the Forest Service's own research says, 'Following Beschta and others (1995) and Everett (1995), we found no studies documenting a reduction in fire intensity in a stand that had previously burned and then been logged.' (p. 19, PNW-GTR-486, 2000) The DEIS is flawed by incorrect analysis and application of science offered in support for the reburn scenario portrayed in the DEIS. In spite of the lack of scientific evidence, the DEIS states, 'The probability of a reburn is small on any one site, but is high over a large area such as a ranger district,' (p.l-9) This statement from Brown's 2001 paper is unsubstantiated by data or research. On p.3-10 the DEIS admits, 'the reburn phenomena is relatively rare in fire history as the conditions for it to occur on a significant scale are fairly specific…." (Individual, Darby, MT - #1696)

Response:

Discussions related to the potential severity and implications for future fires have been supplemented and clarified in Chapter 1 and the Fire and Fuels section in Chapter 3 of the FEIS. No claim has been made that the proposed project would decrease the probability of reburn. Fuel reduction is proposed to reduce fire severity and associated effects to firefighter safety and resistance to control when reburns occur. The reference PNW-GTR-486 does say that the reviewers found no studies conducted on post-fire harvest found documented reductions in fire intensity. It continues following the above cited quote to state, "Although fuel accumulations owing to spruce budworm-caused … tree death can result in unusually severe wildfires (Stocks 1987), there is no similar information on stands killed by wildfire. In general, logging of large-diameter material in green tree stands will lead to decreases in total fuel accumulations over the intermediate term but increases in fine activity fuels over the short term (Brown 1980). Logging in postfire stands, however, would be expected to produce less fine activity fuel because the fine material burned, and one would expect removal of large-diameter material to have and intermediate-term effect similar to green tree stands."

343 The Bitterroot National Forest should not regard the Burned Area Recovery Project as an emergency situation.

"The cover letter accompanying the DEIS states that there is some sort of 'emergency situation' for which exemptions from normal procedures to allow expedited processes have been requested. However, the DEIS provides no evidence that any sort of 'emergency' exists that logging will alleviate. In fact, the science on this disagrees. Beschta et al. (1995), state that 'there is generally no need for urgency, nor is there a universal, ecologically-based need to act at all. By acting quickly, we run the risk of creating new problems before we solve the old ones. Ecologically speaking, fires do not require a rapid human response.' USDA (2000a) reviewed the results of 21 studies of post-fire logging. We note that their general finding was that 'we know enough about both logging activity and structural change to recommend caution' in post-fire salvage operations." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

There may be urgent reasons to complete some work during the appeal period for this project. The deciding official will consider your comment in determining whether to seek an exemption from stay of implementation.

354 The Bitterroot National Forest should reveal supporting evidence in an open and honest manner.

"I am concerned that you still use the 1909 post-logging photo as a baseline for pre-existing conditions. As we know, it is a post-logging photo misrepresented as a pre-logging photo. Why should such deceptions be needed if your proposal is the right thing to do? I listened to the presentation of the USFS's Wildfire Management Plan at a panel discussion on biomass energy in Missoula, Montana. It also misrepresented this photo to the public. Meanwhile, the presenter has been traveling all over the country utilizing this same exact misrepresentation in front of numerous audiences. This is just one example of an attempt by the USFS to use any information to get support for their ideas, even if they have to exclude credible scientific evidence and misuse other evidence. Why can't we talk about the issues honestly, without having to filter everything the USFS says to make sure it's on target?" (Individual, Missoula, MT - #1692)

Response:

The referenced photo series, presumably the Lick Creek series, are not used in this analysis. Figure 1-1 (Chapter 1) is an example of local pre-existing conditions in VRU2 from Gruell, 1983. Please refer to the Forested Plant Community report in Chapter 3, which references the body of research on “pre-existing conditions.”

370 The Bitterroot National Forest should make the Burned Area Recovery project background documents readily available for public scrutiny.

"Given the controversy and size of this project, background documents to the decision must be made easily available to the public, preferably in public reading rooms." (Preservation/Conservation Organization, Moscow, ID - #2501)

Response:

Finalized project documents are provided on request. The Burned Area Recovery DEIS has also been made available to the public on the Forests website.

371 The Bitterroot National Forest should pursue a Stay of Appeal for the proposed management action.

"I would also like to urge the Bitterroot National Forest to pursue a Stay of Appeal so that these restoration projects can move forward in a fast and efficient manner." (Individual, Hamilton, MT - #1650)

Response:

A request for an exemption from stay of implementation is being considered for this project. If requested and granted, this exemption would allow some activities to be implemented as soon as a decision is made.

373 The Bitterroot National Forest should request release of the USDA Inspector General's report on the Boise National Forest Foothills Wildfire Recovery Project.

"We are deeply concerned about the Forest Service's inability to lawfully implement fire salvage timber sales in the past. On the Boise NF the Foothills Wildfire Recovery Project (FWRP) included at least 2,300 violations of statute, regulations, and was the subject of a USDA IG audit and a criminal investigation between November 1993 and January

1994 to address whistleblower complaints about the conduct of the FWRP. The USDA Forest Service has refused to release this investigation's findings to the public. It is crucial that the findings, including the IG's final report, be released to the public in conjunction with this proposed salvage sale, so that the public knows how the Foothills Project, labeled by Chief Jack Ward Thomas as a National Fire Salvage Model, erred and thereby knows what to expect of this project. We are formally asking you to release it." (Recreational Organization Non-Motorized, Boise, ID - #1914)

Response:

The Bitterroot National Forest has no knowledge of the referenced report. The Boise National Forest's Foothills fire recovery project is outside the scope of this project.

377 The Bitterroot National Forest should commit sufficient resources to administer and enforce the proposed management action.

"Previous efforts made by the Forest Service to 'restore' areas after a fire have not always had a happy ending, particularly when the Forest Service does not commit the necessary resources to enforcing the action and allows industry to dictate what it does, what it cuts, and where it goes. The BNF must commit extra resources to administration and enforcement of an action this size." (Preservation/Conservation Organization, Moscow, ID - #2501)

Response:

Depending on what alternative is selected in the decision, the Forest may need to increase staffing for contract administration, as suggested.

385 The Bitterroot National Forest should give more consideration to the opinion of science professionals in the decision-making process.

"The forest supervisor is apparently concerned about polling Bitterroot Valley residents about what to do, but is clearly not as concerned about polling (and weighing more heavily) the opinion of trained ecologists who have been collecting relevant data for nearly a quarter of a century, and who might know something about the subtle long-term effects of proposed actions." (Individual, Missoula, MT - #1691)

Response:

Many scientific references have been used to help determine the best course of action. In addition, team members have conferred with researchers specifically for this project. Additional scientific references and information from researchers consulted with have been added to the FEIS. The ID Team is also highly educated, trained, and experienced and should not be discounted as a credible source of information

387 The Bitterroot National Forest should rewrite and republish the Draft EIS for public comment.

"THE DEIS SHOULD BE REWRITTEN AND REPUBLISHED FOR PUBLIC COMMENT BECAUSE THE ACTIONS PROPOSED CANNOT BE UNDERSTOOD. The DEIS is inadequate in disclosing what is intended in the alternatives presented and, in addition, fails to provide a reasonable range of alternatives. IT IS IMPOSSIBLE TO UNDERSTAND WHAT ACTION IS PROPOSED FOR ALTERNATIVES B, D, AND E. The inability of the reader to understand what is intended on even a gross level, in the logging units proposed in Alternatives B, D, and E makes it imperative that the DEIS be rewritten and republished for public comment." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

The proposed activities are described with narratives and figures in Chapter 2, as well as Management Requirements and Mitigation Measures for each alternative. Clarifications and additional information have been provided in the FEIS to increase understanding. The narratives describe what is proposed in each alternative, many referring to Alternative B to avoid repetition. Unless otherwise noted, the activities in other alternatives would be the same as those described for Alternative B. Additional information specific to activity units and roads for each alternative is provided in Appendix B and the maps in the Map Envelope. This information has also been modified in the FEIS, based on additional field reviews and interdisciplinary evaluation. The comparison of alternatives section at the end of Chapter 2 also helps to understand the alternatives.

Refer also to the response to comment #425.

399 The Bitterroot National Forest should not arbitrarily segment key decisions for separate NEPA analyses.

"The weed spray program, which is a very foreseeable and immediate action, was arbitrarily not included into the BAR DEIS, and it could have presented many possible alternatives if combined with the alternatives in the DEIS. It was not linked into any of the DEIS's action alternatives for any disclosure, consideration, or review by the decision-maker and the public. The segmentation of the weed DEIS and the BAR DEIS is unacceptable. Agencies may not arbitrarily carve out or 'segment' key decisions or issues, which are 'connected' or 'related,' for separate NEPA analysis. Related proposals also must be considered for decision together in a single EIS when they are 'connected actions' or 'cumulative actions' (40C.F.R 1508.25(a); Save the Yaak v. Block, 840 F.2d 714, 719-21 (9th Cir. 1988). This NEPA requirement prevents the division of a project into multiple 'actions,' each of which individually might have a lesser environmental impact but which collectively have a substantial impact (Thomas v. Peterson, 753 F.2d, 758 (9th Cir 1985); Big Hole Ranchers Ass'n v. U.S. Forest Service, 686 F. Supp. 256, 261 (D. Mont. 1988). The Forest Service has plainly 'segmented' their review in violation of NEPA's command that all 'connected,' 'related' and 'cumulative' actions be considered together in an environmental impact analysis. This fundamental violation of NEPA necessitates sending the matter back to the Forest Service for a full, comprehensive analysis." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

See response to # 108

The Bitterroot National Forest is in the process of completing an environmental analysis for a weed control project that will more appropriately analyzed treatment of weeds on a Forest- wide scale. The weed control project is not a connected action because implementation of the Burned Area Recovery project is not dependent on the decision in the weed control project and vice versa. Impacts of the weed control project are considered as reasonably foreseeable action in the BAR cumulative effects analysis.

425 The Bitterroot National Forest should republish the Draft EIS after amending the table in Appendix B to clearly and fully disclose the proposed treatments for each management unit.

"THE DEIS SHOULD BE REWRITTEN AND REPUBLISHED FOR PUBLIC COMMENT BECAUSE THE ACTIONS PROPOSED CANNOT BE UNDERSTOOD . . . . The descriptions of the different treatments that are applied to each unit are described in grossly self-contradictory terms and are too vague for the public to determine what is intended on each site. In fact, the description of the treatment for each unit to be salvaged is not self consistent and is impossible to understand. The key inconsistency is the table in Appendix B which calls for treatments that specify removing a given percentage of trees or other material that, on their face, cannot possibly meet the primary reason for doing the treatment; that is to leave the target fuel on the site. . . . There are several entries in Appendix B where the current fuel load is LESS THAN THE TARGET, yet the treatment calls for salvage logging. . . . It is impossible for the reader to determine what is proposed in Alternatives B, D, and E. Failure to disclose the planned action regarding fuel reduction in Alternatives B, D, and E is a gross violation of NEPA. It is impossible for the public to make an assessment of an environmental impact of an unknown and unspecified action. To remedy this, the Forest Service must republish the DEIS with the alternatives described so that the reader can determine that planned action on each unit." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

Please refer to the response to comment #387.

The proposed actions and alternatives are described in detail to meet the requirements of NEPA. As such, the descriptions, maps, and tables display a large amount of information for both the IDT members and the public. The FEIS has been edited to display this information more clearly. Terms are defined in the Glossary included in with the FEIS. Appendix B contains information on all of the Alternatives and the treatments associated with each. Appendix B contains a large amount of information. Information from these tables is summarized in different ways throughout the document. Each resource area discusses aspects of information in the tables, and summarizes that information to illustrate particular points of the analysis.

The Forest Service does not believe it is necessary to publish a supplemental DEIS. The 60-day review and comment period is considered adequate. The FEIS addresses the concerns raised in public comment and clarifies elements of the DEIS as needed.

Apparent inconsistencies in Appendix B are noted. Current fuel levels in Appendix B are estimates of the tonnage per acre of fire-killed trees greater than four inches dbh. This estimate does not include dead and down CWD that existed at the time of the fires, and was not consumed by the fires. In many instances, there is a higher amount of CWD present than shown in the tables; however, data does not exist from which an estimate could be made. This approach underestimates the CWD present. Appendix B does not include tonnages of green trees that can contribute to future CWD in Intermediate and Salvage treatment prescriptions.

No prescriptions would reduce CWD below the specified minimum levels in areas burned at high or moderate severity, where most or all trees were killed, and most ground fuels were consumed. Final prescriptions will utilize field-based estimates of existing fuel loads in addition to the estimates shown in Appendix B. If it is discovered that a proposed treatment would reduce CWD to below the desired level, the final prescription will propose no additional fuel removals.

Areas burned at low or mixed severity warrant more discussion.

Coarse woody debris guidelines (Graham, 1994) are intended to guide management when applying regeneration harvests in green (unburned) timber. Regeneration harvests generally result in few large trees remaining. With few or no large trees remaining, there would be no ongoing recruitment of CWD into the site from stand development and mortality that is normal in green stands. Graham recommended leaving CWD at the time of regeneration harvest as a practical matter, and as a matter of conservative management. Normally, no such CWD retention requirements are necessary in stands that have a canopy remaining, and that will continue to develop as mature stands. In developing stands, there is an ongoing input of CWD as trees die and fall. In this project, minimums are required, again, as a means of being conservative. No recommendations have been made by research as to levels of CWD to retain following fire. Given that none exist, Graham's recommendations were used for this project and in some cases, they were increased to take a more conservative approach.

Moderate and high severity fires correspond well to 100 percent mortality, and therefore will respond somewhat like a regeneration harvest. Lower intensity fires have some green stand remaining, and those green trees will supply the ongoing input of CWD into the systems for years to come. The treatments prescribed for those units are Intermediate or Salvage treatments. These two treatments mean that a manageable stand of live trees remains after the fires of 2000, and those stands will continue to develop CWD as time goes on, ensuring adequate levels of site protection, soil productivity, and wildlife habitat. Table 1-3 in the FEIS shows the minimum required amounts of CWD for all units.

440 The Final EIS should establish protection of watersheds, wildlife, and fisheries as priorities for management of burned areas.

"As a wildlife biologist, with range and forest management experience in Idaho and Montana, and as a lifetime conservationist and resident of the Bitterroot Valley, I feel very strongly that the protection of watersheds, wildlife and fisheries must be given priority in your final choice of management alternatives for burned land treatments." (Individual, Darby, MT - #1678)

Response:

Protection of watersheds, wildlife, and fisheries are important considerations. Effects of each alternative on these and other resources will be considered when making the decision.

467 The Final EIS should disclose the existing conditions of each treatment unit as a means to assess the environmental impact of the alternatives.

"DEIS FAILS TO DISCLOSE EXISTING CONDITIONS OF EACH UNIT NEEDED TO ASSESS THE ENVIRONMENTAL IMPACT OF ACTION ALTERNAITVES ON THAT UNIT. The succession on a given site, and thus, subsequent fuel load, is a function of topology, vegetative type and other features of each unit in the proposals. Yet, the removal of trees has potentially significant environmental impacts, including impacts on soil, sediment, wildlife, endangered and threatened species, and fisheries depending on the features of the site which are not disclosed. . . . Notwithstanding the ability to determine what is intended on a site, the DEIS also fails to disclose the features each unit to a point that would allow the public and the decision maker to determine the environmental consequences of the alternative action on each unit. The DEIS's own statements show that these very features are what is needed to determine the environmental impact, yet they are not disclosed. The Forest Service must remedy this by republishing a DEIS for public comment that discloses sufficient features and characteristics of each site to allow the public and decision maker to determine the environmental impacts of various alternatives." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

Existing conditions are described at the appropriate scales, including the activity unit level where needed, in Chapter 3. Some site specific information considered in the analysis is included in databases (populated with data collected in the field) and presented on maps in the FEIS or in the project file. While it is not possible to have complete field verified data for every resource attribute on every acre Forest-wide, good information exists for resource attributes including (but not limited to) burn severity, slope, aspect, elevation, land type, habitat type or habitat type group, fuel loads, wildlife habitat suitability, past harvest, stream types and aquatic habitat features, fish and wildlife population data, sensitive plant and weed populations, recreation uses, heritage resources, and many others. Where data is lacking, different approaches may be taken, depending on the significance of the issue, to fill information gaps. Information gaps can be filled by conducting additional field surveys, making reasoned comparisons with areas that have similar characteristics and have more information available, or reasoned estimates made based on local knowledge. This information is considered sufficient to provide adequate knowledge of current conditions, effects, and ultimately an adequately informed decision.

Resource reports in the DEIS and FEIS may summarize the effects of the analysis that was completed for individual units. Current conditions in individual units, along with the proposed treatments are disclosed in Appendix B. Each resource was examined at the appropriate scale to determine effects and compliance with laws and regulations.

507 The Bitterroot National Forest should give more consideration to the opinions of individuals directly involved in forest resource management.

"We are dealing with complex topics in this EIS process and it is doubtful that more than a handful of folks have the skill and experience to give meaningful comments on forest management. A postcard with a signature is not valid. Nor can I trust the opinion of college kids, with pierced rings protruding from everywhere on their bodies. They are inexperienced and cannot be relied upon as a good comment resource. I cannot believe that these young tattooed people with no real life experience should be telling me about keeping our forest healthy and what good forest management is all about when I have spent many years working in the woods. My point is, I just don't believe that the forest service is getting feedback from the people who are REALLY involved in our forest resources." (Individual, No Address - #16, SOP2)

Response:

The decision maker will consider and weigh the public comment as well as the expertise provided by the ID Team, other agencies, and scientists when making the decision (some of whom may have pierced body parts and tattoos themselves).

510 The Bitterroot National Forest should clarify the method and intent employed in drafting the Purpose and Need statement in the Draft EIS.

"How was the purpose and need designed and exactly which forest officials contributed to this process? (Please list names of those outside of the ID team) How were the desired conditions on the landscape identified? (Cite specific management objectives and Forest Plan direction) In detail, please describe how public comment went into the development of the purpose and need statement. In detail, please describe how the ID team contributed to the formulation of the purpose and need statement. On approximately what day was the purpose and need to reduce fuels first identified? (If you cannot identify a day please determine a week) On approximately what day was the purpose and need finalized by the ID team? (If you can not identify a day please determine a week)" (Preservation/Conservation Organization, Missoula, MT - #2054)

Response:

The purpose and need was designed based on National, Regional, and Forest level policy and ID Team analysis and knowledge. Various people were involved in the development of the purpose and need; all are ID Team members or line officers. Chapter 1 explains how the purpose and need is derived. Desired conditions were developed from the Forest Plan and the Bitterroot Fires 2000 Post Fire Assessment. Public comment was gathered during the Post Fire Assessment and contributed to the prioritizing of treatment needs and methods, as well as protection of special areas. Preliminary elements of the purpose and need began to gel near the end of the post-fire assessment and the basic elements of the purpose and need solidified when project scoping began in February 2001. Based on scoping and DEIS public comments, purposes and needs have been clarified and embellished for both the DEIS and the FEIS.

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Purpose and Need for Action

48 The Final EIS should emphasize ecological integrity to protect burned areas from environmental damage.

"I believe the best and highest use of our national forests is the protection and restoration of ecological integrity. A management plan for a fire-affected area should not result in environmental damage." (Individual, Salt Lake City, UT - #60)

Response:

When the decision is made, both positive and negative impacts, including potential environmental damage will be considered.

49 The Bitterroot National Forest should integrate ecological, social, and economic responsibility into post-fire management.

"Please make the Burned Area Recovery project a national model for ecologically responsible and local-economy-friendly post-fire management, not another excuse for cutting trees." (Individual, Salt Lake City, UT - #60)

Response:

Environmental, social, and economic effects will all be considered by the Responsible Official at the time of decision.

103 The Bitterroot National Forest should ensure that cumulative impacts are fully disclosed and site-specific to comply with NEPA.

"Some of the preliminary concerns or questions that have arisen include concerns regarding the sheer size of the proposed actions and questions whether the cumulative impacts (beneficial or adverse) are fully disclosed in the required site-specific manner. The total number of cutting units and spatial array create questions about the accuracy and depth of the NEPA disclosures. While the BAR DEIS is presented as a site-specific proposal, it appears to contain many elements of a programmatic analyses as well." (Preservation/Conservation Organization, Hamilton, MT - #703)

Response:

Response: The cumulative effects analysis is thorough and site-specific to the actions proposed in each alternative. Cumulative effects analyses have been expanded in the FEIS.

105 The Final EIS should incorporate the results of the Biomass Cogeneration Demonstration/Pilot Project.

"Since the initial comment meetings and the formulation of the Draft EIS, considerable developments have occurred dealing with the small diameter wood and waste residues that will result as a by-product of restoration forestry, stewardship contracts, and general fuel reductions in the rural and urban/forest interfaces. The public/private partnership between Ravalli County and Forest Tech LLC regarding the Biomass Cogeneration Demonstration/Pilot Project needs to be considered now in the formulation of the Final EIS document as a means to an end." (Individual, Stevensville, MT - #609)

Response:

Response: The Biomass Cogeneration Demonstration/Pilot Project is not developed enough at this time to include in the Burned Area Recovery EIS. After that proposal's feasibility analysis is completed, if the appropriate fuel reduction remains to be completed in the BAR project, there is a possibility that the material could be used for cogeneration instead of other utilization or disposal methods. Any other biomass removal from forest lands to fuel cogeneration would be considered in separate NEPA analysis. Such future fuel removal has not been proposed and is not foreseeable at this time.

428 The Bitterroot National Forest should establish protection of natural resources as the priority in fire management decisions.

"If the purpose of the Forest Service has been diluted to the point that they only fight fires to protect homes then I think the Department should be abolished and turn it over to the local fire departments. The purpose for fighting forest fires

used to be to protect the natural resources. We think that should again be the case." (Individual, Stevensville, MT - #1667)

Response:

Protection of natural resources is still a purpose for fire suppression. During many days of the 2000 fire event, home protection was all that could be accomplished due to lack of fire suppression resource availability and the extreme burning conditions influencing large fire growth. These conditions limited the ability to safely conduct direct suppression operations. These also limited the effectiveness of indirect suppression efforts.

Refer to Chapter 1, Purpose and Need for more discussion of resource protection objectives. Appendix M of the 1987 Bitterroot National Forest Plan contains direction for Fire Management. This direction states that the National Forest will provide for resource protection necessary to protect, maintain, and enhance resource values and attain land management goals and objectives. Additionally, Appendix K-11 of the Forest Plan (2001 Fire Management Plan) sets priorities for fire management actions. These actions are to provide for the protection of human life, and firefighter, aviation, and public safety; provide for property, natural and cultural resource protection; and fire use.

Consideration of Alternatives

This section is broken into two different categories. The first one is “Alternative and Mitigation Suggestions”. This section includes all of the comments suggesting changes to alternatives, new alternatives or mitigation measures. .

The second section is “For or Against Alternatives”. This section contains all the comments supporting or opposing alternatives. Some of them contain rationale for their support or opposition. A significant portion of the respondents to the Draft EIS voiced support for one or more of the proposed alternatives, and some expressed concern, both directly or indirectly

Alternative and Mitigations Suggestions

11 The Final EIS should ensure road access for firewood gathering.

“Only close roads with gates and leave open during summer for firewood cutting . . . ." (Individual, Hamilton, MT - #159)

Response:

The personal firewood program is ongoing on the Bitterroot. Areas are reviewed annually to determine where firewood gathering should occur. A program of leaving more roads open within the burned areas is outside the scope of the purpose and need for the Burned Area Recovery project, although many are proposed to be left open for recreation access, including firewood cutting. Forest-wide, there are 1,237 miles of roads on the Forest with no motorized restrictions, and 566 miles of roads on the Forest with seasonal restrictions. These roads are open for firewood gathering during all or part of the year.

15 The Final EIS should increase the number of fuel reduction acres in Alternative B.

“The greater Total Fuel Reduction acres noted in Table S-2 for Alternative D should be incorporated into Alternative B." (Individual, Hamilton, MT - #144)

Response:

The action alternatives consider various levels of fuel reduction in response to issues. Please refer to the definition of “proposed action” in Chapter 1.

25 The Bitterroot National Forest should increase the amount of trees to be removed.

“Harvest more acres--at least what the Forest Plan mandates." (Individual, Hamilton, MT - #157)

"We are not for raping the woods, but we certainly are for HARVESTING before forest fires and after." (Individual, Missoula, MT - #663)

Response:

This alternative concept was in the DEIS as an alternative considered, but not studied in detail. See Chapter 2 for rationale under “Treat More Acres.”

56 The Bitterroot National Forest should implement a weed prevention program for the entire burned area.

“Applicable areas. Entire burned area. Management actions. Human and equipment weed seed spread will be limited by a weed prevention program. All commercial activities (including timber, mushrooms, and other harvesting operations) shall have an equipment wash down, personnel education program, and weed-free stock feed." (Conservation Organization, No Address - #23)

Response:

Alternative G has been added to address this comment. Weed seed free hay, grass seed, mulch and other materials are already required on all National Forest lands {36 CFR 261.50 (a) and (b)}.

57 The Bitterroot National Forest should conduct special weed management measures in areas known to contain weeds or weed seeds before they burned.

"Applicable areas. Areas that contained weeds prior to the burn or have been assessed to have weed seed present. Management actions. Survey and map locations of noxious weeds. Apply Integrated Pest Management. The application of herbicides shall be limited to hand application." (Conservation Organization, No Address - #23)

Response:

This suggestion is included in Alternative G.

62 The Bitterroot National Forest should cross-fell timber to stabilize soils.

"I support projects such as cross-felling trees for purposes of soil stabilization." (Individual, Missoula, MT - # 24)

Response:

"Stabilizing more burned slopes" was an alternative considered in early public scoping, but was not given detailed study in the DEIS (pg 2-22) because the most benefit from contour felling occurs during the first year after a fire. During Burned Area Emergency Rehabilitation (BAER) efforts following the 2000 wildfires, cross-felling burned timber for erosion control and slope stabilization was a commonly used practice. Alternatives in the FEIS consider different methods of soil stabilization including using logs anchored perpendicular to slope, water bars, slash spreading, and retention of coarse woody debris (CWD) and slash for erosion control purposes during proposed fuel reduction activities.

70 The Final EIS should require the obliteration of unneeded roads to comply with the Forest Service's new Roads Policy.

"Remove and recontour all roads not needed for foreseeable management projects, for . . . an affirmative response to the new Roads Policy." (Preservation/Conservation Organization, No Address - #23)

Response:

Each alternative contains a number of roads that would be removed by recontouring. Additionally, Alternative G would decommission or recontour about 526 miles of road.

In accordance with the Roads Policy, a Roads Analysis has been completed that will inform the Deciding official for the Record of Decision on the EIS. However, the requirement to implement roads analysis prior to road management decisions has been extended until January 12, 2002.

72 The Bitterroot National Forest should consider graveling Pasture Draw Road.

"Would you please look into putting some gravel on the Pasture Draw Road? I understand you only plan to gravel roads with streams running beside them, with fish in the stream. Pasture Draw is a tributary of Cameron Creek that runs full time. Although Pasture Draw doesn't have fish in it, it does empty into Cameron Creek, which has fish in it. There are three residences up Pasture Draw who use this road. Since we as residents maintain this road as best we can, this entices big game and gopher hunters, as well as Sunday afternoon drivers." (Individual, Sula, MT - #145)

Response:

Pasture Draw is mostly State and Private Land. There are about 80 acres of National Forest Land in the very bottom of Pasture Draw and about 1.5 miles of Forest Service Road traverses through that land. None of the EIS alternative would increase the traffic on this road. The existing road is not causing undue sedimentation into Pasture Draw stream. For these reasons, graveling of the Pasture Draw Road is not considered in the alternatives.

76 The Bitterroot National Forest should replant trees and grasses to benefit soils and watersheds.

"I support projects such as re-planting native tree and grass species in riparian areas to stabilize the banks of the streams most vulnerable to sedimentation due to the loss of vegetation from the fires." (Individual, Missoula, MT - #24)

Response:

All action alternatives would plant about 4.5 miles of riparian corridor and various acreage levels of uplands. Seeding was originally considered in project scoping, but was not given detailed study (See Chapter 2, Alternatives Considered But Not Given Detailed Study).

79 The Final EIS should require the obliteration of unneeded roads to comply with the Federal Guide for Watershed Analysis.

"Remove and recontour all roads not needed for foreseeable management projects, for . . . compliance with watershed analysis process requirements as outlined in the Federal Guide for Watershed Analysis (as mentioned in the INFISH Decision Notice)." (Preservation/Conservation Organization, No Address - #23)

Response:

Alternative B, C, D, E and F all respond to this issue to varying degrees. Alternative G broadens the range of alternatives. To clarify, the watershed analysis process does not direct managers to remove and recontour all roads not needed for foreseeable management projects.

81 The Bitterroot National Forest should upgrade all culverts to meet INFISH specifications.

"Upgrade all culverts, so that they meet INFISH specifications." (Preservation/Conservation Organization, No Address - #23)

Response:

There are two INFISH standards that apply, RF4 and RF5. RF4 was met by the Burned Area Emergency Rehabilitation, which occurred immediately following the fires. RF5 is met by all action alternatives. In Alternatives B, C, D and E, culverts known to be fish barriers would be replaced. In Alternative F and G, more culverts that limit some fish passage at certain times of the year would be enlarged or removed.

84 The Bitterroot National Forest should relocate all sections of roadways that are causing damage to Priority, Key, and Special Emphasis watersheds.

"For those remaining roads that are causing damage to Priority, Key, or Special Emphasis watersheds because of their location in Riparian Habitat Conservation Areas, this alternative [The Conservation and Local Economy Alternative] would relocate those sections of road away from the riparian areas." (Preservation/Conservation Organization, No Address - #23)

Response:

For the FEIS, the obliteration (elimination of road prism) of roads located in Riparian Habitat Conservation areas is included in Alternative G. Roads are not considered for relocation because alternative access routes exist in many cases or the short-term impacts of new road construction to locate them away from riparian areas would be undesirable. In many cases, relocating these roads would require crossing many tributary streams, causing unacceptable short term impacts to the streams intended for increased protection.

87 The Final EIS should require the obliteration of unneeded roads to comply with the Forest Service Bull Trout Biological Assessment.

"Remove and recontour all roads not needed for foreseeable management projects, for . . . an affirmative response to the commitments made by the Forest Service in the bull trout programmatic Biological Assessment." (Preservation/Conservation Organization, No Address - #23)

Response:

Nearly all of the commitments of the Biological Assessment were met at the Regional level or higher. There are two commitments that apply to the project or Forest level; to do a watershed assessment and complete the watershed baseline. The watershed assessment for this project was completed as part of the Post-Fire Assessment in 2001. The watershed baseline was completed in May 2000. The project file contains much more information on this issue.

Based on DEIS comments, Alternative G includes more road obliteration than other alternatives. .

88 The Bitterroot National Forest should reduce fuel loads below 30 tons/acre to prevent reburn damage to vegetation, soil biota, and soil chemistry.

"We also believe that you should consider more comprehensive fuel reduction treatments to reduce the fuel loading to below 30 tons/acre in those forest types where scientific research illustrates that lower retention levels of LWD would still provide for efficient nitrogen fixation. We believe that retaining 30 tons/acre still poses significant risks of

catastrophic re-burns at a later date. Such burns would negate any recovery of vegetation, soil biota and chemistry." (Wood Products Industry/Association, Kalispell, MT - #21)

Response:

An alternative to ”Treat More Acres” was considered but not studied in detail, as described in Chapter 2. The interdisciplinary team looked at the balance between leaving enough coarse woody debris to provide adequate soils and wildlife needs and where excessive fuels pose undesirable fire effects. There are sites where fuels would be reduced to less than 30 tons/acre; particularly in wildland urban interface areas and the low elevation dry ponderosa pine plant communities (VRU 2). This reduction would meet interface fuels objectives as well as approach historic fuel loads.

94 The Bitterroot National Forest should prohibit grazing in burned areas until a NEPA analysis is completed.

"Eliminate cattle grazing in burned areas and initiate National Environmental Policy Act before grazing is allowed." (Preservation/Conservation Organization, No Address - #23)

Response:

In compliance with the Rescission Bill of 1995, NEPA has been either completed or scheduled on all allotments, including the allotments burned in the fires (Project File Range-5). To address this concern, Alternative G would suspend grazing in the burned areas until new NEPA is done. The effects of the alternatives are displayed in the Range report in Chapter 3.

114 The Bitterroot National Forest should hand-apply herbicides as necessary to eliminate weeds in burned areas.

"When noxious weeds are found in the recovery area, they should be eliminated through the hand application of herbicide as necessary." (Individual, Davis, CA - #662)

"I do not favor spraying herbicides in the National Forest except in very specific areas with a backpack sprayer - certainly no aerial or broadcast spraying." (Individual, Victor, MT - #1109)

Response:

Please refer to the Response to comment 57.

116 The Bitterroot National Forest should restore existing wilderness roads to natural forest habitat.

"We feel that there are already too many roads in the wilderness and we would like to see many existing roads restored to natural forest habitat." (Individual, Stevensville, MT - #739)

Response:

Response: There are no Forest Service Roads in designated Wilderness on the Bitterroot National Forest. Alternatives B through G in the FEIS do “restore roads to natural forest habitat” at varying levels.

122 The Bitterroot National Forest should consider setting controlled burns during the historical fire season.

"The Forest Service seems to be fighting fire in the hot weather and setting controlled fires in the cool weather. Cool weather fires are less natural, and although I agree with the policy, as it now exists, I would like to ask that we take advantage of the results of fires that burn during what has historically been fire season. Who knows what different dynamics may be in place in August than in cooler months? Spring burning has always bothered me - if only for the sake of nesting birds and mammals." (Individual, Polson, MT - #732)

Response:

For the FEIS an alternative was considered that would allow burning during the normal fire season. This is discussed in “Integrate Fire Into the Ecosystem or Fuel Reduction Through Natural Fire,” in the Alternatives Considered but Not Studied in Detail section of Chapter 2.

Also refer to FEIS Chapter 3, Fire and Fuels Section 5.2 and Chapter 3, Air Quality report.

123 The Final EIS should include alternatives that examine the addition of permanent road access in areas suitable for timber management.

"We believe the DEIS is seriously flawed by not having any alternatives that examine the addition of permanent road access in productive areas suitable for timber or at least an active management alternative that obliterates fewer roads." (Multiple Use/Land Rights Organization, Columbia Falls, MT - #749)

Response:

This alternative was considered by the IDT in the FEIS. However, it was not given detailed study because in many drainages within the burned areas, it is likely that it would not be possible to construct new permanent roads and meet the Clean Water Act and the Endangered Species Act. Soils in the burned area are more prone to erosion than they were before the fires (new temporary roads are proposed in Alternatives D and F, and they have been reviewed for soil sensitivity and have prescribed rehabilitation requirements). Given the nature of the project, new permanent roads are not needed to achieve objectives. More discussion of this alternative concept can be found in Chapter 2 of the FEIS, in the section “Alternatives Considered But Not Studied in Detail”.

144 The Bitterroot National Forest should consider harvesting slash to provide fuel for cogeneration electrical power facilities.

"Revisiting the slash issue, remember that there is 20-25% of the weight of the tree as needles, limbs, and top. Gary Callihan of Darby has brought new information on cogeneration to the area, and while I have worked the energy system for many years, his direction is refreshing. Normal use of logging slash in this area is to fuel the mill, become a pile, or smoke during burning season. Gary's direction is to do cogeneration like Finland. He says 1500 lbs of this material (dry wt) will develop 1 megawatt of electricity. From just the slash of this fire, we could have produced enough electricity for the entire state of Montana for this year 2001. Are all our electric needs waiting at our back yard? This value is 39-48 million dollars. We should employ cogeneration in this valley to power the county government and other public uses such as the schools and hospitals. There is an incredible amount of energy available in our back yards. This county is growing 97 million bd ft of timber per year (USFS only = 24,250 truck loads), and the max allowable cut from the USFS is 10 million. It doesn't take a 'scientist' to see that the forest is making 10 times as much biomass as we are using, and if it is not utilized Mother Nature will burn it. In the meantime the forest is stagnated and not growing to its potential. Utilization should be done as 'Seamless Forestry' not as logging. Just the top, limbs, and needles from this yearly growth would provide 30% of Montana's yearly needs. Maybe we could sell some to California and make a buck!" (Individual, Stevensville, MT - #873)

Response:

If an action alternative is selected, fuel reduction could supply this utilization approach, provided CWD standards can be met.

The economic efficiency analysis and impact analysis in this EIS is based on existing commercial uses of forest product outputs. This is not to preclude what new uses may be developed in the future. If cogeneration power facilities become available in the future, one result would be a use for material that is now not utilized. .

153 The Bitterroot National Forest should pile, rather than burn, coarse woody debris in timber salvage areas to enhance pine marten habitat.

"The DEIS notes that fuel continuity would be diminished by various methods, largely involving burning or lopping and scattering. In fire-prone Lodgepole pine forests mixed with some Ponderosa pine in central Oregon, we found that leaving CWD [coarse woody debris] in piles promotes continued use of timber-salvage areas by Pine Marten and their associated small-mammal prey. They use the piles for foraging, and also for resting and in some cases for denning and producing kits. In the case of that species, the distribution of CWD is perhaps more important than the total amount. Therefore, in many Bitterroot areas, particularly where timber salvage occurs, it should be feasible to break up fuel continuity and simultaneously enhance Pine Marten habitat by piling the CWD and NOT burning piles as planned. This could be most useful near riparian zones." (Preservation/Conservation Organization, Stevensville, MT - #800)

Response:

A mitigation measure was added to all alternatives in the FEIS to address this comment. Between ten and thirty percent of the hand piles would not be burned to retain habitat for small mammals, birds and marten, as documented in the Mitigation Measures table of Chapter 2. Special emphasis to retain more piles within this range in the vicinity of

RHCAs could be prescribed. Existing and future course woody debris near riparian zones would be retained under all alternatives due to the RHCA buffers along drainages.

166 The Bitterroot National Forest should allow helicopter logging in inventoried roadless areas.

"We strongly feel you should extend the recovery project into the inventoried roadless areas. By only looking at prescribed fire to reduce fuels in the future, you are ignoring how the formerly helicopter logged areas in the roadless areas fared in this fire as well as risking future escaped prescribed fire and smoke problems. The people who live there would rather see the areas cleaned up with helicopters and left roadless." (Business, Portland, OR - #798)

Response:

An alternative was considered but not studied in detail which would treat more acres, including Inventoried Roadless Areas, as described in Chapter 2.

As stated in EIS Chapter 1 – "Objectives Regarding Large Expanses of Heavy Fuels", breaking up fuel continuity is an objective in some burned portions of the Forest where large expanses of heavy ground fuels will accumulate over the next several decades (Lyons, 1984). The focus in the Forest's burned suitable timberlands includes reducing some of the potential for extreme fire behavior over extensive areas, focusing on that portion of Forest's suitable timberlands that are outside inventoried Roadless Areas.

175 The Bitterroot National Forest should base harvest system restrictions on site-specific soil conditions.

"Soil disturbance resulting from ground-based skidding is clearly beneficial for natural seed survival and germination. Harvest system restrictions should be based on site-specific soil conditions and not arbitrarily placed on all ground-based systems." (Wood Products Industry/Association, Columbia Falls, MT - #876)

Response:

A majority of proposed salvage harvest units are in areas that burned at a moderate to high severity and are more susceptible to damage. Therefore, more protective harvest methods, along with other mitigations, have been prescribed to assure that R1 Soil Quality Standards are achieved. In areas burned at low severity, less restrictive harvest methods are prescribed. Also see Response to Public Comment # 263 under Geology and Soils.

We agree that soil disturbance can be beneficial for seed survival and germination, in some situations and at the appropriate degree of disturbance. Excessive soil disturbance can also be damaging in terms of compaction, displacement, loss of organic matter, erosion, and sedimentation.

181 The Final EIS should plant deciduous vegetation in riparian areas to stabilize streambanks.

"The plan seems to eschew the planting of deciduous riparian vegetation: 'Appropriate conifer species would be planted along two stream reaches that were severely burned and now lack a conifer seed source, in order to accelerate reforestation. In all other burned riparian areas natural recovery would be allowed to occur. Riparian areas dominated by shrubs have been lacking on the forest, but will predominate in areas that burned.' (pages 1-13) Also, 'The majority of burned riparian areas would not be planted because shrubs are expected to increase dramatically following the fires and shrub habitats were a scarce but valuable ecosystem component prior to the fires.' (pages 2-9) This policy seems to conflict with the statement in the TOWARD RESTORATION AND RECOVERY document produced by the Northern and Intermountain USFS Regions, 'Where riparian areas and stream banks are burned severely, planting may be needed to stabilize slopes. Watershed restoration dollars will be used, in part, to address these needs.' (Pages III-3) High intensity fires in riparian zones may have killed shrubs and destroyed all seed. The suppression of wildfires for the past 90+ years resulted in conifers occupying sites that under a less intrusive management regime would be occupied by deciduous trees and shrubs. In some of these locations seed may not be present for regenerating deciduous vegetation. The Bitterroot National Forest has a wide variety of potential natural riparian communities ranging from predominately deciduous stands of cottonwood, red-osier dogwood and other understory shrubs at middle elevations to willow/shrub habitats at higher elevations. A healthy riparian zone is essential for streambank stabilization on many stream types and for preventing sediment and other pollutants from entering the stream. Riparian zones also create habitat for a wild variety of wildlife and enhance habitat for fish and other aquatic life." (Montana Department of Environmental Quality, Helena, MT - #1074)

Response:

Response: Informal surveys during summer 2001 field visits suggest deciduous species in riparian areas are recovering rapidly due to increased sunlight and nutrients. Many sites show lush green growth of desirable woody species such as willow, dogwood, maple and alder, and are already providing needed riparian habitat. Rapid growth of these areas is expected to continue for the next several years; rates will tend to slow as the habitat becomes fully occupied and competition increases. Conifer plantings will help stabilize slopes adjacent to riparian areas and will eventually lead to riparian area shading patterns closer to those seen historically. Riparian conifer planting is proposed in two severely burned drainages where all conifer seed sources were lost.

184 The Bitterroot National Forest should consider allowing additional management activities to reduce fuel build-up in inventoried roadless areas.

"We . . . caution your agency to revisit the DEIS's unwarranted sensitivity to inventoried roadless areas. We know entry into these areas can be controversial and we believe that roadless lands should only be entered for compelling reasons--such as addressing unhealthy fuel build-ups. The DEIS's proposal to arbitrarily address such build-ups through prescribed burning may seem politically correct, however, we respectfully suggest an escaped burn with unnecessary smoke-related health consequences and/or destruction of adjacent properties will cause your agency far more public ridicule than will responsible projects designed to ensure forest health. Complex issues require scientific and reasoned leadership, not timid apprehension." (Wood Products Industry/Association, Deer Lodge, MT - #1080)

Response:

See comment 166. This alternative concept was considered but not studied in detail.

190 The Bitterroot National Forest should develop and analyze "The Conservation and Local Economy Alternative" as a stand-alone alternative.

"In order to have a reasonable range of alternatives for the public and the decision maker, the Forest Service needs to develop, analyze, and publish the CLE Alternative. As interpreted by binding regulations of the CEQ, an environmental impact statement must 'rigorously explore and objectively evaluate all reasonable alternatives' {40 C.F.R. 1502.14(a)}. Similarly, recent case law has established that consideration of alternatives which lead to similar results is not sufficient to meet the intent of NEPA {Citizens for Environmental Quality v. United States, 731 F.Supp. 970,989 (D.Colo 1989); State of California v. Block, 690 F.2d 753 (9th Cir 1982)}. While the 'Range of Alternatives' offered in the not yet released DEIS may cover some or all of the components of the Conservation and Local Economy Alternative, we request that this alternative be analyzed in all future NEPA documents (FEIS) as a stand alone alternative. The Forest Service Handbook, chapter 20, section 23.2 states that the purpose and intent of alternatives are to 'ensure that the range of alternatives does not foreclose prematurely any option that might protect, restore and enhance the environment.' The importance of this mandate cannot be over-emphasized; under NEPA, a rigorous review of alternatives is 'the heart of the environmental impact statement' {40 C.F.R. 1502.14}." (Preservation/Conservation Organization, Hamilton, MT - #875)

Response:

Response: The “Conservation and Local Economy Alternative” is analyzed in Alternative G in the FEIS, as it pertains to the burned area. Some modifications were made to the proposed alternative to stay within the scope of the project. Modifications included restricting fuel reduction activities on National Forest land to the burned area limiting the time frame for project activities to that allowed by NEPA (rather than committing to activities in perpetuity as suggested), eliminating “fuel reduction through natural fires”, and eliminating active noxious weed control (see Alternatives Considered But Not Given Detailed Study in Chapter 2). Home protection work is considered in Alternative G on private interface lands both in and outside of burned areas.

193 The Bitterroot National Forest should develop and consider an alternative proposing more aggressive logging treatments.

"I would like to see an alternative with a more aggressive logging approach." (Individual, Hamilton, MT - #1273)

Response:

Response: This alternative was considered but not given detailed study in the DEIS and FEIS as “Treating More Burned Areas.” Please refer to Alternatives Considered But Not Given Detailed Study in Chapter 2.

194 The Bitterroot National Forest should develop and consider an alternative that accomplishes fuel reduction through non-commercial methods.

"Our organizations generally support the scientifically justified components of the project such as, road decommissioning, removal of fish barriers, and adding woody debris to streams. However, the agency has not presented any alternative that would accomplish fuel reduction needs through non-commercial methods. Until an alternative is presented that would carry out ecosystem restoration activities and concentrate efforts on protecting structures in the wildland-urban interface ('WUI'), our organizations will continue to oppose this proposal." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

Response:

Response: For the FEIS, Alternative G was developed and includes these features.

195 The Bitterroot National Forest should amend the timber harvest requirements and mitigation measures detailed in Table 2-5 of the DEIS to maintain economic viability without sacrificing resource protection.

"I am concerned that many of the timber harvest requirements and mitigation measures listed in Table 2-5 present conflicts or will raise the harvesting cost of low value trees to a point where converting facilities will not be able to economically bid on the sales. Some of these requirements could be modified to make your proposal more economical without sacrificing resource protection." (Wood Products Industry/Association, Frenchtown, MT - #803)

Response:

Response: For the FEIS, Alternative F was developed to improve economics, generally by reducing post harvest fuel treatment requirements where they are not as critical to meet fuel reduction objectives. Some units were dropped because of high costs where fuel continuity objectives could still be met. The mitigation measures were designed to protect resources within the treatment areas and the ID team believes they are necessary, so reducing them would likely reduce resource protection. Some sales may not be economical and alternative contracting approaches, such as stewardship contracts, would be used.

199 The Bitterroot National Forest should allow open access to all gated Forest Service roads for recreational and commercial uses.

"I think all of the gates should remain open to the public and not closed to motorized travel, logging, berry picking and firewood gathering." (Individual, Darby, MT - #743)

Response:

Opening motorized access across the Bitterroot Forest is beyond the scope of this analysis. Imposing new access restrictions is minimized in some alternatives. The alternatives analyzed in this EIS consider varying levels of new travel restrictions in order to accomplish resource objectives (e.g., meeting elk habitat effectiveness). The effects of these proposals on motorized access are displayed in the Recreation section of Chapter 3.

203 The Final EIS should allow for site-specific decisions regarding the use of low-pressure ground equipment on grades greater than 35% to increase the economic viability of fuel reduction projects.

"There will be short-term impacts to soils and watersheds due to fuel reduction activities. However, the proposed mitigation measures including low ground pressure equipment, ground-based logging systems only on slopes less than 35 percent if the ground is frozen or snow covered, are excessive and cost prohibitive. There are equally effective mitigation measures that can be employed at less cost and the Forest should consider these. Furthermore, ground-based systems may be beneficial for reforestation efforts where the soil cap as a result of the fires needs to be broken up. This should not be interpreted as a statement opposed to helicopter logging or logging over frozen and snow covered land. Rather it's a statement asking that the Forest not make arbitrary decisions as to the best type of logging or when best to do it. I request that this be done considering the site-specific conditions, timing of events, and economic factors. Certainly protecting resource values and the soil productivity is important but there are alternative means to accomplish this objective at minimal cost to the operator." (Individual, Eugene, OR - #1042)

"There seems to be a contradiction in specifications for ground skidding and brush piling equipment. Ground skidding is limited to slopes under 35%. Excavator piling is allowed on slopes up to 50%. Under the right conditions, low-

pressure ground equipment can also handle slopes up to 50% and with less soil disturbance than an excavator piling brush. Costs could be reduced considerably by substituting some of the line skidding or helicopter yarding with ground skidding. This would result in higher stumpage bids." (Wood Product Industry/Association, Frenchtown, MT - #803)

Response:

A variety of restrictions and allowances for ground based equipment are studied in the FEIS in order to consider a range of reasonable fuel reduction options, each with differing resource impacts and costs. Some ground-based activities are not considered because they can't assure adequate soil protection.

The comparison of alternatives section of Chapter 2 summarizes the differences between logging system and mechanized fuel piling allowances and restrictions for the alternatives.

Ground-based logging is restricted to slopes less than 40% by the Forest Plan. In practice, we have restricted ground based skidding to 35% in recent years because above that slope steepness monitoring has shown undesirable soil impacts. A slope limit of 35% in the FEIS is established to avoid soil displacement from equipment operation on steeper slopes. Due to post-fire conditions, particularly on moderate and high severity burned areas, soil resources are more susceptible to compaction and displacement, and subsequent erosion and loss of productivity.

207 The Bitterroot National Forest should consider chipping slash to speed vegetative re-growth and reduce smoke from burning slash piles.

"Chipping the slash and spreading it over the burned area speeds the re-growth of the forest by years. Also it would reduce smoke from burning the slash piles." (Individual, Stevensville, MT - #880)

Response:

This suggestion was considered but not adopted for study. Please refer to rationale provided in Chapter 2's "Alternatives Considered but Not Given Detailed Study".

213 The Bitterroot National Forest should consider using horse logging in winter to avoid soil disturbance.

"Logging must be done so as to avoid soil disturbance. Winter logging with horses would be a possibility." (Individual, Stevensville, MT - #1554)

Response:

Winter logging using horses is a viable option for fuel reduction and salvage harvest treatments. There is no restriction against this method as long as prescribed conditions and mitigation measures are met. Opportunities to use horse logging would be considered during implementation, depending on the alternative selected in the decision.

220 The Bitterroot National Forest should take a more active approach to managing riparian areas.

"Your hands off approach for management of riparian areas will insure the demise of the very environment you are hoping to protect and preserve. You must remove some of the fuel loading in these areas and plant new trees, shrubs, and grasses if they are to function as intended. Allowing nature to take its course will only insure very high sediment levels, downfall so dense that wildlife use is limited, and continued channel migration because of the windfall. Prolonged periods of water temperature increases will be experienced. What is your scientific basis for this hands off decision? How can the known results of non-management be ignored?" (Wood Products Industry/Association, Columbia Falls, MT

Response:

This alternative was considered but not studied in detail under "Treat more acres".

Decisions to leave burned trees and other "fuels" are based on guidance from INFISH standards. These requirements are intended to minimize sediment contribution to streams, maximize woody debris contribution (which helps rather than hurts fisheries), and maximize stream shading. They are not easily negotiable. Reforestation efforts are proposed to be carried out adjacent to and within many RHCAs to increase the speed of forest recovery.

228 The Final EIS should ensure that non-harvest fuel reduction methods are used in inventoried roadless areas.

"Reports indicate that some 9,800 to 22,000 acres of inventoried roadless areas would be affected by the various alternatives described in the DEIS. We urge you to give special consideration to assuring that the roadless nature of these areas is maintained and that, as suggested in the DEIS, non-harvest fuel reduction methods be used exclusively in these areas." (Individual, Corvallis, MT - #1543)

Response:

In the FEIS, all fuel treatment units in Inventoried Roadless Areas were eliminated from all alternatives. Alternative G avoids any activities in Roadless and unroaded areas. In the DEIS, Alternative B considered 347 acres of non-mechanized fuel reduction activity in Inventoried Roadless Areas; Alternatives D and E considered 363 acres of non-mechanized fuel reduction activity in Inventoried Roadless Areas; and Alternatives A and C proposed no activities in Inventoried Roadless Areas (DEIS 3-438).

234 The Final EIS should include additional measures to prevent the invasion of non-native plant species.

"The post-fire forest is extremely susceptible to the invasion of non-native plants, as many exhibit opportunistic growth characteristics that would allow native species seedling to be out-competed. Ground disruption and tree removal associated with logging will further increase the forest's susceptibility to invasive plants. Alteration of seed sources associated with forest disruption may significantly alter forest succession patterns. Threats from non-native species associated with the alternatives are not adequately discussed. More detailed invasion preventing measures should be proposed." (Preservation/Conservation Organization, Missoula, MT - #1432)

"The Burned Area Salvage Sale D.E.I.S. does not adequately treat the threat of noxious weeds nor the contribution of this sale to an acknowledged problem on the Bitterroot National Forest. In light of the present infestation on the Bitterroot National Forest, the well-documented contribution of logging activities to the spread of noxious weeds, the Forest Service should have focused on causative factors rather than mitigation. The agency cannot simply rely on BMPs and other reactive measures, rather it must begin to address the actions that cause the infestation such as road development and logging related vehicles." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

Response:

New mitigation measures have been added in the FEIS to address this. See Table 2-10, Mitigation Measures. The Forest Service acknowledges the contribution of past ground-disturbing activities on weed spread (Ch 3-Noxious Weeds). See Appendix C for mitigation effectiveness. The Burned Area Recovery EIS also recognizes the short-term versus long-term impacts of proposed activities and proposes the use of low ground-disturbing harvest methods to achieve desired conditions. Building temporary roads and landings are the principal activities that could result in noxious weed spread. These disturbed areas would be rehabilitated as soon as work is done to reduce the likelihood of weed invasion.

Alternative G was added to emphasize the need for weed prevention measures from public land users. Additional mitigation measures were added to the action alternatives in the FEIS to address this comment (Ch 2). In addition, the Forest Service Manual and supplement signed into effect in May of 2001 (PF NOXIOUS-3) incorporate extensive weed prevention techniques required for almost any ground-disturbing activity occurring on National Forest lands.

248 The Bitterroot National Forest should consider low-level prescribed fires in riparian areas.

"We encourage the application of low-level prescribed fires in riparian areas in the absence of timber harvest." (Preservation/Conservation Organization, Hamilton, MT - #1596)

Response:

See response to comment 220.

262 The Final EIS should offer recommendations to local governments for restricting road building and home construction near federal lands.

"In addition to the legal and scientific insufficiency of the DEIS, it omits a vital factor in the entire post-fire analysis. The Federal Government spent an enormous amount of money in fighting the fires of 2000 (I believe that 54 million dollars of taxpayer money was spent in Montana, with millions of this spent in Ravalli County). Furthermore, virtually

the entire expenditure and the entire firefighting effort was to protect private homes and other structures. I certainly understand the humanitarian reasons for this, but because taxpayer money was spent in protecting private investments, the Federal Government has an obligation to concern itself with where and how these homes were built. It is not enough to tell private individuals to cut vegetation around their homes; it is incumbent on the Forest Service to advise Ravalli County officials that measures should be taken to prevent future building in dangerous areas. The American public should not in the future be forced to bear the burden of unwise local government decisions, inactions or negligence. The final DEIS should include specific recommendations to local government to begin restricting road building and home construction near Federal wildlands." (Individual, Hamilton, MT - #1709)

Response:

Response: Recommendations to local governments on road building and home construction is outside the scope of the Burned Area Recovery project. The State and Private Forestry branch of the Forest Service and State Forester's office works directly with local governments and landowners on these kinds of issues.

274 The Bitterroot National Forest should not propose to disturb any mature, late mature, or old growth forest areas until a conservation strategy assures the persistence of old growth dependent species.

"The BNF should not be proposing to disturb any mature, late mature, and old growth forest areas until it has a conservation strategy that assures old growth dependent species' persistence. Has the BNF documented the characteristics of the previously designated, then burned old growth following the fires so that you actually know it has lost its old growth characteristics? The DEIS does not indicate if all the designated old growth meets the criteria as true old growth or if it is only 'recruitment/replacement' habitat. Obviously, the latter is not as effective for old growth dependent species." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

Further field inventories of old growth habitat were conducted between the Draft and Final EIS and the results of those inventories are included in the FEIS. Fuel reduction activities in Old growth habitat are not prescribed in Alternatives A, C, F, and G in the FEIS.

314 The Bitterroot National Forest should not conduct logging in old growth forests.

"Post-fire old growth represents important habitat to the population viability of numerous species. Old growth is an ecosystem state rather than a state of individual trees. Those species that are dependent on old growth ecosystems are primarily dependent on old growth characteristics rather than the presence of large trees. These old growth characteristics include high levels of age class diversity and structural complexity, abundant snags, high levels of soil nutrients, and a rich understory of shade-tolerant species. The presence of old trees generally signifies a relatively undisturbed ecosystem. While high intensity fires may have killed many of the large, old-trees, many of the desirable ecosystem properties remain intact. Additionally, the nutrient recycling due to the decay of large trees will lend to a rich and regenerating ecosystem. The DEIS states that 'in moderate or high severity burned areas salvage harvest will be limited by the guidelines for retaining snags and dead woody material; and the dead wood components necessary for old growth habitat will be retained' (DEIS 3-345). Such a statement fails to recognize the potential ecosystem detriment of old growth logging despite the retention of old growth attributes. Given the potential lack of sufficient old growth in the analysis area to maintain old growth associated species, no logging should occur in forests with old growth attributes." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

See response to comment #274.

Some wildlife species associated with forested old growth need certain structural characteristics such as snags or down logs that are usually found in old growth forests. However, many if not most of these species are absent in recently burned areas or in younger forests even if the individual structural characteristics that they are associated with are present. This implies that species that are truly dependent on forested old growth require the total combination of old growth characteristics. Large, old live trees and their green crowns are an integral feature of old growth forests, and provide numerous niches for many of the species associated with forested old growth. The fires killed all the live trees in many old growth stands. These stands no longer qualify as old growth because of the lack of large, old live trees (Green, et al., 1992). This is appropriate, since such stands no longer provide all of the habitat characteristics required by many wildlife species dependent on forested old growth.

Forested old growth habitat is characterized by a complex combination of vegetative and structural characteristics, usually including some presence of snags, down logs and decay. The presence of a certain number of large, old, live trees is fundamental to the concept of forested old growth regardless of the old growth type. The forest canopy created by the crowns of large, live trees supports much of the insect community that in turn supports many of the bird species associated with mature and old growth forests, such as flammulated owls and Townsend's warblers. Old growth canopies provide cover to hide goshawk nests, which are in turn used by species such as great gray owls. Old growth canopies shade the forest floor, which allows understory plants associated with later successional stages to out-compete the shade-intolerant early successional plants. The shade provided by old growth canopies keeps the forest floor cooler and moister, allowing decay to proceed more rapidly, which in turn accelerates nutrient cycling and provides habitats for a number of insects, small mammals and amphibians.

Old growth characteristics vary considerably depending on the potential productivity of individual sites as reflected in habitat type groups. Old growth on drier, less productive sites is often characterized by relatively low structural complexity, few snags or down logs (Green, et al., 1992), and an understory of shade-intolerant species, reflecting the influence of the frequent low-severity fires that historically produced and maintained this type of old growth. Old growth dominated by ponderosa pine and western larch in our area was created and maintained by recurring disturbance, specifically relatively frequent low-severity fire.

319 The Bitterroot National Forest should conduct burn treatments adjacent to roads to increase buffer zones and reduce fuel loads.

"In the short-term, focus burn treatments on the 'beauty strip' along roads to increase the size of fire buffer and reduce fuel loads in land adjacent to roads where human-linked ignition sources are more likely to occur. The association of roads with fire suggests that a cost-effective approach may be to concentrate initial burn treatments in stands adjacent to, or in close proximity to roads and highways. Burning along roads, for example, would increase the width of the fire buffer that may help reduce the spread and, hence, control suppression costs of future fires." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

Refer to the Fire and Fuels report in Chapter 3, Alternatives B, D, E, F, and G. The use of roads is a common control line for prescribed burns and wildland fire management.

325 The Final EIS should include mitigation measures for displaced snowmobile trails resulting from road or trail closures.

"With regard to recreational opportunities, consideration should be given to how or if this proposal would impact the approved, current snowmobile trail system. With the upcoming winter season only months away, mitigation measures for displaced snowmobile trails resulting from possible road or trail closures should be considered." (Judy Martz, Governor, Helena, MT - #1710)

Response:

Two groomed snowmobile trails would be unavailable for use during winter hauling. This would be a temporary measure for one or two seasons. At this time, no alternate groomed trail route in that area is allowed due to direction in the Lynx Conservation Assessment and Strategy Plan, which does not allow a net change in groomed snowmobile trails within a lynx analysis unit. Snowmobile users would have access to numerous ungroomed trails across much of the Forest during this interim period. Alternate groomed trail facilities are also available on the adjoining Lolo and Beaverhead-Deerlodge National Forests, and elsewhere. Mitigation measures in Chapter 2 require advance notice of closures would be issued to inform users, and to inform them of alternative opportunities for snowmobile use.

391 The Bitterroot National Forest should consider using anti-aggregate pheromones to reduce the risk of bark beetle infestation.

"If there is ongoing risk of bark beetle infestation that needs to be curtailed, we do not understand why you rejected the use of anti-aggregate pheromones as 'premature' (2-22). Not knowing what areas to treat in the 'vast size of the burned area' is a poor excuse given that you have, in fact, targeted certain areas for logging treatment due to 'high-risk' for bark beetles. Anti-aggregate pheromones should be used as an alternative treatment on some of those lands." (Preservation/Conservation Organization, Missoula, MT - #1694)

Response:

This approach was considered in an alternatives “Bark Beetle Suppression” in the DEIS. More rationale has been added to the FEIS, Chapter 2, Alternatives Considered But Not Given Detailed Study” to address this comment.

427 The Bitterroot National Forest should develop and consider an alternative that restricts management activity in roadless areas.

"In many areas, the Burned Area Recovery Plan (BAR) DEIS developed by Forest Supervisor, Rodd Richardson, falls far short of legal sufficiency. Just one example of the document's many failings is the lack of a range of reasonable alternatives. In spite of such demonstrations of concern for our national forests, no alternative was developed that kept proposed projects out of the roadless lands." (Individual, Stevensville, MT - #1706)

Response:

Response: In the DEIS, Alternatives A and C did not contain activities in Inventoried Roadless Areas or “unroaded” lands. For the FEIS, all activities on Inventoried Roadless Areas have been dropped from all alternatives. Alternative G was added, excluding activities in all unroaded areas. An analysis considering impacts on unroaded areas is included in the FEIS.

443 The Bitterroot National Forest should establish quantified guidelines for winter skidding operations and monitor compliance in order to protect sensitive soils.

"It is essential to preventing soil detriment that compliance with these conditions be thoroughly ensured and monitored: Skid only when the soil is solidly frozen from the surface to a depth of 4 inches and/or the snow after a couple passes is compacted to a thickness of 10 inches or more. This thickness of snow needs to be maintained on the skid trail during the entire skidding operation. A limited amount of monitoring of sites yarded under these conditions indicates good soil protection, but more monitoring is needed to verify this." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

We agree that implementation monitoring is a very important component of the fuel reduction proposal outlined in the FEIS. An effective monitoring program, both implementation and post-activity, will ensure that the prescribed measures to protect soil productivity, as well as other resources, are conducted as planned. The soils monitoring plan, for both implementation and post-activity monitoring, is included in the FEIS in Appendix C.

445 The Bitterroot National Forest should require that all forest roads be reconditioned to meet Best Management Practice standards.

"Does the BNF propose to bring all the existing roads in the fire-affected watersheds up to BMP Standards? It is not clear that action alternatives address all watershed restoration needs in these watersheds. If not, the EIS must disclose the impacts of the ongoing watershed and soil problems these out-of-Standard roads are causing." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

Roads and road segments determined to be contributing sediment were chosen for stabilization work, including bringing them up to BMP standards, putting roads in storage, or decommissioning them. These determinations were based on their importance for ongoing public and administrative access both in the near and long term. Watersheds with known problems (eg, MTDEQ 303(d) listed streams) were focused on for watershed improvements, but all burned drainages were considered. The process for selecting watershed improvements, and the sediment and water yield affects resulting from the alternatives is discussed in FEIS Chapter 3’s watershed report.

454 The Bitterroot National Forest should implement as many watershed projects as possible within the next two years to minimize impacts to bull trout habitat.

"The Fish and Wildlife Service recommends that the Bitterroot National Forest implement as many of the watershed improvement projects as possible in post fire years two and three (2002 and 2003), following the priority list the Forest developed for bull trout. These projects demonstrate the Bitterroot National Forest's continued commitment to restore and manage habitat for the threatened bull trout." (U.S. Fish and Wildlife Service, Helena, MT - #1900)

Response:

The Bitterroot National Forest agrees that completing the priority watershed improvement projects for bull trout during 2002 and 2003 is important. The Forest plans on meeting any terms and conditions specified by the U.S. Fish and Wildlife Service.

458 The Bitterroot National Forest should consider additional road closures in burned areas to benefit mule deer and elk populations.

"I urge you to further consider additional road closures in the burned areas. These will be important for elk and mule deer security of the next 10-15 years. These should be accomplished as reforestation and other recovery activities are completed." (Individual, Darby, MT - #1893)

Response:

Additional road closures, above levels proposed in Alternative B, are considered in Alternative C in the DEIS and Alternative G in the FEIS. All alternatives would reduce open road densities to various degrees (FEIS Chapter 2, and Wildlife section of Chapter 3).

The Montana Department of Fish, Wildlife and Parks in cooperation with the Bitterroot NF continue to monitor elk and mule deer numbers. We anticipate that increases in big game productivity that may result from large increases in the amount of forage production after the fires will more than make up for any increased hunter-caused mortality due to loss of hiding and security cover, and that big game numbers will remain high. The number of elk counted in the burned elk herd units in the 2001 spring trend count was comparable to or higher than the record numbers counted in 2000 (Montana Fish, Wildlife and Parks, unpublished), despite the loss of hiding and security cover caused by the fires prior to the 2000 hunting season.

460 The Bitterroot National Forest should use brush berms to protect post-fire soils and vegetation.

"I . . . suggest that brushy material be considered as an erosion control material for burned slopes where this is needed. Brush berms can be constructed with a biodegradable twine or otherwise bound into rough bales that can be secured horizontal to slopes to disperse run-off, fill gullies, etc. Please note too that this would provide important soil cover and, like horizontal logs, help sustain important mychorrizal fungi conducive to forest regrowth and recovery." (Individual, Missoula, MT - #1686)

Response:

Fuel reduction prescriptions have been supplemented for the FEIS and focus on retaining a minimum of 10-25 tons per acre (depending upon VRU and burn severity) of coarse woody debris (CWD) following fuel reduction. Many of the proposed fuel reduction units would retain CWD well above these minimums. Slash (less than 3 inch diameter) would be spread and used to cover new and existing skid trails. Log erosion barriers, contour felling, straw waddles, and lop-and-scatter treatments were used on several thousand acres during Burned Areas Emergency Rehabilitation (BAER) projects completed in the fall of 2000. These treatments accomplish essentially the same results as recommended in the comment, but tend to be less labor-intensive compared to fabricated brush berms. That said, your comment is well founded. Retention and use of woody debris, both coarse and fine, is an integral part of the proposed fuel reduction program for erosion control and nutrient cycling. We envision use of woody material in a similar fashion as recommended.

461 The Bitterroot National Forest should use winter-based skid logging to reduce sediment production in harvest units.

"The short trip to the Cow Creek Demonstration Area was very informative. The small amount of soil disturbance associated with fuel reduction and salvage timber harvest over frozen ground and snow was indeed surprising, and our discussion concerning the implementation of these methods of salvage was particularly informative. I hope that the Bitterroot National Forest employs these methods on the ground based salvage harvest. The use of these methods will greatly diminish sediment production in harvest units, which will substantially reduce the potential for sediment delivery to habitat occupied by westslope cutthroat trout and the threatened bull trout. I am pleased that the Bitterroot National Forest has such a high degree of concern for maintaining the integrity of the upper soil horizon and remaining humus layer, two elements of critical concern in the post fire environment." (U.S. Fish and Wildlife Service, Helena, MT - #1900)

Response:

We appreciate your attending the tour of the Cow Creek Demonstration Area. In moderate and severe intensity burned areas, FEIS Alternatives B, D, E and F limit ground-based salvage harvest activities to frozen ground or 24 inches settled snow cover. We concur that observations of the Cow Creek Demonstration Area illustrate that fuel reduction using salvage harvest can be conducted with minimal soil disturbance and sediment production. Fuel reduction activities outlined in the FEIS require soil mitigations to limit erosion and sedimentation, as described in Chapter 2.

475 The Bitterroot National Forest should develop a modified alternative optimizing environmental and resource trade-offs.

"We recommend that the Forest Service consider development of a modified preferred alternative (perhaps between Alternative E and Alternative B), since we believe a modified alternative could be constructed that may better optimize the environmental and resource trade-offs. We note of course that the Forest Service would need to evaluate and analyze the impacts (e.g., wildlife impacts, sediment production) of any new modified alternative, and display those impacts in the FEIS. This information would allow for improved public disclosure, and to allow the decision maker to make a more reasoned choice between alternatives." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

Response: Two new alternatives are studied in the FEIS. Alternative F was developed and analyzed to balance benefits and impacts, as suggested.

487 The Bitterroot National Forest should clearly delineate all sensitive aquatic features on maps and on the ground for the purposes of timber harvest.

"We encourage the Forest Service to delineate and mark the riparian buffer area boundaries and perennial seeps and springs and wetlands on maps and on the ground before harvesting so that timber contractors will be able to avoid them." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

Riparian buffers will be marked on the ground to INFISH standards to aid timber sale administrators and contractors. Mitigation measures (Table 2-10) specify RHCA protection and wetland areas, including springs and seeps, will be avoided. RHCAs and wetlands have been mapped and would be used during preparation and implementation. Wider RHCA buffer widths are also now considered in three FEIS alternatives.

491 The Bitterroot National Forest should reduce harvest levels and use less disturbing logging methods in specific drainages to minimize sediment delivery impacts on trout species.

"We also note that it is stated in the Fisheries analyses that projected sediment inputs to streams from salvage harvest could adversely effect bull trout and westslope cutthroat trout in many drainages including: Rye and North Fork Rye Creek, Little Sleeping Child Creek, the upper half of Sleeping Child Creek, the unnamed Bad News tributary of the South Fork of Skalkaho Creek and scattered areas near tributaries that flow through salvage units, and areas in the Sleeping Child Creek downstream of White Stallion salvage units and near the mouths of Two Bear, Blacktail, and the unnamed Hot Springs tributary (page 30187, 30196); Medicine Tree Creek, Laird Creek and tributaries, Lower Maynard Creek, Reimel Creek downstream of Wallace Creek, Warm Springs Creek downstream and including Crazy Creek, Camp Creek and lower Andrew, Praine, and Waugh Creeks, Tolan Creek, Meadow Creek, Cameron Creek and its tributaries, lower Guide and Jennings Camp Creeks, and East Fork Bitterroot River downstream from Meadow Creek page 3-209, 3-218); and in Blue Joint and Little Blue Joint Creeks downstream of their trailheads, Lower Castle Creek, Overwhich Creek, lower Coal Creek and lower West Coal Creek, lower Slate Creek, Piquett Creek, and West Fork and Painted Rocks Reservoir (page 3-229, 3-239). We recommend that reduced or deferred levels of logging and harvest and less disturbing logging methods (e.g., helicopter) be considered to reduce bull trout and westslope cutthroat trout impacts in these drainages (e.g., use Alternative E fuels reduction measures in these drainages with projected fisheries impacts to reduce impacts." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

For the FEIS, Alternative F was developed and would not conduct salvage harvest in the portion of the Rye Creek drainage where bull trout are present, and upstream.

In the other drainages Alternatives E, F, and G expand the RHCA buffers on intermittent and non-fish bearing perennial streams to improve sediment-filtering capacity, and provide some additional protection for native fish habitat. The buffer width on intermittent and non-fish bearing perennial streams is 200 feet, and 300 feet on fish-bearing streams in these alternatives. This expansion doubled, and in some drainages such as Rye Creek and the lower East Fork, tripled the width of the buffers surrounding intermittent streams. This is important protection for the fishery because intermittent streams make up the majority of RHCAs within and bordering the salvage harvest units.

505 The Bitterroot National Forest should pave Rye Creek Road from U.S. Highway 93 to the junction with the North Fork of Rye Creek to accommodate an increase of traffic from the proposed management activities.

"The cumulative activities will create a large increase in volume of traffic using the Rye Creek Road. This will include traffic associated with various studies, unit layouts, tree planting, fuel removal, road reconstruction & road obliteration, monitoring, mushroom picking, and more. This road is already a problem for the County Road Department to maintain. The present road, with all the traffic it will have for the next 3 to 5 years will be constantly 'beat out' and prone to erosion. The Forest Service should pave the road from Highway 93 to the junction with North Fork of Rye Creek. The road should be brought up to two lane public highway standards, suitable for heavy truck traffic. There are no bridges on this section of road, and the roadbed is already wide enough. Paving the lower section of the Rye Creek Road would be of long term benefit to the small forest dependent community of Darby, Montana. It would eliminate road dust and washboard conditions that reduce driver safety. Ravalli County would support the paving of this road. Paving this 5.3 miles of road would save the expense and environmental effects of over 200 road gradings, and would greatly reduce the sediment delivery to Rye Creek and the Bitterroot River for decades into the future." (Forest Service Employee, Hamilton, MT - #1674)

Response:

The portion of Rye Creek Road described here is a Ravalli County Road under County jurisdiction. Ravalli County, not the Forest Service, has jurisdiction and responsibility to maintain and upgrade the road for all users. The Rye Creek Road is an arterial road serving large portions of private land as well as National Forest lands and currently serves as much as 50 vehicles per day.

As discussed in the Transportation section of the DEIS and FEIS, five of the alternatives would include additional logging trucks hauling down Rye Creek Road. The number of additional vehicle trips on the Rye Creek Road generated by these alternatives would be as many as 30 to 40 vehicle round-trips per day. This traffic could warrant additional maintenance of the Rye Creek Road.

520 The Final EIS should establish less variability in snag retention levels between logged and unlogged treatment areas.

"While the average number of snags throughout the landscape may be substantial, we are concerned with the spatial distribution of these snags and their ability to sustain wildlife species. High densities of snags in unlogged areas interspersed with very low snag retention in logged areas may have a much different ecological function than a less variable spatial snag distribution. The lower end of snag densities (2, 4, 5, or 10) appears inadequate to ensure long-term viability (DEIS 1-15). The size classes of current snags and recruitment snags must be addressed. The DEIS fails to adequately substantiate the anticipated rate of snag fall." (Preservation/Conservation Organization, Missoula, MT - #2054)

Response:

In the DEIS, Alternatives A and C addressed this issues, as well as Alternative E to some degree. For the FEIS, Alternative G was added, which also addresses this concern to a degree. More analysis is included in the FEIS, Chapter 3's Wildlife section to address this concern.

The Forested Vegetation report in Chapter 3 explains that forested landscapes, within what is now the Bitterroot NF, were characterized by a diverse mosaic of structural stages that was maintained by recurring fire. Since the forest structure across the landscape was so diverse, there is little reason to think that snag densities were consistent across the landscape. The historic condition of the forest included patches with lots of snags where fires had burned recently next to patches with few snags where fires had burned long ago and the resulting snags had fallen down. It is reasonable that the variability in snag densities expected to result from implementation of any of the action alternatives that include timber harvest would provide an ecological function similar to that of historic snag distribution. This should help ensure

the viability of all snag-dependent wildlife species, especially given the unprecedented (at least since European settlement) total number of snags that will be left regardless of alternative selected.

Population viability is appropriately addressed at larger scales, such as the scale of the Bitterroot NF, rather than the scale of an individual treatment unit. The minimum snag retention levels contained in the DEIS (1-15) are largely adequate to provide sufficient habitat to support 100% of the maximum potential populations (MPP) of woodpecker species (USDA, 1979) within the units themselves. Actual snag numbers retained across the landscape would be orders of magnitude higher than the number needed to support 100% of the MPP of woodpecker species because over 70% of the area that burned would not be treated under any of the alternatives. Untreated areas containing very high snag densities would be well distributed across the landscape and within and adjacent to harvest units (such as RHCAs).

The FEIS Wildlife report cites several studies that looked at snag fall rates including one of lodgepole pine in the 1961 Sleeping Child fire on the Bitterroot NF. Various researchers have studied snag longevity and fall down rates in other tree species in other areas; the results of several of these studies are summarized in reference USDA 2000p. In these studies, fire-killed ponderosa pine snags started falling in the third year after the fire. By the end of the fifth year, over 50% of the fire-killed ponderosa pine had fallen, and over 80% of the smaller diameter ponderosa pine fell within 10 years. Fire-killed Douglas-fir snags in these studies started falling four years after the fire. By the end of the fifth year, almost 25% of the Douglas-fir snags had fallen, and fall down rates were increasing. Larger snags of these species often stand longer because they contain more heartwood, which does not decay as fast as the sapwood that makes up most of the cross-section of smaller trees. Fire-killed lodgepole pine, sub-alpine fir and Engelmann spruce snags tended to stand longer and few had fallen after five years. Snags of these species are generally less valuable to wildlife.

For or Against Alternatives

7 The Bitterroot National Forest should reduce bark beetle infestation.

"Cleaning out the burned trees before they decay and become insect infested and stress other trees is the way to go." (Individual, Pasadena, CA - #52)

"I strongly support the removal of commercial salvage products and any associated timber that may be desirable for other reasons such as reducing the threat of bark beetle infestations." (Individual, Missoula, MT - #1067)

THIN GREEN TREES

"[What is the key comment you wish to make about how the DEIS alternatives--or another alternative you can suggest--respond to the issue of bark beetle risk?] Must thin green stands." (Individual, Darby, MT - #12)

INCLUDE MORE BARK BEETLE TREATMENT IN ALTERNATIVE B

"I note that Alternative D would treat 5,467 acres of bark beetle impacted land whereas Alternative B would treat 2,793 acres (p. 23). The 5,467 acres of bark beetle treatment should be incorporated into Alternative B for obvious reasons." (Individual, Hamilton, MT - #144)

Response:

Different action alternatives incorporate varying levels of bark beetle prevention. The differences in these alternatives regarding bark beetle risk will be a factor considered by the Forest Supervisor at the time of decision.

8 The Bitterroot National Forest should allow burned areas to recover naturally.

"A 'recovery' plan should not result in any further environmental damage. Every standing-dead and downed tree plays a specific and essential role in the natural recovery of a burned area. Dead trees are not wasted resources. The scientific community has established that post-fire salvage logging provides no benefit to the post fire forest and may in fact damage fragile soils, remove essential biomass, exacerbate the spread of noxious weeds, and destroy natural regeneration." (Individual, New York, NY - #187)

"I believe the best and highest use of our national forests is the protection and restoration of ecological integrity. A management plan for a fire-affected area should not result in environmental damage." (Individual, Salt Lake City, UT - #60)

"By removing the standing and downed trees, you will reduce habitat for numerous birds and small mammals as well as removing nutrients from the soil. Removing these trees will benefit only the pockets of timber company owners." (Individual, Missoula, MT - #1031)

"I understand that fire suppression has altered the forest, yet I continue to have faith in the forest to bring itself back to health. Constant biomass removal is not the long-term way to best handle our public lands. I would prefer to let the forest heal itself." (Individual, Missoula, MT - #64)

"I could quote the numerous government reports that conclude post-fire logging has no ecological benefits and may indeed be more harmful than leaving the land to recover naturally, but you already know these facts. Beyond government reports and scientific findings, common sense tells us that natural processes (read; God's blueprint) must be more effective than mechanical manipulation, in long-term recovery. To think otherwise is pure arrogance. I hope you will take to heart the words of Theodore Roosevelt who said 'Leave it as it is, you cannot improve it. The ages have been at work on it and man can only mar it.' Don't mar it." (Individual, Missoula, MT - #877)

ECOLOGICAL AND FUEL REDUCTION BENEFITS

"Over a period of time, lasting perhaps several decades, the snags resulting from the 2000 fires will eventually fall to the ground and become more available to ignition and combustion. However, if the agency repeatedly applies prescribed understory burning of natural fuels accumulations of needles and limbs, this will sufficiently abate the hazard of fallen logs. The DEIS assumes that most snags will lose their limbs before they fall and become downed logs. This 'compaction' helps reduce the fuel bed depth, which, along with the naturally low S/V ratio of the logs, impedes airflow and further reduces the flammability of the logs. Also, when logs lie directly on the ground surface, they can 'wick up' and store soil moisture and retain higher fuel moisture levels for a significant portion of the fire season. Large-diameter decaying downed logs can store significant amounts of water, and thus function like 'heat sinks' because so much heat energy is required to evaporate the water, heat, and ignite the woody biomass. The centers of large logs can actually be cool and moist even when the outer shell of a log is on fire; consequently, large logs provide vital refuge for a number of

wildlife species during fire events. These higher fuel moisture levels tend to reduce the flammability of the logs and reduce the rate of fire spread. Finally, the downed logs provide important structures that shade adjacent live vegetation from direct sunlight and strong surface winds. This function helps retain fuel moistures and retard rate of fire spread through adjacent fine fuels. Thus, instead of being the kind of 'fire bombs' that the agency implies bug-killed snags and logs will become, the DEIS should disclose the above information on the naturally low flammability of large fuels compared to the higher flammability of fine fuels." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

Preference for natural recovery is noted and will be considered by the Forest Supervisor at the time of decision.

Ecosystems do recover. Plant and animal biota have an incredible ability to overcome disturbances, however sometimes this recovery takes more time than we, as humans are willing to wait or doesn't recover with the conditions we wish to see. Recovery is also relative. If left alone, would ecosystems recover to conditions that are socially desirable? Because our ecosystems prior to the fires of 2000 were outside their historic range of conditions, would the recovery of these systems still be outside this range, and if so, is this ecologically desirable?

There are choices in how we wish for our ecosystems to recover. These choices include some that involve passive management or no action and some that involve active management, both of which provide varying degrees of recovery toward an ecological and socially desirable condition. These choices are what the alternatives in the EIS provide us. These choices include no action or more passive management as in Alternatives A and C. These choices also include different levels of active management, which are designed in Alternatives B, D, E, F, and G.

Regardless of the choices we make in determining how our lands recover from the fires of 2000, our ecosystems have changed and will continue to change over time. Removing fuel, completing watershed restoration work, and planting trees as proposed in the action alternatives, would bring change to our ecosystems. In addition, by choosing no action or active management, both can result in positive and negative effects. With the effects analysis in Chapter 3 of the FEIS, this project examines the effects of passive management and of varying levels of active management in order to arrive at an informed decision.

10 The Bitterroot National Forest should limit its harvest of trees for reducing bark beetle infestation.

"Bark beetle harvest should be restricted to accessible Douglas fir and Alt. E and C are preferable. Many of the infested trees should be left for snags." (Individual, Whitefish, MT - #13)

Response:

Alternatives E and C do limit the amount of trees harvested for the purpose of bark beetle prevention. However, in all action alternatives only those areas accessible from a road are proposed for harvesting. Bark beetle prevention treatments are generally located near WUI to protect interface values or in areas with the highest hazard/risk. Areas with low risk or areas that are not accessible from a road are not included in the project.

12 The Bitterroot National Forest should conduct salvage logging to promote forest health.

"Salvage logging of the burned timber will promote a healthier environment of new growth, by reducing the fuel loads of dead and down timber." (Individual, Princeton, ID - #165)

"I believe that salvage logging much of the burned timber in the Bitterroots can be done in an environmentally sound way. Using judicious and careful logging practices can help ensure a return a satisfactory degree of forest health." (Individual, Joseph, OR - #227)

"Aquatic and non-aquatic habitat will improve greatly with proper forest management which includes salvage logging." (Individual, Fort Jones, CA - #238)

"I am a native born Montanan, born 1941. I have watched our forest be bugged, burned, logged, and wind damaged. It appears to me that in all instances we can manage before and we can manage afterward, but we must do everything we can to salvage the products that are in our care. The garden does need picking and the best flowers harvested. Salvage logging is a tool for keeping the forest healthy. I support either alternative D or E and urge you to adopt one of them." (Individual, Whitefish, MT - #752)

Response:

Preference for salvage harvest is noted and will be considered by the Forest Supervisor at the time of decision.

14 The Bitterroot National Forest should reduce fire hazards in the wildland-urban interface.

“Reduce fuel hazard in the areas of the National Forest, especially near home and other structures." (Individual, Hamilton, MT - #142)

“Reduce fuels only within 40 yards of home. Don't salvage log our National Forest." (Individual, No Address - #163)

Response:

Support of fuel reduction in the WUI as well as opposition to salvage logging is noted and will be considered in the decision.

16 The Bitterroot National Forest should consider that wildfires have already reduced the fuel hazard.

“Fuel Hazards have already been dealt with by the fire. Your test plots (3 acre) are a prescription to reburn." (Individual, Missoula, MT - #158)

“Fires are natural. Fire already reduces the risk of fires. All burnable parts of trees were burned off. The forest has done a much better job of taking care of itself than humans have." (Individual, Missoula, MT - #8)

“The fuel hazard issue was taken care of by the fire. That which had a risk of burning was removed by the fire. That which was not burnable is still in the forest. The fires of last year have already reduced the massive fuel loading that was brought about by a century of Forest Service fire suppression. The reduction of 'Fuel Hazard' is simply a polite way of saying ‘huge timber sale.’" (Individual, No Address - #16)

Response:

Surface fuels were generally completely consumed in the high intensity/severity burned areas, less so in the moderate to low severity burn areas. Litter fall from unconsumed tree crowns and regrowth of herbaceous, vegetation, shrubs, and trees will add to the fine fuel loads in future years. Fall down of standing dead trees will contribute to heavier fuel loads in the future as a new forest grows. For additional information please refer to the Fire and Fuels report in Chapter 3.

17 The Bitterroot National Forest should remove both live and fire-killed trees to reduce fuel hazards.

"I support Alt. D (or B). Some heavy dead fire killed stands must be logged to reduce future fire intensity. Also support the thinning of green stands." (Individual, Darby, MT - #62)

"P1-5, Extensive areas of fire-killed trees will lead to HEAVY FUEL ACCUMULATION IN YEARS TO COME: I suggest that you allow firewood gathering, logging, thinning, logging for log homes, post & poles, and any other type of industrial use of burned areas." (Individual, Hamilton, MT - #659)

SALVAGE LOGGING

"Using this dead timber not only lessens the danger of a bigger fire but this wood replaces that which would have to be cut down. Allowing this wood to be salvaged is a better alternative as long as all debris is removed by these contractors and perhaps insisting that replanting of those areas harvested is part of the arrangement or planting of a new area elsewhere." (Individual, Creston, CA - #241)

"I am wholly in favor of harvesting burned timber for salvage wherever possible. To let it stand and eventually fall promotes insect infestation and fuel for future fires with the clutter on the ground making fire-fighting more difficult and dangerous." (Individual, St. Louis, MO - #236)

"Most wild fires in any given area do not usually just 'happen' and then go away and allow the area to heal. Very often it is the re-burning of material that is killed by the initial fire that causes more environmental damage, and sets the healing process back by decades. It is best to remove the majority of the material damaged by the initial fire, provide rehabilitative management like re-planting of trees and erosion control, and then simply stay out of the area until the soils is stabilized and trees are growing again. A graphic example is the Lochsa area where the worst damage was caused by later fires that burned the blown down timber that resulted from the 1910 fire. Such damage was very evident for 50+ years and continues even to this day. I support either alternative D or E and urge you to adopt one of them." (Individual, Joseph, OR - #227)

Response:

Varying levels of thinning and salvage harvest fuel reduction treatments are considered in the Alternatives. Preference for thinning and salvage harvest is noted and will be considered by the Forest Supervisor at the time of decision.

19 The Bitterroot National Forest should only reduce fuels with natural or prescribed fire in areas altered by past management decisions.

“PLEASE SUPPORT A PLAN THAT INCLUDES THE FOLLOWING ASPECTS: Fuel reduction achieved by natural and prescribed fires only in areas already heavily impacted by past management decisions." (Individual, No Address - #174)

Response:

This approach is considered in the FEIS. Natural fire use was considered but not studied in detail, as described in Chapter 2. Prescribed fire and manual fuel reduction treatment in managed areas is considered in Alternative G. Support for this approach is noted and will be considered by the Forest Supervisor at the time of decision.

20 The Bitterroot National Forest should support an alternative that restores the ecological role of wildfire.

“PLEASE SUPPORT A PLAN THAT INCLUDES THE FOLLOWING ASPECTS: Restore wildfire into the forest ecology outside of the Wildland-Urban interface." (Individual, No Address - #174)

Response:

This approach was considered in the FEIS, but not studied in detail, as described in Chapter 2. .

22 The Bitterroot National Forest should not use clearcutting as a forest management technique.

“Clear cutting is never the proper way to manage any forest dead, burned, or alive. Clear cutting is economically cheaper for the timber industry but it sure ruins a forest for a very long time if not forever in some cases." (Individual, Hamilton, MT - #142)

"I flew over the burns this spring, and saw that virtually all the areas burned were roaded and logged. How are you going to get tree seedlings to grow if you don't provide shade? This I remember from my forestry classes. Douglas fir requires 10 percent shade at a minimum. A burned forest provides this; a clearcut does not. Yes, like most folks I do support reforestation. Yes, like most folks I do support reducing fuel loads in the housing/wildlands interface. And yes, like most folks I do NOT support commercial clearcuts that leave the type of damage done that I have seen on the burned state lands where they logged this winter." (Individual, No Address - #751)

Response:

Clearcutting is not proposed in any alternative.

In alternatives that propose harvest, down trees, snags, and submerchantable trees would provide the shade necessary to successfully regenerate the stand.

23 The Bitterroot National Forest should use helicopter logging to remove trees.

“Helicopter logging would be the clear choice even though air time is expensive, it still leaves the least amount of scars in the forest." (Individual, Hamilton, MT - #142)

Response:

Over half of the treatments in Alternatives B, D, E and F are proposed for helicopter yarding. To mitigate effects of ground based harvesting, Alternative B and E limit activities to over frozen ground or snow. Low ground pressure equipment during the dry season on a slash mat in low severity areas would be allowed in Alternatives D and F.

24 The Bitterroot National Forest should not permit the mechanical thinning or harvest of trees.

“DO NOT SUPPORT ANY PLAN THAT ALLOWS: Mechanical thinning or harvest. Cutting of green trees." (Individual, No Address- #174)

Response:

Opposition to mechanical thinning and harvest is noted and will be considered by the Forest Supervisor at the time of decision.

27 The Bitterroot National Forest should select Alternative B, D, or a combination of B and D.

"Alternatives 'D' (first preference) and 'B' (second preference) best meet the needs of the forests, the local communities, and the national 'owners' of the forest by addressing short-term requirements and mid-term opportunities in fuel hazard reduction, positive impact on soils and watersheds, bark beetle risk reduction, and economic salvage of fire killed trees coupled with appropriate regeneration of delineated areas." (Individual, Seeley Lake, MT - #654)

"I have reviewed the DEIS for the Burned Area Recovery and urge you to adopt alternative D or B to maximize economic recovery of wood products. This should include a thinning program in green timber to lessen densities as well as salvage fire killed timber before it degrades further." (Business, Portland, OR - #798)

"Of course we would like to see economic activity in our valley that would help all our citizens have a better quality of life, but our first priority must be the safety of the citizens and protection of the forest. For these reasons and more, we feel that alternative D is the best option at this time. We would not object too strenuously if alternative B was decided upon. We believe the people of the Bitterroot have spoken in the random survey that was done and we feel we speak for them when we ask that these two alternatives be given the strongest consideration." (John M. Atthowe Jr., Betty T. Lund, and Alan Thompson, Chairman and Members, Ravalli County Commissioners, Hamilton, MT - #1105)

Response:

Your comments supporting Alternatives D and B are noted and will be considered by the decision maker.

28 The Bitterroot National Forest should select Alternative E.

"This [Alternative E] is a far less aggressive approach and may appease many of the interested parties. Interested parties also include the wild critters who need a say in this. You could also incorporate (even though it would be at taxpayers expense) thinning around people's homes in the interface. This alternative is a moderate approach and one that could be done in the spirit of compromise." (Individual, Darby, MT - #1070)

"I support Alternative E. Let the bulk of the burned areas recover on their own. Despite our best intentions, rarely do we improve on Mother Nature." (Individual, Missoula, MT - #41)

Response:

Your comments supporting Alternative E are noted and will be considered by the decision maker.

Thinning around people’s homes is considered in Alternative G in the FEIS.

29 The Bitterroot National Forest should select Alternative B.

"This letter is in support of Alternative B listed in the EIS for mitigation of the burned area in your forest. I feel that this alternative is more balanced and will achieve the overall goal of fuel reduction, erosion control and replanting." (Individual, Anaconda, MT - #20)

"I support the Proposed Action (Alternative B). It looks like the most sensible approach to restoration management. In addition, the timber removed will help local economies. Finally, the SBA set aside of 70% on the Bitterroot National Forest will benefit mills like Pyramid Mountain Lumber, my employer." (Individual, Seeley Lake, MT - #849)

"I think the Proposed Action of Alternative B is the best choice. It is the best restoration management plan. I think that the removal or salvage of the burned timber will help eliminate future fire danger, helps in soil scarification to allow new growth, as well as give local economies help by allowing small mills to salvage lumber from the dead trees." (Individual, Corvallis, MT - #1065)

Response:

Your comments supporting Alternative B are noted and will be considered by the decision maker.

30 The Bitterroot National Forest should select Alternative C.

“I favor Alternative C recovery plan for the Bitterroot National Forest." (Individual, Missoula, MT - #40)

“I find the argument that to make forests healthy we must cut down the trees to be lacking in both logic and foresight. Therefore, of all the alternatives put forth by the F.S., I find only Alternative C to be in keeping with the best interest of

the forest. In contrast, Alternatives B, D, and E run counter to healthy, sustainable and respectful forest management." (Individual, Missoula, MT - #64)

Response:

Your comments supporting Alternative C are noted and will be considered by the decision maker.

31 The Bitterroot National Forest should select Alternative D.

"In response to the proposed alternatives resulting from the DEIS studies, I strongly support implementing activities outlined in alternative D. I believe we must reduce the fuels to the greatest extent feasible and reduce the bark beetle susceptibility by proper thinning. Furthermore, I believe we should replant as many burned acres as necessary where the fires burned hot and there is little seed available for natural regeneration. If the ultimate goal is to allow natural caused fires to burn in our forests, we must first correct some of the problems we have created over the past decades. I think alternative D best accomplishes that objective." (Individual, Woodinville, WA - #19)

"I like Alternative D. It is wasteful to not log the fire-damaged areas." (Individual, Pinesdale, MT - #37)

"After reading your alternative plans I would choose D. It thins out green trees & more acreage would be replanted. The other alternatives are too minimal." (Individual, Hamilton, MT - #661)

"All of the proposed alternatives will result in some short-term impacts on soils and water quality due to watershed restoration activities, however, the long-term benefits of restoration clearly outweigh those impacts; therefore, the risk/reward inherent in Alternative D is both acceptable and necessary." (Wood Products Industry/Association, Deer Lodge, MT - #1080)

SUPPORTS THE RAVALLI COUNTY BIOMASS PILOT PROJECT

"The new opportunities resulting from the Ravalli County biomass project are too numerous in benefit for the purpose of this comment, but by far I argue for the selection of Alternative D as the Preferred Alternative . . . . From an Educational standpoint, Ravalli County is working with the University and Forest Tech LLC to conduct a pilot project, a public/private partnership that will create educational opportunities for forestry students, deal with the waste wood and un-merchantable forest elements as a result of fuel reductions in the interface, reduce fire caused pollution, enhance watersheds and fisheries, and promote community self determination. Much supported and needed by Alternative D." (Individual, Stevensville, MT - #609)

Response:

Your comments supporting Alternative D are noted and will be considered by the decision maker.

34 The Bitterroot National Forest should restore trails in burned areas.

“Money should be made available for trails restoration in burned areas." (Individual, Darby, MT - #62)

Response:

Trails within the burned area have been and are currently being restored and maintained. In the fall of 2000, 123 miles of trails were cleared, had emergency drainage work and treadwork completed immediately after the fire, and a detailed trail restoration needs inventory was completed on most of these trails. About 250 miles of trail work in the burned area is planned for completion during the 2001 field season.

37 The Bitterroot National Forest should conduct salvage logging.

"I strongly support the salvage logging of the forest. Please don't let the trees go to waste for the whims of the radical environmentalists. God created the things on the land for the wise use of the people and letting trees go to waste is not good stewardship." (Individual, Kooskia, ID - #56)

"By all means do conduct this sale and ignore any mass mailings of pre-prepared forms. We in Wyoming have seen the waste from the Yellowstone fires. The new growth has nothing to do with the timber left standing dead or fallen." (Individual, No Address - #53)

"I support the plan to salvage the dead timber off of the Bitterroot NF in Montana. I think that it is imperative that we once again begin harvesting timber from Western states to improve the forest health in your area, stabilize the economy, and keep folks working." (Individual, Cleveland, TX - #54)

"I believe you have the responsibility to select the alternative that salvages the largest volume of fire-killed timber that is possible. You have already waited too long to get the amount you should have. The Forest Service has done a terrible job of preparing for salvage." (Individual, No Address - #45)

"American common sense insists that we should permit salvaging of burned timber from the Bitterroot or any other federal forest lands. It is what any sensible property owner would consider as wise. Why waste whatever good is left in forests scarred by wildfires." (Individual, Reedville, VA - #58)

Response:

Your comments in support of salvage logging are noted and will be considered by the decision maker.

49 The Bitterroot National Forest should integrate ecological and economic responsibility into post-fire management.

"Please make the Burned Area Recovery project a national model for ecologically responsible and local-economy-friendly post-fire management, not another excuse for cutting trees." (Individual, Salt Lake City, UT - #60)

Response:

The Burned Area Recovery EIS analyzes a range of alternatives. Some alternatives include timber harvest in order to reduce fuels, while others do not. The Deciding Official will consider all of these alternatives and their effects when making the decision.

50 The Bitterroot National Forest should implement sustainable logging practices to bolster local economies.

“I solidly support salvage logging where practical. Economic values in public land decisions should remain an integral factor, especially when kept in balance with other considerations. My wife and I lived in the Bitterroot Valley during the 1960s and '70s and we were aware of poor management practices, such as clearcutting and terracing, that caused the Bitterroot National Forest to be the focus of national controversy. But we also were aware of the benefits of thinning, selective logging and reforestation. Since that time, I'm aware of four sawmills that closed, causing hundreds of ordinary people to be dislocated from the valley. I have great sympathy for those people and strongly believe the timber industry should remain part of the western Montana economy. Sustainable logging can and should be justified in the overall scheme of management." (Individual, Anaconda, MT - #20)

Response:

Your support for salvage logging is noted. The alternatives analyzed in this project include varying amounts of salvage harvesting. The Responsible Official will consider all of these alternatives and their effects when making the decision.

51 The Final EIS should not identify long-term economic benefits as a rationale for timber harvests.

“We have already witnessed the bulk of wood from the Sula State Sale leave the state for processing. The impact on the local economy will be extremely short-lived, especially with the predictable export of wood to whoever bids highest. The economic ‘benefits’ do not justify the enormous amount of board feet that will be lost." (Individual, No Address - #16)

“[Economic Opportunity] Minimal- timber Companies bid on the wood & export to wherever the cheapest processing place is, telling people this will bolster local economy is a lie. The trees will leave & whatever jobs that were created will follow." (Individual, Missoula, MT - #158)

"I think 'salvage logging' is a smoke-screen term used to disguise what is really going on, namely, a windfall profits goldmine for the logging industry. As you must be aware, this sector of the economy has become increasingly multi-national (and therefore actually above the law of any country) in its structure, and therefore less and less supportive of any community in which it sends out its timber beasts. They will come in, take out the best they can get their hands on, use as little local labor as they can, and sell wood to the highest bidder. Less than 5% of the wood sold nationally comes from the National Forests, so there is no reason to keep subsidizing the already wealthy multinational logging business." (Individual, Florence, MT - #738)

Response:

Economic benefits and costs are analyzed in Chapter 3 of the FEIS, including milling, employment and short- versus long-term effects.

The economic impacts in terms of jobs and employee compensation are evaluated in the Economics report in Chapter 3. The impact area is western Montana, but there are effects beyond that area as well when timber stumpage is shipped outside the impact area for processing. The discussion of economic impacts provides additional detail on the IMPLAN Input-Output model and interpretation of the results. Restoration work done through stewardship contracts may be awarded based on “best value” to the government rather than to the highest bidder, and the use of local work force is also a factor in the determination of “best value”.

52 The Bitterroot National Forest should not select Alternatives B, D, or E.

“I understand that the Bitterroot National Forest Burned Area Recovery DEIS alternatives B, D, and E would entail very significant amounts of logging and road building to perform what has become known as 'salvage logging.' The Forest Service's own scientists have acknowledged that salvage logging has no ecological benefit while it may severely damage soils, streams, vegetation, and wildlife. Thus it seems that these alternatives should be removed from consideration in the restoration plan." (Individual, Portland, OR - #135)

Response:

Your opposition to these alternatives and reasons for it are noted and will be considered in the decision.

53 The Bitterroot National Forest should consider the economic benefit of salvage logging to the local economy.

“The hard-pressed sawmill companies would get a tremendously beneficial lift from this opportunity salvage and logging families would—for a time—end the unemployment stress that has plagued them." (Individual, Reedville, VA - #58)

Response:

See response to Public Concern #51.

The estimated employment and employee compensation impacts for each alternative are shown on the Economics report in Chapter 3.

54 The Bitterroot National Forest should retain the maximum number of large-diameter trees for snags.

“Snag retention should be an important factor in Alternative selection. A maximum amount of large diameter trees alive, dead and near dead should be retained for snags." (Individual, Whitefish, MT - #13)

Response:

Snag retention is one of the key factors in the design of each individual unit prescription, which would be applied in all alternatives where fuel reduction activities are considered. The latest research has been used to determine the appropriate amount of snags to be retained for each forested plant community. The snag standard requires that trees be retained across diameter classes, but favor the largest trees. In addition, all areas prescribed for a salvage/regeneration harvest would retain green/live trees.

58 The Bitterroot National Forest should select the "Conservation and Local Economy Alternative" in the Final EIS.

“The best option to post-fire forest management is a new approach, like the one laid out in the 'Conservation and Local Economy Alternative' submitted to you by a conservationist and local Bitterroot Valley residents. This economic-based and forward-thinking plan keeps the work local, provides for ecosystem management, protects homes in the urban/wildlands interface, and allows for the natural processes of forests to continue, without wasting tax dollars on subsidized logging. . . . I like a world that is as intact, clean, and healthy as possible, for myself, my children, and children to come. You can make a difference, right here in the Bitterroot. Please do. Show your support for a sustainable future. Make decisions for your children's children. Choose the 'Conservation and Local Economy Alterative,' and we will thank you for generations to come." (Individual, Missoula. MT - #64)

"I understand that you have received an alternative plan from a coalition of interested parties that do not have the obvious conflict of interest that members of the timber industry would have, but rather base their plan in sound science and in harmony with the wishes of local residents. Please develop, analyze, publish and select the 'Conservation and Local Economy Alternative,' which I fully agree with as the best solution to managing these forest lands." (Individual, Portland, OR - #135)

Response:

This alternative has been added to the FEIS analyzed as Alternative G. Support for this alternative is noted and will be considered in the decision making process.

61 The Bitterroot National Forest should limit logging in burned areas in order to protect sensitive soils.

"There are no legitimate ecological justifications for salvage logging. Erosion and sedimentation, and the accompanying loss of soil nutrients, are acknowledged to be major issues in salvage logging operations, especially post-fire operations (Klock 1975, Marton and Haire 1990, Minshall et al. 1994, Beschta et al. 1995). It has been strongly recommended that salvage logging be prohibited in sensitive areas, including areas such as the Burned Area Salvage Sale, or in any site where accelerated erosion is possible (Beschta, 1995)." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

Response:

The Burned Area Recovery FEIS analyzes seven alternatives that include varying levels of salvage harvesting to reduce fuels. Alternatives A, C, and G have no proposed salvage harvest, while alternatives B, D, E, and F propose varied levels. The Soils section of the FEIS analyzes the impacts of all alternatives on soil resources. The analysis in the FEIS provides appropriate measures for erosion control and nutrient retention. A variety of Management and Mitigation Measures (refer to Chapter 2) would be used to minimize soil disturbance and compaction; as well as erosion, sedimentation, and nutrient loss as the commenter suggests. These measures focus on winter harvest techniques. Over 50% of salvage harvest in alternatives B, D, E, and F are proposed with helicopter harvest methods that result in essentially no soil disturbance. Salvage harvest units proposed in the DEIS that included areas ranked as high erosion potential in the BNF Soil Survey (in progress) were eliminated from treatment consideration in the FEIS.

Following recommendation from Graham et al. (1994), a minimum of 10 –25 tons/acre of coarse woody debris (CWD) will be left for erosion control and nutrient cycling. The exception is a minimum 5 tons/acre in VRU2 with low burn severity. As recommended by Robichaud et al.(2000), sufficient slash (<3 inch diameter) to achieve 30-60% effective ground cover would be left following salvage harvest for erosion control. The Bitterroot NF conducted salvage harvest treatment on two demonstration sites at Waugh Gulch (near the base of Lost Trail Pass) and Cow Creek (near Pinesdale) during the winter of 2000-2001. These treatments were conducted during frozen soil and snow cover conditions and resulted in essentially no soil disturbance. Similar treatment results have been noted on nearby State Lands where ground based skidding occurred last winter.

As included in Appendix C of the FEIS, treatment units would be monitored during implementation and post-activity to ensure that mitigation measures for soil protection are adequately implemented and effective.

68 The Bitterroot National Forest should prohibit logging in buffer zones around wilderness areas.

"I realize that any logging that is to occur will occur not in the Wilderness but in the surrounding N.F. land. Still, in order to maintain true wilderness characteristics a significant buffer must be maintained, and there is no time like the present to stop federally-funded biomass removal from public lands at taxpayer loss." (Individual, Missoula, MT - #64)

Response:

Proposed activities are downstream and miles away from the Wilderness boundaries. As discussed in FEIS Chapter 3 - Wilderness and Inventoried Roadless Areas – all alternatives analyzed in this EIS are consistent with Forest Plan direction and other applicable laws and regulations. Forest Service Policy 2320.3 (5) prohibits maintaining a buffer strip of undeveloped wildlands to provide an extension of designated Wilderness.

73 The Bitterroot National Forest should prohibit logging and road building in inventoried and uninventoried roadless areas.

"We strongly object to logging and roading in inventoried and uninventoried roadless areas. Alternatives B, D, and E run counter to the views of the majority of citizens in Montana and America who overwhelmingly support full roadless area protection." (Individual, No Address - #228)

"The public has spoken and logging of our ROADLESS AREAS SHOULD NOT BE CONSIDERED AS AN OPTION. I vehemently object to logging and roading in inventoried and uninventoried roadless areas." (Individual, Bend, OR - #1015)

"Please, just leave it alone - especially the roadless areas. Just encourage the locals to keep the areas around their homes and cabins fire-safe. Mother Nature, who provided these forests, will take care of the rest. As a conscientious and concerned citizen I am asking you with all sincerity to abandon any plans for post-fire logging in roadless areas of the Bitterroot National Forest." (Individual, Swan Lake, MT - #882)

"Renewed logging, even so-called environmentally friendly salvage logging, should NOT be conducted in INVENTORIED and uninventoried roadless areas - in fact, this alternative runs contrary to the recent 'Roadless Initiative' adopted by the Forest Service in 2000." (Individual, Grand Junction, CO - #602)

Response:

No alternatives consider logging or road building in Inventoried Roadless Areas. In the FEIS, all fuel reduction activities were dropped from Inventoried Roadless Areas. Refer to the Inventoried Roadless Area report in Chapter 3.

Based on DEIS comments, unroaded effects (based on a map of unroaded areas provided by local environmental groups) are analyzed in the FEIS. Alternatives A and C propose no fuel reduction or temporary roads in unroaded areas. Alternatives B, D, E, and F have varying levels of activities and effects as described in Chapter 3. Alternative G has been developed and analyzed in detail in the FEIS. It proposes some fuel reduction, but none in unroaded areas.

74 The Bitterroot National Forest should limit road building on restoration projects to protect soils and watersheds.

"There is no way that increased traffic in the forest can be beneficial to the soil and watershed. Any attempt to restore road conditions will just promote increased traffic." (Individual, No Address - #11)

"Improvement of soil and watershed is needed. A moratorium on road building and destruction of current roads will stop sedimentation of streams and erosion of soils." (Individual, Hamilton, MT - #160)

Response:

Alternatives C, E, F, and G in the FEIS address this issue by analyzing the effects of increased road decommissioning and recontouring. Three alternatives (B, D, and F) propose various levels of temporary roads that would be eliminated immediately after use. None of the alternatives propose new, permanent roads. Improvements in road conditions such as culvert and road upgrades are known to decrease erosion and sedimentation.

89 The Bitterroot National Forest should decrease the number of trees to be removed.

"When I read the notice that the Bitterroot National Forest is proposing to remove up to 280 million board feet, I rubbed off my eyeglasses, splashed water on my face, double-checked for typos, and so forth, but to no avail. 280 million board feet?! What possesses the Forest Service officials in your office? Has the ranger district taken leave of reality? Need I remind you that this is over twice the volume of timber that has been removed from the Bitterroot over the past decade?" (Individual, Logan, UT - #605)

Response:

Alternatives are considered that produce far less harvest volume. Alternatives A, C and G would produce no timber volume. Alternatives B, E and F produce less than the 280 MMBF estimated in Alternative D. The fires of 2000 killed over one billion board feet of sawtimber-sized trees on the Bitterroot National Forest.

92 The Bitterroot National Forest should support the creation of a Community Conservation Corp to address fuel management problems.

"A Community Conservation Corps will be created. This Corps will provide a fire-safety assessment and landscape fire hazard reduction assistance free of charge to homes in the Wildland-Urban Interface." (Preservation/Conservation Organization, No Address - #23)

"One of these actions is the management of the wildland-urban interface. Scientific study has shown that the important area of management around a home is 100 yards or so. Anything outside this range has little to nothing to do with whether a home burns or not. The Conservation and Local Alternative calls for both educating homeowners and the creation of a corps of locally hired workers to thin the forest on private lands within this buffer area. Houses would be protected and money would be spent in Ravalli County." (Individual, Davis, CA - #662)

Response:

Home protection activities, as suggested, are considered as an element of Alternative G in the FEIS. Support for these activates is noted and will be considered by the decision maker.

96 The Bitterroot National Forest should select Alternative A.

"I am extremely concerned about the Burn Recovery Plan and the damage that will result to the ecosystem. Having visited the Yellowstone region a number of times after their 'catastrophic' fires, I am confident that a NO Action Alternative will benefit the forest in the most natural and beneficial manner of fire recovery. We have discussed long enough the positives and negatives of fire ecology, the economics of the logging program in the Forest Service and what forests are supposed to be at any instant from 14,000 years ago 'till present. Knowledge and wisdom would indicate that leaving it alone is the best possible solution." (Individual, Amherst, VA - #664)

"Alternatives B, D, and E are too damaging. Please use Alternate A." (Individual, Los Angeles, CA - #653)

Response:

Your opposition to active restoration and preference for Alternative A will be considered in the decision.

104 The Bitterroot National Forest should salvage burned timber to benefit wildlife.

"Salvage logging burned timber is good environmental practice. Most wildlife will also benefit through greater mobility when they do not have to contend with downed dead fall." (Individual, No Address - #235)

Response:

The FEIS discloses that elk tend to avoid areas with deadfall averaging greater than 18 inches deep (3-334). Salvage harvest in a portion of the burned area would reduce the area covered by deep deadfall when snags eventually fall down. Some wildlife species such as marten, fisher and many small mammals prefer areas that contain abundant course woody debris. Their needs would also be provided for where fuel reduction is proposed.

106 The Bitterroot National Forest should not select Alternatives B, D, or E because of adverse impacts on threatened and endangered species.

"Several alternatives in the DEIS, notably B, D, and E will cause significant adverse impacts to threatened and endangered species, such as bull trout, but also other species that thrive on burned areas, such as the Black-backed woodpecker, which is dependent on post-fire forest structure for survival." (Individual, Pendleton, OR - #713)

"Your Alternatives B, D and E will likely do considerable environmental damage to threatened and endangered species, including the bull trout. I also want to add that this proposal would endanger, (probably knowingly), the citizen-management proposal for the grizzly bear in the Bitterroots." (Individual, Grand Junction, CO - #602)

Response:

Your opposition to these alternatives is noted and will be considered in the decision.

Effects of alternatives on these species are discussed in detail in FEIS.

107 The Final EIS should emphasize watershed restoration only in areas impacted by logging and road building.

"Please support a plan that includes the following aspects: watershed restoration only where the watershed has been impacted by logging and road building." (Individual, No Address - #174)

Response:

Preference for Alternative C is noted and will be considered by the Forest Supervisor at the time of decision.

Watershed improvements are proposed in the form of road improvements, storage and decommissioning (obliteration) for all alternatives except A. They are located within the project area where sediment increases are a concern and vary by alternative. Please refer to the Maps and Tables located in Chapter 2 for specific locations of proposed improvements, storage and decommissioning.

112 The Bitterroot National Forest should select either Alternative D or E.

"As a resident of communities which need the same type of salvage logging as is being considered in the Bitterroot, I support either alternative D or E and urge you to adopt one of them, for forest health, and the economic health of the local communities, schools and families." (Individual, Fort Jones, CA - #238)

Response:

Your comments supporting Alternative D or E will be considered by the Forest Supervisor when he makes a decision.

121 The Bitterroot National Forest should not obliterate roads in areas suitable for long-term timber management.

"It appears to us to be a violation of your forest plan to obliterate roads in management areas suitable for long term timber management. It certainly is not in the interest of efficient long-term stewardship of public resources. Here we have the worst Bitterroot fire disaster on record, acknowledged to be a consequence of lack of management of vegetation coupled with lack of access to control the fire while small, and the Bitterroot is proposing expenditures of substantial taxpayer dollars to obliterate miles and miles of existing roads. We do not believe you have shown all these roads are 'not needed for future access.' How do you propose to implement Forest Plan goals and objectives in MA's 1, 2, 3, 3a, and 3c with no road access?" (Multiple Use/Land Rights Organization, Columbia Falls, MT - #749)

Response:

As described in the DEIS section on Transportation Systems, the Bitterroot NF has nearly 2,700 miles of roads located in MAs 1, 2, and 3. Many of these roads are no longer safe for public use because funding has not been adequate to properly maintain them (see FEIS Transportation System Section), and many of these roads will not be needed in the foreseeable future for long-term timber management. A Roads Analysis has been completed in accordance with the Final Roads Rule, which analyzed the access need and the resource and safety concerns for each road. It is not a violation of the Forest Plan to obliterate roads that are no longer needed and cannot be adequately maintained, even in areas suitable for long-term timber management.

127 The Bitterroot National Forest should focus its efforts on promoting ecosystem health and educating the public about fire ecology.

"Your focus should be on the thinning of forests adjacent to urban or rural human settlements, preventing the invasion of noxious weeds, protecting watersheds and wildlife habitat and improving the public's understanding of fire ecology as it relates to a healthy forest." (Individual, Kalispell, MT - #737)

Response:

Action alternative B, D, E, F, and G all propose treatments that focus on burned lands adjacent to the wildland urban interface. These treatments were designed with the historic fire regime/ecology in mind and to reflect the historic structures, species composition, function, and to allow natural processes to continue.

129 The Final EIS should emphasize active management techniques to achieve a productive forest mosaic.

"Please continue to support active management of productive National Forest land. Only by replacing the catastrophic fire cycle with a planned mosaic of diverse ages, species composition, and density in strategic watersheds, can our communities and resources be protected in the future." (Multiple Use/Land Rights Organization, Columbia Falls, MT - #749)

Response:

Alternatives B, D, E, and F all emphasize active management to achieve a productive mosaic of healthy forests with diversity in terms of size classes, age classes, species composition, and stand densities.

143 The Bitterroot National Forest should maintain woody debris in burned areas to benefit wildlife.

"Salvage logging has not been scientifically proven to enhance fire restoration. This management practice ignores the natural cycles of the ecosystem, namely the importance of snags and deadfall. These large downed trees provide valuable habitats for a variety of wildlife. Pileated woodpeckers require large logs for nesting and roosting. Snags and deadfall also provide denning sites for lynx, marten, fisher, and black bear." (Preservation/Conservation Organization, Washington, DC - #910)

"The structural attributes created by fire, particularly the abundance of snags, are of critical importance to the viability of many species including the bull trout, west slope cutthroat trout, Canada lynx, fisher, flammulated owl, wolf, grizzly bear, goshawk, small mammals, bat species, and several woodpecker species." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

"The removal of standing dead and downed trees will eliminate critical habitat for countless birds and raptors, along with their prey that sustains other native mammals. Dead trees are not wasted resources." (Individual, Missoula, MT - #1068)

Response:

The FEIS recognizes the benefits of snags and course woody debris to various wildlife species and are discussed in Chapter 3's Wildlife report. Snags left in harvest units (Table 1-3) would provide some of these benefits, especially in VRU 2 where the number of retained snags in harvest units would mimic or exceed the historic average, at least for the short term. Untreated areas would provide many more snags than occurred historically in these lower elevations.

It is important to understand that even in Alternatives B and D over 200,000 acres of burned area containing millions of snags would not be treated. It is likely that the number of snags left would far exceed the historic average snag numbers for this area. This huge number of snags will eventually transform into far more course woody material on the ground due to the high rate of snag fall down that will occur over the next 5 to 20 years (USDA, 2000p) This vast supply of snags and down logs would be sufficient to provide habitat for all the wildlife species that use these habitat features.

150 The Bitterroot National Forest should harvest dead and dying timber to create better habitat for wildlife.

"Harvesting this area will create a much healthier forest than leaving it. Get the forest back on track and get the dead and dying timber out of these areas. . . . The harvest of these trees will make for better habitat for the majority of the animals in this area; elk, deer, grouse, bobcats, lynx, rabbits, black bears, moose are just some of the game animals that find better feed in forests that are managed by timber harvest." (Individual, Culdesac, ID - #1032)

"Salvage logging burned timber is good environmental practice. Most wildlife will also benefit through greater mobility when they do not have to contend with downed dead fall." (Individual, No Address - #235)

Response:

Please refer to the response to comment #104. Harvesting dead and dying trees would improve habitat quality for some wildlife species, and reduce habitat quality for others, as described in Chapter 3's Wildlife report.

154 The Bitterroot National Forest should maintain a mixed distribution of stand densities to preserve existing Northern Goshawk habitat.

"Another reason to maintain a mix of distributions of stand densities is to maintain existing NORTHERN GOSHAWK nests, to the extent possible. For example, goshawks generally choose nesting locations on lower-slope positions within forest stands that have >50% canopy closure and relatively high basal area. The spatial extent of such conditions seems to be some 50-75 acres surrounding nest sites. Beyond that, 'feathering' the forest conditions by timber salvage or other silvicultural practices to create stands with increasingly lower densities should increase goshawk prey diversity." (Preservation/Conservation Organization, Stevensville, MT - #800)

Response:

All of the alternatives would largely retain the mosaic of stand conditions created by the fires across the landscape. This range of habitat conditions should provide a diverse prey base for goshawks. Only two known goshawk nests on the Forest are within the burned areas, while one more is just outside the burned area. Known nests within the burned area and those discovered during implementation of restoration activities would be protected from habitat change by creation of a buffer area within which no treatment would occur. Northern Goshawk effects are documented in the Sensitive Species section of the Wildlife Section of Chapter 3.

156 The Bitterroot National Forest should select Alternative E to benefit fire-associated wildlife species.

"I feel under Alternative E mitigations for Black-backed woodpeckers and other fire-associated species will best be met in regards to having some fire-kill around for the next few years." (Individual, Missoula, MT - #897)

Response:

All of the action alternatives would leave more than 70% of the burned area untreated, which would retain well over two hundred thousand acres of fire-killed trees that would meet the habitat needs of a very large population of black-backed woodpeckers and other snag-dependent wildlife species into the future. Alternative E would retain more snags at higher elevations than Alternatives B, D, or F, because treatments would be limited in Alternative E to the Urban Interface and VRU 2.

160 The Bitterroot National Forest should select "The Conservation and Local Economy Alternative" to improve watersheds.

"The Conservation and Local Economy Alternative provides a much better solution for meeting the purposes and needs in the draft EIS. It has distinct features which differentiate it from any of the alternatives listed in the draft EIS. These include: The watershed restoration features of the action alternatives are road removal; rehabilitation, and maintenance; riparian restoration, and tree planting. There is no reasonable range of alternatives in any of these features. All of the action alternatives have within a few miles one way or the other the same road removal and rehabilitation plans. The tree planting plans only vary in response to the various levels of salvage logging and mechanical removal. Riparian restoration is not specific enough to determine what is being proposed for each alternative. The CLE Alternative provides a distinct approach to watershed restoration that is significantly different than any of the action alternatives. If the criteria suggested by the CLE Alternative of removing roads and closing roads that are not needed were applied, it is very likely that there would be a distinctly different outcome for road removal and rehabilitation. And, the improvements to the watershed would also be significantly different (and better) than any of the draft EIS Alternatives." (Preservation/Conservation Organization, Missoula, MT - #875)

Response:

This approach was added and analyzed in the FEIS as Alternative G. Your support for it is noted and will be considered in the decision.

161 The Bitterroot National Forest should not select any of the proposed Alternatives because they will lead to an increase in noxious weeds.

"I am particularly concerned that the post-fire logging suggested in . . . alternatives A through E will lead to increased spread of noxious weeds. This is usually responded to by an increase in pesticides spraying. This is akin to shooting ourselves in the foot - causing damage that leads the forest to cause even more damage. I do not support that kind of 'solution.' It is of course, a great deal more expensive to have to spray for weeds than to prevent their spread in the first place." (Individual, Corvallis, MT - #997)

Response:

The use of herbicides for weed control is beyond the scope of this EIS (Ch 1,Purpose and Need). All alternatives would be required to use weed prevention methods described in FSM 2080 (PF; NOXIOUS-3). Timber harvest activities would be conducted over snow or frozen ground conditions, by helicopter, or by skyline cable to reduce the risk of weed spread. The construction of temporary roads and landings would be the primary ground disturbing activity should certain action alternatives be selected. Alternative E partially addresses this by not building any temporary roads. Alternatives A, C, and G also reduce the amount of ground-disturbing activities in the short-term. There is still a long-term risk of weed spread if fuel reduction does not occur and a wildfire occurs in the future (Ch 3-Noxious Weeds).

162 The Bitterroot National Forest should select "The Conservation and Local Economy Alternative" based on its provisions for noxious weed control.

"The Conservation and Local Economy plan should be adopted because it prioritizes noxious weed control." (Individual, Hamilton, MT - #1078)

"I support The Conservation and Local Economy Alternative. It . . . addresses the need to deal with noxious weeds that infect our forest areas, especially after a burn." (Individual, Gallatin Gateway, MT - #924)

Response:

The FEIS addresses the issue of noxious weed prevention in the burned areas. Other weed prevention measures are included in FSM 2080 (PF; NOXIOUS-3). Any noxious weed control methods are beyond the scope of this EIS and will be addressed in the Forest's Noxious Weed EIS.

168 The Bitterroot National Forest should select Alternative B or D to reduce hazardous fuel loading.

"We need to actively work to reduce fuel hazards on these forests, including controlling the density of understory trees. Only Alternatives D and B deal with this problem. The other alternatives coupled with existing fire suppression policies worsen our already 'unnatural' fuel buildup that leads to severe fires." (Individual, Florence, MT - #1095)

"My 40 years of fire experience including 20 as a planning section chief and incident commander along with much study of fire history and review of the science leads me to support that you 'gotta' do something about all that dead fuel out there which, if left to nature, will be the fuel for future fires, some catastrophic. Therefore, I strongly favor Alternatives B or D." (Individual, Missoula, MT - #1067)

Response:

The support for Alternatives B and D is noted and will be considered in the decision

169 The Final EIS should prohibit post-fire logging and restoration projects outside the wildland/urban interface.

"I am adamantly opposed to any post-fire logging or 'restoration' projects by any name outside the wildland/urban interface." (Individual, Missoula, MT - #877)

Response:

Your preference for limiting fuel reduction activities to the WUI is noted and will be considered.

174 The Bitterroot National Forest should select Alternative D to control post-fire insect populations.

TO MINIMIZE THE THREAT OF BARK BEETLE INFESTATION

"The Montana Logging Association hereby recommends that your agency select Alternative D as your preferred alternative for the following reason: Bark Beetles - One of the inevitable consequences of catastrophic fire is insect infestations that feast on dead and weakened trees. Bark beetle infestations MUST be aggressively addressed in order to minimize the risk of a full-blown epidemic that will spread to adjacent healthy forests. In this regard, Alternative D is clearly the most aggressive." (Wood Products Industry/Association, Kalispell, MT - #874)

TO MINIMIZE THE THREAT OF MOTH AND WORM INFESTATION

"Our forests are in a crisis. The next event will be the moths and worms that threaten the dead unharvested materials from the latest firestorm. Please accept plan 'D' as part of the recovery for the burned areas. I have never seen so many new species of large moths visit our home. Clearly, there is an explosion in the population of bugs due to the dead trees." (Individual, No Address - #1003)

Response:

Alternative D proposes the most amount of acres to be treated to reduce the threat of post-fire insects and your support of this alternative will be considered at the time of decision.

177 The Bitterroot National Forest should not build new roads.

"Zero roads should be built to 'repair' these damaged lands, due to overriding negatives of roads." (Individual, Hamilton, MT - #1053)

Response:

Your opposition to road construction is noted. None of the alternatives in the EIS would construct new permanent roads. The alternatives analyzed in this project include varying amounts of temporary road construction ranging from zero to about 10.2 miles. The Deciding Official will consider all of these options and associated effects when making the decision.

178 The Bitterroot National Forest should repair damaged roads.

"I do . . . support the part of the plan that calls for bolstering existing roads that are vulnerable to significant post-fire erosion." (Individual, Stevensville, MT - #1069)

Response:

Your support for road improvements is noted. The alternatives analyzed in this project include varying amounts of road improvements. The Deciding Official will consider all of these alternatives when making the decision.

179 The Bitterroot National Forest should preserve understory vegetation and coarse woody debris to maintain songbird habitat.

"A study that we commissioned . . . found that SONGBIRD DIVERSITY, abundance, and nesting success can be maintained in areas after timber salvaging bark-beetle killed trees. The trick appears to maintain many of the smaller live trees that are not infected and especially the understory shrubs. The CWD [coarse woody debris] piles are used by certain bird species for nesting as well." (Preservation/Conservation Organization, Stevensville, MT - #800)

Response:

Bird diversity across the burned portion of the Forest would be maintained by retaining most of the diversity in stand conditions created by the fires. Birds closely associated with early post-fire habitats such as black-backed woodpeckers, mountain bluebirds and olive-sided flycatchers (Hutto, 1995) would find abundant high quality habitat in the 200,000 plus acres of burned area that would remain untreated regardless of alternative selected, in addition to lower quality but still suitable habitat in harvested areas. As vegetation in the burned areas recovers, many areas will develop dense shrub layers that provide habitat for shrub specialists such as MacGillivray's warblers, orange-crowned warblers and lazuli buntings (Hutto and Young, 1999). As the millions of snags left across the landscape decay and begin to fall down over the next 5 to 20 years (USDA, 2000p), there will be huge amounts of coarse woody debris distributed across the landscape to provide roost sites and nest sites for bird species that use this type of habitat. Hand piling of fuels would occur on about 1,100 acres in Alternative G, 1,300 in Alternative E, 3,600 in Alternative F, 7,000 in Alternative D and 7,200 acres in Alternative B. Ten to thirty percent of the piles would not be burned so they would provide habitat for small mammals and birds, a mitigation measure that was added in direct response to public comment.

183 The Bitterroot National Forest should use helicopter logging to maintain scenic values.

"I am writing to give you input on the salvage timber proposal west of town. I live on Blodgett Creek and have a view of the mountains. I began to panic lately when I saw the switchback road and skid trails out my window from recent logging operations. I believe more roads would devastate the beauty of this mountain. I imagine you are under a lot of pressure to cut the burned trees instead of let them 'go to waste.' I would like to see a selective operation in 'some areas' utilizing helicopter logging to maintain the beauty and character of the mountain. I used to house log myself as a log builder and realize the importance of the resource, however, please look to the future and do your best to proceed as if this mountain was out your picture window. Good luck and move forward with integrity." (Individual, Hamilton, MT - #915)

Response:

As discussed in the FEIS, many of the proposed harvest units would be logged using helicopters. Mitigating measures listed in Chapter 2 of the FEIS would be used to protect sensitive viewing areas such as Blodgett Face. Visual effects of the alternatives are discussed in Chapter 3's Scenery report. The switchback and skid trails you referred to are on private land.

187 The Bitterroot National Forest should not select Alternative A.

"Please do not choose Alternative A. Please label this alternative as the no activity by humans as it is not a No Action alternative. . . . This is the green alternative. Why do they get special consideration?" (Individual, Stevensville, MT - #873)

Response:

Your opposition to no action is noted and will be considered in the decision.

191 The Bitterroot National Forest should not select Alternatives A, C, or E.

"MWPA strongly opposes consideration of Alternatives A, C, and E. The hands-off approach of those alternatives is simply not in the best interest of the Bitterroot National Forest or any other Montana forest for that matter." (Wood Products Industry/Association, Helena, MT - #1062)

Response:

Your opposition to these alternatives is noted and will be considered in the decision.

196 The Bitterroot National Forest should incorporate the Community Conservation Corps supplemental program with the Forest Service grant program to help homeowners finance fuel reduction efforts.

"We understand that a separate grant program has been established by the Forest Service to provide financial aid to homeowners for fuel reduction. The Community Conservation Corps supplements this program and dramatically lowers the barriers for homeowner participation. It eliminates the red tape and administrative barriers of a grant program and provides on-site readily available service. As such, the CLE [Conservation and Local Economy] is very likely to result in reducing the risk of home ignition far more than a grant program." (Preservation/Conservation Organization, Hamilton, MT - #875)

Response:

Alternative G includes this approach and is analyzed in the FEIS.

215 The Bitterroot National Forest should not obliterate old logging roads.

"I strongly disagree with the idea of tearing out these old logging roads and attempting to rehabilitate the hillside. Close off these roads if you must, but just leave them be. In this time of tight budgets, I see this idea as a total waste of manpower and money. Most of these roads are grown over and not hurting a thing, why tear up the land again?" (Individual, Hamilton, MT - #1409)

Response:

Your objection to rehabilitate old logging roads is noted. The alternatives analyzed in this project include varying amounts of road rehabilitation.

As explained in the DEIS Chapter 3 Transportation section, road maintenance is very costly and there is a backlog of over $13 million of road maintenance needs on the Bitterroot Forest.

Many of the roads were grown-over before the fires, but now the vegetation is gone, and the soils are exposed and subject to erosion. In all but one alternative the only roads proposed for rehabilitation are those that are not needed for access in the future and need to be stabilized by either removing the culvert pipes and fills around those pipes, scarifying the road surface and seeding it, or recontouring parts of the road template.

219 The Bitterroot National Forest should select Alternative C because of its minimal effects on watersheds.

"In support of Alternative C, we note that in the Environmental Consequences Comparison and Summary section on 'Effects on Watershed,' Alt. C does not have any areas of concern, which makes this alternative superior to either Alt. B or D or E in this respect" (Individual, Corvallis, MT - #1543).

Response:

Alternative C is being considered by the deciding officer. Your support for it is noted and will be considered in the decision.

221 The Bitterroot National Forest should not select Alternatives B, D, or E to ensure full roadless area protection.

"Alternatives B, D and E are not acceptable to me, or the majority of the American public that overwhelmingly support full roadless area protection." (Individual, Moscow, ID - #1553)

Response:

The opposition to activities in roadless areas is noted. All of the alternatives analyzed in the FEIS defer treatments in Inventoried Roadless Areas.

225 The Bitterroot National Forest should place forest health above economic considerations.

"As you write your Draft Environmental Impact Statement, please consider all of the factors that contribute to forest health, rather than concentrating on economic issues." (Individual, Pleasant Valley, IA - #1182)

" . . . PUT FOREST HEALTH ABOVE ALL OTHER CONSIDERATIONS. The timber industry will survive in the long term only if we protect the resources upon which they depend (something the Forest Service has failed to do in the past). Montana needs healthy forests and a sustainable timber harvest, not short-term profits for the big mill owners." (Individual, Livingston, MT - #817)

"I'm sure you can understand the frustration of the public, such as myself, when large-scale decisions by federal agencies appear always to cater to industry, at the expense of the health of the public's lands. I am particularly upset when I see clear conflicts between short-term economic gain from resources on one hand, versus much longer-term ecological values for those same resources. At what point are we expecting to take a long-term view of the ecology of these remaining wild lands? In this important decision on the Burned Area Recovery DEIS, please keep in mind that your agency acts as a steward of these lands, for the benefit of my, and your, children and their children, not for the immediate benefit of industry. Please recognize that multiple use does not have to mean industry has access to all places under all conditions - there are many other uses for these lands - including serving as a relatively undisturbed reservoir for wildlife and natural forest succession." (Individual, Billings, MT - #1338)

Response:

Proposed treatments were designed and determined for the primary purposes of reducing fuels, improving watersheds, and reforesting burned lands. Regarding the purpose of reducing fuels, the Bitterroot National Forest does put the health and sustainability of the forest first and foremost. This purpose is a long-term view of the ecological needs and desired conditions for the forest and developing treatments that are responsive to that. As stewards of this land, we are concerned with the “legacy of fuels” left on some areas of the Forest and the effects this would have on future generations. Proposed treatments applied to only 20% of the burned area have been developed to accomplish these purposes and needs and meet desired future conditions for these ecosystems. As stewards of the land, we also have designed proposed treatments to accomplish fuel reduction in a cost efficient manner, which includes the removal of forest products.

226 The Bitterroot National Forest should take immediate action to reduce the threat of post-fire insect invasions.

"We . . . feel that prompt action is needed to reduce the threat of insect build-ups in fire weakened trees. Additional timber losses now, due to insect build-ups, following the fires of 2000 will just add to the problems of recovery and restoration; and may very well indirectly increase the area damaged or affected by the fires." (Business, Hamilton, MT - #1339)

"May I cast my ballot in favor of an immediate start-up of salvage operations for salvage and recovery of burned timber. All of us throughout the Northwest are concerned that this damaged timber be salvaged as soon as possible to prevent a vast invasion of insects which would spread to new - or surviving - timber." (Individual, Corvallis, MT - #1418)

Response:

Action alternatives B, D, E, and F incorporate some level of bark beetle prevention. We thank you for your concern about the timing and threat of post-fire insects and developed Alternative D to include the maximum amount of treatments that may reduce the amount of mortality in live/green trees and help prevent beetles from invading adjacent unburned and/or private land.

229 The Bitterroot National Forest should select Alternatives B or D based on the emphasis of temporary road construction.

"In terms of the Alternatives offered, Pyramid supports either B or D. The primary difference is in temporary road construction. The construction, use, and obliteration of temporary roads has become common in modern harvesting practices and these 'roll up roads' have virtually no impact on Montana's soil and water resources. Therefore, Pyramid would certainly support their use, where appropriate, in order to actively manage the burned-over landscape in the Bitterroot and complete the forest restoration activities as soon as possible." (Wood Products Industry/Association, Seeley Lake, MT - #1544)

Response:

Response: Your support for these alternatives is noted. The alternatives analyzed in this project include varying amounts of temporary road construction ranging from zero to about 10.2 miles. The effects of the proposed temporary roads on resources are disclosed in FEIS Chapter 3. The Deciding Official will consider all of these alternatives when making the decision.

257 The Bitterroot National Forest should choose fuel treatment locations based on effectiveness and cost minimization.

"Given the long-term costs and budget commitment involved with fuel management, it is crucial that fuel treatments are carefully located to increase effectiveness and minimize costs. It is not apparent that the fuel treatments in the DEIS were carefully located for effectiveness or cost minimization. This is partially a result of using fuel accumulation risk, which is an incomplete metric for fire danger. In addition, location of the treatments seems based on where the large trees are and having a positive financial return, rather than effectively reducing fire danger. The DEIS would be greatly improved if a more science-based spatial assessment of fire danger was completed." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

Alternative F was developed for the FEIS, in part, to respond to comments on the DEIS about the cost of fuel treatment. The ID Team considered the location of individual treatment units relative to concentrations of fuels in the surrounding areas, as well as treatment costs, in the selection of units in Alternative F. Refer to Chapter 3’s Fire and Fuels report for assessments of future fire severity and associated risks associated with the alternatives.

280 The Bitterroot National Forest should not select Alternatives B or D until additional analyses of the impacts of reduced thermal cover is undertaken.

"Given the already deficient level of thermal cover, we do not feel that the analysis of impacts to elk and other wildlife has not been sufficiently thorough to warrant further reductions in thermal cover. The amendment proposed for alternatives B and D to further reduce thermal cover should not be implemented without a more thorough understanding of the implications." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The impacts to elk of reducing thermal cover are analyzed in the FEIS, Chapter 3’s Wildlife report. Reduction of thermal cover has been further clarified in there in the FEIS.

294 The Bitterroot National Forest should not conduct large-scale salvage logging because of its impact on Sensitive species.

"I am writing to oppose large-scale, so-called 'salvage logging' as part of the Bitterroot National Forest's fire restoration program. This transparently profit-driven liquidation of forest resources will adversely affect Sensitive species such as the Flammulated Owl and Williamson's Sapsucker." (Individual, Missoula, MT - #1587)

Response:

The Purpose and Need portion of Chapter 1 the FEIS describes the rationale for the proposals. Potential profit (or lack thereof) estimates for the alternatives is discussed in the Economics section of Chapter 3. Effects of the alternatives on sensitive species such as the flammulated owl are discussed in the Wildlife section of Chapter 3. Williamson’s sapsucker is not classified as a Sensitive species on the Bitterroot NF, but their habitat needs in the post-fire landscape are approximated by habitat for Black-backed Woodpeckers, a sensitive species for which an analysis of effects has been documented in the Sensitive Species section of the FEIS.

384 The Bitterroot National Forest should focus on removing smaller fuel types to reduce fuel loads.

"From the perspective of a person with many years of initial attack and IR fire crew experience, even in the catastrophic situation of last summer, you are wrong to say that taking out 10 inch plus trees reduces the fuel load in any more than a theoretical sense. The log-size fuels are virtually irrelevant in the reality of forest fire. It is the one and ten-hour fuels that must be worried about. You fail to show that logging does anything to prevent fire. Facts show us that it causes catastrophic fire in the future by an examination of the fires and historic logging in the Sula and Darby districts." (Individual, Bozeman, MT - #16420)

Response:

In the FEIS, the sizes of fuel and their influence on fire behavior is discussed in Chapter 3's Fire and Fuels section and will be considered in the decision. There is no claim in the FEIS that fuel reduction will prevent fires.

386 The Bitterroot National Forest should not select Alternatives B, D, or E because of their adverse effects on post-fire vegetation.

"Alternatives B, D, and, to a lesser degree, E will retard post-fire vegetative recovery due to reduced soil productivity from compaction and tree removal. Sexton (1998) documented that post-fire salvage logging over snow-reduced regrowth of ponderosa pine and other species relative to adjacent burned, but unlogged, areas. Naturally regenerating groundcover in unlogged areas also had greater survival and growth than plantings on areas that had been salvaged logged after fire. Notably, these adverse effects of logging on regrowth were from over snow logging (Sexton, 1998). Alternatives B, D, and E will also reverse existing recovery by removing vegetation on newly constructed landings, temporary roads, and logged areas. . . ." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Please see the forested plant communities section in Chapter 3 where a discussion of this concern has been addressed since the DEIS. Activities impacts on soils are discussed in Chapter 3's Soils report.

389 The Bitterroot National Forest should adopt "The Conservation and Local Economy Alternative" to support local businesses and workers.

"The CLE Alternative has specific features that are very likely to result in more business and jobs in Ravalli County than any of the Draft EIS alternatives. The Draft EIS approach is to design contracts in size and content for the convenience of the government. This approach provides an environment that highly favors multinational corporations. A similar approach was recently used by the state of Montana in Ravalli County with the salvage sale of the Sula Forest of 22 million board feet of timber. The large bulk of the sales went to out of state companies leaving Montana contractors, such as the struggling Pyramid Lumber, to pick up the leftovers. An executive from Pyramid Lumber called this a 'disappointment' when he met with our group. On the other hand, the CLE Alternative calls for the Forest Service to survey local businesses and job skills and tailor both the size and content to businesses in Ravalli County. There are numerous companies in Ravalli County capable of doing the work in the CLE if the size and scope of contracts are within their capability. These companies are much more likely to get the economic benefits of the Burned Area Recovery with the CLE Alternative than with any alternative in the Draft EIS. The difference between the CLE Alternative and any Draft EIS alternative in the location of economic benefit is significant and of great importance to the businesses and workers of Ravalli County." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

Alternative G, submitted as the "Conservation and Local Economy Alternative" is fully evaluated with all other alternatives in the Final EIS. The economic efficiency and economic impact effects of all alternatives are also evaluated in the FEIS.

390 The Bitterroot National Forest should not use the threat of bark beetle infestation to justify salvage logging.

"We believe that both the risks of beetle infestation and the effectiveness, at this time, of salvage logging to mitigate infestations have been overstated in the DEIS. It is clearly not a given that all the green trees surrounding these burns will succumb to bark beetle infestation. There are many contingency factors that need to be acknowledged when discussing possibilities of beetle outbreaks (source of beetles in the surrounding forest, weather, tree species, beetle enemies, etc.). And it is well established that prevention of bark beetle outbreaks is only successful when populations

are low, not once they are found in high numbers. Greater than one year post-fire is simply too late to curb beetle numbers. It seems disingenuous to rely so heavily on the need to reduce the threat of beetle infestation as a justification for salvage logging. Bark beetles are indeed a natural part of the forest ecosystem. Attempts to argue that the current infestations may be more extensive than usual considers neither the range of natural variability nor the benefits of bark beetle mortality. Bark beetles provide food for many forest birds especially the specialized Three-toed Woodpecker. In fact, this 'delayed mortality' at the edges of burns appears to provide ongoing food resources for woodpeckers, thus extending the usefulness of the burn to wildlife (V. Saab, personal communication). The treatment of low-to mid-severity fires depicted in Figure 2-1 (DEIS 2-6) suggests a 'sanitation' philosophy that is ecologically improper in any situation." (Preservation/Conservation Organization, Missoula, MT - #1694)

Response:

It is not a given that all the green trees surrounding these burns will succumb to bark beetle infestation, nor does it say that anywhere in the document. It does, however, say that there is potential for bark beetles to create a lot of mortality in fire-stressed trees. The EIS discusses in detail the factors that contribute to outbreaks occurring both in the Forested Plant Communities section of Chapter 3 and the Bitterroot Post-fire Assessment (2000). Nowhere does the FEIS state that treatments proposed in the alternatives are to prevent or control the outbreak that currently exists. Alternative D includes some site and stand specific areas for treatment to reduce populations at a local level, particularly if they are adjacent to private land.

The forested plant communities' section in Chapter 3 addresses the fact that beetles are a natural part of the ecosystem and also addresses how they are or are not within the range of historical conditions.

In addition bark beetles, because of their size, are not a primary food source of woodpeckers. However, woodborers are. Woodborers often follow bark beetle caused mortality, however they also follow fires and enter dead and nearly dead trees. See the Wildlife section of Chapter 3 for more information.

405 The Final EIS should not select Alternatives B, D, or E because of their impacts on soil productivity.

"The DEIS does not adequately disclose the alternatives' effects on soil productivity. Alternatives B, D and E will cause extensive, persistent, and significant decreases in soil productivity, although the DEIS thoroughly fails to adequately discuss these effects. The DEIS fails to disclose that elevated erosion from logging will probably be greatest in areas with high severity burns. It also fails to note that these impacts will cumulatively reduce soil productivity in these areas. The DEIS does not disclose that logging under alternative B, D, and E will also elevate surface erosion via increased peakflow and runoff. The increased erosion and peakflows will occur even with helicopter and skyline logging. The DEIS also fails to adequately disclose the amount of compaction and soil disruption caused under each alternative and the total amount of compacted soils throughout the project area and at the watershed scale likely under each alternative. These are severe omissions because soil productivity is a key issue within the project area. Soil productivity has a strong effect on the rate of post-fire vegetation recovery and risk of noxious weed spread. Several of the alternatives would log extensively in severely burned areas. Alternatives B, D, and E also log extensively in watersheds with documented sediment problems that already impair WCT and BT survival and production. Therefore, alternatives B, D, and E will significantly exacerbate losses of soil productivity in highly sensitive and already damaged areas." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

The analysis of effects was expanded in the FEIS to provide a more detailed discussion of soil effects by each alternative (see Chapter 3 – Geology and Soils). Productivity loss relates both to fire effects and detrimental soil disturbances from past and proposed management activities. The effects of fire are discussed in numerous locations within the FEIS. Both past and project related soil disturbances are discussed in the analysis included in Chapter 3 – Geology and Soils. Also refer to Chapter 3 – Watershed for a description of watershed modeling methods and results related to peak flows and sedimentation. Also see Responses to Comment #'s 401, 398, and 397.

430 The Bitterroot National Forest should restrict salvage logging in high-elevation mixed-conifer stands.

"Consider omitting plans to salvage log higher elevation, moister forests that were composed of lodgepole pine and subalpine fir, as we have much evidence that stand replacing fire is appropriate and precedented in such systems." (Individual, Missoula, MT - #1593)

Response:

In the DEIS, Alternatives A, C, and E addressed this issues. For the FEIS, Alternative G was added which also does not treat VRU4 areas.

431 The Bitterroot National Forest should not conduct extensive reforestation of burned areas.

"There appears to be more tree planting planned than is necessary. Only those areas that do not show evidence or hope of natural regeneration should be planted." (Preservation/Conservation Organization, Boise, ID - #1347)

"Extensive replanting efforts may have some of the same effects (compaction, loss of understory), are probably unnecessary in most areas (forests are perfectly capable of natural succession on their own, and have been doing so for thousands of years here), and would be a waste of public money. What data are there to support the assertion that 'natural regeneration of trees will be quite slow and poorly distributed on much of the burned area?' Efforts to reduce invasion by exotic plant species and to mitigate effects of pre-fire logging in areas identified as especially vulnerable would be appropriate alternatives to massive replanting of trees." (Individual, Ovando, MT - #1896)

Response:

For the FEIS, Alternative G was added which only plants trees in areas where no seed source is available. In the DEIS Alternatives A and C contain no planting. There is an extensive discussion about natural and artificial regeneration in the forested plant communities' section of Chapter 3 in the FEIS. This discussion addresses the need for planting, ability of stands to naturally regenerate on their own, and natural succession pathways if artificial means are not applied.

433 The Bitterroot National Forest should not build new roads or impact previously unharvested areas to accomplish reforestation goals.

"I would be strongly opposed to any reforestation that required new road construction for access or would involve management impacts in areas not previously harvested--this would tend to increase the noxious weed problem and the pre-planting preparation would simply be a further disturbance." (Individual, Hamilton, MT - #1590)

Response:

There is no plan or need to build new roads to accomplish reforestation goals. There are temporary roads planned in some of the Alternatives, however they are proposed to accomplish fuel reduction objectives more cost effectively and would be rehabilitated immediately following harvest. Planting could take place in these units accessed by the temporary roads, however the temporary road rehabilitation would not be delayed for that purpose.

438 The Final EIS should not leave diseased green trees when conducting post-fire stand treatments.

"Discussions of post-fire stand treatments and salvage logging proposals are very thorough regarding future mortality of fire damaged trees and from bark beetle infestation. But tree diseases are hardly mentioned! Root diseases and mistletoe infestation are very prevalent in Douglas fir and lodgepole pine stands. IN SALVAGE LOGGING THERE IS NO JUSTIFICATION FOR LEAVING DISEASED MISTLETOE INFESTED GREEN TREES TO INFECT THE NEXT STAND." (Individual, Missoula, MT - #1683)

Response:

Root diseases and dwarf mistletoe are very prevalent in both Douglas fir and lodgepole pine stands. The fire killed a large portion of trees infected with one or both of these diseases. If a tree had a root disease or mistletoe and also is dead and/or dying from the fire, it would be salvaged in certain alternatives. Alternatives that conduct green tree harvesting are the only alternatives where these diseased trees could be removed if the fire didn't kill them. Although not specifically mentioned in the DEIS, the green tree thinning in these alternatives would select against diseased trees. This is clarified in the description of green tree thinning or intermediate harvesting in the FEIS.

439 The Bitterroot National Forest should focus thinning projects and prescribed burns in low-elevation, warm, dry forest zones.

"I strongly feel, as do many other scientists, that logging in fragile, newly burned areas is highly destructive and should be mostly avoided. I do, however, support, where appropriate, the thinning and prescribed burning of green stands, especially in lower elevation warm dry forest lands. Such areas, not newly burned sites, are where our efforts should be focused if we truly wish to reduce the threat of extensive wildfires and bark beetle outbreaks and restore productivity

and function. Unfortunately, such thinning and prescribed burning efforts are not a part of any alternative except those supporting the massive salvage of fire-killed trees." (Individual, Missoula, MT - #1901)

Response:

Your support for thinning and prescribed fire in unburned lands in the low elevation warm dry forests, as a priority, is acknowledged. Projects such as these include the recent Sheafman and Springer Memorial fuels reduction projects on the Bitterroot NF. There are plans for others in the future as well (see the most recent NEPA quarterly list on the Bitterroot National Forest website). The Burned Area Recovery EIS, however, concentrates on the burned area and the short and long-term needs of various resources such as fuel reduction, watershed improvement, and reforestation. Including green and unburned projects is outside the scope of this project. Your opposition to harvest in burned areas is also acknowledged and will be considered by the Forest Supervisor at the time of decision.

441 The Bitterroot National Forest should restrict the use of helicopter logging to areas that would be detrimentally impacted by cable operations.

"Because helicopters are dangerous to use and consume unacceptable volumes of scarce fossil fuels and other scarce resources, they should be used only where other cable systems would be significantly detrimental to the soil and water resource. Harvest methods should otherwise favor ground lead cable and aerial cable systems." (Individual, Paradise, MT - #1897)

Response:

The alternatives analyzed in this EIS evaluate using various yarding systems. Additionally an “Alternative Considered but not Given Detailed Study” was to harvest using only helicopter yarding (see FEIS Chapter 2).

All alternatives analyze the economic effects. Alternatives B, D, E, and F specifically address the economic effects of harvesting systems. The analysis process started with the most economically advantageous system and then changed in order to address resource concerns or issues specific to an individual alternative. For example, if a temporary road was proposed in order to gain access to a skyline unit and that area was in a sensitive watershed, this harvesting unit may have been changed. The next option may have been an excaline system that uses a tracked excavator equipped with skyline capability. The machine would access the unit via the same route as the proposed temporary road, yard the fuels up and a tractor swing would be employed to bring material to the specified road network. This eliminates the need for a road. If this system could not satisfy the resource concerns or alternative issues, a helicopter system would be proposed. The economic effects were then reanalyzed to see if this unit would be economically viable. Helicopter logging systems are proposed only where necessary for resource protection.

New specified road construction was eliminated from consideration in this project due to the current roads policy and the sensitivity of the burned areas.

Helicopter safety is always an agency safety concern. This would be considered on each individual project where helicopter logging occurs. Helicopter logging would meet Federal safety requirements.

453 The Bitterroot National Forest should not log units adjacent to inventoried roadless areas.

"If some form of alt. B, D, or E is chosen, I would like to see the following recommendations included to help the forest maintain natural functions. Drop all cutting units adjacent to inventoried roadless areas." (Individual, Missoula, MT - #1689)

Response:

This suggestion was evaluated and given consideration. Modifications to one or more action alternative was considered but not given detailed study. Refer to Chapter 2 for rationale.

455 The Bitterroot National Forest should consider using its forest as a buffer zone for migrating wildlife.

"The Bitterroot National Forest lies not far from the largest intact ecosystem in the lower 48 states. Has the concept that the Bitterroot National Forest be used as a buffer zone for wildlife migrating out of the wilderness/roadless areas been considered? The Bitterroot National Forest has the opportunity to show a commitment to serving the forest by canceling this sale and putting real forest rehabilitation first." (Individual, Missoula, MT - #1688)

Response:

The vast majority of the burned area and proposed management activities are located on the opposite side of the Bitterroot Valley from the referenced wilderness complex. Bitterroot NF lands between the Selway-Bitterroot Wilderness and the settled areas of the valley do indeed act as buffers for wildlife populations in the Bitterroot Mountains and beyond. Habitats in the Bitterroot NF adjacent to the wilderness and roadless areas offer a range of conditions suitable for travel and dispersal of all native and desirable non-native wildlife species. None of the proposed management activities are expected to change this. Allocations of uses on the Forest are addressed in the Bitterroot Forest Plan, and alternative allocation strategies would best be addressed during Forest Plan revision, currently scheduled to begin in 2003.

456 The Bitterroot National Forest should prohibit logging activities in the Robbins Gulch/Medicine Tree Creek area to protect Flammulated owl habitat.

"One of 2 known colonies of Flammulated owls occurs in the Robbins Gulch to Medicine Tree Creek area. Instead of just sparing pockets of the forest where the owls were detected, I think it is prudent to close the whole area (Road 446 from the highway up to Rd #5767 and along #5767 to its end, and all forest below the road) to any salvage, thinning, or firewood cutting. This area has one of the highest densities documented of cavity nesting birds in the Sapphire Mtns, 2001 and is expected to increase if left undisturbed. Over the last 6 years Flammulated owl colonies have used several different areas here for nesting. They are not loyal, just a few square miles of forest, but seem to shift across the old growth ponderosa landscape. Therefore it is prudent to leave all the trees below the said woods." (Individual, Missoula, MT - #1689)

Response:

Response: The FEIS (Wildlife section of Chapter 3) discusses flammulated owls and the potential effects of proposed activities to this species. The area between Robbins Gulch and Sula Peak supported the largest known concentration of flammulated owls on the Forest before the fires, but much of this area was burned by moderate to high-severity fire that killed most or all of the live trees. Monitoring in June 2001 showed that there were still some owls present in these areas, although at least some of them were in scattered areas that didn't burn. The fact that they were present this year may be an indication of high site fidelity, and it is possible that the habitat has changed to the point that most of the birds were unable to reproduce successfully. We do not know whether these birds will return in 2002, but will continue to monitor the area.

Alternative F addresses this issue. The FEIS (Mitigation Measures section of Chapter 2) includes mitigation regulations designed to protect flammulated owls in three areas where these birds have been found in the past in more abundant numbers. These include the areas between Robbins Gulch and Sula Peak, portions of Reimel Creek, and near Mink Creek. Unit harvest prescriptions have been redefined in Alternative F to limit harvest to salvage only (no thinning would occur). Harvest activities would be restricted to the period between November 1 and March 31 when these owls are not present. In addition, no harvest treatment would occur in any of the remaining old growth stands that are still suitable habitat for flammulated owls. No green trees would be cut regardless of the age of the stand. Large areas of snags in the RHCA buffers along several drainages would be left untreated. Finally, "legacy snags" (snags present before the fires that typically are more valuable to wildlife species than are snags killed by recent fires) would be left throughout the area, and many of the larger snags within harvest units would be retained. This should ensure that most of the snags that currently contain suitable nest cavities would be left on site.

465 The Bitterroot National Forest should not conduct logging in the Little Blue Joint and Blue Joint areas.

"I am writing to express my opposition to the logging proposals in the Burned Area Recovery Draft Environmental Impact Statement published in May 2001. I am particularly concerned about the proposal to log the Little Blue Joint and the Blue Joint areas. As I am part-time resident of the Painted Rocks area (I spend summers near the Lake), I want to keep the area in as much a natural condition as possible. This means no logging. The whole area has already been logged steadily for forty years, and this has done nothing to stop fires." (Individual, Hamilton, MT - #1890)

Response:

Response: Your opposition to this activity is noted and will be considered in the decision. Alternatives A and C do not propose logging. No claim is made in the EIS that proposed activities would stop fires.

469 The Bitterroot National Forest should select "The Conservation and Local Economy Alternative" because of its emphasis on watershed restoration.

"The Conservation and Local Economy Alternative provides a much better solution for meeting the purposes and needs in the Draft EIS. . . . The CLE Alternative provides a distinct approach to watershed restoration that is significantly different than any of the action alternatives. If the criteria suggested by the CLE Alternative of removing roads and closing roads that are not needed were applied, it is likely that there would be a distinctly different outcome for road removal and rehabilitation. And, the improvements to the watershed would also be significantly different (and better) than any of the Draft EIS Alternatives." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

"The Conservation and Local Economy Alternative" is considered (Alternative G) in the FEIS. Your support for it is noted and will be considered in the decision. Watershed effects for all alternatives are discussed in the watershed section of FEIS Chapter 3.

479 The Bitterroot National Forest should implement techniques to minimize smoke impacts on public health and the environment.

"As you are aware, smoke from fire contains air pollutants, including tiny particulates which can cause health problems, especially for people suffering from respiratory illnesses. Smoke can also reduce visibility and diminish the appreciation of scenic vistas. We recommend that the USFS incorporate use of techniques that minimize emissions from fire and the adverse impacts of smoke on public health and the environment. These techniques include scheduling burning during favorable weather conditions that allow good smoke dispersal, limiting the amount of land burned at any one time, and mechanical pretreatment of fuels." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

All action alternatives incorporate procedures and techniques to minimize emissions from fire and adverse impacts of smoke on public health and the environment (Refer to Chapter 2's "Management Requirements and Mitigation Measures").

493 The Bitterroot National Forest should reduce harvest levels and use low impact logging methods in degraded watersheds.

"We would also like to emphasize that watersheds which have both existing degraded conditions due to high levels of past disturbances and with moderate to severe wildfire effects (i.e., already high water yields) are the most sensitive to further degradation from salvage logging operations. Watersheds with such cumulative effects concerns deserve special consideration and protection. Accordingly, while EPA does not in general object to salvage logging, we do favor reduced or deferred levels of logging and harvest and less disturbing logging methods (helicopter, cable) in already degraded watersheds that were also severely impacted by the fire. From the presentation of watershed conditions in the DEIS it would appear that all or portions of the Rye Creek, North Fork of Rye Creek, Mike Creek, Little Sleeping Child Creek, Hot Springs tributary to Sleeping Child Creek, Meadow Creek, Cameron Creek, Lower East Fork Bitterroot River, Upper West Fork Bitterroot River watersheds are sensitive to additional disturbances, and that this warrants reduced or deferred levels of harvest, and less disturbing logging methods in these drainages." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

Low-disturbance logging methods are proposed for all these drainages, and a range of harvest levels are presented in the alternatives. Sediment yield estimates for all 2000 303(d) watersheds are displayed in Chapter 3 of the FEIS to better display and understand potential effects. The FEIS provides appropriate and extensive resource mitigation measures in Chapter 2, including increased RHCA buffers (Alternatives E, F) on all channels meeting the Montana Streamside Management Zone definition. Lower impact logging systems were chosen for harvest units in all landtypes prone to erosion, which includes erodible soils and slope angles.

495 The Bitterroot National Forest should consider reducing timber harvests in the Skalkaho-Rye area to mitigate impacts on Canada lynx habitat.

"Table 3-71 (page 3-348) shows lynx habitat that was burned by geographic area. When the lynx habitat figures in this table are compared with proposed salvage harvests in each geographic area (per Tables 2-1 through 2-4) under each alternative, it shows that the greatest percentage of lynx habitat burned was in the Skalkaho-Rye area (28 percent

burned), and this is also the area having the greatest amount of proposed salvage logging in Alternatives B and D. The discussion of effects to the lynx (page 3-355), however, appears to gloss over cumulative effects of wildfire and salvage logging and other past, present, and reasonably foreseeable future actions to the lynx habitat. The analysis also says that the substantial acreage of lynx habitat removed by the fire has left this area temporarily fragmented. We ask whether or not reduced harvests or deferred harvest would be appropriate in the Skalkaho-Rye area to mitigate impacts to the threatened lynx and its habitats." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

Alternatives have been developed that eliminate all salvage harvest in this area (Alternatives A, C and G). As discussed in the FEIS' Chapter 3 Wildlife report, mitigation measures applied to all action alternatives will retain needed habitat components for lynx. Additional mitigations in the form of reduced green tree harvests, and increased riparian zone buffer widths are being analyzed within alternatives E and F in the FEIS.

See response to comment #293 for a discussion of cumulative effects.

497 The Bitterroot National Forest should conduct pre-harvest surveys for evidence of neotropical bird and owl nests to protect the viability of these species.

"We recommend that pre-harvest surveys for the presence of nests of neotropical migratory birds and owls be conducted so that identification of migratory bird and owl nests may provide opportunities to defer harvest of nest trees, and thus, reduce mortality to eggs and young of the year." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

Seasonal restrictions in the action alternative limit some of the potential for incidental mortality of eggs or juvenile birds. Finding all active bird nests is a difficult, time-consuming venture that is impractical on the scale of activities proposed under any of the action alternatives and not necessary in this case to protect the viability of these species (see FEIS Wildlife viability analysis in Chapter 3).

The alternatives considered would protect most nests of birds associated with early post-fire habitats by not treating over 200,000 acres of the burned area in any of the alternatives. The FEIS also contains several mitigation measures (see Chapter 2) that would protect many nesting birds.

508 The Bitterroot National Forest should not use prescribed burning as a forest resource management technique.

"Sorry, but prescribed burning is wishful thinking. It is no longer possible in the real world. Those who prescribe 'controlled burning' face early retirement with each match they light. The window of opportunity is too short and the risks are too great. The public and I no longer trust prescribed burning. The manpower, the skills and the work ethic that is needed to manage controlled burning NO LONGER EXIST. The history of this action is full of disaster. Man now lives in these areas with homes and large investments. We don't live in teepees. We can't leave when it is smoky or the wind shifts in our direction. The risks are too high and the losses are too great. No one recorded how many lives were lost by Native American 'Prescribed Burns.' Forget it! This is not a long-term practical tool." (Individual, No Address - #16, SOP2)

Response:

Modifying fuels through prescribed burning can reduce fire hazards, and increase fire suppression success and safety. Prescribed burning is one of several methods that can be used to reduce fuels in all vegetation types and carries it own risks and benefits. Mitigation measures to reduce the risk of prescribed fire escape and to minimize air quality impacts are provided in Chapter 2.

515 The Final EIS should not allow winter ground based logging because the proposed mitigation measures are inadequate to protect sensitive soils.

"Monitoring of post-logging soil conditions in areas on the BNF where mitigation measures required frozen soil and over-the-snow ground based yarding show that soil damage in excess of expectations often occurs. These mitigation measures do not prevent soil damage from ground based yarding even when the prescribed conditions are actually met, and are ineffective when prescribed conditions deteriorate during active logging due to changes in weather or when prescribed conditions are thought to exist but, in fact, do not. Project file document Watershed-15 notes that winter conditions are often only sporadically met on the BNF, that on designated skid trails frozen soil is needed ('Snow cover alone will not provide enough soil protection') and that 'winter logging would not be expected to provide full mitigation

for soil.' Thus, mitigation measures described in the DEIS, p.2-16, are not adequate and fail to guarantee protection of soils." (Preservation/Conservation Organization, Missoula, MT - #2054)

Response:

Winter logging provides a means of harvesting and yarding logs with a very light touch on the land, resulting in negligible impacts to soils and associated sedimentation. The key to its success is frozen soil or adequate snow cover, and careful administration. The FEIS describes the results of last winter's logging at the Waugh Gulch and Cow Creek Demonstration Sites, where the method worked quite well. Generally, R1 Forests have had good results with this method. The concluding line of the Project File document referred to in the comment states: "If all the above guidelines and mitigations are followed, winter logging should have very low impacts on soils; in most cases these impacts will be far less than what would occur using heavy equipment during the spring, summer or fall seasons."

Affected Environment and Environmental Consequences

Though respondents provide a wealth of feedback to the Bitterroot National Forest regarding the decision-making process (Planning Process and Policy) and the proposed alternatives for achieving burned area recovery (Consideration of Alternatives), evaluation of the impacts upon the natural, cultural, and economic resources of the Bitterroot Valley most intensely reveals the underlying perspectives and desired outcomes driving public responses to the Draft EIS. For many topics within this section comments were predominately submitted by professional researchers and/or advocates from academic institutions, professional societies, natural resource industries, and conservation organizations, as well as comments from state and federal agency representatives. Concerns expressed regarding topics such as "Recreation," "Economics," and "Social Resources" received the heaviest response from Bitterroot Valley residents and individuals from outlying areas—particularly Missoula and northern Idaho.

Fire and Fuels

There is little to no evidence that post-fire salvage removal of trees limits the intensity of future fires.

"In a response to Beschta, et.al. commissioned by the regional forester, John Lowe, Everett (1995) conceded that there was "little to no evidence" that post-fire salvage removal of trees limits the intensity of future fires."(Preservation/Conservation organization #1432)

Response:

The citation used is Everett 1995, response to John Lowe, which is not included in the literature cited section of this comment letter, so it is assumed to be the August 16, 1995 memorandum. Page 3 of this memo states that "…the greater the amount of available fuel the greater the fireline intensity in BTU's… (Rothermel 1983)". Another way to provide evidence for the reduction in fireline intensity is looking at how it is calculated. Rothermel, 1991, cites Byram (1959) for the definition of fireline intensity. In the equation, $I = Rwh$, Btu/ft·s, where R=rate of spread (ft/s); w=available fuel, lb/ft^2; and h=heat of combustion, Btu/lb. Thus, it is reasonable to conclude that if available fuel is reduced, there is a reduction in fireline intensity. Refer to FEIS Chapter 3, Sections 3.1-3.6

There is a perception of increased fuel loads.

"We request thorough substantiation of perceived increased fuel loads."

(Preservation/Conservation organization #1432)

Response:

Increased fuel loading has been identified in a number of studies, and appear to be especially pronounced in the high frequency-low severity fire regime types (Barrett, 1988; Brown, 2000; Covington and Moore, 1994; Steele, et.al., 1986; Everett, et.al. 2000; Brown, et.al., 1999). These studies indicate that overall fuel loadings in these fire regime types have increased over the last century to levels that were unknown or occurred only in small, isolated patches historically. Refer to FEIS Chapter 3, Section 3.2

There is a concern that intensive forest management will increase the rate-of-spread and flame length through creation of activity fuels.

"As a by-product of clearcutting, thinning, and other tree-removal activities, activity fuels create both short and long-term fire hazards to ecosystems." "The potential rate-of-spread and intensity of fires associated with recently cut logging residues is high…"

(Preservation/Conservation organization #1432)

Response:

Intensive forest management which involves the creation of activity fuels (slash) can indeed increase fire behavior parameters such as rate-of-spread and flame length. However, treatment of slash (e.g. burning, removal, isolation) will reduce fire behavior and fire intensity. Reduction of fuel loadings and stand density would decrease fireline intensity and potential for crown fire occurrence.

Refer to FEIS Chapter 3, Section 3.6

9 The Final EIS should ensure road access for fire suppression.

"Gates only--leave open. As much as possible, leave access for prompt fire suppression." (Individual, Hamilton, MT - #157)

Response:

The Forest Plan directs all road management (Forest Plan pg II-27) according to Forest goals and objectives (Forest Plan pg II-3, pg II-7). Road management standards call for closing public use of roads, if funding is unavailable to meet maintenance standards, that will minimize impacts to water quality and fish habitat. Roads are gated for three management reasons: 1) failure or inability to meet maintenance standards, 2) seasonal closures to protect roads from deterioration and erosion, 3) wildlife and wildlife habitat protection and maintenance. Road closures, however, do not impede access for emergency fire suppression activities, as all fire suppression personnel have keys to access Forest Service gates. Roads considered for storage or decommissioning were prescribed with consideration for fire access needs.

Refer to FEIS Chapter 3, Transportation Systems report.

26 The Bitterroot National Forest should provide evidence that salvage logging will reduce wildfire risk.

"Experts within your agency have acknowledged that there are 'no studies documenting a reduction in fire intensity in a stand that had previously burned and then been logged,' yet the Bitterroot National Forest is considering logging 60,000 acres of a burned area in order to 'manage fuels.' The Forest Service's guidelines regarding logging in burned areas are clear, as the National Fire Plan explicitly states that logging in burned forests is not a 'panacea for reducing wildfire risk.' You have a remarkable opportunity to take the Forest Service in a positive direction by redefining our relationship to the post-fire landscape. Please seriously consider these concerns in your decision making process." (Individual, Missoula, MT - #24)

"A major assumption upon which the DEIS rests is that the justification for removing burned trees is that it responds to some 'need' to reduce fuels. However, there is no scientific support that post-fire logging is needed to reduce risk of future fires. Beschta et al. (1995) state they 'are aware of no evidence supporting the contention that leaving large dead wood material significantly increases the probability of reburn.' In a response to Beschta et al. commissioned by the Forest Service, Everett (1995) conceded that there was 'little to no evidence' that post-fire salvage removal of trees limits the intensity of future fires. Additionally, USDA (2000a) states that 'no studies have specifically looked at how postfire logging alters the size distribution of fuel and the concomitant changes in future fire risk.' In light of these findings, we request that the Forest Service provide specific cites of scientific support that the proposed logging activities will in fact reduce future fire risk. Drought and other climatic factors are the primary causes of large-scale wildland fires, which occur regardless of fuel conditions (Schmoldt, 1999)." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

For the FEIS, new scientific information has been added to the analysis to address this. There are scientific experts within the Forest Service agency that document the need to reduce fuels to reduce the severity of future reburns. Brown, et al (2001) describe that fire resistance to control becomes high to extreme when large fuels exceed 30 tons/acre and have increased potential for severe soil heating effects above 50 tons/acre. As the purpose and need of this project state, we are concerned about the legacy of fuels we leave on the land, particularly where the fires of 2000 burned outside their historic fire regime and for public and firefighter safety concerns.

A FEMA study done after the Cerro Grande fire in New Mexico found that there was an increase in fire danger after fire killed snags fall. Using a four-foot flame length and a rate-of-spread greater than one mile/hour as critical fire parameters, this study found that the fire danger increased, especially in the high severity burn areas, after the sixth post-fire year (Greenlee 2000).

86 The Bitterroot National Forest should coordinate prescribed burning with other aspects of forest management.

"P3-104, Past Activities: Prescribed Fire: In the recent past, some prescribed fire was applied in this area. However, the amount of this that has occurred was small and scattered when compared to the size of the geographic area and probably would have minimal effect during a severe season. I have since 1979 written many letters regarding the management of our national forest. In 1985 or so, regarding the appeal process and timber management, I and many other citizens spoke

about the possibility of another 1910 forest fire. This was totally ignored by the Forest Service. Before the Forest Service does any prescribed fire, they must allow timber management at the same time in the areas." (Individual, Hamilton, MT - #659)

"FUEL REDUCTION THROUGH PRESCRIBED FIRE. Applicable areas. In those areas deemed to be outside the normal range of vegetative conditions due to previous fire exclusion. Management action. In areas unlikely to burn outside the normal range of intensity, apply prescribed fire. In those areas deemed to be outside the normal range of vegetative conditions due to previous fire exclusion, and where a prescribed fire would be likely to burn out of the normal range of intensity, perform manual pretreatments (fuel reduction) in preparation for prescribed fire and wildland fire use prior to conducting prescribed burns." (Preservation/Conservation Organization, No Address - #23)

Response:

All alternatives considered in the FEIS used and interdisciplinary approach to coordinate prescribed burning with other aspects of forest management including silviculture, wildlife, hydrology, soils, fisheries, recreation, fire management, and social concerns. Refer to FEIS Chapter 3, all sections.

Fuel reduction using prescribed fire is considered in Alternatives B, D, E, F, and G in varying levels and in combination with other fuel reduction methods. Alternative G limits fuel reduction to certain areas and using manual or prescribed fire methods, as suggested above.

189 The Final EIS should not cite Stephen Barrett's reburn study (1982) as supporting evidence of Bitterroot National Forest reburn potential.

"Citing Barrett (1982) as supporting evidence of reburn potential (p. 11, Chap III) strikes me as inappropriate, unless the point is merely to indicate that reburns have occurred elsewhere in this large region. That study occurred in mountainous (i.e., canyon terrain) red cedar/grand fir forests in northern Idaho, an environmental setting wholly unlike that in your Project area. Instead, a more useful citation might be: GREENLEE, DAWN. 2000. PREDICTED CHANGES IN FIRE DANGER IN THE LOS ALAMOS WILDLAND-URBAN INTERFACE AS A RESULT OF THE CERRO GRANDE WILDFIRE. UNPUB. FINAL REPT. FEMA-1329-DR-NM, ON FILE AT FIRE RESEARCH INSTITUTE, MISSOULA MT. This study addresses reburn potential in a second growth ponderosa pine forest, based on fuel modeling. Although the Cerro Grande Fire area is geographically distant from the Bitterroot, the forest near Los Alamos can be considered an ecological equivalent." (Individual, Kalispell, MT - #1104)

Response:

References to this paper are included to provide documentation that reburns occur. New information from the suggested reference is included. Refer to FEIS Chapter 3, Fire and Fuels.

318 The Bitterroot National Forest should assess how areas selected for salvage are functioning outside of their historic range of fuel load variation.

"More information on the effects of fire suppression, past logging activities, and past grazing activities within the Bitterroot valley needs to be considered in the DEIS. Specifically, the Forest Service needs to make an assessment of how areas selected for salvage were and currently are functioning outside of their historic range of variation and not rely on broad generalizations. For example, the DEIS did not address variabilities around suggested historic fuel loads. One cannot use a specific number calculated at one specific time period for historic fuel loads. Fuel loads will be higher on north-facing slopes and lower on south-facing slopes and fuel load amounts will vary over time. Thus, a better assessment of historic fuel loads and the variability around them for each forest type is needed in the DEIS." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

For the FEIS a discussion was added to the Fire and Fuels section regarding historic conditions vs. current conditions.

Refer to FEIS Chapter 3, Fire/Fuels Sections 5 and 6 and Chapter 3 Forested Plant sections discussing VRU’s.

383 The Final EIS should incorporate several classes within its definition of "coarse woody debris" to better address fire analysis and resource needs.

"The definition used in the DEIS for course woody debris (CWD) is 3 inches and greater. This definition ignores significant differences in fire behavior between the smaller fuels in the category and the larger ones. It arbitrarily lumps slash sized fuel with merchantable trees; and, by so doing, it ignores wildlife potential, water retention, aquatic benefits,

shade value and other factors that differ significantly between the smaller and larger sizes that are lumped. This arbitrary lumping looses the opportunity to possibly alleviate fuel loading of the more hazardous smaller sized fuels even while protecting the irreplaceable benefits of the larger logs. The BNF is using a CWD definition useful to certain soil needs (nutrient cycling) analysis. It is inappropriate to rely on this definition for fire behavior analysis. It would even be reckless to do so, because of the keen need to understand fire behavior. The lumping approach is yet another error that serves to sneak salvage logging in under the guise of hazardous fuel reduction. A report by Brown and See (GTR-INT-117) contains Table l2 and 13, which break CWD down into four size classes. The smallest class is 3-6 inches. Three classes range from 6 to +20 inches. Information specific to the BNF is described, indicating that the BNF historically makes distinctions of several size classes within the CWD category. It also appears that it is standard practice in stand exams to distinguish between several larger classes." (Individual, Darby, MT - #1696)

Response:

As generally defined in the FEIS glossary, CWD is "Any pieces of dead, woody material and may vary in size." In general, the term is applicable to discussions of soil productivity, certain wildlife habitat, forest fuels, as well as in aquatic habitat, although pertinent sizes or other attributes of the CWD vary between each of the resource discussions. We have attempted to clarify the specific uses of the term throughout the FEIS.

The Fire and Fuels report in Chapter 3 includes discussion of how different sizes of fuels affect fire behavior.

404 The Bitterroot National Forest should reassess the relationship between fire-suppression costs and fuel buildup.

"Fire suppression costs have increased, but pre-fire management may not reduce suppression costs. While fire suppression costs have increased dramatically in recent years, the increase is not entirely attributable to the increase in fuels. Much of the increase in fire suppression costs is a result of rising expenditures to protect homes built in the wildland-urban interface. A series of reports has highlighted the increasing cost of fire fighting due to the emphasis on protection of private property (USDA 1995). While the assertion that forest health management will reduce the costs to control fire and fire damages seems logical--the assertion is supported only by anecdotal evidence. A review of the literature would find that there is very little research documenting that fuel treatment has actually decreased fire control costs (Gortc 1994). This finding is consistent with the research by Bessie and Johnson (1995) suggesting that fuel treatment may have little impact on fires, as climate is the dominant influence. If this is true, then the costs are additive; taxpayers pay for fuel management and they also pay for fire suppression. And, in the urban-wildland interface, homeowners expect suppression efforts whenever a fire occurs--regardless of whether the forest was treated or not. So it does not appear that support for the proposed fuel management can be made based on reduction in fire control expenditures, although additional analysis would be needed to support this hypothesis." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

Fire suppression costs have increased due to a number of factors, including but not limited to increased fuel loadings. Increased costs of equipment, contractors, long duration fire events, increased wildland/urban interface, restrictions due to Threatened and Endangered species habitat, and climatic changes over decades have all contributed to suppression expenditures. Refer to FEIS Ch. 3, Fire and Fuels Section 3.2.

434 The Final EIS should fully disclose the ecological and economic effects of fire management and mitigation activities during the 2000 fire season.

"Firefighting efforts in 2000 resulted in resource and ecological damage. The DEIS doesn't adequately disclose the degree of damaging fire suppression steps taken last year, and the resulting impacts on water, soils, wildlife, and those from noxious weed invasions and any subsequent weed treatments. The Forest Plan EIS also failed to disclose the forest-wide ecological costs of fire fighting activities, nor the economic impacts." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

Resource conditions described in "Bitterroot Fires 2000, An Assessment of Post Fire Conditions with Recovery Recommendations" (2001) include effects of fire suppression. Similarly, the descriptions of current conditions in the FEIS include conditions caused by suppression activities. Cumulative effects analysis in the FEIS has been supplemented, as needed, to include these impacts. Forest-wide costs of firefighting activities and associated economic impacts are beyond the scope of this project analysis.

473 The Final EIS should include information on tree felling operations during the 2000 fire season.

"What is the total amount of tree felling that occurred during fireline construction and mop-up operations, measured in numbers of trees and board feet of timber? How many large-diameter snags were felled during suppression operations? What is the specific location of tree felling during suppression operations?" (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

This information is in the project file and is considered in the cumulative effects analysis.

During line construction, handlines and dozer lines are located to minimize tree felling, unless there is an immediate threat to life or property. Locations of tree felling are found in the project file that shows the locations of these lines. The amount of trees felled, in numbers and board feet, has not been measured. Trees of different sizes, including some “large-diameter” trees, were felled during suppression. These were minimized and generally limited to those that posed a safety hazard to firefighters.

474 The Final EIS should include information on backfire and burnout operations during the 2000 fire season.

"What is the total amount of backfires and burnout acres ignited and burned during the suppression efforts, measured in acres? What are the specific locations of backfire operations? What is the fire severity of areas burned by backfires and burnouts, measured in percent tree mortality? What kinds of ignition devices and chemicals were used to ignite backfires and burnouts?" (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

For the FEIS, backfire and burnout operations were included in the fire severity maps. Whether the severity and tree mortality was caused by the fire spread itself or during firing operations cannot be determined and separated out. Overall fire effects, regardless of cause, are included in cumulative effects.

General ignition devices used for backfire and burnout operations include fusees, drip torches, flares, helitorches and plastic spheres.

508 The Bitterroot National Forest should not use prescribed burning as a forest resource management technique.

"Sorry, but prescribed burning is wishful thinking. It is no longer possible in the real world. Those who prescribe 'controlled burning' face early retirement with each match they light. The window of opportunity is too short and the risks are too great. The public and I no longer trust prescribed burning. The manpower, the skills and the work ethic that is needed to manage controlled burning NO LONGER EXIST. The history of this action is full of disaster. Man now lives in these areas with homes and large investments. We don't live in teepees. We can't leave when it is smoky or the wind shifts in our direction. The risks are too high and the losses are too great. No one recorded how many lives were lost by Native American 'Prescribed Burns.' Forget it! This is not a long-term practical tool." (Individual, No Address - #16, SOP2)

Response:

Modifying fuels through prescribed burning can reduce fire hazards, and increase fire suppression success and safety. Prescribed burning is one of several methods that can be used to reduce fuels in all vegetation types and carries it own risks and benefits.

Refer to Chapter 1, Purpose and Need, and Chapter 3, Fire and Fuels section 3.6

513 The Final EIS should disclose anticipated changes in fuel models, fuel profiles, and predicted fire behavior.

"The analysis needs to be expanded beyond discussion of fuel loads, to incorporate changes in fuels models and fuels profiles over time, and their effects on fire behavior, rate of fire spread, fireline intensity, and fire severity from future fires." (Preservation/Conservation Organization, Missoula, MT - #2054)

Response:

This information can be found in the project file and is summarized in both the DEIS and FEIS. Refer to FEIS Chapter 3, Fire/Fuels Sections 3.2, 3.3, 3.5, 3.6, 5.2

514 The Final EIS should disclose how fuel load estimates were calculated and substantiated.

"Information on fire and fuels is inadequately disclosed or analyzed. The process used for calculations of fuels greater than 30 tons per acre (project file, Fire-3) is arbitrary and not based on site-specific analysis. The assumption that severely burned areas have greater than 30-tons/acre fuel is unsubstantiated by science. How did the models used to determine current fuel levels take into account the fires of 2000 and fuels lost to fire? How does the BNF know that the fuel level determinations made are accurate, have any sites been tested for accuracy? Site specific analysis of all logging units should be disclosed." (Preservation/Conservation Organization, Missoula, MT - #2054)

Response:

For the FEIS, the Analysis Methods section of Fire and Fuels has been supplemented to include a discussion of the process. The method used was changed slightly for the FEIS. Refer to FEIS Chapter 3, Fire/Fuels Sections 3.2 and 3.3

Site specific analysis of all treatment units is available in the project file, the volume of data precluded inclusion in the DEIS.

Air Quality

91 The Final EIS should address impacts of proposed management on public health and safety.

SMOKE AND PARTICULATE MATTER

"I respectfully suggest that the final EIS include the following items: In light of alternatives 'A' and 'C' in the DEIS, a full discussion of the health effects of the smoke and particulate matter released by the wildfires and documented by the Center for Disease Control and Prevention. The federal agency based its finding the 'forest fires represent a serious public health threat' on data gathered in Montana at the height of the 2000 wildfire period." (Individual, Seeley Lake, MT - #654)

Response:

Please refer to the Social and Air Quality FEIS sections for health effects and impacts of smoke and particulate matter released by wildfires/prescribed fires.

482 The Final EIS should include a graphic representation that displays wind patterns and speeds during the months proposed for prescribed burning activity.

"We also recommend that the air quality section display a windrose for the area (perhaps from Hamilton airport) to indicate the primary wind directions and speeds which the wind blows during the months in which the prescribed burning is proposed. This information is helpful to residents living near the area who may be sensitive to smoke impacts (people with respiratory diseases such as asthma, emphysema, bronchitis, cardiovascular problems, etc.)." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

The FEIS contains the results of NFSPUFF and First Order Fire Effects Model (FOFEM), version 4.0 modeling that estimates smoke emissions, smoke dispersion and smoke concentrations for the proposed alternatives. The project file contains NFSPUFF maps that indicate the estimated direction and concentration of smoke emitted from Alternative D, the alternative with the largest proposed prescribed burning. Primary wind direction and speed were used in the smoke modeling for this project. Meteorological conditions, such as primary wind direction, daily and seasonal affects are indicated within the FEIS as well. In addition, any member of the public may access the Montana/Idaho Airshed Group to determine the location of prescribed burning units during the spring and fall prescribed burning periods in Montana and Idaho. During spring and fall prescribed burning the Montana Department of Environmental Quality and the Idaho Division of Environmental Quality provide toll free air quality hotlines for public use and information on current air quality.

483 The Final EIS should acknowledge the potential for unintentional ground-level smoke impacts.

"We also note that smoke management programs depend on favorable meteorological conditions to disperse smoke. However, despite best efforts to predict favorable conditions the weather can shift causing smoke not to disperse as intended. Therefore, the FEIS should acknowledge that there may be unintentional ground-level impacts from smoke and never presume to the public that there will be no air quality impacts. The public will naturally want to know what the USFS will do in the event smoke does not properly disperse. The discussion of the contingency measure element of the smoke management program should address this concern." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

The FEIS does acknowledge there may be unintentional ground-level impacts from smoke and never “presumes to the public” there will be no air quality impacts. The Air Quality section of the DEIS and FEIS provides information on the type of proposed prescribed burning, smoke modeling results, expected smoke dispersal and potential impacts to specific areas. One example of this type of disclosure in the FEIS is: “Smoke from prescribed burning would cause short-term impacts on recreation and transportation in and near the project areas. The size and location of a prescribed burn and weather conditions (e.g., temperature, wind, atmospheric stability and mixing, and fuel moisture) determine how much and in what direction smoke travels. Residents in or near the mouths of drainages might experience short-term periods of smoke during early morning inversions.

Geology and Soils

63 Technical and Editorial

"DEIS p. 3-45; description under table 3-21 'relatively high % low burn severity across all geo areas' –thinks this should say 'relatively high % of high burn severity' instead. Clarify." (Individual, Stevensville, MT - #4)

Response:

In the FEIS, the text referenced by the commenter following Table 3-21 was revised.

66 The Bitterroot National Forest should adopt new, cost-effective timber harvesting technologies as a means to protect soils.

"We also believe that you should become aware of new ground-based logging systems that minimize soil disturbance and compaction. We detect the old Tractor Logging paradigm of the D-7 Cat ground skidding logs in your effects analysis on soils, water yield and sediment delivery. Today there are modern harvester/forwarder ground based systems available that not only minimize soil disturbance and compaction, but also can be deployed in such a way as to build erosion control features (slash filter windrows) as part of the salvage operations. Such development would not only create cost-effective & efficient extraction of valuable products, but also replicate the expensive process of log erosion barriers & wattle installation you conducted last fall. Such equipment can also facilitate the necessary stream rehabilitation activities (LWD placement and bank stabilization) at the same time." (Wood Products Association, Kalispell, MT - #21)

Response:

Alternative F developed in the FEIS addresses this issue to a degree. We are aware of the benefits of using low ground-impact equipment, log forwarding, feller/buncher, tracked-line-machines (Excaline) and other modern methods and equipment, as well as the benefits of maintaining slash mats to minimize soil impacts. These methods would be optional to potential contractors in some units in Alternative F, as long as other prescribed mitigations are applied and soil quality standards are met.

188 The Bitterroot National Forest should reconsider requiring mitigation measures to rehabilitate cable corridors.

"The mitigation measure that requires during summer months that cable corridors must be rehabilitated as soon as possible by anchoring large woody debris in the cable corridors to act as waterbars or breaching the berm with waterbars, and pulling adjacent woody debris to cover bare areas of corridors is . . . excessive and unnecessary. Normal line skidding operations leave sufficient submerchantable material and broken limbs within the corridors to prevent soil erosion. This mitigation measure is exorbitantly expensive and unnecessary." (Wood Products Industry/Association, Columbia Falls, MT - #876)

Response:

Burned conditions have resulted in much less ground cover and residual sub-merchantable material referred to in the comment. Ground cover and woody debris that would provide soil protection in cable corridors and help prevent erosion may not be present, or present in lesser amounts. The elimination of the duff layer by wildfire causes increased overland flow during precipitation and snowmelt. Consequently, the risk of rill and gully erosion during intense rainstorms is substantially higher in cable corridors compared to unburned conditions. Post-fire conditions warrant the additional soil protection and erosion control measures in cable corridors.

212 The Final EIS should include an additional section specifically addressing soil quality and soil protection measures.

"We are very concerned about the protection of the soil quality in the burned areas. No management activity should be undertaken which does not protect soil integrity. We urge you to give special attention to the comments of the soil scientist Ken McBride. He is reported to have made note of significant soil damage associated with past logging in the Bitterroot National Forest. Our concern relates to the risks of soil and watershed damage associated with the proposed salvage logging. This logging would very likely result in soil quality reduction due to loss of biologically active layers through compaction, erosion, and removal by heavy equipment. We urge you to add a section to the Final EIS specifically addressing soil quality issues and how each alternative would protect the soils in the burned areas." (Individual, Corvallis, MT - #1543)

Response:

To protect soil integrity, a variety of mitigation measures were required in the DEIS. Included were operating on frozen ground or 24 inches of settled snow, skyline harvest methods, helicopter harvest methods, slash mats, RHCAs, and other techniques. During refinement of the FEIS, further analyses resulted in new, additional mitigation measures being added to increase soil protection (see Chapter 2's "Management Requirements and Mitigation Measures" and Chapter 3-Geology and Soils). New mitigation measures include, depending on alternative: 1) elimination of activity units ranked as high erosion hazard, 2) expanded Riparian Habitat Conservation Areas (RHCA)'s beyond INFISH guidelines to increase watershed (and soil) protection, and 3) winter skyline harvest to areas ranked as moderate erosion hazard. In addition, new Alternatives F and G were developed to further analyze reduced harvest (Alt. F), and essentially no salvage harvest (Alt. G) in conjunction with other soil and watershed protection activities. The comments received from Ken McBride are also being considered and addressed.

In compliance with Region 1 Soil Quality Standards, the proposed activities are planned to meet current standards, while detrimental conditions remaining from prior activities will be ameliorated where feasible as part of required mitigations and restoration projects outlined in the FEIS. Mitigations prescribed to protect soil quality go beyond past requirements. Chapter 3 – Geology and Soils in the FEIS discusses soil quality issues for the various alternatives. Based on public comments and further analyses, this section was expanded compared to the DEIS. Also see Response to Comment #'s 61 and 394.

227 The Bitterroot National Forest should not conduct salvage logging on steep slopes.

"Much of the fire damaged areas are on steep slopes that are predisposed to erosion and mudslides. Although the political pressures are strong to log these burned forests, science dictates we should allow these areas to recover without disturbance from logging." (Individual, Stevensville, MT - #1411)

Response:

In the effects analysis included in Chapter 3 of the FEIS, areas mapped during the forest Soil Survey as high erosion hazard were eliminated from consideration for salvage harvest in all alternatives. Areas mapped as moderate erosion hazard require skyline over snow or helicopter salvage methods for all alternatives. Areas mapped during the Soil Survey as landslide hazard are not being considered for any activities. As outlined in the FEIS, in Alternatives B, D, E and F, areas with greater than 35% slopes require either skyline or helicopter harvest techniques to minimize soil disturbance. Skyline yarding is estimated to result in 2-5% soil disturbance (Table 3-23). Helicopter yarding has less than 1% estimated soil disturbance. Areas that are disturbed during salvage activities, such as narrow cable corridors, would be rehabilitated with waterbars and slash covering of bare areas (FEIS, Table 2-5). The combination of these mitigations would reduce soil disturbance to minimum levels and maintain compliance with R1 Soil Quality Standards.

250 The Final EIS should address the effects of historic skyline yarding in the cumulative effects analysis of soil impacts.

"The DEIS needs to address effects of historic skyline yarding in the cumulative effects analysis of soil impacts (DEIS, p. 3-55). Skyline yarding can cause significant impacts, especially in the post-fire salvage logging setting. Studies have shown that soil disturbance is higher in post-fire areas that were salvaged logged (PNW-GTR-486 2000)." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

See Response to Comment #395

251 The Final EIS should disclose the existing condition of soil resources in all proposed treatment units.

"The Draft EIS does not disclose the existing condition of the soil resource in the proposed treatment units. I understand this is currently being determined to some extent in the field, but that perhaps not all the units will be assessed. In order to meet the SQS regarding cumulative effects from past yarding, slash treatment, and fuels treatment, this information may be needed for each unit treated in order to satisfy legal requirements and Regional SQS policy and direction." (Individual, Hamilton, MT - #1598)

Response:

During preparation of the FEIS, analysis of existing condition for soil resources was updated using the Timber Stand Management Record System (TSMRS) database. In addition, a field inventory of soil conditions was conducted in mid-

2001 on a representative segment of proposed tractor harvest units. Inventoried units were selected that had past tractor harvest and likely soil impacts. Many of the other fuel reduction units are prescribed for reforestation and manual fuels treatment only (no mechanized equipment) and have essentially no new soil impact. In the FEIS a new mitigation was added requiring a field review of existing soil conditions to determine site-specific soil mitigations to be completed in conjunction with fuel reduction activities (see Appendix C-Monitoring Plan). The TSMRS information and soil inventory described in the previous paragraph provide a reasonable assessment of existing conditions. Salvage harvest activities proposed in the FEIS are designed to meet R1 Soil Quality Standards. The various proposed mitigations and restoration projects follow the guidance in the R1 standards: “the net result being an activity area that is moving toward a net improvement in soil quality.”

258 The Final EIS should comply with regional soil guidelines.

"The DEIS fails to explicitly address compliance with regional soil guidelines." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

Region 1 Soil Quality Standards have been added to the FEIS text in the Soils section. These standards are included in FSM 2500, R1 Supplement 2500-99-1, effective November 12, 1999, and limit detrimental soil disturbance to 15 percent of an activity area. Regarding implementation and compliance with the regional standard, a clarification letter dated June 14, 2000 reads: Design new activities that do not create detrimental soil conditions on more than 15 percent of an activity area. When operations are planned in areas that do not meet soil quality standards due to prior activities, new activities should be planned to meet current standards. Detrimental conditions remaining from prior activities should be ameliorated as part of the current activities where feasible, with the net result being an activity area that is moving toward a net improvement in soil quality”. Compliance with these standards was addressed through the variety of required mitigations and restoration projects integral to the FEIS for protection of soil quality. For additional information, see Response to Public Comment # 394.

259 The Final EIS should quantitatively address the current and anticipated soil detriment for each cutting unit.

"The DEIS fails to quantitatively address current and anticipated soil detriment for each cutting unit." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

In the FEIS, existing condition of soil resources in proposed salvage harvest areas was determined using the Timber Stand Management Record System (TSMRS) database and a 2001 field inventory. The TSMRS database is a compilation of past management and harvest activities in terms of dates, treatment, treatment methods, and other related information. It was compiled using field records and air photo interpretation, and is considered 85-95% accurate from the 1960’s to present (Cornelisse, Project File, 2001). Based on research in Froehlich et al. (1985) and Clayton (2001), it is reasonable that a majority of soil disturbances that occurred prior to the 1960’s are recovered. During 2001, a soils field inventory program was conducted to provide additional information on existing conditions in harvest units proposed in the FEIS. This inventory is discussed in the FEIS in Chapter 3 – Geology and Soils, and in the response to Comment #251.

261 The Bitterroot National Forest should require the retention of additional coarse woody debris in moderately and severely burned areas.

"The Draft EIS states that the coarse woody debris to be left on site to maintain long-term soil productivity was determined by an interdisciplinary team. I was not on that team so I don't know the content of the discussions. However, I am concerned that not enough consideration was given to the fact that the soils, especially those in VRU 2 lands, have just been burned with a severity probably higher than the historic range. This may have resulted in uncharacteristically higher amounts of combustion as loss of soil particulate and colloidal organic matter, as well coarse organic fragments in the soil. So I believe that even more coarse woody debris should be left on site than that recommended by the Graham et. al. paper. The Graham paper relates to historic conditions, which is probably not the case with our current soil conditions in the moderately and severely burned lands. In VRU 2 lands burned moderate to severe, it seems reasonable to retain 1.5 times the amount of coarse woody debris as recommended by Graham et. al. and the Draft EIS." (Individual, Hamilton, MT - #1598)

Response:

In preparation of the FEIS, much consideration was given to appropriate levels of coarse woody debris (CWD) retention following the fuel reduction treatments. As recognized in the comment, the Graham et al. (1994) paper is a widely accepted guide for CWD retention. CWD retention is important as it relates to long-term productivity, as well as shorter-term erosion control. These characteristics are of greater concern in moderate and high severity burned areas. Consequently, the CWD guidelines in the FEIS are higher than those recommended by Graham. Further, these CWD objectives seek a balance between achieving historic fuel loads, soil productivity, and wildlife habitat. As presented in the FEIS (Table 1-3), CWD objectives are a minimum of 10t/ac for moderate/high severity VRU2 areas. This equates to 1.25 to 2.5 times the range of 4 to 8 t/ac recommended by Graham for VRU2. Similarly, minimum CWD objectives for VRU3 and VRU4 exceed the recommendations of Graham. Also, CWD objectives do not include snags, live snag replacements, and stumps that will increase total tons per acre. CWD retention will exceed the specified minimums. We believe that the proposed CWD objectives are reasonable and obtainable, and meet or exceed applicable recommendations.

263 The Bitterroot National Forest should consider using low impact skidders to protect soil resources during winter ground-based logging.

"On page 2-16, Table 2-5 the mitigation specifies that dispersed skidding is permitted if there is 24 inches or more of settled snow, but the term settled snow is not defined. The problem with this mitigation is that after several passes with conventional skidders dragging logs across a piece of ground, the snow often gets displaced off of the soil through churning of skidders tires and the bull-dozing effect of the logs being dragged. So the soil ends-up with very little to no snow protection during skidding. Prior to skidding, with the 24 inches of insulating snow cover in place, the soil will not be frozen, based on my winter monitoring and that of other Region 1 soils scientists. This means the soil will likely be compacted and/or displaced when the heavy equipment operates on it without adequate snow cover. . . . These concerns and uncertainties of winter ground-based logging I've outlined are what lead me to conclude that conventional skidding equipment is not a good choice, and that other available heavy equipment such as Thiokol skidders are preferable, as I suggested in my previous letter related to project scoping. The draft EIS makes no mention of low impact skidders such as Thiokols for winter skidding. I ask that you give serious consideration to purchasing and using such equipment as mandatory mitigation to help protect the public's soil resource." (Individual, Hamilton, MT - #1598)

Response:

Winter logging has been used to successfully avoid unacceptable soil impacts in Region 1 as well as throughout the United States and Canada. Prescribed winter harvest would not preclude the use of Thiokol skidders. Without the duff layer and insulating woody material, burned soil is likely to freeze readily. These operations will be suspended if soils are not frozen, or adequately covered by snow, or if thaw occurs during operations, in order to keep detrimental effects within those limits allowed by R1 Soil Quality Standards.

394 The Bitterroot National Forest should employ the soil quality standards established in the Northern Region Guide when conducting cumulative effects analyses.

"Regional standards supercede BNF soils quality standards. The Bitterroot Forest Plan, to which this DEIS is tiered, says, '[Forest-wide management standards] are intended to supplement, not replace national and regional policies, standards and guidelines found in Forest Service Manuals and Handbooks and the Northern Regional Guide' (p. II-17). The Northern Rockies' Region One (R-l) soils quality standard (SQS) limits soil disturbance to 15% of a logging unit. R-1 SQS appears to be significantly changed by fiat in a memo, 'Clarification of Soil Quality Standards,' dated June 14, 2000. The 'letter of clarification,' signed for Regional Forester Dale Bosworth and interpretations of that letter made by R-1 soil scientist John Nesser, seem to ignore or marginalize cumulative effects. BNF Ranger Dave Campbell also appears to describe an approach to applying standards that effectively ignores cumulative effects. This approach or 'clarification' is markedly contrary to the understanding of R-1 field soil scientists. The apparent meaning of the 'clarification' would lead to illegal soil damage. It simply cannot be legal under the NFMA to allow unlimited cumulative soils damage as long as it is done in increments of less than 15%. Application of this R-1 soil quality 'standard' presents a threat of illegal damage from the activities proposed in the BNF BAR DEIS, as well as other activities where the 'clarified' R-1 SQS are used. This interpretation makes the meaning of 'standard' functionally senseless. Use of this approach allows cumulative effects to be ignored, which is not legal. I do not think it is proper or legal for Regional Forester Dale Bosworth to substantially change the application of or the functional meaning of the Regional SQS simply at the stroke of a pen, without due process either with the public or within the ranks of his own experts." (Individual, Darby, MT - #1696)

Response:

These comments are based on an incorrect understanding of the R1 Soil Quality Standards and an erroneous interpretation of the June 14, 2000 letter that attempts to clarify those standards. R1 Soil Quality Standards do not limit soil disturbance to 15 percent of a logging unit (activity area); they limit ***detrimental*** soil disturbance to 15 percent of an activity area. Not all soil disturbance is necessarily detrimental.

The idea that the June 14, 2000 clarification letter ignores or marginalizes cumulative effects is incorrect; cumulative effects are not ignored or marginalized. It is interesting to note that, contrary to the commenter's assertion, only one R1 soil scientist interpreted this letter as an intention to ignore cumulative effects; the other soil scientists interpreted the letter correctly (J. Nesser, Regional Soil Scientist, personal correspondence). Cumulative effects are considered and will be addressed in any ground disturbing activities.

395 The Final EIS should address skyline and helicopter yarding in the cumulative effects analysis of soil impacts.

"Dismissal of historic skyline yarding in the cumulative effects analysis of soil impacts (DEIS, p.3-55) is not valid. Skyline yarding causes significant impacts, especially in the post-fire salvage logging setting. The Forest Service report PNW-GTR-486 (2000) states, 'When compared to studies conducted on similar systems in green tree stands, soil disturbance was generally higher for Klock's post-fire study . . . ' (p. 15). The acreage of past treatment areas using skyline yarding appears to be quite significant (project file, Soils-12). Previously used landings, for skyline and all other yarding techniques should be mapped and accounted in the cumulative effects analysis. Landings cause a significant impact to soils. The cumulative soil damage resulting from the many helicopter landings is significant. Helicopter yarding causes impacts to soil. A BNF soil scientist file document for a recent nearby, possibly overlapping, timber sale area says, 'Helicopter yarding may not be acceptable because some soil damage may occur and unit is already beyond standards (from a legal point of view this may not be allowable).' The only thing temporary about temporary roads is their use. Some impacts last for decades. DEIS project file, Soils-7, notes that the most effective decompaction method results in only about 30% recovery. Similar results would apply to helicopter landings." (Individual, Darby, MT - #1696)

Response:

Skyline yarding is estimated to result in 2-5% soil disturbance. Helicopter yarding results in 1-2% estimated soils disturbance, whereas dispersed tractor skidding on bare ground has historically resulted in soil disturbances thought to exceed 30% in some areas.

The project file that the commenter refers to is a GIS generated query used to indicate where, and how much, the proposed units lay within old units where ground-based equipment has been used. The skyline acreage noted in the Project File document is for the new proposal; it is not the past acreage. We were interested in using the TSMRS database to identify those units where past soil disturbance may be most important. Also, it is not unusual for historic logging activities to involve ground-based equipment on steeper ground, where only skyline or helicopter would now be allowed.

Previously used landings and proposed landings are listed in the FEIS, and their effects and implications are discussed. During the FEIS analysis, maps depicting landing locations were prepared and are included in the Project File. Following use, landings will be ripped, seeded, with slash spread for soil restoration. Landing acreage will be included in the design to limit detrimental soil conditions to 15% or less for each activity area. There will be no more than one landing for 30 acres (FSM R1 Supplement 2500-99-1).

Temporary roads are part of the activity area and have been considered in the design layout to limit soil disturbance. We recognize that the soils in the track of temporary roads will no longer be in a natural state. Temporary roads will be entirely rehabilitated, e.g., ripped, seeded, and slash scattered across the surface. These measures should speed the recovery of the disturbed area.

The comment refers to the legality of utilizing any harvest method (e.g. even helicopter) if it will result in additional detrimental soil damage over the 15% allowable per the Soil Quality Standard. New activities adhere to soil quality standards of not adding more detrimental effects to an activity area that has over 15% detrimental soil damage, without applying rehabilitation to move towards a net improvement of soil quality. Harvesting methods protective of soil resources were chosen because of the fragility of burned soils. However, we also recognize that these methods will not add significantly to past impacts. Also refer to response to Public Comment #394.

397 The Bitterroot National Forest should address the Inter-Columbia Basin Ecosystem Management Plan assessments regarding soil compaction and productivity in determining post-burn management activities.

"The USFS's own ICBEMP assessments clearly indicate that soil compaction and soil productivity issues are a serious concern within the analysis area (USFS and USBLM, 1997a), although the DEIS completely ignores these assessments and their substance. USFS and USBLM (1997a) notes that soil compaction is a major issue throughout the ICBEMP area because of the longevity of the impact, the significant amount of compacted soil already existing in managed federal lands in the ICBEMP analysis area, the likely future increases in soil disturbance, and the generally thin soils within the ICBEMP area. Soil compaction persists at least 50-80 years, IF THERE IS ADEQUATE ORGANIC MATTER INPUT and freeze thaw cycles (USFS and USBLM, 1997a; emphasis is ours). In a similar vein, Beschta et al. (1995) stated: 'Soil and soil productivity are irreplaceable in human timescales; therefore, post-burn management activities that accelerate erosion or create soil compaction must be prohibited.'" (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Soil compaction and soil productivity issues are a serious concern within the ICBEMP area in general as well as within the Bitterroot National Forest. Information in the ICBEMP assessment (1997), as well as information from various research papers and input from soil scientists throughout the Northern Region was used to write the R1 Soil Quality Standards contained in FSM 2500, R1 Supplement No. 2500-99-1, effective November 12, 1999. These soil quality standards are used on all soil disturbing projects to minimize detrimental effects and to ensure that soil restoration occurs where it is needed and practical. These standards are designed to ensure that long term soil productivity and quality do not deteriorate.

398 The Final EIS should disclose estimates of soil compaction and productivity losses resulting from the proposed management activities.

"Soil compaction reduces infiltration and porosity. This contributes to elevated peakflows, increased erosion and sediment delivery, reduced soil productivity, and reduced soil moisture storage for plant growth. These are all obvious concerns within the project area. Yet, the DEIS never provides any estimate of the cumulative soil compaction within project area caused by logging, grazing, firelines, landings, and roads. This is a significant defect that must be corrected by revising the DEIS to include an estimate of the area within the project area and the watershed scale that has been significantly compacted by these activities. The DEIS must use this information to disclose the likely existing effects on peakflows, erosion and sediment delivery, and reduced soil productivity, and resulting effects on water quality, noxious weeds, and WCT and BT habitats and populations, using available scientific information." (Preservation/Conservation Organization, Tucson, AZ - #1695)

"The DEIS . . . fails to provide any estimate of the existing area with soil productivity losses and degree of soil productivity losses within these areas. The DEIS also fails to adequately disclose that elevated topsoil erosion, loss of CWD and organic matter, and compaction all cumulatively reduce soil productivity significantly (USFS and USBLM, 1997a; b). The DEIS also fails to note that existing soil productivity losses caused by topsoil loss are essentially permanent (Beschta et al., 1995; USFS and USBLM, 1997a). Vegetation removal and logging innately reduce soil productivity in a persistent fashion by reducing CWD and organic matter (USFS and USBLM, 1997a; b). Therefore, it is clear that firelines, landings, grazing, roads, and logging have reduced soil productivity significantly and persistently over the project area. However, the DEIS fails to disclose the extent and intensity of soil productivity loss caused by the cumulative impact of these activities. This must be corrected by revising the DEIS to include a disclosure of the extent and intensity of soil productivity losses caused by all activities causing compaction, accelerated topsoil loss, and/or reductions in CWD and organic matter." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

As stated in the FEIS, peak flows, erosion, sediment delivery, and reduced soil productivity are issues of concern on the Bitterroot National Forest (BNF) and within the project area. Existing condition and cumulative effects to soils were analyzed in the FEIS based on the Timber Stand Management Record System (TSMRS) database, a soils inventory in proposed harvest units, and other available information. With respect to peak flows and sedimentation referenced in the comment, additional modeling was conducted to supplement the DEIS analysis of watershed effects. Two models, WEPP and Estimated Clearcut Area (ECA) were run to provide estimates of project effects on sedimentation and peakflows, respectively. Please refer to Chapter 3 – Watershed in the FEIS for information on modeling parameters and

results. These models incorporate input parameters related to soil, roads, and vegetation condition. In both the DEIS and FEIS, harvest systems that are easy on the land are proposed with multiple mitigations to protect soil resources and retain productivity. The FEIS includes analysis of effects from grazing and fire suppression. Proposed fuel reduction activities are designed to meet Region 1 Soil Quality Standards and provide added mitigations to ameliorate past soil impacts where feasible. See response to Comment # 397 for additional information.

401 The Bitterroot National Forest should evaluate studies that conclude the cumulative effects of active management, compared to fire, will have greater impacts on soils.

"The DEIS . . . distorts existing soil and soil productivity conditions by failing to use the available information which clearly indicates that the cumulative effects of management activities have a greater effect on soils than fires. Although undisclosed in the DEIS, USFS and USBLM (1997b) clearly states that compaction and erosion have greater effects on ecosystem functions than bare soils. Fire may reduce soil productivity, but it typically does not reduce it as much as from soil compaction and whole tree removal. USFS and USBLM (1997b) states: 'Because of the mosaic pattern that wildfire produces, and the residual wood that is left on site . . . wildfire usually has fewer implications for loss of soil productivity and function than disturbances which remove organic matter and decrease bulk density as well.' Although fire can affect soil productivity and hydrologic properties, the effects of compaction on these soil properties are usually more severe and more persistent than fire impacts (USFS and USBLM, 1997b). The DEIS must be revised to clearly disclose this information." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

We are aware of the cumulative effects of active management, as well as fire, on soil resources. Effects from both management activities and wildfire vary widely, depending on site conditions, weather, mitigation measures employed, and a variety of other variables. Consequently, management activities proposed in the FEIS include numerous soil mitigation measures and are designed to meet R1 Soil Quality Standards to limit detrimental soil impacts and maintain long-term productivity. In the FEIS, the impacts of soil movement caused by this past summers rain events in burned areas are disclosed. Also see response to Comment # 397.

403 The Final EIS should disclose the total area of soil productivity loss caused by the cumulative effects of the proposed management activities.

"The DEIS must . . . disclose the total area of soil productivity loss caused by cumulative effects of compaction, soil displacement, wood and vegetation removal, and elevated soil erosion under each alternative over the project area and affected watersheds. This information must also be used to assess the degree of compliance among the alternatives with BNF LRMP standards for soil productivity and NFMA requirements for soil protection." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Chapter 3 – Geology and Soils and cumulative effects analysis was expanded in the FEIS and provides a reasonable assessment of existing conditions and cumulative effects of proposed actions. The proposed fuel reduction activities, soil mitigations, and restoration projects are in compliance with the Forest Plan (LRMP) and Region 1 Soil Quality Standards, which comply with NFMA. Please see Response to Comment #'s 401, 398, and 397 for additional discussion.

407 The Final EIS should include compaction testing data for all proposed logging units.

"Analysis of existing soil conditions should include cumulative impacts from past activities, including firelines, roads, logging, landings and grazing, as well as from effects, such as hydrophobic and severely burned soils, resulting from the 2000 fires. Thorough grids testing soil conditions, including compaction testing should be done across every unit where logging is proposed. Given the critical need for thoroughness and accuracy, the most experienced soil scientist on the BNF should do the soil testing traverses. There is a dearth of information about the existing conditions of soil within the project area. However, it is evident from recent soil testing for other overlapping, intermingled and nearby timber sale areas and grazing allotments that many areas of the BNF suffer soil damage from past logging, grazing and road building far in excess of Regional standards. Results from these studies should be included in the BAR EIS in order to assess cumulative effects." (Individual, Darby, MT - #1696)

Response:

The soils analysis in the FEIS has been expanded (see Chapter 3 – Geology and Soils) to more fully address existing conditions and effects to soil resources. With respect to "grid testing" referenced in the comment, a field inventory of

soils in proposed fuel reduction units was conducted using a transect-based methodology. . Also see Response to Public Comment #'s 401, 398, and 397.

The Monitoring Plan specifies that prior to activities, existing soil conditions will be inspected and evaluated for past effects and rehabilitation needs identified for inclusion in unit prescriptions. For additional information refer to Appendix C.

442 The Bitterroot National Forest should study the potential benefits of seeding grass and cereal grains to stabilize exposed soils.

"The disasters that have occurred this summer with relatively limited high intensity summer rains possibly could have been reduced if an aggressive grass seeding program had been completed in the fall of 2000. I again urge you to reconsider your decision 'to not plant grass throughout the severely burned area.' Grass with a cover crop of cereal rye, oats, wheat, etc. will give a very quick crop, 2-3 tons per acre of organic matter on the soil surface. It still is not too late to seed this fall. You have seen what occurs without the planting of grass on steep slopes, treat at least 10-20,000 acres with grass seed and a cover crop to learn what happens with treatment. Millions of dollars are being spent. Spend at least a few thousand to study what happens when areas are stabilized with grass and a cereal grain for a cover crop" (Individual, Darby, MT - #1893)

Response:

As discussed in Chapter 2 of the FEIS, grass seeding was initially considered but not given detailed study primarily because after the first year, grass seeding would only inhibit the recovery of native species that provide a stronger root system for stabilizing slopes. Concerning post-fire treatment effectiveness, Robichaud et al. (2000) reported that aerial seeding, the most frequently used BAER treatment, was rated equally across the spectrum from "excellent" to "poor." . Following last falls fires, the Bitterroot NF organized 6 BAER Teams composed of resource specialists in the areas of soils, hydrology, revegetation, engineering and other related disciplines. One of the key issues considered by the teams was whether or not to conduct widespread grass seeding. Although they did recommend seeding firelines, none of these teams recommended extensive grass seeding. They did recommend a variety of other site-specific treatments which led to completion of: 1) 4384 acres of log erosion barriers/contour felling, 2) 269 acres of straw wattles, 3) 79 acres of lop&scatter, 4) 200 acres of aerial seeding, 5) 54 acres broadcast seeding, 6) 316 enlarged culverts, 7) 42 removed culverts, 8) 51 drain dips, 9) installed a flood warning system, and 10) completed a number of other erosion control projects. Although natural revegetation has been encouraging in many areas so far, there are still some areas where vegetation remains sparse or non-existent. Because of this, the Forest convened another BAER Team in August 2001, to again consider additional emergency treatments. As a result, the Team identified an area in the Sleeping Child drainage with little revegetation that will be seeded this fall.

The localized effectiveness of large-scale aerial seeding on reducing or preventing flood events is highly uncertain. Data from the USGS rain gauge in Upper Laird Creek for the mid-July storms indicate short-term recurrence intervals ranging from 25 to 50 year storms, indicative of high intensity storms (USGS, Project File, 2001). Areas that were severely burned do not have the ability to handle this amount of water. The lack of a duff layer, reduced organic matter content, and at least partial hydrophobic soil conditions, sharply reduces infiltration. Instead of soaking into the soil, the water stayed on the surface, picked up speed on slopes, and caused significant erosion leading to the debris flows observed downslope. Storms of this intensity would have had virtually the same effect regardless of the amount of grass seeding.

Other issues considered in the decision not to conduct widespread aerial seeding were introduction of weed seed, sensitive plant species, and past experience. Bulk grass seed commonly contains 1-2% or more of weed seed. Grass seeding would also be very undesirable in areas with sensitive plant species. Negative effects were observed on a 1998 post-fire seeding project on the Bitterroot NF, as well as mixed results reported by the state soil scientist for post-fire seeding. These various issues led us to believe that a large-scale seeding effort would have uncertain, and probably a number of undesirable results. Although the comment is well intentioned, long-term effects were given priority and no further consideration was given to widespread grass seeding.

484 The Final EIS should clearly indicate if any areas proposed for salvage harvest occur on landtypes with high risk of sediment production.

"The discussion of soils in Chapter 3 does not clearly indicate if any of the salvage harvest areas or areas for proposed temporary road construction occur on landtypes with high risk of sediment production (e.g., based on soil erodibility,

slope, and potential for transport of sediments to surface waters). It would be helpful if such information were more clearly identified in the FEIS." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

Landtype descriptions have been developed and mapped in the Bitterroot National Forest Soil Survey (in progress). Landtyping has been largely completed on all burned areas. During refinement of the effects analysis to complete the FEIS, harvest activities were eliminated on landtypes with landslide hazard potential in all alternatives. In addition, between Draft and Final EIS, skyline units on landtypes with a high erosion hazard were specified for skyline logging over snow in Alternatives E and F. The FEIS harvest proposals were eliminated on landtypes ranked with landslide hazard potential in Alternatives B and D. In addition, for landtypes ranked as high erosion hazard, more protective harvest methods, primarily skyline over snow, were prescribed in Alternatives E and F.

Watersheds and Water Resources

67 The Final EIS should address the cumulative increase in water yield as a result of fire and intermediate harvesting.

"On page 13 of the DEIS in Key Issue: Effects on Soils and Watersheds, the statement that 'Water yield could be increased in drainages where intermediate harvest occurs' is correct. However this aspect should reflect the increase in water yield caused by fire and that intermediate harvest may add another increment of increase. In any case it has been my experience that the proper application of forestry and riparian zone best management practices will ameliorate most problems with the possible exception of channel scour related to increases in the stream discharge regimen, particularly in channels in less than good condition." (Individual, Hamilton, MT - # 144)

Response:

Estimation of peak flows increases is included in the Post-Fire Assessment, and updated with more detail in the FEIS. Post-fire existing conditions and all facets of the proposed alternatives are considered in the FEIS analysis, refer to the Watershed report in Chapter 3.

85 The Bitterroot National Forest should incorporate the 2000 303(d) list of threatened and impaired waterbodies into the effects analysis of the Final EIS.

"We are dismayed to see reference to the 1996 303(d) report in the effects analysis (Chapter 3). This list of threatened and impaired waterbodies has been superseded by the 1998 and now 2000 303(d) lists. The 1996 list contains some waterbodies, which were listed as threatened or impaired without sufficient credible data to warrant their listing. Indeed, a legislatively-required review of the scientific data conducted by MTDEQ during 1997-2000 revealed that some 5% of these waterbodies that were listed as threatened or impaired in the 1996 list were in fact fully supporting their beneficial uses. We suggest that your final EIS refers to those waterbodies that are listed as threatened or impaired in the 2000 303(d) list and includes a discussion paragraph to the effect of the above facts and the misinformation contained in the DEIS due to the references to the out-of-date 1996 303 (d) list." (Wood Products Industry/Association, Kalispell, MT - #21)

Response:

At the time the DEIS was being written, the 2000 list had yet to be approved for use in the State of Montana. A court order was in effect compelling the State to complete TMDL's (water quality standards and restoration plans) for all streams on the 1996 list, and the Forest was required by this court order to consider the 1996 list for planning purposes. Since publication of the DEIS, the 2000 list has been approved and is also referenced in the FEIS. MT DEQ has requested that the BNF display WQLS in the analysis area from both lists. Deer, Martin, Moose, Meadow, and Reimel Creeks were dropped from the 2000 list due to lack of supporting credible data, but are displayed here to accommodate the current situation.

110 The Bitterroot National Forest should consider the effects of logging in French Basin on Society for Conservation Biology stream monitoring in the area.

"We plan to conduct stream surveys on 3 sites in the Sula State Forest and 3 sites on the DNRC-BNF boundary. We hope to sample Hart Creek, the North Fork of Cameron Creek, and Lyman Creek. In each stream, the downstream site is in DNRC land and the upstream site is on the DNRC-BNF boundary. The second objective relies on reference conditions (i.e., unlogged conditions) on BNF land within the headwaters of the French Basin (i.e., Hart Creek, Cameron Creek, and Lyman Creek). I believe that the Draft EIS's proposed action includes logging in these headwater areas. . . . This logging would invalidate our experimental design for objective #2." (Individual, Missoula, MT - #660)

Response:

The range of alternatives and activities proposed and analyzed allows the Deciding Officer the option to protect the validity of these surveys. Your concern is noted and will be considered in the decision.

113 The Bitterroot National Forest should reassess the cumulative impacts of the proposed management actions on fisheries and watersheds.

"The DEIS acknowledges that cumulative impacts to the fisheries and watersheds have occurred or may occur from past, present and future actions, but then presumes they will somehow mostly be short-term and overall conditions should be greatly improved in the near future. This appears somewhat questionable given the historical record. Between the fires,

past logging and roading, the current proposed cutting, existing road systems, proposed road work, ORVs, grazing, herbicide spraying, etc., it appears there is risk of additional significant adverse impacts on fisheries and watersheds." (Preservation/Conservation Organization, Hamilton, MT - #603)

Response:

Activities that have occurred prior to current times (fires of 2000 and earlier, past OHV use, grazing, road construction and maintenance, past harvest, etc.) are what have led to the existing conditions as described in the FEIS. Sediment and water yields are modeled (estimated) and the additive effect upon current conditions is discussed in the cumulative effects section for each geographic area. Watershed improvements will be beneficial in reducing future cumulative effects related to sediment. FEIS Chapter 2's "Management Requirements and Mitigation Measures" details extensive conservation measures designed to minimize further additions to cumulative effects.

115 The Bitterroot National Forest should minimize road obliteration activities because of short- and long-term impacts on watersheds.

"There is very little if any long term watershed benefit from all the soil disturbance of pulling culverts, ripping road surfaces, and recontouring, especially if the road is on upland slopes. In fact the short term adverse impact will be significant, and the long term effects will also be adverse if lack of access to the land allows for buildup of continuous fuels and a reburn occurs." (Multiple Use/Land Rights Organization, Columbia Falls, MT - #749)

Response:

In Alternatives B, C, D, E, F and G, roads proposed for treatment (improvements as well as decommissioning), allow for adequate continued access into the Bitterroot National Forest for fuel treatments as well as other forest management activities. Alternative A would obliterate no roads.

Chapter 3's watershed report includes a discussion of benefits to watershed health attained by decommissioning roads. Short and long term effects are addressed in Watershed Effects Analysis.

210 The Bitterroot National Forest should compare short- and long-term effects of fuel reduction and watershed restoration activities when setting management priorities.

"The DEIS recognizes that fuel reduction activities will have short-term impacts on soil and watersheds. However, the proposed action, in combination with mitigation measures, addresses these risks. Furthermore, it is important to note that the short-term risks of management are outweighed by the long-term benefits of action. For example, watershed restoration activities such as culvert removal, road re-contouring, and reshaping stream banks may pose higher short-term risks to soils and watersheds than fuel reduction activities. So, before any changes are made to fuel reduction activities on this basis, the Forest Service must first consider the impact of other proposed activities." (Wood Products Industry/Association, Orofino, ID - #1072)

Response:

The watershed analysis for this project suggests long-term benefits of watershed restoration projects outweigh the short-term risks. Positive and negative effects are disclosed for each resource area in Chapter 3. Various combinations of watershed improvements and fuel reduction activities are offered the deciding officer to comply with NEPA and to supply a number of ways to respond to various issues.

244 The Final EIS should include an analysis of the impacts of chemical fire retardants on aquatic resources.

"The environmental impacts of firefighting during the fires of 2000 must be analyzed and disclosed as part of Chapter Three (affected environment and environmental consequences). Where appropriate, please provide maps disclosing the actual locations of firefighting actions and their effects. These firefighting impacts include, but are not limited to: Water Pollution From Chemical Fire Retardants - What is the total amount of chemical retardants dumped on the soil and in the streams during the firefighting efforts, measured in tons of dry chemical agents and gallons of liquid chemical agents? What are the specific locations of retardants drops? What are the brand names and chemical names of the retardants dumped on the ground during the firefighting efforts? What were the effects on water chemistry from retardant dumping? What were the effects on aquatic species from retardant dumping?" (Preservation/Conservation Organization, Eugene, OR - #1592)

Response:

Response: An analysis of the effects of retardant use has been added to the cumulative effects analysis for Fish and Watershed.

245 The Final EIS should address the ecological and economic impacts of burned vegetation bordering decommissioned roads on watersheds.

"Other ongoing NEPA analyses in the Northern Region note that 'decommissioned' roads have impacts on the watershed if the vegetation around them burns. The DEIS must assess the ecological and economic impacts of such a situation, where the inevitable wildland fires will eventually make 'decommissioned' roads a liability that will need quick intervention. The Forest Plan does not deal with this issue." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

Recent experience with decommissioned roads and their susceptibility to post-fire runoff events has been considered during the design phase of the watershed treatments. Implementation of the proposed treatments will include features to minimize failures of road storage, decommissioning, and maintenance projects.

246 The Final EIS should comply with the Bitterroot National Forest Plan water, air, and soil standard h(2).

"The DEIS does not adequately demonstrate compliance with Forest Plan water, air, and soil standard h(2) relating to the maximum amounts of certain habitat and land types that can be hydrologically unrecovered." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

The discussions of compliance with the Forest Plan has been reviewed and strengthened where needed in the FEIS.

Analysis shows that all alternatives are consistent with this standard at the appropriate scale.

247 The Bitterroot National Forest should set the minimum acceptable bid price for watershed improvements.

"The DEIS is confusing in how much of its analysis of benefits of watershed improvements are dependent upon uncertain sources of funding. Why won't the FS set the minimum acceptable bid price so that these restoration actions are guaranteed? Isn't this called a 'recovery' project? Shouldn't recovery of watersheds be the highest priority?" (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

The Forest Service has several available pathways to fund watershed improvements. These include using the timber sale process to help accomplish needed changes (decommissioning, storage, and maintenance) in the road system. Funding an extensive watershed improvement project without this type of approach is more problematic, and lessens the chance for prompt completion. The BNF anticipates the use of stewardship contracts in this project to provide reasonable assurance that watershed improvements can be completed. Stewardship contracting is discussed in Chapter 3's Economics report.

249 The Final EIS should include quantitative documentation that verifies the construction of temporary roads has little or no impact on stream drainages.

"The DEIS's assumption that the combination of the planned watershed restoration, in combination with the logging and additional road construction, will result in a net benefit to the watersheds also qualifies for quantitative effectiveness monitoring. The construction of temporary roads that will be obliterated after use is relatively new. Effectiveness monitoring should verify the fact that the construction of temporary roads will have little to no impact, as claimed in the DEIS, to the affected stream drainages. Although the BNF has carried out many restoration/timber sales in the past, there is no reference in the DEIS to quantitative documentation as to the effectiveness that would support the DEIS's assumptions." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

Many studies show the water resource benefits of eliminating or limiting road construction (Horel, 1996; Luce, 1997). By using temporary roads to harvest timber, there is a short-term sediment contribution during construction, use and decommissioning phases, but a reduced risk of a long-term chronic sediment source. Additional sediment modeling completed for the FEIS includes this source. Best Management Practices (BMPs) use during these improvement projects and their effectiveness are discussed in Chapter 3's Watershed report, and effectiveness monitoring is proposed in the watershed monitoring plan (Appendix C).

339 The Final EIS should address potential watershed disturbances as a result of the expected Equivalent Clearcut Area levels and road densities within each alternative.

"The DEIS fails to describe the alternatives' effects on watershed disturbance levels. The DEIS does not disclose the direct and cumulative disturbance that will be caused by the alternatives within the project area or at the watershed scale. Although the DEIS discloses existing ECA levels and road density, it does not disclose estimated road density and ECA levels under each alternative. Further, both of these indices of disturbance are currently misleading because they are not provided for all land ownerships and they do not include uninventoried roads and firelines. The DEIS must be revised to disclose expected ECA and road density at the watershed scale under each alternative for all land ownerships, including uninventoried roads." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Equivalent clearcut area (ECA) and road miles are used in the WEPP sediment model to provide cumulative effects comparison between alternatives and the existing condition for each watershed. ECA is used to estimate flow for all alternatives. To provide a conservative estimate, all burned areas on private land were considered as logged areas. All private, state, and federal roads on USGS 1:24,000 maps are included in the GIS layers used for modeling road effects, covering all jurisdictions. Roads developed on private land since the last map updates (approximately 1990) are not included. Watershed analysis also used the most recent version of the BNF roads database available.

Please see discussion added to the FEIS Chapter 3 Watershed Section for further details.

340 The Final EIS should disclose the duration, intensity, and cumulative downstream effects of sediment delivery within each alternative.

"The DEIS . . . fails to examine the effects of cumulative increases in sediment delivery under the alternatives and effects on turbidity and water quality standards. The DEIS contains no attempt to relate cumulative sediment delivery under the alternatives to turbidity, suspended sediment, and effects on downstream resources, including domestic water supply. The DEIS also fails to take a hard look at sediment delivery effects and in-stream compliance with state water quality standards under the alternatives. The DEIS also fails to examine and disclose the alternatives' likely effects on reservoir sedimentation. These flaws must be corrected by revising the DEIS to disclose the duration, intensity and extent of these likely impacts within the project area and at the watershed scale." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Additional analysis (sediment modeling) and discussion has been added in the FEIS in response to this comment. Currently no municipal water supply points exist on any analysis area streams. Domestic supplies would not be affected by sediment from proposed activities due to extensive mitigation measures (Table 2-5) and low-impact logging methods. As per MTDEQ guidance, soil and watershed mitigation has strictly controlled activities in areas sensitive to erosion (e.g. RHCAs, steep slopes, sensitive landtypes) to prevent water quality violations related to sediment and turbidity. Sediment modeling estimates only very small percentage changes from the existing (post-fire) condition and suggests downstream effects of sediment will be minimal. Noxon Reservoir is the closest downstream reservoir (approx. 100 miles), and is not likely to be threatened, due to the small increase in sediment, the reservoir's distance from the site, and the small portion of its contributing watershed that the project area represents.

341 The Final EIS should disclose the contributions of existing conditions to peakflows and flood damage.

"The DEIS does not adequately disclose the effect of existing conditions on peakflows and affected downstream resources. Peakflows are plainly a major environmental concern within the project area, as recent flooding and flood damage attests. Yet, the DEIS fails to adequately discuss and disclose the effect of existing conditions on peakflows and

flooding. Soil compaction and soil loss both contribute to elevated peakflows via a number of mechanisms. Both impacts reduce infiltration rates and the ability of soil to store moisture (USFS and USBLM, 1997a; Rhodes and Purser, 1998). All activities that compact soils, elevate soil erosion, and/or remove vegetation, contribute to increasing peakflows and downstream damage from flooding. Such activities include firelines, grazing, roads, landings, and logging. Soil compaction and loss are cumulative. Yet, the DEIS fails to even take a hard look at how these activities have cumulatively increased peakflows and flood damage." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Please see Runoff and Sediment Prediction Tables A-1, A-2, B-1, and B-2 (Bitterroot Fires 2000; An Assessment of Post-fire Conditions with Recovery Recommendations, ("Post-Fire Assessment" USDA 2000), for runoff model results. Section 4.2 in the Post-fire Assessment discusses peakflows, existing conditions, fire effects and related topics (pp 4.2.1, 4.2.2, 4.2.9, 4.2.16 – 4.2.18, 4.2.29). These discussions pertain to both USFS and private lands within the affected 6th level watersheds. The FEIS discusses existing condition and effects of alternatives, and cumulative effects for each Geographic Area in both watershed and fisheries sections.

342 The Final EIS should evaluate the long-term impacts on stream channels resulting from short-term increases in sediment delivery levels.

"The DEIS also fails to disclose that short-term increases in sediment delivery have persistent long-term effects on stream channels. Increased sediment delivery increases fine sediment levels in channel substrate in an immediate and persistent fashion. This relationship is, unfortunately, not elastic. Subsequent decreases in sediment delivery often do not result in rapid improvement of substrate conditions, especially in streams with high sediment delivery. Although this aspect of sediment delivery effects on substrate conditions has been well documented in field and laboratory settings, the DEIS incorrectly conveys the opposite impression. The DEIS must be revised to correctly disclose the persistence of adverse substrate effects from short-term increases in sediment delivery and the limited benefits of longer term sediment delivery reductions for substrate conditions." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

The FEIS provides lengthy discussion and reference on road and harvest effects to water resources in Chapter 3 – Watershed section. Unless watershed improvement projects are implemented, chronic sediment production from these sources will remain at their current levels and no improvements will be realized over the long or short term. FEIS Chapter 2's "Management Requirements and Mitigation Measures" details extensive conservation measures designed to minimize further sediment production from proposed activities, including watershed improvements. Forest Plan direction is to actively reduce sediment from existing roads, and to do otherwise is inconsistent both with the Plan and good land management. US Fish & Wildlife Service and the EPA both support the tradeoff of a short-term sediment pulse for the benefit of long-term sediment reductions.

346 The Final EIS should provide quantified data on existing sediment delivery levels from management-induced sources.

"The DEIS's arbitrary treatment of existing sediment delivery from various sources as either 'measurable' or 'immeasurable' also precludes the rational assessment and disclosure of the current cumulative effects of management activities on sediment delivery. Even if these misleading assessments are taken at face value, addition and logic dictate that at some point a number of immeasurable sediment inputs must equate to a measurable cumulative input of sediment. However, the binary and qualitative characterizations of sediment delivery magnitudes fully subvert such mandatory cumulative assessments, because it is not possible to employ simple arithmetic on undefined qualitative assessments. For these reasons, the DEIS's qualitative and unsubstantiated characterization of sediment delivery from existing sources actively segments the analysis of sediment delivery within the project area and the affected watersheds. Therefore, the DEIS's approach to sediment delivery is in direct conflict with NEPA's mandates that the cumulative effects of past and present activities and conditions must be analyzed and disclosed. This fatal flaw must be corrected by quantifying existing sediment delivery from all management-induced sources at the watershed scale." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Please see additional sediment and flow modeling results for post-fire conditions in the FEIS and project file. The model used takes into account both hillslope (fire and vegetative condition) and road-related sediment contributions to

provide total sediment figures for all alternatives, including no-action. Both existing and proposed sediment sources are considered. Model results are intended to be used for comparison purposes and are not meant to predict absolute values.

347 The Bitterroot National Forest should address the increased risk to property and human safety resulting from potential large-scale flooding.

"Equally frightening is the increased risk that will be placed on not only people's property but also their safety. By salvage logging you will expose the people to an increased probability of large-scale flooding in the future. This is unacceptable that the policies of the Forest Service will place people in danger. Fire suppression for the past century has already placed us in the path of unnaturally large and intense fires. The Forest Service has already sacrificed the safety of the people where fire is concerned to cater to timber production and corporate interests. It is not right for the Forest Service to provide yet another problem in the form of increased flooding." (Individual, Missoula, MT - #1688)

Response:

Substantial water yield increases can be created only by the removal of green trees. The removal of burned dead and dying trees has very little, if any, effect on water yield because their transpiration and interception capability has already been lost. Since the Burned Area Restoration project focuses almost entirely on removing burned dead and dying trees, water yield increases will be minimal. Water yield increases from proposed salvage activities have been estimated and considered in the FEIS and include effects from all proposed harvest.

349 The Final EIS should disclose how Alternatives B, D, and E will impact sediment delivery to riparian areas.

"The DEIS does not disclose that alternatives B, D, and E will cause persistent elevations in sediment delivery by reducing the ability of riparian areas to detain and arrest sediment delivery from upslope sediment sources (USFS et al., 1993; Rhodes et al., 1994; Erman et al., 1996). The widths of INFISH RHCAs on perennial non-fish-bearing and non-perennial streams are too narrow to provide natural levels of sediment prophylaxis. The DEIS must be revised to disclose this information." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Sediment modeling was included in the FEIS for all action alternatives. INFISH buffers have been increased beyond the standard values in Alternatives E, F and G to offer increased protection and address this issue. The FEIS provides appropriate and extensive resource mitigation measures in Chapter 2 to address this issue.

353 The Final EIS should disclose the cumulative effects of existing conditions within Water Quality Limited Streams.

"The DEIS does not take a hard look at cumulative effects on Water Quality Limited (WQL) Streams and compliance with the CWA, including anti-degradation provisions. Due to the numerous and severe flaws in the DEIS's analysis of the direct and cumulative effects of existing conditions and the alternatives on water quality and aquatic resources, the DEIS does not include an adequate analysis of water quality impacts. The DEIS should be revised to include a reasonable disclosure of existing cumulative effects on water quality and their relationship to conditions in WQL segments." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Water resource and fisheries existing conditions and effects of alternatives are discussed in Chapter 3 in the FEIS. The FEIS also references the water resource existing condition detailed in the post fire assessment (USDA 2000). This assessment details watershed integrity and water quality, including discussion of the Clean Water Act section 303(d) implications for each watershed. Listing of a stream on the 303(d) list requires supporting credible scientific data that the stream is not meeting its pertinent beneficial uses. This situation is, by definition, inconsistent with the anti-degradation standard of the CWA. MTDEQ has offered comments on project design and regulations in WQL streams.

Additional analysis was also undertaken for the FEIS to illustrate potential sediment effects of alternatives in the 2000 303(d) list (water quality limited) streams.

356 The Final EIS should comply with water quality standards and the anti-degradation provision of the Clean Water Act.

"The DEIS must . . . analyze and disclose existing compliance with water quality standards and the anti-degradation provision of the CWA." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

The FEIS addresses this in the Chapter 3 Watershed report, referencing the water resource existing condition detailed in the post fire assessment (USDA 2000). This assessment details watershed integrity and water quality, including discussion of the Clean Water Act section 303(d) implications for each watershed. Listing of a stream on the 303(d) list requires supporting credible scientific data that the stream has been degraded and is not meeting its pertinent beneficial uses. A list of water-quality-limited streams and sediment predictions for these watersheds, by alternative can be found in Chapter 3, Watershed.

357 The Bitterroot National Forest should reassess existing watershed conditions impacted by recent flooding events.

"Mother Nature has provided an audit of the BNF's computer modeling assessment of existing watershed conditions in the project area. The flood damage that occurred on much of the project area from July 15 to 22 (and subsequently), 2001 appears to be far more serious and widespread than projections estimated in the DEIS and Bitterroot Fires 2000 assessments. Reassessment of the situation is in order because of the dramatically changed circumstances. Given the level of error inherent in any projected estimates of existing instability and hazards, activities should be designed to err on the side of caution. It is not possible to determine existing conditions from information in the DEIS." (Individual, Darby, MT - #1696)

"The aquatic effects of recent storms and the manifold deficiencies in the DEIS require that a DSEIS be prepared. It is well documented that storms this summer triggered flooding and land sliding in watersheds degraded by logging and roads in the project area. This has significantly affected habitats for native trout and water quality. These impacts have rendered much of the DEIS's discussions of habitat conditions obsolete. Due to these changed conditions, the BNF must re-survey habitat conditions and use this data to prepare a DSEIS. A DSEIS must also be prepared to adequately correct the many significant flaws in the DEIS." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Flood events from July 2001 were added to the existing condition and cumulative effects in the FEIS. Flood damage and mudslides occurred to some extent in almost all burned drainages, which includes both logged (e.g. Rye Creek) and un-logged (e.g. Blue Joint Creek) areas. Overflights in July 2001 indicate that occurrence is not correlated with roads and logging, but more with burn severity and extent. The FEIS also references the water resource existing condition discussion in the post fire assessment (USDA 2000). This assessment details watershed integrity and water quality (including discussion of the Clean Water Act section 303(d) implications) for each watershed, along with potential effects of floods and landslides.

362 The Final EIS should evaluate the impacts of helicopter logging on sediment delivery levels.

"The DEIS also failed to disclose that helicopter logging with riparian tree retention causes significant and persistent increases in sediment delivery. Megahan (1987) found that sediment delivery from helicopter logging and prescribed burning in the Idaho batholith increased sediment delivery by more than 100% in a watershed where 75' buffers on streams were provided. Despite the buffers, the statistically significant increases in sediment delivery persisted for more than 9 years. The DEIS must disclose this information which clearly indicates that helicopter logging will cause significant and persistent increases in sediment delivery." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Additional discussion has been added to the FEIS on helicopter logging effects.

363 The Final EIS should evaluate the impacts on sediment delivery levels resulting from logging activities within a tree height of streambeds.

"The DEIS . . . fails to disclose that logging within a tree height of streams will also increase downstream sediment transport by reducing LWD levels in headwater streams. LWD in headwater streams provides vital sediment retention. The recent debris flows in logged and roaded areas within the project area in response to the July 2001 storms underscore the importance of sediment retention in headwater streams. The DEIS must be revised to disclose this information." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Large woody debris retention is accomplished in all action alternatives via INFISH conservation measures, providing sediment retention and habitat elements similar to untreated watersheds. INFISH standards apply to all streams, including headwaters streams.

364 The Final EIS should disclose the number of existing stream crossings within the project area and on a watershed scale.

"The DEIS fails to disclose the number of existing stream crossings within the project area and by watershed. This is a critical consideration, because stream crossings significantly disrupt aquatic resources in several ways and greatly elevate sedimentation and peakflows. This disclosure is critical because it provides an essential context for assessing the significance of various road treatments under the alternatives (e.g. the fraction of road crossings that will be treated). Such analysis and disclosure is tractable. Other USFS EISs have provided estimates of the number of existing stream crossings over far larger analysis areas than the BAR analysis area (USFS, 1999; 2000a). The DEIS must be revised to disclose total stream crossings within the project area and on a watershed basis. This disclosure must include uninventoried roads." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

This has been added to the FEIS, Chapter 3's Watershed report.

372 The Final EIS should disclose the duration and magnitude of anticipated sediment delivery caused by increased traffic on forest roads.

"The DEIS . . . fails to disclose that increased traffic under the several alternatives will significantly increase sediment delivery. Several of the alternatives will greatly increase traffic on roads, which will increase sediment delivery. The extent, intensity, and longevity of this effect vary considerably among the alternatives. However, the DEIS fails to adequately differentiate among the alternatives with respect to increased sedimentation from increased traffic. These defects must be rectified by revising the DEIS to disclose the total number of road miles affected on a watershed basis and within the project area. The DEIS must . . . credibly disclose the duration and magnitude of increased sediment delivery caused by increased truck traffic." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

This has been added to the FEIS. Modeling completed for the FEIS includes sediment from log haul traffic. Extensive mitigation in the FEIS includes snowplowing and dust abatement specifications consistent with the Bull Trout Road Maintenance BA to further protect streams.

374 The Bitterroot National Forest should not use the Equivalent Clearcut Area model to estimate flow changes caused by logging and road building.

'The DEIS also fails to disclose that the model used in the DEIS to estimate flow changes (USFS, 1991) is not able to incorporate the effects of compaction and other effects on peakflows. Instead, the model relies only on Equivalent Clearcut Area (ECA). As noted in the USFS's own research (King, 1989), actual peakflow increases caused by logging and roads in areas similar to the project area are higher than predicted by models based on ECA." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Discussion of ECA and other models has been added to the hydrologic methods section of the FEIS.

381 The Bitterroot National Forest should not conduct salvage logging in the Rye Creek watershed because of potential increases in water yield and threats to private property.

"Increased water yield due to salvage logging in the Rye Creek watershed would create a clear and present danger to my property. On (7/15/01) the Friends of the Bitterroot Executive Director, Larry Campbell, watched the highest water he has seen in his 23 years while living on Rye Creek. It eroded banks and carried a tremendous amount of sediment. The North Fork Rye Creek has been recently observed to have blown out in several places. The system is out-of-whack; it desperately needs to be left alone to heal. It does not need more industrial strength logging, especially post-fire salvage logging. Likewise, any increased water yield due to soil compaction caused by log yarding or road building would jeopardize Larry Campbell's and many other people's property. Temporary road surfaces would experience reduced

infiltration rates from a natural 900mm/hr to 30mm/hr rising to only 400mm/hr after being ripped (project file Soils-7)." (Preservation/Conservation Organization, Hamilton, MT - #5000)

Response:

Additional discussion of water yield due to salvage logging has been added to the FEIS. Please see response to Public Concern #347 for further discussion.

Floods have been noted in almost all burned areas, including logged, unlogged, roaded and unroaded areas. The water yield increases reported by Mr. Campbell are likely due to fire effects; over 45% of this 6th level watershed was burned at high or moderate intensities. Road treatments proposed in the Burned Area Recovery project are intended to help de-synchronize and decrease flows coming off the burned area, and are focused on Rye Creek and similar watersheds.

Temporary roads proposed for each alternative are listed in the FEIS Chapter 3 Soils section. The 2.45 miles of temporary road proposed within the Rye Creek watershed would result in about 6 acres of compacted soil. This is an approximate increase in compacted area of 0.01 percent in the 40,334-acre watershed. The small change in compacted surface due to temporary roads is very small and would not affect peak flow levels anywhere in any analysis area watershed. Following use, temporary roads would be rehabilitated.

402 The Final EIS should disclose the total area of watersheds cumulatively impacted by management activities specific to each alternative.

"The DEIS must . . . be revised to disclose the total area of watersheds cumulatively impacted by all past, present and likely future activities for all of the alternatives. These impacts should include all logging, grazing, roads, road construction, landings, landing construction, and firelines. The DEIS must also be revised to use this information to make a reasoned assessment of the alternatives degree of compliance with the BNF LRMP standards for soil compaction." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

These cumulative impacts are discussed for each Geographic Area in Chapter 3, Watershed and Fisheries Effects of Alternatives sections (Chapter 3) in the FEIS. Please see the Soils section in Chapter 3 of the FEIS and Response to Comments (soils section) for discussion of soil compaction. The Land & Water Consulting Burned Area Recovery Watershed Analysis provides cumulative impact analysis with water and sediment yield estimates for both existing (post-fire) and post-harvest condition.

417 The Final EIS provide a quantitative definition for the amount of sediment delivery it deems to be immeasurable.

“The DEIS obfuscates the effects of management activities on existing sediment delivery and affected resources by arbitrarily characterizing sediment delivery quantities as either 'immeasurable' or 'measurable.' These characterizations are arbitrary because the DEIS never provides a quantitative definition for the amount of sediment delivery that it deems to be 'immeasurable.' Based on the DEIS it also appears that the BNF made no attempt to estimate the magnitude of likely sediment delivery from these sources, because the magnitudes are not disclosed. This plainly renders the characterization of sediment magnitudes arbitrary and also obscures, instead of disclosing, existing sediment delivery from management sources. The BNF has no basis for asserting that sediment delivery from any source is immeasurable, unless it has done all of the following: defined quantitative criteria for measurability; estimated the amount of likely sediment delivery from the source(s) in question; and, compared these to the quantitative criteria. Absent these steps, the DEIS's characterizations are arbitrary. If the DEIS is based on these steps, it must be disclosed." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

“Immeasurable” sediment is defined in Chapter 3’s Fisheries report. Sediment modeling added for the FEIS considers existing and proposed harvest and roads.

419 The Final EIS should include estimates of the cumulative effects of management activities on water temperatures and riparian vegetation.

"The DEIS acknowledges, albeit inadequately, that riparian areas have been stripped of shade-providing vegetation by numerous activities, including grazing, firelines, road encroachment, ski area expansion, logging, and landings. However, the DEIS fails to disclose the total amount of riparian vegetation removed by these activities, separately and cumulatively, at the scale of the project area or the watershed. The DEIS also fails to make and disclose any credible

analysis of the mount of increase in water temperatures caused by activities within riparian areas. The DEIS also fails to disclose that the loss of shade from vegetation removal requires about 2540 years for full recovery, in areas where recovery is not impeded (Beschta et al., 1986; Rhodes et al., 1994). In areas where the impacts will persist (ski areas, roads, grazing, etc.), recovery will not occur. These are critical flaws that must be corrected by revising the DEIS to disclose the amount of riparian areas disturbed by all activities, the estimated amount of shade removed by these activities, and the cumulative increase in summer water temperatures caused by these activities."' (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Harvest in RHCAs has been limited by various standards. Montana Streamside Management Zone standards, and Forest Plan standards have also limited riparian harvest since 1987. INFISH standards enacted in 1995 imposed strict limitations on harvest in RHCAs and essentially ended riparian harvest on the BNF. The main loss of shade in project area watersheds has been due to the 2000 fires.

To protect against further loss of shade, INFISH conservation buffers have been increased beyond standard values in some alternative, and would be applied to all channels meeting the Montana Streamside Management Zone definition. Project effects on stream shading (and therefore water temperature) would therefore be minimal. The FEIS Fisheries report provides further discussion of water temperature in each Geographic Area discussion on existing condition and effects. Tree planting is proposed adjacent to many riparian areas to speed shade development.

Further discussion on stream temperature can be found in the Fisheries and Watershed sections of FEIS Chapter 3.

444 The Final EIS should provide evidence to support the Bitterroot National Forest's claim that logging will not increase water yield.

"The DEIS claims in several geographic areas: There would be no increases in water yield from this proposal because there is no removal of green trees. We request scientific substantiation of this statement. Removal of trees may alter microclimate (i.e. shade and alteration of wind pattern) and may subsequently influence water yield." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

This discussion has been added to Chapter 3 in the FEIS.

447 The Bitterroot National Forest should consider the potential ecological and economic benefits of forest road removal.

"If the Bitterroot National Forest were truly interested in providing a balanced restoration plan for the burned areas, the proposal would focus on removing the roads from those burned areas. Road removal in these areas will do more to improve soil stability and decrease erosion than any logging proposal. Road removal will also provide high-paying, high skilled jobs for local people. In addition, to prevent future erosion and sedimentation problems, the restoration plan would look at removing roads in non-burned areas of the forests where logging and roading have already severely decreased the ability of the natural forest to recover from insects, disease, logging, and fire." (Individual, Missoula, MT - #1599)

Response:

The purpose of the Burned Area Recovery project is to look at potential restoration activities within the extensive lands burned in summer 2000. Please see Appendix B in the DEIS or FEIS for a listing of road-related restoration activities, which balance both the restoration and access needs within the analysis area. Decisions on roads outside of the project area are beyond the scope of the project.

468 The Final EIS should comply with the land type and habitat type standard established within the Bitterroot National Forest Plan.

"The plan at page II-24 sets limits on the 'Maximum Area allowed to be hydrologically Un-recovered' by Land Type and Habitat Type. There did not appear to be any meaningful discussion, disclosure, or analysis within the DEIS that related to this Standard. It seemed to be ignored. The Supervisor must affirmatively show that he has taken a hard look at whether the project is in compliance with this Standard. A clear and understandable analysis of the existing and proposed conditions must be disclosed." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

Forest Plan Standard h(2) is a Forest-wide Standard. Consistency with this standard is addressed in the Chapter 3 Watershed report.

471 The Bitterroot National Forest should monitor all streams on National Forest System lands.

"Following are some of the actions I would support: Monitoring of all streams on forest lands. Data is needed that is consistent, reliable and will be a solid base for future assessments and decisions. Money can be made available for the needed stream gauges, technicians, and sampling." (Individual, Stevensville, MT - #1705)

Response:

The Bitterroot NF has an active program of stream monitoring across the Forest. Additional post-fire monitoring has been proposed, funded and is currently in progress. Project monitoring plans for streams can be found in Appendix C.

486 The Bitterroot National Forest should conduct cumulative effects analyses for any modified alternatives with particular attention to impacted watersheds.

"We believe cumulative effects analyses should be considered during development of any modified preferred alternative so that the accumulated water yield from proposed fuels reductions activities in each drainage, when combined with the wildfire effects, and all other past, present, and reasonably foreseeable activities in each drainage, do not cause exceedance of water yield standards, or excessive erosion, and particularly do not contribute to further degradation of 303(d) listed streams." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

Additional discussion has been added to the FEIS. Tables in Chapter 3 of the FEIS display the predicted sediment changes for 303(d) listed watersheds and watersheds with greater than 25% moderately and severely burned area. Extensive mitigation (in Chapter 2's Management Requirements and Mitigation Measures) is designed to prevent sedimentation and water quality violations.

498 The Final EIS should ensure a commitment to monitoring and refinement of water quality Best Management Practices.

"The achievement of water quality standards for activities that produce nonpoint source pollution occurs through the implementation of BMPs. Although BMPs are designed to protect water quality, they need to be monitored to verify their effectiveness. If found ineffective, the BMPs need to be revised, and impacts mitigated. The EIS should show a commitment to BMP monitoring within the framework of project monitoring plans and illustrate how monitoring results may be used in refining BMPs." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

Please see the aquatics and watershed monitoring plans in the FEIS, Appendix C.

501 The Final EIS should clearly display the total miles of temporary road construction proposed for each alternative.

"The Tables summarizing the features of the action alternatives in Chapter 2 do not clearly display the extent of TEMPORARY ROAD CONSTRUCTION that is proposed to allow access to fuel reduction units for each alternative. Construction of roads, even temporary roads, is one of the more critical aspects influencing aquatic and ecological health. It is important for any road construction, even temporary road construction to be clearly described and displayed as an important element of the alternative. It is stated in the narrative that no temporary roads would be constructed with Alternative C and E (page 2-23), but we could find no clear presentation of temporary road construction with supplemental information like number of road stream crossings for Alternatives B and D in the Alternatives Chapter 2. Proposed temporary road construction should be displayed in alternatives tables or a table should be added displaying the comparative mileage of proposed temporary road construction for Alternatives B and D. We did eventually find in Chapter 3, Table 3-25, Miles of Temporary Soil Impact, (page 3-52), that appears to indicate that 0.8 miles and 10.2 miles of temporary road would be constructed with alternatives B and D, respectively. If this is the accurate summary of the temporary road construction with these alternatives, we recommend that such information be presented with the other basic descriptive information about the Alternatives in Chapter 2." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

This information has been added to alternative descriptions.

502 The Final EIS should address the relationship between forest-wide and site-specific watershed monitoring activities.

"Thank you for the brief monitoring summary presented on pages 2-19 to 2-21. It is stated that ‘monitoring for sediment and water yield and sediment transport will take place on several streams across the Forest as part of the ongoing monitoring program.’ We would like to better understand the relationship between this ongoing forest-wide monitoring program and individual project monitoring activities, and ask that this relationship be described." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

Please see the aquatics and watershed monitoring plans in the FEIS, Appendix C.

504 The Final EIS should clearly identify the Bitterroot National Forest's water quality monitoring program's goals and objectives.

"We would like to see clear water quality monitoring goals and objectives identified and described in the EIS (e.g., what questions are to be answered; what parameters are to be monitored; where and when monitoring will occur; who will be responsible; how the information will be managed and evaluated; and what actions will be taken based on that information). The monitoring plan should include types of surveys, location and frequency of sampling, parameters to be monitored, budget commitments, and procedures for using data or results in guiding current and future activities. The monitoring program should: 1) ensure State water quality objectives and standards are met, 2) provide a mechanism to initiate additional measures if needed to meet State water quality standards and goals, 3) evaluate the effectiveness of the Best Management Practices and other mitigation methods utilized in this project, 4) evaluate the accuracy of estimates made in the analysis, and 5) provide a feedback mechanism for future projects. We recommend that the monitoring plan include sampling design, methodology, parameters, sampling site locations shown on a map, and frequency of pattern of sampling (channel substrate measures, channel cross sections, etc.). The EPA strongly recommends incorporation of a biological component, such as rapid bioassessments using macroinvertebrates, in a monitoring program. Monitoring of the aquatic biological community is desirable since the aquatic community integrates the effects of pollutant stressors over time and, thus, provides a more holistic measure of impacts than grab samples of turbidity and suspended sediment. We encourage you to use the following reference materials in designing and disclosing a monitoring program: 'MONITORING GUIDELINES TO EVALUATE EFFECTS OF FORESTRY ACTIVITIES ON STREAMS IN THE PACIFIC NORTHWEST AND ALASKA,' Lee H. McDonald, Alan W. Smart, and Robert C, Wissmar; May 1991; EPA/910/9-91-001. 'RAPID BIOASSESSMENT PROTOCOLS FOR USE IN STREAMS AND RIVERS,' James A. Plafkin; May 1989; EPA/444/4-89-001. 'MONTANA FORESTRY BMP'S,' Extension Publications; July 1991, Montana State University; EB0096. 'MONTANA STREAM MANAGEMENT GUIDE; FOR LANDOWNERS, MANAGERS, AND STREAM USERS,' Montana Dept. Of Environmental Quality; December 1995." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

Please see the aquatics and watershed monitoring plans in the FEIS, Appendix C.

Fisheries

The proposed logging activities are going to increase water temperatures in bull trout streams.

"The high water temperatures in the streams that still have bull trout is one reason why bull trout here are already at risk of extirpation. Unfortunately, the proposed logging activities would tend to cause even more increases in temperature…One cannot assume that INFISH buffers are all that's needed to prevent further temperature increases in the streams. The writers of the DEIS should check the programmatic bull trout Biological Assessment and Biological Opinion for discussion of how upland forest canopy removal will in fact cause higher water temperatures. Also, further aggradation of the stream channels due to increased water yields will lead to shallower, wider channels, which will naturally mean more of the water surface exposed to warm air in summer (Preservation Conservation Organization, Missoula, MT - #1431)

Response:

Effects of the activities on water temperature are discussed in the DEIS and FEIS. For the FEIS the RHCA buffers are expanded in Alternatives E and F would protect the caution zones mentioned in the BO by encompassing the floodplains on all streams plus two site potential tree heights, and buffering all wetlands by a minimum of 100 feet. The smaller RHCA buffers in Alternatives B and D would also protect the majority of these caution zones by encompassing the floodplains of all streams plus one site potential tree height, and buffering all wetlands by a minimum of 100 feet The FEIS also addresses the risk of water temperature increases triggered by stream channel aggradation and widening (See the Fisheries Environmental Consequences section).

The bull trout biological assessment needs to be redone to qualify as adequate.

"The biological assessment for bull trout was completed without any information about the cumulative effects of private land salvage logging and flooding/debris flows, some of which has taken place in the last month…the biological assessment needs to be redone to qualify as adequate" (private citizen - #1696)

Response:

The Biological Assessment is only completed for the selected alternative. For the FEIS, the cumulative effects of the recent mudslides and salvage logging on private land, including the logging that has occurred in the Streamside Management Zone (SMZ) along Rye Creek were included in the Chapter 3 Fisheries section.

113 The Bitterroot National Forest should reassess the cumulative impacts of the proposed management actions on fisheries and watersheds.

"The DEIS acknowledges that cumulative impacts to the fisheries and watersheds have occurred or may occur from past, present and future actions, but then presumes they will somehow mostly be short-term and overall conditions should be greatly improved in the near future. This appears somewhat questionable given the historical record. Between the fires, past logging and roading, the current proposed cutting, existing road systems, proposed road work, ORVs, grazing, herbicide spraying, etc., it appears there is risk of additional significant adverse impacts on fisheries and watersheds." (Preservation/Conservation Organization, Hamilton, MT - #603)

Response:

In the DEIS, the cumulative impacts to the fishery were described qualitatively – they were not based on model results because model results were not available when the DEIS was printed. In the FEIS, the WEPP model was used to analyze cumulative effects on the fishery. (See the Fisheries cumulative effects sections).

155 The Bitterroot National Forest should count snags in untreated Riparian Habitat Conservation Areas towards overall snag retention levels.

"SNAG RETENTION LEVELS are part of the Forest Plan amendments proposed for this project and we are amazed that snags in untreated RHCAs will not count towards overall snag retention levels. Unless your agency can justify such a limitation, we request that you revise this provision." (Wood Products Industry/Association, Deer Lodge, MT - #1080)

"Snags left as a result of not treating RHCAs are not counted toward overall snag retention levels. They should count." (Wood Products Industry/Association, Lyons, OR - #987)

Response:

It is important for snags to be distributed throughout the area. Therefore, to meet the snag guidelines stated in Chapter 1, snags really need to be “counted” in areas where activities occur to make sure that enough snags are retained for wildlife and course woody debris. All alternatives would leave millions of snags across the burned area in the untreated areas outside of units, including the RHCAs.

157 The Bitterroot National Forest should not limit fuel reduction treatments within INFISH Riparian Habitat Conservation Areas and wetlands.

"I believe the Bitterroot National Forest is creating some very serious future problems in limiting fuel reduction treatments within INFISH Riparian Habitat Conservation Areas and wetlands. Not allowing fuel treatment within 300 feet of fish-bearing streams, within 150 feet of permanently flowing streams that do not have fish, within 100 feet of intermittent streams in some drainages, and within 50 feet of intermittent in the rest of the drainages is leaving a tremendous number of acres with heavy fuel loading that will be prone to future wildfires. Any fires that will occur in the riparian areas will be far more devastating and damaging to fisheries because of the heavy fuel loading that is being left untreated. These riparian areas will also become jackstrawed messes that will severely limit recreational and wildlife use, while jeopardizing future productivity. Riparian areas need special protective measures but they still need treatment to remain productive." (Wood Products Industry/Association, Columbia Falls, MT - #876)

Response:

The fisheries “Analysis Methods” and “Direct and Indirect Effects Common to All Action Alternatives in All Geographic Areas” sections in the FEIS discuss the reburn risk in riparian areas and disclose that because no fuels would be removed from the RHCAs along all streams, riparian areas may face a higher risk of reburn regardless of the level of fuel reduction that occurs in the uplands.

158 The Bitterroot National Forest should examine INFISH Riparian Habitat Conservation Areas on a case-by-case basis.

"There are no treatments proposed in INFISH riparian habitat conservation areas (RHCA's). This is . . . an arbitrary limitation apparently imposed to avoid controversy. RHCA's should be examined on a case-by-case basis to determine if fuel reduction activities are needed and whether they can be implemented in an economically feasible way that does not compromise other resource values." (Wood Products Industry/Association, Orofino, ID - #1072)

"This same apprehension is evident in the DEIS's arbitrary decision that riparian habitat conservation areas will remain off-limits to recovery/restoration projects. Once again, we believe that such projects should only be proposed in RHCA's for compelling reasons; however, a reasoned case-by-case review is preferable to an arbitrary hands-off approach." (Wood Products Industry/Association, Kalispell, MT - #874)

Response:

RHCAs were not adjusted on a case-by-case basis for this project. In order to comply with Forest Plan as amended by INFISH, this project cannot degrade the INFISH RMOs for pool frequency, large woody debris, water temperature, and width-to-depth ratio, or cause significant harm to bull trout and westslope cutthroat trout populations. The Forest Plan establishes RHCA widths and they were not adjusted downward because of the sensitive conditions created by the fires. Three alternatives consider wider RHCA widths, based on the issue that RHCA widths were established for unburned forests.

238 The Final EIS should comply with the Bitterroot National Forest Plan wildlife and fish standard e(7) regarding cutthroat trout populations.

"The DEIS does not adequately demonstrate compliance with Forest Plan wildlife and fish standard e(7): 'Cutthroat trout populations will be used as an indicator of fisheries habitat changes.'" (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

Consistency with this standard is documented in the FEIS monitoring plan (Appendix C) and the project file.

239 The Final EIS should include further analysis regarding the cumulative effects of private timber harvest activities on fisheries.

"The DEIS fisheries cumulative effects analysis is inadequate. For example, the DEIS provides the following vague assessment of the cumulative effects of private timber harvest, road construction and subdivision: On private land, extensive timber harvest and clearing has occurred for homes, businesses, roads, and pastures. Road densities are high on private land, with numerous stream crossings and encroached road segments. Roads contribute substantial amounts of sediment to fish habitat on private land (DEIS 3-175)." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The quoted statement is not an assessment of cumulative effects, just a short description of a category of activity that was considered in the cumulative effects analysis. In the FEIS, the fisheries cumulative effects analysis was updated and modified to include the WEPP sediment and water yield predictions.

240 The Final EIS should address the effects of both fire and salvage logging on fish populations.

"The Biological Assessment for fishes does not incorporate many fish species response and dependency to 'pulse' disturbances (e.g. stand-replacing fire) compared to the more 'chronic' disturbances (continuous addition of sedimentation by road networks). Studies have shown that fish species have evolved within the context of large-scale disturbances such as fire over time. Fish populations are negatively affected by road and logging activities. However, the effects of both fire and salvage logging on fish populations have not been addressed in the DEIS." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

The fisheries “Analysis Methods” section in the FEIS discloses that wildfires are “pulsed disturbance events” important for creating and maintaining stream systems and quality fish habitat. Fish species response to pulse versus press disturbance events is discussed in the FEIS fisheries cumulative effects sections.

241 The Final EIS should include additional analysis of potential project impacts on the network of fish habitats.

"The DEIS appropriately summarized the shortcomings of INFISH: In a nutshell, INFISH maintains a fragmented network of habitats in degraded conditions, but lacks a comprehensive strategy to protect and restore bull trout watersheds (DEIS 3-167). Given the large area proposed for logging, the DEIS must thoroughly analyze the potential project impacts to the network of fish habitats." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

For each of the geographic areas, the FEIS fisheries “Environmental Consequences” sections analyze the potential impacts to population connectivity and the network of bull trout and westslope cutthroat trout habitats.

242 The Final EIS should include additional analysis of the benefit of periodic fire on fish populations.

"The fisheries analysis for several of the fisheries analysis area is misleading in claiming that only Alternative B and D will ensure compliance with INFISH RMOs if fire returns (e.g. DEIS 3-241). Research has suggested that fire is essential to long-term population viability of fish. While fish populations may show an initial decline following fire, habitat alternative associated with fire will ultimately lead to an increase in fish populations (Bruce Rieman 2001). The DEIS fails to adequately consider the benefit of periodic fire on fish populations." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The FEIS and Post-Fire Assessment both discuss the beneficial aspects of fire (see the “Analysis Methods” section in the fisheries FEIS and section 4.3, pages 6-7 in the Post-Fire Assessment).

243 The Bitterroot National Forest should disclose which commitments they have met in complying with INFISH as noted in the 7/19/98 letter to the U.S. Fish and Wildlife Service.

"In a letter to the U.S. Fish and Wildlife Service dated June 19, 1998, the Forest Service and Bureau of Land Management revised their earlier Biological Assessment (BA) which made a determination of effects on bull trout as a result of the implementation of their Land and Resource Management Plans (as amended by INFISH and PACFISH). . . . As far as we are aware, the BNF has not identified all key and special emphasis watersheds-only the 'priority'

watersheds identified soon after INFISH was adopted by Forest Plan amendment. We have also not seen an 'improved monitoring strategy' put forth by the BNF. Please disclose which of the above commitments [see public comment letter #1431] the BNF has met, and please cite documentation on that compliance. Attached to that June 19 letter were a list of commitments the FS and BLM will carry out within the range of bull trout. Below are excerpts of the letter, many involving nondiscretionary, mandatory commitments that must occur before developments go forward. Please disclose which of the above commitments the BNF has met, and please cite documentation on that compliance." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

These commitments were met at the Regional and Forest level and are complete or nearly complete. In all cases, the Bitterroot National Forest has moved into implementing plans as described in the various documents used to meet the commits. More information on this documentation can be found in the project file. The Burned Area Recovery Project is consistent with all commitments and documentation generated from this issue.

348 The Final EIS should disclose the anticipated levels of riparian disturbance within each alternative.

"The DEIS also fails to disclose the levels of riparian disturbance under the alternatives. It does not disclose the amount of logging that will occur within 300' of streams. The DEIS should be revised to disclose, by alternative, the length and percent length of streams in each watershed that will be logged to within 50,' 100,' 150,' and 300' of the edge of streams. The current maps lack the resolution to disclose this information. The DEIS must also disclose the number of stream crossings and road density within RHCAs under each alternative, including uninventoried roads. The DEIS must also be revised to disclose the number of new and old landings within RHCAs and within 300' of all streams in each watershed under each alternative. It must also disclose the total disturbance within RHCAs and within 300' of streams in each watershed under all alternatives, from all sources of disturbance. The DEIS does not disclose the amount of logging and road and landing construction that will occur in roadless areas greater than 1000 ac in area. These impacts must be disclosed, because assessments have repeatedly stressed the importance of roadless areas for watershed function (Anderson et al., 1993; USFS et al., 1993; Henjum et al., 1994; Rhodes et al., 1994; Beschta et al., 1995)." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

The WEPP model used in the FEIS incorporates past and predicted riparian disturbance to predict sediment and water yields. The WEPP model incorporates sediment delivery variables such as the hillslope position of the harvest unit (upper slopes versus lower slopes), slope gradient, slope length, soil texture, cover type, burn severity, percent of cover, and precipitation. No salvage harvest would occur within 100 feet (Alternatives B and D) or 200 feet (Alternatives E and F) of streams, and within 100 feet of wetlands (all alternatives). These minimum buffers would encompass the narrow floodplains and 1-2 site potential tree heights, depending on the alternative. Because of the stream and wetland buffers, the only disturbance that would occur within riparian areas is the use of existing helicopter landings, and the watershed improvement activities (road decompaction/obliteration, and culvert removals and replacements). These disturbances would occur on existing road prisms and existing clearings, and would not create any significant new areas of ground disturbance

For each of the geographic areas, the fisheries “Existing Condition” sections in the FEIS disclose road density, road density within 300 feet of streams, and road stream crossings. The FEIS discusses how roads are affecting habitat, and lists the streams where roads are negatively affecting habitat

Landings are disclosed and discussed in the project file.

Logging, road construction, and landing construction in unroaded areas are addressed in the “unroaded” section of the FEIS.

358 The Final EIS should disclose the amount of Riparian Habitat Conservation Areas that have been logged.

"The DEIS also fails to disclose the amount of riparian areas that have previously been logged. This is a serious omission, because logged riparian areas reduce LWD levels, increase water temperatures, damage riparian soils, increase sediment delivery, and often reduce channel stability. All of these impacts affect the INFISH RMOs and significantly affect the survival and production of WCT and BT. Therefore, the DEIS must disclose the amount of area of RHCAs logged and the amount of area logged within 300' of streams within the project area and at the watershed

scale. Notably, such analyses have been completed in other EISs where water temperature, LWD, pools, and sedimentation effects on salmonids were of concern (USFS, 2001)." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

For each of the geographic areas, the fisheries "Existing Condition" sections in the FEIS disclose the length of stream channel and percent of stream channel within the watershed that have had equivalent clearcut-type harvest occur within 300 feet of their banks, discuss how this riparian timber harvest affects habitat, and list the streams where past riparian harvest is negatively affecting habitat.

365 The Final EIS should disclose the total miles of roads located within Riparian Habitat Conservation Areas and within 300 feet of streams.

"The DEIS also fails to disclose the total miles of road that are within RHCAs and within 300' of streams within the project area and on a watershed basis. These roads have significant impacts on a variety of aquatic resources (LWD, water temperature, sedimentation, etc.) that are central to the evaluation and disclosure of cumulative effects. They also provide an essential context for evaluating the significance of road treatments under the alternatives. Therefore, the DEIS must be revised to disclose the total amount of roads in RHCAs and within 300' of streams within the project area and on a watershed basis. The maps included with the DEIS lack the resolution and clarity to provide a surrogate for this disclosure." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

For each of the geographic areas, the fisheries "Existing Condition" sections in the FEIS disclose road density, road density within 300 feet of streams, and road stream crossings. The FEIS discusses how roads are affecting habitat, and lists the streams where roads are negatively affecting habitat.

376 The Final EIS should fully disclose how Alternatives B, D, and E will impact the recovery of INFISH riparian management objectives.

"The DEIS fails to reasonably disclose that alternatives B, D, and E will impede the recovery of INFISH RMOs. The DEIS incorrectly asserts that alternatives B, D, and E will not impede the recovery of INFISH RMOs. As discussed, this is demonstrably false. Due to their manifold effects, together with the effects of existing conditions, alternatives B, D, and E will contribute to the degradation of pools, LWD, water temperatures, and channel width/depth ratio. These alternatives will unquestionably retard recovery in these channel attributes. The DEIS must be revised to disclose this information." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

The Fisheries "Consistency with Forest Plan and Other Regulation" section in the FEIS discusses how the alternatives are likely to affect the INFISH RMOs.

408 The Final EIS should evaluate how existing sediment delivery is impeding the recovery of pool quality, frequency, and volume.

"The DEIS does not disclose that existing sediment delivery is impeding the recovery of pool frequency, as well as pool quality and volume. This defect is exacerbated by the DEIS's incorrect statements that several streams with significant land-disturbance and anthropogenic sediment loads have pool frequencies that are 'at potential.' This is in direct conflict with the available scientific information on the effect of sediment delivery and other impacts on pool conditions, including those of the USFS (USFS and USBLM, 1997a). The DEIS must disclose that in all systems with elevated sediment delivery, pool conditions are not at potential, even in systems where they meet the RMO." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

For each of the geographic areas, the fisheries "Existing Condition" sections in the FEIS evaluate the pre- and post-fire sediment conditions in all of the 6th code watersheds in the project area., and disclose all of the streams where elevated sediment delivery is impeding pool frequency and quality.

414 The Final EIS should include additional analyses that address the synergistic and cumulative effects of management practices on watersheds and native fisheries.

"We maintain that the BAR DEIS fails to adequately address the synergistic and cumulative effects on the watersheds and native fisheries. In the case of the BAR DEIS, the Supervisor acknowledges that the project's actions will create sediment, but that it will be immeasurable when compared to the sediment resulting from the fires. That may be so, but the Supervisor misses the point. The watersheds and fisheries in many of the project area's streams are in extremely poor shape due to past practices and the extremely high densities of the existing road systems in some areas. The runoff and sediment coming from the burned lands is currently turning portions of the Bitterroot River nearly black due to the summer's rains. There will then be the cumulative impact to the fisheries and watersheds from the activities proposed by the DEIS. It is not whether one can distinguish or measure the sediment from the fires and that of the proposed actions. The point is, that considering the poor shape of the fisheries and watersheds before the fires, and then the additional impacts resulting from the fires, it appears evident that the supervisor should be doing everything in his considerable powers to absolutely prevent any more sediment whatsoever from entering the systems. Instead, it appears that he has failed to do site-specific examinations of the soil conditions in the cutting units and has failed to disclose or take affirmative actions to greatly reduce the excessive or roads within large portions of the project area." (Preservation/Conservation Organization, Hamilton, MT - #1640)

"The DEIS fails to adequately address the alternatives' effect on WCT and BT habitats and populations. The DEIS's disclosure of the effects of the alternatives on sediment delivery and substrate conditions suffers from many of the same flaws as the analysis of sediment delivery. The DEIS obfuscates the cumulative effects of the alternatives and existing conditions by characterizing substrate effects as 'measurable' or 'immeasurable.' The quantitative criteria for these characterizations are never disclosed in the DEIS. This approach inexorably segments the analysis of substrate effects in direct conflict with NEPA requirements for disclosure of cumulative effects. This indefensible treatment prevents disclosure of effects on WCT and BT because substrate effects are, by nature, cumulative. BT and WCT are extremely sensitive to changes in substrate conditions. This approach also obscures the differences among the alternatives. These are fatal flaws that must be rectified in the DEIS. The DEIS must be revised to include cumulative estimates of changes in substrate conditions and effects on BT and WCT survival, including competition with non-native trout." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

In the DEIS, the qualitative terms “measurable” and “immeasurable” were used to describe substrate conditions because sediment model results were unavailable at the time the DEIS was published. In the FEIS, WEPP sediment model predictions were used instead of these qualitative terms. The WEPP model predictions were used to analyze the direct, indirect, and cumulative effects of sediment on substrate conditions and bull trout and westslope cutthroat trout survival (see the fisheries cumulative effects sections in the FEIS). The fisheries cumulative effects sections in the FEIS discuss the cumulative effects of sediment and competition with non-native trout.

415 The Final EIS should analyze the effects of existing substrate conditions on bull trout and Westslope cutthroat trout survival and competition with non-native trout.

"The DEIS must . . . relate existing substrate conditions to BT and WCT survival and competition with non-native trout. This critical context is currently lacking in the DEIS. Plainly, the impacts of the additional sedimentation that will be caused by implementation of alternatives B and D are extremely serious for BT if fine sediment levels in substrate are currently at about 50% and survival-to-emergence is < 5% (based on the data of Weaver and Fraley, 1991). In fact, the DEIS fails to even note that BT survival is extremely sensitive to fine sediment levels. The DEIS also fails to disclose that USFS and USBLM (1997a) concluded, based on modeling, that levels of fine sediment in substrate and resultant survival-to-emergence appear to be more important for the persistence of weak stocks of salmonids, such as bull trout, than the amount of available habitat and parr carrying capacity. The data of Weaver and Fraley (1991) provide a simple and tractable means of relating existing substrate conditions to the survival-to-emergence of WCT and BT. Therefore, the DEIS must be corrected to include a hard look at the effects of existing substrate conditions and the survival of BT and WCT. Substrate conditions and estimated survival must be disclosed at the watershed scale." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

For each of the geographic areas, the Fisheries “Existing Condition” sections in the FEIS discloses:

(1) The relationship between sediment and native trout

(2) The relationship between sediment levels and rearing habitat

(3) The pre- and post-fire sediment levels at the watershed scale and

(4) the intragravel and surface fine sediment levels that typically occur in undeveloped watersheds on the Bitterroot National Forest. The FEIS relates the existing sediment levels to survival to emergence of bull trout and westslope cutthroat trout, and lists the streams where survival to emergence is likely being suppressed as a result of elevated sediment levels

The fisheries “Analysis Methods” section in the FEIS includes a brief discussion of bull trout and westslope cutthroat trout habitat requirements, and incorporates by reference the habitat requirement and life history information provided in the bull trout Biological Opinion (USDI Fish and Wildlife Service, 1998), the Bitterroot River Section 7 Watershed Baseline (USDA Forest Service, 2000b), the Montana Bull Trout Restoration Plan (Montana Bull Trout Restoration Team, 2000), the Bitterroot Drainage Bull Trout Status Report (MBTSG, 1995), Rieman and McIntyre (1993), and the westslope cutthroat trout conservation agreement (MFWP, 1999

418 The Final EIS should evaluate the importance of roadless areas to trout conservation and restoration.

"The DEIS fails to disclose that the complete protection of roadless areas is essential to the protection and restoration of trout populations for several reasons. Roadless areas provide the best remaining habitats for trout populations (USFS et al., 1993; Henjum et al., 1994; Wissmar et al., 1994; Rhodes et al., 1994; Huntington, 1998; Rhodes and Huntington, 2000). These high quality areas provide important havens for trout populations that can help recolonize restored areas in the future (Rhodes et al., 1994; NMFS, 1995). Roadless areas also typically maintain high habitat quality while other areas continue to degrade due to the legacy of logging, roads, and/or grazing. . . . Much of the historic habitat is degraded, rendering all remaining habitat absolutely critical to the persistence of trout (USFS and USBLM, 1997a). Any additional degradation increases the likelihood of trout extirpation. These conditions make the protection of roadless areas essential to protecting and restoring trout. The DEIS fails to disclose the importance of roadless areas to trout conservation and restoration. This defect in the DEIS must be corrected." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

In general, the best trout populations usually occur where there are large blocks of roadless lands with intact hydrologic connections between streams. This is true of the Bitterroot National Forest, where the best trout populations occur in a large, connected, wilderness area - the upper Selway River drainage. In this project, there would be no salvage harvest within inventoried roadless areas, which are the largest blocks of land that generally contain the best fish habitats

420 The Final EIS should disclose the impacts of elevated water temperatures on the viability of bull trout and Westslope cutthroat trout populations.

"The DEIS compounds the defects related to water temperature by failing to disclose the existing effects of water temperature elevation from existing watershed conditions on WCT and BT habitats, populations, and survival and production. Elevated water temperatures have a variety of negative and synergistic effects on salmonids, and, especially, BT (McCullough, 1999). The water temperature elevation in many watersheds throughout the project area has contributed to the fragmentation if WCT and BT populations, increased the extent of habitat occupied by non-native trout, increased the competition of non-native trout with WCT and BT, and cumulatively decreased the survival and production of WCT and BT. The DEIS's failure to disclose this information is a fatal defect that must be corrected. The DEIS must be revised to estimate existing alteration of water temperatures and disclose the effects on BT and WCT habitats, populations, and survival." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

For each of the geographic areas, the fisheries “Existing Condition” sections in the FEIS disclose the status of the water temperature RMOs in each of the fish-bearing streams, list the streams where water temperatures are elevated as a result of management activities, and discuss the effects of elevated water temperatures on bull trout and westslope cutthroat trout habitat and populations.

421 The Final EIS should address the perception that management activities favor non-native fish species and increase the competitiveness of non-native trout.

"The DEIS . . . fails to disclose that habitat alteration generally favors non-native species and provides a competitive edge to non-native trout that compete with native WCT and BT. Current habitat alteration from past and existing conditions caused by land management has increased the competitiveness of non-native trout in the project area at the expense of native BT and WCT. The invasion of habitats by non-native trout has extremely negative effects on WCT and BT and appears to be irreversible." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

For each of the geographic areas, the fisheries “Existing Condition” sections discuss habitat alteration and its affect on native versus non-native fish. The fisheries cumulative effects sections also analyze the potential for the alternatives contribute to the spread of non-native trout and the displacement of native trout.

423 The Final EIS should evaluate the impacts on bull trout and Westslope cutthroat trout populations resulting from short-term increases in sediment delivery levels.

"The DEIS . . . fails to properly disclose that short-term degradation from short-term increases in sediment delivery have irreversible impacts on BT and WCT populations. Short-term increases in sediment delivery typically cause long-term degradation of substrate conditions. Even if substrate degradation is fairly brief, it can result in long-term negative effects on BT and WCT populations because it significantly depresses survival. Further, short-term degradation benefits non-native trout at the expense of native trout. Once non-native trout gain additional footholds in BT and WCT habitat, it has a long-term negative impact on these native trout. The notion that short-term degradation and loss of native trout is compensated by longer-term habitat benefits is not only in conflict with available information on habitat alteration and population response. It has also been rejected by the courts (Pacific Coast Federation of Fishermen's Assoc., Inc. et al., v. NMFS et al.). Therefore, the DEIS cannot rely on this ecologically unsound and legally indefensible approach. The DEIS must be modified to include the disclosure of the long-term effects of short-term degradation of BT and WCT habitats under the alternatives." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

The fisheries cumulative effects sections in the FEIS discuss the long-term effects of short-term sediment degradation on bull trout and westslope cutthroat trout habitats.

424 The Final EIS should not select Alternatives B, D, or E because of their impacts on bull trout and Westslope cutthroat trout.

SEDIMENT DELIVERY

"The DEIS . . . incorrectly assesses the effects of the alternatives on pools, channel width/depth ratios, water temperature, and LWD and resultant effects on WCT and BT populations and habitats. Cumulatively, alternatives B, D, and E will significantly elevate sediment delivery, although this is not adequately disclosed in the DEIS. These increases will contribute to the loss of pool frequency, volume, and quality. It will also retard the recovery of these pool attributes. Elevated sediment delivery will also contribute to channel widening and significantly impede or prevent the recovery of channel width/depth ratios. The effect of elevated sediment delivery will also impede the recovery of water temperatures by thwarting or impeding the recovery of channel width. Landing construction and use in RHCAs will decrease LWD levels. The inadequate widths of RHCAs on some headwater streams will reduce LWD levels in these streams, which can be transported downstream during events such as the July 2001 storms. Separately, and in concert, these impacts will reduce the survival and production of BT and WCT, while increasing providing a competitive edge to non-native trout. The DEIS not only fails to disclose this information, it incorrectly asserts that these recovery of these habitat attributes will not be significantly affected by the alternatives. The DEIS must be revised to disclose this information." (Preservation/Conservation Organization, Tucson, AZ - #1695)

INCREASED ACCESS TO HABITAT

"The DEIS also incorrectly asserts increasing WCT and BT access to more habitat will more than compensate for the cumulative degradation likely under the alternatives. This is in conflict with the findings of USFS and USBLM (1997a) which concluded that survival-to-emergence is more important for population persistence than rearing capacity, although this is not disclosed in the DEIS. The benefits of increased access are also limited because most of the affected streams are small and many will be cumulatively degraded by the alternatives. Downstream habitats will be the most extensively degraded by the alternatives' cumulative effects. These habitats tend to be the most important for BT and

WCT survival and production. The conditions in downstream habitats tend to be the greatest cause of population fragmentation. These habitats are also the most adversely affected by competition with non-native trout. Recolonization of newly accessible habitats will also be significantly hampered by reductions in populations caused by reduced survival from the cumulative effects of existing conditions, in concert with the effects of several of the alternatives. Therefore, it is extremely unlikely that increased access to additional habitat will compensate for the degradation caused by alternatives B, D, and E. The DEIS must be revised to disclose this information." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

The fisheries “Consistency with Forest Plan and Other Regulation” and “Environmental Consequences” sections in the FEIS discusses how the alternatives are likely to affect the INFISH RMOs (pools, woody debris, channel dimensions, and water temperatures) and native trout populations.

The fisheries “Direct and Indirect Effects Common to All Action Alternatives in All Geographic Areas” section in the FEIS addresses the removal of fish barriers and the relative importance of new access to spawning and rearing habitat. The findings of the USFS and BLM (1997a) are addressed in this portion of the FEIS.

436 The Final EIS should address the effects temporary road building will have on wildlife and fish habitat.

"The proposed permanent road closures are one of the strongest attributes of the DEIS. However, impacts of temporary roads need to be addressed, especially short-term effects on wildlife and fish habitat." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

For the FEIS, the fish and wildlife section have both been reviewed and effects of temporary road construction has been added where needed.

488 The Bitterroot National Forest should consult with aquatic biology experts and all appropriate state and federal agencies regarding design and placement of stream channel treatments.

"Placement of woody debris in stream channels may also have adverse effects if improperly placed (e.g., channels). We recommend that aquatic biologists and staff with training and knowledge of alluvial geomorphology be consulted during design of any stream channel treatments. We also believe that the Army Corps of Engineers, U.S. Fish & Wildlife Service, and Montana Dept. of Fish, Wildlife and Parks and Montana Dept. Of Environmental Quality should be contacted if placement of structures in stream channels is proposed to assure that proper authorization and permits are obtained (e.g., 404 permits, 310 and 124 permits, 3a authorizations, etc.,)." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

The fisheries biologists and hydrologists who would implement the woody debris placement projects have attended Rosgen fluvial geomorphology training courses and have considerable experience in stream restoration projects. Follow-up fish population monitoring indicates favorable fish population responses to past improvement projects. Before placing any woody debris in streams, all of the proper authorizations/permits would be obtained from the relevant agencies.

Forest Plant Communities and Vegetation

6 The Bitterroot National Forest should recognize the benefits of bark beetles to healthy forest ecosystems.

"Bark beetles are a natural thinning method for trees. They are a big link in the food chain and destroying their habitat will be detrimental to the ecosystem." (Individual, Hamilton, MT - #160)

"Bark beetles are natural and have not been proven to cause 'epidemics.' The natural forest is what is important. Bark beetles and dead trees are very much a part of this even if they are not 'pretty.'" (Individual, Missoula, MT - #8)

"The issue of bark beetle suppression has little to do with forest health. A high level of beetles is a threat only to marketable timber. Naturally recurring populations of beetles should not be sacrificed simply to satiate the timber industry. By attempting to control beetle outbreaks the very base of the food chain is threatened." (Individual, No Address - #16)

"Bark beetles are native and natural. Pluck one strand of the food web and web of life, shatter them all, i.e. . . . wood peckers and then dens for animals." (Individual, No Address - #1)

Response:

Bark beetles are natural to our forested ecosystems even when populations rise to epidemic levels. Epidemic populations just describe the situation at a particular scale, such as an entire drainage or on a Ranger District. The question is whether or not the epidemic or elevated populations would have occurred had we allowed fire to play its natural role. Fires would have created a landscape with diversity in age and size classes over time. This may have limited the amount of high or moderate hazard/risk stands susceptible to beetle caused mortality.

Beetles are simply a symptom of a larger problem. On the Bitterroot National Forest before the fires of 2000, this is a problem with a lack of age and size class diversity at the landscape scale.

By no means can this project even come close preventing all bark beetle attacks or harvesting all trees with beetles in them. Because of the extent of Douglas-fir bark beetle populations prior to the fires and the many unknowns in trying to predict future outbreak locations, we can only apply treatments to prevent widespread mortality at a localized scale. Such areas include: wildland urban interface, recreational areas, visually sensitive areas, and high hazard/risk areas.

Bark beetles are members of the food chain, however they are not a key component of woodpeckers diet. Bark beetles are very small (1/8 - 1/4" long) and not as coveted as woodborers and other secondary beetles. Because of the extent of the beetle populations before the fire, the forest will not be lacking beetles for a number of years. Biologists suggest that the niche for those species dependent upon beetles for their diet will not become fully utilized (Hutto, 2001).

38 The Bitterroot National Forest should consider the negative impacts of salvage logging.

"I am concerned about your plan to log the areas burned by last year's wildfires. While I am not a scientist nor do I claim to be knowledgeable about forest management, I have seen first-hand the effect to a healthy forest of large trucks and logging operations. I am very concerned about erosion and the disturbance that a large logging operation would cause to the forest as it tries to heal itself after the huge fires. I do not want the recovery process to be set back years or perhaps even thwarted completely. I am concerned about water quality and wildlife. I am concerned about protecting human residents from future wildland fires." (Individual, Missoula, MT - #186)

"The Bitterroot National Forest Burned Area Recovery DEIS should employ sound science to promote genuine forest restoration and protect homes from wildfire. The Forest Service's own scientists have acknowledged that salvage logging has no ecological benefit while it may severely damage soils, streams, vegetation and wildlife." (Individual, No Address - #228)

"Post fire salvage logging removes essential biomass, exacerbates the spread of noxious weeds, and destroys natural regeneration." (Individual, Salt Lake City, UT - #60)

ECOLOGICAL DAMAGE

"I perceive the unnecessary cutting in burned areas (for instance, of healthy stands; for instance cutting every large and medium standing-dead and downed tree) as stealing from the future growth in the natural way of succession. I believe that we should preserve all the large areas of the native forest in perpetuity not merely as an insurance policy, which is what it is, but also to protect our water supplies and biodiversity. There is so little percentage-wise natural forest that is left after massive harvesting in past years." (Individual, Huntsville, AL - #138)

FOREST UNDERSTORY

"Sexton's work . . . indicates that the post-fire logging . . . reduced understory species richness by 13% in '93 and 30% in '94--logging reduced species richness, diversity and altered species composition, and stunted the growth rates of naturally regenerating ponderosa pine and the survival of planted ponderosa pines relative to unlogged, burned sites. The area was logged using ground based equipment over >60cm of snow." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

Response:

All impacts, positive and negative, are described in detail by resource area in Chapter 3 of the DEIS and FEIS. A summary of effects is provided in Chapter 2 under the environmental consequences comparison and summary section.

A team of specialists working on this project is using the latest and best science and information available to not only develop a project that minimizes the negative effects to various resources but also to prescribe mitigating activities to lessen the impacts. Chapter 2 of the document describes the mitigating measures as well as monitoring plans to evaluate effects on various resources.

Standing trees will be retained for the purposes of snags, snag recruitments, and coarse woody debris. These trees will include representation across size classes, but favor the largest trees.

In Alternative B and D, the project proposes green tree harvest for the purpose of meeting fuels objectives in the wildland urban interface and in the low elevation ponderosa pine communities to approximate historic structure and species composition. These areas are prescribed for a thin from below (removing the smaller diameter trees) rather than to remove the large diameter trees. In both the wildland urban interface and the low elevation ponderosa pine communities, these live large diameter trees are very important ecologically and are prescribed to be retained.

Management to preserve large tracts of land do exist in our wilderness areas as well as inventoried roadless areas as defined in the Bitterroot National Forest Plan. In addition, not every acre available to harvest from within the burned area is proposed to be harvested. Alternative D, which proposes to treat the most acres in the Environmental Impact Statement, includes approximately 72,882 acres of commercial harvesting. The 79,000 acres of total fuel treatment activities in this alternative also includes non-harvesting fuel reduction and prescribed burning. To put this into perspective, this is 24% of the total burned area and 5% of the total land in the Bitterroot National Forest.

39 The Bitterroot National Forest should consider the ecological benefits of leaving burned timber in the ecosystem.

“A 'recovery' plan should not result in any further environmental damage. Every standing-dead and downed tree plays a specific and essential role in the natural recovery of a burned area. Dead trees are not wasted resources. The scientific community has established that post-fire salvage logging provides no benefit to the post fire forest and may in fact damage fragile soils, remove essential biomass, exacerbate the spread of noxious weeds, and destroy natural regeneration." (Individual, New York, NY - #187)

Response:

We agree that standing dead and downed trees play a very specific and essential ecological role, which is why burned area specific recommendations for the retention of snags and coarse woody debris were developed. This is to ensure that recovery processes with regard to soil productivity, the building back of organic matter, and habitat for wildlife are provided.

The removal of fuels to reduce the severity of future fires can be viewed as benefit to many resources. The long-term effects of severe fires could be detrimental to soils, watersheds, tree regeneration, understory revegetation, etc. The interdisciplinary team has worked together throughout this project to mitigate negative effects to resources. The team has also recommended monitoring plans to evaluate these effects during the implementation of this project (Appendix C). Please see Chapter 2 for more detailed information. Also see specific resource discussions in Chapter 3 where the effects are described.

64 The Bitterroot National Forest should ensure that burned areas are revegetated.

"Measures need to be taken to ensure that existing seeds are allowed to grow and the natural reforestation is allowed to happen." (Individual, Hamilton, MT - #160)

"Reforestation in those areas unlikely to satisfactorily regenerate naturally is also an urgent need in our minds. We continue to believe that some level of natural resource use will continue to be important in the economic future of the

Bitterroot. Without debating levels or kinds of use we believe that healthy, adequately stocked forests are an asset for our future, whether the use is watershed, recreation, wildlife habitat or timber yields, the sooner the burned areas are restocked with the most desirable species, the better for all." (Business Association, Hamilton, MT - #1339)

"Plant more than 36,000 acres of trees. Considering that 356,000 acres burned, 36,000 is a small percentage." (Individual, Stevensville, MT - #880)

"Most of the area should recover if left alone. Those areas that have been over-managed and thus lack seed source should either be replanted or have seeds placed there." (Individual, Davis, CA - #662)

Response:

Both natural and artificial regeneration is proposed within the project areas. Natural regeneration is prescribed where natural recovery can meet desired conditions for both species composition and stocking. All areas prescribed for regeneration would be monitored over time to make certain stands are progressing and becoming stocked.

133 The Bitterroot National Forest should study forested lands near Mount St. Helens to evaluate the merits of salvage logging versus natural recovery.

"I am certain that you are familiar with many other, possibly similar, efforts and have seen many differing results. I would, however, suggest that you consider investigating the results of salvage logging vs. natural recovery in the area of Mount St. Helens. The differences in recovery, in side-by-side properties, are stark and extreme." (Individual, Hamilton, MT - #1030)

Response:

The Mount St. Helens habitat types and forest types are very different from habitats and forest types on the Bitterroot National Forest. The volcano eruption disturbance had far different effects than the wildfire effects. Comparisons of recovery between these two areas are not considered appropriate. We have looked at other fire recovery projects in areas with similar habitats and forests that were affected by wildfire such as the Boise and Payette National Forests in Idaho.

222 The Bitterroot National Forest should consider the impacts of conventional logging practices on mycorrhizal fungi.

"Consider the impacts of compaction, the primary damage associated with conventional logging practices involving skidders, drag lines, trucks, etc. Such compaction has been demonstrated to be fatal to fungi, and is the reason that mushrooms will fruit at the edge of a trail or track, the fungal mycelium has encountered an impenetrable wall of compacted soil. Survival of mycorrhizal fungi is crucial to tree survival in the nitrogen poor soils of our area. Studies have demonstrated that soil temperatures in clearcut areas may be 10 degrees warmer than nearby forest soils. Burned areas with standing dead timber are warmer than the forest, but some 6-7 degrees cooler than the clearcut. Fungal succession progresses differently at higher temperatures, favoring wood decomposers and early-season species over mycorrhizal species. Mycorrhizal failure is a leading cause of tree regeneration failure. Death of the key fungal species may take decades to replace by natural processes." (University/Professional Society, Missoula, MT - #1415)

Response:

The health of our soils is critical to ensure long-term forest health. This is the reason mitigations are proposed in some of the alternatives to compare the effects of ground based harvesting (skyline, tractor, and tracked line machine) during winter operations over snow and/or frozen ground versus in the dry season. Compaction and the effects of detrimental compaction are disclosed in the soils section of Chapter 3. Mychorrizae is another critical component of healthy soils and of some concern after the fires, particularly on high severity burned lands. According to Amaranthus (2000), the majority of the mychorrizae will recover in 2-3 years following a severe burn.

Graham, et. al, 1994 used ectomychorrizae as a bio-indicator of how much CWD is needed for organic matter. Ectomychorrizae activity increases as more CWD is added up to a certain point, but beyond that point no significant additional ectomychorrize activity occurs. Graham et. al. (1994) used the peak of the range to establish the mid point of the range for recommended levels of CWD. Going beyond the upper figure in Graham, et al's range would not increase ectomychorrizal activity and needs for the site in terms of organic matter. For long-term site productivity, it's this layer of organic matter that is critical. Because it will take time for the organic matter layer to build back up in moderate and high severity areas, there is no added value to mychorrizae by increasing the CWD tons/acre. Mychorrizae will only use CWD to a certain point and won't help to build up the organic layer any faster.

Jain (2001) states that CWD only contributes 30 - 40% of what is needed toward organic matter in the DF habitat types. The rest of the 60 - 70% comes from understory plants, needle cast, and other material that builds up in the litter layer with vegetation recovery. Based on research of this subject, Jain (2001) concurs we would be able to meet the organic matter needs through CWD on sites with the minimums listed in Table 1-3.

230 The Final EIS should address the cumulative landscape-scale effects of the proposed logging activities.

"While large stand-replacing fires are typical of landscape dynamics in the northern Rockies, salvage logging is not. Therefore, we need to fully understand how logging within the burned areas will affect natural landscape dynamics and then tailor our restoration methods accordingly. The DEIS fails to provide information demonstrating the impacts of salvage logging on recovery processes at the large scale proposed in this project. The DEIS does not evaluate how salvage logging at this scale will change the configuration of the burned patches across the landscape and how this change will affect wildlife species habitat, vegetation composition, and natural landscape patterns created by the fire. Furthermore, the DEIS did not incorporate scientific information on landscape-level ecosystem processes and the cumulative effects of salvage logging on these processes within the burned area at the proposed scales. The DEIS did not include an evaluation of the removal of 'live' trees and how the removal by salvage logging at the project-level and landscape-level will affect wildlife species habitat, vegetation composition, and natural landscape patterns created by the fire." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

The harvesting of dead and dying trees within the project area has been carefully designed and analyzed to determine how it will affect landscape dynamics. Each resource has looked at the indirect, direct, and cumulative impacts at various scales on recovery processes. The wildlife section in Chapter 3 defines the effects to species and their habitat. The forested plant communities' section in Chapter 3 describes effects of harvesting on vegetation composition and landscape patterns. Alternatives B D, and F include some green tree removal and the effects of this action are included in all resources sections of Chapter 3. A summary comparison of the effects of green tree removal for Alternatives B D, and F is included in Chapter 2 for each resource. These effects should be compared to Alternative E and F where no green tree harvest is proposed.

307 The Final EIS should include post-fire stand structure data.

"The DEIS states that 'post-fire stand structure data has not yet been collected.' This lack of data should be remedied (DEIS 3-250)." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The Forested Vegetation Section of the FEIS has been expanded to include post-fire structure data and a discussion of why this level of data is adequate in addressing the effects of structure at the landscape scale.

309 The Final EIS should address the differences in ecological impacts on forest plant communities caused by fire and logging.

"In discussing the substantial impacts of fire, the DEIS fails to address the ecological difference between fire and logging. While natural disturbances including fire leave ecological legacies, logging often removes structural complexity, disrupts soil and water, and degraded vegetation in ways markedly different from natural fire. Spies and Franklin (1988) emphasize that the disturbance pattern resulting from intensive logging differs markedly from that created by natural processes: In comparing the ecological effects of a wildfire with traditional clear cutting, it is apparent that harvesting removes the live wood (reducing coarse woody debris loading and structural diversity); creates a pattern of smaller, dispersed, and more uniform patches (affecting wildlife habitat and future disturbance probabilities); and truncates succession before it can proceed to older stages (decreasing the quantity of stands with old-growth characteristics) (Spies and Franklin 1988). Further, because natural disturbances usually leave abundant dead (and often living) wood behind, they tend to enhance biodiversity. In contrast, modern logging and silvicultural methods create barren patches mostly devoid of natural structure (Noss and Cooperrider 1994)." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

Harvesting practices, such as clearcutting mature stands, is not proposed in any of the action alternatives. The harvesting proposed would not substantially change or alter the landscape patterns that were created by the fire. Removing adjacent unburned and/or green trees would not expand openings created by the fire. No new patterns on the

landscape would be created that are smaller, dispersed, or more uniform, as suggested. The silvicultural methods and harvesting practices proposed for action alternatives that consider harvest include measures to ensure that ecologically appropriate amounts of snags and coarse woody debris are retained for wildlife, long-term soil/site productivity, and structural diversity. Diversity would be retained or enhanced. For much more discussion, refer to Chapter 3's Forested Plant Communities and Wildlife report.

316 The Final EIS should address the essential role insects play in forest nutrient cycling and renewal.

"The DEIS . . . fails to address the essential role that insects play in forest nutrient cycling and renewal. Emphasizing individual tree health subverts the goal of ecosystem management integrity and long-term sustainability of forests and their myriad biotic components. In the Northern Rocky Mountains, tree decay, native insects, and fire are integral components of a healthy forest." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

As stated in the Forested Plant Communities report in Chapter 3, a detailed discussion of the benefits and ecological role of forest pests is included in the Post-Fire Assessment (Project File, pages 4.5.29-35). The discussion of insects in the EIS focuses on when and where these disturbances are not natural and causes declines in forest health that are not ecologically desirable at either the stand or landscape scale. The EIS does not emphasize individual tree health, but rather stand health and landscape scale health. Also see the wildlife section in Chapter 3 for a discussion of the values insects provide for wildlife.

317 The Final EIS should disclose the methodology for identifying stands at high risk of bark beetle infestation.

"We request substantiation of the 'high risk' of bark beetles in stands identified for treatment. The methodology for identifying high risk should be disclosed. The DEIS discusses the conditions necessary for a Douglas Fir Bark beetle outbreak following fire (DEIS 3-252). The DEIS fails to address the prevalence of these conditions in the analysis area following the fires of 2000. While the DEIS vaguely states 'we did see attacks after the fires of 2000, and do expect to see more in the next few years.' These observations should be thoroughly disclosed (DEIS 3-252). The DEIS fails to provide adequate substantiation of past occurrences when bark beetle populations have increased following fire." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

For the FEIS, more documentation and literature of the determination and substantiation of "high risk" stands has been included.

In DEIS Chapter 3 of the forested plant communities section, the sentence "We did see attacks after the fires of 2000, and do expect to see more in the next few years" is in reference to pine engraver beetle and western pine beetle – not Douglas-fir bark beetle. Although the FEIS does not go into detail into where every pine engraver and western pine beetle population is located – in general these were found throughout the Little Blue fire, Reimel ridge, Blodgett fire and in most areas of low to mixed severity fire where there is a presence of ponderosa pine.

The Post-fire Assessment, DEIS and FEIS includes the following literature/documentation of previous post-fire bark beetle populations: Weatherby et. al., 1994; Weatherby et. al., 2001; Amman & Ryan, 1991; and Rasmussen et. al., 1996.

321 The Final EIS should address the effects that salvage logging and replanting will have on natural landscape patterns.

"Fire has played a dominant role in the Northern Rockies, causing a rich mosaic of plant communities across the varied landforms of western Montana. Fires are random in where they burn and how severely they burn, and thus, enhance biological diversity by providing for varied structure and species composition across a landscape. The haphazard nature of fire's pathway, periodicity, and ignitions provide various patch sizes, textures, and kinds of vegetations as a result. The DEIS mentions the need to maintain the fire-created mosaic or patterns on the landscape; however, it does not address the effects that salvage logging and replanting will have on specific natural landscape patterns resulting from large-scale fires. These landscape patterns depend on such factors as pre-fire ecosystem structure and species composition, local patterns of fire severity, and unpredictable post-fire events including year-to-year variations in climate. This combination of variables is responsible for the landscape heterogeneity in the Northern Rockies and will undoubtedly contribute to the future heterogeneity of this landscape. Salvage logging and replanting at the scale

proposed in the project would only disrupt the natural patterns created by the 2000 fires, thereby decreasing overall landscape heterogeneity within this area. Many plant and animal species have evolved within the context of these natural landscape patterns over time and the simplification of these patterns will have a large impact on species habitat amount and configuration in the short- and long-term (Crist et al. FORTHCOMING)." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

The FEIS addresses landscape patterns and patch sizes with references to their historic fire regime in the Forested Plant Community report in Chapter 3.

388 The Final EIS should disclose the percentage of green ponderosa pine trees proposed to be cut under Alternatives B and D.

"PONDEROSA PINE HAS ALREADY BEEN OVERCUT. The BAR DEIS failed to disclose and discuss specifically what percentage of green ponderosa pine trees would be cut in the proposed actions for alternatives B and D. Historically, according to agency documents, the BNF has continually overcut the ponderosa pine segment of the forest until very recent times. The agency report and Regional Forester direction generated during the Bitterroot Controversy period on this forest documented the overcutting of the ponderosa pine component. The report, 'Management Practices on the Bitterroot National Forest - A Forest Service Task Force Appraisal,' (May 1969-April 1970) stated the following: 'Is the ponderosa pine element of the allowable cut being overcut? The answer is yes.' The BNF misinterpreted the fact that the allowable cut is the volume to cut by type. . . . The overage should be compensated for by a reduction of this amount in ponderosa pine sales during the next few years (F.S. Appraisal, p.66). Recommendations: 1. Reduce timber sales in the ponderosa pine type for the balance of the present timber management plan period to bring the cut in line with approved allowable cut (F.S. Appraisal, p.69)." (Preservation/Conservation Organization, Hamilton, MT - #5000)

Response:

Although the project discusses treatment in the low elevation dry site ponderosa pine/Douglas-fir communities (VRU 2), this would not include the removal of most or all ponderosa pine. As discussed in Chapter 1 and elsewhere, the desired condition for these sites is to more closely approximate historic structures and species composition. To do this, most or all of the green/live ponderosa pine would be retained. Those harvested would be subdominant and only where densities are excessive.

The FEIS identifies the percentage of change from 1900 to 1995 in ponderosa pine in VRU 2. This study was conducted by Hartwell et. al. (2000) in the Mill and Sheafman creek drainages (Blodgett geographic area). One of the reasons for the drastic change in ponderosa pine according to Hartwell et. al. (2000) is fire suppression, past logging (that removed the large old pine), and past grazing. Past logging effects on species composition in this VRU is discussed in the forested plant communities section of Chapter 3. All past management and fire suppression has had an effect on the present vegetation after the fires of 2000. This is addressed in great detail in the Forested Plant Communities section of Chapter 3.

429 The Final EIS should disclose the actual acreages and percentages of past regeneration, intermediate harvest, and prescribed fire for the entire geographic area.

"The DEIS discloses that 'the actual acreages and percentages of the amount of past regeneration, intermediate harvest, and prescribed fire for the entire Geographic Area are not provided in this document' (DEIS 3-250). As an understanding of past logging is essential to understanding cumulative effects, this information should be disclosed." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The analysis in Chapter 3 has been supplemented to include this information.

437 The Bitterroot National Forest should not allow the expansion of timber sales to include high value ponderosa pines.

"Because of the high value of the ponderosa pine, managers have had a real incentive for years to 'sweeten the pot' of a timber sale with it. . . With both 'green' cutting along with the other extensive cutting proposed in the BAR DEIS's logging alternatives, there is a real possibility of the ponderosa pine component again being overcut. The helicopter logging that is proposed by the DEIS will likely need to include high value large trees to be economically attractive." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

Please refer to the response to comment #388.

472 The Final EIS should include information on helispot, drop point, and safety zone construction during the 2000 fire season.

"What is the total number and amount of helispots, drop points, and safety zones constructed during the suppression efforts, measured in acres? What are the specific locations of helispots, drop points, and safety zones constructed during the suppression efforts? What is the average size of helispots, drop points, and safety zones constructed during the suppression efforts, measured in acres? What is the extent of soil disturbance caused by construction of helispots, drop points, and safety zones? What is the extent of vegetation removal caused by construction of helispots, drop points, and safety zones?" (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

Refer to FEIS Chapter 3, Forested Plant Communities and Soils reports.

516 The Final EIS should provide additional information regarding methods for and associated impacts of bark beetle reduction.

"Please explain the interconnected role of bark beetles, ants, bacteria, woodpeckers and wood boring insects in the decomposition of organic materials in the forest. What are the cumulative effects of artificially manipulating one or more of those variables? What is the direct effect of reducing bark beetle numbers on decomposition rates and how would varying rates of decay affect the stated 'optimum' amounts of coarse woody debris? Especially considering that the dry climate and slow decomposition in the Bitterroot is particularly sensitive to the manipulation of rate-of-decay variables. Please explain the effects of removing snags and fire stressed trees on bark beetle predator habitats. Please consider that natural animal and bacterial predators have proven to be the most effective means of beetle population reduction. Please explain the timing of proposed beetle reductions considering the fact that existing beetles have already flown to fire damaged stands and will have gone through any fire induced growth before reduction prescriptions are to be performed. Please indicate the expected level of effectiveness on forest wide beetle populations for each action alternative. Do these levels of success justify the potentially negative effects of proposed management prescriptions?" (Preservation/Conservation Organization, Missoula, MT - #2054)

Response:

There are relationships between bark beetles, other insects, woodpeckers, and decomposition. There is information that we do know about these relationships and things we do not know. For example, there are shifts in habitat preference between metapopulations of woodpeckers within their range. We find Lewis' woodpeckers in cottonwood stands on the Bitterroot, but do not find them in ponderosa pine forest, which is where they are usually found in other parts of their range. In Northern Idaho, research has found that blackback woodpeckers respond following bark beetle epidemics due to the ensuing plentiful source of preferred insects, such as woodborers. More discussion is included in the wildlife section in Chapter 3.

An important consideration in determining the effects on relationships between habitat, food source, and populations is that proposed treatments would occur on less than 20% of the burned area, regardless of alternative. . Manipulating this interconnected relationship may cause negative effects with endemic bark beetle population levels, when habitat and food may be limiting. Impacts in an epidemic situation are less likely to be limiting due more plentiful habitat and prey

The timing of proposed beetle reductions as well as the effectiveness on the forest-wide beetle populations for each action alternative is discussed in detail in the Forested Plant Communities section of Chapter 3.

TES Plants

21 Clarification of statement

"P 3-323, under Alts B, D, E - 2nd sentence accurate? Compared to conventional ground based over dry soils?" (Individual, Stevensville, MT - #4)

Response:

Clarification of this sentence has been included in the FEIS.

452 The Final EIS should include post-fire logging effect surveys on Candidate, Sensitive, Threatened, Endangered, and Management Indicator Species plants.

"What effect will 72,000 acres (I can't even believe so much land can be included in one DEIS) of post-fire logging have on habitat for Candidate, Sensitive, Threatened, Endangered, and Management Indicator Species? What are the results of surveys in the areas for any of these species that may use the habitat in the action areas? Please include these surveys in the Final Environmental Impact Statement. If you have not performed these on-site surveys, how can you adequately and qualitatively know what possible negative effects this action will have on these species? The Final EIS should reference all Management Indicator Species (MIS) and disclose the potential impacts and realized adverse impacts due to the proposed actions. The FEIS should discuss the available data from Forest Plan implementation monitoring on how MIS populations have responded to post-fire salvage and thinning and other geographically related management actions. If sufficient data is not available to indicate trends for these MIS, the FEIS should say so and the analysis be expanded to acquire the information so that cumulative impacts from further logging and other ongoing actions in the area can be adequately analyzed." (Individual, Missoula, MT - #1692)

Response:

There are no candidates, threatened or endangered plant species on the Bitterroot Forest and years of surveys have never identified any of these plant species. Management indicator species are not identified for plant species in the Bitterroot Forest Plan (USDA Forest Service 1987a). Extensive surveys for plants on the Bitterroot Forest Sensitive Plant list have been conducted during the spring and summer of 2001 in areas of proposed activities in the burned area. The results of these surveys and effects of proposed activities on sensitive plant species are published in the FEIS, along with Biological Evaluations for each geographic area. Any pre-fire survey work was also incorporated into the effects analysis. Mitigation measures have been specified to avoid any sensitive plant locations found in areas where temporary roads or landings occur, since these type disturbances can permanently alter sensitive plant habitat.

Range

435 The Bitterroot National Forest should address the cumulative effects of livestock grazing on affected resources.

"The DEIS repeatedly concedes that grazing within the project area elevates sediment delivery and damages streambanks (e.g., DEIS, pp. 3-204 and 3-205). Therefore, grazing management clearly meets the purpose and need for the project and is within the scope of decisions to be made. Grazing also greatly affects soil productivity (USFS and USBLM, 1997a), which strongly affects the rate and success of reforestation efforts. Reforestation is also one of the avowed purposes and needs for the DEIS (pp.1-4). Soil productivity is a key issue within the project area. Grazing also strongly affects most of the INFISH Riparian Management Objectives (RMOs) via its impacts on riparian vegetation, channel banks, stream shading, and sediment delivery. Grazing elevates water temperatures by decreasing stream shading and widening channels (Platts, 1991). Grazing contributes to pool loss via increased sediment delivery and loss of bank stability (McIntosh, 2000). Elevated sedimentation also increases channel width-depth ratio (Richards, 1982). Water temperature, pool frequency, and width-depth are all INFISH RMOs. Bank stability and bank angle also apply in non-forested systems; grazing strongly affects these channel attributes (Platts, 1991; Fleischner, 1994; Rhodes et al., 1994; Belsky et al., 2000). Therefore, grazing management must be part of the decisions to be made. A DSEIS should be issued that includes at least one alternative that eliminates grazing within the project area." (Preservation/Conservation Organization, Tucson, AZ - #1695)

"The DEIS falls far short of providing the required analysis of the cumulative impacts of livestock grazing activities on soil productivity, wildlife habitat, water quality, and fish habitat." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

For the FEIS, the cumulative effects analysis for each resource has been reviewed and supplemental information regarding cumulative effects of grazing has been added in Chapter 3 where needed.

In compliance with the Rescission Bill of 1995, NEPA has been either completed or scheduled on all allotments on the Forest, including the allotments burned in the fires (Project File Range-5). However, to more adequately address this concern, Alternative G suspends grazing in the burned areas until new NEPA planning is completed. The effects of Alternative G are displayed in the Range report in Chapter 3.

Noxious Weeds

163 The Bitterroot National Forest should allocate additional funds for weed control and re-seeding efforts.

"We were not only impacted by the loss of our view from the backfire, but we were impacted by the loss of wildlife feeding grounds. (Winter range) We had elk on our 26 acres every day all through fall and winter and into April. They ate our fragile property down to MUD. We now have more cheat grass and weeds than ever before, in spite of our three year long effort to spray annually. More funds must be allocated for weed control and re-seeding." (Individual, Conner, MT - #1110)

Response:

The germination of cheatgrass seed throughout the burned area is addressed in the FEIS (Ch. 3—Noxious Weeds). Spraying for cheatgrass is not very effective, since chemicals that target cheatgrass often also target native grass species. The Noxious Weed EIS currently in progress includes treating many of the burned areas susceptible to weed encroachment. The Weed EIS will also address areas where the native plant component has been suppressed for so long there is not much chance of viable seed being available in the soil. These areas will likely need some supplemental seeding.

Vegetation in burned areas may take three or four years to come back, depending on burn severity and the vegetation existing on site prior to the fires. Shrubs were seen sprouting this spring and native forbs and bunchgrasses will follow in subsequent years. Wildlife in many areas were attracted to the fresh young shoots sprouting from shrubs this year. There is the potential for over browsing to occur in some areas. In general, though, the fires of 2000 should prove beneficial for wildlife forage. Any treatments on private property are not proposed in either the Burned Area EIS or the Noxious Weed EIS. Such treatments are left to the discretion of individual property owners. Opportunities for weed management assistance on private property are available through the Ravalli County Weed Management program, BIRT organization, and/or NRCS.

233 The Bitterroot National Forest should not address weed management in a separate Environmental Impact Statement.

"The DEIS states, 'Weed management is not proposed in this project and will be addressed in a separate EIS' (p.l-20). One cannot segment out the analysis of weed management activities in a separate NEPA document because the activities and effects of foreseeable weed management activities are intimately connected and related to the activities analyzed in the DEIS. A recent ruling by the 5th Circuit in SIERRA CLUB VS GLICKMAN is instructive on this matter." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

Please refer to the response to comment #399, previously addressed in Chapter 4's "Planning Process and Policy" section. It is recognized in the EIS that the proposed activities may contribute to the spread of noxious weeds (Ch 3—Noxious Weeds). Mitigation measures (Ch. 2) and recent Forest Service Manual direction (PF; NOXIOUS-3) identify procedures to be used during fuel reduction and watershed restoration activities to prevent the spread of weeds. The cumulative effects analysis (Ch 3-Noxious Weeds) addresses the impacts of foreseeable and past noxious weed treatments (including the proposed Noxious Weed EIS) or other ground-disturbing activities on the proposed project. Alternative G has been added in the FEIS and specifies additional weed prevention measures.

Wildlife

18 The Bitterroot National Forest should consider the impacts of proposed management activities on wildlife.

"The Burned Area Salvage Sale includes commercial harvest, ground-disturbing activities associated with timber harvest, and other vegetative manipulation. These activities are likely to jeopardize the viability of species that find optimal habitat in forests with well-developed structures, and forests naturally disturbed by fire, disease, and insect pathogens." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

"These lands are free and wild, home to innumerable species. And it seems that once areas like this are selfishly logged, the resulting erosion damages habitat." (Individual, Morro Bay, CA - #137)

"I am opposed to the USFS's 'Burned Area Recovery' plan. As proposed, though it will provide more jobs and profits, it will only cause more environmental damage to wildlife habitat and areas that are already naturally recovering." (Individual, Kalispell, MT - #737)

SALVAGE LOGGING AND PRESCRIBED BURNING

"The things that you have planned in your Draft Environmental Impact Statement are a major overkill that will do nothing to prevent fires in a bad year. Especially if you don't put out the fires when they happen and you wait for three days, your plans will do terrible harm to the habitat of the animals that live in the area. It will further degrade big game cover, both hiding and thermal cover. You MUST NOT further damage endangered species such as the Lynx anymore than they already are. This should stop most of your planned burning and much of your planned logging." (Individual, Corvallis, MT - #39)

ROAD BUILDING

"We truly believe that we DO NOT need any more roads in our forests. Too many roads encroach too much on wildlife habitat and their breeding and calving areas." (Individual, Hamilton, MT - #800)

"The less roading the better, since roading is such a destructive factor for wildlife habitat. The money you spend on roading could be better spent on planting trees for recovery and biodiversity." (Individual, Florence, MT - #738)

Response:

The FEIS includes additional population viability analysis in the Wildlife section of Chapter 3. Proposed activities would not jeopardize the viability of wildlife species associated with recently burned forests because less than 25 percent of the burned area would be treated under any alternative. The untreated area, along with the 80 percent of the Forest that did not burn, will provide abundant habitat for endemic and immediate post-fire associated wildlife species. Proposed activities would not jeopardize the viability of wildlife species associated with old growth. Four of seven alternatives considered do not conduct any activities in existing old growth, and none of the alternatives reduce existing old growth percentages (FEIS, Wildlife section of Chapter 3).

None of the alternatives in the FEIS include treatments in roadless or wilderness lands. Mitigations to protect soils during proposed activities are described in the Mitigations section of Chapter 2 of the FEIS. The FEIS describes potential effects to wildlife habitat in the Wildlife section of Chapter 3.

Fuels reduction treatments proposed in the FEIS are not designed to prevent ignitions, but rather to satisfy a number of fire management concerns including the reduction of fire severity. . The FEIS includes additional analysis of project effects to big game habitat and to lynx in the Wildlife section of Chapter 3. A large percentage of the proposed treatments are in areas that do not have the potential to become lynx habitat because they are too low and dry.

The FEIS (Alternative Descriptions section of Chapter 2) does not propose any new permanent road construction, but most alternatives would close some existing permanent roads. Three alternatives consider the construction of varying levels of temporary roads. Most of these temporary roads would be relatively short and located on ridges. None would be open to the public, and most would be rehabilitated immediately after harvest operations are finished. All the action alternatives include thousands of acres of tree planting.

141 The Final EIS should include population viability analyses.

MINIMUM NUMBER OF REPRODUCTIVE INDIVIDUALS

"For many of these species the Forest Service has no up-to-date population data describing population numbers, locations, and trends, nor monitoring data on which the agency can rely to determine that the actions proposed in the

context of Burned Area Salvage Sale will maintain numbers and distribution of these species sufficient for insuring long term viability. Nor has the Forest Service determined the 'minimum number' of reproductive individuals that would constitute a viable population. The Forest Service is required by law to determine this minimum number of reproductive individuals before implementing activities that might impact those individuals or populations such as are planned in the Burned Area Salvage Sale. The Forest Service cannot permit these activities without knowing the location and number of individuals of these species that would enable determination of whether habitat for each vertebrate is well distributed to facilitate interaction. Until such information is provided the Forest Service cannot know whether it is providing sufficient habitat to support the minimum number of reproductive individuals nor that the habitat is distributed in such a manner as to permit interaction. Because the Forest Service has no such data for most species adversely affected by the proposed management activities, and because what data there is suggests that such species are declining and otherwise at risk, the Forest Service runs afoul of viability and diversity requirements set forth in forest planning regulations 36 C.F.R. [section] 219.19 and [section] 219.26. In addition, any decision made on the Burned Area Salvage Sale and associated activities without the above-described information would be considered arbitrary and capricious and constitute agency action unlawfully withheld or unreasonably delayed in violation of the APA." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

SENSITIVE AND MANAGEMENT INDICATOR SPECIES

"The DEIS also fails to provide any basis for concluding that population viability for these species is being maintained, simply because it fails to provide or rely upon any valid assessments of population viability. The issue of fragmentation highlights this deficiency quite well. As fragmentation and disruption of biological corridors may threaten population viability, the lack of appropriate analysis in this regard represents a failure to ensure population viability as required by NFMA." (Preservation/Conservation Organization, Missoula, MT - #1431)

"The DEIS generally fails to address current populations of wildlife species, their habitat use, and their population demographics. The DEIS fails to assess population viability of management indicator species (MIS) and Sensitive species as required by NEPA and NFMA. This precludes consideration of whether the forest is maintaining habitat conditions sufficient to maintain viable populations of species. USDA Regulation 9500-4 requires that: Habitats for all existing native and desired non-native plants, fish and wildlife species will be managed to maintain at least viable populations of such species. In achieving this objective, habitat must be provided for the number and distribution of reproductive individuals to ensure the continued existence of a species throughout its geographic range." (Preservation/Conservation Organization, Missoula, MT - #1432)

DISPERSAL, RECOLONIZATION, AND GENE FLOW

"Population viability analysis has suggested that the core ecosystems of the Northern Rockies are not sufficiently large to support viable populations of many wildlife species. It is essential to understand the population structure and habitat use in the project area. Analysis should include consideration of the role of dispersal, recolonization, and gene flow in sustaining the population. Analysis should thoroughly assess the population structure in the analysis area: It is especially important that cumulative effects analyses, which extend beyond the direct effects of individual management actions, examine ecological consequences within the metapopulation." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The FEIS includes additional population viability analysis in the Wildlife section of Chapter 3.

180 The Final EIS should address the benefits of standing dead trees to elk summer range.

"It might help the DEIS to note that wide distribution of use by elk on wildfire-burned summer range is enhanced by standing dead trees. Apparently, the snags provide some level of psychological security, at least in roaded areas accessible to the public." (Preservation/Conservation Organization, Stevensville, MT - #800)

Response:

All of the alternatives would leave all of the existing snags on more than 200,000 acres burned during the fires. The millions of snags left on these untreated areas would be available to provide some level of elk security until they fall down. Unburned or lightly burned areas interspersed with moderate to high severity burned areas would provide more tangible security benefits to elk. Effects on elk and other big game are discussed in Chapter 3's wildlife report.

218 The Bitterroot National Forest should count snags located outside proposed harvest units toward overall snag retention levels.

"In determining the needs for snag retention, I am always amazed that only the snags in proposed harvest units are considered. Snags around the unit boundary, uncut areas, riparian areas, unroaded areas and wilderness are never considered. All snags must be counted. Research on the Firefighter Mountain areas on the Flathead National Forest shows that the 'edges' of cutting units are more beneficial than snags within the unit. What is your justification for your requirements?" (Wood Products Industry/Association, Columbia Falls, MT - #1545)

Response:

. The FEIS (Chapter 1, “Other Features of the Proposed Action” section) includes updated snag retention and course woody debris standards. It is important to consider snag numbers on both the stand scale and the landscape scale. All alternatives would leave millions of snags across the burned area in the untreated areas outside of activity units, including the RHCAs. These would provide abundant habitat at the landscape scale for the many wildlife species that are associated with high snag densities, as well as the many wildlife species that prefer large amounts of course woody debris when these snags fall down.

Retention of some snags within harvest units provides many long-term ecosystem benefits on those sites that would not be met by the huge amount of snags left at the landscape scale. Snags retained in harvest units would provide habitat at the stand scale for species that prefer lower snag densities, such as Lewis’ woodpecker and American kestrel (Saab and Dudley, 1998), and provide perches for raptors that prefer open habitats such as red-tailed hawks. After they fall and become course woody debris, snags in harvest units are also important for providing habitat for many insects, amphibians and small mammals. Down logs in activity units would also help reduce erosion potential and increase nutrient cycling and soil water retention. Some of the larger snags may stand for many years, and would increase the wildlife species diversity of the future regenerated forest by providing nest and roost sites for species that would otherwise not occupy these areas

266 The Final EIS should address the cumulative impacts of removing live trees on elk populations.

"The DEIS should follow up on the suggestion by Montana Fish, Wildlife and Parks' Regional Supervisor, 'when salvage logging occurs, live trees should not be removed to provide security for elk' (project files, Wildlife-4). The DEIS does propose to remove live trees. The cumulative impacts of . . . reduction of cover provided by live trees is not considered." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

The FEIS’ Elk Habitat section of the Wildlife report addresses the effects of thinning green trees to elk thermal cover and concludes that the minor reductions of thermal cover in elk winter range proposed in some alternatives would not likely affect elk winter distribution or viability. As noted in the FEIS, recent research (Cook, et al., 1998) indicates that thermal cover is probably not necessary to ensure the survival of elk in the winter.

The FEIS’ Elk Security section of the Wildlife report addresses the effects of thinning green trees to elk security. Elk security areas are defined as contiguous areas of cover greater than 250 acres that are more than one-half mile from any road open to motorized vehicles during the hunting season (Hillis, et al., 1991). Proposed intermediate harvest in some alternatives would reduce existing elk security area percentages a small amount in some elk herd units, but most elk herd units would still contain more than the 30% security area recommended as a minimum level. The FEIS concludes that the reductions of elk security area caused by the fire combined with additional, though minor, reductions caused by proposed harvest may impact elk habitat to some extent, and that travel plan revisions or changes to hunting season regulations may be needed to reduce elk mortality due to hunting if monitoring indicates that populations are declining. Big game population monitoring is conducted annually by the Montana Department of Fish, Wildlife, and Parks. The Bitterroot National Forest works closely with the Department to share population data and trends and to adjust management as needed. Bitterroot Forest and State goals are met by cooperatively implementing travel or hunting season restrictions.

Over the next 10 to 20 years, the combination of hundreds of thousands of acres of regenerating trees and heavy downfall created by snag attrition should increase the amount of available elk security cover dramatically. This should help ensure more than adequate elk survival through the hunting season.

268 The Final EIS should evaluate the effects of logging and fire suppression on vegetation patch size and connectivity.

"Another example is offered on page 3-376 where the DEIS addresses the need to maintain connectivity for animal movement, migration, and dispersal. The DEIS described an analysis demonstrating how fire suppression has contributed to the increase of vegetation patch size and connectivity over time. Yet, this analysis does not consider the effects of timber harvesting on vegetation patch size and connectivity over time. There have been a few studies (e.g. McGarigal et al. FORTHCOMING) that have shown the effects of logging on vegetation patch size and connectivity over time. Thus, the DEIS needs to evaluate the effects of logging along with the effects of fire suppression to really assess if patch size and connectivity has indeed increased." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

The DEIS (3-376) states that patch size and connectivity of the forested areas have increased since fire suppression became effective, not that these changes are solely due to fire suppression. The increase in patch size and connectivity described has occurred over time and includes the effects of all natural and human-caused changes within that time period, including timber harvest. In other words, patch size has increased in the area since the early 1900s even considering the effects of timber harvest, which typically creates patches smaller than those usually associated with historic fire events in this area (DEIS 3-378).

270 The Final EIS should include conservation strategies for Sensitive species.

"The Forest Service Manual outlines the need to design and implement conservation strategies for sensitive and other species for which viability is a concern. The Forest Service Manual at FSM 2621.2 states: 'To preclude trends toward endangerment that would result in the need for Federal listing, units must develop conservation strategies for those sensitive species whose continued existence may be negatively affected by the forest plan or a proposed project.' In specific cases where the BNF has not done so, they run the risk of extirpating these species and contributing toward a trend toward listing under the ESA." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

The analysis of viability has been expanded for the FEIS. It indicates that the continued existence of sensitive, threatened and endangered species would not be negatively affected, regardless of alternative.

271 The Final EIS should disclose the methodology for maintaining viable populations of Management Indicator Species in old growth habitat.

"Given that the BNF lacks population monitoring information for old growth MIS, fails to maintain an accurate inventory of forestwide old growth, and has insufficient numerical old growth standards in its Forest Plan based upon scientific information indicating the amounts and distribution needed, both total forestwide and in smaller geographic areas, an EIS for a massive project such as the BAR must disclose the methodology for maintaining viable populations of old growth species. The DEIS does not." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

The Old Growth Habitat section of the Wildlife report in Chapter 3 discloses that large percentages of the old growth habitat that existed within the burned area prior to the fires was burned with moderate to high-severity, which generally killed all the trees and thus eliminated the most important old growth characteristic, i.e. live old trees. Treatments proposed in those areas would not affect old growth associated wildlife species because the fires changed habitat conditions so radically that old growth species no longer use them.

All alternatives in the FEIS would meet Forest Plan old growth standards because none of them would reduce remaining old growth percentages. Alternatives A, C, F and G would not conduct harvest in remaining old growth within the burned area. Alternatives B, D and E include some thinning treatments within remaining old growth, but treated old growth stands would retain their old growth characteristics and would still qualify as old growth (FEIS, Chapter 3, Wildlife section). Since all alternatives would maintain all existing old growth habitat within the burned area, all would help ensure viable populations of old growth wildlife species.

273 The Final EIS should demonstrate compliance with the Bitterroot National Forest Plan wildlife and fish standard e(1) regarding viable species populations.

"Given the huge scale of past, ongoing, and anticipated developments in the project area--not even considering the BAR project--the Forest Service should be using baseline ecosystem conditions to determine if viable populations of species will be able to persist on national forest land including the project area. The DEIS's analyses fall far short of completing such an analysis of the y situation for the Sensitive, ESA-listed, and management indicator species. Mainly the DEIS ignores past actions on land of all ownership, merely proceeding under the assumption (without adequate basis) that viable populations are persisting. In sum, the DEIS does not explain if habitat conditions of the national forest land in the project area are adequate to contribute to or demonstrate compliance with Forest Plan wildlife and fish standard e(1)." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

As discussed in the FEIS' Chapter 3 Wildlife report, the current levels of fragmentation, edge and patch size may be similar to those maintained by historic ecosystem processes. This leads us to conclude that it is likely that the diverse landscape pattern created by past actions including the fires of 2000 will provide an adequate amount and distribution of all habitats to contribute to the maintenance of viable populations of all existing native and desirable non-native vertebrate species.

Forest Plan fish and wildlife standard e(1) (FP II-19) requires the Forest to ensure population viability for all existing native and desirable non-native vertebrate species through the amount and distribution of old growth. All alternatives in the FEIS would meet Forest Plan old growth standards because none of them would reduce remaining old growth percentages. Alternatives A, C, F and G would not conduct harvest in any remaining old growth within the burned area. Alternatives B, D and E include some thinning treatments within remaining old growth, but treated old growth stands would retain their old growth characteristics and would still qualify as old growth (FEIS, Chapter 3, Wildlife section). Since all alternatives would maintain all existing old growth habitat within the burned area, all would meet Forest Plan fish and wildlife standard e(1) by helping to ensure viable populations of old growth wildlife species.

276 The Final EIS should assess salvage logging impacts on fire-associated bird species in all VRU types.

"One of the most significant effects of salvage logging is the simplification of the post-disturbance ecosystem. Salvage logging has been found to reduce the number and abundance of birds. For example, in a study of a recently burned forest in Colorado, none of the five species of woodpeckers found in the unsalvaged control area bred in the salvaged area, and several birds occurred only in the unsalvaged control area. Birds that were more common in the salvaged area were common species associated with open or forest-edge habitat (C. Schultz, pers. comm.). There are many wildlife species that depend on recently burned forests for habitat; Hutto (1995) found 15 species associated with recent burns including three-toed and black-backed woodpeckers and olive-sided flycatchers. The retention of 'live' trees and snags within burned areas is crucial to cavity-nesters. In fact, forest stand conditions resulting from stand-replacing fires in all forest types (e.g. ponderosa pine) provide 'source habitats' for five species of woodpeckers in the northern Rockies (V. Saab, pers. comm.). The DEIS offered a very basic discussion for these species in VRU 4 (lodgepole pine). However, the DEIS did not adequately assess how salvage logging would impact these species in all VRU types, especially in light of their current population declines due to habitat loss and/or alteration. The large scale of this proposed project would have a tremendous negative impact on species that utilize recently-burned forests." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

The Sensitive Species section of Chapter 3's Wildlife report acknowledges the importance of recently burned forests to a suite of bird species. Hutto (1995) showed that the bird communities in recently burned forests are different from those in other types of forests primarily because members of three foraging guilds (woodpeckers, flycatchers and seed eaters) are especially abundant in them, and listed 15 species that appear to be primarily restricted to recently burned forests. Saab and Dudley (1998) found some apparent differences in the snag densities preferred by cavity-nesting bird species in the Foothills fire in southern Idaho. Black-backed woodpeckers were most abundant in areas where no salvage logging occurred, and nesting success for hairy woodpeckers and mountain bluebirds was highest in unlogged areas. Nesting success for northern flickers and western bluebirds was highest in areas where 50% of the fire-killed trees were removed through salvage logging. Nesting success for Lewis' woodpecker and American kestrel was highest in areas where most of the fire-killed trees were removed through salvage logging. Saab and Dudley (1998) also found that all the woodpecker species present on the Foothills fire preferred clumps of snags rather than evenly-spaced snags, and that

woodpeckers were much more likely to excavate nest cavities in older snags that pre-dated the fire and contained higher amounts of decay than in recently-killed snags.

These studies suggest that some variation in snag densities across the landscape would provide for the habitat needs of a greater number of bird species than would essentially uniform snag densities. All the existing snags on over 200,000 acres of recently burned forest would be retained under any of the alternatives, which are expected to provide adequate habitat to support very large populations of the cavity nesters that prefer high snag densities. The action alternatives would increase the diversity of snag densities across the landscape by removing many of them in harvest units, which would improve habitat conditions for cavity nesters that prefer lower snag densities. Chapter 1 of the FEIS expands the snag guidelines in the DEIS by providing direction to retain most “legacy snags” (snags that pre-dated the fires of 2000) in harvest units, since these are the snags most likely to contain sufficient decay to make them suitable for cavity excavation. Snag mitigation guidelines documented in Chapter 2 of the FEIS have been expanded to include criteria for size, distribution, quality and numbers of snags to be retained.

277 The Bitterroot National Forest should consider the cumulative impacts of management activities on state, federal, and private land to Black-backed woodpeckers.

"Given the potential importance of spatial habitat pattern to Black-backed woodpeckers, it is crucial that the BNF thoroughly consider the cumulative impacts of management activities on state, federal, and private land to Black-backed woodpeckers. The DEIS cumulative effects analysis is vague and lacking scientific integrity and substantiation: Of the 296,557 burned acres, 49,000 acres occur on state and private lands. The State conducted salvage sales on their lands during the fall of 2000 and through the 2001 winter season. Salvage will continue to occur this summer and for the next few seasons until their objectives are met. Salvage sales were also conducted on private land starting during the fall of 2000 and are expected to continue for the next few seasons as well. Assuming that approximately 75 percent of the state and private landowners affected by the 2000 fires will salvage their fire-killed trees, this reduction of fire-killed trees and potential snags will reduce the amount of habitat that would have otherwise been used by Black-backed woodpeckers. Even with the loss of these fire-killed trees and potential snags, the amount of habitat left on the landscape is sufficient in meeting the needs of Black-backed woodpeckers, as well as many other woodpecker and snag dependent species (DEIS 3-369)." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The Sensitive Species section of the Wildlife report in FEIS Chapter 3 evaluates the cumulative effects of harvest on adjacent State and private lands to snag numbers and indirectly to black-backed woodpecker populations. It is important to remember that even in Alternatives B and D over 200,000 acres of burned area containing millions of snags would not be harvested. It is believed that the number of snags left would exceed historic average snag numbers for this area. It is believed that this vast supply of snags would be sufficient to provide habitat for abundant populations of black-backed woodpeckers beyond what has been available for many decades, and all the other wildlife species that depend on snags. It is unlikely that black-backed woodpeckers have the reproductive capacity to increase their populations enough to fully utilize all the snags that would be left under any alternative before insect populations and habitat quality for this species declines in four to five years.

278 The Final EIS should provide a basis for the DEIS conclusion that habitat degradation resulting from the proposed post-fire activities will not result in reduced hunting opportunities.

"The DEIS recognizes that elk and other big game species populations are under heavy pressure due to reduced security due to high road densities and the developments in this fragmented landscape. However, the DEIS does not provide any basis for concluding that cumulatively, the proposed new habitat degradation from the proposed postfire logging activities will not result in significantly reduced hunting opportunities, and significantly fails to meet state goals and objectives and Forest Plan requirements for big game." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

Possible reductions in hunting opportunities resulting from loss of big game hiding and security cover are discussed in the FEIS’ Elk Habitat Effectiveness and Elk Security sections of the Wildlife report. It is likely that any of the FEIS alternatives would meet state (Montana FWP, 1992) and Forest Plan (USDA, 1987a) goals and objectives for elk, since these are focused on maintaining healthy elk populations. Elk trend counts in spring of 2001 (Montana FWP, unpublished) indicate that elk numbers in most elk herd units are comparable to or slightly higher than the record elk

number recorded in 2000, and it is likely that elk reproductive rates will increase as a result of greatly increased forage production in the burned area. Montana Fish Wildlife and Parks has concurred with these findings.

279 The Final EIS should demonstrate compliance with the Bitterroot National Forest Plan wildlife and fish standard e(11) regarding elk population status.

"The DEIS does not adequately demonstrate compliance with Forest Plan wildlife and fish standard e(11): 'Elk population status will be used as an indicator of commonly hunted ungulate species and the status of their habitat.'" (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

The DEIS (3-333) disclosed that elk numbers in the Bitterroot valley were the highest ever recorded in the spring of 2000. The FEIS contains elk trend count numbers from the spring of 2001 in the Wildlife section of Chapter 3. The Montana Department of Fish, Wildlife and Parks monitors trends in elk populations through aerial surveys on winter/spring elk ranges. The Bitterroot NF reports population trends in the annual Forest Plan Monitoring Report (latest is USDA, 2000e).

281 The Final EIS should include a cumulative effects analysis of the impacts of dead and green tree removal on elk populations.

"The DEIS claims that none of the alternatives would have a short-term effect on elk populations because 'the removal of dead trees and intermediate harvest of green trees in certain small areas will have no direct effect on elk populations' (DEIS 3-333). However, the DEIS fails to consider a myriad of potential impacts. The removal of structural complexity may impact denning habitat. The impacts to soils and potential disruption of revegetation may impact foraging opportunities. The removal of trees may also impact thermal and hiding cover to a degree. Given the heavy logging on adjacent private lands, the elk cumulative effects analysis is inadequate: Timber sale projects listed as reasonably foreseeable actions in Appendix A have the potential to reduce thermal cover on winter ranges. The reductions will likely be minor and effects on elk populations undetectable. None of the other projects listed will have an effect on winter range thermal cover (DEIS 3-336). We request substantiation of this perceived lack of impacts." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The DEIS briefly discussed the cumulative effects of timber harvest to elk at 3-336 and 340. Cumulative effects of the alternatives to elk have been addressed in more detail in the FEIS (Wildlife section of Chapter 3) in response to this and other comments.

282 The Final EIS should address the impacts of removing snags from pileated woodpecker habitat.

"Region One's Warren (1990) document discusses the importance of snags at least 30" dbh for pileated nesting, and snags at least 20" dbh as preferred for foraging. The DEIS does not adequately discuss the impacts of removing these important components of the MIS pileated woodpecker's habitat." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

The DEIS (3-343 to 344) discusses habitat requirements of pileated woodpeckers. Snag retention guidelines listed in the DEIS at 1-15 and updated in Chapter 2 of the FEIS specify that the larger snags within harvest units would be retained. The FEIS further specifies that most “legacy snags” (snags present before the fires) would be retained. These guidelines should ensure that most of the snags suitable for pileated nest excavation remain on site. In addition, large areas of VRUs 2 and 3 would not be harvested, including the productive areas within RHCAs that pileated woodpeckers often prefer for nesting and foraging. Pileated woodpeckers do not seem to utilize large burned areas where all the trees are dead, so harvest within many of the burned areas is expected to have little impact to this species.

283 The Final EIS should include additional analyses of how logging on state and private lands will impact pine marten habitat.

"The cumulative effects analysis for pine marten lacks scientific integrity and fails to thoroughly and appropriately consider the implications of logging on state and private land." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

Cumulative effects to marten were analyzed in the DEIS (#3-343), and are further clarified in the Wildlife portion of Chapter 3 of the FEIS. Logging on State and private land would have limited impacts to marten or their habitat because the majority of those lands are at lower elevations that are generally too dry and unproductive to support marten habitat.

284 The Final EIS should include additional analyses of coarse woody debris use by pine marten.

"Recommendations of coarse wood debris levels are not scientifically supported. The DEIS does not adequately address the use of coarse woody debris by wildlife species such as pine marten." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

The FEIS establishes standards for course woody debris retention in Chapter 1, and discusses habitat requirements of pine marten in Chapter 3's Wildlife report. Additional references have been added and clarified. Since one of the management objectives is to restore historical structure and composition on the landscape, course woody debris levels would be retained at levels appropriate for each vegetation type instead of managing for a particular species (see lynx section of FEIS and Chapter 1 amendment section). Pine Marten, like many other forest dwelling species depend on ground level boles and debris for habitat (Ruggiero et al, 1994) and all alternatives described in the FEIS will meet this requirement.

285 The Final EIS should consider the implications of the proposed project on landscape pattern of pine marten habitat core areas and connectivity.

"The DEIS discloses the importance of maintaining landscape pattern created by natural disturbance for marten. Koehler and Hornocker (1977) found that the fires in the Selway-Bitterroot Wilderness in Idaho affected marten cover and food sources. The vegetation mosaic, including stringers and patches of retained large trees, created by the fires of 1910 provided ideal juxtaposition and quantities of marten food and cover (DEIS 3-341). Hence, the DEIS should thoroughly consider the implications of the proposed project on landscape pattern of habitat core areas and connectivity." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The Wildlife Report in Chapter 3 discusses wildlife corridors, and suggests that major linkages between large refugia are no more interrupted in the current landscape pattern than they were by the major fire occurrences of the past. Since individual animals often disperse through non-suitable habitat to reach areas of suitable habitat, the existing diverse landscape pattern should not create barriers to wildlife movement.

The FEIS also discusses the effects of the alternatives on marten habitat. Most of the landscape pattern created by the fires would be retained under any of the alternatives since all of them would leave more than 70% of the burned area untreated. The RHCA buffer areas would maintain marten travel corridors along streams and drainages, which marten tend to frequent due to the mesic habitat types and increased prey productivity typical of those areas.

The same information is included in the Animal Movement, Migration and Dispersal section of the Wildlife section of Chapter 3 of the FEIS.

286 The Final EIS should contain maps of Canada lynx habitat and connectivity.

"The DEIS fails to appropriately map lynx habitat and connectivity between habitat. The LCAS mandates that the following standard be implemented: Within each LAU, map lynx habitat. Identify potential denning habitat and foraging habitat (primarily snowshoe hare habitat, but also habitat for important alternate prey such as red squirrels), and topographic features that may be important for lynx movement (major ridge systems, prominent saddles, and riparian corridors). Also identify non-forest vegetation (meadows, shrub-grassland communities, etc.) adjacent to and intermixed with forested lynx habitat that may provide habitat for alternate lynx prey species (LCAS 79). The LCAS further mandates that projects 'maintain habitat connectivity within and between LAUs' (LCAS 79). The FEIS should include maps of lynx habitat, including connectivity within and between LAUs. The maps should be presented at a spectrum of scales in order to impact both a local and landscape sense of habitat components." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

Lynx habitat has been mapped utilizing satellite imagery data to define foraging habitats and potential denning and travel habitat. Lynx habitat mapping was completed in coordination with the USFWS prior to the initiation of this EIS. Maps are located in the project file, rather than publishing them in the FEIS due to the expense of illustrating habitat details on large maps. These maps are available for review.

According to Lynx Conservation Strategy guidelines forested vegetation on ridges, saddles, and riparian zones are assumed to be connective habitat. These features are delineated on maps available for review in the project files.

Larger scale maps have been produced for those areas determined to have connective habitat concerns. They are located in the project files and are also available for review.

287 The Final EIS should demonstrate compliance with "The Lynx Conservation Assessment and Strategy."

"The DEIS vaguely states compliance with the standards and guidelines of the LCAS without adequately substantiating compliance. We request substantiation of correspondence with these guidelines. While substantiation may be included in the biological documents, summaries should be provided in the EIS to provide substantiation."
(Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

A summary of consistency findings from the biological assessment is included in the FEIS and the project file.

289 The Final EIS should address Canada lynx population viability within the Cave Gulch project area.

"The DEIS also fails to address population viability of lynx in the analysis area in violation of NFMA. While lynx may not use the analysis area extensively and may indeed be a transient in the analysis area, the Cave Gulch project area may provide habitat that is critical to population viability of lynx. Populations of lynx in the vicinity of the project area may function as a metapopulation; a population in which viability is maintained through the migration of individuals between patches of habitat. While the individual patches may not be utilized as habitat consistently, their habitat integrity is essential to the long term viability of the population (Hanski and Gilpin 1997, Hanski 1994)."
(Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The Bitterroot National Forest has no information on the Cave Gulch project.

The Burned Area Recovery project as designed is not expected to affect the suitability of habitat preferred by lynx. Mitigations as applied will eliminate most effects to lynx and thereby not be additive to any past actions. Further discussions concerning lynx habitat and viability of wildlife species can be found in the FEIS' Chapter 3 Wildlife report.

Preliminary consultation with the USFWS indicate that activities proposed may affect lynx but are not likely to adversely affect lynx or lynx populations. The final decision concerning this project will be made after consultation has been completed.

291 The Final EIS should include additional analyses of project impacts on Threatened and Sensitive species.

"We are concerned that thorough analysis for numerous species was dismissed by stating without adequate support that the species is 'unlikely' in a given area. Species for which we request substantiation for lack of project impacts include: western big-eared bat, fisher, wolverine, northern bog lemming, boreal toad, northern leopard frog, peregrine falcon, and gray wolf. We are concerned that removing possible roosting and nesting snags may detriment western big-eared bat. The trapping of few fisher and wolverines on the BNF should be rationale for further concern rather than analysis dismissal. The potential project impacts to fishers associated with altered landscape pattern and future forest productivity should be thoroughly considered. The limited knowledge of wolverine habitat use in the analysis area should not provide rationale for dismissing a thorough analysis of wolverines. The DEIS claims that the wolverines will not be impacted due to the 'no increase in motorized travel.' However, the DEIS fails to consider the impact of increased road use by logging trucks and the noise and disruption of logging on wolverines that are detrimented by human impacts. As amphibians, including boreal toads and northern leopard frogs, can travel substantial distances through forested habitats, the FEIS should further substantiate the effectiveness of mitigation measures. The DEIS fails to

adequately consider the landscape habitat pattern implications of the proposed project on flammulated owls. We are concerned that thinning mature stands may disrupt, rather than improve, owl habitat." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

Additional analysis has been completed since the DEIS was completed and documentation is located in Chapter 3 of the FEIS (wildlife section) and in the project files.

293 The Final EIS should include additional analyses of the cumulative impacts of forest management activities on Canada lynx.

"The cumulative impacts to lynx in the analysis area have clearly been substantial, the DEIS should more adequately analyze cumulative impacts. We request substantiation of the lack of impact of salvage logging of the 1991 Sleeping Child Fire on lynx: The fire burned the headwaters of Rye Creek at high severity in the early 1960's. The fire, subsequent heavy salvage harvest, and road construction had little direct effect on lynx; and the resulting lodgepole pine stand has outgrown its value for foraging habitat. It is probable that preferred den habitat characteristics were lost, due to the heavy level of salvage harvest (DEIS 3-356). The DEIS fails to adequately consider the potentially synergistic habitat impacts of activities in the various geographic areas analyzed and the Bitterroot landscape as a whole. The DEIS fails to qualitatively address the effects of timber harvest on landscape pattern. The LCAS require that the BNF: Maintain suitable acres and juxtaposition of lynx habitat through time. Design vegetation treatments to approximate historical landscape patterns and disturbance processes. Further: If the landscape has been fragmented by past management activities that reduced the quality of lynx habitat, adjust management practices to produce forest composition, structure, and patterns more similar to those that would have occurred under historical disturbance regimes." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

Cumulative effects evaluations have been updated since the release of the Draft EIS. The details and impacts of activities on lynx have been updated and are disclosed in the wildlife section of the FEIS. Additional discussions of landscape patterns and historical structure can be found in the Forested Plant Communities section of the FEIS.

296 The Bitterroot National Forest should analyze the impacts of corridor and connectivity fragmentation on threatened and endangered species.

"Further, the failure to analyze impacts of fragmentation on biological corridors and connectivity represents a failure to ensure the conservation of species listed as threatened or endangered under the Endangered Species Act, such as gray wolves and lynx." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

The DEIS (3-378) discussed fragmentation effects to wildlife, and concluded that none of the alternatives would alter the existing pattern of fragmentation and the mosaic of patches created by the fires. Almost all species of wildlife native to western Montana are adapted to highly fragmented landscapes because that is the typical historical condition of these areas. None of the alternatives would substantially alter connectivity for any Threatened or Endangered wildlife species. Biological corridors are usually defined at a very broad scale, such as for the Northern Rocky Mountains. It is highly unlikely that any of the proposals in the FEIS would affect connectivity at such a large scale.

Dispersing wolves are well known to frequently travel hundreds of miles in short periods of time through a wide variety of habitats and across potential barriers such as mountain ranges, highways, rivers and areas dominated by farms and ranches (Curt Mack, pers comm.). Given this, it is highly unlikely that any of the projects proposed under any of the alternatives would create barriers reducing the ability of individual wolves or packs of wolves to traverse the landscape at will.

Lynx generally travel through landscapes using forested corridors and tend to avoid openings (Ruggiero, et al., 1994), although they are known to sometimes cross large expanses of shrub-steppe habitat. They often travel along forest roads (Ruggiero, et al., 1994), so roads are not barriers per se. Lynx will likely avoid using areas burned by moderate to high-severity fire for a number of years, both because they offer inadequate overhead cover and because they provide little suitable habitat for snowshoe hares or red squirrels, the primary prey items of lynx. Since lynx already avoid these areas, harvest treatments in areas burned by moderate to high-severity fire would have no further effect on the ability of lynx to move through the landscape. There may be short- term displacement of lynx during proposed activities in stands that

burned at low severity in some alternatives. Refer to the lynx section of Chapter 3's Wildlife report for additional information.

298 The Final EIS should address the difference between the impacts of fire and logging on wildlife habitat and movement.

"In discussing the substantial impacts of fire, the DEIS fails to address the difference between fire and logging. While natural disturbances including fire leave ecological legacies, logging often removes structural complexity, disrupts soil and water, and degraded vegetation in ways markedly different from natural fire. Having spent abundant time in forests studying forest fragmentation, I can confirm that while the forest indeed retains a 'burned' appearance following logging, many of the forest components essential to wildlife habitat and movement are degraded (i.e. structural complexity, microclimate). The demonstration site is a suite of stumps with a few standing trees. The structural complexity of downed logs has been replaced by small pieces of deliberately scattered slash. Animals have evolved with fire for thousands of years; to think it necessary to remove potential future downed wood that could impede wildlife movement neglects this fundamental concept (DEIS 3-377)." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

Implementation of any of the FEIS alternatives would largely retain natural legacies such as snags and structural complexity left by the fires across the landscape since there are no harvest activities proposed on over 200,000 acres of the burned area under any of the alternatives. The FEIS' Forested Plant Communities report discusses some of the long-term ecological benefits of the treatments proposed under the action alternatives to future plant communities as well as potential adverse effects. The Wildlife section of the FEIS incorporates this information and discusses implications for wildlife habitat and populations.

While generally beyond the scope of this FEIS, the Cow Creek demonstration site example is useful for discussing similarities and differences between fire and harvest. The Cow Creek demonstration site retains all the trees that had any green needles after the fire, in addition to between 5 and 10 merchantable-sized snags per acre. Pre-fire tree stocking levels on this site were much higher than would typically occur under historic conditions. There were very few down logs on this site before the fire, certainly nothing that could be described as structurally diverse. Course woody material will accumulate over the next 3 to 15 years as most of the remaining snags fall down. Fuel loadings at that point will probably be within the range of historic variability for this type of fairly dry site. Future fuel loadings on this site, if none of the snags had been removed, would have been much higher than the historic average, and probably outside the historic range.

Native animals have indeed evolved with fire for thousands of years. What they probably have not evolved with is so much moderate to high-intensity fire at one time, especially in lower elevations (see the Forested Vegetation of Chapter 3 of the FEIS for a discussion of fire impacts on low elevation forests). Elk and deer can maneuver around areas of logs stacked several to many feet deep when that condition occurs on a small percentage of the forest at any one time. These conditions over several hundred thousand acres simultaneously could impede big game movements, and could conceivably result in limited big game use of much of the area during most of the year (except when driven into these areas by hunting pressure).

300 The Final EIS should identify scientific literature supporting the proposed levels of snag retention.

"The DEIS states that 'The numbers of snags far exceed the level necessary on these lands to meet the Forest Plan population viability goals' (pg. 1-15, Table 1-2 Snag Standard). The proposed snag levels seem low to support viable populations of many species. The DEIS did not include scientific literature to support these snag levels, especially at the scale of the proposed project." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

The FEIS includes additional discussion of snags as habitat for wildlife species, and citations of scientific literature pertaining to appropriate snag retention levels in both the Forested Vegetation and Wildlife/Snags sections of Chapter 3. Snag retention guidelines are included as part of the Forest Plan amendment for snags in Chapter 1. All alternatives would leave millions of snags across the burned area in the untreated areas outside of units, including the RHCAs. These would provide abundant habitat for the many wildlife species that are associated with high snag densities, as well as the many wildlife species that prefer large amounts of course woody debris when these snags fall down. Snags retained in harvest units would provide habitat for species that prefer lower snag densities, such as Lewis' woodpecker and American kestrel (Saab and Dudley, 1998), and provide perches for raptors that prefer open habitats such as red-tailed

hawks. After they fall and become course woody debris, snags in harvest units are also important for providing habitat for many insects, amphibians and small mammals. Down logs in units would also help reduce erosion potential and increase nutrient cycling and soil water retention.

304 The Final EIS should address the cumulative effects on old growth habitat resulting from logging on private and state lands.

"The cumulative effects analysis for old growth is inadequate in its lack of scientific integrity and thorough analysis. Given that many old growth dependent species require large habitat areas and a mosaic pattern of forest conditions, the failure of the DEIS to adequately consider cumulative effects is particularly problematic. The entirety of the old growth cumulative effects analysis is as follows: None of the activities proposed in any of the alternatives with this proposal would have any effect on old growth habitat quantity or distribution. Timber sales listed in Appendix A could affect old growth habitat, but effects would be expected to be slight and within the guidelines established for retention of old growth habitat (DEIS 3-345). We request substantiation that the impacts of logging on private and state land to old growth would be 'slight and within the guidelines established for retention of old growth habitat.'" (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

The FEIS (Wildlife section of Chapter 3) contains additional analysis of cumulative effects to representative old growth associated species. Alternatives A, C, F and G would not harvest in any existing old growth stands. Alternatives B, D and E would use intermediate harvest to reduce stocking densities in the understory tree layers, but would retain existing old growth characteristics. None of the alternatives would reduce existing old growth habitat percentages, so none would add to the cumulative effects of past management. The Bitterroot NF has no control over management on adjacent state or private lands, but these lands have largely been harvested in the past and thus tend to contain little habitat that qualifies as old growth. The Bitterroot Forest Plan old growth habitat standard assumes private and State land will not contribute to maintenance of old growth habitat in the Bitterroot Valley.

327 The Final EIS should include additional analyses regarding the impacts of the proposed activities on species viability.

"Analysis of Wildlife Impacts is Incomplete: The DEIS makes some vague generalizations about the impacts of the proposals on northern goshawks, flammulated owls, and forest land birds. The National Forest Management Act and its associated regulations (36 CFR 219.19) require that the BNF maintain viable populations of forest vertebrates. NEPA section 102 requires that all environmental impacts of a proposal be analyzed and disclosed. Thus, substantial standards of law, regulation and the Forest Plan require substantial analysis and disclosure of the impacts of projects on species viability." (Preservation/Conservation Organization, Missoula, MT - #1911)

Response:

The FEIS includes additional discussion of the impacts of the proposed activities on species viability in the Wildlife section of Chapter 3 in response to this and other comments.

328 The Final EIS should cite documentation to support the assertion that green tree thinning will increase northern goshawk habitat potential.

"Although the DEIS acknowledges that impacts on northern goshawk are 'probable in low severity burns' (DEIS Table 3-72, p. 3-364), it claims that habitat potential would increase with green tree thinning in ponderosa pine and Douglas fir forest (DEIS 3-373). The DEIS fails to cite any authority to support this remarkable assertion." (Preservation/Conservation Organization, Missoula, MT - #1911)

Response:

Reynolds, et al. (1992) recommend thinning unwanted understory trees, intermediate cutting and prescribed burning to create and maintain desirable stand conditions for goshawks in situations where fire absence has resulted in higher tree stocking levels than existed under historic fire regimes. Reynolds, et al. (1992) recognize that dense stands of trees are less likely to develop into suitable goshawk habitat in a reasonable amount of time, if ever, because competition between trees for moisture and nutrients limits growth rates. Overstocked conditions stresses the trees, making them more vulnerable to insects and disease losses, and mortality from crown fires. Refer to the response to comment #329 for more discussion

329 The Final EIS should include additional analyses on the impacts of canopy tree removal on goshawks.

"The analysis of goshawk impacts seems to assume that thinning would not remove canopy trees. Nowhere else in the document can we find such assurance. If that is the case, it should be specified in the proposal. The pictures showing thinning effects do imply a reduction in canopy closure. Moreover, the fuel reduction targets shown in the tables of the DEIS for thinning units indicate that substantial tonnage will be removed, indicating that larger, canopy trees will be cut and removed. Thus, the analysis of goshawk impacts is incorrect, inadequate and fails to meet the standards set by NFMA, NEPA and their associated regulations." (Preservation/Conservation Organization, Missoula, MT - #1911)

Response:

The FEIS contains additional analysis of project effects to goshawks in the Wildlife section of Chapter 3. Intermediate harvest proposed for some areas would remove some canopy trees, specifically those that are dead or dying as a result of the fires or subsequent beetle attacks (FEIS Chapter 2). However, these treatments (sometimes referred to as “thinning from below”) would focus on removing smaller trees to reduce ladder fuels and stocking levels, which should increase the vigor and insect resistance of the remaining trees.

Many stands where intermediate harvest is proposed currently have understory and intermediate tree layers that are too dense for goshawks to effectively utilize. In these cases, thinning may improve habitat quality for goshawks. In other cases where stands are fairly open underneath, removal of some overstory trees may in fact reduce habitat quality for goshawks. However, goshawks appear to be rather flexible in their habitat requirements, and seem to require a variety of stand conditions within their home range to accommodate the wide range of habitat requirements of their prey species (Graham, et al., 1995). The treatments proposed in all alternatives would provide the variety of stand conditions that goshawks appear to need.

330 The Final EIS should include an analysis of Townsend's warblers to meet the monitoring, viability analysis, and disclosure requirements of NEPA and NFMA.

"The forest land birds analysis in the DEIS is . . . inadequate to meet the viability, monitoring, and analysis/disclosure requirements of NEPA and NFMA. . . . In particular, analysis of one species adversely affected by thinning and burning in these forests is missing. . . . To the extent that the DEIS believes that northern goshawk analysis substitutes for this species, an analysis that assumes thinning of burned or unburned forests will benefit the Townsend's warbler is not a substitute. Estimates of current Townsend's warbler population size, suitable habitat and nesting areas pre- and post-fire and following the different project alternatives and the viability of the population under those estimates is necessary to meet the monitoring, viability analysis and disclosure requirements of NFMA and NEPA." (Preservation/Conservation Organization, Missoula, MT - #1911)

Response:

Townsend’s warbler is a fairly abundant, widespread species throughout mature conifer forests in western Montana and northern Idaho. Most foraging and nesting occurs high in the canopy. They are most abundant in the moister mixed conifer types, and less abundant in drier, more open forests, and tend to avoid forests dominated by ponderosa and lodgepole pines. Townsend’s warblers are uncommon in early post-fire habitats. They are fairly common in forests that have been partially cut, but decline in abundance with increasingly cut forests (Hutto and Young, 1999). Townsend’s warbler populations appear to be increasing by over 2.5% per year throughout the western Montana/north Idaho region (Sauer, et al., 2001), indicating a robust population. There are no population estimates for this species on the Bitterroot NF, but data from the Northern Region Landbird Monitoring Program (Hutto and Young, 1999), data from several Breeding Bird Survey routes on the Forest (Sauer, et al., 2001) and personal observations (Lockman, 2001) indicate that the species is common and widespread in appropriate habitat. The fires of 2000 obviously reduced the amount of habitat available for this species to some extent, as they probably inhabited most of the areas burned in VRU 3 as well as some of the areas burned in VRUs 2 and 4. They still occupy appropriate habitat within the burned area affected by low-intensity fire, but are largely absent from areas burned by moderate to high-intensity fire.

Timber harvest in moderate to high severity burns would not affect Townsend’s warblers because these habitats lack the dense canopies that this species prefers, and they are thus unlikely to utilize these areas. Intermediate harvest in low-severity burns could affect Townsend’s warblers to some extent, but the fact that they are relatively common in partially cut forests indicates that impacts on the species are likely to be minor. Since proposed activities would have little impact to Townsend’s warblers and the population seems to be robust and growing on a regional scale, none of the alternatives are likely to reduce population viability of Townsend’s warblers at any scale.

331 The Bitterroot National Forest should analyze the impacts of thermal cover reduction on elk populations and habitat.

"The DEIS seems to confuse protection of elk habitat with protection of elk. Recovery of elk populations can be easier than recovery of elk habitat. Recovery of elk security cover and thermal cover can take a very long time because they require, among other factors, the regeneration and growth of tree cover. Loss of elk security cover caused by the fire should be mitigated by road closures more extensive than that proposed in the DEIS. The loss of security and thermal cover caused by the fire should not be increased, as would happen with salvage logging. Proposed site-specific changes to Elk Habitat Effectiveness (EHE) Standards (DEIS, p. 1-16) are unacceptable. Reduction of EHE should be mitigated by adequate road closures. Further reduction of existing thermal cover in the Skalkaho-Rye Geographic Area winter range from 5 to 2 percent (DEIS, p. 1-16) is unacceptable and entirely avoidable. In spite of the suggestion by Montana Fish Wildlife and Parks Regional Supervisor, 'when salvage logging occurs that live trees not be removed to provide security' (project files, Wildlife-4), the DEIS does propose to remove live trees. The cumulative impacts of reduction of thermal cover and security cover from the fire, of loss of thermal and security cover from proposed logging and of unmitigated reduction of EHE due to failure to close roads should be fully disclosed and analyzed." (Individual, Darby, MT - #1696)

Response:

The FEIS contains additional analysis of alternatives effects to elk habitat, and of cumulative effects to elk (Wildlife section of Chapter 3). All of the action alternatives would accelerate recovery of big game hiding and thermal cover by planting thousands of burned acres with conifers. Much of the planted or naturally regenerated burned area would recover rapidly and should provide excellent hiding cover within 10 to 15 years, which would also increase the amount of security cover in areas more than one-half mile from any road open to motorized use during the hunting season. Restoration of thermal cover would obviously take longer.

The FEIS wildlife report explains that proposed treatments in winter range thermal cover are designed to reduce the risk of attack by Douglas-fir beetle, which could reduce the crown closure even more than the proposed intermediate harvest. In the FEIS, Alternatives B, D and F would reduce winter range thermal cover percentages to various extents. Winter range thermal cover would not be treated in Alternatives A, C, E, or G.

The FEIS (Wildlife section of Chapter 3) explains that none of the alternatives would reduce the existing Elk Habitat Effectiveness (EHE). Alternatives A and D would maintain the existing EHE levels. Alternatives C, E and G would meet Forest Plan EHE standards in all third order drainages within the analysis area by closing roads. Alternatives B and F would improve EHE levels in several drainages by closing some roads, but would not fully meet the Forest Plan standard in those drainages. This reflects the fact that the only option available for closing enough road miles to meet the EHE standard in these drainages would result in eliminating public access for recreation. The proposed site-specific Forest Plan amendment for EHE recognizes some of the conflicts between providing optimum conditions for elk and allowing human access to the Forest for recreational and other purposes while meeting overall Forest Plan goals and objectives. As disclosed in the FEIS elk populations on the Bitterroot are at record levels, even after the fires, which indicates that current habitat conditions on the Forest are meeting State and Forest plan goals for big game.

332 The Final EIS should assess the impacts of project alternatives on goshawk viability.

"The DEIS fails to compare the extent of goshawk nesting or populations or habitat before the fires or after the fires. No goshawk monitoring or habitat suitability mapping information is analyzed. The DEIS simply reports that 23 nest sites are known and they haven't completed the survey. The 1999 BNF Monitoring Report reflects the addition of the northern goshawk to the Region 1 sensitive species list and discusses the results of monitoring in 1998 and 1999. There is no disclosure of how many goshawk nest sites burned. There is no assessment of the number of viable and occupied nest sites there are currently on the forest. 23 nest sites are not enough to assure viability of northern goshawks on the BNF. NFMA and Forest Service regulations require the monitoring of sensitive species to assess the impacts of proposed actions on viability. Either inadequate monitoring exists, in which case the project should be halted until it can be collected and analyzed and disclosed in the DEIS. Failure to adequately monitor northern goshawks or adequately analyze the monitoring information violates NEPA and NFMA. The DEIS fails to analyze the number of thinning units in goshawk nesting, post-fledging or foraging habitat. It fails to assess the impacts of the project alternatives on goshawk viability." (Preservation/Conservation Organization, Missoula, MT - #1911)

Response:

Goshawks appear to be remarkably flexible in their habitat needs, and seem to require a variety of stand conditions within their home range to accommodate the wide range of habitat needs of their prey species (Graham, et al., 1995). All of the fire regimes historically present in the Rocky Mountains sustained goshawk habitat by creating vegetative diversity across the landscape (Graham, et al., 1995). Most of the Bitterroot NF, at least at lower to mid-elevations was suitable habitat for goshawks before the fires. The fires reduced the amount of total suitable goshawk habitat on the Forest by a substantial but unknown amount. Areas burned by low-severity fires often retain suitable habitat for goshawk foraging and nesting, and low-severity fires may improve habitat quality in some situations by thinning some of the understory. Goshawks probably use the edges of moderate to high-severity burns to some extent for foraging due to the abundance of woodpeckers and other suitable prey, but they likely don't venture too far into these areas due to the lack of cover.

The Bitterroot NF maintains an intensive goshawk monitoring program. Goshawks are generally very secretive birds that can be notoriously difficult to find. The fact that most of the Forest is suitable habitat for goshawks complicates survey efforts, because they could literally be almost anywhere. The large number of crews working out in the burned areas greatly enhanced our monitoring efforts in 2001. Results of goshawk monitoring in 2000 are contained in the Bitterroot NF Forest Plan Monitoring Report (USDA, 2001g). Prior to the fires, we had identified a total of 28 separate goshawk nests located in 17 different territories, plus six additional territories that were occupied but where we had not been able to locate any nests. Four of the previously known nests were active in 2000, and produced a total of nine juvenile goshawks. We discovered one new active nest in 2000, but the fires destroyed that nest before the young could fledge. The fires destroyed one additional nest that was inactive in 2000, leaving us with a total of 26 known nests at the end of 2000. One other known nest is in a small, unburned island within a large area of moderate to high-severity burn. No other known nests were within the burned area, but it is certain that the fires burned a number of unknown nests.

Results of goshawk monitoring in 2001 will be published in the 2001 Forest Plan Monitoring Report. Preliminary results show that only two of the known nests were active in 2001, and fledged a total of 5 juveniles. However, we discovered eight new nests, one in a previously known territory and seven located in four new territories. Four of the new nests were active, and fledged a total of seven juvenile goshawks. We also discovered two additional active goshawk territories where we could not locate any nests. We now know of 34 separate goshawk nests located in 21 different territories, plus eight additional territories where no nests have been located.

The 29 known goshawk territories on the Bitterroot NF are distributed across the landscape. There are undoubtedly many other undiscovered territories throughout suitable habitat on the Forest. We suspect that suitable goshawk habitat on the Forest is fully occupied, but it is difficult to be sure since goshawk home ranges can be as large as 5,000 acres (Graham, et al., 1995). Since goshawks are well-distributed across the Forest, seem to be reasonably abundant given their large territory size and seem to produce good numbers of fledglings, we are confident that the goshawk population across the Forest is doing well and that it contributes positively to the viability of goshawk populations in western Montana. We currently know of five goshawk territories that are within or adjacent to the burned area. Proposed treatments would have little affect to known goshawk nest areas because no treatments would occur within individual nest area boundaries (FEIS, Mitigations section of Chapter 2). The Forest will continue to monitor known goshawk territories and search for new territories.

457 The Final EIS should cite published materials that conclude salvage logging will benefit wildlife populations.

"The authors are using very few unreplicated studies to weave a story of danger if we do not salvage, while ignoring numerous peer-reviewed, published studies that demonstrate unequivocally through impressive levels of replication that there are negative consequences of salvage logging to wildlife populations! In fact, the justification for salvage logging is based entirely on anecdotal evidence, while clearly demonstrated facts argue strongly against such action! Much of the proposed salvage logging is being justified on the basis of fuel reduction, but (1) the fine fuels have already been reduced by fire, and (2) there is virtually no evidence (through well-designed studies with true replication) that fire severity will be unnaturally high in the absence of such salvage logging. What amazed me, once again, is that there ARE numerous meticulously designed studies with true replication (e.g., Hutto 1995, Caton 1996, Hitchcox 1996, Villard and Schieck 1997, Murphy and Lehnhausen 1998, Saab and Dudley 1998, Sallabanks and McIver 1998, Schulte and Neimi 1998, Smith 2000, Hagard and Gaines 2000, Kotliar et al. 2000) that note the importance of standing dead timber to wildlife, including at least one sensitive wildlife species that is nearly restricted in extent to such burned forests. None of those studies were considered seriously or even cited (and those I've listed are merely references from the past 5 years dealing exclusively with birds)! ALL TOLD THERE IS NOT A SINGLE PUBLISHED STUDY DEMONSTRATING

A BENEFIT OF SALVAGE LOGGING TO WILDLIFE, WHILE THERE ARE NUMEROUS STUDIES DEMONSTRATING NEGATIVE EFFECTS. When are proposed actions going to reflect a concern for maintaining ecological integrity and not simply a concern for short-term economic gain coupled with growing future timber resources as rapidly as humanly possible?" (Individual, Missoula, MT - #1691)

Response:

Please note that the purpose of this project is quite specific (FEIS, Chapter 1, Purpose and Need) and, with limited exception, is not specifically to "improve wildlife habitat." It has been designed to limit adverse effects to wildlife where possible, (FEIS Chapter 2, Mitigation), and in some cases would provide benefits to some wildlife species, like American Kestrels, Western Bluebirds and Lewis' Woodpecker. The various alternatives (FEIS Chapter 2) propose varying types and degrees of activities, reflecting concern for wildlife habitat, and their effects are discussed in Chapter 3.

The Wildlife sections of Chapter 3 in both the DEIS and the FEIS recognize the benefits of snags and down logs to many wildlife species, including the Sensitive black-backed woodpecker. All the alternatives would retain abundant snag habitat well distributed across the landscape because over 200,000 acres of the burned area would not be treated under any alternative. These untreated areas contain millions of snags, which should provide sufficient habitat to support very large numbers of most wildlife species associated with early post-fire habitats. Partially in response to some of the literature referenced by the commenter, the FEIS (Mitigations section of Chapter 2) increases the number of snags that would be left in harvest units, and adds the retention of most "legacy snags" (snags present before the fires that typically are more valuable to wildlife species than are snags killed by recent fires). Many of the citations provided by the commenter have been added to the FEIS. At least one of the scientific papers referenced by the commenter suggests that salvage logging of fire-killed trees benefits several wildlife species. Saab and Dudley (1998) found that several species of cavity nesting birds (Lewis' woodpecker, American kestrel, northern flicker and western bluebird) experienced higher nest success in areas of the Foothills Fire that had been salvage logged, and that although Lewis' woodpecker was the most abundant cavity nester in the burn, it was rarely found nesting in the unlogged control areas.

459 The Bitterroot National Forest should analyze the current status of wildlife corridors for Management Indicator, Threatened, and Endangered Species.

"NEPA requires the Forest Service to consider biological corridors. The standard for such a review is the same hard look NEPA requires of other environmental effects. We are requesting the Forest Service analyze the current status of wildlife corridors for all MIS and TES species, and effects of each of the alternatives on the linkages. This analysis should specifically include the effect of corridor fragmentation on species, such as grizzly bear, lynx, and the Gray wolf, that require a large home range. That means that corridors within the analysis area, and linkages with areas adjacent to the analysis area need be examined, plus the value of the entire analysis area as part of a larger corridor within or between ecosystems." (Individual, Missoula, MT - #1692)

Response:

The FEIS discusses wildlife corridors in the Wildlife section of Chapter 3. Briefly, the FEIS points out that the historic fire patterns in the northern Rocky Mountains forced animals to disperse through large areas of recently disturbed habitats in various stages of recovery, and that most if not all of our existing native wildlife species are capable of doing so. We do not expect that the diverse landscape pattern left by the combination of previous management activities and the fires of 2000 presents insurmountable barriers to the movements of any native wildlife species, especially species such as gray wolves that habitually travel over long distances through almost any kind of habitat. Proposed harvest activities, which would be entirely within the burned area, are unlikely to reduce the ability of any wildlife species to move through the landscape in numbers sufficient to guarantee adequate gene flow to ensure viability, and dispersal to colonize new habitat.

462 The Final EIS should break down old growth percentage amounts into lodgepole and non-lodgepole old growth for each district.

"The percentages listed for old growth forest on each of the 4 districts may be misleading to the public. I think it would be helpful to breakdown old growth % amounts for each district as lodgepole and non-lodgepole old growth." (Individual, Missoula, MT - #1689)

Response:

The FEIS (Wildlife and Forested Vegetation sections of Chapter 3) contains additional information describing the historic and existing old growth conditions within the project area.

463 Public Concern The Final EIS should comply with the Bitterroot National Forest Plan's old growth standards.

"The BAR DEIS failed to adequately disclose whether the lands within the project area are in compliance with the Forest Plan's old growth Standards. The 1987 Forest Plan sets specific old growth Standards: MA-1 About 3 percent of management area 1, suitable timberland, in each third order drainage, will be maintained in old growth (Plan at III-4). MA-2 About 8 percent of management area 1, suitable timberland, in each third order drainage, will be maintained in old growth (Plan at III-16) MA-3b riparian areas; 50% fisheries and 25% non-fisheries (Plan III-24). The plan mentions the importance of these areas. MA-3b 'has the highest concentration of resource values on the forest and the most diverse plant and animal ecosystems' (Plan at III-22). MA-3c About 8 percent old growth in non-riparian, and over 25% old growth in riparian areas (Plan at III-31)." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

The FEIS (Wildlife and Forested Vegetation sections of Chapter 3) contains additional information describing the historic and existing old growth conditions within the project area. Many of the Management Areas within third order drainages within the burned area no longer meet applicable Forest Plan standards for old growth percentage because the fires reduced the amount of old growth habitat. However, all alternatives in the FEIS would meet Forest Plan old growth standards because none of them would reduce existing old growth percentages. Alternatives A, C, F and G would not conduct harvest in any remaining old growth within the burned area. Alternatives B, D and E include some thinning treatments within remaining old growth, but treated old growth stands would retain their old growth characteristics and would still qualify as old growth and increased resistance to high severity fires and insect epidemics. None of the alternatives proposes any harvest within MA 3b because these areas are within the RHCA buffers.

464 The Final EIS should disclose existing old growth conditions within the project area.

"The Supervisor failed to adequately disclose the currently existing old growth conditions in the lands within the BAR DEIS project area. The DEIS says that 'a mat in the project file visually shows the amount and distribution of pre-fire inventoried old growth habitat on the Forest' (p. 3-345). A 'map in the project files' in not any kind of NEPA disclosure whatsoever. The discussion in the DEIS is barely a page long, and the growth standards have placed restrictions on logging proposals before, and the managers have tried to work around the Standard many times before. It appears that the Supervisor has refused to take a hard look, (or if he has), to disclose to the public in a meaningful manner." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

The FEIS (Wildlife and Forested Vegetation sections of Chapter 3) contains additional information describing the historic and existing old growth conditions within the project area. Maps and other documents in the project file are incorporated as part of the FEIS, and are available for review.

494 The Final EIS should include a Canada lynx Biological Assessment and U.S. Fish and Wildlife Service Biological Opinion.

"The DEIS did not include a Biological Assessment (BA) for the threatened lynx, but states that a Lynx BA will be prepared prior to the final decision on the project (page 3-347). The Final EIS should include the Lynx BA and the associated USFWS Biological Opinion or formal concurrence for the following reasons: 1. NEPA requires public involvement and full disclosure of all issues upon which a decision is to be made; 2. The Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA strongly encourage the integration of NEPA requirements with other environmental review and consultation requirements (40 CFR 1502.25); and 3. The Endangered Species Act (ESA) consultation process can result in the identification of mandatory, reasonable, and prudent alternatives that can significantly affect project implementation. EPA recommends that the Final EIS and Record of Decision not be complete prior to the completion of ESA consultation. If the consultation process is treated as a separate process, the Agencies risk FWS identification of additional significant impacts, new mitigation measures, or changes to the preferred alternative. If these changes have not been evaluated in the final EIS, a supplement to the EIS would be warranted." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

The consultation process for lynx has been ongoing with the USFWS and all information has been discussed with the USFWS prior to completion of the FEIS. Consultation will be completed prior to any decision.

496 The Final EIS should provide detailed implementation and monitoring guidelines for maintaining Pileated woodpecker habitat.

"It is stated (page 3-344) that snag and woody debris guidelines will assure the retention of habitat components necessary for Pileated Woodpecker nest sites and forage areas. These snag and woody debris guidelines should be more fully identified and quantified in the FEIS. How many snags per acre will be left? Will snags be retained in clumps or scattered on a per acre basis? Given the large amounts of proposed timber harvest with Alternatives B and D, we ask how the guidelines for snag and woody debris retention will be monitored. Also how will maintenance of cavity habitat be monitored? Will these guidelines provide adequate protection for the various woodpecker species using cavity habitat?" (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

The FEIS contains additional specifications for retaining snags and course woody debris within treatment units in the Mitigation section of Chapter 2. The FEIS adds retention of all “legacy snags” (snags present before the fires that typically are more valuable to wildlife species than are snags killed by recent fires) within units. In addition, all of the alternatives would retain all the existing snags on over 70% of the burned area of the Forest. These should ensure abundant habitat for all the woodpecker species that occur in western Montana. Field preparation crews would mark snags to be left, and compliance with marking would be monitored by contract administrators and others. The monitoring plan (Appendix C) provides for monitoring to assure the snag guidelines are implemented.

517 The Final EIS should provide evidence supporting the claim that bark beetle infestation will negatively impact big game population viability.

"As you can reference our section on beetles, there is no scientific or historical support for the idea that bark beetles will even remotely impact thermal cover habitat. While some stands may be lost to a beetle epidemic, in order to justify logging you need to demonstrate that this loss will be so widespread and severe as to lead to a downward trend in big game viability. This simply has not been done in the BAR DEIS. We do not argue that beetles may impact some trees and maybe even some stands of trees, but they certainly do not pose a threat to the viability of big game. There is no data to indicate that this beetle kill will be any larger than what has occurred historically. However, we do know the negative impacts of logging on wildlife and big game in particular - loss of hiding and thermal covers, habitat fragmentation, increased human mortality. Your arguments for logging are not supported by the facts, the science, or the best interest of the forest and it's inhabitants. Your arguments for logging amount to nothing more than unsupportable justifications." (Preservation/Conservation Organization, Missoula, MT - #2054)

Response:

The FEIS’ Chapter 3 Forested Plant Communities report cites several examples of recent fires in the western United States that resulted in high levels of Douglas-fir mortality from Douglas-fir beetle, and describes the potential risks of similar widespread mortality in Douglas-fir on the Bitterroot NF. There is little data to indicate how large Douglas-fir beetle outbreaks were historically, but forests dominated by Douglas-fir in western Montana and northern Idaho increased by 50% between 1935 and 1975, and the proportion of Douglas-fir forest types classified as “large tree, well-stocked” almost tripled in the same period (Hagle, et al. 2000). Since there is much more forest dominated by Douglas-fir in the structural stage most susceptible to attack by Douglas-fir beetles than there was historically, it is quite possible that potential beetle kill could exceed historic levels.

The DEIS makes no claim that decreased thermal cover percentages resulting from bark beetle infestation would affect big game viability. However, much of the thermal cover on big game winter ranges on the Forest consists of canopies dominated by mature Douglas-fir, and those types of stands are the most susceptible to attack by Douglas-fir beetles. Infestations such as those referenced above do have the potential to reduce the amount of thermal cover present on big game winter ranges to some extent. Intermediate harvest can potentially limit the severity and extent of Douglas-fir beetle outbreaks by increasing the vigor of trees within the harvest unit, and thus their resistance to beetle attack, which then reduces the reproductive capacity of the beetles. Such treatments could thus help retain more existing thermal cover on the landscape than taking no action.

Timber harvest can indeed have some negative effects to big game. Probably the most important negative effect of harvest results from the construction of roads that increase human access to previously secure areas, and the increased big game mortality associated with greater numbers of hunters. However, harvest can benefit big game populations by opening dense forest canopies and increasing forage production, and by reducing the risk of high-severity fire that can eliminate hiding and thermal cover over thousands of acres, as happened on the Bitterroot NF in 2000. All of the big game species that inhabit the Bitterroot NF are considered “edge” species; thus, fragmented habitat conditions often support higher population levels than do large expanses of unbroken forest.

518 The Bitterroot National Forest should conduct pileated woodpecker monitoring as required by the Bitterroot National Forest Plan in order to accurately evaluate impacts on this species.

"According to the 1999 BNF Forest Plan and Monitoring Report, the monitoring of pileated woodpeckers requires more transects to reduce variability and increase confidence in the data, but lack of funding prevents this. Monitoring efforts in 1996-1999 are inefficient in providing reliable data. The report also admits that variability makes it difficult to determine whether pileated populations are changing positively or negatively. In addition, although the Forest Plan requires an assessment of pileated woodpecker populations, 'in relation to habitat changes,' this analysis has never been conducted by the BNF monitoring program. The BNF has not interpreted the meaning of their data: only call numbers and sightings are reported; actual population estimates are not given. There is no doubt that current monitoring efforts are inconclusive. Here, the BNF simply has not even attempted to complete its own Forest Plan's monitoring requirements. This failure to comply with Forest Plan monitoring requirements is an ongoing violation of NFMA and has led to uninformed predictions as to the effects on pileated woodpecker viability." (Preservation/Conservation Organization, Missoula, MT - #2054)

Response:

Implementation of the Forest Plan monitoring and evaluation requirements is outside the scope of this project EIS.

The analysis of effects on Pileated Woodpeckers is based on habitat effects and the limited population data available from the monitoring report (USDA, 2000e), as reported in the Pileated Woodpecker section of the Wildlife section of Chapter 3.

519 The Bitterroot National Forest should conduct pine marten monitoring as required by the Bitterroot National Forest Plan in order to accurately evaluate impacts on this species.

"The DEIS states, 'there is no evidence to suggest that management activities have had an effect on the viability of the species' (3-343). Unfortunately, no evidence exists because past monitoring efforts have been insufficient. Pine marten monitoring has failed to adequately survey for populations or relate habitat changes to population trends. In 1993, 1994, 1995, 1996 and 1997, monitoring reports indicated that 'budget constraints' and 'funding priorities' would not allow sufficient evaluation of this monitoring item. While the 1995 report suggests that 'it may be more meaningful to monitor habitat quality changes than to try and follow populations,' this approach would be unable to detect the relationships of habitat change to population numbers, as the Forest Plan requires." (Preservation/Conservation Organization, Missoula, MT - #2054)

Response:

Implementation of the Forest Plan monitoring and evaluation requirements is outside the scope of this project EIS.

The analysis of effects on pine marten is based on habitat effects and the limited population data available from the monitoring report (USDA, 2000e) as reported in the pine marten section of the Wildlife section of Chapter 3.

Scenery

232 The Final EIS should comply with the Bitterroot National Forest Plan visual quality standards d(2) and d(3).

"The DEIS does not adequately demonstrate compliance with Forest Plan visual quality standards d(2) and d(3)." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

The Scenery section in the FEIS has been rewritten to clarify the effects to the scenery resource. All alternatives are consistent with these standards.

451 The Final EIS should disclose the analysis verifying compliance with the Bitterroot National Forest Plan visual quality standards.

"The BAR DEIS's 'Scenery' chapter (3-387 to 3-400) somewhat vaguely discusses the 'visual effects' and percentages but apparently does not ever disclose an analysis that complies with the Forest Plan's Standards. The section in the DEIS essentially ends up saying that the visual quality will not be greatly affected, and it will meet the Forest Plan Standards (3-392, 3-394, etc.). Apparently, in each of the four Geographical Areas in the DEIS, the visual effects will be similar in all timber cutting alternatives (for example, see 3-390-91, 3-393). There likely would have been some perceived visual changes if there was a disclosure and comparison between the no-action or no cutting alternatives and the maximum timber alternatives B and D. It also seems unlikely there would be no visual differences between an 80 million board foot cut and ones that were over three times larger. This forest, over thirty years ago, became embroiled in the Bitterroot Controversy, which eventually led (in part) to the passage of the NFMA. One of those forest management issues, thirty years ago, was the public's concern for the perceived reductions in the visual quality. Some of those 'visual' concerns were triggered by the aftermath of wildfires and logging practices that followed. That concern for the visual quality led to the 1987 Forest Plan Standards. The Plan clearly sets out a process that will be used to inform the public and the decision-maker as to the potential effects of proposed projects. It also sets limits on the amount of area that can be hydrologically and visually unrecovered. The Supervisor needs to demonstrate that the study or analysis required by the Plan's Standards are indeed done and they must be fully disclosed to the public in a meaningful fashion." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

The Scenery section in the FEIS has been rewritten to clarify effects to the scenery resource by each alternative. This comment initiated a more detailed review of visually unrecovered units in the burned area. The proposed salvage of fire killed trees is consistent with the Forest Plan standard for visual recovery of openings because this standard does not apply to natural catastrophic conditions such as a fire (NFMA 219.27 (d) (iii)).

Recreation

101 The Final EIS should disclose the basis for considering trail use by off-road vehicles greater than 40 inches in width.

"The BAR DEIS discusses 50 inch trail machines using the forest trails. We are not aware of any site-specific public NEPA process that has made that decision. There has been no Bitterroot Forest NEPA analysis to allow the use of off-road vehicles (ORVs) that are greater than 40 inches in width. There is litigation regarding these actions currently ongoing that involves this forest, but there did not appear to be any disclosure of it in the DEIS either." (Preservation/Conservation Organization, Hamilton, MT - #603)

Response:

For the FEIS, the road width reduction does not include the 50-inches vehicle width delineation.

204 The Final EIS should evaluate the economic and burn efficiency benefits of hand piling slash along trail corridors.

"The requirement that slash piles be located at least one chain away from trails is another excessive requirement. On steep terrain, it means that slash will have to be pulled back 66 feet by hand (sometimes uphill) for piling. It is cheaper and more practical to make small hand piles in place where concentrations lay. Besides, hand piles more completely

burn out so there will be very limited, short-term visual impacts." (Wood Products Industry/Association, Frenchtown, MT - #803)

Response:

Hand piling away from trails would have some additional, although minimal, impact on the economics of the proposals This is a customary approach on the Bitterroot National Forest for fuel reduction near system trails and is used to reduce impacts for recreation users.

214 The Bitterroot National Forest should select Alternative C because of its minimal effects on recreation.

"Each item in the section 'Effects on Recreation' shows that negative effects from Alt. C will be less than Alt. B or D. Given the above comparison, it is clear to us that Alternative C is the better choice for the environment. We urge you to reconsider your support for Alt. B as the preferred alternative." (Individual, Corvallis, MT - #1543)

Response:

Your support for Alternative C is noted. Alternative B was not identified in the DEIS as the preferred alternative. Alternative B was described as the proposed action and is the starting point for alternative development and effects analysis. The proposed action and preferred alternative are not necessarily the same alternative. The DEIS did not identify a preferred alternative; however, in his cover letter that accompanied the DEIS, the Forest Supervisor indicated he was leaning toward implementing activities in the range between Alternatives D and E.

480 The Final EIS should indicate how the Bitterroot National Forest will enforce restrictions on motorized access to burned areas.

"The EPA is concerned about increasing use of off-road vehicles (ORVs) and all terrain vehicles (ATVs) that occurs away from roads and trails, including steep slopes, wet meadows, and around water bodies. ORV/ATV vehicle use may increase on a burned watershed, since loss of vegetation may increase ease of travel. We are concerned that off road vehicle activity can cause erosion and habitat damage and adversely impact wildlife habitat and security. It is difficult to effectively restrict motorized access to public lands and protect them with simple road closures (i.e., gated closures). Road obliteration is a preferred method of road closure. An effective policing and enforcement program is also needed to assure that motorized access does not occur in restricted areas. It is important that enforcement of off-road restrictions be prioritized. The FEIS should indicate if there is a Forest Service inspection and enforcement program that will be used to assure that ATVs and ORVs will not cause erosion and habitat damage on burned lands, and/or otherwise violate motorized vehicles access limitations." (U.S. Environmental Protection Agency, Helena, MT - #2538)

Response:

As discussed in FEIS Recreation Chapter 3, the Forest Service and Bureau of Land Management issued a decision to limit or restrict motorized wheeled cross-country travel on lands administered by the two agencies in Montana in January 2001. The decision restricts yearlong, wheeled motorized cross-country travel, where it was not already restricted. Motorized vehicles would continue to be allowed on trails that have existing motorized use. A Forest Order was completed for the Bitterroot NF and signs were placed across the forest by July 1, 2001.

The Bitterroot Forest has 3 law enforcement officers and numerous Forest Protection Officers who are able to enforce this order. There is not 100% assurance of compliance to this or any order, nor a law enforcement program specifically for off-road OHV enforcement. When adverse environmental effects are occurring from OHV use, local managers have the ability to immediately close the road, trail, or area until the problem is corrected.

Proposed alternatives in the EIS include decommissioning and obliteration of some roads for watershed improvements.

Wilderness and Inventoried Roadless Areas and Unroaded Areas

102 The Final EIS should disclose more information regarding uninventoried roadless areas.

"The DEIS appears to have failed to discuss or disclose the uninventoried and essentially undeveloped roaded lands. We have previously provided the BNF with maps of those unroaded areas but apparently they are ignored in the DEIS. The discussion and disclosures regarding the uninventoried roadless lands appeared to be only about one paragraph in length out of the entire DEIS." (Preservation/Conservation Organization, Hamilton, MT - #603)

Response:

Uninventoried roadless areas were discussed in Chapter 3 - Wilderness and Roadless – "Unroaded Area" on page 3-439 of the DEIS.

The FEIS analyzes the effects of the alternatives on unroaded areas, as mapped by local environmental groups, and requested to be used in this analysis.

235 The Final EIS should disclose the criteria and protocol for determining which roads are necessary for long-term resource management.

"Until a comprehensive road inventory and forest-scale road analysis has been completed and incorporated as appropriate into a forest plan, . . . there would be an interim requirements period during which a demonstration of a compelling need would be required to construct or reconstruct a road in either an inventoried roadless area or in a contiguous unroaded area (as defined by the Final Interim Rule) (Final Roadless Policy EA, 4). The DEIS fails to disclose the criteria and protocol for how roads were examined to determine which are needed for long-term resource management." (Preservation/Conservation Organization, Missoula, MT - #1431)

Response:

A Roads Analysis has been completed in accordance with the Final Roads Rule, which analyzes the access needs associated with each road. This document is located in the Project File.

No road construction or reconstruction is proposed in Inventoried Roadless Areas. With the exception of Alternative D, no road construction or reconstruction in unroaded areas larger than 1,000 acres adjacent to Inventoried Roadless Areas is proposed.

236 The Final EIS should include additional analysis on forest management activity impacts on roadless areas.

"Even though the DEIS (p. l-7) states reduction of potential for extreme fire behavior 'focusing in the roaded portions of the Forest' is a primary objective, a large proportion of activity area includes roadless lands. Entering roadless lands for logging or road building is a very controversial issue. The impacts of activities in roadless areas are not adequately disclosed or analyzed in the DEIS." (Preservation/Conservation Organization, Boise, ID - #1347)

"The DEIS fails to appropriately consider impacts to inventoried and uninventoried roadless lands. The DEIS fails to adequately analyze the impacts to several roadless area defined characteristics, particularly: - Change in natural integrity that would be deviations or departures from natural processes of an overall integrated ecosystem. - Change in special features (DEIS 3-436)." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

See Public Concern #102

The FEIS fully analyzes the effects of the alternatives on unroaded areas. Alternative G proposes no activity in unroaded areas. .

333 The Final EIS should evaluate the impacts on uninventoried roadless areas resulting from logging activities.

"This issue has been raised by us regarding other proposed Bitterroot Forest logging projects for many years. Perhaps the reason that the Supervisor refused to meaningfully respond to repeated requests (and regulations, court decisions, etc.) to fully disclose the effects on uninventoried, undeveloped lands is the sheer quantity of those acres of uninventoried roadless lands that he proposes to impact. The Supervisor's arbitrary refusal to disclose, discuss, or take a hard look at the effects of logging in the uninventoried and unroaded lands is quite understandable when the full extent

of his proposals become evident; nearly 50% of the acres to be logged in the three timber-cutting alternatives (B,C,D) are in the uninventoried and unroaded lands. It appears reasonable to assume that approximately 50% of the total harvest volumes in those three alternatives will come from those undeveloped lands as well. The Supervisor's failures to address and disclose the impacts on the unroaded and uninventoried roadless areas. Even though the DEIS (p.1-7) states reduction of potential for extreme fire behavior, 'focusing in the roaded portions of the Forest' is a primary objective, a large proportion of activity area included roadless lands. Impacts to roadless lands, should be mapped and disclosed in the EIS. Entering roadless lands for logging or road building is a very controversial issue with a long history here on the BNF [Bitterroot National Forest]. The impacts of activities in roadless areas is not adequately disclosed or analyzed in the DEIS." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

See Public Concern #102.

334 The Final EIS should include an analysis of the impacts on unroaded areas resulting from the proposed alternatives.

"On 7/24/2000 of last year the Sierra Club joined with other local groups to propose conservation of a series of unroaded areas on the Bitterroot National Forest that are outside of inventoried roadless areas (see attached map). These areas, which are a subset of the total areas 1000 acres or greater without roads on the forest, are important areas for conservation of wildlife and fish populations and habitat and the connectivity of other habitat areas and populations, old growth forest, water quality and quantity, and recreation. They are areas unsuitable for roading or timber harvest. The BNF has been on notice of these areas for a year and has stated that the maps provided of these areas were being used in the project planning process. The current proposals being analyzed by the BNF in the DEIS include roughly 28,000 acres of these unroaded wildlands in cutting units of some type for alternatives B and D and some 9,800 acres of cutting units under alternative E (L. Broberg, pers. comm.). Thus, of the acreage harvested or thinned in some way, the unroaded lands comprise greater than one-third to almost one-half of the area so treated! Yet, the DEIS makes no analysis of the impact of various alternatives on these resources. This is a gross oversight and violation of the requirement of the National Environmental Policy Act that all significant impacts on resources by analyzed and disclosed. The USFS has recently acknowledged the potential importance of these areas for a number of resource values in the rulemaking process for the Roadless Area Conservation Rule." (Preservation/Conservation Organization, Missoula, MT - #1911)

Response:

Please refer to the response to Public Concern #102.

506 The Final EIS should evaluate the benefits of uninventoried, unroaded areas.

"There is no analysis, meaningful discussion, or disclosure evident in the DEIS of where these uninventoried, unroaded lands are located. There is no worthwhile discussion whatsoever in the DEIS of the benefits and values of their in-place resources. This appears to demonstrate this Forest's internal bias against roadless areas because the Forest Service's own recent Roadless Area Conservation EIS documents were quite able to discuss and disclose the significant values of roadless lands. We, and others, have requested in our scoping comments about this project that the uninventoried roadless lands issue be fully addressed in a substantive and meaningful fashion." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

Please refer to the response to Public Concern #102

Harvest Systems

206 The Bitterroot National Forest should reserve timber sale cruising for contract bidders.

"Do not cruise the sales. These numbers will be used to stop sales and their value to the industry is small. Cruising is the responsibility of the bidders." (Individual, Stevensville, MT - #873)

Response:

If an alternative is selected that includes commercial harvesting, volume estimation would be an issue for the Forest to resolve. The Bitterroot NF follows Forest Service Manual and Handbook direction requiring that timber volumes be estimated.

211 The Final EIS should incorporate flexible management policies to account for potential losses from deteriorating standing timber.

"Deposits and additional requirements need to be minimized to cover the loses in deteriorating standing timber. Pyramid's Bear Timber Sale Area included in your Skalkaho-Rye Analysis Area is key to our Fall 2001 harvest plans in order to build inventory for Spring breakup 2002. Our contract loggers will be positioned to move on Bear as soon as the Contract Modification is executed. It is imperative that the Final EIS incorporates language which gives the Forest Service some flexibility in dealing with increased mortality as the full effect of fire and insects materialize over the next year." (Wood Products Industry/Association, Seeley Lake, MT - #1544)

Response:

The Forest Service Timber Sale Contract does not adjust deposits or minimize environmental requirements to cover losses due to the deterioration of material for forest products. The catastrophic modifications, stewardship projects, and the timber sale contracts that may be implemented from the Burned Area Recovery EIS may allow measurement for payment by weight. This could alleviate concerns over deterioration because only the merchantable material that is removed from the project area would be scheduled for payment.

369 The Final EIS should fully disclose the cumulative impacts of timber landings within the project area and at the watershed scale.

"The DEIS also fails to disclose the number, location, and type of landings within the watersheds and at project scale. As previously discussed, landings have a number of negative direct and cumulative impacts on soils, water quality, trout habitat, and trout survival, especially when they are within 300' of streams. Therefore, the DEIS must be revised to disclose the number, area, and location of landings within the project area, at the watershed scale and within RHCAs and 300' of streams within the project area and at the watershed scale. The DEIS should also be revised to disclose the number, area, and location of existing landings in areas with soils with moderate to severe erosion hazards." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

Please refer to Public Concern #348 and Logging Plans which are located in the Project File.

The size, location and the number of landings are dependent upon the type of harvesting system used. Skyline harvesting systems do not usually require any constructed landings because the logs are decked on the existing road system. The logs can also be decked at the top of the skyline corridor. These systems do not require any new ground-disturbing activities in order to build a landing. Landing areas for ground-based systems are approved by the Forest Service prior to use. It is always desirable to use an existing landing rather than construct a new one, and keep new landings to a minimum. . Helicopter landings are usually a minimum of one acre in order to prevent logs from flying over personnel and equipment and to meet Federal Occupational Health and Safety Standards and Montana State Safety standards.

393 The Bitterroot National Forest should levy substantial fines against businesses whose logging practices result in damage to forest resources.

"If the logging company agrees to comply with certain rules/guidelines set up to lessen the damage to the land, I propose that the NFS set up a system where serious (perhaps unprecedented) fines can be levied against the logging company if they do not follow these guidelines. Knowing that they will have to pay large fines if they are sloppy about their work will act as an incentive for careful logging practice. Token fines would not be enough to deter this, and merely agreeing to follow best practices is surely not enough. Money talks." (Individual, Missoula, MT - #1875)

Response:

All Forest Service contracts contain provisions that require contractors and timber sale purchasers to comply with laws and regulations. For example, the timber sale contract contains provision C6.0 Operations which states; “Purchaser agrees to conduct its operations under this contract and other related business activities in compliance with Federal, State, and local statutes, standards, orders, permits, or other regulations.” All government contractors are subject to the Code of Federal Regulations. Federal agencies already have the ability to levy fines for violations of environmental laws or regulations. This is considered on a case-by-case basis. In extreme cases, criminal prosecution through the courts is possible.

Performance bonds guarantee that unacceptable damage can be repaired by either the purchaser or by the use of the purchaser’s funds. The breach provision in contracts allows the agency to stop all activities if damage is occurring on a sale area. Finally, government contracts have termination provisions that provide for the cancellation of contracts.

Economics

90 The Bitterroot National Forest should assess the economic viability of helicopter logging.

"I respectfully suggest that the final EIS include the following items: An additional careful look at the percentage of helicopter logging to other systems prior to releasing the final EIS to ensure the economics will support the proposed operations." (Individual, Seeley Lake, MT - #654)

Response:

Between the draft and final EIS a detailed economic analysis was done for each treatment unit considered for harvest. Some units, primarily those with long helicopter yarding distances, were dropped from Alternative F because of high logging costs. The proportion of helicopter yarding is an important variable in the Region 1 Stumpage Appraisal Model, so the amount of helicopter logging affected the reported estimated stumpage price for all alternatives considered in the EIS.

105 The Final EIS should incorporate the results of the Biomass Cogeneration Demonstration/Pilot Project.

"Since the initial comment meetings and the formulation of the Draft EIS, considerable developments have occurred dealing with the small diameter wood and waste residues that will result as a by-product of restoration forestry, stewardship contracts, and general fuel reductions in the rural and urban/forest interfaces. The public/private partnership between Ravalli County and Forest Tech LLC regarding the Biomass Cogeneration Demonstration/Pilot Project needs to be considered now in the formulation of the Final EIS document as a means to an end." (Individual, Stevensville, MT - #609)

Response:

The Biomass Cogeneration Demonstration/Pilot Project is not developed enough at this time to include in the Burned Area Recovery EIS. After that proposal is completed, if the appropriate fuel reduction remains to be completed in the BAR project, there is a possibility that the material could be used for cogeneration instead of other disposal methods. This possibility would include a review of the NEPA effects analysis to determine if it is applicable, as it would pertain to the defined cogeneration proposal.

109 Technical and Editorial

"P 3-445 table 3-95 - stewardship revenue for restoration - explain. Two bottom footnotes appear in conflict." (Individual, Stevensville, MT - #4)

Response:

The narrative on page DEIS 3-443 (and in FEIS Economics report) goes into more detail than the footnotes to explain why the sale revenue for 25% Fund and/or restoration activities depends on whether the sales are sold in the conventional manner or as stewardship contracts.

135 The Bitterroot National Forest should fully assess claims of economic and ecological benefits resulting from post-fire salvage projects.

"The Boise National Forest here in Idaho carried out a similar large scale, post-fire salvage logging project in 1994-96, Boise River Wildfire Recovery. There were grand claims for economic and ecological values to this project, which did not prove to be true or were never confirmed. There were claims that $65 million of revenue to the federal government and an additional $16 million to the counties. This did not prove to be true and yet people were led to believe there was great economic benefit, when it never happened. Same with claims about soils, reforestation, fisheries, wildlife and other resources that were supposed to be improved. It either didn't happen or there was no monitoring or monitoring report to compare the advance claims with the actual results. ICL urges the Bitterroot NF to not make the same mistakes as the Boise NF and to not leave claims unexamined in the future." (Preservation/Conservation Organization, Boise, ID - #1007)

Response:

The economic analysis for the FEIS is more detailed than the analysis for the DEIS.

The estimated stumpage values are based on the current Stumpage Appraisal Model for Region 1, which is based on actual stumpage receipts over the last 3 years. In the Final EIS reference is made to expected reductions in stumpage values because of deterioration of the sawtimber that would result from delays in awarding contracts.

136 The Final EIS should include a cost-benefit analysis compliant with 40 CFR Sec. 1502.24 of the CEQ regulations for implementing NEPA.

"In the economic section, cost benefit analysis requirements are discussed. I believe that the DEIS does not meet the following requirements 40 C.F.R. Sec. 1502.23 Cost-benefit analysis. 'If a cost-benefit analysis relevant to the choice among environmentally different alternatives is being considered for the proposed action, it shall be incorporated by reference or appended to the statement as an aid in evaluating the environmental consequences. To assess the adequacy of compliance with section 102(2)(B) of the Act the statement shall, when a cost-benefit analysis is prepared, discuss the relationship between that analysis and any analyses of unquantified environmental impacts, values, and amenities. For purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need to be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations. In any event, an environmental impact statement should at least indicate those considerations, including factors not related to environmental quality, which are likely to be relevant and important to a decision.' The DEIS does not discuss the relationship between the quantified and unquantified impacts, values and amenities in the economic section as required by 40 C.F.R. section 1502.23." (Individual, Helena, MT - #1244)

Response:

The Economics section in Chapter 3 combines both economic and non-economic information for each alternative. The narrative discussing information gives examples of how to weigh the market benefits and costs in comparison with factors that are important to a decision. The Present Net Value of costs for road restoration, weed prevention, reforestation, fisheries habitat improvement, and non-harvest fuel treatment are displayed. When those costs are combined with the specialist’s reports which go into detail on the non-valued benefits associated management activities, the relationship between the quantified economic information and unquantified economic impacts, values and amenities is disclosed, as called for in 40 C.F.R., Section 1502.23.

138 The Bitterroot National Forest should quantify the economic impact of the National Forest Service's logging program.

"We are concerned with the adverse economic effects of the national forest logging program, and the Forest Service's failure to quantify such effects at the project level or for the program as a whole. The logging program increases costs of water purification and filtration, decreases the value of private timberlands, unfairly competes against alternative fiber and building material businesses, increases wildfire risk, increases repair and maintenance costs for highways and public roads, and decreases the number of jobs in recreation, tourism, fisheries, and alternative forest products." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

Response:

The project level economic effects of harvesting activity associated with each alternative are shown in Chapter 3’s Economics report. Project level effects on other resources are disclosed throughout Chapter 3 of the FEIS. The effect of the entire Forest Service timber program on areas such as competition with alternative fiber and building material businesses, or employment impacts on recreation, tourism, fisheries and alternative forest product sectors, is beyond the scope of this analysis.

140 The Final EIS should include a full accounting of the net costs and benefits of the proposed management actions.

"The Forest Service has failed to complete an economic analysis of the Burned Area Salvage Sale that provides the public with a full and fair accounting of net economic benefits. Instead, the economic analysis is limited to net costs incurred by the Forest Service and project administrators for county receipts as well as sale preparation and administration costs. The D.E.I.S. and project record fail to place any economic value on existing uses and functions of the sale area, including recreation, flood control, pest control, carbon sequestering, and many other 'ecosystem services.' In addition, the economic analysis fails to consider a wide range of costs that will be incurred by the public through loss of these 'ecosystem services' and other externalized costs such as increased flooding, increased risk of death, injury, and property damage from logging operations, and increased fire risk. The D.E.I.S. discloses the diversity of the economy in Bitterroot County and discusses the important contributions of the non-timber sector. However, the D.E.I.S. stops short

of placing an economic value on the contributors for which to make a balanced accounting of net public benefits and states irresponsibly that the wildlife resource is of 'indeterminable value.' This statement is false and an example of the length the Forest Service will go to deny that timber sales impact these non-timber values." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

"Provide a full accounting of the economic costs and benefits of each alternative. Methods have been developed to quantify non-market costs and benefits associated with management. Estimates based on these methods should be internalized into the economic analysis completed for each management alternative as part of the NEPA process. If a total economic framework was used, the agency may find that the true economic value of Montana's national forests is in recreation, passive use benefits, watershed protection, and providing habitat for the native fish and wildlife, as well as the less charismatic biotic life forms that perform essential ecological functions for society. Many of these non-market goods and services are provided by the public wildlands at virtually no cost to taxpayers." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

The FEIS' economic analysis displays the economic efficiency and impacts associated with each alternative. No value was placed on "existing uses and functions of the sale area" because many of those values will not be affected by alternatives considered in this DEIS. To the extent that there are economic effects, they have been identified in the Economics section of the EIS. There are many resource values that could potentially be affected by management activity and those resource affects are also documented in the EIS under each resource topic. However, not each resource has a market value since many forest resources are not bought and sold in established markets. This does NOT mean that resources without market values are ignored in this EIS. For example, although there is no monetary value placed on the wildlife resource, effects on wildlife for each alternative are disclosed in the EIS, and those effects are considered by the Deciding Official when selecting an alternative. In this way both market and non-market resource costs and benefits associated with proposed actions are clearly considered and this is what is meant by net public benefits.

142 The Bitterroot National Forest should provide opportunities for small, local lumber mills to acquire salvage timber contracts.

"Pyramid is a small, independent mill whose recent struggles are well chronicled. The Small Business Set Aside Program was designed for mills like Pyramid. The SBA share on the Bitterroot is 70% and these burned sales may be the only significant volume offered for many years. Please work hard to see that the interests of the small mills are satisfied, up to the extent called for in the SBA guidelines. The burned sale offerings on the Bitterroot are critical to Pyramid Mountain Lumber. We have already survived six months longer than expected. Now we find ourselves installing two pieces of equipment that will make us very competitive when bidding against large business. Not only is the timing critical for us, but the forests need your restoration plan to kick in as well." (Wood Products Industry/Association, Seeley Lake, MT - #821)

"I understand that the sales will be offered in large units. This would place the smaller operators at a disadvantage, and basically eliminate them from the bidding process. Please make small sales available so that we can meet our small business quota. These sales should represent a cross section of the timber available. Specifically units that provide house logs and other high value products should be marketed as separate units. Small sales will help residents of the immediate local community compete in the bidding." (Individual, Stevensville, MT - #873)

Response:

As noted in the FEIS' Economics report, 27 individual timber removal projects were analyzed and ranged in size from 1.5 MMBF to 22 MMBF. In addition, some projects would be advertised under the Small Business Set Aside Program.

145 The Bitterroot National Forest should assess the economic profitability of harvesting green trees.

"I wouldn't like to see green trees harvested as I feel that the current state of the timber market would not provide the BNF with grounds to maximize profits on this green tree resource." (Individual, Missoula, MT - #897)

Response:

The alternatives analyzed in this project include varying amounts of green tree harvesting, including none. The Deciding Official will consider all of these alternatives when making the decision.

172 The Bitterroot National Forest should calculate the dollar value of ecosystem services provided by standing forests.

"The dollar value of undisturbed forest or standing timber should have been calculated and used in the analysis of economic costs associated with the Burned Area Salvage Sale. The value of 'ecosystem services' provided by standing forests has never been evaluated and compared with their value as lumber. Economic benefits of standing forests include but are not limited to clean air and water, balance of global geochemical cycles, and buffering of carbon emissions resulting from the burning of fossil fuels. It has been shown that the rate of carbon lost to that of accumulation is much greater during harvest, and there is a net transfer of carbon from biomass to atmospheric CO2. Further, the carbon stored in forest regrowth is less than that in the original forest biomass." (Preservation/Conservation Organization, Santa Fe, NM - #1100)

The analysis requested is beyond the scope of this EIS. The economic effects of each alternative are shown in DEIS Table 3-95 and the narrative on DEIS page 3-442 addresses how non-commodity values were evaluated in this document. We believe that this economic analysis meets the NEPA requirements in Title 40, Code of Federal Regulations for NEPA (40 CFR 1502.23).

Response:

Please refer to Public Concern #138.

254 The Final EIS should evaluate the economic costs associated with decreased ecosystem integrity and forest productivity.

"While the DEIS does report large costs associated with the action alternatives, the cost is substantially underestimated by failing to incorporate losses in ecological integrity (i.e., ecosystem services, wildlife habitat, watershed condition). The DEIS also fails to incorporate costs associated with future losses in forest productivity. The proposed logging has the potential to degrade soil nutrients and structure and microclimate in a manner that may degrade future forest productivity. We are concerned that low market prices may prevent watershed and reforestation work." (Preservation/Conservation Organization, Missoula, MT - #1432)

Response:

Economic information in the FEIS is based on all identified quantifiable market costs. Any expected non-market effects such as “losses in ecological integrity (i.e., wildlife habitat, watershed condition, etc)” resulting from an alternative is disclosed in the discussion of each resource in the EIS. It is impossible to precisely predict stumpage market prices that may exist when harvesting may take place, but the FEIS estimates average cost and revenue of fuel treatment using timber harvest.

Even if stumpage prices fell by 50% from current levels, it would still be less costly to accomplish fuel treatment with timber harvest than without. In any case, the amount of appropriated money available for implementation may have more to do with the amount of watershed and reforestation work accomplished than timber stumpage prices.

255 The Bitterroot National Forest should offer subsidies for forest ecosystem restoration work.

"I believe workers in timber-dependent communities should be subsidized (paid) for work that truly restores forest ecosystems." (Individual, Missoula, MT - #1715)

Response:

Subsidizing forest ecosystem restoration work is outside the scope of this analysis.

345 The Bitterroot National Forest should employ trained workers to assist with post-fire management projects.

"Economic benefits in the aftermath of the 2000 fire season might be best addressed by training and employing people to help those living in the wildland/urban interface manage their land in a way compatible with the forested environment in which they live, training and employing people to manage noxious weed infestation in forested areas, training and employing people to restore roaded areas incompatible with wilderness initiatives, training and employing people to maintain hiking trails, and supporting on-going educational efforts as we continue to learn about the dynamics of living on the edge of the greatest wilderness complex in the lower 48 states and in the Bitterroot Valley watershed." (Individual, Stevensville, MT - #1699)

"Pay local youth to clear fuel within several hundred feet of homes." (Individual, Missoula, MT - #1716)

Response:

The opinions are noted and will be considered by the Forest Supervisor at the time of decision. Alternative G includes home protection via a community conservation corps.

The economic impacts of each alternative for western Montana are discussed in Economics, Chapter 3. The magnitude of restoration work to be done varies by alternative. If an action alternative were selected, implementation would most likely include workers from throughout the local region. If stewardship contracts are used for completing this work, the use of the local work force is one factor in the award of those contracts. It follows that local workers, including local youth, would have to be trained for the various types of restoration work to be done.

404 The Bitterroot National Forest should reassess the relationship between fire-suppression costs and fuel buildup.

"Fire suppression costs have increased, but pre-fire management may not reduce suppression costs. While fire suppression costs have increased dramatically in recent years, the increase is not entirely attributable to the increase in fuels. Much of the increase in fire suppression costs is a result of rising expenditures to protect homes built in the wildland-urban interface. A series of reports has highlighted the increasing cost of fire fighting due to the emphasis on protection of private property (USDA 1995). While the assertion that forest health management will reduce the costs to control fire and fire damages seems logical--the assertion is supported only by anecdotal evidence. A review of the literature would find that there is very little research documenting that fuel treatment has actually decreased fire control costs (Gortc 1994). This finding is consistent with the research by Bessie and Johnson (1995) suggesting that fuel treatment may have little impact on fires, as climate is the dominant influence. If this is true, then the costs are additive; taxpayers pay for fuel management and they also pay for fire suppression. And, in the urban-wildland interface, homeowners expect suppression efforts whenever a fire occurs--regardless of whether the forest was treated or not. So it does not appear that support for the proposed fuel management can be made based on reduction in fire control expenditures, although additional analysis would be needed to support this hypothesis." (Preservation/Conservation Organization, Boise, ID - #1347)

Response:

Fire suppression costs have increased due to a number of factors, including but not limited to increased fuel loadings. Increased costs of equipment, contractors, long duration fire events, increased wildland/urban interface, restrictions due to Threatened and Endangered species habitat, and climatic changes over decades have all contributed to suppression expenditures. Research done by Finney, et.al. 1997 show that fuel treatments can reduce suppression costs due to reduced fire behavior requiring less personnel and equipment to control wildfires and protect homes and infrastructure. Refer to FEIS Ch. 3, Sec. 3.2.

Social

91 The Final EIS should address impacts of proposed management on public health and safety.

FALLING SNAGS

"Yellowstone offers an excellent example of why damaged trees should be salvaged. More than 10 years after the 1988 blaze, the highest safety risk to hikers is from being hit by a falling tree!" (Individual, Suches, GA - #244)

Response:

The effects on trail safety from burned snags is analyzed in both the DEIS and FEIS in the Recreation section. Normal trail maintenance includes removing hazard trees that are leaning across the trail. On trails that go through high severity burns, hazard trees will be evaluated during normal maintenance. With many miles of trails going through burned areas, it would be impossible to remove all the dead trees. There is always a risk of tree failure and Forest users must be cautious when entering burned areas. The Forest makes reasonable efforts to minimize the risk to trail users by posting trailhead information on hazards.

151 The Bitterroot National Forest should address the potential impacts to the local communities resulting from transporting large volumes of timber.

"If this timber is harvested in one year we will have a social problem for the large number of log trucks that will be on the roads. 271,000MBF/4 MBF/LD=67750 ld/yr/200 operations days=338 loaded trucks/day/12hr day=28 trucks/hr x 2 (empty return)=56 log trucks/hr. Basically 1 truck per minute. The state Sula sale ran about 75 trucks per day - 12 trucks/hr - 1 truck each 5 minutes." (Individual, Stevensville, MT - #873)

"Another important matter relating to harvesting is that the DEIS is silent about what Forest Service policies and procedures would be implemented relating to public safety issues and noise abatement practices for controlling timber project traffic and operations in neighborhoods near harvest areas. The DEIS is also silent about a Forest Service response to the likely adverse effects of such timber projects on nearby local businesses and residents. Our experience in the upper West Fork is that, unless regulated, timber project traffic occurs at all hours of the day and night, and is routinely disruptive to local residents and local businesses. . . . These 'good neighbor' and true 'multiple-use' matters regarding the hours of operation, noise abatement procedures, and traffic safety should be written into and rigorously enforced in every timber contract involving the Forest Service." (Preservation/Conservation Organization, Darby, MT - #1687)

Response:

Safety issues are addressed in Chapter 3 Social and Recreation reports. “Disruption to daily activities (including noise) is addressed in the Social effects analysis. Chapter 2 specifies safety requirements in “Management Requirements and Mitigation Measures.” Effectiveness of these requirements and monitoring is documented in Appendix C. Mitigation allows flexibility so we can identify specific safety issues and adjust management activities based on the time of year, weather, and local conditions.

The Forest Service has both contractual and legal authority to establish and require safe user practices, including traffic. The BNF works with State and County departments to enforce traffic laws on roads. Forest Service officials now have authority to enforce traffic laws on Forest Service roads.

Every contract containing the removal of timber has a Traffic Control and Safety Plan as a required agreement between the agency and the contractor (see Mitigation Measures in FEIS Chapter 2). This plan is made a part of and subject to all of the requirements of the contract. This plan must meet the requirements contained within the Manual of Uniform Traffic Control Devices. Helicopter operations are subject to agency, OSHA, and FAA regulations and are built into all contracts with helicopter activity.

Residents and local businesses would be affected by activities on the National Forest as discussed in FEIS Chapter 3 Social and Economic sections. We can mitigate local business and residential concerns with coordination and by agreement with contractors. Operations can be, and routinely are, contractually limited based on safety and other concerns. District Rangers are aware at the local level of specific concerns that affect local residents and the local economy. Specific mitigations can then be agreed to at the pre-operations meeting for a particular project area.

Please refer to Public Concern #192, below.

192 The Bitterroot National Forest should coordinate timber transportation safety measures with the logging industry.

"One note of caution with respect to timber salvage; the MLA is legitimately concerned that an aggressive timber salvage effort will likely increase traffic congestion as the result of transporting hundreds of loads of logs from forest to mill. To that end, we pledge industry support for harvesting plans and transportation routes/schedules that minimize such congestion. We look forward to coordinating this important public safety effort once the preferred alternative has been selected and implemented." (Wood Products Industry/Association, Kalispell, MT - #874)

Response:

The Bitterroot National Forest appreciates and shares your concern about safety and the potential problems caused by an increase in traffic. If one of the harvesting alternatives were chosen, the Valley would experience an increase in both ground (as discussed in FEIS Chapter 3 Transportation section) and aerial traffic. We appreciate your willingness to help alleviate congestion and reduce safety risks. We also believe traffic congestion and safety concerns can be successfully addressed.

Transportation System, Infrastructure, and Facilities

69 The Bitterroot National Forest should address road drainage problems during annual road grading projects.

“I have to agree with the 'Roads' statement on page 7 of the DEIS. These conditions are typical across Region 1 as I observed over a 10-year period as a member of one of the Montana Department of natural Resources-Forestry biannual timber harvest audit teams. I submit, however, that many road drainage problems can be addressed as part of the annual road-grading work I see on Forest roads. Decreasing road surface-washing would reduce road maintenance costs." (Individual, Hamilton, MT - #144)

Response:

We recognize that road drainage has been inadequate on many of the roads on the Bitterroot National Forest. Our annual road maintenance program has been emphasizing improvements to roadway drainage during the last several years. Unfortunately funding for road maintenance has not allowed accomplishment of the large road maintenance backlog; see FEIS’ Chapter 3 Transportation System report for more information.

71 Technical and Editorial

"Explain differences between road mileage numbers presented on PP 3-454 & 3-466 - 'road mileages in burned areas.' Add them up and they don't agree." (Individual, Stevensville, MT - #4)

Response:

The road mileage numbers on DEIS page 3-454 are a description of the miles of roads on the Bitterroot Forest that are maintained to a certain standard and a description of that maintenance standard. The road mileage numbers on DEIS page 3-466 are a summary of the miles of roads that have certain travel restrictions on them and have an effect on motorized access on the Forest. The road mileages on each of these pages do not agree because they are different types of road information.

165 The Bitterroot National Forest should require minimum impact standards when constructing temporary roads.

"I am concerned about construction requirements for temporary roads. Since they will be used only for a short time period and then reclaimed they should be constructed to minimum standards (such as snow roads) with limited cut, fill, or stump removal work. I have seen many instances where loggers where able to weave a trail through the trees that allowed access for a log truck with little or no environmental impact. Minimizing construction will reduce work needed to obliterate the temporary roads and minimize resource disturbance." (Wood Products Industry/Association, Frenchtown, MT - #803)

Response:

As disclosed in FEIS Chapter 3 Transportation Systems, Consistency with Bitterroot Forest Plan and Other Regulatory Direction, all temporary roads would be constructed to minimum standards that are necessary for safe logging access to the landing.

237 The Bitterroot National Forest should use timber sale dollars to improve roads and campgrounds.

"The monies received from the sale of the trees should be funneled back into the Bitterroot Forest to improve the roads and campgrounds." (Individual, Hamilton, MT - #1573)

Response:

The Bitterroot Forest now has recent authority to use a Service Contract for tree harvest and removal and, through that contract, trade the timber value for the contractor performing other work such as improving roads and campgrounds. This type of contracting is called Stewardship Contracting. As discussed in FEIS Chapter 3 Economics section, this contract authority would be used to implement some of the work proposed in the EIS alternatives.

335 The Final EIS should fully disclose the total existing road densities within in the project area.

"The DEIS statement on page 3-454 that 'there are an unknown number of temporary roads' is totally inadequate under the NEPA requirements. It apparently evidences an arbitrary non-disclosure of the site-specific, existing conditions. The DEIS never makes any clear and concise statement disclosing the true amounts of roads (system and non-system) in the project area. The NEPA/CEQ requires that the Supervisor fully and accurately disclose the correct total amounts of both System (Classified) roads and the cumulative effects of the Non-System (Unclassified) roads that exist within the DEIS project area. This is an extremely critical issue that is apparently being avoided by the Supervisor; it is likely that forest roads cause the greatest long-term, significant adverse impacts on the rest of the forest's resources." (Preservation/Conservation Organization, Hamilton, MT - #5000)

Response:

The temporary roads referenced in the DEIS are non-classified roads, and they have not been completely inventoried. There are likely a few non-system roads that have not been inventoried in the project area, but there are very few of these when compared to the total road system. This has been clarified in the FEIS.

The DEIS is very concise about the amount of system or classified roads, as these roads have been inventoried. As the DEIS explains, there is no concise information on non-system roads; these were intended to be temporary roads when they were constructed. They are low standard, most are high in the drainages; and most do not contain any culverts or other permanent features.

336 The Final EIS should fully disclose the location, condition, and classification of existing roads.

"There is an enormous lack of information and disclosure concerning roads within the burned area. For example, the following must be covered in the document: 1. Location - Show accurately on maps of a scale that can be used in a productive and useful manner, in the field and in the office. 2. Condition plus methodology for determining condition. 3. Level of current and predicted foreseeable future use plus the rationale for the predictions. 4. Classification for each road e.g., system or non-system (classified or unclassified). All EXISTING roads must be shown. 5. Road Density/sq.mi. - list by township and section. All roads, system and non-system, closed or open, must be used in road density calculations." (Individual, Stevensville, MT - #1706)

Response:

The locations of roads in the burned area are shown on maps in the EIS. Maps with greater detail are available on request. The condition of each road has been determined by field surveys. A Roads Analysis was done to determine the resource concerns with each road and the future access needs for each road. The Roads Analysis documentation is located in the Project File. System roads are identified in the Forest Road Inventory. There are likely a few non-system roads that have not been inventoried. Road density information is used as indicators of various resource conditions. The indicator may be open roads; or unsurfaced roads; and it may also be location of roads. The indicators for the analysis in this EIS used information on system or inventoried roads on National Forest Land and information on private and state land roads where it was available.

337 The Final EIS should fully disclose all stream and Hydrologic Unit Code road density calculations.

"Of the partial densities provided, the stream names only were given and no disclosure was found regarding the HUC numbers (see DEIS Map 3-5) so that any relational comparison could be made. There apparently was no information provided in the DEIS regarding the methodology used in arriving at those particular road density figures used in the DEIS. There was no apparent linkage of the road densities, Riparian Habitat Conservation Areas, bull trout or westslope

cutthroat trout distribution areas, or streams that are (or were previously) listed as Water Quality Limited Streams (WQLS). The Supervisor apparently failed to take a hard look and provide a full and complete disclosure of the streams/road densities and their impacts on watershed, fisheries, WQLS, and soils because of this lack of critical information. We are very aware that large portions of the Skalkaho-Rye and East Fork Geographical Areas have extremely high existing road density numbers. It appears the Supervisor deliberately avoided providing and fully disclosing all of the stream and/or HUC road density calculations. Perhaps this was because the Supervisor and IDT had made critical 'Strategic Assumptions' early on, prior to the start of the NEPA analysis, that they should 'avoid changing pre-fire motorized access status' (See BAR EIS IDT Notes, 1/9/01) in the DEIS. A full disclosure and hard look at the total road density situations found within the DEIS project area would have likely demonstrated that many more existing roads should have been considered for closures, decompacting, and/or re-contouring beyond just the few listed. Full disclosure would have likely indicated that the 1/9/01 'Strategic Assumptions - avoid changing pre-fire motorized access status' was highly arbitrary and capricious." (Preservation/Conservation Organization, Hamilton, MT - #5000)

Response:

This information is disclosed in the Fisheries “Existing Conditions” sections. Within each Geographic Area, information on road density in each HUC is provided.

367 The Final EIS should disclose road mileage and road densities for uninventoried roads within the project area and on a watershed scale.

"It . . . appears that DEIS only provides information on inventoried roads. On most forests, there is a significant amount of uninventoried roads. Surveys in other areas, including in an adjacent forest within the same USFS Region (CNF, 1998), indicate that uninventoried roads typically comprise more than 25-50% of the inventoried road network. Therefore, it is likely that there more actual roads and higher road densities than disclosed in the DEIS. Uninventoried roads contribute significantly to adverse cumulative effects on soils, runoff, peakflows, and sedimentation. The lack of maintenance on uninventoried roads typically increases the severity of adverse direct and cumulative impacts on aquatic resources caused by these roads (USFS, 2000a; b). The DEIS appears to only discuss and disclose road mileage and watershed scale road densities for inventoried roads. The BNF must include uninventoried roads in its disclosure of road miles and road density within the project area and the watershed scale." (Preservation/Conservation Organization, Tucson, AZ - #1695)

Response:

The EIS uses information from the Forest Service Roads Inventory. Information on non-inventoried roads does not exist. As explained in the FEIS, there are few non-inventoried roads in the burned areas; the number is very small compared to the inventoried roads.

446 The Bitterroot National Forest should republish the Draft EIS after integrating a science-based roads analysis.

"The Supervisor believes that segmenting and delaying the Roads Analysis until after the public has commented on the DEIS is an acceptable process. We disagree. The 'science-based Roads Analysis' would serve to inform the public up front as to what options are available. Delaying the Roads Analysis until after the DEIS comment period prevents the decisions-maker and the public from utilizing that information to investigate and consider what alternatives might be available for consideration in this DEIS proposal. Delaying the required Roads Analysis until the FEIS is published means that that information is being withheld from public disclosure until after the alternatives are finalized. It also prevents the public from being able to comment on its analysis and findings until after the EIS is nearly complete. This is an unacceptable approach and does not comply with the NEPA/CEQs." (Preservation/Conservation Organization, Hamilton, MT - #1640)

Response:

An analysis of the roads in the burned area has been completed in accordance with the Forest Service Roads Policy. However, the requirement to implement roads analysis prior to road management decisions has been extended until January 12, 2002. The analysis evaluated each inventoried road as to the resource concerns and the access needs for each road. This assessment will inform the Deciding Official, when the decision is made.

The Roads Analysis documentation is available in the Project File.

448 The Bitterroot National Forest should consider using public volunteers to maintain roads.

"I am concerned with road decommissioning, recontouring or stabilizing and placing in storage. The need to access all areas of the forest would to me far out-weigh spending a large sum to decommission, etc. I know that it costs to maintain the forest roads, but I have never known the Forest Service to ask the public for volunteer help in doing road maintenance. I believe the ATV clubs, Horse riding clubs, Gem & Mineral clubs, Prospecting clubs, plus all of the other clubs and National Forest users would volunteer to help." (Individual, Hamilton, MT - #1641)

Response:

As explained in the DEIS Transportation Section, road maintenance is very costly and there is a backlog of over $13 million of road maintenance needs on the Bitterroot Forest.

Alternative G has been added to the FEIS and it contains over 525 miles of road recontouring as a further action to reduce stream impacts.

In the other alternatives, the only roads proposed for recontouring are those that have not been used for the last few years and have been determined as not needed for access in the future. The Forest has an active volunteer program that will accommodate volunteers who have been properly trained and could furnish road maintenance equipment to perform this work. Volunteers currently do some of this work.

500 The Final EIS should detail methods for evaluating and repairing roads, planning repairs, and sources of funding for these activities.

"We also recommend that the FEIS describe the frequency of maintenance activities for roads, and whether adequate funding is anticipated for road maintenance. We recommend that erosion control be kept current with log skidding activities and that road maintenance (e.g., blading) be focused on reducing road surface erosion and sediment delivery from roads to area streams. Blading of unpaved roads in a manner that contributes to road erosion and sediment transport to streams and wetlands should be avoided. We also support inspections and evaluations to identify existing road conditions that cause or contribute to nonpoint source pollution and stream impairment." (U.S. Environmental Protection

Response:

The Interdisciplinary Team has identified the existing roads that are contributing to nonpoint source pollution and stream impairment. That is the basis for the specific proposals in the action alternatives in the DEIS and FEIS to treat the roads to improve and restore watersheds and streams.

As stated in the FEIS Transportation section, “Roads used for commercial timber haul would receive maintenance commensurate with their use.” The road maintenance requirement would be part of the contract in the Timber Sale or the Service Contract. Funding for this traffic-generated maintenance would come from the value of the timber being removed or from the appropriated funds already available to the Forest for Burned Area Restoration.

Road grading procedures would be defined in the contracts and would be based on the Forest’s Best Management Practices for minimizing sedimentation and erosion from the road surface

United States Department of the Interior

FISH AND WILDLIFE SERVICE

MONTANA FIELD OFFICE
100 N. PARK, SUITE 320
HELENA, MT 59601
PHONE (406) 449-5225, FAX (406) 449-5339

M.19 Bitterroot National Forest

Rodd Richardson
Forest Supervisor
Bitterroot National Forest
1801 N. First Street
Hamilton, MT. 59840-3114

07 July 2001

Dear Rodd:

Thank you for meeting with us on June 14, 2001 to discuss issues surrounding the 2000 Bitterroot Fires and proposed Burned Area Recovery. The aerial tour of the burned area vividly illustrated the enormity of the 2000 fires and the impact of past and current forest management on private and public lands.

The aerial tour also demonstrated the complexity of the growing urban interface situation in fire adapted forested lands the Bitterroot Valley. I am left with the feeling that this situation can only worsen as the population of the Bitterroot Valley continues to grow, and I understand the urgency on the part of the Bitterroot National Forest to reduce wildfire fuels in areas where human life and property are at risk The *Intermediate Harvest* and the *Fuel Reduction Using Salvage Harvest* prescriptions you and your staff described address this risk while retaining wildlife habitat in the form of snags and where available, live trees.

The short trip to the Cow Creek Demonstration Area was very informative. The small amount of soil disturbance associated with fuel reduction and salvage timber harvest over frozen ground and snow was indeed surprising, and our discussion concerning the implementation of these methods of salvage was particularly informative. I hope that the Bitterroot National Forest employs these methods on the ground based salvage harvest. The use of these methods will greatly diminish sediment production in harvest units, which will substantially reduce the potential for sediment delivery to habitat occupied by westslope cutthroat trout and the threatened bull trout. I am pleased that the Bitterroot National Forest has such a high degree of concern for maintaining the integrity of the upper soil horizon and remaining humus layer, two elements of critical concern in the post fire environment.

Much of the discussion during the day focused on secondary forest roads and the associated impacts on fish and fish habitat. The Bitterroot National Forest has proposed a broad program of

road closure and decommissioning to improve watershed conditions. As you know, forest roads are one of the leading contributors of sediment to fish bearing streams in western Montana. The Fish and Wildlife Service strongly supports the closure and reclamation of roads that, due to their position on the landscape, detrimentally impact fish and other aquatic organisms and their habitat.

The Fish and Wildlife Service recommends that the Bitterroot National Forest implement as many of the watershed improvement projects as possible in post fire years two and three (2002 and 2003), following the priority list the Forest developed for bull trout. These projects demonstrate the Bitterroot National Forest's continued commitment to restore and manage habitat for the threatened bull trout.

			Sincerely,	
			R. Mark Wilson	
			Field Supervisor	
			Montana Field Office	
Copies to:	Craig Bobzien, Bitterroot National Forest			
	Mike Jakober, Sula Ranger District			
	Stu Lovejoy, Bitterroot National Forest			

The Big Sky Country

MONTANA HOUSE OF REPRESENTATIVES

REPRESENTATIVE RICK LAIBLE
HOUSE DISTRICT 59

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COMMITTEES:
BUSINESS & LABOR
LOCAL GOVERNMENT
NATURAL RESOURCES

Craig Bobzien
Acting Deputy Forest Supervisor
Bitterroot Nation Forest
1801 N. 1st. St.
Hamilton, Mt. 59840

July 20, 2001

Re: Burned Area Recovery

Dear Craig

Before beginning on the above subject let me say congratulations on your apparent promotion. There would be nothing that could please me more than to have you promoted to Forest Supervisor for the Bitterroot National Forest when Rod is promoted to a higher position within the Forest Service which he deserves. You both have worked tirelessly for this community and our forests.

After reviewing the Forest Service EIS alternatives for the "Burned Area Recovery" it is apparent that Alternative D is the most effective. Not only does Alternative D address the need for removal of excess fuel, but as important, will utilize burned timber as a marketable commodity.

The DEIS was well prepared and thought out by your staff and included practicality and good science. Please let us proceed with Alternative D.

Again, thank you for all of your help and professional service to this community.

Sincerely,

Rick Laible
Representative HD-59

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Denver Federal Center, Building 56, Room 1003
P.O. Box 25007 (D-108)
Denver, Colorado 80225-0007

July 13, 2001

ER 01/479

RECEIVED
JUL 16 2001
Bitterroot National Forest

Rodd Richardson, Forest Supervisor
Bitterroot National Forest
1801 North 1st Streets
Hamilton, Montana 59840

Dear Mr. Richardson:

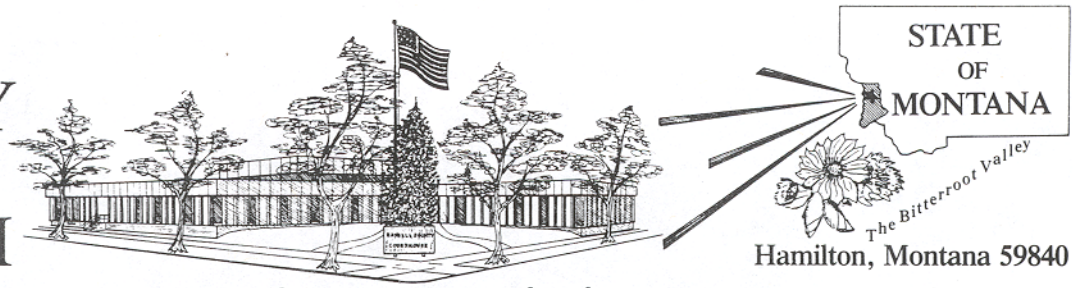
The Department of the Interior has reviewed the Draft Environmental Impact Statement for the Burned Area Recovery, Bitterroot National Forest, Ravalli County, Montana and has no comments.

Sincerely,

Robert F. Stewart

Robert F. Stewart
Regional Environmental Officer

COUNTY OF RAVALLI



Hamilton, Montana 59840

Ravalli County Commissioners
Courthouse - Box 5001
Hamilton, MT. 59840
406-375-6200

July 10, 2001

Craig Bobzien
Bitterroot National Forest
1801 North First Street
Hamilton, MT. 59840

RE: EIS Draft

Dear Mr. Bobzien;

The Ravalli County Commissioners have reviewed the burned area recovery draft environmental impact statement and would like to make comment. We have viewed the area both from the ground and from the air and have seen first hand the damage done to our natural resources. Our main objective in casting our vote for one of the alternatives is to see if we can forestall this kind of disaster in the future.

The fires of 2000 were unprecedented, but if we do not do something with the excess material that is accumulating in the forest at this time, we will see the same type of fires over and over. Many of the dead trees are dangerously dry and need to be removed now or they will contribute to a more catastrophic fire in the near future.

Of course we would like to see economic activity in our valley that would help all our citizens have a better quality of life, but our first priority must be the safety of the citizens and protection of the forest. For these reasons and more, we feel that alternative D is the best option at this time. We would not object too strenuously if alternative B was decided upon.

We believe the people of the Bitterroot have spoken in the random survey that was done and we feel we speak for them when we ask that these two alternatives be given the strongest consideration.

We hope that the Bitterroot National Forest will put into effect the measures that will address forest health and the safety of the people who live and recreate in the valley.

Sincerely,

BOARD OF COUNTY COMMISSIONERS

Alan Thompson, Chairman

John M. Atthowe Jr., Member

Betty T. Lund, Member

DEPARTMENT OF ENVIRONMENTAL QUALITY COMMENTS

BITTERROOT FIRE RECOVERY PLAN
DRAFT ENVIRONMENTAL IMPACT STATEMENT

The Bitterroot National Forest **Burned Area Recovery Plan** emphasizes actions that will protect water quality and improve watershed conditions.

Salvage logging mitigation measures and management requirements exceed state Forestry BMP guidelines. All ground logging will be done in the winter when there is a settled snow cover of 24 inches or a frost layer at least four inches deep. Slopes greater than 35 percent will be helicopter or skyline logged. Landings and new road construction will be minimized. All these measures will protect water quality. However, we would like to see included as part of the Plan a follow-up site visit and report that assesses the impacts of the logging operation. This assessment should be done following the spring thaw or other major run-off event. The assessment should include an estimate of sediment or other pollutants (if any) that are reaching surface waters as a result of the logging activity. These assessments would not only enable the Forest Service to evaluate and fine tune mitigation measures and management requirements, they could be the basis of determining targets for sediment in water quality restoration plans in forested watersheds.

The Plan also exceeds the requirements of the state Streamside Management Zone law. There will be no salvage operations within 300 feet of a fish producing stream or within 150 feet of perennial streams, lakes, ponds and wetlands larger than one acre. These measures will preserve the designated beneficial uses of these waterbodies.

The preferred alternative (B) would result in the decommissioning or recontouring of 63 miles of roads, the removal of 105 culverts and the enlargment of seven culverts. These projects will help mitigate the impact of past road projects. Whenever feasible the Forest Service should consider scheduling culvert removal and road decommissioning work when sediment from these projects won't be simultaneous with increases in sediment from the fires.

The plan seems to eschew the planting of deciduous riparian vegetation: "Appropriate conifer species would be planted along two stream reaches that were severely burned and now lacks a conifer seed source, in order to accelerate reforestation. In all other burned riparian areas natural recovery would be allowed to occur. Riparian areas dominated by shrubs have been lacking on the forest, but will predominate in areas that burned." (page 1-13). Also, "The majority of burned riparian areas would not be planted because shrubs are expected to increase dramatically following the fires and shrub habitats were a scarce but valuable ecosystem component prior to the fires" (page 2-9). This policy seems to conflict with the statement in the **Toward Restoration and Recovery** document produced by the Northern and Intermountain USFS Regions, "Where riparian areas and stream banks are burned severely, planting may be needed to stabilize slopes. Watershed restoration dollars will be used, in part, to address these needs" (page III-3). High intensity fires in riparian zones may have killed shrubs and destroyed all seed. The suppression of wildfires for the past 90+ years resulted in conifers occupying sites that under a less intrusive management regime would be occupied by deciduous trees and shrubs. In some of these locations seed may not be present for regenerating deciduous

vegetation. The Bitterroot National Forest has a wide variety of potential natural riparian communities ranging from predominately deciduous stands of cottonwood, red-osier dogwood and other understory shrubs at middle elevations to willow/shrub habitats at higher elevations. A healthy riparian zone is essential for streambank stabilization on many stream types and for preventing sediment and other pollutants from entering the stream. Riparian zones also create habitat for a wild variety of wildlife and enhance habitat for fish and other aquatic life. The **Burned Area Recovery Plan** should include a more complete description of Potential Natural Communities as well as a long-term strategy for establishing and maintaining the Proper Functioning Condition of riparian areas as per the 1996 Cooperative Management Strategy to accelerate the restoration and improved management of riparian-wetland areas in the western United States.

Overall, the Bitterroot National Forest has done an admirable job in addressing watershed health and in identifying practices to protect and restore water quality. The Department of Environment Quality looks forward to working with the Forest in the development of a water quality restoration plan for the Bitterroot headwaters area that will include the establishment of TMDLs for identified pollutants, the development of targets and the implementation of a long term monitoring plan to gauge success.

Jim Bauermeister

Watershed Management Section

Montana Department of Environmental Quality

406-444-6771 jbauermeister@state.mt.us

OFFICE OF THE GOVERNOR

STATE OF MONTANA

JUDY H. MARTZ
GOVERNOR

STATE CAPITOL
PO BOX 200801
HELENA, MONTANA 59620-0801

July 31, 2001

United States Department of Agriculture
Forest Service
Bitterroot National Forest
1801 N. First
Hamilton, MT 59840-3114
Attn: Craig Bobzien, Acting Deputy Forest Supervisor

Dear Mr. Bobzien:

I wanted to thank you for this opportunity to comment on the Burned Area Recovery Draft Environmental Impact Statement. As a Montanan, and someone who recognizes the value of the goods and services provided by our national forests, I appreciate the thoughtful and detailed analysis that went into the DEIS. I also wanted to applaud the social survey that was conducted to assess local opinions in the Bitterroot Valley. Whereas national forests belong to all Americans, many times management actions affect local citizens disproportionately. It was interesting to note that more than 89 percent of respondents said it was important or very important to salvage timber burned in the fires of 2000; 84 percent said it was important or very important to reduce fuels and fire hazards in the wildland-urban interface; and 83 percent said it was important or very important to thin trees in the wildland-urban interface. I realize that it is oftentimes difficult to balance competing interests with scientific claims, but I feel that you and your professional staff have done an admirable job in accomplishing that task.

In preparing these comments, I relied heavily on the expertise of Montana's Fish, Wildlife and Parks, and the Department of Natural Resources and Conservation. Their knowledge of issues important to wildlife, wildlife habitat, forest management and social concerns was invaluable in the preparation of these comments.

In general, I am supportive of the proposed action; however, I feel that Alternative D best meets the purpose and need for this project.

Even though I would have liked to have seen the DEIS follow a more expedited process, I understand the impact that the procedural requirements of the National Environmental Policy Act (NEPA) have on completing projects in a timely manner. I am pleased, however, that during recent speaking engagements, Chief Bosworth has offered encouraging words

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that NEPA regulations will be reviewed under the new administration to see where efficiencies can be gained to improve the process.

As is accurately portrayed in the DEIS, 49,000 acres of state and private land burned, with more than 12,000 acres burned on the Sula State Forest. Last fall, state, private, and federal officials worked together to implement rehabilitation and restoration measures prior to anticipated spring runoff events this year. The coordination and cooperation exhibited by all parties is to be commended. Efforts by the Bitterroot Interagency Recovery Team (BIRT) and Burned Area Emergency Rehabilitation (BAER) teams were instrumental in identifying areas in need of emergency rehabilitation and outlining necessary information for securing adequate funding for these projects. This initial emphasis on rehabilitation later enabled the state to complete its own environmental analysis and sell approximately 22 million board feet (MMBF) at a value of about $3.6 million to various trusts. (Approximately 16.5 MMBF or 75 percent of this timber volume was purchased and milled in Montana, and about 90 percent of the workers employed were from within the state.)

Listed below are comments regarding specifics in the DEIS:

WILDLIFE COMMENTS

Green Trees

I recognize the need to thin thickets of small diameter green trees that may act as ladder fuels for fuel reduction purposes in the urban interface. However, in these low-elevation foothill habitats, thickets of less than ¼ acre, which in some locations will be scarce due to the fires, may compose a portion of blue grouse breeding territories. Caution should be exercised in determining which areas to thin and how much thinning should occur to assure these thickets still function as security for breeding male blue grouse. In addition, we recommend a reasonable number of larger diameter living trees be left in units proposed for fuels reduction and/or salvage logging. These trees will accelerate forest regeneration and contribute to hiding and thermal cover for elk and mule deer. The loss of security through the fires and salvage logging will result in elk being more vulnerable during the hunting season until these areas re-vegetate, and may result in displacement to private lands, where they may or may not be available to hunters. Live trees across the burned landscape will also add to the wildlife habitat diversity for a variety of species.

Snags

Burned forests also provide unique and important habitat, especially for certain cavity nesting birds. Recent studies have demonstrated that about 15 bird species (woodpeckers, flycatchers and seed-eaters) are generally more abundant in recent post-fire forests than in any other major cover type occurring in western Montana. Large diameter, burned ponderosa pine, larch and Douglas fir are the preferred nest trees for species such as black-backed woodpeckers.

I noted and support the need to amend the Forest Plan to adopt a more site specific snag standard. (Even though the proposed snag standard on page 1-15 of the DEIS is more

restrictive than the state standard, it should be noted that on the Sula project, the state did leave on average about 30 dead trees per acre greater than 9 inches d.b.h., with about 5.5 of those trees per acre greater than 15 inches d.b.h.).The snag standards appear adequate for these species listed above, and your analysis on page 2-32 allays these concerns, wherein you state, "However, given the extent of the fires and acres of new habitat created, Black-Backed Woodpeckers populations are not expected to be affected over the entire burned area landscape." Additionally, the analysis states, "Alternative D, the alternative that would treat the most area, would leave 80% of the burned area untreated. Additional snag retention within riparian habitat conservation areas that are interspersed among treatment units, as well as large untreated areas, would provide an abundance of foraging and nesting sites for Black-Backed Woodpeckers across the Bitterroot National Forest."

Winter Range

A considerable amount of the fuels reduction will occur along the urban interface that is located in big game winter range. Since fuels treatment and salvage logging are scheduled to occur during winter to reduce impacts to soils, there may be some displacement of elk to private land, which could result in additional game damage problems. Rather than scheduling activities over entire winter-range herd units at the same time, smaller units of activity may be necessary so animals will have the option of being displaced to undisturbed national forest land.

The Blodgett Fire and those fires west of US Highway 93 and south of Conner have opened up several thousand acres of formerly timbered, low productivity winter range. As shrubs and other understory species become established, these areas will provide improved mule deer winter range that will result in an increased capacity to support mule deer during the winter. Open, productive mule deer winter range is lacking on the west side of the Bitterroot Valley due to aspect and extensive tree cover. In the future, to maintain the integrity of this improved winter range, I would recommend that the Bitterroot NF plan periodic, prescribed burns or mechanical treatment on key sites to keep plant succession at an early stage.

Weeds

The burned landscape is now very vulnerable to weed establishment. Your proposed mitigations that minimize mechanical disturbance to prevent weed establishment and spread are to be commended. I suspect most re-seeding has probably already occurred, but if additional seeding is planned for stabilization or revegetation of severely burned lands, I would encourage using predominantly a mix of native species.

Road Management

I am pleased that little additional road construction is planned to accomplish proposed activities, and that the 10 miles of temporary road to be built will be put to bed. In addition, approximately 105 miles of roads in burned areas would be put "in storage" and no longer used, and 63 miles of currently closed roads within burned areas would be decommissioned or recontoured. These proposals, as outlined in the proposed action, should help mitigate the loss of habitat security in local areas as a result of the fires.

The Forest Service should consider how it will respond to increased interest in removing house logs when burned trees become suitable in the future. If additional road construction is necessary, issues associated with the increased access should be considered.

FISHERIES COMMENTS

I understand that INFISH standards will apply so that there will be no harvest within 300 feet of a stream. Additionally, green tree harvest in water quality-limited drainages should be carefully analyzed to avoid additional quality impairments. Harvest of green trees in these areas should occur only if it is to improve the health of the stand and will not significantly add to water quality problems.

Since the fires of last year, it is apparent that there are areas of increased sedimentation due to recent heavy rains. Mudslides have been reported in recent weeks and are most likely having negative impacts on fish and fish habitat. All efforts to reduce sedimentation in streams is critical and that is why I support efforts to rehabilitate and decommission roads that could lead to increased sedimentation in streams. Efforts to stabilize stream banks and high-risk slide areas should be implemented as soon as possible.

While the area is recovering, second entry after harvest should be minimized to allow unstable soils opportunity to grow a cover crop, thus minimizing additional run-off and possible impairments to streams.

I also support the replacement of culverts that have been identified by fisheries personnel as causing upstream migration barriers for trout or causing stream-channel impacts.

RECREATIONAL OPPORTUNITY COMMENTS

With regard to recreational opportunities, consideration should be given to how or if this proposal would impact the approved, current snowmobile trail system. With the upcoming winter season only months away, mitigation measures for displaced snowmobile trails resulting from possible road or trail closures should be considered. I would encourage the Forest Service to engage local trail enthusiasts such as the Hamilton Snowmobile Club with these discussions.

CONCLUSION

With its emphasis on reducing fuels, improving watershed conditions, restoring forested conditions, and providing labor income, I feel that Alternative D best meets the purpose and need of this project. I am pleased to see that your proposed restoration activities include identifying a vegetative desired future condition that is predicated on following natural disturbance patterns and applying management prescriptions to facilitate those conditions when appropriate. Whereas Alternative D does not generate positive net income, it does provide the most income to accomplish the related restoration and improvement activities associated with this project, while also adding $118 million in labor income. (While some would have you believe that generating revenue is an anathema to forest management, a

careful reading of the Multiple Use Sustained-Yield Act will show that nowhere is generating revenue from the sale of forest products precluded, and I believe it should be encouraged when appropriate.) By implementing Alternative D, all of these management activities would be accomplished while ensuring that more than adequate mitigations for fish, wildlife, water quality, soils, air quality, weeds, and vegetation were employed.

I hope that you have found these comments helpful as you complete your decision-making process. You and your staff have done an excellent job in preparing the DEIS, and I hope that you will not delay in completing the final EIS, with management to begin late this fall.

Sincerely,

JUDY MARTZ
Governor

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 301 S. PARK, DRAWER 10096
HELENA, MONTANA 59626-0096

Ref: 8MO

July 12, 2001

Mr. Craig Bobzien, District Ranger
Sula Ranger District
7338 Hwy 93 South
Sula, Montana 59871

Re: EPA Comments: Burned Area Recovery Project Draft Environmental Impact Statement

Dear Mr. Bobzien:

The Environmental Protection Agency (EPA) Region VIII Montana Office has reviewed the Draft Environmental Impact Statement (DEIS) for the Burned Area Recovery Project. The EPA reviews EISs in accordance with its responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. Section 309 of the Clean Air Act directs EPA to review and comment in writing on the environmental impacts of any major federal agency action. EPA's comments include a rating of both the environmental impact of the proposed action and the adequacy of the NEPA document. A summary of EPA's rating system is enclosed for your information.

We commend the Forest Service for the comprehensive presentation and analysis of watershed and fisheries information for this large and complex Burned Area Recovery project on the Bitterroot National Forest. The DEIS includes an excellent array of maps of the four geographic areas within the overall project area, clearly showing streams, hydrologic units and critical fisheries in relation to harvest units, and the DEIS includes comprehensive drainage by drainage watershed and fisheries assessments.

The EPA fully supports proposed watershed improvements, including upgrading road BMPs, recontouring and revegetating roads, pulling culverts, installing ditch relief culverts, improving road drainage, stabilizing cut and fill slopes, putting a gravel surface on main roads, ripping and revegetating roads (105 miles), decommissioning roads (63 miles), placing woody debris on slopes to retard erosion, improving fish habitat, eliminating fish barrier culverts, and replanting/revegetation efforts. Road drainage and BMP improvements are critical to the aquatic health of the area.

In regard to the alternatives presented for fuels reduction, the EPA's main concerns regard erosion and sediment production from harvests and road construction, and increased water

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yield associated with harvests and prescribed burning after a wildfire. Increased water yields are especially critical since existing water yields are already high due to the wildfire, and efforts need to be made to avoid exacerbating the already high water yields to avoid increasing peak flows too much and destabilizing stream channels (i.e., measures such as deferring harvests in drainages with water yield exceedances).

The EPA has significant concerns with Alternative D, which has the highest level of salvage harvest and highest risk of reducing bull trout and westslope cutthroat trout spawning and rearing habitat (sedimentation) and killing some juveniles and eggs (page 2-28). The DEIS acknowledges that there is increased risk of channel changes due to increased water yield with Alternatives B and D (page 2-27). We generally consider Alternative E to provide a better balance for addressing the resource and environmental trade-offs and project purpose and need (reduce fuels, improve watershed conditions, restore forested conditions, and provide forest products for the economy) and the significant issues (fuel hazard reduction, soil and watershed effects, road access, bark beetle risk, and economic opportunities). We also support the Alternative E (and Alternative C) motorized and non-motorized access restrictions, including the seasonal closure of 5.4 miles of road that would bring three drainages in the treatment area into compliance with Forest open road density standards (page 2-31). However, we recommend that the Forest Service consider development of a modified preferred alternative (perhaps between Alternative E and Alternative B), since we believe a modified alternative could be constructed that may better optimize the environmental and resource trade-offs. Desirable features EPA considers worthy of including in a modified preferred alternative include:

- ☞ restore desired vegetative conditions for sustainable forest ecosystems and reduce fuel loadings in high fire risk areas while protecting other resource values (e.g., wildlife habitat, water quality, channel stability, old growth or cavity habitat, forest connectivity, control of noxious weeds);

- ☞ stabilize eroding soils and sediment transport risk, while avoiding excessive sediment production and sediment transport and water yield from timber harvest, and maximize fish and watershed improvement;

- ☞ minimize road construction and site roads away from streams, use less disturbing logging methods, and improve road BMPs and reduce sediment production from roads; meet or exceed Forest open road density standards, and restrict motorized vehicle access adequately to protect wildlife and wildlife habitat and watersheds while allowing reasonable public access.

We note of course that the Forest Service would need to evaluate and analyze the impacts (e.g., wildlife impacts, sediment production) of any new modified alternative, and display those impacts in the FEIS. This information would allow for improved public disclosure, and to allow the decision maker to make a more reasoned choice between alternatives.

In regard to the salvage harvests, EPA does not oppose harvest of dead and dying fire killed trees and bark-beetle infested trees. We do have concerns, however, regarding harvest of

healthy green trees in an area where many trees have already been lost to the wildfire and high water yields exist. We recommend that in such situations only smaller green trees that serve as ladder fuels in densely stocked stands be harvested to reduce fire risk (especially at urban-wildland interface) and promote healthy sustainable forest ecosystems. We support leaving healthy larger and older seral species trees that exist in the harvest areas to develop larger and older open grown forests and restore historical seral species such as ponderosa pine. We also support the proposed planting of historical seral species such as ponderosa pine and douglas fir on burned timber areas where there is not an adequate seed source for successful natural regeneration, and where there is likely to be accelerated reforestation success from such plantings.

We would also like to emphasize that watersheds which have both existing degraded conditions due to high levels of past disturbances and with moderate to severe wildfire effects (i.e., already high water yields) are the most sensitive to further degradation from salvage logging operations. Watersheds with such cumulative effects concerns deserve special consideration and protection. Accordingly, while EPA does not in general object to salvage logging, we do favor reduced or deferred levels of logging and harvest and less disturbing logging methods (helicopter, cable) in already degraded watersheds that were also severely impacted by the fire. From the presentation of watershed conditions in the DEIS it would appear that all or portions of the Rye Creek, North Fork of Rye Creek, Mike Creek, Little Sleeping Child Creek, Hot Springs tributary to Sleeping Child Creek, Meadow Creek, Cameron Creek, Lower East Fork Bitterroot River, Upper West Fork Bitterroot River watersheds are sensitive to additional disturbances, and that this warrants reduced or deferred levels of harvest, and less disturbing logging methods in these drainages. We also note that it is stated in the Fisheries analyses that projected sediment inputs to streams from salvage harvest could adversely effect bull trout and westslope cutthroat trout in many drainages. Such drainages likewise deserve special consideration and protection to reduce adverse impacts to bull trout and westslope cutthroat trout.

This recommendation to limit or defer harvests in degraded drainages is supported by the cumulative effects watershed analyses in the DEIS which indicates that many proposed activities would be acceptable without cumulative effects in several watersheds (e.g., Skalkaho-Rye drainages, East Fork Bitterroot drainages), but states that, <u>when combined with the cumulative effects from wildfire and from other past, present, and reasonably foreseeable future actions in the watershed would cause measurable effects</u>. We agree with the recommendation on page 3-108 that says that **activities should be limited to those that do not contribute to increases in erosion or water yield.** We believe cumulative effects analyses should be considered during development of any modified preferred alternative so that the accumulated water yield from proposed fuels reductions activities in each drainage, when combined with the wildfire effects, and all other past, present, and reasonably foreseeable activities in each drainage, do not cause exceedances of water yield standards, or excessive erosion, and particularly do not contribute to further degradation of 303(d) listed streams.

Since many streams in the project area are on the State's 303(d) list for water quality impaired water bodies (e.g., East and West Forks of Bitterroot River, Sleeping Child, Skalkaho,

Rye, Blodgett, Moose, Martin, Meadow, Hughes, Deer, Reimel, and Overwhich, Creeks) and such 303(d) listed streams need TMDL development, we recommend that the Forest Service contact the Montana Department of Environmental Quality (i.e., Ron Steg at 444-7423 in Helena) to ensure MDEQ concurrence on, and coordination of proposed fuels reduction activities in these drainages with the MDEQ's TMDL development for these listed streams.

The EPA's more detailed questions, comments, and concerns regarding the analysis, documentation, or potential environmental impacts of the Burned Area Recovery Project are included in the enclosure with this letter. Based on the procedures EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed action and alternatives in an EIS, the Burned Area Recovery Project DEIS has been rated as Category EC-2 (Environmental Concerns - Insufficient Information). A copy of EPA's rating criteria is attached.

If you have any questions you may contact Mr. Steve Potts in Helena at (406) 441-1140 ext. 232. Thank you for your willingness to consider our comments at this stage of the process, and we hope they will be useful to you.

Sincerely,

John F. Wardell
Director
Montana Office

Enclosure

cc: Cynthia Cody/Yolanda Martinez, EPA, 8EPR-EP, Denver
Ron Steg, MDEQ, Helena

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements
Definitions and Follow-Up Action*

Environmental Impact of the Action

LO - - Lack of Objections: The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC - - Environmental Concerns: The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO - - Environmental Objections: The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU - - Environmentally Unsatisfactory: The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 - - Adequate: EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 - - Insufficient Information: The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 - - Inadequate: EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

EPA Comments on the Draft Environmental Impact Statement for the Burned Area Recovery Project

Brief Project Overview:

The Sula Ranger District of the Bitterroot National Forest prepared this DEIS to evaluate no action and four action alternatives for fuels reduction treatments and post-fire recovery of National Forest land in the middle and southern portion of the Bitterroot Valley that burned during wildfires last year. The geographic area includes 758,814 total acres, including 597,817 acres of National Forest land in the Blodgett, Skalkaho-Rye, East and West Fork Bitterroot geographic areas. The purposes of the project are to reduce fuels, improve watershed conditions, restore forested conditions, and provide forest products for the economy.

Alternative A is the no action alternative to provide a baseline for comparison purposes for the action alternatives.

Alternative B is the proposed action that includes 73,191 acres of fuels reduction harvests (271 MMBF of timber harvest) and prescribed burns, 36,792 acres of reforestation planting, and measures to improve watershed condition (63 miles of road decommissioning and 105 miles of road drainage improvements).

Alternative C avoids the effects of timber harvests and other fuel reduction methods, but includes 36,885 acres of reforestation planting, and measures to improve watershed condition (78 miles of road decommissioning and 90 miles of road drainage improvements).

Alternative D was developed to increase salvage opportunities and address bark beetle susceptibility in high risk stands. Alternative D includes 79,221 acres of timber harvest (279 MMBF of timber harvest) and prescribed burns, 36,350 acres of reforestation planting, and measures to improve watershed condition (73 miles of road decommissioning and 95 miles of road drainage improvements).

Alternative E was developed to reduce harvest at mid and upper elevations beyond the wildland-urban interface and warm dry Ponderosa pine forests and avoid harvest of green trees, and temporary road construction, and more aggressively recontour roads to improve watershed condition (78 miles of road decommissioning and 95 miles of road drainage improvements). Alternative E includes 22,571 acres of fuels reduction harvests (85 MMBF of timber harvest) and prescribed burns, 22,981 acres of reforestation planting, and measures to improve watershed condition.

A preferred alternative was not identified, however, the Forest Supervisor has indicated that he was leaning toward implementing activities in the range between Alternatives D and E.

Comments

1. The EPA fully supports the proposed watershed improvements, including improving road BMPs, recontouring and revegetating roads, pulling culverts, installing ditch relief culverts, improving road drainage, stabilizing cut and fill slopes, putting a gravel surface on main roads, ripping and revegetating roads (105 miles), decommissioning roads (63 miles), placing woody debris on slopes to retard erosion, improving fish habitat, eliminating fish barrier culverts, and replanting/revegetation efforts.

   We are also pleased that fuel reduction work is not proposed with any alternatives in riparian habitat conservation areas (RHCAs) specified in INFISH (page 2-5) or wetland areas (page 3-50), and that no equipment will be allowed in wetland and streamside management areas (page 2-16), and that erosion control measures such as skyline and helicopter logging, and using tracked excavators only on snow or frozen ground to minimize ground disturbance are proposed (page 3-71). We encourage the Forest Service to delineate and mark the riparian buffer area boundaries and perennial seeps and springs and wetlands on maps and on the ground before harvesting so that timber contractors will be able to avoid them.

   In regard to salvage harvests the EPA's principle concern regards erosion and sediment production from harvests and road construction, and increased water yield associated with harvests and prescribed burning after a wildfire that increase peak flows and destabilize stream channels. Increased water yields are especially critical since existing water yields are already high due to the wildfire, and measures need to taken to avoid exacerbating the already high water yields that may destabilize stream channels (i.e., measures such as deferring harvests in drainages with water yield exceedances).

   Of the alternatives presented for fuels reduction, the EPA has the most concerns with Alternative D which has the highest level of salvage harvest and highest risk of reducing bull trout and westslope cutthroat trout spawning and rearing habitat (sedimentation) and killing some juveniles and eggs (page 2-28). The DEIS acknowledges that there is increased risk of channel changes due to increased water yield with Alternatives B and D (page 2-27). We generally believe Alternative E provides a better balance to address the resource and environmental trade-offs and project purpose and need (reduce fuels, improve watershed conditions, restore forested conditions, and provide forest products for the economy) and the significant issues (fuel hazard reduction, soil and watershed effects, road access, bark beetle risk, and economic opportunities). Alternative E is stated to have the lowest risk to fisheries (page 2-28). We also support the Alternative E (and Alternative C) motorized and non-motorized access restrictions, including seasonal closure of 5.4 miles of road that would bring three drainages in the treatment area into compliance with Forest open road density standards (page 2-31). However, our recommendation is that development of a modified preferred alternative (between Alternative E and Alternative B) be considered, since we believe a modified alternative

could be constructed that may better optimize the environmental and resource trade-offs.

Desirable features EPA considers worthy of including in a modified preferred alternative include:

☞ restore desired vegetative conditions for sustainable forest ecosystems and reduce fuel loadings in high fire risk areas while protecting other resource values (e.g., wildlife habitat, water quality, channel stability, old growth or cavity habitat, forest connectivity, control of noxious weeds);

☞ stabilize eroding soils and sediment transport risk, while avoiding excessive sediment production and sediment transport and water yield from timber harvest, and maximize fish and watershed improvement;

☞ minimize road construction and site roads away from streams, use less disturbing logging methods, and improve road BMPs and reduce sediment production from roads; meet or exceed Forest open road density standards, and restrict motorized vehicle access adequately to protect wildlife and wildlife habitat and watersheds while allowing reasonable public access.

Inclusion or discussion of additional alternative evaluation in the FEIS from evaluation of a modified preferred alternative may also better explain to the public the trade-offs involved in making land management decisions, and may lead to improved public acceptance of decisions. We note of course that the Forest Service will need to evaluate and analyze the impacts (e.g., wildlife impacts, sediment production, water yield) of any new modified alternative, and display those impacts in the FEIS. This information should be provided in the FEIS to allow for improved public disclosure, and to allow the decision maker to make a more reasoned choice between alternatives.

In regard to the fuels reduction treatments, the EPA does not oppose vegetative treatments that focus on removing dead and dying fire killed trees and bark-beetle infested trees. We do have concern, however, regarding harvest of healthy green trees in an area where many trees have already been lost to the wildfire and high water yields exist. We recommend that in such situations only smaller green trees that serve as ladder fuels in densely stocked stands be harvested to reduce fire risk (especially at urban-wildland interface) and to promote healthy sustainable forest ecosystems. We support leaving healthy larger and older seral species trees that exist in the harvest areas to develop larger and older open grown forests and restore historical seral species such as ponderosa pine. We also support planting of historical seral species such as ponderosa pine and douglas fir on burned timber areas where there is not an adequate seed source for successful natural regeneration, and where there is likely to be accelerated reforestation success from such plantings.

We would also like to emphasize that watersheds with both existing degraded conditions due to high levels of past disturbances in the watershed and moderate to severe wildfire effects (already high water yields) are the most sensitive to further degradation from salvage logging operations. Watersheds with such cumulative effects concerns deserve special consideration and protection. Accordingly, while we don't in general object to salvage logging, we favor reduced or deferred levels of logging and harvest and less disturbing logging methods (helicopter, cable) in the already more severely degraded watersheds that were also severely impacted by the fire. From the presentation of watershed conditions in the DEIS it would appear that all or portions of the Rye Creek, North Fork of Rye Creek, Mike Creek, Little Sleeping Child Creek, Hot Springs tributary to Sleeping Child Creek, Meadow Creek, Cameron Creek, Lower East Fork Bitterroot River, Upper West Fork Bitterroot River watersheds are sensitive to additional disturbances, and that this warrants reduced or deferred levels of harvest, and less disturbing logging methods.

We also note that it is stated in the Fisheries analyses that projected sediment inputs to streams from salvage harvest could adversely effect bull trout and westslope cutthroat trout in many drainages including: Rye and North Fork Rye Creek, Little Sleeping Child Creek, the upper half of Sleeping Child Creek, the unnamed Bad News tributary of the South Fork of Skalkaho Creek and scattered areas near tributaries that flow through salvage units, and areas in the Sleeping Child Creek downstream of White Stallion salvage units and near the mouths of Two Bear, Blacktail, and the unnamed Hot Springs tributary (page 3-187, 3-196); Medicine Tree Creek, Laird Creek and tributaries, Lower Maynard Creek, Reimel Creek downstream of Wallace Creek, Warm Springs Creek downstream and including Crazy Creek, Camp Creek and lower Andrew, Praine, and Waugh Creeks, Tolan Creek, Meadow Creek, Cameron Creek and its tributaries, lower Guide and Jennings Camp Creeks, and East Fork Bitterroot River downstream from Meadow Creek page 3-209, 3-218); and in Blue Joint and Little Blue Joint Creeks downstream of their trailheads, Lower Castle Creek, Overwhich Creek, lower Coal Creek and lower West Coal Creek, lower Slate Creek, Piquett Creek, and West Fork and Painted Rocks Reservoir (page 3-229, 3-239). We recommend that reduced or deferred levels of logging and harvest and less disturbing logging methods (e.g., helicopter) be considered to reduce bull trout and westslope cutthroat trout impacts in these drainages (e.g., use Alternative E fuels reduction measures in these drainages with projected fisheries impacts to reduce impacts).

2. It is also important to note that the many streams in the Burned Area Recovery Project area are on the State's 303(d) list for water quality impaired water bodies (e.g., East and West Forks of Bitterroot River, Sleeping Child, Skalkaho, Rye, Blodgett, Moose, Martin, Meadow, Hughes, Deer, Reimel, and Overwhich, Creeks). These listed streams should not be further degraded, and the State of Montana and EPA are under Court Order to develop Total Maximum Daily loads (TMDLs) for listed streams. The TMDL process identifies the maximum load of a pollutant (e.g., sediment, nutrient) a waterbody is able

to assimilate and fully support its designated uses; allocates portions of the maximum load to all sources; identifies the necessary controls that may be implemented voluntarily or through regulatory means; and describes a monitoring plan and associated corrective feedback loop to insure that uses are fully supported . We recommend that the Forest Service contact the Montana Department of Environmental Quality (i.e., Ron Steg at 444-7423 in Helena) to ensure MDEQ concurrence on, and coordination of, proposed fuels reduction activities in these drainages with the MDEQ's TMDL development for these drainages.

3. We appreciate the efforts of the Forest Service to identify and assess the past, present and reasonably foreseeable future actions in each geographic area for each resource in its efforts to analyze and disclose overall cumulative effects. We note that the cumulative effects watershed analyses identify the water yield issue we have discussed above disclosing that proposed activities would be acceptable without cumulative effects in several watersheds (e.g., Skalkaho-Rye drainages, East Fork Bitterroot drainages), however, when combined with the cumulative effects from wildfire and from other past, present, and reasonably foreseeable future actions in the watershed would cause measurable effects (page 3-108). We agree with the statement that says that **activities should be limited to those that do not contribute to increases in erosion or water yield.** We support this statement, and believe that cumulative effects analyses need to done during development of any modified preferred alternative so that the accumulated fuels reduction activities in each drainage, when combined with the wildfire effects, and all other past, present, and reasonably foreseeable activities in each drainage do not cause exceedances of water yield standards or erosion standards or guidelines.

4. Thank you for including the section, "Description of Tools Used in This Analysis" (page 3-63) providing a discussion of the methods used to evaluate water resource and watershed impacts (WATSED, IWWR, Bitterroot Coarse Filter Analysis, BAER analysis, Bitterroot post-Fire Assessement, and stream condition surveys). This discussion along with the drainage by drainage assessment of watershed/water quality and fisheries impacts with each alternative provides clear and descriptive analyses and discussion of watershed and fisheries impacts. Thank you for also including Table 2-5 listing management requirements and mitigation measures, and for including an excellent array of maps clearly showing streams and hydrologic units and critical fisheries in relation to harvest units in each geographic area. These maps along with the drainage by drainage assessments and discussions provide a comprehensive presentation of watershed and fisheries information for such a large and complex proposed project.

5. The Tables summarizing the features of the action alternatives in Chapter 2 do not clearly display the extent of temporary road construction that is proposed to allow access to fuel reduction units for each alternative. Construction of roads, even temporary roads, is one of the more critical aspects influencing aquatic and ecological health. It is important for any road construction, even temporary road construction to be clearly described and

displayed as an important element of the alternative. It is stated in the narrative that no temporary roads would be constructed with Alternatives C and E (page 2-23), but we could find no clear presentation of temporary road construction with supplemental information like number of road stream crossings for Alternatives B and D in the Alternatives Chapter 2. Proposed temporary road construction should be displayed in alternatives tables or a table should be added displaying the comparative mileage of proposed temporary road construction for Alternatives B and D. We did eventually find in Chapter 3 , Table 3-25, Miles of Temporary Soil Impact, (page 3-51), that appears to indicate that 0.8 miles and 10.2 miles of temporary road would be constructed with Alternatives B and D, respectively. If this is the accurate summary of the temporary road construction with these alternatives, we recommend that such information be presented with the other basic descriptive information about the Alternatives in Chapter 2.

For your information, EPA's areas of concern regarding roads include the number of road stream crossings; road drainage and surface erosion, interception and routing sediment to streams; culvert sizing and potential for washout; culvert allowance of fish migration and effects on stream structure; seasonal and spawning habitats; large organic material supplies; and riparian habitats. Culverts should be properly sized to handle flood events and should be properly aligned with the stream channel. Undersized culverts should be replaced and culverts which are not properly aligned or which present fish passage problems and/or serve as barriers to fish migration should be adjusted. Open bottom culverts that simulate stream grade and substrate and that provide adequate capacity for flood flows and bedload are recommended to minimize adverse fisheries effects of stream crossings.

We also recommend that the FEIS describe the frequency of maintenance activities for roads, and whether adequate funding is anticipated for road maintenance. We recommend that erosion control be kept current with log skidding activities and that road maintenance (e.g., blading) be focused on reducing road surface erosion and sediment delivery from roads to area streams. Blading of unpaved roads in a manner that contributes to road erosion and sediment transport to streams and wetlands should be avoided. We also support inspections and evaluations to identify existing road conditions that cause or contribute to nonpoint source pollution and stream impairment

6. Thank you for displaying the 1895 and 1980 photos of the Wetzsteon Homestead (page 1-6, 1-8). These photos provide good visual displays of the varying vegetative conditions existing during these periods particularly illustrating the changed vegetative conditions and fuel loads that have accumulated over the years as a result of past fire suppression policies.

7. The EPA is concerned about increasing use of off-road vehicles (ORVs) and all terrain vehicles (ATVs) that occurs away from roads and trails, including steep slopes, wet meadows, and around water bodies. ORV/ATV vehicle use may increase on a burned

watershed, since loss of vegetation may increase ease of travel. We are concerned that off road vehicle activity can cause erosion and habitat damage and adversely impact wildlife habitat and security. It is difficult to effectively restrict motorized access to public lands and protect them with simple road closures (i.e., gated closures). Road obliteration is a preferred method of road closure. An effective policing and enforcement program is also needed to assure that motorized access does not occur in restricted areas. It is important that enforcement of off-road restrictions be prioritized. The FEIS should indicate if there is a Forest Service inspection and enforcement program that will be used to assure that ATVs and ORVs will not cause erosion and habitat damage on burned lands, and/or otherwise violate motorized vehicle access limitations.

8. The discussion of soils in Chapter 3 does not clearly indicate if any of the salvage harvest areas or areas for proposed temporary road construction occur on landtypes with high risk of sediment production (e.g., based on soil erodibility, slope, and potential for transport of sediments to surface waters). It would be helpful if such information were more clearly identified in the FEIS. We recommend that severely erodible landtypes be avoided (particularly for road construction) and that effective erosion control measures be utilized to retard erosion soil transport from such erodible areas.

9. It is stated that large woody debris would be placed in sections of Reimel Creek, Jennings Camp Creek, Taylor Creek, N. Fork Rye Creek, and three unnamed tributaries of F. Fork of Rye Creek (page 2-9). We support the concept of such woody debris placements in streams for improvement aquatic habitat, and for bank stabilization. Placement of woody debris in stream channels may also have adverse effects if improperly placed (e.g., directing stream flows against stream banks to erode banks and destabilize stream channels). We recommend that aquatic biologists and staff with training and knowledge of alluvial geomorphology be consulted during design of any stream channel treatments. We also believe that the Army Corps of Engineers, U.S. Fish & Wildlife Service, and Montana Dept. of Fish, Wildlife and Parks and Montana Dept. of Environmental Quality should be contacted if placement of structures in stream channels is proposed to assure that proper authorizations and permits are obtained (e.g., 404 permits, 310 or 124 permits, 3a authorizations, etc.,).

10. The EPA generally believes that water quality/aquatics monitoring is a necessary and crucial element in identifying and understanding the consequences of one's actions, and should be an integral part of any management decision. The EPA endorses the concept of adaptive management whereby effects of implementation activities are determined through monitoring (i.e., ecological, environmental effects), and monitoring results are evaluated for comparison to goals and objectives. It is through the iterative process of setting goals and objectives, planning and carrying out projects, monitoring impacts of projects, and feeding back monitoring results to managers so they can make needed adjustments, that adaptive management works.

The achievement of water quality standards for activities that produce nonpoint source pollution occurs through the implementation of BMPs. Although BMPs are designed to protect water quality, they need to be monitored to verify their effectiveness. If found ineffective, the BMPs need to be revised, and impacts mitigated. The EIS should show a commitment to BMP monitoring within the framework of project monitoring plans and illustrate how monitoring results may be used in refining BMPs.

We believe monitoring information should be disclosed in the EIS to assure that the effects (i.e., physical, chemical and biological effects) of the proposed activities on water quality and the aquatic ecosystem will be determined. The BMP Implementation Process should require evaluation of BMP effectiveness in protecting water quality and maintaining water quality standards (WQS) are maintained and protecting beneficial uses. Without this information the EIS is inadequate to fully assess the role of monitoring and evaluation in project implementation.

Thank you for the brief monitoring summary presented on pages 2-19 to 2-21. It is stated that "monitoring for sediment and water yield and sediment transport will take place on several streams across the Forest as part of the ongoing monitoring program." We would like to better understand the relationship between this ongoing forest-wide monitoring program and individual project monitoring activities, and ask that this relationship be described. We would also like to have more specific information on the water quality, sediment, water yield, and channel conditions monitoring that is taking place in the project area (as either project specific monitoring or as part of the ongoing forest-wide monitoring program).

We believe the monitoring plan for an EIS project should assess impacts from implementation of the preferred alternative, and particularly how well the preferred alternative addresses issues and concerns. We note that watershed improvements are an significant issue and part of the purpose of the project. We would like to see clear water quality monitoring goals and objectives identified and described in the EIS (e.g., what questions are to be answered; what parameters are to be monitored; where and when monitoring will occur; who will be responsible; how the information will be managed and evaluated; and what actions will be taken based on that information). The monitoring plan should include types of surveys, location and frequency of sampling, parameters to be monitored, budget commitments, and procedures for using data or results in guiding current and future activities. The monitoring program should:

1) ensure State water quality objectives and standards are met,

2) provide a mechanism to initiate additional measures if needed to meet State water quality standards and goals,

3) evaluate the effectiveness of the Best Management Practices and other mitigation

methods utilized in this project,

4) evaluate the accuracy of estimates made in the analysis, and

5) provide a feedback mechanism for future projects.

We recommend that the monitoring plan include sampling design, methodology, parameters, sampling site locations shown on a map, and frequency or pattern of sampling (channel substrate measures, channel cross sections, etc.,). The EPA strongly recommends incorporation of a biological component, such as rapid bioassessments using macroinvertebrates, in a monitoring program. Monitoring of the aquatic biological community is desirable since the aquatic community integrates the effects of pollutant stressors over time and, thus, provides a more holistic measure of impacts than grab samples of turbidity and suspended sediment. We encourage you to use the following reference materials in designing and disclosing a monitoring program:

"Monitoring Guidelines to Evaluate Effects of Forestry Activities on Streams in the Pacific Northwest and Alaska", Lee H. McDonald, Alan W. Smart, and Robert C, Wissmar; May 1991; EPA/910/9-91-001.

"Rapid Bioassessment Protocols for Use in Streams and Rivers", James A. Plafkin; May 1989; EPA/444/4-89-001.

Montana Forestry BMP's; Extension Publications; July 1991, Montana State University; EB0096.

"Montana Stream Management Guide; for Landowners, Managers, and Stream Users", Montana Dept. Of Environmental Quality; December 1995.

11. We support the Forest Service use of prescribed fire to influence future forest vegetative conditions and reduce fuel loads and the risk of wildfire. Judicious use of prescribed fire may provide the best overall resource protection scenario (e.g., low intensity fire in specific planned locations spread out over time so that some vegetative cover could become reestablished before runoff). We support judicious use of prescribed fire where it can be carried out with minimal risk to fisheries, wildlife habitat, and noxious weed spread and air quality impacts. Site-specific evaluation of underburning risks should be incorporated into the modified preferred alternative. It would appear that a well planned and managed underburning program could be accommodated without unduly impacting other resources.

On May 15, 1998, the EPA issued the *Interim Policy* to address public health and welfare impacts caused by wildland and prescribed fires that are managed to achieve resource benefits. The *Interim Policy* was prepared in an effort to integrate the public policy goals

of allowing fire to function in its natural role in maintaining healthy ecosystems and protecting public health and welfare by mitigating the impacts of air pollutant emissions on air quality and visibility. The policy was developed with the active involvement of stakeholders, including the U.S. Department of Agriculture. The *Interim Policy* is Federal policy which reconciles the competing needs to conduct prescribed fires while at the same time to maintain clean air to protect public health. The *Interim Policy* is interim only in that it does not yet address agricultural burning nor visibility/regional haze. It is not interim with regard to how States, Tribes, and Federal land managers should address smoke from prescribed fires.

While the *Interim Policy* is directed at both Federal land managers and State/Tribal air quality managers, the expectations are different because each have a different role in protecting air quality. The *Interim Policy* calls on States and Tribes to develop smoke management programs and for the Federal land managers to participate in the State and Tribal smoke management programs. The development of the *Interim Policy* was partly driven by the concern that there will be exceedances of the National Ambient Air Quality Standards in light of plans by Federal land managers to carry out more prescribed fires. Again, this concern is even more pronounced with the increased appropriations to reduce fire risks at urban/rural interface areas.

The FEIS should make it clear to the public that the USFS participation in the Montana/Idaho State Airshed Group smoke management program is consistent with the *Interim Policy*. We also note that smoke management programs depend on favorable meteorological conditions to disperse smoke. However, despite best efforts to predict favorable conditions the weather can shift causing smoke not to disperse as intended. Therefore, the FEIS should acknowledge that there may be unintentional ground-level impacts from smoke and never presume to the public that there will be no air quality impacts. The public will naturally want to know what the USFS will do in the event smoke does not properly disperse. The discussion of the contingency measure element of the smoke management program should address this concern.

As you are aware, smoke from fire contains air pollutants, including tiny particulates which can cause health problems, especially for people suffering from respiratory illnesses. Smoke can also reduce visibility and diminish the appreciation of scenic vistas. We recommend that the USFS incorporate use of techniques that minimize emissions from fire and the adverse impacts of smoke on public health and the environment. These techniques include scheduling burning during favorable weather conditions that allow good smoke dispersal, limiting the amount of land burned at any one time, and mechanical pretreatment of fuels. Sound fire management practices include:

* Reducing the dangerous build-up of dead trees, branches, and vegetative matter on forest floors by using prescribed fire or the selective thinning, pruning, or cutting and removal of trees by mechanical means.

* Using smoke management techniques during burns to minimize smoke in populated areas as well as visibility effects. Each prescribed burn site will have unique characteristics, but in general, smoke impacts can be minimized by burning during weather conditions that provide optimal humidity levels and wind conditions for the types of materials being burned. Smoke impacts can also be minimized by limiting the amount of materials and acreage burned at any one time.

* Whenever possible, mechanical thinning (such as selective timber thinning, pruning, or cutting of small trees) can be used as an effective "pretreatment" to prescribed burning.

* Implementing fire hazard awareness and mitigation programs for the public.

Conduct of prescribed fires immediately before precipitation events and runoff periods may result in stream sedimentation and nutrient transport to surface waters. We recommend low intensity fire in specific planned locations spread out over time so that some vegetative cover becomes reestablished before runoff periods. Additional information on wildland fire and air quality issues is available from EPA's website <www.epa.gov/airlinks/>.

While in general we concur with the use of prescribed burning to help achieve forest health, we suggest that there may be circumstances where it may be appropriate to use mechanical treatments in lieu of prescribed burns to address fuel accumulation in areas (e.g., near more urban areas). Mechanical treatments may be appropriate where the risk of the escape of prescribed burns is high and where nearby home developments may be threatened.

12. We also recommend that the air quality section display a windrose for the area (perhaps from Hamilton airport) to indicate the primary wind directions and speeds which the wind blows during the months in which the prescribed burning is proposed. This information is helpful to residents living near the area who may be sensitive to smoke impacts (people with respiratory diseases such as asthma, emphysema, bronchitis, cardiovascular problems, etc.,).

13. Thank you for including the section on Noxious Weeds (beginning on page 3-319) with information on the status of noxious weeds present in the project area. Among the greatest threats to biodiversity is the spread of noxious weeds and exotic (non-indigenous) plants. Many noxious weeds can out-compete native plants and produce a mono-culture that has little or no plant species diversity or benefit to wildlife. Noxious weeds tend to gain a foothold where there is disturbance in the ecosystem, such as wildfire. While burning and other ground disturbance (such as logging) can stimulate or promote weed problems, we note that burning followed by herbicide use can bring effective weed control.

It is stated (page 3-332) that the Bitteroot Forest is preparing a Noxious Weed EIS (to be released later this year) to cover the high weed risk areas impacted by the fires. We look forward to reviewing this important EIS, since efforts to control spread of noxious weeds after the large wildfires of year 2000 are worthy of detailed analysis and evaluation. EPA recommends that a strategy for prevention, early detection of invasion, and control procedures for each species be developed.

While EPA fully supports control of noxious weed infestations, we also want to note that weed control chemicals can be toxic and have the potential to be transported to surface or ground water following application. It is important that the water contamination concerns of herbicide usage be fully evaluated and mitigated. The USFS should include an objective indicating that herbicides, pesticides, and other toxicants and chemicals would be used in a safe manner in accordance with Federal label instructions and restrictions that allow protection and maintenance of water quality standards and ecological integrity, and avoid public health and safety problems.

All efforts should be made to avoid movement or transport of herbicides into surface waters that could adversely affect fisheries or other water uses. Herbicide applicators should be advised of the potential for runoff of herbicides at toxic concentrations into the streams. The applicators should take precautions during spraying (e.g., applying herbicide only after careful review of weather reports to ensure minimal likelihood of rainfall within 24 hours of spraying; special precautions adjacent to the stream to reduce runoff potential; etc.).

It should be unequivocally stated that no herbicide spraying will occur in streams and wetlands or other aquatic areas (seeps, springs, etc.,). Herbicide drift into streams and wetlands could adversely affect aquatic life and wetland functions such as food chain support and habitat for wetland species. Streams and wetlands in any area to be sprayed be identified and flagged on the ground to assure that herbicide applicators are aware of the location of wetlands, and thus, can avoid spraying in or near wetlands.

14. It is stated (page 3-344) that snag and woody debris guidelines will assure the retention of habitat components necessary for Pileated Woodpecker nest sites and forage areas. These snag and woody debris guidelines should be more fully identified and quantified in the FEIS. How many snags per acre will be left? Will snags be retained in clumps or scattered on a per acre basis? Given the large amounts of proposed timber harvest with Alternatives B and D, we ask how the guidelines for snag and woody debris retention be monitored. Also how will maintenance of cavity habitat be monitored? Will these guidelines provide adequate protection for the various woodpecker species using cavity habitat?

15. We recommend that pre-harvest surveys for the presence of nests of neotropical migratory birds and owls be conducted so that identification of migratory bird and owl

nests may provide opportunities to defer harvest of nest trees, and thus, reduce mortality to eggs and young of the year.

16. Table 3-71 (page 3-348) shows lynx habitat that was burned by geographic area. When the lynx habitat figures in this table are compared with proposed salvage harvests in each geographic area (per Tables 2-1 through 2-4) under each alternative, it shows that the greatest percentage of lynx habitat burned was in the Skalkaho-Rye area (28 percent burned), and this is also the area having the greatest amount of proposed salvage logging in Alternatives B and D. The discussion of effects to the lynx (page 3-355), however, appears to gloss over cumulative effects of wildfire and salvage logging and other past, present, and reasonably foreseeable future actions to the lynx habitat. The analysis also says that the substantial acreage of lynx habitat removed by the fire has left this area temporarily fragmented. We ask whether or not reduced harvest or deferred harvest would be appropriate in the Skalkaho-Rye area to mitigate impacts to the threatened lynx and its habitat.

17. The DEIS did not include a Biological Assessment (BA) for the threatened lynx, but states that a Lynx BA will be prepared prior to the final decision on the project (page 3-347). The Final EIS should include the Lynx BA and the associated USFWS Biological Opinion or formal concurrence for the following reasons:

    1. NEPA requires public involvement and full disclosure of all issues upon which a decision is to be made;

    2. The Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA strongly encourage the integration of NEPA requirements with other environmental review and consultation requirements (40 CFR 1502.25); and

    3. The Endangered Species Act (ESA) consultation process can result in the identification of mandatory, reasonable, and prudent alternatives which can significantly affect project implementation.

EPA recommends that the Final EIS and Record of Decision not be completed prior to the completion of ESA consultation. If the consultation process is treated as a separate process, the Agencies risk FWS identification of additional significant impacts, new mitigation measures, or changes to the preferred alternative. If these changes have not been evaluated in the final EIS, a supplement to the EIS would be warranted.

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Alliance For the Wild Rockies, Michael Wood
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Bitterroot Conservation District
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National Wildlife Federation, Tom France
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Senator Conrad Burns, Julie Altemus
Senator Conrad Burns, Susan Brooke
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Sterling, Clay
Stout, Merle
Tanikuni, Dennis
Trochmann, Carolyn
University of ID Library, Government Documents
US Environmental Protection Agency
US Fish & Wildlife Service, Kemper McMaster
US Fish & Wildlife Service, Lee Metcalfe Wildlife Refuge
USDA National Agriculture Library
USDA Policy and Planning Division
USDA-Forest Service, Doug Powell
USDA-Forest Service, Northern Region
USDA-Forest Service, Washington DC
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Wilderness Society, Michele Crist
Wilderness Watch, George Nickas
Wildlands Center for Preventing Roads, J Ferenstein
Winckler, Dave
Winsett, Jennifer
Wojtowicz, Richard
Yarbro, Charles E & Mary E
York, Bonnie
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GLOSSARY

ABIOTIC. The non-living material components of the environment such as air, rocks, soil particles, inorganic compounds, coal, peat, plant litter, etc.

ACCESS MANAGEMENT OBJECTIVES. Objectives that describe the extent and form of access needed to accomplish the management area direction, including how access to and within National Forest lands will be provided, weather by foot, horse, motorized vehicle, or aircraft; over water, roads, or trails; or through the air (FSH 7709.55 section 06).

ACTIVITY. A measure, course of action, or treatment that is undertaken to directly or indirectly produce, enhance, or maintain forest and range land outputs or achieve administrative or environmental quality objectives.

ACTIVITY AREA. Area within the project area where activities are proposed.

AFFECTED ENVIRONMENT. The natural, physical, and human-related environment that is sensitive to changes due to proposed actions.

AGE CLASSES. A distinct group of trees, or portion of growing stock recognized on the basis of age (i.e., seedling, pole, mature).

AGGRADATION (DEPOSITION). When more sediment enters a reach than leaves it, there is a buildup of sediment. This is called aggradation or deposition.

AIR POLLUTANT. Any substance in air that could, if in high enough concentration, harm humans, animals, vegetation, or material. Air pollutants may include almost any natural or artificial matter capable of being airborne, in the form of solid particles, liquid droplets, gases, or a combination of these.

AIR QUALITY. Refers to standards for various classes of land as designated by the Clean Air Act, P.L. 88-206: Jan. 1978.

ALLOTMENT. See Range Allotment.

ALLOTMENT MANAGEMENT PLAN (AMP). An Allotment Management Plan is defined in the Federal Land Management Policy Act (FLPMA) as a document applying to management of rangeland ecosystems and livestock operations on the public lands prescribing: (1) the manner in and extent to which livestock operations will be conducted in order to meet ecosystem healthy, multiple use, economic, and other objectives; (2) describing range improvements to be installed and maintained; and (3) containing such other provisions relating to livestock grazing and other objectives found by the Secretary of Agriculture to be consistent with the provisions of FLPMA. It also integrates resource objectives, standards, guidelines, and management requirements for soil and water for watershed protection, wildlife and fisheries, recreation, timber, and other resources on lands within a range allotment.

ALLOWABLE USE. Allowable use is a predetermined amount of current forage production that is to be removed and/or soil disturbance that is acceptable under a given set of circumstances in order to accelerate range improvement. Degree of use will vary depending upon range type, range condition and trend, season of use, and physiological needs of various species (i.e., feed should not be grazed more than (XX) percent during a particular phonological stage, and management system employed). Allowable use is also often defined as the degree of use estimated to be proper until proper use is known.

ALLOWABLE SALE QUANTITY. A quantity of timber that may be sold from the area of suitable land covered by the Forest Plan for a time period specified by the Plan. This quantity is usually expressed on an annual basis as the “average annual sale quantity”.

ALTERNATIVE. A mix of management prescriptions proposed for specific land areas to achieve a set of goals and objectives. Each alternative represents a different way of achieving a set of similar management objectives.

ANALYSIS AREA. The geographic area defining the scope of analysis for a particular resource. This area may be larger than the project area when effects have the potential to extend beyond the boundaries of the proposed action.

ANALYTICAL SAMPLING. Data collection using sound statistical procedures.

APPEAL. A request by any party dissatisfied with a decision of a Forest Officer to have that decision reviewed at a higher organizational level within the Forest Service and, where appropriate, by the Secretary of Agriculture.

APPROPRIATED FUNDING. Monies allotted or budgeted for departments to fund the job activities taking place for the fiscal year.

AQUATIC SYSTEMS. Biological and physical attributes and their interaction related to water.

ARTERIAL ROAD. See Road.

BARK BEETLE HAZARD. The degree of vulnerability of a stand to a particular bark beetle, given that the insect is present.

BASAL AREA. The area of the cross-section of a tree trunk measured at 4.5 ft. above the ground. Basal area can be used to measure how much of a site is occupied by trees. The term is often used to describe the collective basal area of trees per acre.

BENEFICIAL USES. Attributes that are considered useful products of the resource. They may include (but are not limited to): recreation, production of salmonid fishes, drinking water, power generation, and irrigation.

BEST MANAGEMENT PRACTICES (BMP). A set of practices which, when applied during implementation of a project, ensures that water-related beneficial uses are protected and that State water quality standards are met.

BIG GAME. Those species of large mammals normally managed as a sport hunting resource.

BIODIVERSITY. Biodiversity is the variety of life in an area, including all the processes of life. Included in this definition is genetic diversity in species; species richness; variety, patterns, and abundance of species communities and ecosystems at large geographical scales; and the processes whereby species interact.

BIOLOGICAL ASSESSMENT. Information (document) prepared by or under the direction of the federal agency concerning listed and proposed threatened and endangered species and proposed critical habitat that may be present in the action area, and the evaluation of potential effects of the action on such species and habitats.

BIOLOGICAL EVALUATION. A documented Forest Service review of programs or activities in sufficient detail to determine how an action or proposed action may affect any sensitive species.

BIOLOGICAL POTENTIAL. The maximum possible output of a given resource limited only by its inherent physical and biological characteristics.

BIOMASS. The sum total of living plants and animals above and below ground.

BIOME. Large subdivision of the terrestrial ecosystems characterized by their physiognomy (e.g., grassland), including total assemblage of plants and animals.

BIOPHYSICAL. The combination of biological and physical components in an ecosystem.

BIOTIC. Pertaining to any aspect of living components.

BLOWDOWN. See Windthrow.

BOARD FOOT (BF). A unit of measurement equal to an unfinished board one square foot by one inch thick. Timber volumes are often expressed in terms of thousands of board feet (MBF) or millions of board feet (MMBF).

BOGS. Perennially saturated areas that usually have wetland and riparian plants surrounding them.

BOLE. The trunk or main stem of the above ground part of a tree.

BROADCAST BURN. See Prescribed Burning.

BROAD-SCALE ASSESSMENT. A synthesis of current scientific knowledge, including a description of uncertainties and assumptions, to provide a characterization and comprehensive description of ecological, social, and economic components within an assessment area critical for understanding past and present conditions and projecting future trends which provides a foundation for the identification of additional or necessary information for policy discussion or decisions.

BULK DENSITY. The mass of dry soil per unit volume, corrected for weight and volume of coarse fragments greater than 2mm in diameter.

BURN INTENSITY (FIRE INTENSITY). The rate of heat release for an entire fire at a specific point in time.

BURN SEVERITY (FIRE SEVERITY). Refers to soil impacts (BAER Handbook, FSH 2509.13):

High Severity – More than 40% of the polygon exhibits soil features likely to significantly increase runoff and erosion (e.g., absence of duff layer, hydrophobic soils, and soil discoloration). High severity fires are lethal to conifers with all needles burned off of the trees.

Moderate Severity – Less than 40% of the polygon exhibits high severity indicators. Duff layers may be absent or mostly absent. Moderate severity fire kill the majority of conifers and needles on trees are scorched (brown).

Low Severity – Duff layers are burned but intact. Unburned areas are intermingled with lightly burned areas. Low severity fires cause some tree mortality (torching) but stands have a notable live tree component.

BURNED PLANTATIONS. Approximately 20 year and older stands that had been treated with regeneration harvest (e.g., seed tree, shelterwood, or clearcut) and then planted or naturally regenerated. The trees range in diameters of 4 to 10 inches.

BURN PERIOD. The part of a 24-hour period (usually from 10 AM to sundown) during which fires spread most rapidly.

CANDIDATE SPECIES. Species identified by the United States Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS), which are considered to be candidates for listing under the Endangered Species Act.

CANOPY. The more or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth. Layers of canopies may be called “stories”.

CANOPY CLOSURE. The progressive reduction of space between tree crowns as they spread laterally; a measure of the percent of potential open space occupied by the collective tree crowns in a stand.

CAPABILITY. The potential of an area to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils and geology, as well as the application of management practices, such as silviculture or protection from fires, insects, and disease.

CAPITAL INVESTMENT. Investment in facilities such as roads and structures with specially-appropriated funds.

CARRYING CAPACITY. 1 (Recreation) - the amount of recreation use an area can sustain without deterioration of site quality; 2 (Wildlife) - the maximum number of animals an area can support during a given period of the year; 3 (Range) - the maximum stocking rate possible without damaging the vegetation or related resources. Carrying capacity may vary from year to year on the same area due to fluctuating forage production.

CAVITY. Hollows, which are excavated in trees by birds, used for roosting and reproduction by many birds and mammals.

CAVITY HABITAT. Standing dead trees, broken-topped live trees, and down logs used by wildlife species that excavate and/or occupy cavities in these trees.

CAVITY NESTERS. Wildlife species that nest in cavities.

CLIMAX. The terminal plant community of a succession; it remains relatively unchanged (dynamic stability) unless the environment changes. Species are capable of reproducing themselves within the community and excluding new species, especially potentially dominant species.

CLOSED CANOPY. The condition that exists when the canopy created by trees or shrubs or both is dense enough to exclude most of the direct sunlight from the forest floor.

CLOSED ROAD. A national forest road or segment which is restricted from certain types of use during certain seasons of the year. The prohibited use and the time period of closure must be specified. The closure is legal when the Forest Supervisor has issued an order and posted it in accordance with Chapter 36 of the CFR section 261.

CLOSURE. The administrative order that does not allow specified uses in designated areas or on Forest system roads or trails.

COARSE WOODY DEBRIS. Sound and rotting dead woody plant material, standing or fallen, generally greater than 3 inches in diameter. It provides habitat for wildlife and plants and is a source of nutrients and structures for soil protection and development.

CODE OF FEDERAL REGULATIONS (CFR). The official, legal tabulation, or regulations directing federal government activities.

COLLECTOR ROAD. See Road.

COMMUNITY. A group of one or more populations of plants and animals in a common spatial arrangement; an ecological term used in a broad sense to include groups of various sizes and degrees of integration.

COMMUNITY STABILITY. The capacity of a community to absorb and cope with change without major hardship to institutions or groups within the community.

COMPACTION. A physical change in soil properties from compression, vibration, or shearing that increases soil bulk density and decreases porosity, air exchange, root penetration, infiltration, and permeability.

COMPARTMENTS. A geographic area delineated by a watershed drainage for management planning purposes.

CONIFER. Any of a group of needle and cone-bearing evergreen trees, typically referring to gymnosperms.

CONSERVATION AGREEMENT. A formal agreement between the Forest Service and the US Fish and Wildlife Service and/or National Marine Fisheries Service identifying management actions necessary to prevent the need to list species under the Endangered Species Act.

CONTAIN (FIRES). Keeping the fire within established boundaries under prevailing conditions and reasonable constraints.

CORRIDORS. An area through which species can move from one place to another over time in response to changes in environment or as a natural part of their life history.

COST. The negative or adverse effects or expenditures resulting from an action. Costs may be monetary, social, physical, or environmental in nature.

COST EFFICIENCY. The usefulness of specified inputs (costs) to produce specified outputs (benefits). In measuring cost efficiency, some outputs, including environmental, economic, or social impacts, are not assigned monetary values but are achieved at specific levels in the least cost manner. Cost efficiency is usually measured using present net value, although use of benefit-cost ratios and rates of return may be appropriate.

COUNCIL OF ENVIRONMENTAL QUALITY (CEQ). An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews federal programs for their affect on the environment, conducts environmental studies, and advises the President on environmental matters.

COVER. Vegetation used by wildlife for protection from predators, breeding, and rearing of young (hiding cover), or to ameliorate conditions of weather (thermal cover).

COVER/FORAGE RATIO. The ratio, in percent, of the amount of area in cover conditions to that in forage conditions.

COVER TYPE. See Forest Cover Type.

CROWN FIRE. A fire burning into the crowns (i.e., leaves and needles) of the vegetation, generally associated with an intense understory fire.

CUBIC FOOT. The amount of wood volume equivalent to a cube 1 foot by 1 foot by 1 foot.

CUT SLOPE. Road construction slopes that are made by excavation.

CULTURAL RESOURCES. The physical remains of human activity (e.g., artifacts, ruins, burial mounds, petroglyphs, etc.) having scientific, prehistoric, or social values.

CUMULATIVE EFFECT. The impact on the environment which results from the incremental impact of past, present, and reasonably foreseeable actions. Cumulative impacts can also result from individually minor but collectively significant actions over a period of time.

DEADFALL. Dead trees that have fallen.

DECADENT. Deteriorating; when used in reference to the conditions of groups of trees, there are inferences of the loss of trees from the overstory and of the presence of disease, or indications of loss of vigor in dominant trees.

DECIDING OFFICER. The Forest Service employee who has the authority to select and/or carry out a specific planning action. May also be referred to as the "Responsible Official".

DECISION AREA. The geographic area defining the scope of an environmental analysis document and the alternatives proposed by it.

DECOMMISSION. To remove those elements of a road or buildings that reroute hillslope drainage and present slope stability hazards – *synonym* hydrologic obliteration.

DEGRADATION. This occurs when a stream has excess energy and more sediment leaves a reach than enters it. This is associated with channel scouring.

DEMOGRAPHIC. Related to the vital statistics of human populations (size, density, growth, distribution, etc.) and the effect of these on social and economic conditions.

DENNING HABITAT (Canada lynx). Habitat used during parturition or rearing of young until they are mobile. The common component appears to be large amounts of coarse woody debris, either down logs or root wads. Denning habitat may be found in either mature forests of conifer or mixed/deciduous types, or in regenerating stands (<20 years since disturbance). Denning habitat must be located within daily travel distance of foraging habitat (typical maximum daily distance for females is 3-6 miles).

DENNING SECURITY HABITAT (Canada lynx). Areas that provide secure winter daytime bedding sites for lynx in highly disturbed landscapes (e.g., large developed winter recreation sites or areas of concentrated winter recreational use). It is presumed that lynx may be able to adapt to the presence of regular and concentrated human use during winter, so long as other critical habitat needs are being met, and security habitat blocks are present and adequately distributed in such disturbed landscapes. Security habitats should be areas that naturally discouraged winter human activity and are sufficiently large to provide effective visual and acoustic insulation from winter human activity. It should also allow easy movement away from infrequent human intrusion and in close proximity to foraging areas.

DENNING SITE. A place of shelter for an animal; also where an animal gives birth and raises young.

DETRIMENTAL SOIL CONDITION. The condition where established soils quality standards are not met and the result is a significant change in soil quality.

DESIGNATED ROADS AND TRAILS. Specific roads and trails identified by the agencies where some type of motorized vehicle use is appropriate and allowed either yearlong or seasonally.

DESIRED NON-NATIVE SPECIES. Those species of plants or animals, that are not indigenous to an area but which represent an important social or economic benefit.

DESIRED FUTURE CONDITION. A portrayal of the land or resource conditions which are desired to result in the future with, or without active management.

DEVELOPED RECREATION. Recreation that occurs where improvements enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

DEVELOPED RECREATION SITES. Relatively small, distinctly defined areas where facilities are provided for concentrated public use (i.e., campgrounds, picnic areas, and swimming areas).

DIRECT EFFECTS. Effects on the environment which occur at the same time and place as the initial cause or action.

DISCOUNT RATE. An interest rate that reflects the cost or time of money. It is used in discounting future costs and benefits.

DISCOUNTABLE EFFECT. Effects that are extremely unlikely to occur (Endangered Species Act, US Fish and Wildlife Service, 1998).

DISCOUNTING. An economic adjustment for the time value of money; mathematical reduction of costs and/or benefits which occur in the future to the present time for purposes of comparison.

DISPERSED RECREATION. Outdoor recreation in which visitors are diffused over relatively large areas. Where facilities or developments are provided, they are more for access and protection of the environment than for the comfort and convenience of the people.

DISPLACEMENT (Soil Displacement). The removal and horizontal movement of soil from one place to another, usually by mechanical forces such as dozer blades, repeated vehicular traffic, or the yarding of logs.

DISPLACEMENT AREA. An area of suitable habitat reserved for use by a local population of a wildlife species while that population is displaced from, or caused to vacate its former habitat by disturbance from human activities.

DISTURBANCE. Any event which affects the structure, function, composition, and/or successional development of a plant community (e.g., fire, insect attack, windthrow, timber harvest).

DIVERSITY. The relative distribution and variety of plant and animal communities and species within an area.

DOWN WOODY COMPONENT. A component of forest habitats used by wildlife for feeding, denning, and shelter.

DRAINAGE RELATED DEFERRED MAINTENANCE. Road maintenance that has been deferred over an extended period of time, but is needed to restore or improve the roads functional drainage characteristics.

DUFF. An organic surface soil layer, below the surface ground cover, in which the original form of plant and animal matter cannot be identified with the unaided eye.

DYNAMIC. Marked by continuous change, activity, or progress.

ECOBURN. A prescribed fire for which at least one objective is to restore or enhance the condition of an area by approximating the results of a fire burning under conditions of the natural fire regime.

ECOLOGICAL NICHE. The set of habitat conditions that is favorable for the growth and reproduction of a given species.

ECOLOGICAL APPROACH. An approach to natural resource management that considers the relationships among all organisms, including humans, and their environment.

ECOLOGICAL COMPOSITION. The biological components of an ecological system, which are the foundation of diversity at the genetic, species, and landscape scales. Genetic diversity is the variation in inheritable characteristics within and among individual organisms and populations. Species diversity is the number and different kinds of species present in a given area. Landscape diversity is the variety of plant communities (including their identity, distribution, juxtaposition, and seral stage) and habitats evaluated at the landscape scale.

ECOLOGICAL SUSTAINABILITY. The maintenance or restoration of ecological system composition, structure, and function which are characteristic of an area over time and space, including but not limited to ecological processes, biological diversity, and the productive capacity of ecological systems.

ECONOMICS. The study of how limited resources, goods, and services are allocated among competing uses.

ECONOMIC EFFICIENCY. The usefulness of inputs (costs) to produce outputs (benefits) and effects when all costs and benefits that can be identified and valued are included in the computations. Economic efficiency is usually measured using present net value, though use of benefit-cost ratios and rates of return may sometimes be appropriate.

ECOSYSTEM. The complete system formed by the interaction of a group of organisms and their environment. In the context of activities on national forest lands, humans are considered part of the ecosystem.

ECOSYSTEM INTEGRITY. The completeness of an ecosystem that, at multiple geographic and temporal scales, maintains its characteristic diversity of biological and physical components, spatial patterns, and structure and functional processes within its approximate range of historic variability. These processes include disturbance regimes, nutrient cycling, hydrologic functions, vegetation succession, and species adaptation and evolution. Ecosystems with integrity are resilient and capable of self-renewal in the presence of the cumulative effects of human and natural disturbance.

ECOSYSTEM MANAGEMENT. Using an ecological approach to achieve the multiple-use management goals of national forest and grasslands by blending the needs of people and environmental values in such a way that represents diverse, healthy, productive, and sustainable ecosystems.

ECOSYSTEM STRUCTURE. The biological and physical attributes that shape ecological systems. Biotic attributes include: population size, structure, and range; foliage density and layering; snags; large woody debris; or the size, shape, and spatial relationships of cover types within a landscape. Physical attributes include: soil and geologic substrate variables, slope and aspect, or stream gradient.

EFFECTIVE GROUND COVER. Effective ground cover consists of vegetation, fine organic matter, coarse woody material, and rock fragments larger than three-fourths inch in diameter in contact with the soil surface.

EFFECTS. Environmental consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative.

ELK HABITAT EFFECTIVENESS (EHE). An index of the capability of an area to provide protection for elk. It is based on the density of roads open to public motorized use per square mile.

ELK SECURITY AREA. A contiguous block of cover over 250 acres in size and at least 1/2 mile from an open road.

ELYTRODERMA. A disease affecting the foliage of ponderosa, Jeffery, pinyon, jack, and lodgepole pines.

ENDANGERED SPECIES. Any plant or animal species which is in danger of extinction throughout all or a significant portion of its range (Endangered Species Act of 1973).

ENDEMIC. Native or characteristic of a particular geographic area.

ENVIRONMENT. The aggregate of physical, biological, economic, and social factors affecting organisms in an area.

ENVIRONMENTAL ANALYSIS. An analysis of proposals and their predictable environmental effects, including physical, biological, economic, and social consequences and their interactions; short and long-term effects; and direct, indirect, and cumulative effects.

ENVIRONMENTAL ASSESSMENT (EA). A concise public document which serves to: (a) briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a Finding of No Significant Impact; (b) aid in agency's compliance with the National Environmental Policy Act when no environmental impact statement is necessary; and (c) facilitate preparation of an environmental impact statement when necessary.

ENVIRONMENTAL IMPACT STATEMENT (EIS). A detailed statement prepared by the responsible official in which a major federal action which significantly affects the quality of the human environment is described, alternatives to the proposed action provided, and effects analyzed.

EPHEMERAL STREAMS. Streams that flow only as a direct response to rainfall or snowmelt events. They have no baseflow.

EPIDEMIC. The populations of plants, animals, and diseases that buildup, often rapidly, to highly abnormal and generally injurious levels.

EQUIVALENT CLEARCUT AREA (ECA). Equivalent Clearcut Area is an indicator of basin condition and is calculated from the total amount of crown removal that has occurred from harvesting, road building, and other activities based on the current state of vegetative recovery.

EROSION. Detachment or movement of soil or rock fragments by water, wind, ice, or gravity. Accelerated erosion is much more rapid than normal, natural, or geologic erosion, primarily as a result of the influence of activities of people, animals, or natural catastrophes.

EVEN-AGED MANAGEMENT. Deliberate planned actions that result in stands of trees of essentially the same age, growing together. Clearcut, shelterwood, or seed tree regeneration methods produce even-aged stands.

EXCAVATOR PILING. A mechanized fuel reduction treatment in which an excavator with a thumb grapple is used to pile slash prior to burning. As with other mechanized fuel treatments excavator piling is preferred to hand piling when fuel loads or unit size precludes handpiling or other prescribed fire treatment. Like most conventional tracked equipment excavators are limited by slope.

FAUNA. The animal life of a region, period, or environment.

FEDERAL REGISTER. A daily publication which reports Presidential and federal agency documents.

FILL SLOPE. Road construction slopes that are made by depositing soil from excavated areas.

FINE (LIGHT) FUELS. Fast-drying fuels, generally with a comparatively high surface area-to-volume ratio, which are less than 1/4-inch in diameter and have a time lag of one hour or less. These fuels readily ignite and are rapidly consumed by fire when dry.

FINE ORGANIC MATTER. Organic materials such as plant litter, duff, and woody material less than 3 inches in diameter in contact with the soil.

FIRE BEHAVIOR. The manner in which a fire reacts to the influences of fuel, weather, and topography.

FIRE CYCLE. (Also called Fire Return Interval) The average time between fires in a given area.

FIRE-DEPENDENT. Forests, grasslands, and other ecosystems historically composed of species that evolved with and are maintained by periodic fire.

FIRE HAZARD. The rapid ignition of fuels dependent on arrangement, volume, and conditions to sustain fire.

FIRE INTENSITY. See Burn Intensity.

FIRE LINE. A linear fire barrier that is scraped or dug to mineral soil. Direct fire line is located along the black of a fire's edge; indirect is located with unburned material between the fire line and the fire; parallel is fire line located across "fingers" of fire to connect and contain the fire via the shortest route.

FLAME LENGTH. Distance from the center of the base of the flame to the tip of the flame along the axis.

FIRE REGIME. The characteristics of fire in a given ecosystem, such as the frequency, predictability, intensity, seasonality, and extent in an ecosystem. Examples include: nonlethal, lethal (stand-replacing), and mixed lethal.

FIRE RISK. The chance that a fire will ignite as affected by the nature and incidence of causative agents (also see Fire Hazard).

FIRE SEVERITY. See Burn Severity.

FIRE-TOLERANT. A plant which has properties or characteristics which enable it to survive fire.

F**IRE USE.** The combination of wildland fire use and prescribed application of fire to meet resource objectives.

FISH HABITAT. The place where a population of fish species lives and its surroundings; provides life requirements such as food and cover.

FISHERY. The total population of fish in a stream or body of water and the physical, chemical, and biological factors affecting that population.

FLOODPLAIN. The lowland and relatively flat areas adjoining inland and coastal waters, including, at a minimum, that area subject to a one percent or greater chance of flooding in any given year.

FLORA. The plant life characteristic of a region, period, or special environment.

FORAGE. Vegetation used for food by wildlife, particularly big game wildlife and domestic livestock.

FORAGE AREAS. Vegetative areas with less than 60% combined canopy closure of trees and tall shrubs (greater than 7 feet in height).

FORAGE HABITAT (Canada lynx). Habitat that supports primary prey (snowshoe hare) and/or important alternate prey (e.g., red-squirrels). Highest quality foraging habitats support high densities of young trees and shrubs, tall enough to protrude above snow levels.

FORB. Any green leaf-like plant other than true grasses, sedges, or rushes.

FOREST COVER TYPE. A descriptive classification of forestland based on the present vegetative species composition and/or locality (e.g., lodgepole pine, mixed conifer).

FOREST PLAN. Refers to the various Forest Plans for each national forest, or specifically to the Bitterroot National Forest Plan.

FORESTED FORAGE. Big game forage available under tree cover that does not meet open forage, hiding cover, or thermal cover conditions.

FOREST HEALTH. The perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence, or unusual levels of insects and disease, and resilience to disturbance.

FOREST LAND. Land at least 10% occupied by trees or formally having had such tree cover and not currently developed for nonforest use. Lands developed for nonforest use include areas for crops, improved pasture, residential, or administrative areas, improved roads of any width, and adjoining road clearing and powerline clearing of any width.

FOREST ROAD. See Road.

FOREST TRANSPORTATION ATLAS. An inventory, description, display, and other associated information for those roads, trails, and airfields that are important to the management and use of National Forest System lands or to the development and use of resources upon which communities within or adjacent to the National Forests depend.

FOREST TRANSPORTATION FACILITY. A classified road, designated trail, or designated airfield, including bridges, culverts, parking lots, log transfer facilities, safety devices and other transportation network appurtenances under Forest Service jurisdiction that is wholly or partially within or adjacent to National Forest System lands.

FRAGMENTATION. The process of removing links between areas of habitat suitable for a species, or the reduction of contiguous blocks of vegetation with similar structure and form into smaller isolated parts.

FUEL. Combustible material. Includes vegetation, such as grass, leaves, ground litter, plants, shrubs and trees, that feed a fire (also see Surface Fuels.).

FUEL BED. An array of fuels usually constructed with specific loading, depth, and particle size to meet experimental requirements; also, commonly used to describe the fuel composition in natural settings.

FUELBREAK. A zone in which fuels have been reduced or altered to provide a position for fire suppression forces to make a stand against wildfire. Fuelbreaks are designated or constructed before the outbreak of a fire. Fuelbreaks may consist of one or a combination of the following: natural barriers, constructed fuelbreaks, and human-made barriers.

FUEL LOADING. The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area, usually expressed in tons per acre.

FUEL MODEL. Simulated fuel complex (or combination of vegetation types) for which all fuel descriptors required for the solution of a mathematical rate of spread model have been specified.

FUEL REDUCTION. Manipulation, including combustion, or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control.

FUEL TYPE. An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

FUELS MANAGEMENT. Manipulation or reduction of fuels to meet Forest protection and management objectives while preserving and enhancing environmental quality.

FUELS TREATMENT. The rearrangement or disposal of fuels to reduce the fire hazard.

GAME SPECIES. Any species of wildlife or fish for which seasons and bag limits have been prescribed, and which are normally harvested by hunters, trappers, and fisherman under State or federal laws, codes, and regulations.

GENOTYPE. The genetic composition of an individual.

GRADIENT. The rise or fall of a ground surface expressed in degrees of slope.

GROUP SELECTION CUTTING. A regeneration method used to develop and maintain uneven-aged stands by removing small groups of trees to meet a predetermined goal of size distribution and species composition in remaining stands.

HABITAT. The sum total of environmental conditions of a specific place occupied by a wildlife species or a population of such species.

HABITAT COMPONENT. A simple part, or a relatively complex entity regarded as a part, or an area or type of environment in which an organism or biological population normally lives or occurs.

HABITAT CONNECTIVITY. Vegetative cover in sufficient quantity an arrangement to allow for the movement of lynx. Narrow forested mountain ridges or shrub-steppe plateaus may provide a linkage between more extensive areas of lynx habitat. Wooded riparian communities may provide travel cover across otherwise open valley floors between mountain ranges, or lower elevation ponderosa pine may link high elevation forests.

HABITAT DIVERSITY. The variation in types, sizes, and shapes of landscape elements or vegetation types.

HABITAT EFFECTIVENESS. The ability of an area to support a species (individual or population) based on a potential of 100%.

HABITAT TYPE. An aggregation of all land areas potentially capable of producing similar plant communities at the climax phase of succession.

HABITAT TYPE GROUP. A category of habitat types with similar ecological amplitudes and environmental conditions. Combined with information on stand conditions, habitat type groups can be used to develop silvicultural stand treatment priorities during the planning process.

HANDPILE and BURN. Fuels treatment method used to reduce hazardous fuels concentrations. Material is piled by hand. Piles are burned under conditions when the risk of fire spread is minimal.

HARDWOODS. A conventional term for the wood of broadleaf (deciduous) trees.

HEAVY FUELS. Fuels of large diameter such as snags, logs, and large limb wood, that ignite and are consumed more slowly than flash fuels.

HIDING COVER. Vegetation capable of hiding 90% of a standing adult deer or elk at 200 feet or less. Includes some shrub stands and all forested stand conditions with adequate tree stem density or shrub layer to hide animals. In some cases, topographic features also can provide hiding cover.

HISTORICAL RANGE OF VARIABILITY. The limits of change in composition, structure, and processes of the biological and physical components of an ecosystem resulting from natural variations in the frequency, magnitude, and patterns of natural disturbance and ecological processes characteristic to an area before European settlement. Estimates are made for a specified period of time and include the effects of pre-European settlement human activities.

HOST TREE. A tree in which other organisms, parasites, or insects live for part of their life cycle.

HYDROLOGIC FUNCTION. Soil hydrologic function is the ability of the soil to absorb, store, and transmit water, both vertically and horizontally. Changes in soil bulk density, soil structure, and ground cover can alter the hydrologic function of the soil.

IMMEASUREABLE EFFECT. An effect that is too small to be detected and quantified by the applicable monitoring methodology.

IMPROVEMENT CUTTING. Removing trees of undesirable species, form, or condition from the main canopy in stands past the sapling stage to improve the composition and quality of the remaining stand.

INDICATOR SPECIES. See Management Indicator Species.

INDIRECT EFFECTS. Secondary effects which occur in locations other than where the initial action occurs or significantly later in time.

INFISH (Inland Native Fish Strategy). On July 31, 1995, the Decision Notice for Inland Native Fish Strategy Environmental Assessment (INFISH) was signed. This strategy was developed to provide interim direction to protect habitat and populations of native resident fish until longer-term conservation strategies such as the Upper Columbia River Basin and federal recovery plans replaced it .

INSIGNIFICANT EFFECT (Endangered Species Act). Insignificant effects relate to the size of the impact and should never reach the scale where “take” occurs. Based on best judgment, a person would not be able to meaningfully measure, detect, or evaluate insignificant effects. The term “negligible” is the same as “insignificant” (US Fish and Wildlife Service, 1998).

INSTREAM FLOWS. The minimum water volume (cubic feet/second) in each stream necessary to meet seasonal streamflow requirements for maintaining aquatic ecosystems, visual quality, recreational opportunities, and other uses.

INTERDISCIPLINARY TEAM (ID Team). A group of resource professionals with different expertise that collaborate to develop and evaluate resource management proposals. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately address resource management activities.

INTERMEDIATE HARVEST. Any harvest in a even-aged stand rotation which retains the major stand components and does not regenerate the stand.

INTERMEDIATE TREATMENT. Any treatment or tending designed to enhance growth, quality, vigor, and composition of the stand after establishment or regeneration and prior to final harvest. Thinning, salvage, and improvement cuts are all types of intermediate treatments.

INTERMITTENT STREAM. A stream which flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow. An intermittent stream shows clear evidence of annual scour. Gullies that washed out during flood events are not considered intermittent streams.

INTERPLANTING. Young trees (planted or naturally) that grow amongst existing forest growth.

INVENTORY DATA. Recorded measurements, facts, evidence, or observations on Forest resources such as soil, water, timber, wildlife, range, geology, minerals, and recreation which was used to determine the capability and opportunity of the Forest to be managed for these resources.

INVENTORIED ROADLESS AREA. Undeveloped areas typically exceeding 5,000 acres that met the minimum criteria for wilderness consideration under the Wilderness Act and that were inventoried during the Forest Service's Roadless Area Review and Evaluation (RAREII) process, subsequent assessments, or Forest planning.

IRREVERSIBLE. A term that describes the loss of future options. Applies primarily to the effects of use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity that are renewable only over long periods of time.

IRRETRIEVABLE. A term that applies to the loss of production, harvest, or use of natural resources. For example, some or all of the timber production from an area is lost irretrievably while an area is serving as a winter sports site. The lost production is irretrievable, but the action is not irreversible. If the use changes, it is possible to resume timber production.

ISSUE INDICATORS. Units of measure developed to facilitate comparison of major issues.

JACKPOT BURNING. A fuel reduction/site preparation treatment in which a continuous fuel bed is not present. Jackpot burning is conducted when fuels tend to be scattered with isolated accumulations distributed across the treatment unit.

LADDER FUELS. Small trees and understory shrubs that allow fire to burn into the canopy of larger trees.

LANDSLIDE PRONE AREAS. Areas which have a tendency toward instability (e.g., very steep slopes on erosive soils, old landslides, and areas with springs).

LANDSCAPE. A spatial mosaic of several ecosystems, landforms, and plant communities across a defined area irrespective of ownership or other artificial boundaries and repeated in similar form throughout.

LANDTYPE. A unit of land with similar designated soil, vegetation, geology, topography, climate, and drainage. The basis for mapping units in the land systems inventory.

LARGE WOODY DEBRIS (LWD). Branches and/or tree trunks located within a stream channel, originating from trees growing in or near the channel. Such material is considered "large" if it is of sufficient size that it remains at least partially submerged during all but major flood events. These materials are important in stream systems because they serve a variety of functions related to channel hydraulics and morphology. In mountain streams, LWD is very important because it provides excellent hiding cover and forms pools, which are the best fish habitats. Functions would include flow energy reduction due to friction and turbulence on downstream side of debris, and sediment storage on upstream side of materials. LWD is delivered to stream channels by decay and/or windfall of trees in close proximity.

LATE SUCCESSIONAL SPECIES. Species that are shade-tolerant and usually grow under early successional species. Examples of late successional tree species include subalpine fir, Douglas-fir, and grand fir.

LETHAL FIRES. A descriptor of fire response and effect in forested ecosystems of high-severity or severe fire that burns through the overstory and understory which consumes large woody surface fuels and may consume entire duff layer.

LOCAL ROAD. See Road.

LYNX ANALYSIS UNIT (LAU). The LAU is a project analysis unit upon which direct, indirect, and cumulative effects analyses are performed. It is an area of at least the size used by an individual lynx, about 25-50 square miles.

MANAGEMENT AREA. Geographic areas, not necessarily contiguous, which have common management direction, consistent with the Forest Plan allocations.

MANAGEMENT CONCERN. An issue, problem, or condition which constrains the range of management practices identified by the Forest Service in the planning process.

MANAGEMENT DIRECTION. A statement of multiple use and other goals and objectives, along with the associated management prescriptions and standards and guidelines to direct resource management.

MANAGEMENT INDICATOR SPECIES (MIS). A fish or wildlife species selected for monitoring because their population changes are believed to indicate the effects of management activities on other species of selected major biological communities or on water quality.

MASS EROSION (MASS WASTING). Downslope movement of a unit of soil. Mass erosion includes landslides, debris flows, debris avalanches, debris torrents, slumps, and soil creeping.

MATURE. On lands allocated for timber harvest, mature is defined as trees or stands that have reached rotation age, generally around 100 years. In the context of wildlife, refers to mature forest habitat with characteristics needed to provide habitat for species such as pine marten and pileated woodpecker (generally occurs around age 100).

MICROHABITAT. The habitat conditions (i.e., substrate, cover, depth, and velocity) within a 1-foot radius of a fish's position.

MID-SERAL. A middle transitory stage in forest succession.

MITIGATION. Actions to avoid, minimize, reduce, eliminate, replace, or rectify the impact of a management practice.

MIXED LETHAL FIRES. A descriptor of fire response and effect in forested ecosystems of moderate fire, burns in surface fuels but may involve a tree understory. It consumes litter, upper duff, understory plants, and foliage on understory trees. Individuals and groups of overstory trees may torch out if fuel ladders exist. Enough of the stand's overstory survives to provide for the major portion of the regeneration that results.

MIXED SEVERITY. Units that have a combination of high, moderate, and low degrees of severity and may depend on fuel loading and placement.

MONITORING AND EVALUATION. The evaluation of Forest Plan management practices to determine how well objectives are being met, as well as the effects of those management practices on the land and environment.

MONOCULTURE. A pure forest stand of a single species.

MONTANA WILDERNESS STUDY ACT AREA. Those areas that are required to be studied for their wilderness suitability under the Montana Wilderness Study Act of 1977 (Public Law 95-150).

MULTI-STORY. A forest stand or plant community having more than two main canopy layers.

NATIONAL FOREST MANAGEMENT ACT (NFMA). A law passed in 1976 as amendments to the Forest and Rangeland Renewable Resources Planning Act that requires the preparation of Regional and Forest Plans and the preparation of regulations to guide that development.

NATIONAL FOREST SYSTEM. As defined in the Forest Rangeland Renewable Resources Planning Act, the ``National Forest System" includes: all National Forest lands reserved or withdrawn from the public domain of the United States; all National Forest lands acquired through purchase, exchange, donation, or other means; the National Grasslands and land utilization projects administered under title III of the Bankhead-Jones Farm Tennant Act (50 Stat. 525, 7 U.S.C. 1010-1012); and other lands, waters, or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system.

NATIONAL FOREST SYSTEM ROAD (FSR). A classified Forest road under the jurisdiction of the Forest Service. The term "National Forest System Road" is synonymous with the term "Forest development road" as used in 23 U.S.C. 205.

NATIVE SPECIES. Those plant and animal species indigenous to the planning or assessment area.

NEW ROAD CONSTRUCTION. Activity that results in the addition of Forest classified or temporary road miles.

NONATTAINMENT AREA. A geographic area that does not meet one or more of the national ambient air quality standards for the criteria pollutants designated in the Clean Air Act.

NONDESIGNATED ROADS AND TRAILS. Roads and trails that have not yet gone through site-specific travel planning to determine if they should be open, closed, or restricted to motorized vehicle use, or roads and trails that have gone through travel planning and determined that motorized use is not appropriate and is not allowed.

NONGAME SPECIES. All wild animals not subject to sport hunting, trapping, or fishing regulation.

NON-LETHAL FIRES. A descriptor of fire response and effect in forested ecosystems of low severity or cool fire. Has minimal impact on the site. It burns in surface fuels consuming only the litter, herbaceous fuels, foliage, and small twigs on woody undergrowth. Little heat travels downward through the duff.

NONSTOCKED. A stand of trees or aggregation of stands that have a stocking level below the minimum specified for meeting the prescribed management objectives.

NOXIOUS WEEDS. Rapidly spreading plants which can cause a variety of major ecological impacts to both agricultural and wild lands. A plant species designated as possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States. According to the Federal Noxious Weed Act (PL 93-639) a noxious weed is one that causes disease or has other adverse effects on people or their environment and therefore is detrimental to the agriculture and commerce of the United States and to the public health.

OFF-HIGHWAY VEHICLE. Any motorized wheeled vehicle designed for cross-country travel over any type of terrain.

OFF-ROAD VEHICLE DESIGNATIONS (FS).

> **Open:** Areas and trails on which all types of motorized vehicles may be operated off roads without restrictions.
>
> **Restricted:** Areas and trails on which motorized vehicle use is restricted by times or specified in orders issued under the authority of 36 CFR 261 or by law.
>
> **Closed:** Areas and trails on which all motorized vehicle use is prohibited, except by permit, under authority of 36 CFR 361 or by law.

OLD-GROWTH HABITAT. Old-growth is a distinct successional stage in the development of a timber stand that has special significance for wildlife, generally characterized by: (1) large diameter trees (often exceeding 19” dbh) with a relatively dense, often multilayered canopy; (2) the presence of large, standing dead or dying trees; (3) down and dead trees; (4) stand decadence associated with the presence of various fungi and heartrots; and (5) an average age often in excess of 200 years.

OPEN ROAD DENSITY. A measure of the amount of open roads per area of land, usually expressed as miles per square mile.

OPERATIONAL MAINTENANCE LEVEL. A formally established set of objectives which describes the conditions necessary to achieve the planned operation of a road.

> **Level 1:** Assigned to intermittent service roads during the time that they are closed to traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns.
>
> **Level 2:** Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed, recreation, or other specialized uses.
>
> **Level 3:** Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single-lane with turnouts and spot surfacing.

Level 4: Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double-lane and aggregate surfaced, however some roads may be paved and/or dust abated.

Level 5: Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double-lane, paved facilities. Some may be aggregate surfaced and dust abated.

OVERMATURE. The condition that exists after a tree reaches maturity. The point in time a decline in vigor, health, and soundness begins.

OVERSTOCKED. Stands exceeding a prescribed standard or expected number of trees or basal area per acre.

OVERSTORY. The portion of trees in a forest which forms the uppermost layer of foliage.

PARTICULATE MATTER. Tiny particles of solid or semi-solid matter suspended in the air. Particulate matter less than 10 microns in diameter (PM10) is found in smoke and dust, and it can affect visibility and human health. Maximum concentrations of PM10 occur in the evening when atmospheric conditions occur after sunset, and in the mornings before inversion conditions dissipate.

PATCH. An area of vegetation that is relatively homogeneous internally with respect to composition and successional stage and that differs from what surrounds it.

PATHOGEN. An organism which causes disease in other another organism.

PAYMENT TO COUNTIES. The portion of receipts derived from Forest Service resource management that is distributed to County governments.

PEAK FLOW. The greatest flow attained during the melting of the winter snowpack.

PERENNIAL STREAMS. Streams that flow continuously throughout the year.

PHENOTYPE. The product of the interaction of the genes of an organism (genotype) with the environment

PHEROMONE. A semiochemical secreted into the environment by one individual of a particular species for the purpose of influencing behavior of the other individuals of the same species.

PLANT ASSOCIATION. A potential natural plant community of definite floristic composition and uniform appearance.

PLANTATION. Areas in the forest where trees have been planted.

POLYGON. A vector representation of the boundary and interior of an enclosed area, described by a sequential list of vertices or mathematical functions.

POPULATION. In statistics, the aggregate of all units forming the subject of study; otherwise, a community of individuals that share a common gene pool.

POTENTIAL VEGETATION. Vegetation that would develop if all successional sequences were completed under present site conditions (also see Habitat Type).

PRECOMMERCIAL THINNING. When trees are cut in an immature stand in order primarily to accelerate growth and also, by suitable selection, to improve the average form of trees that remain. Usually occurs in crowded stands to give remaining trees (a prescribed desired number of trees) a competitive advantage for full development.

PREDATOR. One that preys, destroys, or devours - usually an animal that lives by preying on other animals.

PRESCRIBED BURNING (PRESCRIBED FIRE). The intentional application of fire to wildland fuels in either their natural or modified state under such conditions as to allow the fire to be confined to a predetermined area and at the same time to produce the intensity of heat and rate of spread required to further certain planned objectives (i.e., silviculture, wildlife management, reduction of fuel hazard, etc.). A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

PRESCRIBED FIRE. See Prescribed Burning.

PRIVATE ROAD. A road under private ownership authorized by an easement to a private party, or a road that provides access pursuant to a reserved or private right.

PRODUCTIVE CAPACITY OF ECOSYSTEMS. The continuing productivity of an ecological system, including its ability to sustain desirable conditions such as clean water, fertile soil, riparian habitat, and viable populations of plants and animals; and to sustain desirable human uses; and to renew itself following disturbance.

PROGRAMMATIC EIS. An environmental impact statement that establishes a broad management direction for an area by establishing a goal, objective, standard, management prescription, and monitoring and evaluation requirement for different types of activities which are permitted. It can also establish what activities are not permitted within the specified area(s).

PROJECT AREA. The geographic area defining the scope of this document and the alternatives proposed by it.

PROJECT FILE. An assemblage of documents that contains all the information developed or used during an environmental analysis. The Project File becomes part of the administrative record for judicial review in case of legal action.

PROGENY. The offspring of a particular tree or mating.

PROPOSED ACTION. In terms of the National Environmental Policy Act, the project, activity, or action that a federal agency intends to implement or undertake and which is the subject of an environmental analysis.

PUBLIC ACCESS. Usually refers to a road or trail route over which a public agency claims a right-of-way available for public use.

PUBLIC INVOLVEMENT. A Forest Service process designed to broaden the information base upon which agency decisions are made by: (1) informing the public about Forest Service activities, plans, and decisions; and (2) encouraging public understanding about and participation in the planning processes which lead to final decision-making.

PUBLIC ISSUE (PUBLIC CONCERN). A subject or question of widespread public interest relating to management of the National Forest System.

PUBLIC ROAD. Any road or street under the jurisdiction of and maintained by a public authority and open to public travel.

RANGE ALLOTMENT. A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on National Forest System and associated lands administered by the Forest Service.

RANGELAND. Land on which the climax vegetation (i.e., potential natural plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain forb and shrub communities.

RANGE READINESS. A range is ready for grazing when the soil has become firm after winter and early spring precipitation, and when plants have reached the defined stage of growth at which grazing may begin under a specific management plan without permanent damage.

RIPARIAN MANAGEMENT OBJECTIVES (RMOs). Fish habitat objectives established by INFISH for pool frequency, large woody debris, water temperature, and width-to-depth ration on all streams in the project area.

REACH. A segment of a stream that contains similar physical characteristics (e.g., gradient, width, stream bottom materials). In general, most reaches are between 1 mile and 3 miles in length.

REBURN. Re-ignition and burning of incompletely burned fuels.

RECONTOUR. A form of obliteration where the road prism is eliminated by pulling back fill material to re-establish the natural sideslope.

RECORD OF DECISION. A concise public document disclosing the decision made following preparation of an EIS and the rationale used by the Deciding Officer to reach that decision.

RECREATION OPPORTUNITY SPECTRUM (ROS). A range of possible combinations or recreation activities, settings, and experience opportunities, from Primitive to Urban, arranged along a continuum. Classes used herein are:

Primitive (PRIM) - Area is characterized by essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other area users is minimal. The area is managed to be essentially free from evidence of man-induced restrictions and controls. Motorized use within the area is not permitted.

Non-Motorized (SPNM) - Area is characterized by a predominantly natural or natural-appearing environment of moderate-to-large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is not permitted.

Semi-Primitive motorized (SPM) - Area is characterized by a predominantly natural or natural-appearing environment of moderate-to-large size. Concentration of users is low, but there is often evidence of other area users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is permitted.

Roaded Natural Appearing (RNA) - Area is characterized by predominantly natural-appearing environment with moderate evidences of the sights and sounds of man. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in the construction standards and design facilities.

Rural (R) - Area is characterized by substantially modified natural environment. Resource modification and utilization practices are primarily to enhance specific recreation activities and to retain vegetative cover and soil. Sights and sounds of man are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.

RECREATION USE.

LOW-USE. 0 to 20 people per day.

MODERATE-USE. Between 20 to 40 people per day.

HIGH-USE. Over 40 people per day.

RECREATION TYPES.

DEVELOPED RECREATION. The type of recreation that occurs where modifications (i.e., improvements) enhance recreation activities in a defined area.

DISPERSED RECREATION. The type of recreation use related to and in conjunction with roads and trails that requires few if any improvements and may occur over a wide area. Activities tend to be day-use oriented and include hunting, fishing, berry picking, off-road vehicle use, hiking, horseback riding, picnicking, camping, viewing scenery, snowmobiling, and many others.

REFERENCE LANDSCAPES. Terrestrial and aquatic areas with high ecosystem integrity and within the historical range of variability, and of sufficient size, where relevant disturbance and ecological processes occur and are generally unaffected by human activities.

REFORESTATION. The natural or artificial restocking of an area with trees. It may include tree planting and seeding measures to obtain natural regeneration.

REGENERATION. The renewal of a tree crop, whether by natural or artificial means. This term may also refer to the crop (i.e., seedlings, saplings) itself.

REGENERATION HARVEST. Used in reference to clearcut, seedtree, and shelterwood harvest methods which remove an existing stand to prepare a site for regeneration.

REHABILITATION (Roads). Remove culverts, stabilize the road surface, and place in storage. Restore banks at intermittent or perennial crossings; scarify or rip and seed the road surface; and maintain the road on the Forest road system as a road needed for future use.

RELIC. A tree that has survived several stand-replacing events.

RESERVE TREE. Trees retained after the regeneration period (pole-sized or larger) under the clearcutting, seed tree, or shelterwood methods.

RESIDUAL TREE. Trees remaining after any harvest.

RESISTANCE TO CONTROL. An estimate of the suppression force required to control a unit of fire. Ratings are usually qualitative (i.e., high, medium, low) and are based on fuel loadings and potential fire intensity.

RESPONSIBLE OFFICIAL. The Forest Service line officer who has the authority and responsibility to oversee the planning process and make decisions on proposed actions. May also be referred to the Deciding Official.

RESTOCKING. The process of planting or seeding trees to bring the stocking up to prescribed conditions.

RESTORATION. Treatments that restore vital soil functions to their inherent range of variability. It is recognized that treatments may need to occur over a period of years and may need to be maintained. Restoration treatments could include, but are not limited to, tillage, ripping, seeding, mulching, recontouring if temporary roads, and water barring.

RESTRICTED ROAD. A National Forest road or segment which is restricted from a certain type of use or all uses during certain seasons of the year or yearlong. The use being restricted and the time period must be specified. The closure is legal when the Forest Supervisor has issued an Order and posted that Order in accordance with 36 CFR 261.

RHIZOME. A root-like stem under or on top of the ground, ordinarily in a horizontal position, which usually sends out roots from its lower surface and leafy shoots from its upper surface.

RILL/GULLY. A channel or miniature valley cut by concentrated runoff, through which water commonly flows only during and immediately after heavy rains or during the melting of snow.

RIPARIAN AREAS/HABITATS. Land where the vegetation and microclimate are influenced by perennial and/or intermittent water.

RIPARIAN HABITAT CONSERVATION AREA (RHCA). As established by the Inland Native Fish Strategy, RHCAs are portions of watersheds where riparian-dependent resources receive primary emphasis and management activities are subject to specific standards and guidelines. Examples of RHCAs include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems.

RIPARIAN MANAGEMENT OBJECTIVE (RMO). Objectives specified by the Inland Native Fish Strategy regarding how Riparian Habitat Conservation Areas are to be managed. These objectives apply to factors such as pool frequency, large woody debris, mean-maximum temperature, and mean wetted width-depth ratios.

RIPPING (Roads). A form of obliteration; a method of aerating the surface and subsurface material of a road, landing, and/or skid trail to allow water infiltration by tilling the soil with a piece of machinery equipped with ripper bars.

ROAD. A motor vehicle travelway over 50 inches wide, unless designated and managed as a trail. A road may be classified, unclassified, or temporary.

Classified Roads. Roads wholly or partially within or adjacent to National Forest System lands that are determined to be needed for long-term motor vehicle access, including State roads, county roads, privately owned roads, National Forest System roads, and other roads authorized by the Forest Service.

ARTERIAL ROAD. A Forest road that provides service to a large land area and usually connects with other arterial roads or public highways.

COLLECTOR ROAD. A Forest road that serves smaller land areas than an arterial road, and usually connects Forest arterial roads to local Forest roads or terminal facilities.

LOCAL ROADS. A Forest road that connects terminal facilities with Forest collector, Forest arterial, or public highways. Usually Forest local roads are single purpose transportation facilities.

Temporary Roads. Roads authorized by contract, permit, lease, other written authorization, or emergency operation not intended to be part of the forest transportation system and not necessary for long-term resource management.

Unclassified Roads. Roads on National Forest System lands that are not managed as part of the Forest transportation system, such as unplanned **roads**, abandoned travelways, and off-road vehicle tracks that have not been designated and managed as a trail; and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization.

ROAD DECOMMISSIONING. Roads that are not needed for future use. Activities that result in the stabilization and restoration of unneeded roads to a more natural state.

ROAD DENSITY. Number of miles of open road per square mile.

ROAD MAINTENANCE. The ongoing upkeep of a road necessary to retain or restore the road to the approved road management objective.

ROAD MANAGEMENT OBJECTIVE. Defines the intended purpose of an individual road based on management area direction and access management objectives. Road management objectives contain design criteria, operation criteria, and maintenance criteria (FSM 7721.31 and FSH 7790.55--33).

ROAD RECONSTRUCTION. Activity that results in improvement or realignment of an existing classified road as defined below:

(1) **ROAD IMPROVEMENT**: A road reconstruction activity that results in an increase of an existing road's traffic service level, expands its capacity, or changes its original design function.

(2) **ROAD REALIGNMENT**: A road reconstruction activity that results in a new location of an existing road or portions of an existing road and treatment of the old roadway.

ROADED NATURAL RECREATION SETTING. A classification on the recreation opportunity spectrum where timber harvest or other surface use practices are evident. Motorized vehicles are permitted on all or parts of the road system.

ROOT CROWNS. The point at or just below the surface of the ground where the stem and the root join.

ROOT DISEASE. A fungal organism which lives in organic matter in the soil and invades the living root systems of trees.

ROSGEN CHANNEL CLASSIFICATION. A system of measure that utilizes various channel features to rate a stream or river into reproducible classes.

ROTATION. The planned number of years required to establish (including a regeneration period) and grow timber crops to a specified condition

RUTTING. Deformation of the soil under saturated conditions resulting in detrimental changes to soil structure and reduced porosity.

SALMONIDS. Members of the family of elongate soft-finned fishes Salmonidae - the trout and salmon family.

SALVAGE HARVEST. The cutting of trees that are dead, dying, or deteriorating before they lose commercial value as sawtimber. The removed trees are generally overmature, damaged by fire, wind, insects, fungi, or other injurious agents.

SANITATION HARVEST. The removal of dead, damaged, or susceptible trees, essentially to prevent the spread of pests or pathogens and to promote forest health.

SAWLOG. A log that meets minimum regional standards of diameter, length, and defect, intended for sawing.

SAWTIMBER. Trees containing at least one 8-foot piece with a 5.6 inch diameter inside bark at the small end and meeting Regional specification for defect percentage. Trees must be at least 8 inches in diameter at breast height for all species except lodgepole pine which will be 7 inches at breast height.

SCALPING. To remove vegetation and other organic or inorganic material to expose underlying mineral soil and prepare an area for planting or seeding.

SCOPING. The procedures by which the Forest Service collects input in the environmental analysis process. This information is used to determine: the extent of analysis necessary; the range of actions, alternatives, and impacts to be addressed; the significant issues related to the proposed action; and the depth of environmental analysis, data, and task assignments needed.

SEDIMENT. Any material carried in suspension by water, which will ultimately settle to the bottom. Sediment has two main sources: from the stream channel area itself and from disturbed sites.

SEDIMENT TRAP. Any natural or man-made feature in a stream that traps sediment.

SEEDTREE. A tree selected as a natural seed source within a shelterwood or seed tree harvest cut; sometimes also reserved for seed collection.

SEEDTREE HARVEST. A regeneration method under an even-aged silvicultural system. A portion of the mature stand, usually 10-15 trees per acre, is retained as a source of seed for regenerating the stand. The seedtrees are intended for removal after regeneration is established.

SEEDLING AND SAPLINGS. Non-commercial-sized young trees, generally occurring in plantations.

SELECTION HARVEST. The periodic removal of trees, usually at 10-20 year intervals, individually or in small groups, from an uneven-aged forest in order to realize yield and establish regeneration of irregular constitution.

SENSITIVE SPECIES. Those species identified by the Regional Forester for which population viability is a concern as evidenced by significant current or predicted downward trends in (a) population numbers or density, or (b) habitat capability that would reduce a species' existing distribution.

SENSITIVITY LEVEL. A particular degree or measure of viewer interest in the scenic qualities of the landscape.

SERAL STAGE (Successional Stage). The series of plant community conditions that develop during ecological succession from bare ground (or major disturbance) to the climax stage. *Early seral stage* is a condition in which plants are present soon after a disturbance or at the beginning of a new successional process (seedling or saplings in a forest). Grass, herbs, or brush are abundant, diversity is high. A *mid-seral stage* is characterized in a forest setting has almost full crown closure in pole-to medium-sized trees. Understory vegetation and species diversity is less due to tree shading. A *late seral stage* is a condition with mature trees, often of old forest character. Tree growth has slowed, mortality has increased, understory forage is minimal, structural diversity may be high, and species diversity is generally less.

SEROTINOUS. Applies to the nature of lodgepole pine cones, which are closed until heated during fire at which time they open so the seed can be released. This is an adaptive trait for fire-dependent ecosystems.

SERVICE CONTRACT with EMBEDDED TIMBER SALE. This type of contract combines the operations of what would normally be a contract for services such as thinning or road construction, with the normal requirements for merchantable timber removal. This arrangement, while limited in scope, combines the elements of two types of contracts into one. This adds efficiency of reducing entries and meeting multiple objectives.

SHADED FUELBREAK. A strategically selected area where fuels are manipulated to provide a break in fuel continuity, which slows fire spread and aids in suppression activities. The fuel manipulation varies, but it primarily involves falling ladder fuels and cutting up down fuels and removing them from the site, usually by piling and burning. Healthy, larger diameter trees are left on the site to provide shade.

SHELTERWOOD HARVEST. A regeneration method under an even-aged silvicultural system. A portion of the mature stand is retained as a source of seed and for site protection during the regeneration period.

SHRUB. A plant with persistent woody stems and a relatively low growth form; usually produces several basal shoots as opposed to a single bole; and differs from a tree by its low stature and multi-branching form.

SIGNIFICANT. As used in NEPA, requires consideration of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole, and the affected region, interests, and locality. Intensity refers to the severity of impacts (40 CFR 1508.27).

SILVICULTURE. The art and science of growing and tending forest vegetation (i.e., controlling the establishment, growth, composition, health, and quality of forests) for specific management goals on a sustainable basis.

SILVICULTURAL DIAGNOSIS. The processes of comparing existing stand conditions to a desired condition or "target stand", and determining a need for treatment to bring the stand to the desired condition.

SILVICULTURAL EXAMINATION. The process used to gather the detailed in-place field data needed to determine management opportunities and direction for the timber resource within a small subdivision of a forest area such as a stand.

SILVICULTURAL SYSTEM. A management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. The system name is based on the number of age classes (e.g., even-aged, two aged, uneven-aged) or the regeneration method (e.g., clearcutting, seed tree, shelterwood, selection) used.

SITE PREPARATION. A general term for a variety of activities that remove or treat competing vegetation, slash, and other debris that may inhibit the establishment of regeneration.

SITE PRODUCTIVITY. Production capability of specific areas of land.

SLASH. The residue left on the ground after felling and other silvicultural operations and/or accumulating there as a result of storm, fire, or girdling.

SLASHING. An intermediary treatment conducted prior to piling, underburning, or jackpot burning. Slashing consists of felling and limbing small diameter vegetation to increase fuel consumption during burning or to facilitate piling.

SLASH MAT. An accumulation of organic debris consisting of tree limbs and tops left on the ground after tree felling or other silvicultural operations. Ground-based logging equipment can operate on top of this material to reduce disturbance of the soil surface.

SMALL GAME. Birds and small mammals normally hunted or trapped.

SNAG. A standing dead usually greater than 5 feet tall and 6 inches diameter at breast height.

SNAG-DEPENDENT WILDLIFE. Wildlife species that are dependent on standing dead trees for nesting or roosting habitat or for food.

SOIL FUNCTION. Primary soil functions are: (1) the sustenance of biological activity, diversity, and productivity, (2) soil hydrologic function, (3) filtering, buffering, immobilizing, and detoxifying organic materials, and (4) storing and cycling nutrients and other materials.

SOIL MASS MOVEMENT. The detachment and downslope movement of soil or the surface mantle in the form of debris slides/avalanches or deep-seated rotational failures or slumps.

SOIL PRODUCTIVITY. The capacity of a soil to produce a specific crop such as fiber and forage, under defined levels of management. It is generally dependent on available soil moisture and nutrients and length of growing season.

SOIL QUALITY. The capacity of a specific soil function within its surroundings, support plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.

SPECIAL-USE PERMIT. A permit issued under established laws and regulations to an individual, organization, or company for occupancy or use of national forest land for some special uses.

SPECIES. A unit of classification of plants and animals consisting of the largest and most inclusive array of sexually reproducing and cross-fertilizing individuals which share a common gene pool.

SPECIES VIABILITY. A species consisting of self-sustaining and interacting populations that are well distributed through the species' range. Self-sustaining populations are those that are sufficiently abundant and have sufficient genetic diversity to display the array of life history strategies and forms to provide high likelihood for their long-term persistence and adaptability over time.

SPOT FIRE. A fire ignited outside the perimeter of the main fire by flying sparks or embers.

SPYDERPILING. A mechanized fuel reduction treatment in which low ground pressure equipment (e.g., walking excavator is used to pile slash prior to burning).

STAGNATION. Refers to stand growth, implying that there is a failure to express dominance due to poor site conditions, and competition from other trees that limits development of the crowns suppressing individual tree growth and over all stand development. Usually diameter growth is severely limited and height growth still occurs, but slowly.

STAND. A community of trees or other vegetation uniform in composition, constitution, spatial arrangement, or condition to be distinguishable from adjacent communities.

STAND COMPOSITION. The representation of tree species in a forest stand, expressed by some measure of dominance (i.e., % volume, number, basal area).

STAND DENSITY. A measure of the degree of crowding of trees within a stocked area, commonly expressed by various growing-space ratios such as crown length to tree height, crown diameter to diameter at breast height, crown diameter to tree height, or stem spacing to tree height.

STAND-REPLACING FIRE. A fire that kills most or all of a stand of trees.

STAND STRUCTURE. The horizontal and vertical arrangement of the vegetation in a stand. The components of stand structure might include tree diameter, heights, crown layers, number of stems, shrubs, herbaceous understory, snags, and down logs.

STANDARD. A particular action, level of performance, or threshold specified by the Forest Plan for resource protection or accomplishment of management objectives. Unlike “guidelines” which are optional, standards specified in the Forest Plan are mandatory.

STEWARDSHIP CONTRACT. Stewardship contracting is used in this document to describe in a general way a “goods-for-services” arrangement. Normally, a “goods-for-services” is not legal. However, under a pilot program, the Bitterroot National Forest is authorized to pursue the use of “goods-for-services” arrangements to accomplish fuels reduction objectives.

STOCKING. The degree to which trees occupy the land, measured by basal area and/or number of trees by size and spacing, compared with a stocking standard; that is, the basal area and/or number of trees required to fully utilize the land's growth potential.

STREAM. A natural watercourse of perceptible extent that has a generally sandy or rocky bottom or definite banks and that confines and conducts continuously or intermittently flowing water. "Perceptible extent" means that 50% of a 100-foot segment meets the definition of a stream (Montana Streamside Management Law).

STREAM CHANNEL STABILITY. A classification system that utilizes ocular estimates of various channel, bank, and riparian area features to evaluate channel health.

STREAM ORDER. It is often convenient to classify streams within a drainage basin by systematically defining the network of branches. Each nonbranching channel segment (smallest size) is designated a first-order stream. A stream which receives only first-order segments is termed a second-order stream, and so on. The order of a particular drainage basin is determined by the order of the principle or largest segment.

STRUCTURAL DIVERSITY. The variation in sizes and shapes of landscape elements, as well as diversity of pattern (i.e., heterogeneity).

SUBPOPULATION. A geographically distinct segment of a larger population. For example, the bull trout in Mill Creek are a subpopulation of the larger bull trout population in the entire Bitterroot River Drainage.

SUCCESSION. A series of dynamic changes in vegetation and in animal life over time as a result of one community replacing another leading to a climax stage.

SUCCESSIONAL STAGE. A stage or recognizable condition of a plant community which occurs during its development from bare ground to climax.

SUMMER RANGE. A range, usually at higher elevation, used by deer and elk during the summer; a summer range is usually much more extensive than a winter range.

SUPPRESSED. Refers to individual trees, which are growing very slowly; their crowns are entirely below the general level of the crown cover, receiving no direct light either from above or from the sides. They are common in stands that are considered overstocked.

SUPPRESSION (FIRE SUPPRESSION). Any act taken to slow, stop, or extinguish a fire. Examples of suppression activities include fireline construction, backfiring, and applying water or chemical fire retardants.

SURFACE EROSION. The detachment and transport of individual soil particles by wind, water, or gravity. Surface erosion is the loss of soil in a fairly uniform layer across the land surface (sheet erosion), in many small rills, or as larger gullies.

SURFACE FUELS. Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branchwood, down logs, and stumps interspersed with or partially replacing the litter.

TARGET STAND. A description of individual forest stands that reflects the desired future attributes and conditions that have the potential to meet management objectives.

TEMPORAL. Related to time.

TERRESTRIAL. Pertaining to the land.

THERMAL COVER. Vegetation used by animals to modify the adverse effects of weather. A forest stand that is a least 40 feet in height with tree canopy cover of at least 70 percent provides thermal cover. These stand conditions are achieved in closed sapling-pole stands and by all older stands unless the canopy cover is reduced below 70 percent. Deciduous stands may serve as thermal cover in summer, but not in winter.

THINNING. A cutting made to reduce stand density of trees primarily to improve and speed growth, enhance forest health, or recover potential mortality.

THIN-FROM ABOVE. The removal of trees from the dominant (high) crown classes to enhance growth of trees from lower crown classes.

THIN-FROM-BELOW. Removing trees from the lower crown classes to favor those in the upper crown classes.

THREATENED SPECIES. Any species of plant or animal which is likely to become endangered within the foreseeable future throughout all of a significant portion of its range.

TIMBER BASE. The lands within the Forest that are suitable for timber production.

TIMBER PRODUCTION. The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use.

TIMBER STAND IMPROVEMENT. All noncommercial intermediate cuttings and other treatments to improve composition, condition, and volume growth of a timber stand.

TIMBER TYPES. A descriptive classification of forestland based on present occupancy of an area by tree species (i.e., lodgepole, mixed conifer, etc.). More appropriately called forest cover types, this category is further defined by the composition of its vegetation and/or environmental factors that influence its locality.

TORCHING. The ignition and flare-up of a tree or small group of trees, usually from bottom to top.

TRANSITORY RANGE. Land which produces forage or has inherent forage producing capabilities and can become available on a temporary basis (normally 15 to 20 years) as a result of partial or complete removal of the vegetation through fire, logging, or other events.

TURBIDITY. An optical measure of how fine sediment inhibits light transmission in a given water sample due to scattering and absorption by suspended particles.

TWO-STORIED. A forest stand or plant community having two main canopy layers.

UNDERBURN. A fuel reduction/site preparation treatment in which surface fuels are ignited under controlled conditions and are allowed to burn with specified parameters. Underburns are usually conducted in areas where the fuel bed is fairly continuous and conditions are such that fire will spread in a predictable and consistent fashion. Underburning implies that there is a live overstory present and often a live understory as well. Prescriptions for underburning usually include an acceptable mortality level in the live component.

UNDERSTORY. Vegetation (e.g., trees or shrubs) growing under the canopy formed by taller trees.

UNEVEN-AGED MANAGEMENT. The application of a combination of actions needed to simultaneously maintain continuous high-forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single-tree selection and group selection.

UNIT. A treatment area that may undergo activity such as harvest, salvage, burning, or other purposes that is specified within boundaries.

UNMERCHANTABLE. Timber that does not meet minimum height and diameter specifications which would make it suitable for commercial sawtimber.

UNROADED AREAS. Any area without the presence of a classified road (i.e., a road at least 50 inches wide and constructed or maintained for vehicle use) of a size and configuration sufficient to protect the inherent characteristics associated with its roadless condition. Unroaded areas do not overlap with inventoried roadless areas.

UNSUITABLE RANGE. Land that should not be grazed by livestock because of unstable soils, steep topography, or inherent low potential for forage production.

VALUES AT RISK. Natural resources, improvements, or other values that may be jeopardized if a fire occurs.

VEGETATION RESPONSE UNIT (VRU). An aggregation of lands with similar patterns in potential vegetation, soils climate, topography, and response to natural processes.

VERTICAL DIVERSITY. The diversity in an area that results from the complexity of the above ground structure of the vegetation; the more tiers of vegetation or the more diverse the species makeup is, the higher the degree of vertical diversity.

VIABLE POPULATION. A wildlife population of sufficient size to maintain its existence over time in spite of normal fluctuations in population levels.

VISUAL QUALITY OBJECTIVE (VQO). A system of indicating the potential expectations of the visual resource by considering the frequency an area is viewed and the type of landscape. VQOs are listed below:

> **Maximum Modification:** Human activities may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background.
>
> **Modification:** Human activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. It should appear as natural occurrence when viewed in foreground or middleground.
>
> **Partial Retention:** Human activity may be evident but must remain subordinate to the characteristic landscape.
>
> **Retention:** Human's activities are not evident to the casual Forest visitor.
>
> **Preservation:** Provides for ecological change only.
>
> **Variety Class:** Diversity of the landscape character.
>
> **Sensitivity Level:** A particular degree or measure of viewer interest in the scenic qualities of the landscape.

VISUAL RESOURCE. The composite of landforms, water features, vegetative patterns, and cultural features which create the visual environment.

WALLOW. A depression, pool of water, or wet area produced or utilized by elk or moose during the breeding season.

WATER YIELD. The measured output of the Forest's streams.

WETLANDS. Those areas that are inundated by surface or ground water with a frequency sufficient, under normal circumstances, to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands include marshes, bogs, sloughs, potholes, river overflows, mud flats, wet meadows, seeps, and springs.

WHOLE TREE YARDING. During timber harvesting, entire trees are yarded to the landing. Tops, limbs, and other unmerchantable material is piled for later treatment or utilization at the landing site.

WILDERNESS. All lands included in the National Wilderness Preservation System by public law; generally defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation.

WILDFIRE (WILDLAND FIRE). Any non-structure fire (not a prescribed fire) in the wildlands. May be ignited naturally or by arson.

WILDLAND FIRE USE. The management of naturally-ignited wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas outlined in Fire Management Plans.

WILDLAND FIRE. See Wildfire.

WILDLAND-URBAN INTERFACE (WUI). Includes those areas of resident human populations at imminent risk from wildland fire, and human developments having special significance. These areas include critical communication sites, municipal watersheds, high voltage transmission lines, observatories, church camps, scout camps, research facilities, and other structures that if destroyed by fire, would result in hardship to communities. These areas encompass not only the sites themselves but also the continuous slopes and fuels that lead directly to the sites, regardless of the distance involved.

WINDTHROW. The action of uprooting trees by the force of wind.

WINTER RANGE. A range, usually at lower elevation, used by migratory deer and elk during the winter months. It is usually better defined and smaller than summer range.

WOODY DEBRIS RECRUITMENT. The process of trees naturally falling over and landing in stream channels.

YEAR-ROUND CLOSURE. Gate, earthen barrier, or sign closing a road or area all year long. These areas are sometimes open during harvest or other land management activities.

YARDING. A method of bringing logs to a roadside or landing, for truck transport. Methods include forms of skyline cabling, ground-based skidding, balloon, and helicopter.

YARDING UNMERCHANTABLE MATERIAL (YUM). A fuel reduction treatment in which all unmerchantable material is skidded to the landing for later treatment or utilization.

ABBREVIATIONS AND ACRONYMS

ALT	Alternative
ATV	All-terrain Vehicle, same as OHV and ORV
BA	Biological Assessment
BMP	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
CFS	Cubic Feet Per Second
CWA	Clean Water Act
CWD	Coarse Woody Debris
DBH	Diameter at Breast Height
DEIS	Draft Environmental Impact Statement
ECA	Equivalent Clearcut Acres
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FDR	Forest Development Road
FEIS	Final Environmental Impact Statement
FP	Forest Plan
FSH	Forest Service Handbook
FSM	Forest Service Manual
GIS	Geographical Information System
IDT	Interdisciplinary Team
INFISH	Inland Native Fish Strategy
IRA	Inventoried Roadless Area
LWD	Large Woody Debris
MA	Management Area
MIS	Management Indicator Species
MBF	Thousand Board Feet
MFWP	Montana Fish Wildlife and Parks
MMBF	Million Board Feet
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
OHV	Off-highway vehicle
ORV	Off-road vehicle
PNV	Present Net Value
RHCA	Riparian Habitat Conservation Area
RMO	Riparian Management Objective
ROS	Recreation Opportunity Spectrum
SHPO	State Historic Preservation Officer
UCRB	Upper Columbia River Basin
USFS	United States Forest Service
USFWS	USDI-Fish & Wildlife Service
VQO	Visual Quality Objectives
VRU	Vegetation Response Unit

APPENDIX A

Past, Present, and Reasonably Foreseeable Future Activities

PAST, PRESENT AND REASONABLY FORSEEABLE FUTURE ACTIVITIES

Past, Present, and Reasonably Foreseeable Future Activities Listed below are activities and natural events that already have occurred, are currently occurring, or are likely to occur in the vicinity of the proposed Burned Area Recovery project and may contribute cumulative effects. The area encompassing these activities and events includes the entire Montana portion of the Bitterroot National Forest, including State lands and private property, unless otherwise stated. For certain issues the area considered in cumulative effects analysis may also include proposed activities in burned areas on the neighboring Salmon-Challis or Beaverhead-Deerlodge National Forests, so these are also identified on the list of reasonably foreseeable future activities.

The past and present activities and natural events have contributed to creating the existing condition, as described in the Existing Condition sections of Chapter 3. These activities, as well as reasonably foreseeable activities, may produce environmental effects on issues or resources relevant to the proposal. Therefore, the past, present, and reasonably foreseeable activities have been considered in the cumulative effects analysis for each resource area.

The activities listed as reasonable and foreseeable were gleaned from the Forest's NEPA quarterly list, and from interviewing Forest program managers and neighboring Forests such as the Salmon-Challis and Beaverhead-Deerlodge. All relevant projects are listed that are likely to occur on the Bitterroot National Forest NEPA quarterly list throughout 2001.

In order to spatially display the activities that could contribute cumulative effects, the past, present, and reasonably foreseeable activities listed in the spreadsheets have been mapped in the project file

This comprehensive listing of projects is intended to demonstrate that relevant past, present, and reasonably foreseeable activities are identified and are considered in the analysis of cumulative effects. However, these listings cannot stand alone, and must be supported with cumulative effects analysis by each resource area in the effects discussion of Chapter 3. The effects of the activities listed in the spreadsheets are not the effects that must be disclosed. What must be disclosed is how each of the listed activities, individually and together with other activities, might contribute to the effects caused by this project.

Because cumulative effects vary in time and space, each resource area has defined a specific cumulative effects analysis area in their effects discussion that is pertinent to their specific resource and the issues addressed. To strengthen documentation that the appropriate past, present, and reasonably foreseeable actions are considered, each resource area has addressed all of the listed activities in the environmental effects discussion. For each activity listed in the spreadsheets, each resource area has disclosed why or why not specific activity or types of activities would contribute to cumulative effects, and what those effects might be.

Past Projects

Past Projects	Since when?	Fire Area	Drainage
FS timber sales (acres by geographic area)	TSMRS records	All	see GIS maps
State and private timber sales (acres by geographic area)	1990	All	Forest-wide
FS artificial reforestation (acres by geographic area)	TSMRS records	All	see GIS maps
FS road construction/reconstruction	GIS layer	All	see GIS maps
State and private road construction/reconstruction	GIS layer	All	see GIS maps
FS facilities construction/reconstruction	GIS layer	All	see GIS maps
FS trail construction/reconstruction	GIS layer	All	see GIS maps
Noxious weed treatments	1990	All	Forest-wide
Ditches, diversions, and irrigation dewatering	GIS layer	All	see GIS maps
Painted Rocks Dam (construction/operation/maintenance)	1939	West Fork	lower West Fork
DNRC Little Sleeping Child Dam (constr/operation/maint)	1950	Skal-Rye	Little Sleeping Child Creek
Dam Lake Dam (construction/operation/maintenance)	1912	Skal-Rye	Daly Creek
Canyon/Wyant Dams (construction/operation/maintenance)	1891	Blodgett	Canyon Creek
Blodgett/High Dams (construction/operation/maintenance)	1910-11	Blodgett	Blodgett Creek
Mill/Sears/Hauf Dams (construction/operation/maintenance)	1892-1913	Blodgett	Mill Creek
Garrard/Knaack Dams (construction/operation/maintenance)	1905	Blodgett	Sheafman Creek
Fred Burr Res/Lake Dams (construction/operation/mainten)	1948, 1914	Blodgett	Fred Burr Creek, lower Mill Creek
Fred Burr Reservoir dam failure and flood	1948	Blodgett	Fred Burr Creek, lower Mill Creek
Fish stocking (natives and exotics)	1930's	All	forestwide (primarily lakes)
Routine FS road, trail, and facilities maintenance	1897	All	forestwide
Routine road maintenance on private land	early 1900's	All	forestwide
Subdivision on private land	GIS layer	All	forestwide
Highway construction/maintenance	1910-20	East Fork	Camp Creek, East Fork (East Fork and US 93)
Highway construction/maintenance	1910-20	West Fork	West Fork (West Fork highway)
Highway construction/maintenance	1910-20	Skal-Rye	Skalkaho Cr, Daly Cr (State highway 38)
Lost Trail ski area construction and use	1960	East Fork	East Fork Camp Creek
Private - Hughes Creek dredge mining	early 1900's	West Fork	Hughes Creek
Private - Crystal Mtn flourspar mine, head of Rye Creek	1950	Skal-Rye	Rye Creek
Private - livestock grazing	1880's	East Fork	Camp Cr, Tolan Cr, East Fork
Private - Rye Creek elk farm	early 1990's	Skal-Rye	Rye Creek
Private - pond construction and fish stocking	1970's	All	forestwide
Andrews grazing allotment	pre 1941	East Fork	Andrews Creek
Bunch Gulch grazing allotment	pre 1954	East Fork	Bunch Gulch

Past Projects

Past Projects	Since when?	Fire Area	Drainage
Shirley Mountain grazing allotment	pre 1961	East Fork	Lyman Creek, Guide Creek
Camp Reimel grazing allotment	pre 1941	East Fork	Reimel Creek
Coal Creek grazing allotment	Pre-1950	West Fork	Coal Creek
East Fork grazing allotment	pre 1945	East Fork	Jennings Camp Creek
Harlan Burke grazing allotment	pre 1945	Skal-Rye	Harlan Creek, Roan Creek
Meadow Tolan grazing allotment	pre 1960	East Fork	Meadow Cr, Tolan Cr, Mink Cr, Swift Cr
Medicine Tree grazing allotment	pre 1945	East Fork	Medicine Tree Creek
North Sleeping Child grazing allotment	pre 1945	Skal-Rye	lower Sleeping Child Creek
Piquett Creek grazing allotment	pre 1958	West Fork	Piquett Creek, East Fork Piquett Creek
Rye Creek grazing allotment	Pre-1945	Skal-Rye	Rye Creek, North Rye Creek
Skalkaho grazing allotment	DN 2000	Skal-Rye	Skalkaho Cr (north of hwy 38), Daly Cr, Gird Cr
Sleeping Child grazing allotment	pre 1961	Skal-Rye	upper Sleeping Child Creek
Sula Peak grazing allotment	pre 1961	East Fork	Cameron Creek, Spring Gulch
Trapper Peak grazing allotment	pre 1945	West Fork	Trapper Creek
Warm Springs grazing allotment	pre 1941	East Fork	Warm Springs Creek, Maynard Creek
Waugh Gulch grazing allotment	pre 1945	East Fork	WF Camp Creek, Waugh Creek
Fire suppression	1910	All	forestwide
Wildfires (acres by geographic area)	1889	All	see GIS maps
Prescribed fire (acres by geographic area)	1950	All	see GIS maps
2000 fires - suppression and rehabilitation efforts	2000	All	all burned drainages
2000 fires - completed BAER projects	2000	All	all burned drainages
2000 fires - effects (hydrophobic soils, burned trees, etc)	2000	All	all burned drainages
Personal use firewood cutting	1880's	All	forestwide
Personal use Christmas tree harvesting	1880's	All	forestwide
Hunting, fishing, and dispersed recreation	1880's	All	forestwide
Fred Burr Trail #733 drainage improvements	finished in 1997	Blodgett	Fred Burr Creek
Hughes Creek mine reclamation project	finished in 1998	West Fork	Hughes Creek
Pinesdale burned interface demonstration project	finished spring 2001	Blodgett	Sheafman Creek, Cow Creek
Waugh Gulch burned interface demonstration project	finished spring 2001	East Fork	Waugh Creek, Camp Creek
Private salvage sales - Blue Joint Bay	finished spring 2001	West Fork	Blue Joint Creek, Painted Rocks
Private green timber sale - Piquett Creek	finished spring 2001	West Fork	Piquett Creek
DNRC Coal Creek/Painted Rocks timber sale	finished spring 2001	West Fork	Coal Creek

Ongoing Projects

Ongoing Projects	Starts when?	Fire Area	Drainage
DNRC salvage sale (S 36, Sleeping Child)	Fall 2001-02	Skal-Rye	Sleeping Child Creek
DNRC salvage sale (S 36, North Rye)	Fall 2001-02	Skal-Rye	North Rye Creek
DNRC salvage sale (S 16, Blodgett face)	Fall 2001-02	Blodgett	Blodgett Creek, Churn Creek
Fire-related road repairs	Starts spring 2001	All	roaded burned drainages
Roadside herbicide spraying (Sula RD roads)	Ongoing	East Fork	all East Fork drainages with roads
Roadside herbicide spraying (West Fork RD roads)	Ongoing	West Fork	all West Fork drainages with roads
Blodgett/Sheafman Creek trail herbicide spraying (spots)	Ongoing	Blodgett	Blodgett Creek, Sheafman Creek
Boulder Creek trail herbicide spraying (spots)	Ongoing	West Fork	Boulder Creek
Watchtower/Sheephead Cr trail herbicide spraying (spots)	Ongoing	West Fork	Watchtower Creek, Sheephead Creek
Deer/Chicken Creek trail herbicide spraying (spots)	Ongoing	West Fork	Deer Creek, Chicken Creek
Rombo Ridge/Shook Mtn grasslands herbicide spraying	Ongoing	West Fork	Piquett Creek, Rombo Creek
Reimel Ridge/Barley Ridge grasslands herbicide spraying	Ongoing	East Fork	Reimel Creek
Mushroom and special products harvest	Starts spring 2001	All	forestwide
Toilet replacements in recreation sites	Starts summer 2001	All	forestwide
Springer Memorial fuel reduction demonstration project	Starts spring 2001	East Fork	Echo Gulch, unnamed McCart tribs
Tree planting in managed stands	Starts spring 2001	All	forestwide
Ditch bills/irrigation dewatering	Ongoing	All	forestwide
Painted Rocks Dam (operation and maintenance)	Ongoing	West Fork	lower West Fork
Dam Lake Dam (operation and maintenance)	Ongoing	Skal-Rye	Daly Creek
Canyon/Wyant Dams (operation and maintenance)	Ongoing	Blodgett	Canyon Creek
Blodgett/High Dams (operation and maintenance)	Ongoing	Blodgett	Blodgett Creek
Mill/Sears/Hauf Dams (operation and maintenance)	Ongoing	Blodgett	Mill Creek
Garrard/Knaack Dams (minor repairs summer 01, o & m)	Starts summer 2001	Blodgett	Sheafman Creek
Fred Burr Res/Lake Dams (operation and maintenance)	Ongoing	Blodgett	Fred Burr Creek, lower Mill Creek
Bear TS (Skal=units 4,5,6; Two Bear=units 1,2,3)	Ongoing	Skal-Rye	Skalkaho Cr (Bad News trib), Two Bear Creek
Roan Burke TS	Ongoing	Skal-Rye	Little Sl. Child Cr, Roan Gulch, Burke Gulch
North Rye firewood TS	Ongoing	Skal-Rye	Rye Cr, North Rye Cr, Fox Cr, Spring Gulch
Fern Trap TS	Ongoing	West Fork	lower West Fork

Ongoing Projects	Starts when?	Fire Area	Drainage
Thin Bertie TS	Ongoing	East Fork	Bertie Lord Creek
Beaver Woods TS (Johnson=unit 17; Woods=32,33,34)	Ongoing	West Fork	Johnson Creek, Woods Creek
Beaver Woods Post & Pole I TS (unit 1)	Ongoing	West Fork	Salt Block Creek
Beaver Woods Post & Pole II TS (units 7,8,9)	Ongoing	West Fork	Johnson Creek
Douglas fir bark beetle infestations (see write-up)	Ongoing	All	all burned drainages
Private salvage sales - undetermined locations	Ongoing	All	all burned drainages
Private salvage sales - Trinity Ranch	Ongoing	East Fork	lower East Fork, Spade Creek
Private salvage sales - Dickson Creek	Ongoing	East Fork	lower East Fork, Dickson Creek
Private salvage sales - CB Ranch	Ongoing	Skal-Rye	Burke Gulch, Mike Creek
DNRC salvage sales - Sula State Forest	Ongoing	East Fork	Cameron, Andrews, Praine Creeks
Highway 93 reconstruction (Sula north/south phase)	Starts spring 2001	East Fork	Camp Creek, lower East Fork
West Fork highway paving (Painted Rocks)	Starts summer 2001	West Fork	Slate Creek, Painted Rocks
Routine FS road, trail, and facilities maintenance	Ongoing	All	forestwide
Routine road maintenance on private land	Ongoing	All	forestwide
Subdivision/road construction on private land	Ongoing	All	forestwide
Highway maintenance (East Fork highway and US 93)	Ongoing	East Fork	Camp Creek, East Fork
Highway maintenance (West Fork highway)	Ongoing	West Fork	West Fork
Highway maintenance (State highway 38)	Ongoing	Skal-Rye	Skalkaho Creek, Daly Creek
Lost Trail ski area expansion	Ongoing	East Fork	East Fork Camp Creek
Private - Hughes Creek dredge mining	Ongoing	West Fork	Hughes Creek
Private - livestock grazing	Ongoing	East Fork	Camp Cr, Tolan Cr, East Fork
Private - Rye Creek elk farm	Ongoing	Skal-Rye	Rye Creek
Private - pond construction and fish stocking	Ongoing	All	forestwide
Andrews grazing allotment	Ongoing - active	East Fork	Andrews Creek
Bunch Gulch grazing allotment	Ongoing - active	East Fork	Bunch Gulch
Shirley Mountain grazing allotment	Ongoing - active	East Fork	Lyman Creek, Guide Creek
Camp Reimel grazing allotment	Ongoing - active	East Fork	Reimel Creek
Coal Creek grazing allotment	Ongoing - active	West Fork	Coal Creek
East Fork grazing allotment	Ongoing - active	East Fork	Jennings Camp Creek
Harlan Burke grazing allotment	Ongoing - rested 2001	Skal-Rye	Harlan Creek, Roan Creek

Ongoing Projects	Starts when?	Fire Area	Drainage
Meadow Tolan grazing allotment	Ongoing - active	East Fork	Meadow Cr, Tolan Cr, Mink Cr, Swift Cr
Medicine Tree grazing allotment	Ongoing - rested 2001	East Fork	Medicine Tree Creek
North Sleeping Child grazing allotment	Ongoing - rested 2001	Skal-Rye	lower Sleeping Child Creek
Piquett Creek grazing allotment	Vacant,used in 2001?	West Fork	Piquett Creek, East Fork Piquett Creek
Skalkaho grazing allotment	Ongoing - active	Skal-Rye	Skalkaho Cr (north of hwy 38), Daly Cr, Gird Cr
Sleeping Child grazing allotment	Ongoing - non use	Skal-Rye	upper Sleeping Child Creek
Sula Peak grazing allotment	Ongoing - rested 2001	East Fork	Cameron Creek, Spring Gulch
Trapper Peak grazing allotment	Ongoing - active	West Fork	Trapper Creek
Warm Springs grazing allotment	Ongoing - active	East Fork	Warm Springs Creek, Maynard Creek
Waugh Gulch grazing allotment	Ongoing - rested 2001	East Fork	WF Camp Creek, Waugh Creek
Re-allocate Rock Creek outfitter and guide area	Starts summer 2001	Skal-Rye	Skalkaho Creek
Re-allocate Fox Peak outfitter and guide area	Starts summer 2001	Skal-Rye	Skalkaho Creek
BAER projects that need to be finished in 2001	Starts spring 2001	All	all burned drainages
Artificial regeneration (tree planting)	Starts spring 2001	All	all burned drainages
Indian Trees campground reconstruction	Starts spring 2001	East Fork	Camp Creek
Trapper Creek Job Corps sewer system upgrade	Starts spring 2001	West Fork	lower West Fork
Mill/Pinesdale boundary reposting	Starts summer 2001	Blodgett	westside, Canyon Cr to Sheafman Cr
Sula Peak lookout construction	Starts summer 2001	East Fork	Spring Gulch
Sula Peak electronic site construction	Starts summer 2001	East Fork	Spring Gulch
Skalkaho/Daly dispersed campsite rehabilitation	Starts summer 2001	Skal-Rye	Skalkaho Cr, Daly Cr, Railroad Cr
Snow Pillow Creek culvert removal (Road 62622)	Starts summer 2001	Skal-Rye	Snow Pillow Creek, Daly Creek
West Fork bank stabilization project	Starts fall 2001	West Fork	lower West Fork
Fire suppression in certain areas	Ongoing	All	forestwide
Personal use firewood cutting	Ongoing	All	forestwide
Personal use Christmas tree harvesting	Ongoing	All	forestwide
Hunting, fishing, and dispersed recreation	Ongoing	All	forestwide
Fish stocking of lakes by MFWP (native species)	Ongoing	All	forestwide
Use of developed recreation sites (campgrounds, etc)	Ongoing	All	forestwide

Reasonably Foreseeable Projects

Reasonably Foreseeable Projects	Starts when?	Fire Area	Drainage
Funding of home protection	2001	All	
Breaching of DNRC dam on Little Sleeping Child Creek	2002-03	Skal-Rye	Little Sleeping Child Creek
Permit to use road 446 for private access and built ¼ mile of new rd.	2002 at earliest	Skal-Rye	Robbins Gulch
Stevi SW ecoburn (2 units, 200 acres, Fred Burr drainage)	2001 at earliest	Blodgett	Fred Burr Creek, lower Mill Creek
Fern Trap ecoburn units	2001 at earliest	West Fork	Trapper Cr; westside, Hart Bench to Rock Cr
Tepee #1 ecoburn	spring 2001	East Fork	upper East Fork drainage
Tepee #2 ecoburn	spring 2001	East Fork	upper East Fork drainage
Camp Reimel #10 ecoburn	spring 2001	East Fork	Camp Creek
Trapper overlook ecoburn	2001 at earliest	West Fork	Trapper Creek
Green team fuel reduction projects	2002 at earliest	All	forestwide
Sheafman fuels reduction project	spring 2001	Blodgett	Sheafman Creek
Lost Moose EIS	2002 at earliest	Blodgett	Canyon Creek
Nez Perce EIS	Postponed	West Fork	Nez Perce Fork drainage
Sam Billings campground fuel reduction project	2001 at earliest	West Fork	Boulder Creek
Upper West Fork fuel reduction project	2002 at earliest	West Fork	West Fork
Boundary fuels (non-commercial thinning)	2001 at earliest	Blodgett	Fred Burr Creek
Nez Perce road paving	2002 at earliest	West Fork	Nez Perce Fork drainage
Nez Perce road raise	2001 at earliest	West Fork	Nez Perce Fork drainage
Slate Hughes travel management EA	2002 at earliest	West Fork	Hughes Cr, Overwhich Cr, Slate Cr
Herbicide spraying (all areas covered in Weed EIS)	2002	All	
Continued roadside herbicide spraying (Sula RD roads)	continued activity	East Fork	East Fork drainage
Continued roadside herbicide spraying (West Fork RD roads)	continued activity	West Fork	West Fork drainage
South Fork Sleeping Child Cr Trail #84 reconstruction	2002	Skal-Rye	Little Sleeping Child Creek
Sleeping Child Creek #105 reconstruction	summer 2001	Skal-Rye	Sleeping Child Creek
Buck Creek Trail #198 reconstruction	2002	East Fork	Buck Creek
Jew Mtn/Taylor Trail #185/182 reconstruction	2002	West Fork	Taylor Creek, Overwhich Creek
Continental Divide Trail #9 reconstruction	summer 2002	East Fork	Dick Creek, Reimel Creek, Tolan Creek
Medicine Point Trail #181 reconstruction	summer 2001	East Fork	Laird Creek
Medicine Point Trailhead construction	summer 2001	East Fork	Laird Creek
Jennings commercial thin TS	winter 2001-02	East Fork	Jennings Camp Creek
Beaver Woods TS aspen release units	winter 2001-02	West Fork	upper West Fork drainage
DNRC salvage sale (S 16, Gird/Skalkaho divide)	2004	Skal-Rye	Skalkaho Creek, Gird Creek
West Fork bridge construction (Nez Perce Rd intersection)	2002 at earliest	West Fork	lower West Fork

Reasonably Foreseeable Projects	Starts when?	Fire Area	Drainage
Silverbird salvage sale (Salmon-Challis NF, Clear Creek fire)	fall 2001	West Fork	Salmon River drainage
Mussigbrod fire trail restoration/maintenance (B-D)	summer 2001	East Fork	Big Hole River drainage
Mussigbrod fire fence construction (B-D)	summer 2001	East Fork	Big Hole River drainage
Mussigbrod roadside hazard tree removal (B-D)	summer 2001	East Fork	Big Hole River drainage
Mussigbrod bark beetle mortality control (B-D)	fall 2001	East Fork	Big Hole River drainage
Middle Fork fire trail restoration/maintenance (B-D)	summer 2001	Skal-Rye	Rock Creek drainage
Middle Fork fire fence construction (B-D)	summer 2001	Skal-Rye	Rock Creek drainage
Middle Fork roadside hazard tree removal (B-D)	summer 2001	Skal-Rye	Rock Creek drainage
Middle Fork bark beetle mortality control (B-D)	fall 2001	Skal-Rye	Rock Creek drainage
Grizzly bear reintroduction (Fish and Wildlife Service)	2002 at earliest	Blodgett	westside canyons
Grizzly bear reintroduction (Fish and Wildlife Service)	2002 at earliest	West Fork	Nez Perce Fork, Selway
FS/BLM OHV EIS	2001	All	all burned drainages
Bull trout recovery plan (Fish and Wildlife Service)	2002 at earliest	All	all burned drainages
Continued irrigation dewatering of streams	continued activity	All	all burned drainages
Deer Creek irrigation pipeline installation	summer 2001	West Fork	Deer Creek, upper West Fork
Painted Rocks Dam (operation and maintenance)	continued activity	West Fork	lower West Fork
Dam Lake Dam (operation and maintenance)	continued activity	Skal-Rye	Daly Creek
Reconstruction of Canyon and Wyant Dams	summer 2002	Blodgett	Canyon Creek
Blodgett/High Dams (operation and maintenance)	continued activity	Blodgett	Blodgett Creek
Mill/Sears/Hauf Dams (operation and maintenance)	continued activity	Blodgett	Mill Creek
Garrard/Knaack Dams (operation and maintenance)	continued activity	Blodgett	Sheafman Creek
Fred Burr Res/Lake Dams (operation and maintenance)	continued activity	Blodgett	Fred Burr Creek, lower Mill Creek
Continued fire-related road repairs	continued activity	All	roaded burned drainages
Continued mushroom and special products harvest	continued activity	All	forestwide
Continued private salvage sales - undetermined locations	continued activity	All	all burned drainages
Continued Douglas fir bark beetle infestations (see write-up)	continued activity	All	all burned drainages
FS response to the Douglas fir beetle infestations	2002 at earliest	All	all burned drainages
Continued highway 93 reconstruction (Sula north/south phase)	continued activity	East Fork	Camp Creek, lower East Fork
Continued routine FS road, trail, and facilities maintenance	continued activity	All	forestwide
Fire recovery-related trail maintenance	2002	All	all burned drainages
Continued routine road maintenance on private land	continued activity	All	forestwide
Continued subdivision/road construction on private land	continued activity	All	forestwide
Highway maintenance (East Fork highway and US 93)	continued activity	East Fork	Camp Creek, East Fork
Highway maintenance (West Fork highway)	continued activity	West Fork	West Fork
Highway maintenance (State highway 38)	continued activity	Skal-Rye	Skalkaho Creek, Daly Creek

Reasonably Foreseeable Projects	Starts when?	Fire Area	Drainage
Lost Trail ski area expansion	continued activity	East Fork	East Fork Camp Creek
Private - Hughes Creek dredge mining	continued activity	West Fork	Hughes Creek
Private - livestock grazing	continued activity	East Fork	Camp Cr, Tolan Cr, East Fork
Private - Rye Creek elk farm	continued activity	Skal-Rye	Rye Creek
Private - pond construction and fish stocking	continued activity	All	forestwide
Andrews grazing allotment	continued activity	East Fork	Andrews Creek
Bunch Gulch grazing allotment	continued activity	East Fork	Bunch Gulch
Shirley Mountain grazing allotment	continued activity	East Fork	Lyman Creek, Guide Creek
Camp Reimel grazing allotment	continued activity	East Fork	Reimel Creek
Coal Creek grazing allotment	continued activity	West Fork	Coal Creek
East Fork grazing allotment	continued activity	East Fork	Jennings Camp Creek
Harlan Burke grazing allotment	continued activity	Skal-Rye	Harlan Creek, Roan Creek
Meadow Tolan grazing allotment	continued activity	East Fork	Meadow Cr, Tolan Cr, Mink Cr, Swift Cr
Medicine Tree grazing allotment	continued activity	East Fork	Medicine Tree Creek
North Sleeping Child grazing allotment	continued activity	Skal-Rye	lower Sleeping Child Creek
Piquett Creek grazing allotment	continued activity	West Fork	Piquett Creek, East Fork Piquett Creek
Skalkaho grazing allotment	continued activity	Skal-Rye	Skalkaho Cr (north of hwy 38), Daly Cr, Gird Cr
Sleeping Child grazing allotment	continued activity	Skal-Rye	upper Sleeping Child Creek
Sula Peak grazing allotment	continued activity	East Fork	Cameron Creek, Spring Gulch
Trapper Peak grazing allotment	continued activity	West Fork	Trapper Creek
Warm Springs grazing allotment	continued activity	East Fork	Warm Springs Creek, Maynard Creek
Waugh Gulch grazing allotment	continued activity	East Fork	WF Camp Creek, Waugh Creek
Continued implementation of BAER projects	continued activity	All	all burned drainages
Continued artificial regeneration (tree planting)	continued activity	All	all burned drainages
Continued fire suppression in certain areas	continued activity	All	forestwide
Continued personal use firewood cutting	continued activity	All	forestwide
Continued personal use Christmas tree harvesting	continued activity	All	forestwide
Continued hunting, fishing, and dispersed recreation	continued activity	All	forestwide
Continued outfitter and guide activities	continued activity	All	forestwide
Continued reposting of the burned FS boundary	continued activity	All	all burned drainages
Continued fish stocking of lakes by MFWP (native species)	continued activity	All	forestwide

APPENDIX B

Unit and Road Detail

FUEL REDUCTION UNIT INFORMATION

The following tables provide details concerning the individual fuel reduction units for each alternative. Headings and abbreviations were used in the tables and are defined below.

Unit Number is the identifier placed on all the units. Maps in the map packet show the locations of each unit.

Geo Area is the geographic area where the unit is located. Four geographic areas were used for this analysis; B is Blodgett, S-R is Skalkaho-Rye, EF is East Fork and WF is West Fork.

Watershed is the main named drainage where the unit is located.

MA identifies the Forest Plan management area found in each unit. They are described in Chapter 1.

VRU is the vegetation response unit. VRU 2 is dry ponderosa pine vegetation types, VRU 3 is Douglas-fir vegetation types and VRU 4 is lodgepole pine and subalpine fir vegetation types. Detailed information is found in Forested Plant Communities section of Chapter 3.

Burn Severity describes how hot the fire was in that area. H is high, M is moderate and L is low severity. The glossary contains a more detailed description.

Treatment Purpose is the purpose for treatment and ties back directly to the discussion and summary tables in Chapter 2. WUI is Wildland Urban Interface. VRU 2 is the dry ponderosa pine vegetation types. REFO is within the suitable timberland base where reforestation is needed. FUELS is fuels treatment to break up fuel continuity at the landscape scale. DFB is high risk bark beetle stands.

Treatment Prescription includes the fuel reduction method(s) and the regeneration method. A detailed description of these methods is found in Chapter 2.

SALVAGE – salvage of dead and dying trees only.

SALVAGE/REGEN – salvage of dead and dying trees only that results in a unit needing regenerated.

SALVAGE/SALVAGE/REGEN – combination of salvage and salvage/regeneration.

INTERMEDIATE - intermediate treatment which included dead and dying tree removal in addition to green/live tree thinning.

MANUAL/RX FIRE – manual fuels treatment and/or prescribed fire, see fuels treatments listed below.

PLANTING ONLY – planting trees.

FELL/PLACE/BURN – felling trees and placing them on the slope with a prescribed burn to follow.

SLASH/BUCK/PILE/BURN – felling trees to forest floor, bucking, hand piling, and prescribed burning.

RX FIRE – prescribed fire.

UNEVEN-AGED THINNING – includes removal of dead, dying, and some green/live trees to create an uneven-aged structure.

THIN FROM BELOW – includes removal of dead, dying, and some green/live trees favoring smaller diameters and retaining the larger component.

LOG EROSION BARRIER - felling of trees perpendicular to the slope and preparing them to collect sediment.

Fuels Treatment is the secondary fuels treatment following a commercial harvest in some units or the only fuels treatment applied where no commercial harvest is proposed.

SL - slashing.

UB - under burn.

HP - hand pile.

YT - yard tops.

WT - whole tree removal.

SP - spyder piling.

EX - excavator piling.

YUM - yard unmerchantable material.

NA - not applicable.

Regen Method is the type of regeneration prescribed when the treatment purpose is REFO or when the treatment prescription is SALVAGE/REGEN.

P - regeneration by planting.

N - regeneration through natural methods.

NA - not applicable.

% Stem Removal is the approximate percentage of stems that would be removed. This is not the same as % crown removal as many of the treatments proposed include dead trees where the crown was removed by the fires.

Current Fuel Level is an estimated amount of fire-killed material greater than four inches in diameter that may be present in the unit and is measured in tons per acre. The tons per acre fuel loading estimates do not include the amount of dead or downed material not consumed in the fires of 2000.

Logging system is the harvest equipment used to remove merchantable material.

H - helicopter.

S - skyline.

T - tractor or other ground based logging system.

TLM – tracked line machine.

NA - not applicable.

Acres are amount of area proposed for treatment.

Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
4	B	SHEAFMAN	3A	2	M/L	WUI	MANUAL/ RX FIRE	JP	NA	10-50	38	NA	7
5	B	SHEAFMAN	3A	2	H/M/L	WUI	MANUAL/ RX FIRE	JP	P	30-70	39	NA	183
15	S-R	SKALKAHO	1	3	H/M/L	FUELS	SALVAGE/SALVAGE/REGEN	NA	P	10-30	25	H	188
15	S-R	SKALKAHO	1	3	H/M/L	FUELS	SALVAGE/SALVAGE/REGEN	NA	P	10-30	25	S	125
16	S-R	S FK SKALKAHO	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	30-80	42	H	53
17	S-R	S FK SKALKAHO	1	3	M	REFO	SALVAGE/REGEN	HP	P	40-70	40	H	17
17	S-R	S FK SKALKAHO	1	3	M	REFO	SALVAGE/REGEN	WT	P	40-70	40	S	15
18	S-R	S FK SKALKAHO	1	3	H/M	REFO	SALVAGE/REGEN	JP	P	40-70	49	H	118
18	S-R	S FK SKALKAHO	1	3	H/M	REFO	SALVAGE/REGEN	WT	P	40-70	50	S	50
19	S-R	S FK SKALKAHO	1	3	H/M/L	REFO	SALVAGE/REGEN	NA	P	40-70	25	H	26
19	S-R	S FK SKALKAHO	1	3	H/M/L	REFO	SALVAGE/REGEN	NA	P	40-70	25	S	26
20	S-R	S FK SKALKAHO	1	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	6
21	S-R	S FK SKALKAHO	1	3	M/L	REFO	SALVAGE/REGEN	JP	N	40-70	49	H	83
21	S-R	S FK SKALKAHO	1	3	M/L	REFO	SALVAGE/REGEN	WT	N	40-70	49	S	55
21	S-R	S FK SKALKAHO	1	3	M/L	REFO	SALVAGE/REGEN	WT	N	40-70	49	T	15
22	S-R	S FK SKALKAHO	1	3	H/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	29
23	S-R	S FK SKALKAHO	1	3	H/M/L	REFO	SALVAGE/REGEN	SP/HP	N	40-70	43	H	31
24	S-R	S FK SKALKAHO	1	3	M/L	REFO	MANUAL/ RX FIRE	SL/HP	N	40-70	45	NA	8
25	S-R	DIVIDE	1	4	H/M/L	REFO	SALVAGE/REGEN	NA	N	50-80	41	H	58
25	S-R	DIVIDE	1	4	H/M/L	REFO	SALVAGE/REGEN	NA	N	50-80	41	S	75
25	S-R	DIVIDE	1	4	H/M/L	REFO	SALVAGE/REGEN	NA	N	50-80	41	T	33
26	S-R	DIVIDE	1	4	H/M	REFO	SALVAGE/REGEN	HP	N	50-80	59	H	30
26	S-R	DIVIDE	1	4	H/M	REFO	SALVAGE/REGEN	WT	N	50-80	59	S	107
26	S-R	DIVIDE	1	4	H/M	REFO	SALVAGE/REGEN	WT	N	50-80	59	T	7
27	S-R	BAD NEWS	1	3	M/L	FUELS/DFB	SALVAGE	NA	NA	10-30	51	H	176
27	S-R	BAD NEWS	1	3	M/L	FUELS/DFB	SALVAGE	NA	NA	10-30	51	S	59
28	S-R	BAD NEWS	1	3	M/L	FUELS/DFB	SALVAGE	NA	NA	10-30	39	H	56
28	S-R	BAD NEWS	1	3	M/L	FUELS/DFB	SALVAGE	NA	NA	10-30	39	S	37
29	S-R	BAD NEWS	1	3	H/M/L	REFO	SALVAGE/REGEN	JP	N	40-80	52	H	178
29	S-R	BAD NEWS	1	3	H/M/L	REFO	SALVAGE/REGEN	WT	N	40-80	52	S	23
30	S-R	BAD NEWS	1	2	L	VRU2	INTERMEDIATE	NA	NA	30-60	7	S	19
31	S-R	BAD NEWS	1	3	L	FUELS/DFB	SALVAGE	NA	NA	10-30	25	S	48

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
32	S-R	BAD NEWS	1	3	L	FUELS/DFB	SALVAGE	NA	NA	10-30	25	S	25
32	S-R	BAD NEWS	1	3	L	FUELS/DFB	INTERMEDIATE	NA	NA	40-60	1	T	16
32	S-R	S FK SKALKAHO	1	3	H/M/L	REFO	SALVAGE/REGEN	YT	N	40-70	43	H	122
33	S-R	BAD NEWS	1	2	M/L	VRU2	SALVAGE/REGEN	NA	P	40-70	21	S	76
33	S-R	BAD NEWS	1	2	M/L	VRU2	SALVAGE/REGEN	NA	P	40-70	21	T	33
34	S-R	SKALKAHO	3A	3	H/M/L	WUI	SALVAGE/REGEN	SL/SP	N	50-80	97	H	152
35	S-R	SKALKAHO	3A	2	H/M/L	VRU2	INTERMEDIATE	NA	NA	10-40	20	H	106
36	S-R	SKALKAHO	3A	3	H/M	REFO	SALVAGE/REGEN	JP	N	60-80	82	H	48
37	S-R	SKALKAHO	3A	2	H/M/L	VRU2	INTERMEDIATE	NA	NA	20-40	55	H	143
38	S-R	SKALKAHO	3A	3	H/M/L	WUI	SALVAGE/REGEN	NA	N	40-80	25	H	142
39	S-R	SKALKAHO	3A	3	M/L	WUI	SALVAGE/REGEN	NA	N	40-80	24	H	49
40	S-R	SKALKAHO	3A	3	H/M/L	WUI	SALVAGE/REGEN	SP/JP	N	40-80	49	H	215
41	S-R	SKALKAHO	3A	3	H/L	WUI	SALVAGE/REGEN	SP/JP	N	40-80	81	H	288
42	S-R	SKALKAHO	3A	3	H/L	WUI/DFB	INTERMEDIATE	NA	NA	40-60	31	H	151
43	S-R	SKALKAHO	3A	3	H/L	WUI/DFB	INTERMEDIATE	NA	NA	40-60	31	H	100
44	S-R	SKALKAHO	3A	3	H/L	WUI	SALVAGE/REGEN	SP/JP	N	40-80	62	H	79
45	S-R	SKALKAHO	3A	3	H/L	WUI/DFB	INTERMEDIATE	NA	NA	40-60	28	H	98
46	S-R	SKALKAHO	3A	3	H/M/L	WUI	SALVAGE/REGEN	SL/JP	N	40-80	39	H	74
47	S-R	SKALKAHO	2/3A	2	L	WUI	INTERMEDIATE	NA	NA	20-50	27	H	547
48	S-R	BEAR	1	2	L	VRU2	INTERMEDIATE	SL/UB	NA	10-30	35	H	108
48	S-R	BEAR	1	2	L	VRU2	INTERMEDIATE	WT/UB	NA	10-30	35	T	9
48	S-R	BEAR	1	2	L	VRU2	INTERMEDIATE	WT/UB	NA	10-30	35	S	13
49	S-R	BEAR	2/3A	2	H/M/L	VRU2	MANUAL/ RX FIRE	SL/HP	NA	10-30	10	NA	914
51	WF	PIQUETT	1	3	M	REFO	SALVAGE/REGEN	NA	N	50-80	39	H	361
52	WF	PIQUETT	1	3	M	FUELS/DFB	MANUAL/ RX FIRE	SL/HP	N	20-50	25	NA	10
53	WF	PIQUETT	1	3	M/L	FUELS/DFB	SALVAGE	NA	NA	20-50	25	H	150
54	WF	PIQUETT	2	3	L	FUELS/DFB	SALVAGE	NA	NA	20-50	22	H	59
55	WF	PAINTED ROCKS LAKE	3A	3	L	WUI/DFB	MANUAL/ RX FIRE	SL/UB	NA	30-60	80	NA	58
56	WF	BLUE JOINT	2/3A	3	H	WUI	MANUAL/ RX FIRE	SL/HP	P	40-80	48	NA	5
57	WF	LITTLE BLUE JOINT	1/2	3	H/M	REFO	MANUAL/ RX FIRE	SL/SP/EX	P	40-80	54	NA	201
58	WF	LITTLE BLUE JOINT	2	3	M	REFO	MANUAL/ RX FIRE	SL/HP	P	40-80	48	NA	24
59	WF	BLUE JOINT	2/3A	3	H/M/L	REFO	SALVAGE/REGEN	NA	P	40-80	44	H	397
59	WF	BLUE JOINT	2/3A	3	H/M/L	REFO	SALVAGE/REGEN	NA	P	40-80	44	S	49
59	WF	BLUE JOINT	2/3A	3	H/M/L	REFO	SALVAGE/REGEN	NA	P	40-80	44	T	49

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
60	WF	COAL	1/2	4	H/L	REFO	SALVAGE/REGEN	NA	N	50-80	35	H	392
60	WF	COAL	1/2	4	H/L	REFO	SALVAGE/REGEN	NA	N	50-80	35	S	104
60	WF	COAL	1/2	4	H/L	REFO	SALVAGE/REGEN	NA	N	50-80	35	T	26
61	WF	W FK FACE	3A	3	M/L	WUI	INTERMEDIATE	NA	NA	40-60	25	H	308
61	WF	W FK FACE	3A	3	M/L	WUI	INTERMEDIATE	NA	NA	40-60	25	S	23
61	WF	W FK FACE	3A	3	M/L	WUI/DFB	INTERMEDIATE	NA	NA	40-60	25	T	142
63	WF	WEST	2	4	H/M/L	REFO	SALVAGE/REGEN	NA	N	50-80	39	H	111
63	WF	WEST	2	4	H/M/L	REFO	SALVAGE/REGEN	NA	N	50-80	39	S	12
64	WF	OVERWHICH	2	3	H	REFO	SALVAGE/REGEN	NA	P	50-80	32	H	112
65	WF	OVERWHICH	2	3	H	REFO	SALVAGE/REGEN	NA	N	30-60	25	H	38
65	WF	OVERWHICH	2	3	H	REFO	SALVAGE/REGEN	NA	N	30-60	25	S	25
66	WF	OVERWHICH	2	3	H	REFO	MANUAL/ RX FIRE	SL/HP	P	50-80	43	NA	19
67	WF	OVERWHICH	2	3	H	REFO	MANUAL/ RX FIRE	SL/HP	P	50-80	32	NA	22
68	WF	OVERWHICH	2	3	H	REFO	MANUAL/ RX FIRE	SL/HP	N	50-80	36	NA	6
69	WF	OVERWHICH	2	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	25	H	80
70	WF	OVERWHICH	1/2	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	21	H	7
70	WF	OVERWHICH	1/2	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	40-60	21	S	145
71	WF	OVERWHICH	2	3	H/L	FUELS	MANUAL/ RX FIRE	SL/HP	P	30-60	26	NA	29
72	WF	OVERWHICH	2	3	H/M/L	REFO	MANUAL/ RX FIRE	SL/SP/EX	P	50-80	37	NA	220
73	WF	OVERWHICH	2	3	H/M/L	REFO	SALVAGE/REGEN	NA	P	50-80	38	S	238
73	WF	OVERWHICH	2	3	H/M/L	REFO	SALVAGE/REGEN	SL/SP/EX	P	50-80	28	H	29
75	S-R	SLEEPING CHILD	2	3	M/L	REFO	SALVAGE/REGEN	NA	P	50-80	51	S	8
75	S-R	SLEEPING CHILD	2	3	M/L	REFO	SALVAGE/REGEN	NA	P	50-80	51	T	74
76	S-R	SLEEPING CHILD	3A	3	H/M	FUELS/REFO	SALVAGE/REGEN	NA	P	50-80	25	S	72
77	S-R	SLEEPING CHILD	2/3A	2	M/L	VRU2	MANUAL/ RX FIRE	SL/UB/JP	NA	20-50	20	NA	2021
78	S-R	SLEEPING CHILD	2	3	L	FUELS	MANUAL/ RX FIRE	SL/UB/JP	P	30-60	44	NA	124
79	S-R	SLEEPING CHILD	1/3A	3	H/L	FUELS/REFO	INTERMEDIATE	JP	N	40-60	32	H	59
80	S-R	SLEEPING CHILD	1/3A	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	40-60	32	H	14
81	S-R	SLEEPING CHILD	3A	3	H/M/L	FUELS/DFB	MANUAL/ RX FIRE	SL/HP	NA	40-60	25	NA	114
83	S-R	BLACKTAIL	2/3A	3	L	FUELS/DFB	SALVAGE	NA	NA	30-50	25	H	32
84	S-R	BLACKTAIL	1	3	H/M/L	REFO	SALVAGE/REGEN	WT/JP	P	50-80	47	T	21
85	S-R	BLACKTAIL	2	3	H/L	FUELS/DFB	MANUAL/ RX FIRE	SL/HP	NA	10-40	25	NA	68
86	S-R	BLACKTAIL	2	2	H/L	VRU2	MANUAL/ RX FIRE	SL/HP	NA	10-40	8	NA	40
87	S-R	BLACKTAIL	2	2	L	VRU2	MANUAL/ RX FIRE	SL/HP	NA	10-40	6	NA	51

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
88	S-R	BLACKTAIL	2	2	L	VRU2	INTERMEDIATE	NA	NA	10-40	5	H	189
89	S-R	BLACKTAIL	2	2	L	VRU2	MANUAL/ RX FIRE	SL/HP	NA	10-40	36	NA	25
90	S-R	BLACKTAIL	2/3A	2	L	VRU2	MANUAL/ RX FIRE	SL/HP	NA	10-40	8	NA	194
91	S-R	SLEEPING CHILD	2/3A	3	L	WUI	MANUAL/ RX FIRE	SL/HP	NA	30-60	25	NA	223
92	S-R	SLEEPING CHILD	2/3A	2	L	WUI	INTERMEDIATE	NA	NA	10-60	7	H	124
93	S-R	SLEEPING CHILD	3A	2	L	WUI	INTERMEDIATE	NA	NA	10-60	7	H	142
95	S-R	SLEEPING CHILD	1	3	H/L	FUELS/REFO	INTERMEDIATE	NA	P	40-70	3	H	69
95	S-R	SLEEPING CHILD	1	3	H/L	FUELS/REFO	INTERMEDIATE	NA	P	40-70	3	S	69
96	S-R	SLEEPING CHILD	1	3	H/M	REFO	SALVAGE/REGEN	SL/JP	P	50-80	88	H	78
96	S-R	SLEEPING CHILD	1	3	H/M	REFO	SALVAGE/REGEN	WT/JP	P	50-80	88	S	26
97	S-R	SLEEPING CHILD	1	3	H/L	REFO	SALVAGE/REGEN	NA	P	50-80	25	T	54
98	S-R	SLEEPING CHILD	1	3	H/M/L	REFO	SALVAGE/REGEN	NA	P	50-80	25	T	31
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	SALVAGE/REGEN	JP	P	40-70	56	H	305
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	SALVAGE/REGEN	WT/JP	P	40-70	56	S	156
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	SALVAGE/REGEN	WT/EX	P	40-70	56	T	62
100	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	SALVAGE/REGEN	SP	P	50-80	68	H	216
100	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	SALVAGE/REGEN	WT/SP	P	50-80	68	S	75
100	S-R	LITTLE SLEEPING CHILD	1/2	2	H/M/L	VRU2	SALVAGE/REGEN	WT/EX	P	50-80	68	T	75
101	S-R	LITTLE SLEEPING CHILD	1	2	H/L	VRU2	INTERMEDIATE	NA	P	30-70	44	S	69
102	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	INTERMEDIATE	NA	NA	10-30	8	H	43
102	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	INTERMEDIATE	NA	NA	10-30	8	S	26
102	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	INTERMEDIATE	NA	NA	10-30	8	T	17
103	S-R	LITTLE SLEEPING CHILD	2	2	M/L	VRU2	INTERMEDIATE	NA	NA	10-30	36	H	181
104	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	INTERMEDIATE	NA	NA	30-60	16	H	107
105	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	INTERMEDIATE	NA	NA	30-60	13	S	18
105	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2/DFB	INTERMEDIATE	NA	NA	30-60	13	H	293
106	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	SALVAGE	NA	NA	0-30	15	H	494
107	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	SALVAGE	NA	NA	0-30	15	H	57
108	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	SALVAGE	NA	NA	0-30	15	H	92
109	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	WUI	SALVAGE/REGEN	JP	P	30-80	40	H	258
109	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	WUI	SALVAGE/REGEN	YT	P	30-80	40	S	42
110	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	VRU2	INTERMEDIATE	HP	NA	30-60	52	H	47
110	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	VRU2	INTERMEDIATE	YT	NA	30-60	52	S	16
111	S-R	LITTLE SLEEPING CHILD	2	2	M/L	VRU2	INTERMEDIATE	SL/HP	NA	30-60	30	H	31

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
112	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	INTERMEDIATE	NA	NA	30-60	30	H	117
113	S-R	LITTLE SLEEPING CHILD	1/2	2	L	VRU2	INTERMEDIATE	NA	NA	30-60	33	H	75
114	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	INTERMEDIATE	HP	P	40-70	64	H	29
114	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	INTERMEDIATE	WT/HP	P	40-70	64	S	44
115	S-R	LITTLE SLEEPING CHILD	1	3	M/L	FUELS/DFB	MANUAL/ RX FIRE	SL/SP/EX	NA	40-60	27	NA	157
116	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	MANUAL/ RX FIRE	SL/SP/EX	P	30-80	22	NA	80
118	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	SALVAGE/REGEN	SP/JP	P	50-80	76	H	79
118	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	SALVAGE/REGEN	WT/HP	P	50-80	76	S	27
121	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	FUELS	SALVAGE/SALVAGE/REGEN	NA	P	30-80	64	S	277
121	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	FUELS	SALVAGE/SALVAGE/REGEN	NA	P	30-80	64	T	41
122	S-R	MIKE	2	2	H	VRU2	MANUAL/ RX FIRE	SL/HP	NA	30-50	10	NA	30
123	S-R	MIKE	2	2	H	VRU2	MANUAL/ RX FIRE	SL/HP	NA	30-50	11	NA	15
124	S-R	MIKE	2	2	H	VRU2	SALVAGE/REGEN	WT/SL/JP	P	40-80	86	S	32
126	S-R	MIKE	2	2	H	VRU2	SALVAGE/REGEN	WT/HP	P	40-80	31	S	24
127	S-R	BURKE	2	2	H/M	VRU2	SALVAGE/REGEN	NA	P	50-80	30	H	64
127	S-R	BURKE	2	2	H/M	VRU2	SALVAGE/REGEN	NA	P	50-80	30	S	64
128	S-R	BURKE	2	2	M	VRU2	SALVAGE/REGEN	HP	P	50-80	36	H	45
129	S-R	BURKE	2	2	H/M	VRU2	MANUAL/ RX FIRE	SL/SP/EX	P	50-80	59	NA	103
130	S-R	BURKE	1	2	H	VRU2	SALVAGE/REGEN	WT/HP	P	50-80	38	S	32
131	S-R	BURKE	1	2	H	VRU2	SALVAGE/REGEN	WT/HP	P	50-80	30	S	16
132	S-R	BURKE	1	2	H	VRU2	SALVAGE/REGEN	WT/HP	P	50-80	38	S	12
133	S-R	BURKE	1/2	2	M/L	REFO	SALVAGE/REGEN	NA	P	40-80	39	H	170
134	S-R	DEER HOLLOW	2	2	L	VRU2	INTERMEDIATE	NA	NA	30-50	23	H	162
135	S-R	DEER HOLLOW	2	2	L	VRU2	INTERMEDIATE	SL/JP	NA	30-50	65	H	44
136	S-R	JERRYS GULCH	2	3	H/L	REFO	SALVAGE/REGEN	WT	P	50-80	44	S	16
137	S-R	HARLAN	2	3	M/L	FUELS	SALVAGE/SALVAGE/REGEN	NA	P	40-80	50	T	7
137	S-R	HARLAN	2	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	50	S	40
138	S-R	HARLAN	2	2	M/L	VRU2	INTERMEDIATE	NA	NA	30-50	15	H	103
138	S-R	HARLAN	2	2	M/L	VRU2	INTERMEDIATE	NA	NA	30-50	15	S	21
139	S-R	ROAN	2/3A	3	H/M	REFO	SALVAGE/REGEN	NA	P	50-80	48	S	106
139	S-R	ROAN	2/3A	3	H/M	REFO	SALVAGE/REGEN	NA	P	50-80	48	T	196
140	S-R	ROAN	2	2	L	VRU2	MANUAL/ RX FIRE	SL/UB	P	30-60	28	NA	116
141	S-R	N RYE	1	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	65
142	S-R	N RYE	1	2	H/L	VRU2	SALVAGE/REGEN	NA	P	40-80	15	H	49

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
142	S-R	N RYE	1	2	H/L	VRU2	SALVAGE/REGEN	NA	P	40-80	15	S	57
143	S-R	N RYE	1	2	H/M	VRU2	SALVAGE/REGEN	SL/HP	P	40-80	45	S	37
144	S-R	LOWMAN	1	2	M/L	VRU2	INTERMEDIATE	NA	NA	30-60	18	T	92
145	S-R	LOWMAN	1	2	M/L	VRU2	SALVAGE/REGEN	WT/EX	P	40-80	47	S	30
145	S-R	LOWMAN	1	2	M/L	VRU2	SALVAGE/REGEN	WT/EX	P	40-80	47	T	36
146	S-R	LOWMAN	1	3	M/L	REFO	SALVAGE/REGEN	NA	P	40-80	25	S	64
147	S-R	LOWMAN	1/2	3	M	REFO	SALVAGE/REGEN	NA	P	40-80	31	S	100
147	S-R	LOWMAN	1/2	3	M	REFO	SALVAGE/REGEN	NA	P	40-80	31	T	24
148	S-R	DUGOUT	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	16
149	S-R	N RYE	2	3	H	REFO	SALVAGE/REGEN	SL/HP	P	40-70	123	H	39
150	S-R	N RYE	2	3	H	REFO	SALVAGE/REGEN	WT/YUM	P	40-70	81	H	119
151	S-R	N RYE	3A	3	H	REFO	SALVAGE/REGEN	NA	P	40-70	39	H	17
152	S-R	N RYE	2	3	H/M	REFO	SALVAGE/REGEN	SL/HP	P	40-70	39	H	61
153	S-R	N RYE	3A	3	M	REFO	SALVAGE/REGEN	SL/HP	P	40-70	67	H	73
154	S-R	N RYE	2/3A	3	M	REFO	SALVAGE/REGEN	NA	P	40-70	66	H	71
154	S-R	N RYE	2/3A	3	M	REFO	SALVAGE/REGEN	NA	P	40-70	66	S	21
154	S-R	N RYE	2/3A	3	M	REFO	SALVAGE/REGEN	NA	P	40-70	66	T	10
155	S-R	N RYE	3A	3	M	REFO	SALVAGE/REGEN	SL/JP	P	40-70	35	S	5
156	S-R	N RYE	3A	3	M	REFO	SALVAGE/REGEN	SL/JP	P	40-70	32	H	97
156	S-R	N RYE	3A	3	M	REFO	SALVAGE/REGEN	WT	P	40-70	32	S	12
156	S-R	N RYE	3A	3	M	REFO	SALVAGE/REGEN	WT	P	40-70	32	T	6
157	S-R	N RYE	3A	3	H/M	REFO	SALVAGE/REGEN	NA	P	40-70	32	S	23
157	S-R	N RYE	3A	3	H/M	REFO	SALVAGE/REGEN	NA	P	40-70	32	T	54
158	S-R	N RYE	2	3	H	REFO	SALVAGE/REGEN	SL/SP	P	40-70	34	H	108
160	S-R	N RYE	1	2	H/M	VRU2	SALVAGE/REGEN	WT	P	50-80	48	S	8
160	S-R	N RYE	1	2	H/M	VRU2	SALVAGE/REGEN	WT	P	50-80	48	T	79
161	S-R	N RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	50-80	48	S	48
161	S-R	N RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	50-80	48	T	12
162	S-R	N RYE	1	3	H/M	FUELS/DFB	MANUAL/ RX FIRE	SL/HP	NA	40-60	25	NA	17
163	S-R	N RYE	1	3	H/M	REFO	MANUAL/ RX FIRE	SL/SP/EX	P	50-80	61	NA	160
164	S-R	N RYE	1	4	M	REFO	SALVAGE/REGEN	NA	P	50-80	30	T	104
165	S-R	N RYE	1	3	M/L	REFO	SALVAGE/REGEN	NA	P	50-80	25	H	24
165	S-R	N RYE	1	3	M/L	REFO	SALVAGE/REGEN	NA	P	50-80	25	S	94
166	S-R	N RYE	1	3	M	REFO	SALVAGE/REGEN	WT/EX	P	50-80	62	T	51

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
167	S-R	N RYE	1	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	25	T	1
169	S-R	N RYE	1	3	H/M/L	FUELS/DFB	SALVAGE	YT	NA	30-60	40	S	9
170	S-R	N RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	50-80	25	S	77
170	S-R	N RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	50-80	25	T	8
171	S-R	N RYE	1	3	H/M	FUELS/REFO	PLANTING ONLY	NA	P	NA	NA	NA	85
172	S-R	N RYE	1	3	M	FUELS/DFB	SALVAGE	SL	NA	30-60	68	H	73
173	S-R	N RYE	1	3	M	REFO	SALVAGE/REGEN	SL/SP/EX	P	50-80	101	H	63
174	S-R	N RYE	1	3	M	REFO	SALVAGE/REGEN	SL/JP	P	50-80	63	H	102
175	S-R	N RYE	1	3	M/L	REFO	SALVAGE/REGEN	WT/EX	P	50-80	70	T	45
176	S-R	N RYE	2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	27	T	45
177	S-R	N RYE	1	3	M	REFO	SALVAGE/REGEN	SL/SP/EX	P	50-80	97	H	114
178	S-R	SLEEPING CHILD	1	4	H/L	REFO	SALVAGE/REGEN	SL/JP	N	50-80	63	H	251
178	S-R	SLEEPING CHILD	1	4	H/L	REFO	SALVAGE/REGEN	WT	N	50-80	63	S	178
178	S-R	SLEEPING CHILD	1	4	H/L	REFO	SALVAGE/REGEN	WT	N	50-80	63	T	183
179	S-R	SLEEPING CHILD	1	4	H/M	REFO	SALVAGE/REGEN	SL/SP/EX	N	50-80	60	H	84
180	S-R	SLEEPING CHILD	1	4	H/M	REFO	SALVAGE/REGEN	SL/SP/EX	N	50-80	83	H	193
181	S-R	RYE	1	3	H/M	REFO	SALVAGE/REGEN	WT	P	50-80	71	T	57
182	S-R	RYE	1	4	H/L	REFO	SALVAGE/REGEN	NA	P	50-80	30	H	74
182	S-R	RYE	1	4	H/L	REFO	SALVAGE/REGEN	NA	P	50-80	30	S	58
183	S-R	RYE	1	4	H/M	REFO	SALVAGE/REGEN	NA	P	50-80	48	S	31
184	S-R	RYE	1	3	M/L	REFO	SALVAGE/REGEN	NA	P	50-80	48	H	37
185	S-R	RYE	1	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	N	30-70	39	T	81
186	S-R	RYE	1/2	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	N	30-70	25	T	81
187	S-R	RYE	1/2	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	30-70	25	T	68
187	S-R	RYE	1/2	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	30-70	25	S	64
188	S-R	RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	30-70	26	H	101
188	S-R	RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	30-70	26	S	8
188	S-R	RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	30-70	26	T	8
189	S-R	RYE	1	3	H/L	REFO	SALVAGE/REGEN	NA	P	30-70	43	H	92
189	S-R	RYE	1	3	H/L	REFO	SALVAGE/REGEN	NA	P	30-70	43	S	31
190	S-R	RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	30-70	57	H	40
190	S-R	RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	30-70	57	S	71
190	S-R	RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	30-70	57	T	48
191	S-R	RYE	1	3	L	FUELS/DFB	SALVAGE	NA	NA	30-60	67	H	23

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
191	S-R	RYE	1	3	L	FUELS/DFB	SALVAGE	NA	NA	30-60	67	S	15
192	S-R	RYE	1	3	M/L	REFO	SALVAGE/REGEN	NA	P	50-80	30	H	215
193	S-R	RYE	1	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	25	S	13
193	S-R	RYE	1	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	25	T	116
194	S-R	RYE	1/2	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	43	H	260
194	S-R	RYE	1/2	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	43	S	65
195	S-R	RYE	1/2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	26	H	103
195	S-R	RYE	1/2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	26	S	118
195	S-R	RYE	1/2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	26	T	103
196	S-R	RYE	2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	31	H	56
196	S-R	RYE	2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	31	S	45
196	S-R	RYE	2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	31	T	12
197	S-R	RYE	1/2	2	M/L	VRU2	INTERMEDIATE	WT/HP	NA	30-50	45	S	13
197	S-R	RYE	1/2	2	M/L	VRU2	INTERMEDIATE	WT/EX	NA	30-50	45	T	138
198	S-R	RYE	2	2	H/M	VRU2	INTERMEDIATE	NA	NA	20-50	8	T	503
199	S-R	RYE	2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	20-50	26	H	182
199	S-R	RYE	2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	20-50	26	S	23
199	S-R	RYE	2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	20-50	26	T	23
200	S-R	RYE	2	2	H/M/L	VRU2	INTERMEDIATE	NA	NA	20-30	4	H	181
200	S-R	RYE	2	2	H/M/L	VRU2	INTERMEDIATE	NA	NA	20-30	4	S	22
200	S-R	RYE	2	2	H/M/L	VRU2	INTERMEDIATE	NA	NA	20-30	4	T	22
201	S-R	RYE	2	2	H	VRU2	SALVAGE/REGEN	NA	P	50-80	19	H	40
201	S-R	RYE	2	2	H	VRU2	SALVAGE/REGEN	NA	P	50-80	19	S	5
201	S-R	RYE	2	2	H	VRU2	SALVAGE/REGEN	NA	P	50-80	19	T	5
202	S-R	RYE	2	3	H/M	REFO	SALVAGE/REGEN	NA	P	50-80	25	T	15
203	S-R	RYE	2	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	40-60	25	S	34
203	S-R	RYE	2	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	40-60	25	T	137
204	S-R	RYE	2	3	H/M/L	FUELS/DFB	SALVAGE	WT	NA	20-50	45	S	14
204	S-R	RYE	2	3	H/M/L	FUELS/DFB	SALVAGE	WT	NA	20-50	45	T	14
205	S-R	RYE	2	3	H	REFO	SALVAGE/REGEN	NA	P	50-80	27	S	91
205	S-R	RYE	2	3	H	REFO	SALVAGE/REGEN	NA	P	50-80	27	T	61
206	S-R	RYE	2	3	H/L	REFO	SALVAGE/REGEN	NA	P	50-80	37	H	670
207	S-R	RYE	2	2	H/L	WUI/VRU2	SALVAGE/REGEN	SL/SP/EX	P	50-80	31	H	413
207	S-R	RYE	2	2	H/L	WUI/VRU2	SALVAGE/REGEN	WT	P	50-80	31	S	310

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
207	S-R	RYE	2	2	H/L	WUI/VRU2	SALVAGE/REGEN	WT	P	50-80	31	T	310
208	S-R	RYE	2	2	H/L	WUI	INTERMEDIATE	SL/JP	NA	40-70	32	H	170
208	S-R	RYE	2	2	H/L	WUI	INTERMEDIATE	YT	NA	40-70	32	S	19
209	S-R	RYE	3A	3	H/M	WUI/DFB	INTERMEDIATE	NA	P	40-70	33	H	465
210	S-R	RYE	2/3A	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	12	H	42
210	S-R	RYE	2/3A	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	12	T	8
211	S-R	RYE	2	3	M	FUELS/DFB	SALVAGE	NA	NA	30-50	30	H	14
211	S-R	RYE	2	3	M	FUELS/DFB	SALVAGE	NA	NA	30-50	30	S	6
212	S-R	RYE	2	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	30-50	25	H	17
212	S-R	RYE	2	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	30-50	25	S	17
213	S-R	RYE	3A	3	M	WUI	SALVAGE	NA	NA	30-50	45	H	14
214	S-R	RYE	2/3A	2	H/M	WUI	SALVAGE/REGEN	NA	P	40-80	23	H	314
215	S-R	WHITESELL	2	2	M/L	VRU2	INTERMEDIATE	NA	NA	30-60	20	H	81
216	S-R	WHITESELL	3A	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	25	S	11
217	S-R	ROBBINS	2	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	5	S	21
217	S-R	ROBBINS	2	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	5	T	56
217	S-R	ROBBINS	2	2	M/L	WUI	SALVAGE	NA	NA	30-60	15	H	28
218	S-R	ROBBINS	2	2	H/M/L	VRU2	SALVAGE/REGEN	NA	P	40-80	20	H	78
218	S-R	ROBBINS	2	2	H/M/L	VRU2	SALVAGE/REGEN	NA	P	40-80	20	S	77
218	S-R	ROBBINS	2	2	H/M/L	VRU2	SALVAGE/REGEN	NA	P	40-80	20	T	231
219	S-R	ROBBINS	2	2	M/L	VRU2	SALVAGE/REGEN	NA	P	40-80	25	S	211
219	S-R	ROBBINS	2	2	M/L	VRU2	SALVAGE/REGEN	NA	P	40-80	25	T	52
220	S-R	ROBBINS	2	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	17	H	109
220	S-R	ROBBINS	2	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	17	T	12
221	S-R	SPADE	2	2	H/M/L	WUI	SALVAGE/REGEN	SL/SP/EX	P	40-80	42	H	379
222	S-R	SPADE	3A	3	H	WUI	SALVAGE/REGEN	SL/SP/EX	P	40-80	62	H	135
223	WF	W FK BITTERROOT	2/3A/3C	3	H/M/L	WUI/DFB	INTERMEDIATE	NA	NA	40-60	19	H	727
224	WF	W FK BITTERROOT	3C	3	M/L	WUI/DFB	INTERMEDIATE	SL/SP/EX	NA	40-60	50	H	21
225	WF	W FK BITTERROOT	3A	2	M/L	WUI	INTERMEDIATE	NA	NA	10-30	7	H	110
226	WF	W FK BITTERROOT	3A	2	H/L	VRU2	INTERMEDIATE	NA	NA	20-40	5	H	79
227	WF	W FK BITTERROOT	3A	2	L	VRU2	INTERMEDIATE	NA	NA	30-50	27	H	53
228	WF	W FK BITTERROOT	3A	3	L	FUELS/DFB	SALVAGE	NA	NA	40-60	27	H	53
229	WF	W FK BITTERROOT	3A	2	L	WUI	INTERMEDIATE	NA	NA	10-40	10	H	66
230	WF	W FK BITTERROOT	3A	3	M/L	WUI/DFB	INTERMEDIATE	NA	NA	30-50	15	H	162

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
231	WF	W FK BITTERROOT	3A	3	H/M/L	WUI/DFB	INTERMEDIATE	NA	NA	30-60	30	H	42
233	WF	W FK BITTERROOT	3A	3	H/L	WUI	SALVAGE	NA	NA	20-80	22	H	374
235	WF	W FK BITTERROOT	3A	3	L	WUI	SALVAGE	NA	NA	30-60	25	H	31
236	EF	MEDICINE TREE	2	2	H/L	VRU2	SALVAGE	YT	NA	40-80	31	S	59
238	EF	MEDICINE TREE	2	2	H/L	VRU2	SALVAGE/REGEN	NA	P	10-40	16	H	65
238	EF	MEDICINE TREE	2	2	H/L	VRU2	SALVAGE/REGEN	NA	P	10-40	16	T	262
239	EF	MEDICINE TREE	2	2	H/L	VRU2	INTERMEDIATE	NA	P	20-40	20	H	32
239	EF	MEDICINE TREE	2	2	H/L	VRU2	INTERMEDIATE	NA	P	20-40	20	S	21
240	EF	MEDICINE TREE	2	2	L	VRU2	INTERMEDIATE	NA	NA	40-60	24	H	42
240	EF	MEDICINE TREE	2	2	L	VRU2	INTERMEDIATE	NA	NA	40-60	24	S	28
241	EF	MEDICINE TREE	2	2	L	VRU2	INTERMEDIATE	NA	NA	20-40	8	H	62
242	EF	MEDICINE TREE	2	2	H/M	VRU2	SALVAGE/REGEN	NA	P	40-80	27	H	23
243	EF	MEDICINE TREE	2	2	M/L	VRU2	INTERMEDIATE	NA	NA	30-40	18	S	48
244	EF	MEDICINE TREE	2	2	M	VRU2	SALVAGE/REGEN	WT/YUM	P	40-80	63	S	94
245	EF	MEDICINE TREE	2	2	M/L	VRU2	INTERMEDIATE	NA	NA	10-50	10	T	96
246	EF	MEDICINE TREE	2	2	M/L	VRU2	INTERMEDIATE	NA	P	10-70	6	S	42
246	EF	MEDICINE TREE	2	2	M/L	VRU2	INTERMEDIATE	NA	P	10-70	6	T	170
247	EF	MEDICINE TREE	2	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	20-60	25	T	118
248	EF	MEDICINE TREE	2	2	M/L	VRU2	SALVAGE/REGEN	WT/YUM	P	10-30	42	S	41
249	EF	MEDICINE TREE	2	2	M/L	VRU2	SALVAGE/REGEN	WT/EX	P	10-40	60	T	89
250	EF	MEDICINE TREE	2	2	M/L	VRU2	SALVAGE/REGEN	HP	P	40-80	43	H	22
250	EF	MEDICINE TREE	2	2	M/L	VRU2	SALVAGE/REGEN	WT	P	40-80	43	S	22
251	EF	MEDICINE TREE	2	2	H/M	VRU2	SALVAGE/REGEN	HP	P	30-50	67	S	16
251	EF	MEDICINE TREE	2	2	H/M	VRU2	SALVAGE/REGEN	WT	P	30-50	67	T	9
252	EF	MEDICINE TREE	2	2	H/M	VRU2	SALVAGE/REGEN	WT	P	40-80	48	S	12
253	EF	MEDICINE TREE	2	2	H/M	VRU2	SALVAGE/REGEN	WT	P	40-60	35	S	23
254	EF	MEDICINE TREE	2	3	M/L	REFO	SALVAGE/REGEN	SL/HP	P	40-80	33	S	13
254	EF	MEDICINE TREE	2	3	M/L	REFO	SALVAGE/REGEN	SL/SP/EX	P	40-80	33	T	49
255	EF	MEDICINE TREE	2	2	H/M/L	VRU2	SALVAGE/REGEN	WT	P	10-30	26	S	60
255	EF	MEDICINE TREE	2	2	H/M/L	VRU2	SALVAGE/REGEN	WT	P	10-30	26	T	90
256	EF	MEDICINE TREE	2	2	H/M/L	VRU2	MANUAL/ RX FIRE	SL/UB	P	20-50	25	NA	86
257	EF	MEDICINE TREE	2	3	H/L	REFO	SALVAGE/REGEN	NA	P	40-80	39	S	132
257	EF	MEDICINE TREE	2	3	H/L	REFO	SALVAGE/REGEN	NA	P	40-80	39	T	15
258	EF	MEDICINE TREE	2	2	H	VRU2	SALVAGE/REGEN	HP	P	10-20	27	H	12

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
258	EF	MEDICINE TREE	2	2	H	VRU2	SALVAGE/REGEN	YT	P	10-20	27	S	29
259	EF	MEDICINE TREE	2	2	H	VRU2	SALVAGE/REGEN	WT	P	20-30	30	T	11
260	EF	MEDICINE TREE	2	2	H	VRU2	SALVAGE/REGEN	HP	P	30-60	33	H	14
261	EF	MEDICINE TREE	2	2	H	VRU2	SALVAGE/REGEN	WT/EX/SP	P	20-40	46	S	47
262	EF	MEDICINE TREE	2	2	H	VRU2	SALVAGE/REGEN	WT/EX	P	20-40	75	T	17
265	EF	WHISKEY	3A	2	M/L	WUI	INTERMEDIATE	SL/JP	NA	10-40	35	H	123
269	EF	ELK GULCH	3A	2	L	WUI	INTERMEDIATE	NA	NA	30-60	8	H	328
270	EF	ELK GULCH	3A	2	H/L	WUI	INTERMEDIATE	NA	NA	30-60	21	H	194
274	EF	DICKSON	3A	3/4	H/L	WUI/DFB	INTERMEDIATE	NA	P	40-70	48	H	308
275	EF	DICKSON	3A	3	L	WUI/DFB	INTERMEDIATE	HP	P	10-50	28	H	66
276	EF	BLIND DRAW	2	3	H/M/L	FUELS/REFO	PLANTING ONLY	NA	P	NA	NA	NA	171
277	EF	LAIRD	2	2	H/L	WUI	INTERMEDIATE	NA	P	40-70	7	T	299
278	EF	LAIRD	2	2	H/M	WUI	SALVAGE/REGEN	NA	P	40-80	16	H	26
279	EF	LAIRD	2	2	H/M/L	WUI	INTERMEDIATE	NA	P	30-60	27	H	24
280	EF	LAIRD	1/2	4	H/M/L	WUI	INTERMEDIATE	NA	N	40-70	31	H	89
281	EF	LAIRD	1/2	3	H/M/L	WUI/DFB	INTERMEDIATE	NA	NA	30-60	24	H	96
282	EF	LAIRD	1/2	3	H/L	WUI/DFB	INTERMEDIATE	JP	P	40-70	52	H	201
283	EF	LAIRD	1/2	3	H/M/L	WUI/DFB	INTERMEDIATE	JP	P	40-70	49	H	201
283	EF	LAIRD	1/2	3	H/M/L	WUI/DFB	INTERMEDIATE	WT	P	40-70	49	S	121
283	EF	LAIRD	1/2	3	H/M/L	WUI/DFB	INTERMEDIATE	WT	P	40-70	49	T	80
284	EF	LAIRD	2/3A	2	H/M/L	WUI	SALVAGE/REGEN	JP	P	30-70	36	H	284
284	EF	LAIRD	2/3A	2	H/M/L	WUI	SALVAGE/REGEN	WT	P	30-70	36	S	316
284	EF	LAIRD	2/3A	2	H/M/L	WUI	SALVAGE/REGEN	WT	P	30-70	36	T	32
285	EF	LAIRD	2	3	H/M	REFO	SALVAGE/REGEN	WT	P	20-80	71	S	6
286	EF	LAIRD	1/2	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	40-80	48	H	142
286	EF	LAIRD	1/2	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	40-80	48	S	96
287	EF	LAIRD	1	4	H	REFO	SALVAGE/REGEN	HP	P	40-80	49	H	11
287	EF	LAIRD	1	4	H	REFO	SALVAGE/REGEN	HP	P	40-80	49	S	90
288	EF	LAIRD	1	4	H/L	REFO	SALVAGE/REGEN	NA	N	40-80	42	H	56
289	EF	LAIRD	1/2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	30	H	8
289	EF	LAIRD	1/2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	30	S	74
290	EF	LAIRD	1	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	45	S	74
291	EF	LAIRD	1	3	H/M	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	49	H	44
291	EF	LAIRD	1	3	H/M	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	49	S	19

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
292	EF	LAIRD	1	3	M	FUELS/REFO	SALVAGE/SALVAGE/REGEN	HP	N	40-80	54	H	17
292	EF	LAIRD	1	3	M	FUELS/REFO	SALVAGE/SALVAGE/REGEN	WT	N	40-80	54	T	7
293	EF	LAIRD	1	3	H/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	JP	N	40-80	61	H	91
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	SALVAGE/REGEN	HP	P	40-80	28	H	185
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	SALVAGE/REGEN	YT	P	40-80	28	S	232
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	SALVAGE/REGEN	YT	P	40-80	28	T	66
296	EF	LORD DRAW	2/3A	2	H/M	WUI	SALVAGE/REGEN	NA	P	40-80	41	H	57
296	EF	LORD DRAW	2/3A	2	H/M	WUI	SALVAGE/REGEN	NA	P	40-80	41	S	57
297	EF	LORD DRAW	2/3A	2	H	VRU2	SALVAGE/REGEN	JP	P	40-80	49	H	107
297	EF	LORD DRAW	2/3A	2	H	VRU2	SALVAGE/REGEN	WT	P	40-80	49	T	5
298	EF	WARM SPRINGS	2	2	H/M/L	VRU2	PLANTING ONLY	NA	P	NA	NA	NA	55
299	EF	WARM SPRINGS	2	3	L	FUELS/DFB	SALVAGE	NA	NA	30-60	22	S	32
300	EF	WARM SPRINGS	2	3	M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	26	H	46
301	EF	WARM SPRINGS	2	3	L	FUELS/DFB	SALVAGE	NA	NA	30-60	28	H	34
302	EF	WARM SPRINGS	1/2	3	H/L	FUELS/REFO	SALVAGE/REGEN	SL/JP	N	30-60	52	H	86
304	EF	WARM SPRINGS	1	4	M/L	REFO	SALVAGE/REGEN	SL/JP	N	40-80	83	H	42
306	EF	WARM SPRINGS	2	3	L	FUELS/REFO	MANUAL/ RX FIRE	SL/UB	N	40-80	51	NA	31
307	EF	WARM SPRINGS	1/2	3	H/M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	N	40-80	43	H	55
308	EF	WARM SPRINGS	1/2	3	H/M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	N	40-80	41	H	322
309	EF	WARM SPRINGS	1/2	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	40-60	27	H	204
310	EF	WARM SPRINGS	2	2	M/L	FUELS	INTERMEDIATE	NA	NA	40-60	25	H	59
311	EF	WARM SPRINGS	2	2	M/L	WUI	INTERMEDIATE	NA	N	40-70	36	H	318
312	EF	WARM SPRINGS	2/3A	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	22	H	48
313	EF	WARM SPRINGS	2/3A	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	20	H	128
314	EF	WARM SPRINGS	3A	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	21	H	109
315	EF	E FK BITTERROOT	3A	2	H/M/L	WUI	INTERMEDIATE	NA	NA	30-60	20	H	36
316	EF	E FK BITTERROOT	3A	2	H/L	WUI	INTERMEDIATE	NA	NA	30-60	14	H	108
316	EF	E FK BITTERROOT	3A	2	H/L	WUI	INTERMEDIATE	NA	NA	30-60	14	S	18
317	EF	E FK BITTERROOT	2/3A	2	H/L	WUI	SALVAGE/REGEN	SL/SP/EX	P	40-80	46	H	75
318	EF	E FK BITTERROOT	2/3A	2/3	H/M/L	WUI	INTERMEDIATE	SL/SP/EX	N	40-70	49	H	387
319	EF	MAYNARD	2/3A	2/3	H/M/L	VRU2	INTERMEDIATE	SL/SP/EX	N	40-70	47	H	262
319	EF	MAYNARD	2/3A	2/3	H/M/L	VRU2	INTERMEDIATE	WT	N	40-70	47	S	38
320	EF	MAYNARD	2	3	H/L	REFO	SALVAGE/REGEN	SP	N	40-80	78	H	70
321	EF	MAYNARD	2	3	H	REFO	SALVAGE/REGEN	SP	N	40-80	60	H	85

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
322	EF	MAYNARD	1	3	H/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	30-60	24	H	89
322	EF	MAYNARD	1	3	H/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	30-60	24	S	89
323	EF	MAYNARD	1	3	H/M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	38	H	46
323	EF	MAYNARD	1	3	H/M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	38	S	18
324	EF	MAYNARD	2	3	H/L	FUELS/DFB	SALVAGE	NA	NA	30-60	31	H	50
324	EF	MAYNARD	2	3	H/L	FUELS/DFB	SALVAGE	NA	NA	30-60	31	S	118
324	EF	MAYNARD	2	3	H/L	FUELS/DFB	SALVAGE	NA	NA	30-60	31	T	30
325	EF	MAYNARD	1/2	3	H/L	REFO	SALVAGE/REGEN	WT/HP	P	40-80	83	S	28
325	EF	MAYNARD	1/2	3	H/L	REFO	SALVAGE/REGEN	WT/EX	P	40-80	83	T	29
326	EF	MAYNARD	1	3	H/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	46	S	35
327	EF	MAYNARD	1/2	3	H/L	FUELS/DFB	SALVAGE	NA	NA	30-60	40	T	42
328	EF	MAYNARD	1/2	4	H/L	REFO	SALVAGE/REGEN	SL/JP	N	40-80	73	H	58
328	EF	MAYNARD	1/2	4	H/L	REFO	SALVAGE/REGEN	WT/JP	N	40-80	73	S	7
328	EF	MAYNARD	1/2	4	H/L	REFO	SALVAGE/REGEN	WT/EX	N	40-80	73	T	24
329	EF	MAYNARD	1	3	H/L	REFO	Salvage/Regen	SL/JP	N	40-80	84	H	31
330	EF	MAYNARD	1	3	H/L	REFO	Salvage/Regen	JP	N	40-80	66	TLM	98
330	EF	MAYNARD	1	3	H/L	REFO	Salvage/Regen	WT	N	40-80	66	T	24
331	EF	MAYNARD	1	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	31	H	25
331	EF	MAYNARD	1	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	40-60	31	S	24
332	EF	MAYNARD	1	4	H	REFO	Salvage/Regen	SL/HP	N	40-80	63	H	21
332	EF	MAYNARD	1	4	H	REFO	Salvage/Regen	WT/HP	N	40-80	63	S	17
333	EF	ANDREWS	2/3A	3	H/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	SL/UB	N	30-60	88	S	96
334	EF	ANDREWS	2/3A	3	M/L	FUELS/DFB	SALVAGE	NA	NA	40-80	25	S	25
340	EF	PRAINE	1/3A	3	H/M/L	REFO	SALVAGE/REGEN	NA	P	40-80	50	H	114
341	EF	ANDREWS	3A	2	H	WUI	SALVAGE/REGEN	HP	P	40-80	45	H	36
342	EF	ANDREWS	3A	2	H	WUI	SALVAGE/REGEN	SL/HP	P	40-80	40	H	14
343	EF	WAUGH	1/2	3	H/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	N	40-80	38	H	63
345	EF	WAUGH	3A	2	L	WUI	MANUAL/ RX FIRE	SL/UB	P	30-60	22	NA	12
346	EF	CAMP	3A	2	H	WUI	MANUAL/ RX FIRE	SL/SP/EX	P	30-60	30	NA	108
347	EF	CAMP	1/2/3A	3	H/M/L	WUI	SALVAGE/REGEN	SL/SP/EX	N	40-80	63	H	393
348	EF	W FK CAMP	2/3A	2	H/L	WUI	SALVAGE	SL/SP/EX	NA	30-60	35	H	120
349	EF	CAMP	3A	2	L	WUI	MANUAL/ RX FIRE	SL/HP	NA	30-60	12	NA	43
350	EF	DICK	1/2	3	H/M/L	WUI	SALVAGE/REGEN	NA	P	40-80	59	H	213
350	EF	DICK	1/2	2	H	WUI	SALVAGE/REGEN	SL/SP/EX	P	40-80	56	H	682

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
350	EF	DICK	1/2	2	H	WUI	SALVAGE/REGEN	SL/SP/EX	P	40-80	56	S	72
351	EF	DICK	1/2	2	H	WUI	SALVAGE/REGEN	SL/SP/EX	P	40-80	56	T	83
351	EF	DICK	1/2	3	H/M/L	WUI	SALVAGE/REGEN	SL/SP/EX	P	40-80	59	S	89
353	EF	CAMP	2/3A	2	H	WUI	SALVAGE/REGEN	WT/EX/SP	N	30-60	41	H	62
353	EF	CAMP	2/3A	2	H	WUI	SALVAGE/REGEN	SL/SP/JP	N	30-60	41	S	22
353	EF	CAMP	2/3A	2	H	WUI	SALVAGE/REGEN	WT	N	30-60	41	T	4
354	EF	CAMP	2/3A	2	H/L	WUI	SALVAGE/REGEN	SP/JP	N	30-60	32	H	37
354	EF	CAMP	2/3A	2	H/L	WUI	SALVAGE/REGEN	SL/SP	N	30-60	32	S	19
355	EF	CAMP	2	2	H/L	WUI	SALVAGE/REGEN	WT/YUM	N	30-60	48	H	15
355	EF	CAMP	2	2	H/L	WUI	SALVAGE/REGEN	WT/YUM	N	30-60	48	S	5
356	EF	CAMP	3A	2	L	WUI	INTERMEDIATE	SL/SP	NA	30-60	24	H	22
356	EF	CAMP	3A	2	L	WUI	INTERMEDIATE	WT/YUM	NA	30-60	24	S	28
356	EF	CAMP	3A	2	L	WUI	INTERMEDIATE	SL/SP	NA	30-60	24	T	12
357	EF	CAMP	2/3A	2	H/L	WUI	SALVAGE/REGEN	WT/HP	P	30-60	38	H	44
357	EF	CAMP	2/3A	2	H/L	WUI	SALVAGE/REGEN	SL/JP	P	30-60	38	S	26
357	EF	CAMP	2/3A	2	H/L	WUI	SALVAGE/REGEN	WT	P	30-60	38	T	17
358	EF	CAMP	2/3A	2	H/L	WUI	SALVAGE/REGEN	WT	P	30-60	36	H	54
358	EF	CAMP	2/3A	2	H/L	WUI	SALVAGE/REGEN	SL/SP	P	30-60	36	S	10
358	EF	CAMP	2/3A	2	H/L	WUI	SALVAGE/REGEN	WT/YUM	P	30-60	36	T	4
359	EF	CAMP	3A	2	H/L	WUI	INTERMEDIATE	WT/YUM	NA	30-60	28	H	97
359	EF	CAMP	3A	2	H/L	WUI	INTERMEDIATE	SL/SP	NA	30-60	28	S	48
359	EF	CAMP	3A	2	H/L	WUI	INTERMEDIATE	WT/YUM	NA	30-60	28	T	16
360	EF	CAMP	3A	2	H/M/L	WUI	INTERMEDIATE	WT/YUM	NA	30-60	23	H	34
360	EF	CAMP	3A	2	H/M/L	WUI	INTERMEDIATE	NA	NA	30-60	23	T	34
361	EF	CAMP	3A	2	H/L	WUI	INTERMEDIATE	NA	NA	30-60	34	H	20
362	EF	CAMP	3A	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	34	H	3
363	EF	CAMP	3A	2	H/M/L	WUI	INTERMEDIATE	NA	NA	30-60	21	H	157
363	EF	CAMP	3A	2	H/M/L	WUI	INTERMEDIATE	NA	NA	30-60	21	S	26
363	EF	CAMP	3A	2	H/M/L	WUI	INTERMEDIATE	HP	NA	30-60	21	T	79
364	EF	REIMEL	2/3A	3	H/M	FUELS/REFO	SALVAGE/SALVAGE/REGEN	HP	N	40-80	37	H	274
364	EF	REIMEL	2/3A	3	H/M	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	N	40-80	37	S	15
364	EF	REIMEL	2/3A	3	H/M	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	N	40-80	37	T	16
365	EF	REIMEL	2/3A	2	M/L	WUI	INTERMEDIATE	NA	NA	30-60	12	H	44
366	EF	REIMEL	2/3A	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	30-60	24	H	67

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
367	EF	REIMEL	2	3	H	FUELS/REFO	SALVAGE/REGEN	NA	N	30-60	81	H	30
368	EF	REIMEL	2/3A	3	H/L	FUELS/DFB	SALVAGE	NA	NA	30-60	32	H	33
369	EF	REIMEL	2	2	H/L	VRU2	MANUAL/ RX FIRE	SL/HP	N	30-60	15	NA	34
370	EF	REIMEL	2	3	H/L	REFO	SALVAGE/REGEN	NA	N	40-80	51	H	36
372	EF	TOLAN	2	3	L	FUELS/DFB	SALVAGE	NA	NA	40-80	26	H	71
373	EF	TOLAN	3A	2	L	VRU2	INTERMEDIATE	SL/HP	NA	30-60	23	H	35
374	EF	TOLAN	3A	3	L	FUELS/DFB	SALVAGE	NA	NA	30-60	25	H	71
375	EF	TOLAN	3A	2	L	VRU2	INTERMEDIATE	SL/JP	NA	30-60	16	H	33
376	EF	E FK BITTERROOT	2	3	L	FUELS/DFB	MANUAL/ RX FIRE	SL/JP	NA	40-80	31	NA	14
377	EF	JENNINGS	1	3	L	FUELS	MANUAL/ RX FIRE	SL/HP	NA	10-40	25	NA	32
378	EF	GUIDE	1	3	L	FUELS/DFB	MANUAL/ RX FIRE	SL/HP	NA	10-40	25	NA	88
379	EF	GUIDE	2	3	L	FUELS/DFB	SALVAGE	NA	NA	10-40	25	H	20
380	EF	E FK BITTERROOT	1/2/3A	2	L	VRU2	SALVAGE	NA	NA	10-60	18	H	341
381	EF	CAMERON	3A	2	H/L	WUI	SALVAGE/REGEN	NA	P	40-80	25	H	501
382	EF	CAMERON	2/3A	2	H/M/L	VRU2	SALVAGE/REGEN	NA	P	40-80	38	H	831
383	EF	CAMERON	2	2	H/M/L	VRU2	SALVAGE/REGEN	NA	P	40-80	31	T	109
384	EF	CAMERON	2	3	M/L	REFO	SALVAGE/REGEN	NA	P	40-80	25	T	118
385	EF	CAMERON	2	3	H/M/L	REFO	SALVAGE/REGEN	SL/SP/HP	P	40-80	41	S	192
386	EF	CAMERON	2	2	H/M	VRU2	INTERMEDIATE	SL/SP/HP	P	40-70	25	S	107
386	EF	CAMERON	2	2	H/M	VRU2	INTERMEDIATE	WT	P	40-70	25	T	107
386	EF	CAMERON	2	2	H/M	VRU2	INTERMEDIATE	NA	P	40-70	25	H	107
387	EF	CAMERON	2	2	H	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	34	S	111
387	EF	CAMERON	2	2	H	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	40-80	34	T	222
388	EF	HART	2	3	M	FUELS/REFO	SALVAGE/SALVAGE/REGEN	YT	P	20-60	27	S	53
388	EF	HART	2	3	M	FUELS/REFO	SALVAGE/SALVAGE/REGEN	WT	P	20-60	27	T	54
389	EF	CAMERON	2	2	H	FUELS/REFO	SALVAGE/SALVAGE/REGEN	YT	P	40-80	34	H	131
389	EF	HART	2	2	H/M	VRU2	INTERMEDIATE	WT	P	30-60	22	H	110
389	EF	HART	2	2	H/M	VRU2	INTERMEDIATE	SL/JP	P	30-60	22	S	48
390	EF	HART	2	2	H	VRU2	SALVAGE/REGEN	NA	P	40-80	41	S	33
391	EF	HART	2	2	L	VRU2	INTERMEDIATE	NA	NA	30-60	27	S	23
391	EF	HART	2	2	L	VRU2	INTERMEDIATE	NA	NA	30-60	27	T	24
392	EF	HART	2	2	H/M/L	VRU2	INTERMEDIATE	NA	P	30-60	35	S	39
392	EF	HART	2	2	H/M/L	VRU2	INTERMEDIATE	WT	P	30-60	35	T	156
393	EF	CAMERON	1	3	M	REFO	SALVAGE/REGEN	NA	P	40-80	25	S	23

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
394	EF	JENNINGS	2	3	M	FUELS/DFB	SALVAGE	NA	NA	10-40	25	H	113
394	EF	JENNINGS	2	3	M	FUELS/DFB	SALVAGE	NA	NA	10-40	25	S	102
394	EF	JENNINGS	2	3	M	FUELS/DFB	SALVAGE	NA	NA	10-40	25	T	12
395	EF	JENNINGS	2	3	L	FUELS/DFB	MANUAL/ RX FIRE	SL/HP	NA	10-40	25	NA	91
396	EF	JENNINGS	1/2	3	L	FUELS/DFB	MANUAL/ RX FIRE	SL/HP	NA	10-40	25	NA	186
398	EF	MEADOW	1	3	H/M	REFO	SALVAGE/REGEN	NA	N	40-80	78	S	55
399	EF	BUGLE	1	2	L	VRU2	INTERMEDIATE	NA	NA	30-70	21	T	53
400	EF	MEADOW	1	2	L	VRU2	MANUAL/ RX FIRE	SL/HP	NA	30-60	22	NA	25
401	EF	MEADOW	1	3	H/L	REFO	SALVAGE/REGEN	YT	N	40-80	53	H	94
402	EF	MEADOW	1	2	H/L	VRU2	INTERMEDIATE	YT	NA	30-60	32	H	101
403	EF	MEADOW	1	4	H/M/L	REFO	SALVAGE/REGEN	SL/JP	N	40-80	49	H	216
403	EF	MEADOW	1	4	H/M/L	REFO	SALVAGE/REGEN	WT	N	40-80	49	S	216
404	EF	MEADOW	1	4	H/M	REFO	SALVAGE/REGEN	SL/JP	N	40-80	73	H	165
404	EF	MEADOW	1	4	H/M	REFO	SALVAGE/REGEN	NA	N	40-80	73	S	41
405	EF	TOLAN	1	4	H/L	REFO	SALVAGE/REGEN	NA	N	50-80	44	H	143
405	EF	TOLAN	1	4	H/L	REFO	SALVAGE/REGEN	YT	N	50-80	44	S	67
405	EF	TOLAN	1	4	H/L	REFO	SALVAGE/REGEN	SL/JP	N	50-80	44	T	62
406	EF	TOLAN	1	4	H/L	REFO	SALVAGE/REGEN	WT/YUM	N	50-80	54	H	372
406	EF	TOLAN	1	4	H/L	REFO	SALVAGE/REGEN	NA	N	50-80	54	S	106
406	EF	TOLAN	1	4	H/L	REFO	SALVAGE/REGEN	NA	N	50-80	54	T	54
407	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	37	H	206
407	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	37	T	52
408	EF	TOLAN	1	4	H/L	REFO	Salvage	YT	N	50-80	47	T	52
410	EF	TOLAN	1	4	H/M/L	REFO	SALVAGE/REGEN	NA	N	50-80	53	H	765
411	EF	TOLAN	1	4	H/M/L	REFO	SALVAGE/REGEN	NA	N	50-80	43	H	151
411	EF	TOLAN	1	4	H/M/L	REFO	SALVAGE/REGEN	SL/JP	N	50-80	43	S	125
414	S-R	DALY	3A	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	2
415	S-R	DALY	3A	4	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	20
416	S-R	LITTLE SLEEPING CHILD	2	2	M/L	REFO	MANUAL/ RX FIRE	SL/SP	P	10-50	24	NA	48
417	S-R	LITTLE SLEEPING CHILD	2	2	L	REFO	MANUAL/ RX FIRE	SL/SP	P	10-50	20	NA	56
418	S-R	SKALKAHO	1	4	M/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	32
419	S-R	LITTLE SLEEPING CHILD	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	28
420	S-R	SKALKAHO	1	4	H/M	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	13	NA	62
421	S-R	SKALKAHO	1	4	M/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	54

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
422	S-R	LITTLE SLEEPING CHILD	2	3	M/L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	30	NA	24
423	S-R	LITTLE SLEEPING CHILD	2	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	19
424	S-R	SKALKAHO	1	4	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	33
425	S-R	LITTLE SLEEPING CHILD	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	60
426	S-R	SKALKAHO	1	4	H	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	14	NA	33
427	S-R	SKALKAHO	1	4	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	56
428	S-R	SKALKAHO	1	4	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	2
429	S-R	LITTLE SLEEPING CHILD	2	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	22
430	S-R	SKALKAHO	1	4	H/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	43
431	S-R	LITTLE SLEEPING CHILD	2	3	H/M/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	42
432	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	5
433	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	8
434	S-R	LITTLE SLEEPING CHILD	2	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	19
435	S-R	SKALKAHO	1	4	H/L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	19	NA	28
436	S-R	SKALKAHO	1	4	H/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	97
437	S-R	SKALKAHO	1	4	H/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	20
438	S-R	LITTLE SLEEPING CHILD	2	3	H/M/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	53
439	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	30
440	S-R	LITTLE SLEEPING CHILD	2	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	12
441	S-R	LITTLE SLEEPING CHILD	1	3	H/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	31
442	S-R	SKALKAHO	2	4	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	20
443	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	8
444	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	22	NA	42
445	S-R	LITTLE SLEEPING CHILD	2	2	H/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	27
446	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	44
447	S-R	SKALKAHO	2	4	H	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	21	NA	12
448	S-R	LITTLE SLEEPING CHILD	1	4	M	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	26	NA	22
449	S-R	SKALKAHO	1	4	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	35
450	S-R	SKALKAHO	1	4	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	35
451	S-R	SKALKAHO	1	4	H/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	18
452	S-R	SLEEPING CHILD	1	4	H/L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	19	NA	18
453	S-R	SLEEPING CHILD	2	4	L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	26	NA	14
454	S-R	RYE	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	70
455	S-R	LITTLE SLEEPING CHILD	1	3	H/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	51

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
456	S-R	SLEEPING CHILD	1	4	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	34
457	S-R	SLEEPING CHILD	1	4	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	19
458	S-R	SLEEPING CHILD	1	4	M	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	30	NA	11
459	S-R	SLEEPING CHILD	1	4	M	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	26	NA	12
460	S-R	SLEEPING CHILD	1	4	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	10
461	S-R	SLEEPING CHILD	1	4	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	16
462	S-R	SLEEPING CHILD	2	4	M	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	25	NA	92
463	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	88
464	S-R	SLEEPING CHILD	1	4	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	44
465	S-R	SLEEPING CHILD	1	4	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	77
466	S-R	SLEEPING CHILD	1	4	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	14
467	S-R	SLEEPING CHILD	1	4	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	11
468	S-R	SLEEPING CHILD	1	4	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	20
469	S-R	SLEEPING CHILD	2	4	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	35
470	S-R	LITTLE SLEEPING CHILD	1	4	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	146
471	S-R	SLEEPING CHILD	1	4	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	11
472	S-R	LOWMAN	1	4	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	12
473	S-R	LOWMAN	1	4	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	13
474	S-R	LOWMAN	2	4	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	89
475	S-R	N RYE	2	4	M/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	65
476	S-R	N RYE	2	3	M/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	60
477	S-R	BURKE	2	3	M/H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	19
478	S-R	BURKE	1	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	5
479	S-R	LOWMAN	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	13
480	S-R	BURKE	1	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	11
481	S-R	N RYE	1	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	41
482	S-R	N RYE	1	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	56
483	S-R	LOWMAN	1	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	5
484	S-R	LOWMAN	1	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	26
485	S-R	N RYE	1	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	51
486	S-R	N RYE	1	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	29
487	S-R	N RYE	1	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	37
488	S-R	N RYE	1	2	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	50
489	S-R	N RYE	1	2	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	57

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
490	S-R	RYE	1	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	14
491	S-R	RYE	1	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	26
492	S-R	RYE	1	4	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	5
493	S-R	N RYE	1	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	26
494	S-R	N RYE	1	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	35
495	S-R	N RYE	2	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	22
496	EF	CAMERON	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	4
497	S-R	N RYE	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	30
498	S-R	RYE	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	87
499	S-R	RYE	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	15
500	S-R	RYE	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	4
501	S-R	N RYE	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	36
502	S-R	RYE	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	11
503	S-R	RYE	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	9
504	S-R	N RYE	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	23
505	S-R	N RYE	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	91
506	S-R	N RYE	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	18
507	S-R	RYE	3A	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	29
508	S-R	RYE	3A	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	11
509	S-R	RYE	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	80
510	S-R	RYE	3A	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	43
511	EF	DORAN	3A	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	15
512	S-R	RYE	3A	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	8
513	EF	MEDICINE TREE	3A	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	32
514	EF	MEDICINE TREE	3A	2	H/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	21
515	S-R	RYE	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	19
516	S-R	RYE	3A	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	16
517	EF	MEDICINE TREE	1	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	5
518	EF	CAMERON	3A	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	11
519	EF	MEDICINE TREE	3A	2	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	15
520	EF	MEDICINE TREE	2	2	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	35
521	EF	LYMAN	3A	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	51
522	EF	MEDICINE TREE	3A	2	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	15
523	S-R	RYE	2	3	H/M/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	33

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
524	EF	CAMERON	1	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	44
525	EF	CAMERON	2	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	13
526	EF	LYMAN	3A	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	13
527	EF	DORAN	2	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	3
528	EF	LYMAN	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	6
529	EF	CAMERON	3A	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	19
530	EF	DORAN	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	4
531	EF	LYMAN	3A	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	15
532	EF	MEDICINE TREE	2	2	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	27
533	EF	LYMAN	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	4
534	EF	LYMAN	3A	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	14
535	EF	MEDICINE TREE	2	2	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	12
536	EF	LYMAN	2	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	13
537	EF	LYMAN	3A	2	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	13
538	EF	MEDICINE TREE	3A	2	M/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	74
539	EF	MEDICINE TREE	3A	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	14
540	EF	MEDICINE TREE	1	2	H	REFO	MANUAL/ RX FIRE	SL/HP	P	10-50	25	NA	17
541	EF	MEADOW	3A	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	122
542	EF	MEDICINE TREE	1	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	4
543	EF	MEADOW	2	3	L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	22	NA	6
544	EF	TOLAN	3A	4	NI	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	26	NA	16
545	EF	LAIRD	3A	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	19
546	EF	LAIRD	3A	3	H/L	REFO	PLANTING ONLY	NA	P	NA	NA	NA	59
547	EF	WARM SPRINGS	3A	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	31
548	EF	WARM SPRINGS	3A	2	M	REFO	MANUAL/ RX FIRE	SL/HP	P	10-50	22	NA	65
549	EF	WARM SPRINGS	3A	3	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	21
551	EF	LAIRD	3A	2	M/L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-50	20	NA	23
552	EF	LAIRD	3A	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	52
553	EF	WARM SPRINGS	3A	2	M	REFO	MANUAL/ RX FIRE	SL/HP	P	10-50	21	NA	19
554	EF	WARM SPRINGS	3A	3	M/L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	26	NA	81
555	EF	WARM SPRINGS	3A	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	38
556	EF	ANDREWS	3A	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	8
557	EF	ANDREWS	3A	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	3
558	EF	ANDREWS	3A	4	L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	26	NA	49

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
559	EF	ANDREWS	3A	3	H	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	25	NA	3
560	EF	ANDREWS	3A	3	H	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	25	NA	23
561	EF	ANDREWS	2	3	H	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	25	NA	7
562	EF	WAUGH	2	2	L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-50	25	NA	12
563	EF	WAUGH	3A	2	H	REFO	MANUAL/ RX FIRE	SL/HP	P	10-50	20	NA	24
564	EF	REIMEL	2	2	L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-50	21	NA	11
565	WF	LITTLE BLUE JOINT	3A	2	M	REFO	MANUAL/ RX FIRE	SL/HP	P	10-50	20	NA	27
566	WF	LITTLE BLUE JOINT	2	2	H	REFO	MANUAL/ RX FIRE	SL/HP	P	10-50	20	NA	7
567	WF	LITTLE BLUE JOINT	2	2	H	REFO	PLANTING ONLY	NA	P	NA	NA	NA	30
568	WF	LITTLE BLUE JOINT	2	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	10
569	WF	LITTLE BLUE JOINT	2	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	9
570	WF	LITTLE BLUE JOINT	2	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	30
571	WF	LITTLE BLUE JOINT	2	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	12
572	WF	LITTLE BLUE JOINT	2	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	32
573	WF	LITTLE BLUE JOINT	2	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	11
574	WF	LITTLE BLUE JOINT	2	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	15
575	WF	LITTLE BLUE JOINT	2	3	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	11
576	WF	COAL	2	2	M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	7
577	WF	COAL	1	2	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	22
578	WF	COAL	3A	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	57
579	WF	WEST	2	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	38
580	WF	COAL	2	3	H/M	REFO	PLANTING ONLY	NA	P	NA	NA	NA	69
581	WF	WEST	2	3	L	REFO	MANUAL/ RX FIRE	SL/HP	P	10-40	22	NA	30
589	S-R	SLEEPING CHILD	1	3	H/M/L	FUELS/DFB	SALVAGE	WT/EX	NA	40-60	65	T	30
590	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	FUELS	SALVAGE/SALVAGE/REGEN	NA	P	30-80	22	T	7
591	S-R	BURKE	1/2	2	M/L	REFO	SALVAGE/REGEN	JP	P	40-80	33	H	122
592	S-R	N RYE	1	3	H/M/L	FUELS/REFO	INTERMEDIATE	NA	P	40-70	9	S	47
592	S-R	N RYE	1	3	H/M/L	FUELS/REFO	INTERMEDIATE	NA	P	40-70	9	T	47
594	EF	LAIRD	2	2	H/L	WUI	INTERMEDIATE	NA	P	40-70	8	T	27
595	EF	LAIRD	2	2	H/L	WUI	INTERMEDIATE	NA	P	40-70	7	T	22
596	EF	WARM SPRINGS	2	3	L	FUELS/DFB	INTERMEDIATE	WT	NA	40-60	43	S	19
596	EF	MEDICINE TREE	2	3	M/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	NA	P	20-60	25	T	79
597	EF	WARM SPRINGS	2	3	L	FUELS/DFB	INTERMEDIATE	UB	NA	40-60	82	H	27
598	EF	MAYNARD	3A	2	H/L	WUI	INTERMEDIATE	JP	P	40-70	56	H	245

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
598	EF	MAYNARD	3A	2	H/L	WUI	INTERMEDIATE	WT/JP	P	40-70	56	S	29
599	EF	MAYNARD	1	3	H/M/L	REFO	SALVAGE/REGEN	WT/JP	P	40-80	59	S	27
599	EF	MAYNARD	1	3	H/M/L	REFO	SALVAGE/REGEN	WT/JP	P	40-80	59	T	26
601	EF	GUIDE	1	3	L	FUELS/DFB	SALVAGE	NA	NA	10-40	38	H	16
602	EF	JENNINGS	2	3	L	FUELS/DFB	SALVAGE	NA	NA	10-40	37	S	14
603	EF	JENNINGS	2	3	L	FUELS/DFB	SALVAGE	WT	NA	10-40	43	S	5
604	EF	JENNINGS	2	3	L	FUELS/DFB	SALVAGE	WT	NA	10-40	63	T	13
605	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	INTERMEDIATE	WT	NA	20-40	10	T	5
606	S-R	BURKE	2	2	H	VRU2	SALVAGE/REGEN	WT/YUM	P	50-80	62	S	31
607	S-R	RYE	1	3	L	FUELS/DFB	SALVAGE	NA	NA	30-60	38	H	153
608	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	INTERMEDIATE	NA	NA	10-30	8	S	94
610	B	COW	3A	2	H	WUI	SALVAGE/REGEN	SL/HP	P	30-70	39	T	14
611	B	SHEAFMAN	3A	2	H/M/L	WUI	SALVAGE/REGEN	HP	P	30-70	54	H	30
611	B	SHEAFMAN	3A	2	H/M/L	WUI	SALVAGE/REGEN	WT/YUM	P	30-70	54	S	180
611	B	SHEAFMAN	3A	2	H/M/L	WUI	SALVAGE/REGEN	WT/EX	P	30-70	54	T	90
613	S-R	S FK SKALKAHO	1	3	H/M	REFO	SALVAGE/REGEN	NA	N	40-70	24	H	28
613	S-R	S FK SKALKAHO	1	3	H/M	REFO	SALVAGE/REGEN	NA	N	40-70	24	S	7
614	S-R	S FK SKALKAHO	1	3	H/L	REFO	SALVAGE/REGEN	NA	P	40-70	28	H	110
614	S-R	S FK SKALKAHO	1	3	H/L	REFO	SALVAGE/REGEN	NA	P	40-70	28	S	110
700	WF	PIQUETT	1	3	H/M	REFO	SALVAGE/REGEN	JP	N	50-80	29	H	120
701	WF	PIQUETT	1	3	M/L	FUELS/DFB	SALVAGE/REGEN	NA	N	20-50	25	H	387
702	WF	OVERWHICH	2	3	H	REFO	MANUAL/ RX FIRE	SL/HP	P	50-80	43	NA	28
703	WF	PAINTED ROCKS LAKE	3A	3	L	WUI/DFB	INTERMEDIATE	SL/HP	NA	30-60	53	H	65
704	WF	OVERWHICH	2	3	H	REFO	SALVAGE/REGEN	NA	P	50-80	35	S	20
705	WF	OVERWHICH	2	3	H/L	FUELS	SALVAGE/SALVAGE/REGEN	WT	P	30-60	43	S	21
705	WF	OVERWHICH	2	3	H/L	FUELS	SALVAGE/SALVAGE/REGEN	WT	P	30-60	43	T	48
706	WF	BLUE JOINT	3A	3	H/M/L	WUI	SALVAGE/REGEN	NA	P	40-80	32	S	126
707	WF	LITTLE BLUE JOINT	2	3	H/M	REFO	SALVAGE/REGEN	NA	P	40-80	25	S	23
708	WF	LITTLE BLUE JOINT	2	3	H/M	REFO	SALVAGE/REGEN	NA	P	40-80	49	S	7
709	WF	LITTLE BLUE JOINT	1/2	3	H/M	REFO	SALVAGE/REGEN	SL/JP	P	40-80	53	H	447
711	EF	GUIDE	1	2	L	FUELS/DFB	SALVAGE	SL/JP	NA	10-40	67	H	38
712	EF	JENNINGS	2	2	L	WUI	INTERMEDIATE	SL/SP	P	30-60	66	S	33
713	EF	JENNINGS	2	4	H/M	REFO	SALVAGE/REGEN	NA	N	40-80	44	S	26
714	EF	WARM SPRINGS	2	2	M/L	WUI	MANUAL/ RX FIRE	SL/UB	NA	10-40	52	NA	48

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
715	EF	WARM SPRINGS	2	3	M/L	FUELS/DFB	INTERMEDIATE	NI	NA	30-60	22	S	79
716	EF	WAUGH	2	2	L	WUI	INTERMEDIATE	WT/YUM	P	30-60	40	S	106
716	EF	WAUGH	2	2	L	WUI	INTERMEDIATE	WT/EX	P	30-60	40	T	28
717	EF	CAMP	3A	2	H	WUI	SALVAGE/REGEN	WT/YUM	P	30-60	43	S	173
717	EF	CAMP	3A	2	H	WUI	SALVAGE/REGEN	WT/EX	P	30-60	43	T	19
718	EF	REIMEL	2/3A	2	H/L	VRU2	INTERMEDIATE	SL/SP	N	30-60	48	H	197
719	EF	E FK BITTERROOT	2/3A	3	L	FUELS/DFB	SALVAGE	SL/JP	NA	40-80	51	H	185
720	EF	TOLAN	3A	2	L	VRU2	INTERMEDIATE	SL/SP	NA	30-60	49	H	116
721	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	45	H	354
721	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	45	T	57
722	EF	MEADOW	1	2	L	VRU2	INTERMEDIATE	SL/SP	NA	30-60	47	H	187
722	EF	MEADOW	1	2	L	VRU2	INTERMEDIATE	SL/SP	NA	30-60	47	T	46
723	S-R	ROAN	2	2	L	VRU2	INTERMEDIATE	SL/SP	P	30-60	47	H	186
724	S-R	SLEEPING CHILD	3A	3	H/M/L	FUELS	SALVAGE	NA	NA	40-60	32	H	18
725	S-R	SLEEPING CHILD	3A	3	M/L	FUELS/REFO	INTERMEDIATE	NA	N	40-60	32	H	46
726	S-R	SLEEPING CHILD	3A	3	M/L	FUELS/REFO	INTERMEDIATE	NA	P	40-70	27	S	34
727	S-R	LITTLE SLEEPING CHILD	1/2	2	M/L	VRU2	INTERMEDIATE	WT/WL/JP	NA	30-60	50	S	32
728	S-R	JERRYS GULCH	2	3	H/L	REFO	MANUAL/ RX FIRE	SL/SP	P	50-80	62	NA	5
729	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	INTERMEDIATE	WT/YUM	P	30-70	55	S	119
729	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	INTERMEDIATE	WT/EX	P	30-70	55	T	38
730	S-R	MIKE	2	2	M/L	VRU2	INTERMEDIATE	WT	NA	30-50	35	S	44
730	S-R	MIKE	2	2	M/L	VRU2	INTERMEDIATE	WT	NA	30-50	35	T	19
731	S-R	LITTLE SLEEPING CHILD	1	3	L	FUELS/DFB	SALVAGE	WT/YUM	NA	40-60	65	S	24
732	S-R	BURKE	1	2	H	VRU2	SALVAGE/REGEN	WT/HP	P	50-80	34	S	11
733	S-R	BURKE	2	2	M/L	VRU2	SALVAGE/REGEN	SL/HP	P	50-80	54	H	99
733	S-R	BURKE	2	2	M/L	VRU2	SALVAGE/REGEN	WT/YUM	P	50-80	54	S	13
734	S-R	BURKE	2	2	H/M	VRU2	SALVAGE/REGEN	WT/EX	P	50-80	57	T	88
735	S-R	N RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	40-80	40	H	45
735	S-R	N RYE	1	3	H/M	REFO	SALVAGE/REGEN	NA	P	40-80	40	S	44
736	S-R	DUGOUT	2	3	H	REFO	SALVAGE/REGEN	NA	P	40-80	34	H	40
737	S-R	DUGOUT	2	3	H	REFO	SALVAGE/REGEN	SL/HP	P	40-80	58	H	35
738	S-R	N RYE	1	3	H/M	REFO	SALVAGE/REGEN	WT/YUM	P	50-80	76	S	42
738	S-R	N RYE	1	3	H/M	REFO	SALVAGE/REGEN	WT/EX	P	50-80	76	T	42
739	S-R	BURKE	1	2	H	VRU2	SALVAGE/REGEN	YT	P	50-80	30	T	39

Fuel Reduction Unit Information – Alternative B

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
740	S-R	N RYE	1	3	H/M/L	FUELS/DFB	SALVAGE	NA	NA	40-60	25	T	25
741	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	FUELS	INTERMEDIATE	NA	NA	40-60	5	T	11
742	S-R	ROBBINS	2/3A	2	M/L	WUI	MANUAL/ RX FIRE	SL/HP	NA	10-40	19	NA	59
744	EF	LAIRD	2	2	M/L	WUI	INTERMEDIATE	WT/EX	P	40-70	67	T	109
746	EF	MEDICINE TREE	2	2	H/L	VRU2	INTERMEDIATE	HP	P	10-40	15	T	24
748	S-R	ROBBINS	2	2	H/M/L	VRU2	PLANTING ONLY	NA	P	NA	NA	NA	2
750	EF	MEDICINE TREE	2	2	H	VRU2	PLANTING ONLY	NA	P	NA	NA	NA	121
751	S-R	SLEEPING CHILD	2/3A	3	L	WUI/DFB	INTERMEDIATE	NA	NA	30-60	30	H	122
752	EF	CAMP	3A	2	H	WUI	MANUAL/ RX FIRE	SL/HP	P	30-60	37	NA	17
754	S-R	SLEEPING CHILD	1	3	H	REFO	SALVAGE/REGEN	NA	P	50-80	32	S	18
754	S-R	SLEEPING CHILD	1	3	H	REFO	SALVAGE/REGEN	NA	P	50-80	32	T	12
755	B	SHEAFMAN	3A	2	M/L	WUI	INTERMEDIATE	WT	NA	10-50	28	S	28
756	EF	WARM SPRINGS	2	3	H/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	SL/JP	N	40-80	63	H	23
756	EF	WARM SPRINGS	2	3	H/L	FUELS/REFO	SALVAGE/SALVAGE/REGEN	WT	N	40-80	63	S	8
757	EF	WARM SPRINGS	1	4	H	REFO	SALVAGE/REGEN	NA	N	40-80	44	H	46
758	EF	JENNINGS	1/3A	3	L	FUELS/DFB	SALVAGE	SL/JP	NA	10-40	52	H	73
759	S-R	N RYE	1	3	M/L	FUELS/REFO	INTERMEDIATE	NA	P	40-70	27	S	65
759	S-R	N RYE	1	3	M/L	FUELS/REFO	INTERMEDIATE	NA	P	40-70	27	T	15
760	S-R	BAD NEWS	1	2	M/L	VRU2	INTERMEDIATE	WT	NA	30-60	42	S	129
761	S-R	BLACKTAIL	2	3	M/L	REFO	MANUAL/ RX FIRE	SL/SP	P	50-80	47	NA	128
762	S-R	RYE	2	3	M/L	FUELS/DFB	MANUAL/ RX FIRE	SL/JP	NA	10-40	27	NA	44
763	EF	JENNINGS	2	3	L	FUELS/DFB	SALVAGE	WT/YUM	NA	10-40	66	S	34

Alternative C

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
5	B	SHEAFMAN	3A	2	H/M/L	Planting	P	39	238
15	S-R	SKALKAHO	1	3	H/M/L	Planting	P	25	390
16	S-R	S FK SKALKAHO	1	3	H/M	Planting	P	42	58
17	S-R	S FK SKALKAHO	1	3	M	Planting	P	40	36
18	S-R	S FK SKALKAHO	1	3	H/M	Planting	P	49	203
19	S-R	S FK SKALKAHO	1	3	H/M/L	Planting	P	25	66
20	S-R	S FK SKALKAHO	1	3	L	Planting	P	80	12
22	S-R	S FK SKALKAHO	1	3	H/L	Planting	P	31	40
33	S-R	BAD NEWS	1	2	M/L	Planting	P	21	110
56	WF	BLUE JOINT	2/3A	3	H	Planting	P	48	8
57	WF	LITTLE BLUE JOINT	1/2	3	H/M	Planting	P	54	296
58	WF	LITTLE BLUE JOINT	2	3	M	Planting	P	48	24
59	WF	BLUE JOINT	2/3A	3	H/M/L	Planting	P	44	574
64	WF	OVERWHICH	2	3	H	Planting	P	32	112
66	WF	OVERWHICH	2	3	H	Planting	P	43	21
67	WF	OVERWHICH	2	3	H	Planting	P	32	24
71	WF	OVERWHICH	2	3	H/L	Planting	P	26	39
72	WF	OVERWHICH	2	3	H/M/L	Planting	P	37	229
73	WF	OVERWHICH	2	3	H/M/L	Planting	P	38	280
75	S-R	SLEEPING CHILD	2	3	M/L	Planting	P	51	94
76	S-R	SLEEPING CHILD	3A	3	L	Planting	P	25	78
78	S-R	SLEEPING CHILD	2	3	L	Planting	P	44	128
84	S-R	BLACKTAIL	1	3	H/M/L	Planting	P	47	47
95	S-R	SLEEPING CHILD	1	3	H/L	Planting	P	3	144
96	S-R	SLEEPING CHILD	1	3	H/M	Planting	P	88	118
97	S-R	SLEEPING CHILD	1	3	H/L	Planting	P	25	55
98	S-R	SLEEPING CHILD	1	3	H/M/L	Planting	P	25	32
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	Planting	P	56	671
100	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	Planting	P	68	390
101	S-R	LITTLE SLEEPING CHILD	1	2	H/L	Planting	P	44	73
109	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	Planting	P	40	354
114	S-R	LITTLE SLEEPING CHILD	1	2	H	Planting	P	64	87
116	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	Planting	P	22	101

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
118	S-R	LITTLE SLEEPING CHILD	1	3	H	Planting	P	76	156
121	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	Planting	P	64	344
124	S-R	MIKE	2	2	H	Planting	P	86	32
126	S-R	MIKE	2	2	H	Planting	P	31	24
127	S-R	BURKE	2	2	H/M	Planting	P	30	128
128	S-R	BURKE	2	2	M	Planting	P	36	45
129	S-R	BURKE	2	2	H/M	Planting	P	59	122
130	S-R	BURKE	1	2	H	Planting	P	38	34
131	S-R	BURKE	1	2	H	Planting	P	30	16
132	S-R	BURKE	1	2	H	Planting	P	38	12
133	S-R	BURKE	1/2	2	M/L	Planting	P	39	175
136	S-R	JERRYS GULCH	2	3	H/L	Planting	P	44	16
137	S-R	HARLAN	2	3	M/L	Planting	P	50	47
139	S-R	ROAN	2/3A	3	L	Planting	P	48	321
140	S-R	ROAN	2	2	L	Planting	P	28	124
141	S-R	N RYE	1	3	H/M	Planting	P	29	86
142	S-R	N RYE	1	2	H/L	Planting	P	10	130
143	S-R	N RYE	1	2	L	Planting	P	45	44
145	S-R	LOWMAN	1	2	M/L	Planting	P	47	67
146	S-R	LOWMAN	1	3	M/L	Planting	P	25	78
147	S-R	LOWMAN	1/2	3	M	Planting	P	31	157
148	S-R	DUGOUT	2	3	H	Planting	P	34	18
149	S-R	N RYE	2	3	H	Planting	P	123	48
150	S-R	N RYE	2	3	H	Planting	P	81	120
151	S-R	N RYE	3A	3	H	Planting	P	39	23
152	S-R	N RYE	2	3	M	Planting	P	39	69
153	S-R	N RYE	3A	3	M	Planting	P	67	80
154	S-R	N RYE	2/3A	3	M	Planting	P	66	123
155	S-R	N RYE	3A	3	M	Planting	P	35	11
156	S-R	N RYE	3A	3	M	Planting	P	32	130
157	S-R	N RYE	3A	3	H/M	Planting	P	32	85
158	S-R	N RYE	2	3	H	Planting	P	34	124
160	S-R	N RYE	1	2	H/M	Planting	P	48	87
161	S-R	N RYE	1	3	H/M	Planting	P	48	87
163	S-R	N RYE	1	3	H/M	Planting	P	61	180

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
164	S-R	N RYE	1	4	M	Planting	P	30	136
165	S-R	N RYE	1	3	M/L	Planting	P	25	130
166	S-R	N RYE	1	3	M	Planting	P	62	57
170	S-R	N RYE	1	3	H/M	Planting	P	25	152
171	S-R	N RYE	1	3	H/M	Planting	P	3	129
173	S-R	N RYE	1	3	M	Planting	P	101	65
174	S-R	N RYE	1	3	M	Planting	P	63	106
175	S-R	N RYE	1	3	M/L	Planting	P	70	45
177	S-R	N RYE	1	3	M	Planting	P	97	120
181	S-R	RYE	1	3	L	Planting	P	71	63
182	S-R	RYE	1	4	H/L	Planting	P	30	101
183	S-R	RYE	1	4	L	Planting	P	48	47
184	S-R	RYE	1	3	M/L	Planting	P	48	37
187	S-R	RYE	1/2	3	L	Planting	P	25	166
188	S-R	RYE	1	3	L	Planting	P	26	143
189	S-R	RYE	1	3	H/L	Planting	P	43	136
190	S-R	RYE	1	3	H/L	Planting	P	43	172
192	S-R	RYE	1	3	M/L	Planting	P	30	231
193	S-R	RYE	1	3	M/L	Planting	P	25	141
194	S-R	RYE	1/2	3	M/L	Planting	P	43	392
201	S-R	RYE	2	2	H	Planting	P	19	80
202	S-R	RYE	2	3	H/M	Planting	P	25	24
205	S-R	RYE	2	3	H	Planting	P	27	183
206	S-R	RYE	2	3	H/L	Planting	P	37	926
207	S-R	RYE	2	2	H/L	Planting	P	31	1179
209	S-R	RYE	3A	3	H/M	Planting	P	33	482
214	S-R	RYE	2/3A	2	H/M	Planting	P	23	323
218	S-R	ROBBINS	2	2	H/M/L	Planting	P	20	417
219	S-R	ROBBINS	2	2	M/L	Planting	P	25	346
221	S-R	SPADE	2	2	H/M/L	Planting	P	42	486
222	S-R	SPADE	3A	3	H	Planting	P	62	140
238	EF	MEDICINE TREE	2	2	H/L	Planting	P	16	447
239	EF	MEDICINE TREE	2	2	H/L	Planting	P	20	53
242	EF	MEDICINE TREE	2	2	L	Planting	P	27	30
244	EF	MEDICINE TREE	2	2	M	Planting	P	63	95

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
246	EF	MEDICINE TREE	2	2	M/L	Planting	P	6	270
247	EF	MEDICINE TREE	2	3	L	Planting	P	25	118
248	EF	MEDICINE TREE	2	2	M/L	Planting	P	42	51
249	EF	MEDICINE TREE	2	2	M/L	Planting	P	60	92
250	EF	MEDICINE TREE	2	2	M/L	Planting	P	43	48
251	EF	MEDICINE TREE	2	2	L	Planting	P	67	29
252	EF	MEDICINE TREE	2	2	L	Planting	P	48	21
253	EF	MEDICINE TREE	2	2	L	Planting	P	35	30
254	EF	MEDICINE TREE	2	3	M/L	Planting	P	33	118
255	EF	MEDICINE TREE	2	2	H/M/L	Planting	P	26	172
256	EF	MEDICINE TREE	2	2	H/M/L	Planting	P	25	109
257	EF	MEDICINE TREE	2	3	H/L	Planting	P	39	151
258	EF	MEDICINE TREE	2	2	H	Planting	P	27	50
259	EF	MEDICINE TREE	2	2	H	Planting	P	30	13
260	EF	MEDICINE TREE	2	2	H	Planting	P	33	16
261	EF	MEDICINE TREE	2	2	H	Planting	P	46	57
262	EF	MEDICINE TREE	2	2	H	Planting	P	75	17
274	EF	DICKSON	3A	3/4	H/L	Planting	P	48	384
275	EF	DICKSON	3A	3	L	Planting	P	28	70
276	EF	BLIND DRAW	2	3	H/M/L	Planting	P	9	195
277	EF	LAIRD	2	2	H/L	Planting	P	7	437
278	EF	LAIRD	2	2	H/M	Planting	P	16	26
279	EF	LAIRD	2	2	H/M/L	Planting	P	27	31
282	EF	LAIRD	1/2	3	H/L	Planting	P	49	222
283	EF	LAIRD	1/2	3	H/M/L	Planting	P	49	450
284	EF	LAIRD	2/3A	2	H/M/L	Planting	P	36	772
285	EF	LAIRD	2	3	L	Planting	P	71	11
287	EF	LAIRD	1	4	H	Planting	P	49	101
291	EF	LAIRD	1	3	H/M	Planting	P	49	101
295	EF	LORD DRAW	2/3A	2	H/M/L	Planting	P	28	586
296	EF	LORD DRAW	2/3A	2	H/M	Planting	P	41	137
297	EF	LORD DRAW	2/3A	2	H	Planting	P	49	125
298	EF	WARM SPRINGS	2	2	H/M/L	Planting	P	18	73
317	EF	E FK BITTERROOT	2/3A	2	H/L	Planting	P	46	148
322	EF	MAYNARD	1	3	H/L	Planting	P	24	210

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
323	EF	MAYNARD	1	3	H/M/L	Planting	P	38	70
325	EF	MAYNARD	1/2	3	H/L	Planting	P	83	57
326	EF	MAYNARD	1	3	H/L	Planting	P	46	49
333	EF	ANDREWS	2/3A	3	H/L	Planting	P	88	96
340	EF	PRAINE	1/3A	3	H/M/L	Planting	P	50	114
341	EF	ANDREWS	3A	2	H	Planting	P	45	36
342	EF	ANDREWS	3A	2	H	Planting	P	40	15
343	EF	WAUGH	1/2	3	H/L	Planting	P	38	79
345	EF	WAUGH	3A	2	L	Planting	P	22	35
346	EF	CAMP	3A	2	H	Planting	P	30	119
350	EF	DICK	1/2	2	H	Planting	P	56	140
351	EF	DICK	1/2	3	H/M/L	Planting	P	59	322
356	EF	CAMP	3A	2	L	Planting	P	24	30
357	EF	CAMP	2/3A	2	H/L	Planting	P	38	87
358	EF	CAMP	2/3A	2	H/L	Planting	P	36	70
381	EF	CAMERON	3A	2	H/L	Planting	P	25	534
382	EF	CAMERON	2/3A	2	H/M/L	Planting	P	38	1003
383	EF	CAMERON	2	2	H/M/L	Planting	P	31	113
384	EF	CAMERON	2	3	M/L	Planting	P	25	127
385	EF	CAMERON	2	3	H/M/L	Planting	P	41	201
386	EF	CAMERON	2	2	H/M	Planting	P	25	369
387	EF	CAMERON	2	2	H	Planting	P	34	549
388	EF	HART	2	3	M	Planting	P	27	549
389	EF	HART	2	2	H/M	Planting	P	22	169
390	EF	HART	2	2	H	Planting	P	41	47
392	EF	HART	2	2	H/M/L	Planting	P	35	195
393	EF	CAMERON	1	3	M	Planting	P	25	23
414	S-R	DALY	3A	3	H	Planting Burned Plantation	P	9	2
415	S-R	DALY	3A	4	L	Planting Burned Plantation	P	14	20
416	S-R	LITTLE SLEEPING CHILD	2	2	M/L	Planting Burned Plantation	P	24	48
417	S-R	LITTLE SLEEPING CHILD	2	2	L	Planting Burned Plantation	P	20	56
418	S-R	SKALKAHO	1	4	M/L	Planting Burned Plantation	P	62	32
419	S-R	LITTLE SLEEPING CHILD	2	3	H	Planting Burned Plantation	P	12	28
420	S-R	SKALKAHO	1	4	H/M	Planting Burned Plantation	P	13	62
421	S-R	SKALKAHO	1	4	M/L	Planting Burned Plantation	P	13	54

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
422	S-R	LITTLE SLEEPING CHILD	2	3	M/L	Planting Burned Plantation	P	30	24
423	S-R	LITTLE SLEEPING CHILD	2	2	M	Planting Burned Plantation	P	11	19
424	S-R	SKALKAHO	1	4	H	Planting Burned Plantation	P	15	33
425	S-R	LITTLE SLEEPING CHILD	2	2	H	Planting Burned Plantation	P	11	60
426	S-R	SKALKAHO	1	4	H	Planting Burned Plantation	P	14	33
427	S-R	SKALKAHO	1	4	L	Planting Burned Plantation	P	14	56
428	S-R	SKALKAHO	1	4	L	Planting Burned Plantation	P	14	2
429	S-R	LITTLE SLEEPING CHILD	2	2	M	Planting Burned Plantation	P	21	22
430	S-R	SKALKAHO	1	4	H/L	Planting Burned Plantation	P	14	43
431	S-R	LITTLE SLEEPING CHILD	2	3	H/M/L	Planting Burned Plantation	P	33	42
432	S-R	LITTLE SLEEPING CHILD	2	3	M	Planting Burned Plantation	P	20	5
433	S-R	LITTLE SLEEPING CHILD	2	3	M	Planting Burned Plantation	P	19	8
434	S-R	LITTLE SLEEPING CHILD	2	3	L	Planting Burned Plantation	P	16	19
435	S-R	SKALKAHO	1	4	H/L	Planting Burned Plantation	P	19	28
436	S-R	SKALKAHO	1	4	H/L	Planting Burned Plantation	P	15	97
437	S-R	SKALKAHO	1	4	H/L	Planting Burned Plantation	P	26	20
438	S-R	LITTLE SLEEPING CHILD	2	3	H/M/L	Planting Burned Plantation	P	22	53
439	S-R	LITTLE SLEEPING CHILD	2	3	M	Planting Burned Plantation	P	19	30
440	S-R	LITTLE SLEEPING CHILD	2	3	L	Planting Burned Plantation	P	25	12
441	S-R	LITTLE SLEEPING CHILD	1	3	H/L	Planting Burned Plantation	P	22	31
442	S-R	SKALKAHO	2	4	L	Planting Burned Plantation	P	21	20
443	S-R	LITTLE SLEEPING CHILD	2	3	M	Planting Burned Plantation	P	22	8
444	S-R	LITTLE SLEEPING CHILD	2	3	M	Planting Burned Plantation	P	22	42
445	S-R	LITTLE SLEEPING CHILD	2	2	H/L	Planting Burned Plantation	P	17	27
446	S-R	LITTLE SLEEPING CHILD	1	3	H	Planting Burned Plantation	P	17	44
447	S-R	SKALKAHO	2	4	H	Planting Burned Plantation	P	21	12
448	S-R	LITTLE SLEEPING CHILD	1	4	M	Planting Burned Plantation	P	26	22
449	S-R	SKALKAHO	1	4	M	Planting Burned Plantation	P	26	35
450	S-R	SKALKAHO	1	4	H	Planting Burned Plantation	P	19	35
451	S-R	SKALKAHO	1	4	H/L	Planting Burned Plantation	P	21	18
452	S-R	SLEEPING CHILD	1	4	H/L	Planting Burned Plantation	P	19	18
453	S-R	SLEEPING CHILD	2	4	L	Planting Burned Plantation	P	26	14
454	S-R	RYE	2	3	H	Planting Burned Plantation	P	25	70
455	S-R	LITTLE SLEEPING CHILD	1	3	H/L	Planting Burned Plantation	P	29	51
456	S-R	SLEEPING CHILD	1	4	H	Planting Burned Plantation	P	26	34

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
457	S-R	SLEEPING CHILD	1	4	M	Planting Burned Plantation	P	26	19
458	S-R	SLEEPING CHILD	1	4	M	Planting Burned Plantation	P	30	11
459	S-R	SLEEPING CHILD	1	4	M	Planting Burned Plantation	P	26	12
460	S-R	SLEEPING CHILD	1	4	H	Planting Burned Plantation	P	26	10
461	S-R	SLEEPING CHILD	1	4	M	Planting Burned Plantation	P	26	16
462	S-R	SLEEPING CHILD	2	4	M	Planting Burned Plantation	P	25	92
463	S-R	LITTLE SLEEPING CHILD	1	3	H	Planting Burned Plantation	P	18	88
464	S-R	SLEEPING CHILD	1	4	H	Planting Burned Plantation	P	25	44
465	S-R	SLEEPING CHILD	1	4	M	Planting Burned Plantation	P	25	77
466	S-R	SLEEPING CHILD	1	4	M	Planting Burned Plantation	P	25	14
467	S-R	SLEEPING CHILD	1	4	M	Planting Burned Plantation	P	25	11
468	S-R	SLEEPING CHILD	1	4	M	Planting Burned Plantation	P	25	20
469	S-R	SLEEPING CHILD	2	4	H/M	Planting Burned Plantation	P	25	35
470	S-R	LITTLE SLEEPING CHILD	1	4	H	Planting Burned Plantation	P	26	146
471	S-R	SLEEPING CHILD	1	4	NI	Planting Burned Plantation	P	25	11
472	S-R	LOWMAN	1	4	M	Planting Burned Plantation	P	26	12
473	S-R	LOWMAN	1	4	M	Planting Burned Plantation	P	26	13
474	S-R	LOWMAN	2	4	H	Planting Burned Plantation	P	31	89
475	S-R	N RYE	2	4	M/L	Planting Burned Plantation	P	36	65
476	S-R	N RYE	2	3	M/L	Planting Burned Plantation	P	31	60
477	S-R	BURKE	2	3	H/M	Planting Burned Plantation	P	22	19
478	S-R	BURKE	1	3	H	Planting Burned Plantation	P	22	5
479	S-R	LOWMAN	2	3	H	Planting Burned Plantation	P	17	13
480	S-R	BURKE	1	2	H	Planting Burned Plantation	P	21	11
481	S-R	N RYE	1	3	H/M	Planting Burned Plantation	P	21	41
482	S-R	N RYE	1	3	M	Planting Burned Plantation	P	31	56
483	S-R	LOWMAN	1	3	H	Planting Burned Plantation	P	19	5
484	S-R	LOWMAN	1	3	H	Planting Burned Plantation	P	19	26
485	S-R	N RYE	1	3	M	Planting Burned Plantation	P	31	51
486	S-R	N RYE	1	3	M	Planting Burned Plantation	P	19	29
487	S-R	N RYE	1	3	H	Planting Burned Plantation	P	23	37
488	S-R	N RYE	1	2	L	Planting Burned Plantation	P	29	50
489	S-R	N RYE	1	2	L	Planting Burned Plantation	P	21	57
490	S-R	RYE	1	3	M	Planting Burned Plantation	P	19	14
491	S-R	RYE	1	3	M	Planting Burned Plantation	P	23	26

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
492	S-R	RYE	1	4	M	Planting Burned Plantation	P	26	5
493	S-R	N RYE	1	2	M	Planting Burned Plantation	P	21	26
494	S-R	N RYE	1	3	M	Planting Burned Plantation	P	24	35
495	S-R	N RYE	2	3	M	Planting Burned Plantation	P	24	22
496	EF	CAMERON	2	3	H	Planting Burned Plantation	P	25	4
497	S-R	N RYE	2	3	H	Planting Burned Plantation	P	17	30
498	S-R	RYE	2	2	H	Planting Burned Plantation	P	21	87
499	S-R	RYE	2	2	H	Planting Burned Plantation	P	24	15
500	S-R	RYE	2	2	H	Planting Burned Plantation	P	22	4
501	S-R	N RYE	2	2	H	Planting Burned Plantation	P	23	36
502	S-R	RYE	2	3	H	Planting Burned Plantation	P	22	11
503	S-R	RYE	2	2	H	Planting Burned Plantation	P	23	9
504	S-R	N RYE	2	3	H	Planting Burned Plantation	P	22	23
505	S-R	N RYE	2	3	H	Planting Burned Plantation	P	31	91
506	S-R	N RYE	2	3	H	Planting Burned Plantation	P	22	18
507	S-R	RYE	3A	2	H	Planting Burned Plantation	P	28	29
508	S-R	RYE	3A	3	H	Planting Burned Plantation	P	22	11
509	S-R	RYE	2	2	H	Planting Burned Plantation	P	28	80
510	S-R	RYE	3A	2	H	Planting Burned Plantation	P	21	43
511	EF	DORAN	3A	3	M	Planting Burned Plantation	P	22	15
512	S-R	RYE	3A	2	H	Planting Burned Plantation	P	25	8
513	EF	MEDICINE TREE	3A	3	L	Planting Burned Plantation	P	22	32
514	EF	MEDICINE TREE	3A	2	H/L	Planting Burned Plantation	P	16	21
515	S-R	RYE	2	3	H	Planting Burned Plantation	P	22	19
516	S-R	RYE	3A	2	H	Planting Burned Plantation	P	21	16
517	EF	MEDICINE TREE	1	2	H	Planting Burned Plantation	P	16	5
518	EF	CAMERON	3A	2	M	Planting Burned Plantation	P	20	11
519	EF	MEDICINE TREE	3A	2	L	Planting Burned Plantation	P	20	15
520	EF	MEDICINE TREE	2	2	L	Planting Burned Plantation	P	20	35
521	EF	LYMAN	3A	2	H	Planting Burned Plantation	P	20	51
522	EF	MEDICINE TREE	3A	2	L	Planting Burned Plantation	P	20	15
523	S-R	RYE	2	3	H/M/L	Planting Burned Plantation	P	22	33
524	EF	CAMERON	1	2	M	Planting Burned Plantation	P	21	44
525	EF	CAMERON	2	2	M	Planting Burned Plantation	P	16	13
526	EF	LYMAN	3A	3	H	Planting Burned Plantation	P	22	13

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
527	EF	DORAN	2	3	H	Planting Burned Plantation	P	22	3
528	EF	LYMAN	2	2	H	Planting Burned Plantation	P	25	6
529	EF	CAMERON	3A	2	M	Planting Burned Plantation	P	25	19
530	EF	DORAN	2	2	H	Planting Burned Plantation	P	24	4
531	EF	LYMAN	3A	2	H	Planting Burned Plantation	P	29	15
532	EF	MEDICINE TREE	2	2	L	Planting Burned Plantation	P	20	27
533	EF	LYMAN	2	2	H	Planting Burned Plantation	P	24	4
534	EF	LYMAN	3A	2	M	Planting Burned Plantation	P	19	14
535	EF	MEDICINE TREE	2	2	L	Planting Burned Plantation	P	20	12
536	EF	LYMAN	2	3	L	Planting Burned Plantation	P	33	13
537	EF	LYMAN	3A	2	L	Planting Burned Plantation	P	20	13
538	EF	MEDICINE TREE	3A	2	M/L	Planting Burned Plantation	P	20	74
539	EF	MEDICINE TREE	3A	2	H	Planting Burned Plantation	P	28	14
540	EF	MEDICINE TREE	1	2	H	Planting Burned Plantation	P	25	17
541	EF	MEADOW	3A	3	L	Planting Burned Plantation	P	22	122
542	EF	MEDICINE TREE	1	2	H	Planting Burned Plantation	P	20	4
543	EF	MEADOW	2	3	L	Planting Burned Plantation	P	22	6
544	EF	TOLAN	3A	4	NI	Planting Burned Plantation	P	26	16
545	EF	LAIRD	3A	2	H	Planting Burned Plantation	P	23	19
546	EF	LAIRD	3A	3	H/L	Planting Burned Plantation	P	22	59
547	EF	WARM SPRINGS	3A	3	H	Planting Burned Plantation	P	32	31
548	EF	WARM SPRINGS	3A	2	M	Planting Burned Plantation	P	22	65
549	EF	WARM SPRINGS	3A	3	H	Planting Burned Plantation	P	32	21
551	EF	LAIRD	3A	2	M/L	Planting Burned Plantation	P	20	23
552	EF	LAIRD	3A	3	L	Planting Burned Plantation	P	20	52
553	EF	WARM SPRINGS	3A	2	M	Planting Burned Plantation	P	21	19
554	EF	WARM SPRINGS	3A	3	M/L	Planting Burned Plantation	P	26	81
555	EF	WARM SPRINGS	3A	3	L	Planting Burned Plantation	P	25	38
556	EF	ANDREWS	3A	2	M	Planting Burned Plantation	P	25	8
557	EF	ANDREWS	3A	3	M	Planting Burned Plantation	P	25	3
558	EF	ANDREWS	3A	4	L	Planting Burned Plantation	P	26	49
559	EF	ANDREWS	3A	3	H	Planting Burned Plantation	P	25	3
560	EF	ANDREWS	3A	3	H	Planting Burned Plantation	P	25	23
561	EF	ANDREWS	2	3	H	Planting Burned Plantation	P	25	7
562	EF	WAUGH	2	2	L	Planting Burned Plantation	P	25	12

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
563	EF	WAUGH	3A	2	H	Planting Burned Plantation	P	20	24
564	EF	REIMEL	2	2	L	Planting Burned Plantation	P	21	11
565	WF	LITTLE BLUE JOINT	3A	2	M	Planting Burned Plantation	P	20	27
566	WF	LITTLE BLUE JOINT	2	2	H	Planting Burned Plantation	P	20	7
567	WF	LITTLE BLUE JOINT	2	2	H	Planting Burned Plantation	P	20	30
568	WF	LITTLE BLUE JOINT	2	2	M	Planting Burned Plantation	P	20	10
569	WF	LITTLE BLUE JOINT	2	2	M	Planting Burned Plantation	P	20	9
570	WF	LITTLE BLUE JOINT	2	2	M	Planting Burned Plantation	P	20	30
571	WF	LITTLE BLUE JOINT	2	2	M	Planting Burned Plantation	P	20	12
572	WF	LITTLE BLUE JOINT	2	2	M	Planting Burned Plantation	P	20	32
573	WF	LITTLE BLUE JOINT	2	3	M	Planting Burned Plantation	P	21	11
574	WF	LITTLE BLUE JOINT	2	2	M	Planting Burned Plantation	P	24	15
575	WF	LITTLE BLUE JOINT	2	3	M	Planting Burned Plantation	P	18	11
576	WF	COAL	2	2	M	Planting Burned Plantation	P	20	7
577	WF	COAL	1	2	NI	Planting Burned Plantation	P	40	22
578	WF	COAL	3A	3	L	Planting Burned Plantation	P	21	57
579	WF	WEST	2	3	L	Planting Burned Plantation	P	22	38
580	WF	COAL	2	3	L	Planting Burned Plantation	P	27	69
581	WF	WEST	2	3	L	Planting Burned Plantation	P	22	30
590	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	Planting	P	22	23
591	S-R	BURKE	1/2	2	M/L	Planting	P	11	125
592	S-R	N RYE	1	3	H/M/L	Planting	P	9	168
593	EF	MEDICINE TREE	2	3	L	Planting	P	25	79
594	EF	LAIRD	2	2	H/L	Planting	P	8	27
595	EF	LAIRD	2	2	H/L	Planting	P	7	22
598	EF	MAYNARD	3A	2	H/L	Planting	P	56	316
599	EF	MAYNARD	1	3	H/M/L	Planting	P	59	30
606	S-R	BURKE	2	2	H	Planting	P	62	34
610	B	COW	3A	2	H	Planting	P	39	14
611	B	SHEAFMAN	3A	2	H/M/L	Planting	P	54	363
614	S-R	S FK SKALKAHO	1	3	H/L	Planting	P	28	307
702	WF	OVERWHICH	2	3	H	Planting	P	43	28
704	WF	OVERWHICH	2	3	H	Planting	P	35	20
705	WF	OVERWHICH	2	3	H/L	Planting	P	43	69
706	WF	BLUE JOINT	3A	3	H/M/L	Planting	P	32	136

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Prescription	Regen Method	Current Fuel Level	Acres
707	WF	LITTLE BLUE JOINT	2	3	H/M	Planting	P	25	64
708	WF	LITTLE BLUE JOINT	2	3	H/M	Planting	P	49	22
709	WF	LITTLE BLUE JOINT	1/2	3	H/M	Planting	P	53	557
712	EF	LAIRD	2	2	L	Planting	P	66	62
716	EF	WAUGH	2	2	L	Planting	P	40	175
717	EF	CAMP	3A	2	H	Planting	P	43	202
723	S-R	ROAN	2	2	L	Planting	P	47	187
726	S-R	SLEEPING CHILD	3A	3	M/L	Planting	P	27	53
728	S-R	JERRYS GULCH	2	3	H/L	Planting	P	62	5
729	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	Planting	P	55	162
732	S-R	BURKE	1	2	H	Planting	P	34	11
733	S-R	BURKE	2	2	M	Planting	P	54	113
734	S-R	BURKE	2	2	H/M	Planting	P	57	91
735	S-R	N RYE	1	3	H/M	Planting	P	40	125
736	S-R	DUGOUT	2	3	H	Planting	P	34	40
737	S-R	DUGOUT	2	3	H	Planting	P	58	35
738	S-R	N RYE	1	3	H/M	Planting	P	76	132
739	S-R	BURKE	1	2	H	Planting	P	30	41
744	EF	LAIRD	2	2	M/L	Planting	P	67	109
746	EF	MEDICINE TREE	2	2	H/L	Planting	P	15	28
748	S-R	ROBBINS	2	2	H/M/L	Planting	P	12	12
750	EF	MEDICINE TREE	2	2	H	Planting	P	16	126
752	EF	CAMP	3A	2	H	Planting	P	37	17
754	S-R	SLEEPING CHILD	1	3	H	Planting	P	32	72
759	S-R	N RYE	1	3	H	Planting	P	27	86
761	S-R	BLACKTAIL	2	3	M	Planting	P	47	130

Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
4	B	SHEAFMAN	3A	2	M/L	WUI	Manual/Rx Fire	JP	NA	10-50	38	NA	7
5	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	JP	P	30-70	39	S	183
15	S-R	SKALKAHO	1	3	H/M/L	FUELS	Salvage/Salvage/Regen	NA	P	10-30	25	H	188
15	S-R	SKALKAHO	1	3	H/M/L	FUELS	Salvage/Salvage/Regen	NA	P	10-30	25	S	125
16	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	NA	P	30-80	42	H	35
16	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	NA	P	30-80	42	S	18
17	S-R	S FK SKALKAHO	1	3	M	REFO	Salvage/Regen	WT	P	40-70	40	S	32
18	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	JP	P	40-70	49	H	118
18	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	WT	P	40-70	50	S	50
19	S-R	S FK SKALKAHO	1	3	H/M/L	REFO	Salvage/Regen	NA	P	40-70	25	H	26
19	S-R	S FK SKALKAHO	1	3	H/M/L	REFO	Salvage/Regen	NA	P	40-70	25	S	26
20	S-R	S FK SKALKAHO	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	6
21	S-R	S FK SKALKAHO	1	3	M/L	REFO	Salvage/Regen	JP	N	40-70	49	H	83
21	S-R	S FK SKALKAHO	1	3	M/L	REFO	Salvage/Regen	WT	N	40-70	49	S	55
21	S-R	S FK SKALKAHO	1	3	M/L	REFO	Salvage/Regen	WT	N	40-70	49	T	15
22	S-R	S FK SKALKAHO	1	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	29
23	S-R	S FK SKALKAHO	1	3	H/M/L	REFO	Salvage/Regen	SP/HP	N	40-70	43	H	61
23	S-R	S FK SKALKAHO	1	3	H/M/L	REFO	Salvage/Regen	YT	N	40-70	43	S	92
24	S-R	S FK SKALKAHO	1	3	M/L	REFO	Manual/Rx Fire	SL/HP	N	40-70	35	NA	8
25	S-R	DIVIDE	1	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	41	H	58
25	S-R	DIVIDE	1	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	41	S	75
25	S-R	DIVIDE	1	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	41	T	33
26	S-R	DIVIDE	1	4	H/M	REFO	Salvage/Regen	HP	N	50-80	59	H	30
26	S-R	DIVIDE	1	4	H/M	REFO	Salvage/Regen	WT	N	50-80	59	S	109
26	S-R	DIVIDE	1	4	H/M	REFO	Salvage/Regen	WT	N	50-80	59	T	8
27	S-R	BAD NEWS	1	3	M/L	FUELS/DFB	Intermediate	NA	NA	40-60	51	H	176
27	S-R	BAD NEWS	1	3	M/L	FUELS/DFB	Intermediate	NA	NA	40-60	51	S	60
28	S-R	BAD NEWS	1	3	M/L	FUELS/DFB	Intermediate	NA	NA	40-60	39	H	56
28	S-R	BAD NEWS	1	3	M/L	FUELS/DFB	Intermediate	NA	NA	40-60	39	S	38
29	S-R	BAD NEWS	1	3	H/M/L	REFO	Salvage/Regen	JP	N	40-80	52	H	178
29	S-R	BAD NEWS	1	3	H/M/L	REFO	Salvage/Regen	WT	N	40-80	52	S	23
30	S-R	BAD NEWS	1	2	L	VRU2	Intermediate	NA	NA	30-60	7	S	19

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
31	S-R	BAD NEWS	1	3	L	FUELS/DFB	Intermediate	NA	NA	40-60	6	S	48
32	S-R	BAD NEWS	1	3	L	FUELS/DFB	Intermediate	NA	NA	40-60	1	S	25
32	S-R	BAD NEWS	1	3	L	FUELS/DFB	Intermediate	NA	NA	40-60	1	T	16
33	S-R	BAD NEWS	1	2	M/L	VRU2	Salvage/Regen	NA	P	40-70	21	S	76
33	S-R	BAD NEWS	1	2	M/L	VRU2	Salvage/Regen	NA	P	40-70	21	T	33
34	S-R	SKALKAHO	3A	3	H/M/L	WUI	Salvage/Regen	SL/SP	N	50-80	97	H	152
35	S-R	SKALKAHO	3A	2	H/M/L	VRU2	Intermediate	NA	NA	10-40	20	H	106
36	S-R	SKALKAHO	3A	3	H/M	REFO	Salvage/Regen	JP	N	60-80	82	H	48
37	S-R	SKALKAHO	3A	2	H/M/L	VRU2	Intermediate	NA	NA	20-40	55	H	143
38	S-R	SKALKAHO	3A	3	H/M/L	WUI	Salvage/Regen	NA	N	40-80	25	H	142
39	S-R	SKALKAHO	3A	3	M/L	WUI	Salvage/Regen	NA	N	40-80	24	H	49
40	S-R	SKALKAHO	3A	3	H/M/L	WUI	Salvage/Regen	SP/JP	N	40-80	49	H	215
41	S-R	SKALKAHO	3A	3	H/L	WUI	Salvage/Regen	SP/JP	N	40-80	81	H	288
42	S-R	SKALKAHO	3A	3	H/L	WUI/DFB	Intermediate	NA	NA	40-60	31	H	151
43	S-R	SKALKAHO	3A	3	H/L	WUI/DFB	Intermediate	NA	NA	40-60	31	H	100
44	S-R	SKALKAHO	3A	3	H/L	WUI	Salvage/Regen	SP/JP	N	40-80	62	H	79
45	S-R	SKALKAHO	3A	3	H/L	WUI/DFB	Intermediate	NA	NA	40-60	28	H	98
46	S-R	SKALKAHO	3A	3	H/M/L	WUI	Salvage/Regen	SL/JP	N	40-80	39	H	74
47	S-R	SKALKAHO	2/3A	2	L	WUI	Intermediate	NA	NA	20-50	27	H	547
48	S-R	BEAR	1	2	L	VRU2	Intermediate	SL/UB	NA	10-30	35	H	110
48	S-R	BEAR	1	2	L	VRU2	Intermediate	WT/UB	NA	10-30	35	T	9
48	S-R	BEAR	1	2	L	VRU2	Intermediate	WT/UB	NA	10-30	35	S	13
49	S-R	BEAR	2/3A	2	H/M/L	VRU2	Manual/Rx Fire	SL/HP	NA	10-30	10	NA	891
51	WF	PIQUETT	1	3	M	REFO	Salvage/Regen	NA	N	50-80	39	H	361
52	WF	PIQUETT	1	3	M	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	20-60	25	NA	10
53	WF	PIQUETT	1	3	M/L	FUELS/DFB	Intermediate	NA	NA	20-60	12	H	150
54	WF	PIQUETT	2	3	L	FUELS/DFB	Intermediate	NA	NA	20-60	22	S	23
54	WF	PIQUETT	2	3	L	FUELS/DFB	Intermediate	NA	NA	20-60	22	H	36
55	WF	PAINTED ROCKS LAKE	3A	3	L	WUI/DFB	Manual/Rx Fire	SL/UB	NA	30-60	80	NA	58
56	WF	BLUE JOINT	2/3A	3	H	WUI	Manual/Rx Fire	SL/HP	P	40-80	48	NA	5
57	WF	LITTLE BLUE JOINT	1/2	3	H/M	REFO	Manual/Rx Fire	SL/EX/SP	P	40-80	54	NA	202
58	WF	LITTLE BLUE JOINT	2	3	M	REFO	Manual/Rx Fire	SL/HP	P	40-80	48	NA	24
59	WF	BLUE JOINT	2/3A	3	H/M/L	REFO	Salvage/Regen	NA	P	40-80	44	H	336
59	WF	BLUE JOINT	2/3A	3	H/M/L	REFO	Salvage/Regen	NA	P	40-80	44	S	88

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
59	WF	BLUE JOINT	2/3A	3	H/M/L	REFO	Salvage/Regen	NA	P	40-80	44	T	75
60	WF	COAL	1/2	4	H/L	REFO	Salvage/Regen	NA	N	50-80	35	H	392
60	WF	COAL	1/2	4	H/L	REFO	Salvage/Regen	NA	N	50-80	35	S	104
60	WF	COAL	1/2	4	H/L	REFO	Salvage/Regen	NA	N	50-80	35	T	26
61	WF	W FK FACE	3A	3	M/L	WUI/DFB	Intermediate	NA	NA	40-60	25	H	284
61	WF	W FK FACE	3A	3	M/L	WUI	Intermediate	NA	NA	40-60	25	S	57
61	WF	W FK FACE	3A	3	M/L	WUI	Intermediate	NA	NA	40-60	25	T	146
63	WF	WEST	2	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	39	H	111
63	WF	WEST	2	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	39	S	12
64	WF	OVERWHICH	2	3	H	REFO	Salvage/Regen	NA	P	50-80	32	H	112
65	WF	OVERWHICH	2	3	H	REFO	Salvage/Regen	NA	N	30-60	25	S	25
65	WF	OVERWHICH	2	3	H	REFO	Salvage/Regen	NA	N	30-60	25	H	37
66	WF	OVERWHICH	2	3	H	REFO	Manual/Rx Fire	SL/HP	P	50-80	43	NA	19
67	WF	OVERWHICH	2	3	H	REFO	Manual/Rx Fire	SL/HP	P	50-80	32	NA	22
68	WF	OVERWHICH	2	3	H	REFO	Manual/Rx Fire	SL/HP	N	50-80	36	NA	6
69	WF	OVERWHICH	2	3	M/L	FUELS/DFB	Intermediate	NA	NA	40-60	20	H	80
70	WF	OVERWHICH	1/2	3	M/L	FUELS/DFB	Intermediate	NA	NA	40-60	21	H	7
70	WF	OVERWHICH	1/2	3	H/M/L	FUELS/DFB	Salvage	NA	NA	40-60	21	S	145
71	WF	OVERWHICH	2	3	H/L	FUELS	Manual/Rx Fire	SL/HP	P	30-60	26	NA	29
72	WF	OVERWHICH	2	3	H/M/L	REFO	Manual/Rx Fire	SL/EX/SP	P	50-80	37	NA	220
73	WF	OVERWHICH	2	3	H/M/L	REFO	Salvage/Regen	NA	P	50-80	38	S	267
75	S-R	SLEEPING CHILD	2	3	M/L	REFO	Salvage/Regen	NA	P	50-80	51	S	7
75	S-R	SLEEPING CHILD	2	3	M/L	REFO	Salvage/Regen	NA	P	50-80	51	T	68
76	S-R	SLEEPING CHILD	3A	3	H/M	FUELS/REFO	Salvage/Regen	NA	P	50-80	25	S	73
77	S-R	SLEEPING CHILD	2/3A	2	M/L	VRU2	Manual/Rx Fire	SL/UB/JP	NA	20-50	20	NA	2020
78	S-R	SLEEPING CHILD	2	3	L	FUELS	Manual/Rx Fire	SL/UB/JP	P	30-60	44	NA	124
79	S-R	SLEEPING CHILD	1/3A	3	H/L	FUELS/REFO	Intermediate	JP	N	40-60	32	H	59
80	S-R	SLEEPING CHILD	1/3A	3	H/M	FUELS/DFB	Intermediate	NA	NA	40-60	32	H	14
81	S-R	SLEEPING CHILD	3A	3	H/M/L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	40-60	25	NA	114
83	S-R	BLACKTAIL	2/3A	3	L	FUELS/DFB	Salvage	NA	NA	30-50	25	H	32
84	S-R	BLACKTAIL	1	3	H/M/L	REFO	Salvage/Regen	WT/JP	P	50-80	47	T	21
85	S-R	BLACKTAIL	2	3	H/L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	10-40	25	NA	68
86	S-R	BLACKTAIL	2	2	H/L	VRU2	Manual/Rx Fire	SL/HP	NA	10-40	8	NA	40
87	S-R	BLACKTAIL	2	2	L	VRU2	Manual/Rx Fire	SL/HP	NA	10-40	6	NA	51

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
88	S-R	BLACKTAIL	2	2	L	VRU2	Intermediate	NA	NA	10-40	5	H	189
89	S-R	BLACKTAIL	2	2	L	VRU2	Manual/Rx Fire	SL/HP	NA	10-40	36	NA	25
90	S-R	BLACKTAIL	2/3A	2	L	VRU2	Manual/Rx Fire	SL/HP	NA	10-40	8	NA	194
91	S-R	SLEEPING CHILD	2/3A	3	L	WUI	Manual/Rx Fire	SL/HP	NA	30-60	25	NA	223
92	S-R	SLEEPING CHILD	2/3A	2	L	WUI	Intermediate	NA	NA	10-60	7	H	124
93	S-R	SLEEPING CHILD	3A	2	L	WUI	Intermediate	NA	NA	10-60	7	H	142
94	S-R	SLEEPING CHILD	2/3A	2	L	WUI	Intermediate	NA	NA	10-60	18	H	221
95	S-R	SLEEPING CHILD	1	3	H/L	FUELS/REFO	Intermediate	NA	P	40-70	3	H	70
95	S-R	SLEEPING CHILD	1	3	H/L	FUELS/REFO	Intermediate	NA	P	40-70	3	S	70
96	S-R	SLEEPING CHILD	1	3	H/M	REFO	Salvage/Regen	SL/JP	P	50-80	88	H	78
96	S-R	SLEEPING CHILD	1	3	H/M	REFO	Salvage/Regen	WT/JP	P	50-80	88	S	26
97	S-R	SLEEPING CHILD	1	3	H/L	REFO	Salvage/Regen	NA	P	50-80	25	T	54
98	S-R	SLEEPING CHILD	1	3	H/M/L	REFO	Salvage/Regen	NA	P	50-80	25	T	31
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	JP	P	40-70	56	H	306
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/JP	P	40-70	56	S	156
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/EX	P	40-70	56	T	63
100	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	SP	P	50-80	68	H	216
100	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/SP	P	50-80	68	S	75
100	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/EX	P	50-80	68	T	75
101	S-R	LITTLE SLEEPING CHILD	1	2	H/L	VRU2	Intermediate	NA	P	30-70	44	S	73
102	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	Intermediate	NA	NA	10-30	8	H	43
102	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	Intermediate	NA	NA	10-30	8	S	26
102	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	Intermediate	NA	NA	10-30	8	T	17
103	S-R	LITTLE SLEEPING CHILD	2	2	M/L	VRU2	Intermediate	NA	NA	10-30	36	H	181
104	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Intermediate	NA	NA	30-60	16	H	108
105	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Intermediate	NA	NA	30-60	13	H	248
105	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Intermediate	NA	NA	30-60	13	S	36
105	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2/DFB	Intermediate	NA	NA	30-60	13	T	27
106	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Salvage	NA	NA	0-30	15	H	494
107	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Salvage	NA	NA	0-30	15	H	57
108	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Salvage	NA	NA	0-30	15	H	92
109	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	WUI	Salvage/Regen	JP	P	30-80	40	H	258
109	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	WUI	Salvage/Regen	YT	P	30-80	40	S	42
110	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	VRU2	Intermediate	HP	NA	30-60	52	H	47

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
110	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	VRU2	Intermediate	YT	NA	30-60	52	S	16
111	S-R	LITTLE SLEEPING CHILD	2	2	M/L	VRU2	Intermediate	SL/HP	NA	30-60	30	H	31
112	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Intermediate	NA	NA	30-60	30	H	117
113	S-R	LITTLE SLEEPING CHILD	1/2	2	L	VRU2	Intermediate	NA	NA	30-60	33	H	75
114	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	Intermediate	HP	P	40-70	64	H	29
114	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	Intermediate	WT/HP	P	40-70	64	S	44
115	S-R	LITTLE SLEEPING CHILD	1	3	M/L	FUELS/DFB	Manual/Rx Fire	SL/SP/EX	NA	40-60	27	NA	157
116	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Manual/Rx Fire	SL/SP/EX	P	30-80	22	NA	80
118	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	Salvage/Regen	SP/JP	P	50-80	76	H	80
118	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	Salvage/Regen	WT/HP	P	50-80	76	S	27
121	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	FUELS	Salvage/Salvage/Regen	NA	P	30-80	64	S	277
121	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	FUELS	Salvage/Salvage/Regen	NA	P	30-80	64	T	41
122	S-R	MIKE	2	2	H	VRU2	Manual/Rx Fire	SL/HP	NA	30-50	10	NA	30
123	S-R	MIKE	2	2	H	VRU2	Manual/Rx Fire	SL/HP	NA	30-50	11	NA	15
124	S-R	MIKE	2	2	H	VRU2	Salvage/Regen	WT/SL/JP	P	40-80	86	S	32
126	S-R	MIKE	2	2	H	VRU2	Salvage/Regen	WT/HP	P	40-80	31	S	24
127	S-R	BURKE	2	2	H/M	VRU2	Salvage/Regen	NA	P	50-80	30	H	64
127	S-R	BURKE	2	2	H/M	VRU2	Salvage/Regen	NA	P	50-80	30	S	64
128	S-R	BURKE	2	2	M	VRU2	Salvage/Regen	HP	P	NA	36	H	45
129	S-R	BURKE	2	2	H/M	VRU2	Manual/Rx Fire	SL/EX/SP	P	50-80	59	NA	103
130	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	WT/HP	P	50-80	38	S	32
131	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	WT/HP	P	50-80	30	S	16
132	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	WT/HP	P	50-80	38	S	9
133	S-R	BURKE	1/2	2	M/L	REFO	Salvage/Regen	NA	P	40-80	39	H	170
134	S-R	DEER HOLLOW	2	2	L	VRU2	Intermediate	NA	NA	30-50	23	H	162
135	S-R	DEER HOLLOW	2	2	L	VRU2	Intermediate	SL/JP	NA	30-50	65	H	44
136	S-R	JERRYS GULCH	2	3	H/L	REFO	Salvage/Regen	WT	P	50-80	44	S	16
137	S-R	HARLAN	2	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	50	S	40
137	S-R	HARLAN	2	3	M/L	FUELS	Salvage/Salvage/Regen	NA	P	40-80	50	T	7
138	S-R	HARLAN	2	2	M/L	VRU2	Intermediate	NA	NA	30-50	15	H	103
138	S-R	HARLAN	2	2	M/L	VRU2	Intermediate	NA	NA	30-50	15	S	21
139	S-R	ROAN	2	3	H/M	REFO	Salvage/Regen	NA	P	50-80	48	S	106
139	S-R	ROAN	2	3	H/M	REFO	Salvage/Regen	NA	P	50-80	48	T	196
140	S-R	ROAN	2	2	L	VRU2	Manual/Rx Fire	SL/UB	P	30-60	28	NA	116

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
141	S-R	N RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	65
142	S-R	N RYE	1	2	H/L	VRU2	Salvage/Regen	NA	P	40-80	15	H	49
142	S-R	N RYE	1	2	H/L	VRU2	Salvage/Regen	NA	P	40-80	15	S	57
143	S-R	N RYE	1	2	H/M	VRU2	Salvage/Regen	SL/HP	P	40-80	45	S	37
144	S-R	LOWMAN	1	2	M/L	VRU2	Intermediate	NA	NA	30-60	18	T	92
145	S-R	LOWMAN	1	2	M/L	VRU2	Salvage/Regen	WT/EX	P	40-80	47	S	30
145	S-R	LOWMAN	1	2	M/L	VRU2	Salvage/Regen	WT/EX	P	40-80	47	T	36
146	S-R	LOWMAN	1	3	M/L	REFO	Salvage/Regen	NA	P	40-80	25	S	64
147	S-R	LOWMAN	1/2	3	M	REFO	Salvage/Regen	NA	P	40-80	31	S	100
147	S-R	LOWMAN	1/2	3	M	REFO	Salvage/Regen	NA	P	40-80	31	T	24
148	S-R	DUGOUT	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	16
149	S-R	N RYE	2	3	H	REFO	Salvage/Regen	SL/HP	P	40-70	123	H	39
150	S-R	N RYE	2	3	H	REFO	Salvage/Regen	NA	P	40-70	81	H	119
151	S-R	N RYE	3A	3	H	REFO	Salvage/Regen	NA	P	40-70	39	H	17
152	S-R	N RYE	2	3	H/M	REFO	Salvage/Regen	NA	P	40-70	39	H	61
153	S-R	N RYE	3A	3	M	REFO	Salvage/Regen	SL/JP	P	40-70	67	H	73
154	S-R	N RYE	2/3A	3	M	REFO	Salvage/Regen	SL/JP	P	40-70	66	H	71
154	S-R	N RYE	2/3A	3	M	REFO	Salvage/Regen	WT	P	40-70	66	S	21
154	S-R	N RYE	2/3A	3	M	REFO	Salvage/Regen	WT	P	40-70	66	T	10
155	S-R	N RYE	3A	3	M	REFO	Salvage/Regen	SL/JP	P	40-70	35	S	5
156	S-R	N RYE	3A	3	M	REFO	Salvage/Regen	JP	P	40-70	32	H	97
156	S-R	N RYE	3A	3	M	REFO	Salvage/Regen	YT	P	40-70	32	S	12
156	S-R	N RYE	3A	3	M	REFO	Salvage/Regen	YT	P	40-70	32	T	6
157	S-R	N RYE	3A	3	H/M	REFO	Salvage/Regen	NA	P	40-70	32	S	23
157	S-R	N RYE	3A	3	H/M	REFO	Salvage/Regen	NA	P	40-70	32	T	54
158	S-R	N RYE	2	3	H	REFO	Salvage/Regen	SL/JP	P	40-70	34	H	108
160	S-R	N RYE	1	2	H/M	VRU2	Salvage/Regen	WT	P	50-80	48	S	8
160	S-R	N RYE	1	2	H/M	VRU2	Salvage/Regen	WT	P	50-80	48	T	79
161	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	50-80	48	S	48
161	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	50-80	48	T	12
162	S-R	N RYE	1	3	H/M	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	40-60	25	NA	17
163	S-R	N RYE	1	3	H/M	REFO	Manual/Rx Fire	SL/EX/SP	P	50-80	61	NA	160
164	S-R	N RYE	1	4	M	REFO	Salvage/Regen	NA	P	50-80	30	T	105
165	S-R	N RYE	1	3	M/L	REFO	Salvage/Regen	NA	P	50-80	25	H	24

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
165	S-R	N RYE	1	3	M/L	REFO	Salvage/Regen	NA	P	50-80	25	S	94
166	S-R	N RYE	1	3	M	REFO	Salvage/Regen	WT/EX	P	50-80	62	T	51
167	S-R	N RYE	1	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	25	T	0
169	S-R	N RYE	1	3	H/M/L	FUELS/DFB	Salvage	YT	NA	30-60	40	S	10
170	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	50-80	25	S	77
170	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	50-80	25	T	8
171	S-R	N RYE	1	3	H/M	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	85
172	S-R	N RYE	1	3	M	FUELS/DFB	Salvage	SL	NA	30-60	68	H	73
173	S-R	N RYE	1	3	M	REFO	Salvage/Regen	SL/EX/SP	P	50-80	101	H	63
174	S-R	N RYE	1	3	M	REFO	Salvage/Regen	SL/JP	P	50-80	63	H	102
175	S-R	N RYE	1	3	M/L	REFO	Salvage/Regen	WT/EX	P	50-80	70	T	45
176	S-R	N RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	27	T	45
177	S-R	N RYE	1	3	M	REFO	Salvage/Regen	SL/EX/SP	P	50-80	97	H	114
178	S-R	SLEEPING CHILD	1	4	H/L	REFO	Salvage/Regen	SL/JP	N	50-80	63	H	251
178	S-R	SLEEPING CHILD	1	4	H/L	REFO	Salvage/Regen	WT	N	50-80	63	S	178
178	S-R	SLEEPING CHILD	1	4	H/L	REFO	Salvage/Regen	WT	N	50-80	63	T	183
179	S-R	SLEEPING CHILD	1	4	H/M	REFO	Salvage/Regen	SL/EX/SP	N	50-80	60	H	84
180	S-R	SLEEPING CHILD	1	4	H/M	REFO	Salvage/Regen	SL/EX/SP	N	50-80	83	H	193
181	S-R	RYE	1	3	H/M	REFO	Salvage/Regen	WT	P	50-80	71	T	57
182	S-R	RYE	1	4	H/L	REFO	Salvage/Regen	NA	P	50-80	30	H	74
182	S-R	RYE	1	4	H/L	REFO	Salvage/Regen	NA	P	50-80	30	S	58
183	S-R	RYE	1	4	H/M	REFO	Salvage/Regen	NA	P	50-80	48	S	31
184	S-R	RYE	1	3	M/L	REFO	Salvage/Regen	NA	P	50-80	48	H	37
185	S-R	RYE	1	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	N	30-70	39	T	81
186	S-R	RYE	1/2	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	N	30-70	25	T	81
187	S-R	RYE	1/2	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	30-70	25	T	68
187	S-R	RYE	1/2	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	30-70	25	S	64
188	S-R	RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	30-70	26	H	101
188	S-R	RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	30-70	26	S	8
188	S-R	RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	30-70	26	T	8
189	S-R	RYE	1	3	H/L	REFO	Salvage/Regen	NA	P	30-70	43	H	92
189	S-R	RYE	1	3	H/L	REFO	Salvage/Regen	NA	P	30-70	43	S	31
190	S-R	RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	30-70	57	H	40
190	S-R	RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	30-70	57	S	71

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
190	S-R	RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	30-70	57	T	48
191	S-R	RYE	1	3	L	FUELS/DFB	Salvage	NA	NA	30-60	67	H	23
191	S-R	RYE	1	3	L	FUELS/DFB	Salvage	NA	NA	30-60	67	S	15
192	S-R	RYE	1	3	M/L	REFO	Salvage/Regen	NA	P	50-80	30	H	215
193	S-R	RYE	1	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	25	S	13
193	S-R	RYE	1	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	25	T	116
194	S-R	RYE	1/2	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	43	H	227
194	S-R	RYE	1/2	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	43	S	98
195	S-R	RYE	1/2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	26	H	103
195	S-R	RYE	1/2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	26	S	118
195	S-R	RYE	1/2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	26	T	103
196	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	31	H	56
196	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	31	S	45
196	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	31	T	12
197	S-R	RYE	1/2	2	M/L	VRU2	Intermediate	WT/HP	NA	30-50	45	S	13
197	S-R	RYE	1/2	2	M/L	VRU2	Intermediate	WT/EX	NA	30-50	45	T	137
198	S-R	RYE	2	2	H/M	VRU2	Intermediate	NA	NA	20-50	8	T	503
199	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	20-50	26	H	182
199	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	20-50	26	S	23
199	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	20-50	26	T	23
200	S-R	RYE	2	2	H/M/L	VRU2	Intermediate	NA	NA	20-30	4	H	181
200	S-R	RYE	2	2	H/M/L	VRU2	Intermediate	NA	NA	20-30	4	S	22
200	S-R	RYE	2	2	H/M/L	VRU2	Intermediate	NA	NA	20-30	4	T	22
201	S-R	RYE	2	2	H	VRU2	Salvage/Regen	NA	P	50-80	19	S	37
201	S-R	RYE	2	2	H	VRU2	Salvage/Regen	NA	P	50-80	19	T	12
202	S-R	RYE	2	3	H/M	REFO	Salvage/Regen	NA	P	50-80	25	T	15
203	S-R	RYE	2	3	H/M/L	FUELS/DFB	Salvage	NA	NA	40-60	25	S	34
203	S-R	RYE	2	3	H/M/L	FUELS/DFB	Salvage	NA	NA	40-60	25	T	137
204	S-R	RYE	2	3	H/M/L	FUELS/DFB	Salvage	WT	NA	20-50	45	S	14
204	S-R	RYE	2	3	H/M/L	FUELS/DFB	Salvage	WT	NA	20-50	45	T	14
205	S-R	RYE	2	3	H	REFO	Salvage/Regen	NA	P	50-80	27	S	91
205	S-R	RYE	2	3	H	REFO	Salvage/Regen	NA	P	50-80	27	T	61
206	S-R	RYE	2	3	H/L	REFO	Salvage/Regen	NA	P	50-80	37	H	670

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
207	S-R	RYE	2	2	H/L	WUI/VRU2	Salvage/Regen	SL/EX/SP	P	50-80	31	H	413
207	S-R	RYE	2	2	H/L	WUI/VRU2	Salvage/Regen	WT	P	50-80	31	S	311
207	S-R	RYE	2	2	H/L	WUI/VRU2	Salvage/Regen	WT	P	50-80	31	T	311
208	S-R	RYE	2	2	H/L	WUI	Intermediate	SL/JP	NA	40-70	32	H	170
208	S-R	RYE	2	2	H/L	WUI	Intermediate	YT	NA	40-70	32	S	19
209	S-R	RYE	3A	3	H/M	WUI/DFB	Intermediate	NA	P	40-70	33	H	465
210	S-R	RYE	2/3A	2	M/L	WUI	Intermediate	NA	NA	30-60	12	H	43
210	S-R	RYE	2/3A	2	M/L	WUI	Intermediate	NA	NA	30-60	12	S	9
210	S-R	RYE	2/3A	2	M/L	WUI	Intermediate	NA	NA	30-60	12	T	9
211	S-R	RYE	2	3	M	FUELS/DFB	Salvage	NA	NA	30-50	30	H	14
211	S-R	RYE	2	3	M	FUELS/DFB	Salvage	NA	NA	30-50	30	S	6
212	S-R	RYE	2	3	H/M/L	FUELS/DFB	Salvage	NA	NA	30-50	25	H	17
212	S-R	RYE	2	3	H/M/L	FUELS/DFB	Salvage	NA	NA	30-50	25	S	17
213	S-R	RYE	3A	3	M	WUI	Salvage	NA	NA	30-50	45	S	14
214	S-R	RYE	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	23	H	304
214	S-R	RYE	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	23	S	10
215	S-R	WHITESELL	2	2	M/L	VRU2	Intermediate	NA	NA	30-60	20	T	69
215	S-R	WHITESELL	2	2	M/L	VRU2	Intermediate	NA	NA	30-60	20	S	12
216	S-R	WHITESELL	3A	3	M/L	FUELS/DFB	Intermediate	NA	NA	40-60	20	S	11
217	S-R	ROBBINS	2	2	M/L	WUI	Intermediate	NA	NA	30-60	5	S	21
217	S-R	ROBBINS	2	2	M/L	WUI	Intermediate	NA	NA	30-60	5	T	84
218	S-R	ROBBINS	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	20	H	78
218	S-R	ROBBINS	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	20	S	77
218	S-R	ROBBINS	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	20	T	231
219	S-R	ROBBINS	2	2	M/L	VRU2	Salvage/Regen	NA	P	40-80	25	S	211
219	S-R	ROBBINS	2	2	M/L	VRU2	Salvage/Regen	NA	P	40-80	25	T	52
220	S-R	ROBBINS	2	2	M/L	WUI	Intermediate	NA	NA	30-60	17	H	109
220	S-R	ROBBINS	2	2	M/L	WUI	Intermediate	NA	NA	30-60	17	T	12
221	S-R	SPADE	2	2	H/M/L	WUI	Salvage/Regen	SL/EX/SP	P	40-80	42	H	379
222	S-R	SPADE	3A	3	H	WUI	Salvage/Regen	SL/EX/SP	P	40-80	62	H	135
223	WF	W FK BITTERRROOT	2/3A/3C	3	H/M/L	WUI/DFB	Intermediate	NA	NA	40-60	19	H	727
224	WF	W FK BITTERRROOT	3C	3	M/L	WUI/DFB	Intermediate	SL/EX/SP	NA	40-60	50	H	21
225	WF	W FK BITTERRROOT	3A	2	M/L	WUI	Intermediate	NA	NA	10-30	7	H	111
226	WF	W FK BITTERRROOT	3A	2	H/L	VRU2	Intermediate	NA	NA	20-40	5	H	79

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
227	WF	W FK BITTERRROOT	3A	2	L	VRU2	Intermediate	NA	NA	30-50	27	H	53
228	WF	W FK BITTERRROOT	3A	3	L	FUELS/DFB	Intermediate	NA	NA	40-60	27	H	53
229	WF	W FK BITTERRROOT	3A	2	L	WUI	Intermediate	NA	NA	10-40	10	H	66
230	WF	W FK BITTERRROOT	3A	3	M/L	WUI/DFB	Intermediate	NA	NA	30-50	15	H	162
231	WF	W FK BITTERRROOT	3A	3	H/M/L	WUI/DFB	Intermediate	NA	NA	30-60	30	H	42
233	WF	W FK BITTERRROOT	3A	3	H/L	WUI	Salvage	NA	NA	20-80	22	H	374
235	WF	W FK BITTERRROOT	3A	3	L	WUI	Salvage	NA	NA	30-60	25	H	31
236	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage	YT	NA	40-80	31	S	59
238	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Regen	NA	P	10-40	16	H	65
238	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Regen	NA	P	10-40	16	T	263
239	EF	MEDICINE TREE	2	2	H/L	VRU2	Intermediate	NA	P	20-40	20	H	32
239	EF	MEDICINE TREE	2	2	H/L	VRU2	Intermediate	NA	P	20-40	20	S	21
240	EF	MEDICINE TREE	2	2	L	VRU2	Intermediate	NA	NA	40-60	24	H	42
240	EF	MEDICINE TREE	2	2	L	VRU2	Intermediate	NA	NA	40-60	24	S	28
241	EF	MEDICINE TREE	2	2	L	VRU2	Intermediate	NA	NA	20-40	8	H	62
242	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	NA	P	40-80	27	H	23
243	EF	MEDICINE TREE	2	2	M/L	VRU2	Intermediate	NA	NA	30-40	18	S	48
244	EF	MEDICINE TREE	2	2	M	VRU2	Salvage/Regen	WT/YUM	P	40-80	63	S	94
245	EF	MEDICINE TREE	2	2	M/L	VRU2	Intermediate	NA	NA	10-50	10	T	96
246	EF	MEDICINE TREE	2	2	M/L	VRU2	Intermediate	NA	P	10-70	6	S	43
246	EF	MEDICINE TREE	2	2	M/L	VRU2	Intermediate	NA	P	10-70	6	T	170
247	EF	MEDICINE TREE	2	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	20-60	25	T	118
248	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	WT/YUM	P	10-30	42	S	40
249	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	WT/EX	P	10-40	60	T	89
250	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	HP	P	40-80	43	H	22
250	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	WT	P	40-80	43	S	22
251	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	HP	P	30-50	67	S	16
251	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	WT	P	30-50	67	T	9
252	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	WT	P	40-80	48	S	12
253	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	WT	P	40-60	35	S	23
254	EF	MEDICINE TREE	2	3	M/L	REFO	Salvage/Regen	SL/HP	P	40-80	33	S	13
254	EF	MEDICINE TREE	2	3	M/L	REFO	Salvage/Regen	SL/EX/SP	P	40-80	33	T	50
255	EF	MEDICINE TREE	2	2	H/M/L	VRU2	Salvage/Regen	WT	P	10-30	26	S	60
255	EF	MEDICINE TREE	2	2	H/M/L	VRU2	Salvage/Regen	WT	P	10-30	26	T	90

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
256	EF	MEDICINE TREE	2	2	H/M/L	VRU2	Manual/Rx Fire	SL/UB	P	20-50	25	NA	87
257	EF	MEDICINE TREE	2	3	H/L	REFO	Salvage/Regen	NA	P	40-80	39	S	132
257	EF	MEDICINE TREE	2	3	H/L	REFO	Salvage/Regen	NA	P	40-80	39	T	15
258	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	HP	P	10-20	27	H	12
258	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	YT	P	10-20	27	S	29
259	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	WT	P	20-30	30	T	11
260	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	HP	P	30-60	33	H	14
261	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	WT/EX/SP	P	20-40	46	S	47
262	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	WT/EX	P	20-40	75	T	17
265	EF	WHISKEY	3A	2	M/L	WUI	Intermediate	SL/JP	NA	10-40	35	H	123
269	EF	ELK GULCH	3A	2	L	WUI	Intermediate	NA	NA	30-60	8	H	328
270	EF	ELK GULCH	3A	2	H/L	WUI	Intermediate	NA	NA	30-60	21	H	194
274	EF	DICKSON	3A	3/4	H/L	WUI/DFB	Intermediate	NA	P	40-70	48	H	327
275	EF	DICKSON	3A	3	L	WUI/DFB	Intermediate	HP	P	10-50	28	H	68
276	EF	BLIND DRAW	2	3	H/M/L	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	171
277	EF	LAIRD	2	2	H/L	WUI	Intermediate	NA	P	40-70	7	T	299
278	EF	LAIRD	2	2	H/M	WUI	Salvage/Regen	NA	P	40-80	16	H	26
279	EF	LAIRD	2	2	H/M/L	WUI	Intermediate	NA	P	30-60	27	H	24
280	EF	LAIRD	1/2	3	H/M/L	WUI	Intermediate	NA	P	40-70	31	H	89
281	EF	LAIRD	1/2	3	H/M/L	WUI/DFB	Intermediate	NA	NA	30-60	24	H	111
282	EF	LAIRD	1/2	3	H/L	WUI/DFB	Intermediate	JP	P	40-70	52	H	201
283	EF	LAIRD	1/2	3	H/M/L	WUI/DFB	Intermediate	JP	P	40-70	49	H	201
283	EF	LAIRD	1/2	3	H/M/L	WUI	Intermediate	WT	P	40-70	49	S	121
283	EF	LAIRD	1/2	3	H/M/L	WUI	Intermediate	WT	P	40-70	49	T	80
284	EF	LAIRD	2/3A	2	H/M/L	WUI	Salvage/Regen	JP	P	30-70	36	H	284
284	EF	LAIRD	2/3A	2	H/M/L	WUI	Salvage/Regen	WT	P	30-70	36	S	316
284	EF	LAIRD	2/3A	2	H/M/L	WUI	Salvage/Regen	WT	P	30-70	36	T	32
285	EF	LAIRD	2	3	H/M	REFO	Salvage/Regen	WT	P	20-80	71	S	6
286	EF	LAIRD	1/2	3	H/M/L	FUELS/DFB	Salvage	NA	NA	40-80	48	H	142
286	EF	LAIRD	1/2	3	H/M/L	FUELS/DFB	Salvage	NA	NA	40-80	48	S	96
287	EF	LAIRD	1	4	H	REFO	Salvage/Regen	HP	P	40-80	49	H	11
287	EF	LAIRD	1	4	H	REFO	Salvage/Regen	HP	P	40-80	49	S	90
288	EF	LAIRD	1	4	H/L	REFO	Salvage/Regen	NA	N	40-80	42	H	56
289	EF	LAIRD	1/2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	30	H	9

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
289	EF	LAIRD	1/2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	30	S	78
290	EF	LAIRD	1	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	45	S	74
291	EF	LAIRD	1	3	H/M	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	49	H	44
291	EF	LAIRD	1	3	H/M	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	49	S	19
292	EF	LAIRD	1	3	M	FUELS/REFO	Salvage/Salvage/Regen	HP	N	40-80	54	H	17
292	EF	LAIRD	1	3	M	FUELS/REFO	Salvage/Salvage/Regen	WT	N	40-80	54	T	7
293	EF	LAIRD	1	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	JP	N	40-80	61	H	91
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	Salvage/Regen	HP	P	40-80	28	H	178
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	Salvage/Regen	YT	P	40-80	28	S	225
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	Salvage/Regen	YT	P	40-80	28	T	-23
296	EF	LORD DRAW	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	41	H	28
296	EF	LORD DRAW	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	41	S	86
297	EF	LORD DRAW	2/3A	2	H	VRU2	Salvage/Regen	JP	P	40-80	49	H	106
297	EF	LORD DRAW	2/3A	2	H	VRU2	Salvage/Regen	WT	P	40-80	49	T	5
298	EF	WARM SPRINGS	2	2	H/M/L	VRU2	Planting Only	NA	P	NA	NA	NA	55
299	EF	WARM SPRINGS	2	3	L	FUELS/DFB	Intermediate	NA	NA	40-60	22	S	32
300	EF	WARM SPRINGS	2	3	M/L	FUELS/DFB	Intermediate	NA	NA	40-60	26	H	46
301	EF	WARM SPRINGS	2	3	L	FUELS/DFB	Intermediate	NA	NA	40-60	28	H	34
302	EF	WARM SPRINGS	1/2	3	H/L	FUELS/REFO	Salvage/Regen	SL/JP	N	30-60	52	H	184
304	EF	WARM SPRINGS	1	4	M/L	REFO	Salvage/Regen	SL/JP	N	40-80	83	H	43
305	EF	WARM SPRINGS	1/2	4	H	REFO	Manual/Rx Fire	JP	N	40-80	59	NA	47
306	EF	WARM SPRINGS	2	3	L	FUELS/REFO	Manual/Rx Fire	SL/UB	N	40-80	51	NA	31
307	EF	WARM SPRINGS	1/2	3	H/M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	43	H	56
308	EF	WARM SPRINGS	1/2	3	H/M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	41	H	322
309	EF	WARM SPRINGS	1/2	3	H/M/L	FUELS/DFB	Intermediate	NA	NA	40-60	27	H	204
310	EF	WARM SPRINGS	2	2	M/L	VRU2	Intermediate	NA	NA	40-60	25	H	59
311	EF	WARM SPRINGS	2	2	M/L	WUI	Intermediate	NA	N	40-70	36	H	318
312	EF	WARM SPRINGS	2/3A	2	M/L	WUI	Intermediate	NA	NA	30-60	22	H	48
313	EF	WARM SPRINGS	2/3A	2	M/L	WUI	Intermediate	NA	NA	30-60	20	H	128
314	EF	WARM SPRINGS	3A	2	M/L	WUI	Intermediate	NA	NA	30-60	21	H	109
315	EF	E FK BITTERROOT	3A	2	H/M/L	WUI	Intermediate	NA	NA	30-60	20	H	35
316	EF	E FK BITTERROOT	3A	2	H/L	WUI	Intermediate	NA	NA	30-60	14	H	108
316	EF	E FK BITTERROOT	3A	2	H/L	WUI	Intermediate	NA	NA	30-60	14	S	18

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
317	EF	E FK BITTERROOT	2/3A	2	H/L	WUI	Salvage/Regen	SL/EX/SP	P	40-80	46	H	72
318	EF	E FK BITTERROOT	2/3A	2/3	H/M/L	WUI	Intermediate	SL/EX/SP	N	40-70	49	H	387
319	EF	MAYNARD	2/3A	2/3	H/M/L	VRU2	Intermediate	SL/EX/SP	N	40-70	47	H	262
319	EF	MAYNARD	2/3A	2/3	H/M/L	VRU2	Intermediate	WT	N	40-70	47	S	38
320	EF	MAYNARD	2	3	H/L	REFO	Salvage/Regen	SP	N	40-80	78	H	70
321	EF	MAYNARD	2	3	H	REFO	Salvage/Regen	SP	N	40-80	60	H	85
322	EF	MAYNARD	1	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	30-60	24	H	89
322	EF	MAYNARD	1	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	30-60	24	S	89
323	EF	MAYNARD	1	3	H/M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	38	H	46
323	EF	MAYNARD	1	3	H/M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	38	S	18
324	EF	MAYNARD	2	3	H/L	FUELS/DFB	Salvage	NA	NA	30-60	31	H	50
324	EF	MAYNARD	2	3	H/L	FUELS/DFB	Salvage	NA	NA	30-60	31	S	118
324	EF	MAYNARD	2	3	H/L	FUELS/DFB	Salvage	NA	NA	30-60	31	T	30
325	EF	MAYNARD	1/2	3	H/L	REFO	Salvage/Regen	WT/HP	P	40-80	83	S	28
325	EF	MAYNARD	1/2	3	H/L	REFO	Salvage/Regen	WT/EX	P	40-80	83	T	29
326	EF	MAYNARD	1/2	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	46	S	35
327	EF	MAYNARD	1/2	3	H/L	FUELS/DFB	Salvage	NA	NA	30-60	40	T	42
328	EF	MAYNARD	1/2	4	H/L	REFO	Salvage/Regen	SL/JP	N	40-80	73	H	58
328	EF	MAYNARD	1/2	4	H/L	REFO	Salvage/Regen	WT/JP	N	40-80	73	S	7
328	EF	MAYNARD	1/2	4	H/L	REFO	Salvage/Regen	WT/EX	N	40-80	73	T	24
329	EF	MAYNARD	1	3	H/L	REFO	Salvage/Regen	SL/JP	N	40-80	84	H	31
330	EF	MAYNARD	1	3	H/L	REFO	Salvage/Regen	JP	N	40-80	66	TLM	98
330	EF	MAYNARD	1	3	H/L	REFO	Salvage/Regen	WT	N	40-80	66	T	24
331	EF	MAYNARD	1	3	M/L	FUELS/DFB	Intermediate	NA	NA	40-60	31	H	25
331	EF	MAYNARD	1	3	H/M/L	FUELS/DFB	Salvage	NA	NA	40-60	31	S	24
332	EF	MAYNARD	1	4	H	REFO	Salvage/Regen	SL/HP	N	40-80	63	H	21
332	EF	MAYNARD	1	4	H	REFO	Salvage/Regen	WT/HP	N	40-80	63	S	17
333	EF	ANDREWS	2/3A	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	SL/UB	N	30-60	88	S	96
334	EF	ANDREWS	2/3A	3	M/L	FUELS/DFB	Salvage	NA	NA	40-80	25	S	25
340	EF	PRAINE	1/3A	3	H/M/L	REFO	Salvage/Regen	NA	P	40-80	50	H	114
341	EF	ANDREWS	3A	2	H	WUI	Salvage/Regen	HP	P	40-80	45	H	36
342	EF	ANDREWS	3A	2	H	WUI	Salvage/Regen	SL/HP	P	40-80	40	H	14
343	EF	WAUGH	1/2	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	38	H	79
345	EF	WAUGH	3A	2	L	WUI	Manual/Rx Fire	SL/UB	P	30-60	22	NA	23

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
346	EF	CAMP	3A	2	H	WUI	Manual/Rx Fire	SL/EX/SP	P	30-60	30	NA	108
347	EF	CAMP	1/2/3A	3	H/M/L	WUI	Salvage/Regen	SL/EX/SP	N	40-80	63	H	394
348	EF	W FK CAMP	2/3A	2	H/L	WUI	Salvage	NA	NA	30-60	35	H	120
349	EF	CAMP	3A	2	NI	WUI	Manual/Rx Fire	SL/HP	NA	30-60	12	NA	43
350	EF	DICK	1/2	3	H/M/L	WUI	Salvage/Regen	SL/SP/JP	P	40-80	59	H	207
350	EF	DICK	1/2	3	H/M/L	WUI	Salvage/Regen	WT	P	40-80	59	S	102
351	EF	DICK	1/2	2	H	WUI	Salvage/Regen	SL/EX/SP	P	40-80	56	H	415
351	EF	DICK	1/2	2	H	WUI	Salvage/Regen	WT/EX/SP	P	40-80	56	S	167
351	EF	DICK	1/2	2	H	WUI	Salvage/Regen	WT/EX/SP	P	40-80	56	T	249
353	EF	CAMP	2/3A	2	H	WUI	Salvage/Regen	SL/SP	N	30-60	41	H	62
353	EF	CAMP	2/3A	2	H	WUI	Salvage/Regen	WT/YUM	N	30-60	41	S	22
353	EF	CAMP	2/3A	2	H	WUI	Salvage/Regen	WT/YUM	N	30-60	41	T	4
354	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	SL/SP	N	30-60	32	H	36
354	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT/YUM	N	30-60	32	S	19
355	EF	CAMP	2	2	H/L	WUI	Salvage/Regen	SL/SP	N	30-60	48	H	15
355	EF	CAMP	2	2	H/L	WUI	Salvage/Regen	WT/HP	N	30-60	48	S	5
356	EF	CAMP	3A	2	L	WUI	Intermediate	SL/JP	NA	30-60	24	H	22
356	EF	CAMP	3A	2	L	WUI	Intermediate	WT	NA	30-60	24	S	28
356	EF	CAMP	3A	2	L	WUI	Intermediate	WT	NA	30-60	24	T	12
357	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	SL/SP	P	30-60	38	H	44
357	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT/YUM	P	30-60	38	S	26
357	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT/YUM	P	30-60	38	T	17
358	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	SL/SP	P	30-60	36	H	54
358	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT/YUM	P	30-60	36	S	10
358	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT/YUM	P	30-60	36	T	4
359	EF	CAMP	3A	2	H/L	WUI	Intermediate	NA	NA	30-60	28	H	97
359	EF	CAMP	3A	2	H/L	WUI	Intermediate	NA	NA	30-60	28	S	48
359	EF	CAMP	3A	2	H/L	WUI	Intermediate	NA	NA	30-60	28	T	16
360	EF	CAMP	3A	2	H/M/L	WUI	Intermediate	NA	NA	30-60	23	H	34
360	EF	CAMP	3A	2	H/M/L	WUI	Intermediate	NA	NA	30-60	23	T	34
361	EF	CAMP	3A	2	H/L	WUI	Intermediate	HP	NA	30-60	34	H	20
362	EF	CAMP	3A	2	M/L	WUI	Intermediate	HP	NA	30-60	34	H	3
363	EF	CAMP	3A	2	H/M/L	WUI	Intermediate	NA	NA	30-60	21	H	157
363	EF	CAMP	3A	2	H/M/L	WUI	Intermediate	NA	NA	30-60	21	S	26

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
363	EF	CAMP	3A	2	H/M/L	WUI	Intermediate	NA	NA	30-60	21	T	79
364	EF	REIMEL	2/3A	3	H/M	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	37	H	274
364	EF	REIMEL	2/3A	3	H/M	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	37	S	15
364	EF	REIMEL	2/3A	3	H/M	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	37	T	16
365	EF	REIMEL	2/3A	2	M/L	WUI	Intermediate	NA	NA	30-60	12	H	44
366	EF	REIMEL	2/3A	3	M/L	FUELS/DFB	Intermediate	NA	NA	40-60	24	H	67
367	EF	REIMEL	2	3	H	FUELS/REFO	Salvage/Regen	SL/JP	N	30-60	81	H	30
368	EF	REIMEL	2/3A	3	H/L	FUELS/DFB	Intermediate	NA	NA	40-60	32	H	33
369	EF	REIMEL	2	2	H/L	VRU2	Manual/Rx Fire	SL/HP	N	30-60	15	NA	34
370	EF	REIMEL	2	3	H/L	REFO	Salvage/Regen	NA	N	40-80	51	H	36
372	EF	TOLAN	2	3	L	FUELS/DFB	Intermediate	SL/JP	NA	40-70	26	H	71
373	EF	TOLAN	3A	2	L	VRU2	Intermediate	NA	NA	30-60	23	H	35
374	EF	TOLAN	3A	3	L	FUELS/DFB	Intermediate	NA	NA	40-60	15	H	71
375	EF	TOLAN	3A	2	L	VRU2	Intermediate	NA	NA	30-60	16	H	33
376	EF	E FK BITTERROOT	2	3	L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	40-80	31	NA	14
377	EF	JENNINGS	1	3	L	FUELS	Manual/Rx Fire	SL/HP	NA	10-40	25	NA	32
378	EF	GUIDE	1	3	L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	10-40	25	NA	88
379	EF	GUIDE	2	3	L	FUELS/DFB	Salvage	NA	NA	10-40	25	S	10
379	EF	GUIDE	2	3	L	FUELS/DFB	Salvage	NA	NA	10-40	25	T	10
380	EF	E FK BITTERROOT	1/2/3A	2	L	VRU2	Salvage	NA	NA	10-60	18	H	341
381	EF	CAMERON	3A	2	H/L	WUI	Salvage/Regen	SL/SP/HP	P	40-80	25	H	501
382	EF	CAMERON	2/3A	2	H/M/L	VRU2	Salvage/Regen	SL/SP/HP	P	40-80	38	H	831
383	EF	CAMERON	2	2	H/M/L	VRU2	Salvage/Regen	WT	P	40-80	31	T	109
384	EF	CAMERON	2	3	M/L	REFO	Salvage/Regen	NA	P	40-80	25	T	118
385	EF	CAMERON	2	3	H/M/L	REFO	Salvage/Regen	NA	P	40-80	41	S	192
386	EF	CAMERON	2	2	H/M	VRU2	Intermediate	NA	P	40-70	25	S	107
386	EF	CAMERON	2	2	H/M	VRU2	Intermediate	YT	P	40-70	25	T	107
386	EF	CAMERON	2	2	H/M	VRU2	Intermediate	YT	P	40-70	25	H	107
387	EF	CAMERON	2	2	H	FUELS/REFO	Salvage/Salvage/Regen	WT	P	40-80	34	S	119
387	EF	CAMERON	2	2	H	FUELS/REFO	Salvage/Salvage/Regen	WT	P	40-80	34	T	237
387	EF	CAMERON	2	2	H	FUELS/REFO	Salvage/Salvage/Regen	SL/JP	P	40-80	34	H	119
388	EF	HART	2	3	M	FUELS/REFO	Salvage/Salvage/Regen	NA	P	20-60	27	S	53
388	EF	HART	2	3	M	FUELS/REFO	Salvage/Salvage/Regen	NA	P	20-60	27	T	54
389	EF	HART	2	2	H/M	VRU2	Intermediate	NA	P	30-60	22	H	105

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
389	EF	HART	2	2	H/M	VRU2	Intermediate	NA	P	30-60	22	S	45
390	EF	HART	2	2	H	VRU2	Salvage/Regen	WT	P	40-80	41	S	33
391	EF	HART	2	2	L	VRU2	Intermediate	NA	NA	30-60	27	S	23
391	EF	HART	2	2	L	VRU2	Intermediate	NA	NA	30-60	27	T	24
392	EF	HART	2	2	H/M/L	VRU2	Intermediate	NA	P	30-60	35	S	39
392	EF	HART	2	2	H/M/L	VRU2	Intermediate	NA	P	30-60	35	T	156
393	EF	CAMERON	1	3	M	REFO	Salvage/Regen	NA	P	40-80	25	S	23
394	EF	JENNINGS	2	3	M	FUELS/DFB	Salvage	NA	NA	10-40	25	H	113
394	EF	JENNINGS	2	3	M	FUELS/DFB	Salvage	NA	NA	10-40	25	S	102
394	EF	JENNINGS	2	3	M	FUELS/DFB	Salvage	NA	NA	10-40	25	T	12
395	EF	JENNINGS	2	3	L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	10-40	25	NA	91
396	EF	JENNINGS	1/2	3	L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	10-40	25	NA	186
398	EF	MEADOW	1	3	H/M	REFO	Salvage/Regen	WT/YUM	N	40-80	78	S	55
399	EF	BUGLE	1	2	L	VRU2	Intermediate	NA	NA	30-70	21	T	53
400	EF	MEADOW	1	2	L	VRU2	Manual/Rx Fire	SL/HP	NA	30-60	22	NA	25
401	EF	MEADOW	1	3	H/L	REFO	Salvage/Regen	SL/JP	N	40-80	53	H	94
402	EF	MEADOW	1	2	H/L	VRU2	Intermediate	NA	NA	30-60	32	H	101
403	EF	MEADOW	1	4	H/M/L	REFO	Salvage/Regen	NA	N	40-80	49	H	217
403	EF	MEADOW	1	4	H/M/L	REFO	Salvage/Regen	YT	N	40-80	49	S	217
404	EF	MEADOW	1	4	H/M	REFO	Salvage/Regen	SL/JP	N	40-80	73	H	165
404	EF	MEADOW	1	4	H/M	REFO	Salvage/Regen	WT/YUM	N	40-80	73	S	41
405	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	44	H	143
405	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	44	S	67
405	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	44	T	62
406	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	54	H	372
406	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	YT	N	50-80	54	S	106
406	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	YT	N	50-80	54	T	54
407	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	37	H	206
407	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	37	T	52
408	EF	TOLAN	1	4	H/L	REFO	Salvage	YT	N	50-80	47	T	52
410	EF	TOLAN	1	4	H/M/L	REFO	Salvage/Regen	SL/JP	N	50-80	53	H	765
411	EF	TOLAN	1	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	43	H	151
411	EF	TOLAN	1	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	43	S	125
412	S-R	SKALKAHO	2	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	20

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
414	S-R	DALY	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	2
415	S-R	DALY	3A	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	20
416	S-R	LITTLE SLEEPING CHILD	2	2	M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	24	NA	48
417	S-R	LITTLE SLEEPING CHILD	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	56
418	S-R	SKALKAHO	1	4	M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	62	NA	32
419	S-R	LITTLE SLEEPING CHILD	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	28
420	S-R	SKALKAHO	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	62
421	S-R	SKALKAHO	1	4	M/L	REFO	Planting Only	NA	P	NA	NA	NA	54
422	S-R	LITTLE SLEEPING CHILD	2	3	M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	30	NA	24
423	S-R	LITTLE SLEEPING CHILD	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	19
424	S-R	SKALKAHO	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	33
425	S-R	LITTLE SLEEPING CHILD	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	60
426	S-R	SKALKAHO	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	33
427	S-R	SKALKAHO	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	56
428	S-R	SKALKAHO	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	2
429	S-R	LITTLE SLEEPING CHILD	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	22
430	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	43
431	S-R	LITTLE SLEEPING CHILD	2	3	H/M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	33	NA	42
432	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	5
433	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	8
434	S-R	LITTLE SLEEPING CHILD	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	19
435	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	28
436	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	97
437	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	20
438	S-R	LITTLE SLEEPING CHILD	2	3	H/M/L	REFO	Planting Only	NA	P	NA	NA	NA	53
439	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	30
440	S-R	LITTLE SLEEPING CHILD	2	3	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	12
441	S-R	LITTLE SLEEPING CHILD	1	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	31
443	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	22	NA	8
444	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	22	NA	42
445	S-R	LITTLE SLEEPING CHILD	2	2	H/L	REFO	Planting Only	NA	P	NA	NA	NA	27
446	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	44
447	S-R	SKALKAHO	2	4	H	REFO	Planting Only	NA	P	NA	NA	NA	12
448	S-R	LITTLE SLEEPING CHILD	1	4	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	22

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
449	S-R	SKALKAHO	1	4	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	35
450	S-R	SKALKAHO	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	35
451	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	18
452	S-R	SLEEPING CHILD	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	18
453	S-R	SLEEPING CHILD	2	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	14
454	S-R	RYE	2	3	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	70
455	S-R	LITTLE SLEEPING CHILD	1	3	H/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	29	NA	51
456	S-R	SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	34
457	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	19
458	S-R	SLEEPING CHILD	1	4	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	30	NA	11
459	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	12
460	S-R	SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	10
461	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	16
462	S-R	SLEEPING CHILD	2	4	M	REFO	Planting Only	NA	P	NA	NA	NA	92
463	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	88
464	S-R	SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	44
465	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	77
466	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	14
467	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	11
468	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	20
469	S-R	SLEEPING CHILD	2	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	35
470	S-R	LITTLE SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	146
471	S-R	SLEEPING CHILD	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	11
472	S-R	LOWMAN	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	12
473	S-R	LOWMAN	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	13
474	S-R	LOWMAN	2	4	H	REFO	Planting Only	NA	P	NA	NA	NA	89
475	S-R	N RYE	2	4	M/L	REFO	Planting Only	NA	P	NA	NA	NA	65
476	S-R	N RYE	2	3	M/L	REFO	Planting Only	NA	P	NA	NA	NA	60
477	S-R	BURKE	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	19
478	S-R	BURKE	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	5
479	S-R	LOWMAN	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	13
480	S-R	BURKE	1	2	H	REFO	Planting Only	NA	P	NA	NA	NA	11
481	S-R	N RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	41
482	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	56

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
483	S-R	LOWMAN	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	5
484	S-R	LOWMAN	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	26
485	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	51
486	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	29
487	S-R	N RYE	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	37
488	S-R	N RYE	1	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	50
489	S-R	N RYE	1	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	57
490	S-R	RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	14
491	S-R	RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	26
492	S-R	RYE	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	5
493	S-R	N RYE	1	2	M	REFO	Planting Only	NA	P	NA	NA	NA	26
494	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	35
495	S-R	N RYE	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	22
496	S-R	CAMERON	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	4
497	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	30
498	EF	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	87
499	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	15
500	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
501	S-R	N RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	36
502	S-R	RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	11
503	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	9
504	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	23
505	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	91
506	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	18
507	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	29
508	S-R	RYE	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	11
509	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	80
510	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	43
511	EF	DORAN	3A	3	M	REFO	Planting Only	NA	P	NA	NA	NA	15
512	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	8
513	EF	MEDICINE TREE	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	32
514	EF	MEDICINE TREE	3A	2	H/L	REFO	Planting Only	NA	P	NA	NA	NA	21
515	S-R	RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	19
516	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	16

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
517	EF	MEDICINE TREE	1	2	H	REFO	Planting Only	NA	P	NA	NA	NA	5
518	EF	CAMERON	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	11
519	EF	MEDICINE TREE	3A	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	15
520	EF	MEDICINE TREE	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	35
521	EF	LYMAN	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	51
522	EF	MEDICINE TREE	3A	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	15
523	S-R	RYE	2	3	H/M/L	REFO	Planting Only	NA	P	NA	NA	NA	33
524	EF	CAMERON	1	2	M	REFO	Planting Only	NA	P	NA	NA	NA	44
525	EF	CAMERON	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	13
526	EF	LYMAN	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	13
527	EF	DORAN	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	3
528	EF	LYMAN	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	6
529	EF	CAMERON	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	19
530	EF	DORAN	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
531	EF	LYMAN	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	15
531	EF	LYMAN	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	14
532	EF	MEDICINE TREE	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	27
533	EF	LYMAN	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
535	EF	MEDICINE TREE	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	12
536	EF	LYMAN	2	3	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	33	NA	13
537	EF	LYMAN	3A	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	13
538	EF	MEDICINE TREE	3A	2	M/L	REFO	Planting Only	NA	P	NA	NA	NA	74
539	EF	MEDICINE TREE	3A	2	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	28	NA	14
540	EF	MEDICINE TREE	1	2	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	17
541	EF	MEADOW	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	122
542	EF	MEDICINE TREE	1	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
543	EF	MEADOW	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	6
544	EF	TOLAN	3A	4	NI	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	16
545	EF	LAIRD	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	19
546	EF	LAIRD	3A	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	59
547	EF	WARM SPRINGS	3A	3	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	32	NA	31
548	EF	WARM SPRINGS	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	65
549	EF	WARM SPRINGS	3A	3	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	32	NA	21
551	EF	LAIRD	3A	2	M/L	REFO	Planting Only	NA	P	NA	NA	NA	23

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
552	EF	LAIRD	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	52
553	EF	WARM SPRINGS	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	19
554	EF	WARM SPRINGS	3A	3	M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	81
555	EF	WARM SPRINGS	3A	3	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	38
556	EF	ANDREWS	3A	2	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	8
557	EF	ANDREWS	3A	3	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	3
558	EF	ANDREWS	3A	4	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	49
559	EF	ANDREWS	3A	3	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	3
560	EF	ANDREWS	3A	3	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	23
561	EF	ANDREWS	2	3	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	7
562	EF	WAUGH	2	2	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	12
563	EF	WAUGH	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	24
564	EF	REIMEL	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	11
565	WF	LITTLE BLUE JOINT	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	27
566	WF	LITTLE BLUE JOINT	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	7
567	WF	LITTLE BLUE JOINT	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	30
568	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	10
569	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	9
570	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	30
571	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	12
572	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	32
573	WF	LITTLE BLUE JOINT	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	11
574	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	15
575	WF	LITTLE BLUE JOINT	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	11
576	WF	COAL	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	7
577	WF	COAL	1	2	H/M	REFO	Manual/Rx Fire	SL/HP	P	10-50	40	NA	22
578	WF	COAL	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	57
579	WF	WEST	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	38
580	WF	COAL	2	3	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	27	NA	69
581	WF	WEST	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	30
582	EF	TOLAN	1	4	H/M	REFO	Salvage/Regen	SL/HP	N	40-80	59	H	225
584	EF	W FK CAMP	3A	4	H/L	REFO	Salvage/Regen	SL/JP	P	40-80	47	H	81
584	EF	W FK CAMP	3A	4	H/L	REFO	Salvage/Regen	WT	P	40-80	47	T	101
589	S-R	SLEEPING CHILD	1	3	H/M/L	FUELS/DFB	Salvage	WT/EX	NA	40-60	65	T	30

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
590	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	FUELS	Salvage/Salvage/Regen	NA	P	30-80	22	T	7
591	S-R	BURKE	1/2	2	M/L	REFO	Salvage/Regen	JP	P	40-80	33	H	122
592	S-R	N RYE	1	3	H/M/L	FUELS/REFO	Intermediate	NA	P	40-70	9	S	47
592	S-R	N RYE	1	3	H/M/L	FUELS/REFO	Intermediate	NA	P	40-70	9	T	47
593	EF	MEDICINE TREE	2	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	20-60	25	T	66
594	EF	LAIRD	2	2	H/L	WUI	Intermediate	NA	P	40-70	8	T	27
595	EF	LAIRD	2	2	H/L	WUI	Intermediate	NA	P	40-70	7	T	22
596	EF	WARM SPRINGS	2	3	L	FUELS/DFB	Intermediate	WT	NA	40-60	43	S	19
597	EF	WARM SPRINGS	2	3	L	FUELS/DFB	Intermediate	UB	NA	40-60	82	H	27
598	EF	MAYNARD	3A	2	H/L	WUI	Intermediate	JP	P	40-70	56	H	245
598	EF	MAYNARD	3A	2	H/L	WUI	Intermediate	WT/JP	P	40-70	56	S	29
599	EF	MAYNARD	1	3	H/M/L	REFO	Salvage/Regen	WT/JP	P	40-80	59	S	27
599	EF	MAYNARD	1	3	H/M/L	REFO	Salvage/Regen	WT/JP	P	40-80	59	T	26
601	EF	GUIDE	1	3	L	FUELS/DFB	Salvage	NA	NA	10-40	38	H	16
602	EF	JENNINGS	2	3	L	FUELS/DFB	Salvage	NA	NA	10-40	37	S	14
603	EF	JENNINGS	2	3	L	FUELS/DFB	Salvage	NA	NA	10-40	43	S	5
604	EF	JENNINGS	2	3	L	FUELS/DFB	Salvage	WT	NA	10-40	63	T	13
605	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	Intermediate	WT	NA	20-40	10	T	5
606	S-R	BURKE	2	2	H	VRU2	Salvage/Regen	WT/YUM	P	50-80	62	S	31
607	S-R	RYE	1	3	L	FUELS/DFB	Salvage	NA	NA	30-60	38	H	153
608	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Intermediate	NA	NA	10-30	8	S	94
610	B	COW	3A	2	H	WUI	Salvage/Regen	SL/HP	P	30-70	39	T	14
611	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	HP	P	30-70	54	H	30
611	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	WT/YUM	P	30-70	54	S	180
611	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	WT/EX	P	30-70	54	T	90
613	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	NA	N	40-70	24	H	30
613	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	NA	N	40-70	24	S	7
614	S-R	S FK SKALKAHO	1	3	H/L	REFO	Salvage/Regen	NA	P	40-70	28	H	109
614	S-R	S FK SKALKAHO	1	3	H/L	REFO	Salvage/Regen	NA	P	40-70	28	S	110
700	WF	PIQUETT	1	3	H/M	REFO	Salvage/Regen	JP	N	50-80	53	H	120
701	WF	PIQUETT	1	3	M/L	FUELS/DFB	Salvage/Regen	NA	N	20-50	25	H	387
702	WF	OVERWHICH	2	3	H	REFO	Manual/Rx Fire	SL/HP	P	50-80	43	NA	28
703	WF	PAINTED ROCKS LAKE	3A	3	L	WUI/DFB	Intermediate	SL/HP	NA	30-60	53	H	65
704	WF	OVERWHICH	2	3	H	REFO	Salvage/Regen	NA	P	50-80	35	S	20

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
705	WF	OVERWHICH	2	3	H/L	FUELS	Salvage/Salvage/Regen	WT	P	30-60	43	S	21
705	WF	OVERWHICH	2	3	H/L	FUELS	Salvage/Salvage/Regen	WT	P	30-60	43	T	48
706	WF	BLUE JOINT	3A	3	H/M/L	WUI	Salvage/Regen	NA	P	40-80	32	S	127
707	WF	LITTLE BLUE JOINT	2	3	H/M	REFO	Salvage/Regen	NA	P	40-80	25	S	23
708	WF	LITTLE BLUE JOINT	2	3	H/M	REFO	Salvage/Regen	NA	P	40-80	49	S	8
709	WF	LITTLE BLUE JOINT	1/2	3	H/M	REFO	Salvage/Regen	SL/JP	P	40-80	53	H	447
711	EF	GUIDE	1	2	L	FUELS/DFB	Salvage	SL/JP	NA	10-40	67	H	38
712	EF	JENNINGS	2	2	L	WUI	Intermediate	SL/SP	P	30-60	66	S	33
713	EF	JENNINGS	2	4	H/M	REFO	Salvage/Regen	NA	N	40-80	44	S	26
714	EF	WARM SPRINGS	2	2	M/L	WUI	Manual/Rx Fire	SL/UB	NA	10-40	52	NA	48
715	EF	WARM SPRINGS	2	3	M/L	FUELS/DFB	Intermediate	NI	NA	30-60	22	S	78
716	EF	WAUGH	2	2	L	WUI	Intermediate	WT/YUM	P	30-60	40	S	106
716	EF	WAUGH	2	2	L	WUI	Intermediate	WT/EX	P	30-60	40	T	28
717	EF	CAMP	3A	2	H	WUI	Salvage/Regen	WT/YUM	P	30-60	43	S	173
717	EF	CAMP	3A	2	H	WUI	Salvage/Regen	WT/EX	P	30-60	43	T	19
718	EF	REIMEL	2/3A	2	H/L	VRU2	Intermediate	SL/SP	N	30-60	48	H	197
719	EF	E FK BITTERROOT	2/3A	3	L	FUELS/DFB	Salvage	SL/JP	NA	40-80	51	H	185
720	EF	TOLAN	3A	2	L	VRU2	Intermediate	SL/SP	NA	30-60	49	H	116
721	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	45	H	354
721	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	45	T	57
722	EF	MEADOW	1	2	L	VRU2	Intermediate	SL/SP	NA	30-60	47	H	187
722	EF	MEADOW	1	2	L	VRU2	Intermediate	SL/SP	NA	30-60	47	T	46
723	S-R	ROAN	2	2	L	VRU2	Intermediate	SL/SP	P	30-60	47	H	139
723	S-R	ROAN	2	2	L	VRU2	Intermediate	WT/YUM	P	30-60	47	S	47
724	S-R	SLEEPING CHILD	3A	3	H/M/L	FUELS/DFB	Salvage	NA	NA	40-60	32	H	18
725	S-R	SLEEPING CHILD	3A	3	M/L	FUELS/REFO	Intermediate	NA	N	40-60	32	H	46
726	S-R	SLEEPING CHILD	3A	3	M/L	FUELS/REFO	Intermediate	NA	P	40-70	27	S	34
727	S-R	LITTLE SLEEPING CHILD	1/2	2	M/L	VRU2	Intermediate	WT/DL/JP	NA	30-60	50	S	32
728	S-R	JERRYS GULCH	2	3	H/L	REFO	Manual/Rx Fire	SL/SP	P	50-80	62	NA	5
729	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Intermediate	WT/YUM	P	30-70	55	S	119
729	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Intermediate	WT/EX	P	30-70	55	T	38
730	S-R	MIKE	2	2	M/L	VRU2	Intermediate	WT	NA	30-50	35	S	44
730	S-R	MIKE	2	2	M/L	VRU2	Intermediate	WT	NA	30-50	35	T	19
731	S-R	LITTLE SLEEPING CHILD	1	3	L	FUELS/DFB	Salvage	WT/YUM	NA	40-60	65	S	24

Fuel Reduction Unit Information - Alternative D

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
732	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	WT/HP	P	50-80	34	S	11
733	S-R	BURKE	2	2	M/L	VRU2	Salvage/Regen	SL/HP	P	50-80	54	H	99
733	S-R	BURKE	2	2	M/L	VRU2	Salvage/Regen	WT/YUM	P	50-80	54	S	13
734	S-R	BURKE	2	2	H/M	VRU2	Salvage/Regen	WT/EX	P	50-80	57	T	88
735	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	40-80	40	H	45
735	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	40-80	40	S	44
736	S-R	DUGOUT	2	3	H	REFO	Salvage/Regen	NA	P	40-80	34	H	40
737	S-R	DUGOUT	2	3	H	REFO	Salvage/Regen	SL/HP	P	40-80	58	H	35
738	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	WT/YUM	P	50-80	76	S	42
738	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	WT/EX	P	50-80	76	T	42
739	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	YT	P	50-80	30	T	40
740	S-R	N RYE	1	3	H/M/L	FUELS/DFB	Salvage	NA	NA	40-60	25	T	25
741	S-R	LITTLE SLEEPING CHILD	1	3	M/L	FUELS	Intermediate	NA	NA	40-60	5	T	11
742	S-R	ROBBINS	2/3A	2	M/L	WUI	Manual/Rx Fire	SL/HP	NA	10-40	19	NA	59
744	EF	LAIRD	2	2	M/L	WUI	Intermediate	WT/EX	P	40-70	67	T	109
746	EF	MEDICINE TREE	2	2	H/L	VRU2	Intermediate	HP	P	10-40	15	T	24
748	S-R	ROBBINS	2	2	H/M/L	VRU2	Planting Only	NA	P	NA	NA	NA	2
750	EF	MEDICINE TREE	2	2	H	VRU2	Planting Only	NA	P	NA	NA	NA	126
751	S-R	SLEEPING CHILD	2/3A	3	L	WUI/DFB	Intermediate	NA	NA	30-60	30	H	122
752	EF	CAMP	3A	2	H	WUI	Manual/Rx Fire	SL/HP	P	30-60	37	NA	17
754	S-R	SLEEPING CHILD	1	3	H	REFO	Salvage/Regen	NA	P	50-80	32	S	18
754	S-R	SLEEPING CHILD	1	3	H	REFO	Salvage/Regen	NA	P	50-80	32	T	12
755	B	SHEAFMAN	3A	2	M/L	WUI	Intermediate	WT	NA	10-50	28	S	28
756	EF	WARM SPRINGS	2	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	SL/JP	N	40-80	63	H	23
756	EF	WARM SPRINGS	2	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	WT	N	40-80	63	S	8
757	EF	WARM SPRINGS	1	4	H	REFO	Salvage/Regen	NA	N	40-80	44	H	47
758	EF	JENNINGS	1/3A	3	L	FUELS/DFB	Salvage	SL/JP	NA	10-40	52	H	73
759	S-R	N RYE	1	3	M/L	FUELS/REFO	Intermediate	NA	P	40-70	27	S	65
759	S-R	N RYE	1	3	M/L	FUELS/REFO	Intermediate	NA	P	40-70	27	T	15
760	S-R	BAD NEWS	1	2	M/L	VRU2	Intermediate	WT	NA	30-60	42	S	129
761	S-R	BLACKTAIL	2	3	H	REFO	Manual/Rx Fire	SL/SP	P	50-80	47	NA	130
762	S-R	RYE	2	3	M/L	FUELS/DFB	Manual/Rx Fire	SL/JP	NA	10-40	27	NA	44
763	EF	JENNINGS	2	3	L	FUELS/DFB	Salvage	WT/YUM	NA	10-40	66	S	34

Alternative E

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
4	B	SHEAFMAN	3A	2	M/L	WUI	Manual/Rx Fire	JP	NA	10-35	38	NA	6
5	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	JP	P	30-70	39	H	167
33	S-R	BAD NEWS	1	2	M/L	VRU2	Salvage/Regen	NA	P	40-70	21	S	74
33	S-R	BAD NEWS	5	2	M/L	VRU2	Salvage/Regen	NA	P	40-70	21	T	32
34	S-R	SKALKAHO	3A	3	H/M/L	WUI	Salvage/Regen	SL/SP	N	50-80	97	H	160
38	S-R	SKALKAHO	3A	3	H/M/L	WUI	Salvage/Regen	NA	N	40-80	25	H	139
39	S-R	SKALKAHO	3A	3	M/L	WUI	Salvage/Regen	NA	N	40-80	24	H	49
40	S-R	SKALKAHO	3A	3	H/M/L	WUI	Salvage/Regen	SP/JP	N	40-80	49	H	209
41	S-R	SKALKAHO	3A	3	H/L	WUI	Salvage/Regen	SP/JP	N	40-80	81	H	269
44	S-R	SKALKAHO	3A	3	H/L	WUI	Salvage/Regen	SP/JP	N	40-80	62	H	77
46	S-R	SKALKAHO	3A	3	H/M/L	WUI	Salvage/Regen	SL/JP	N	40-80	39	H	74
56	WF	BLUE JOINT	2/3A	3	H	WUI	Manual/Rx Fire	SL/HP	P	40-80	48	NA	4
99	S-R	LITTLE SLEEPPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	JP	P	40-70	56	H	259
99	S-R	LITTLE SLEEPPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/JP	P	40-70	56	S	133
99	S-R	LITTLE SLEEPPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/EX	P	40-70	56	T	53
100	S-R	LITTLE SLEEPPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	SP	P	50-80	68	H	212
100	S-R	LITTLE SLEEPPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/SP	P	50-80	68	S	74
100	S-R	LITTLE SLEEPPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/EX	P	50-80	68	T	74
101	S-R	LITTLE SLEEPPING CHILD	1	2	H/L	VRU2	Salvage/Regen	NA	P	30-55	44	S	68
106	S-R	LITTLE SLEEPPING CHILD	2	2	L	VRU2	Salvage	NA	NA	0-30	15	H	412
107	S-R	LITTLE SLEEPPING CHILD	2	2	L	VRU2	Salvage	NA	NA	0-30	15	H	53
108	S-R	LITTLE SLEEPPING CHILD	2	2	L	VRU2	Salvage	NA	NA	0-30	15	H	87
109	S-R	LITTLE SLEEPPING CHILD	2	2	H/M/L	WUI	Salvage/Regen	JP	P	30-80	40	H	238
109	S-R	LITTLE SLEEPPING CHILD	2	2	H/M/L	WUI	Salvage/Regen	YT	P	30-80	40	S	39
114	S-R	LITTLE SLEEPPING CHILD	1	2	H	VRU2	Salvage/Regen	HP	P	40-65	64	H	24
114	S-R	LITTLE SLEEPPING CHILD	1	2	H	VRU2	Salvage/Regen	WT/HP	P	40-65	64	S	35
116	S-R	LITTLE SLEEPPING CHILD	1	2	H/M/L	VRU2	Manual/Rx Fire	SL/SP/EX	P	30-65	22	NA	80
124	S-R	MIKE	2	2	H	VRU2	Salvage/Regen	WT/SL/JP	P	40-80	86	S	32
126	S-R	MIKE	2	2	H	VRU2	Salvage/Regen	WT/HP	P	40-80	31	S	24
127	S-R	BURKE	2	2	H/M	VRU2	Salvage/Regen	NA	P	50-80	30	H	64
127	S-R	BURKE	2	2	H/M	VRU2	Salvage/Regen	NA	P	50-80	30	S	64
128	S-R	BURKE	2	2	M	VRU2	Salvage/Regen	HP	P	50-80	36	H	45

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
129	S-R	BURKE	2	2	H/M	VRU2	Manual/Rx Fire	SL/EX/SP	P	50-80	59	NA	99
130	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	WT/HP	P	50-80	38	S	31
131	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	WT/HP	P	50-80	30	S	16
132	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	WT/HP	P	50-80	38	S	12
133	S-R	BURKE	1/2	2	M/L	REFO	Salvage/Regen	NA	p	40-80	39	H	167
140	S-R	ROAN	2	2	L	VRU2	Manual/Rx Fire	SL/UB	P	30-45	28	NA	112
142	S-R	N RYE	1	2	H/L	VRU2	Salvage/Regen	NA	P	40-80	15	H	45
142	S-R	N RYE	1	2	H/L	VRU2	Salvage/Regen	NA	P	40-80	15	S	53
143	S-R	N RYE	1	2	H/M	VRU2	Salvage/Regen	SL/HP	P	40-80	45	S	34
145	S-R	LOWMAN	1	2	M/L	VRU2	Salvage/Regen	WT/EX	P	40-80	47	S	27
145	S-R	LOWMAN	1	2	M/L	VRU2	Salvage/Regen	WT/EX	P	40-80	47	T	33
160	S-R	N RYE	1	2	H/M	VRU2	Salvage/Regen	WT	P	50-80	48	S	8
160	S-R	N RYE	1	2	H/M	VRU2	Salvage/Regen	WT	P	50-80	48	T	79
201	S-R	RYE	2	2	H	VRU2	Salvage/Regen	NA	P	50-80	19	H	32
201	S-R	RYE	2	2	H	VRU2	Salvage/Regen	NA	P	50-80	19	S	4
201	S-R	RYE	2	2	H	VRU2	Salvage/Regen	NA	P	50-80	19	T	4
207	S-R	RYE	2	2	H/L	WUI/VRU2	Salvage/Regen	SL/EX/SP	P	50-80	31	H	373
207	S-R	RYE	2	2	H/L	WUI/VRU2	Salvage/Regen	WT	P	50-80	31	S	280
207	S-R	RYE	2	2	H/L	WUI/VRU2	Salvage/Regen	WT	P	50-80	31	T	280
209	S-R	RYE	3A	3	H/M	WUI/DFB	Salvage/Regen	NA	P	50-65	33	H	455
213	S-R	RYE	3A	3	M	WUI	Salvage	NA	NA	30-50	45	H	10
214	S-R	RYE	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	23	H	295
218	S-R	ROBBINS	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	20	H	45
218	S-R	ROBBINS	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	20	S	75
218	S-R	ROBBINS	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	20	T	227
219	S-R	ROBBINS	2	2	M/L	VRU2	Salvage/Regen	NA	P	40-80	25	S	203
219	S-R	ROBBINS	2	2	M/L	VRU2	Salvage/Regen	NA	P	40-80	25	T	50
221	S-R	SPADE	2	2	H/M/L	WUI	Salvage/Regen	SL/EX/SP	P	40-80	42	H	342
222	S-R	SPADE	3A	3	H	WUI	Salvage/Regen	SL/EX/SP	P	40-80	62	H	132
233	WF	W FK BITTERROOT	3A	3	H/L	WUI	Salvage	NA	NA	20-80	22	H	383
235	WF	W FK BITTERROOT	3A	3	L	WUI	Salvage	NA	NA	30-60	25	H	38
236	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage	YT	NA	40-80	31	S	59
238	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Regen	NA	P	10-40	16	H	64
238	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Regen	NA	P	10-40	16	T	255

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
239	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Regen	NA	P	20-25	20	H	32
239	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Regen	NA	P	20-25	20	S	21
242	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	NA	P	40-80	27	H	22
244	EF	MEDICINE TREE	2	2	M	VRU2	Salvage/Regen	WT/YUM	P	40-80	63	S	90
246	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	NA	P	10-65	15	S	42
246	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	NA	P	10-65	15	T	170
248	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	WT/YUM	P	10-30	42	S	40
249	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	WT/EX	P	10-40	60	T	88
250	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	HP	P	40-80	43	H	23
250	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	WT	P	40-80	43	S	23
251	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	HP	P	30-50	67	S	19
251	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	WT	P	30-50	67	T	10
252	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	WT	P	40-80	48	S	12
253	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	WT	P	40-60	35	S	23
255	EF	MEDICINE TREE	2	2	H/M/L	VRU2	Salvage/Regen	WT	P	10-30	26	S	58
255	EF	MEDICINE TREE	2	2	H/M/L	VRU2	Salvage/Regen	WT	P	10-30	26	T	87
256	EF	MEDICINE TREE	2	2	H/M/L	VRU2	Manual/Rx Fire	SL/UB	P	20-50	25	NA	86
258	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	HP	P	10-20	27	H	11
258	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	YT	P	10-20	27	S	27
259	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	WT	P	20-30	30	T	10
260	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	HP	P	30-60	33	H	12
261	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	WT/EX/SP	P	20-40	46	S	47
262	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	WT/EX	P	20-40	75	T	17
274	EF	DICKSON	3A	3/4	H/L	WUI/DFB	Salvage/Regen	NA	P	40-65	48	H	333
275	EF	DICKSON	3A	3	H/M	WUI/DFB	Salvage/Regen	HP	P	10-35	28	H	64
276	EF	BLIND DRAW	2	3	H/M/L	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	163
277	EF	LAIRD	2	2	H/L	WUI	Salvage/Regen	NA	P	40-65	15	T	288
278	EF	LAIRD	2	2	H/M	WUI	Salvage/Regen	NA	P	40-80	16	H	26
279	EF	LAIRD	2	2	H/M/L	WUI	Salvage/Regen	NA	P	30-45	27	H	21
280	EF	LAIRD	1/2	3	H/M/L	WUI	Salvage/Regen	NA	N	40-65	31	H	85
282	EF	LAIRD	1/2	3	H/L	WUI/DFB	Salvage/Regen	JP	P	40-65	52	H	201
283	EF	LAIRD	1/2	3	H/M/L	WUI/DFB	Salvage/Regen	JP	P	40-65	49	H	197
283	EF	LAIRD	1/2	3	H/M/L	WUI/DFB	Salvage/Regen	WT	P	40-65	49	S	118
283	EF	LAIRD	1/2	3	H/M/L	WUI/DFB	Salvage/Regen	WT	P	40-65	49	T	79

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
284	EF	LAIRD	2/3A	2	H/M/L	WUI	Salvage/Regen	JP	P	30-70	36	H	270
284	EF	LAIRD	2/3A	2	H/M/L	WUI	Salvage/Regen	WT	P	30-70	36	S	301
284	EF	LAIRD	2/3A	2	H/M/L	WUI	Salvage/Regen	WT	P	30-70	36	T	30
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	Salvage/Regen	HP	P	40-80	28	H	183
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	Salvage/Regen	YT	P	40-80	28	S	231
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	Salvage/Regen	YT	P	40-80	28	T	66
296	EF	LORD DRAW	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	41	H	53
296	EF	LORD DRAW	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	41	S	53
297	EF	LORD DRAW	2/3A	2	H	VRU2	Salvage/Regen	JP	P	40-80	49	H	106
297	EF	LORD DRAW	2/3A	2	H	VRU2	Salvage/Regen	WT	P	40-80	49	T	5
298	EF	WARM SPRINGS	2	2	H/M/L	VRU2	Planting Only	NA	P	NA	NA	NA	55
311	EF	WARM SPRINGS	2	2	M/L	WUI	Salvage/Regen	NA	N	40-65	36	H	304
317	EF	E FK BITTERROOT	2/3A	2	H/L	WUI	Salvage/Regen	SL/EX/SP	P	40-80	46	H	100
317	EF	E FK BITTERROOT	2/3A	2	H/L	WUI	Salvage/Regen	SL/EX/SP	P	40-80	46	S	36
317	EF	E FK BITTERROOT	2/3A	2	H/L	WUI	Salvage/Regen	SL/EX/SP	P	40-80	46	T	12
318	EF	E FK BITTERROOT	2/3A	2/3	H/M/L	WUI	Salvage/Regen	SL/EX/SP	N	40-65	49	H	389
319	EF	MAYNARD	2/3A	2/3	H/M/L	VRU2	Salvage/Regen	SL/EX/SP	N	40-65	47	H	267
319	EF	MAYNARD	2/3A	2/3	H/M/L	VRU2	Salvage/Regen	WT	N	40-65	47	S	38
341	EF	ANDREWS	3A	2	H	WUI	Salvage/Regen	HP	P	40-80	45	H	36
342	EF	ANDREWS	3A	2	H	WUI	Salvage/Regen	SL/HP	P	40-80	40	H	13
345	EF	WAUGH	3A	2	L	WUI	Manual/Rx Fire	SL/UB	P	30-45	22	NA	25
346	EF	CAMP	3A	2	H	WUI	Manual/Rx Fire	SL/EX/SP	P	30-60	30	NA	108
348	EF	W FK CAMP	2/3A	2	H/L	WUI	Salvage	SL/EX/SP	NA	30-60	35	H	127
349	EF	E FK CAMP	3A	2	L	WUI	Manual/Rx Fire	SL/HP	NA	30-60	12	NA	43
350	EF	DICK	1/2	2	H	WUI	Salvage/Regen	SL/EX/SP	P	40-80	56	H	250
350	EF	DICK	1/2	2	H	WUI	Salvage/Regen	WT/EX/SP	P	40-80	56	S	96
350	EF	DICK	1/2	2	H	WUI	Salvage/Regen	WT/EX/SP	P	40-80	56	T	154
351	EF	DICK	1/2	3	H/M/L	WUI	Salvage/Regen	NA	P	40-80	59	H	190
351	EF	DICK	1/2	3	H/M/L	WUI	Salvage/Regen	SL/EX/SP	P	40-80	59	S	93
353	EF	CAMP	2/3A	2	H	WUI	Salvage/Regen	WT/EX/SP	N	30-60	41	H	63
353	EF	CAMP	2/3A	2	H	WUI	Salvage/Regen	SL/SP/JP	N	30-60	41	S	22
353	EF	CAMP	2/3A	2	H	WUI	Salvage/Regen	WT	N	30-60	41	T	4
354	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	SP/JP	N	30-60	32	H	43
354	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	SL/SP	N	30-60	32	S	23

Fuel Reduction Unit Information - Alternative E

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
355	EF	CAMP	2	2	H/L	WUI	Salvage/Regen	WT/YUM	N	30-60	48	H	15
355	EF	CAMP	2	2	H/L	WUI	Salvage/Regen	WT/YUM	N	30-60	48	S	5
357	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT/HP	P	30-60	38	H	44
357	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	SL/JP	P	30-60	38	S	26
357	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT	P	30-60	38	T	17
358	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT	P	30-60	36	H	54
358	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	SL/SP	P	30-60	36	S	10
358	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT/YUM	P	30-60	36	T	4
369	EF	REIMEL	2	2	H/L	VRU2	Planting Only	NA	N	NA	NA	NA	39
380	EF	E FK BITTERROOT	1/2/3A	2	L	VRU2	Salvage	NA	NA	10-60	18	H	381
381	EF	CAMERON	3A	2	H/L	WUI	Salvage/Regen	NA	P	40-80	25	H	501
382	EF	CAMERON	2/3A	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	38	H	830
383	EF	CAMERON	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	31	T	109
386	EF	CAMERON	2	2	H/M	VRU2	Salvage/Regen	SL/SP/HP	P	40-65	25	S	107
386	EF	CAMERON	2	2	H/M	VRU2	Salvage/Regen	WT	P	40-65	25	T	107
386	EF	CAMERON	2	2	H/M	VRU2	Salvage/Regen	NA	P	40-65	25	H	107
387	EF	CAMERON	2	2	H	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	34	S	118
387	EF	CAMERON	2	2	H	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	34	T	236
387	EF	CAMERON	2	2	H	FUELS/REFO	Salvage/Salvage/Regen	YT	P	40-80	34	H	119
389	EF	HART	2	2	H/M	VRU2	Salvage/Regen	WT	P	30-45	22	H	104
389	EF	HART	2	2	H/M	VRU2	Salvage/Regen	SL/JP	P	30-45	22	S	45
390	EF	HART	2	2	H	VRU2	Salvage/Regen	NA	P	40-80	41	S	33
392	EF	HART	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	30-45	35	S	39
392	EF	HART	2	2	H/M/L	VRU2	Salvage/Regen	WT	P	30-45	35	T	156
414	S-R	DALY	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	2
415	S-R	DALY	3A	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	20
416	S-R	LITTLE SLEEPPING CHILD	2	2	M/L	REFO	Manual/Rx Fire	SL/SP	P	10-50	24	NA	48
417	S-R	LITTLE SLEEPPING CHILD	2	2	L	REFO	Manual/Rx Fire	SL/SP	P	10-50	20	NA	56
418	S-R	SKALKAHO	1	4	M/L	REFO	Planting Only	NA	P	NA	NA	NA	32
419	S-R	LITTLE SLEEPPING CHILD	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	28
420	S-R	SKALKAHO	1	4	H/M	REFO	Manual/Rx Fire	SL/HP	P	10-50	13	NA	62
421	S-R	SKALKAHO	1	4	M/L	REFO	Planting Only	NA	P	NA	NA	NA	54
422	S-R	LITTLE SLEEPPING CHILD	2	3	M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	30	NA	24
423	S-R	LITTLE SLEEPPING CHILD	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	19

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
424	S-R	SKALKAHO	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	33
425	S-R	LITTLE SLEEPPING CHILD	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	60
426	S-R	SKALKAHO	1	4	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	14	NA	33
427	S-R	SKALKAHO	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	56
428	S-R	SKALKAHO	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	2
429	S-R	LITTLE SLEEPPING CHILD	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	22
430	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	43
431	S-R	LITTLE SLEEPPING CHILD	2	3	H/M/L	REFO	Planting Only	NA	P	NA	NA	NA	42
432	S-R	LITTLE SLEEPPING CHILD	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	5
433	S-R	LITTLE SLEEPPING CHILD	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	8
434	S-R	LITTLE SLEEPPING CHILD	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	19
435	S-R	SKALKAHO	1	4	H/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	19	NA	28
436	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	97
437	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	20
438	S-R	LITTLE SLEEPPING CHILD	2	3	H/M/L	REFO	Planting Only	NA	P	NA	NA	NA	53
439	S-R	LITTLE SLEEPPING CHILD	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	30
440	S-R	LITTLE SLEEPPING CHILD	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	12
441	S-R	LITTLE SLEEPPING CHILD	1	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	31
442	S-R	SKALKAHO	2	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	20
443	S-R	LITTLE SLEEPPING CHILD	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	8
444	S-R	LITTLE SLEEPPING CHILD	2	3	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	22	NA	42
445	S-R	LITTLE SLEEPPING CHILD	2	2	H/L	REFO	Planting Only	NA	P	NA	NA	NA	27
446	S-R	LITTLE SLEEPPING CHILD	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	44
447	S-R	SKALKAHO	2	4	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	21	NA	12
448	S-R	LITTLE SLEEPPING CHILD	1	4	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	22
449	S-R	SKALKAHO	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	35
450	S-R	SKALKAHO	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	35
451	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	18
452	S-R	SLEEPING CHILD	1	4	H/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	19	NA	18
453	S-R	SLEEPING CHILD	2	4	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	14
454	S-R	RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	70
455	S-R	LITTLE SLEEPPING CHILD	1	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	51
456	S-R	SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	34
457	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	19

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
458	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	11
459	S-R	SLEEPING CHILD	1	4	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	12
460	S-R	SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	10
461	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	16
462	S-R	SLEEPING CHILD	2	4	M	REFO	Planting Only	NA	P	NA	NA	NA	92
463	S-R	LITTLE SLEEPPING CHILD	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	88
464	S-R	SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	44
465	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	77
466	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	14
467	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	11
468	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	20
469	S-R	SLEEPING CHILD	2	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	35
470	S-R	LITTLE SLEEPPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	146
471	S-R	SLEEPING CHILD	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	11
472	S-R	LOWMAN	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	12
473	S-R	LOWMAN	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	13
474	S-R	LOWMAN	2	4	H	REFO	Planting Only	NA	P	NA	NA	NA	89
475	S-R	N RYE	2	4	M/L	REFO	Planting Only	NA	P	NA	NA	NA	65
476	S-R	N RYE	2	3	M/L	REFO	Planting Only	NA	P	NA	NA	NA	60
477	S-R	BURKE	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	19
478	S-R	BURKE	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	5
479	S-R	LOWMAN	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	13
480	S-R	BURKE	1	2	H	REFO	Planting Only	NA	P	NA	NA	NA	11
481	S-R	N RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	41
482	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	56
483	S-R	LOWMAN	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	5
484	S-R	LOWMAN	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	26
485	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	51
486	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	29
487	S-R	N RYE	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	37
488	S-R	N RYE	1	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	50
489	S-R	N RYE	1	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	57
490	S-R	RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	14
491	S-R	RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	26

Fuel Reduction Unit Information - Alternative E

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
492	S-R	RYE	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	5
493	S-R	N RYE	1	2	M	REFO	Planting Only	NA	P	NA	NA	NA	26
494	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	35
495	S-R	N RYE	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	22
496	EF	CAMERON	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	4
497	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	30
498	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	87
499	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	15
500	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
501	S-R	N RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	36
502	S-R	RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	11
503	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	9
504	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	23
505	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	91
506	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	18
507	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	29
508	S-R	RYE	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	11
509	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	80
510	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	43
511	EF	DORAN	3A	3	M	REFO	Planting Only	NA	P	NA	NA	NA	15
512	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	8
513	EF	MEDICINE TREE	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	32
514	EF	MEDICINE TREE	3A	2	H/L	REFO	Planting Only	NA	P	NA	NA	NA	21
515	S-R	RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	19
516	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	16
517	EF	MEDICINE TREE	1	2	H	REFO	Planting Only	NA	P	NA	NA	NA	5
518	EF	CAMERON	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	11
519	EF	MEDICINE TREE	3A	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	15
520	EF	MEDICINE TREE	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	35
521	EF	LYMAN	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	51
522	EF	MEDICINE TREE	3A	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	15
523	S-R	RYE	2	3	H/M/L	REFO	Planting Only	NA	P	NA	NA	NA	33
524	EF	CAMERON	1	2	M	REFO	Planting Only	NA	P	NA	NA	NA	44
525	EF	CAMERON	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	13

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
526	EF	LYMAN	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	13
527	EF	DORAN	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	3
528	EF	LYMAN	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	6
529	EF	CAMERON	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	19
530	EF	DORAN	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
531	EF	LYMAN	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	15
532	EF	MEDICINE TREE	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	27
533	EF	LYMAN	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
534	EF	LYMAN	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	14
535	EF	MEDICINE TREE	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	12
536	EF	LYMAN	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	13
537	EF	LYMAN	3A	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	13
538	EF	MEDICINE TREE	3A	2	M/L	REFO	Planting Only	NA	P	NA	NA	NA	74
539	EF	MEDICINE TREE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	14
540	EF	MEDICINE TREE	1	2	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	17
541	EF	MEADOW	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	122
542	EF	MEDICINE TREE	1	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
543	EF	MEADOW	2	3	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	22	NA	6
544	EF	TOLAN	3A	4	NI	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	16
545	EF	LAIRD	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	19
546	EF	LAIRD	3A	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	59
547	EF	WARM SPRINGS	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	31
548	EF	WARM SPRINGS	3A	2	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	22	NA	65
549	EF	WARM SPRINGS	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	21
551	EF	LAIRD	3A	2	M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	20	NA	23
552	EF	LAIRD	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	52
553	EF	WARM SPRINGS	3A	2	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	21	NA	19
554	EF	WARM SPRINGS	3A	3	M/L	REFO	Planting Only	NA	P	NA	NA	NA	81
555	EF	WARM SPRINGS	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	38
556	EF	ANDREWS	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	8
557	EF	ANDREWS	3A	3	M	REFO	Planting Only	NA	P	NA	NA	NA	3
558	EF	ANDREWS	3A	4	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	49
559	EF	ANDREWS	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	3
560	EF	ANDREWS	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	23

Fuel Reduction Unit Information - Alternative E

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
561	EF	ANDREWS	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	7
562	EF	WAUGH	2	2	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	12
563	EF	WAUGH	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	24
564	EF	REIMEL	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	11
565	WF	LITTLE BLUE JOINT	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	27
566	WF	LITTLE BLUE JOINT	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	7
567	WF	LITTLE BLUE JOINT	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	30
568	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	10
569	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	9
570	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	30
571	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	12
572	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	32
573	WF	LITTLE BLUE JOINT	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	11
574	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	15
575	WF	LITTLE BLUE JOINT	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	11
576	WF	COAL	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	7
577	WF	COAL	1	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	22
578	WF	COAL	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	57
579	WF	WEST	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	38
580	WF	COAL	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	69
581	WF	WEST	2	3	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	22	NA	30
591	S-R	BURKE	1/2	2	M/L	REFO	Salvage/Regen	JP	P	40-80	33	H	118
594	EF	LAIRD	2	2	H/L	WUI	Salvage/Regen	NA	P	40-65	15	T	27
595	EF	LAIRD	2	2	H/L	WUI	Salvage/Regen	NA	P	40-65	15	T	22
598	EF	MAYNARD	3A	2	H/L	WUI	Salvage/Regen	JP	P	40-65	56	H	266
598	EF	MAYNARD	3A	2	H/L	WUI	Salvage/Regen	WT/JP	P	40-65	56	S	30
606	S-R	BURKE	2	2	H	VRU2	Salvage/Regen	WT/YUM	P	50-80	62	S	31
610	B	COW	3A	2	H	WUI	Salvage/Regen	SL/HP	P	30-70	39	T	14
611	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	HP	P	30-70	54	H	27
611	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	WT/YUM	P	30-70	54	S	165
611	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	WT/EX	P	30-70	54	T	83
711	EF	GUIDE	1	2	L	FUELS/DFB	Salvage	SL/JP	NA	10-40	67	H	52
712	EF	JENNINGS	2	2	H/M	WUI	Salvage/Regen	SL/SP	P	30-60	66	H	30
714	EF	WARM SPRINGS	2	2	M/L	WUI	Manual/Rx Fire	SL/HP	NA	10-40	52	NA	47

Fuel Reduction Unit Information - Alternative E

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
716	EF	WAUGH	2	2	H/M	WUI	Salvage/Regen	WT/YUM	P	30-45	40	S	107
716	EF	WAUGH	2	2	H/M	WUI	Salvage/Regen	WT/EX	P	30-45	40	T	42
717	EF	CAMP	3A	2	H	WUI	Salvage/Regen	WT/YUM	P	30-60	43	S	173
717	EF	CAMP	3A	2	H	WUI	Salvage/Regen	WT/EX	P	30-60	43	T	19
718	EF	REIMEL	2/3A	2	H/L	VRU2	Salvage/Regen	SL/SP	N	30-45	48	H	247
723	S-R	ROAN	2	2	H/M	VRU2	Salvage/Regen	SL/SP	P	30-45	47	H	137
723	S-R	ROAN	2	2	H/M	VRU2	Salvage/Regen	WT/YUM	P	30-45	47	S	46
729	S-R	LITTLE SLEEPPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/YUM	P	30-65	55	S	114
729	S-R	LITTLE SLEEPPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/EX	P	30-65	55	T	36
732	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	WT/HP	P	50-80	34	S	11
733	S-R	BURKE	2	2	M	VRU2	Salvage/Regen	SL/HP	P	50-80	54	H	99
733	S-R	BURKE	2	2	M	VRU2	Salvage/Regen	WT/YUM	P	50-80	54	S	13
734	S-R	BURKE	2	2	H/M	VRU2	Salvage/Regen	WT/EX	P	50-80	57	T	88
739	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	YT	P	50-80	30	T	39
742	S-R	ROBBINS	2/3A	2	M/L	WUI	Manual/Rx Fire	SL/HP	NA	10-50	19	NA	59
744	EF	LAIRD	2	2	M/L	WUI	Salvage/Regen	WT/EX	P	40-65	67	T	109
746	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Regen	HP	P	10-25	15	T	24
748	S-R	ROBBINS	2	2	H/M/L	VRU2	Planting Only	NA	P	NA	NA	NA	2
750	EF	MEDICINE TREE	2	2	H	VRU2	Planting Only	NA	P	NA	NA	NA	121
752	EF	CAMP	3A	2	H	WUI	Manual/Rx Fire	SL/HP	P	30-60	37	NA	17

Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
4	B	SHEAFMAN	3A	2	M/L	WUI	Manual/Rx Fire	SL/HP	NA	10-50	38	NA	6
5	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	JP	P	30-70	39	S	167
15	S-R	SKALKAHO	1	3	H/M/L	FUELS	Salvage/Salvage/Regen	WT	P	10-30	25	H	169
15	S-R	SKALKAHO	1	3	H/M/L	FUELS	Salvage/Salvage/Regen	WT	P	10-30	25	S	120
16	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	NA	P	30-80	42	H	33
16	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	NA	P	30-80	42	S	18
17	S-R	S FK SKALKAHO	1	3	M	REFO	Salvage/Regen	WT	P	40-70	40	S	30
18	S-R	S FK SKALKAHO	1	4	H/M	REFO	Salvage/Regen	NA	P	40-70	49	H	114
18	S-R	S FK SKALKAHO	1	4	H/M	REFO	Salvage/Regen	NA	P	40-70	50	S	49
19	S-R	S FK SKALKAHO	1	3	H/M/L	REFO	Salvage/Regen	YT	P	40-70	25	H	26
19	S-R	S FK SKALKAHO	1	3	H/M/L	REFO	Salvage/Regen	YT	P	40-70	25	S	26
20	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	NA	N	40-70	80	S	6
21	S-R	S FK SKALKAHO	1	3	M/L	REFO	Salvage/Regen	JP	N	40-70	49	H	77
21	S-R	S FK SKALKAHO	1	3	M/L	REFO	Salvage/Regen	WT	N	40-70	49	S	51
21	S-R	S FK SKALKAHO	1	3	M/L	REFO	Salvage/Regen	WT	N	40-70	49	T	14
22	S-R	S FK SKALKAHO	1	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	31
23	S-R	S FK SKALKAHO	1	4	H/M/L	REFO	Salvage/Regen	NA	N	40-70	43	H	55
23	S-R	S FK SKALKAHO	1	4	H/M/L	REFO	Salvage/Regen	YT	N	40-70	43	S	82
24	S-R	S FK SKALKAHO	1	4	M/L	REFO	Manual/Rx Fire	SL/HP	N	40-70	40	NA	6
25	S-R	DIVIDE	1	4	H/M/L	REFO	Salvage/Regen	WT	N	50-80	41	H	55
25	S-R	DIVIDE	1	4	H/M/L	REFO	Salvage/Regen	WT	N	50-80	41	S	71
25	S-R	DIVIDE	1	4	H/M/L	REFO	Salvage/Regen	WT	N	50-80	41	T	31
28	S-R	BAD NEWS	1	3	M/L	FUELS/DFB	Salvage/Regen	NA	P	40-60	39	H	41
28	S-R	BAD NEWS	1	3	M/L	FUELS/DFB	Salvage/Regen	NA	P	40-60	39	S	27
29	S-R	BAD NEWS	1	3	H/M/L	REFO	Salvage/Regen	JP	N	40-80	52	TLM	170
29	S-R	BAD NEWS	1	3	H/M/L	REFO	Salvage/Regen	WT	N	40-80	52	TLM	22
30	S-R	BAD NEWS	1	2	L	VRU2	Salvage	NA	NA	30-60	15	S	19
31	S-R	BAD NEWS	1	3	L	FUELS/DFB	Salvage	NA	NA	40-60	25	S	48
33	S-R	BAD NEWS	1	2	M/L	VRU2	Salvage/Regen	NA	P	40-70	21	S	74
33	S-R	BAD NEWS	1	2	M/L	VRU2	Salvage/Regen	NA	P	40-70	21	T	32
35	S-R	SKALKAHO	3A	2	H/M/L	VRU2	Salvage	NA	NA	10-40	20	H	102
37	S-R	SKALKAHO	3A	2	H/M/L	VRU2	Salvage	NA	NA	20-40	55	H	139
38	S-R	SKALKAHO	3A	3	H/M/L	WUI	Salvage/Regen	NA	N	40-80	25	H	139
39	S-R	SKALKAHO	3A	3	M/L	WUI	Salvage/Regen	NA	N	40-80	24	H	49
41	S-R	SKALKAHO	3A	3	H/L	WUI	Salvage/Regen	SL/JP	N	40-80	81	H	269
42	S-R	SKALKAHO	3A	3	H/L	WUI/DFB	Intermediate	NA	NA	40-60	31	H	147

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
43	S-R	SKALKAHO	3A	3	H/L	WUI/DFB	Intermediate	NA	NA	40-60	31	H	93
44	S-R	SKALKAHO	3A	3	H/L	WUI	Salvage/Regen	SL/JP	N	40-80	62	H	37
46	S-R	SKALKAHO	3A	3	H/M/L	WUI	Salvage/Regen	SL/JP	N	40-80	39	H	41
47	S-R	SKALKAHO	2/3A	2	L	WUI	Intermediate	NA	NA	20-50	27	H	270
48	S-R	BEAR	1	2	L	VRU2	Salvage	NA	NA	10-30	35	H	43
48	S-R	BEAR	1	2	L	VRU2	Salvage	NA	NA	10-30	35	T	3
48	S-R	BEAR	1	2	L	VRU2	Salvage	NA	NA	10-30	35	S	66
49	S-R	BEAR	2/3A	2	H/M/L	VRU2	Salvage/Regen	YT	P	10-30	15	S	886
55	WF	PAINTED ROCKS LAKE	3A	3	L	WUI/DFB	Manual/Rx Fire	SL/UB	NA	30-60	80	NA	58
56	WF	BLUE JOINT	2/3A	3	H	WUI	Manual/Rx Fire	SL/HP	P	40-80	48	NA	4
57	WF	LITTLE BLUE JOINT	1/2	3	H/M	REFO	Manual/Rx Fire	SL	P	40-80	54	NA	191
58	WF	LITTLE BLUE JOINT	2	3	M	REFO	Manual/Rx Fire	SL/HP	P	40-80	48	NA	24
59	WF	BLUE JOINT	2/3A	3	H/M/L	REFO	Salvage/Regen	NA	P	40-80	44	H	467
60	WF	COAL	1/2	4	H/L	REFO	Salvage/Regen	NA	N	50-80	35	H	392
63	WF	WEST	2	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	39	H	106
63	WF	WEST	2	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	39	S	12
64	WF	OVERWHICH	2	3	H	REFO	Salvage/Regen	NA	P	50-80	32	H	52
64	WF	OVERWHICH	2	3	H	REFO	Salvage/Regen	NA	P	50-80	32	T	49
65	WF	OVERWHICH	2	3	H	REFO	Salvage/Regen	NA	N	30-60	25	H	36
65	WF	OVERWHICH	2	3	H	REFO	Salvage/Regen	NA	N	30-60	25	S	24
67	WF	OVERWHICH	2	3	H	REFO	Manual/Rx Fire	SL/HP	P	50-80	32	NA	22
68	WF	OVERWHICH	2	3	H	REFO	Manual/Rx Fire	SL/HP	N	50-80	36	NA	6
69	WF	OVERWHICH	2	3	M/L	FUELS/DFB	Salvage	NA	NA	40-60	25	H	23
69	WF	OVERWHICH	2	3	M/L	FUELS/DFB	Salvage	NA	NA	40-60	25	S	36
69	WF	OVERWHICH	2	3	M/L	FUELS/DFB	Salvage	NA	NA	40-60	25	T	13
70	WF	OVERWHICH	1/2	3	M/L	FUELS/DFB	Salvage	NA	NA	40-60	21	S	51
72	WF	OVERWHICH	2	3	H/M/L	REFO	Manual/Rx Fire	SL/HP	P	50-80	37	NA	214
73	WF	OVERWHICH	2	3	H/M/L	REFO	Salvage/Regen	NA	P	50-80	38	H	10
73	WF	OVERWHICH	2	3	H/M/L	REFO	Salvage/Regen	NA	P	50-80	38	S	219
75	S-R	SLEEPING CHILD	2	3	M/L	REFO	Salvage/Regen	NA	P	50-80	51	S	7
75	S-R	SLEEPING CHILD	2	3	M/L	REFO	Salvage/Regen	NA	P	50-80	51	T	65
76	S-R	SLEEPING CHILD	3A	3	H/M	FUELS/REFO	Salvage/Regen	NA	P	50-80	25	S	68
77	S-R	SLEEPING CHILD	2/3A	2	M/L	VRU2	Salvage	SL/JP	NA	20-50	20	T	1892
78	S-R	SLEEPING CHILD	2	3	L	FUELS	Manual/Rx Fire	SL/UB/JP	P	30-60	44	NA	115
79	S-R	SLEEPING CHILD	1/3A	3	H/L	FUELS/REFO	Salvage/Regen	SL/HP	NA	40-60	32	NA	69
80	S-R	SLEEPING CHILD	3A	3	H/M	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	40-60	32	NA	31
81	S-R	SLEEPING CHILD	3A	3	H/M/L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	40-60	25	NA	112
83	S-R	BLACKTAIL	2/3A	3	L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	30-50	25	NA	3

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
84	S-R	BLACKTAIL	1	3	H/M/L	REFO	Salvage/Regen	WT/JP	P	50-80	47	T	21
84	S-R	BLACKTAIL	1	3	H/M/L	REFO	Planting Only	NA	P	NA	NA	NA	26
85	S-R	BLACKTAIL	2	3	H/L	REFO	Manual/Rx Fire	SL/HP	P	10-40	25	NA	42
86	S-R	BLACKTAIL	2	2	H/L	VRU2	Manual/Rx Fire	SL/HP	NA	10-40	8	NA	38
87	S-R	BLACKTAIL	2	2	L	VRU2	Manual/Rx Fire	SL/HP	NA	10-40	6	NA	47
88	S-R	BLACKTAIL	2	2	L	VRU2	Salvage	NA	NA	10-40	15	H	180
89	S-R	BLACKTAIL	2	2	L	VRU2	Manual/Rx Fire	SL/HP	NA	10-40	36	NA	31
90	S-R	BLACKTAIL	2/3A	2	L	VRU2	Manual/Rx Fire	SL/HP	NA	10-40	8	NA	189
91	S-R	SLEEPING CHILD	2/3A	3	L	WUI	Manual/Rx Fire	SL/HP	NA	30-60	25	NA	213
92	S-R	SLEEPING CHILD	2/3A	2	L	WUI	Intermediate	NA	NA	10-60	7	H	86
93	S-R	SLEEPING CHILD	3A	2	L	WUI	Intermediate	NA	NA	10-60	7	H	136
94	S-R	SLEEPING CHILD	2/3A	2	L	WUI	Intermediate	NA	NA	10-60	18	H	199
95	S-R	SLEEPING CHILD	1	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	50-80	25	H	67
95	S-R	SLEEPING CHILD	1	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	50-80	25	S	67
96	S-R	SLEEPING CHILD	1	3	H/M	REFO	Salvage/Regen	SL/JP	P	50-80	88	H	67
96	S-R	SLEEPING CHILD	1	3	H/M	REFO	Salvage/Regen	WT/YUM	P	50-80	88	S	23
97	S-R	SLEEPING CHILD	1	3	H/L	REFO	Salvage/Regen	NA	P	50-80	25	T	54
98	S-R	SLEEPING CHILD	1	3	H/M/L	REFO	Salvage/Regen	WT	P	50-80	25	T	31
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	JP	P	40-70	56	H	259
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT	P	40-70	56	T	53
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT/JP	P	40-70	56	S	132
99	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Planting Only	NA	P	NA	NA	NA	39
100	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	SL/HP	P	50-80	68	H	212
100	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT	P	50-80	68	S	74
100	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Regen	WT	P	50-80	68	T	74
101	S-R	LITTLE SLEEPING CHILD	1	2	H/L	VRU2	Salvage/Salvage/Regen	NA	P	30-70	44	S	72
102	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	Salvage	NA	NA	10-30	15	H	11
102	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	Salvage	NA	NA	10-30	15	S	20
102	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	Salvage	NA	NA	10-30	15	T	7
103	S-R	LITTLE SLEEPING CHILD	2	2	M/L	VRU2	Salvage	NA	NA	10-30	36	H	171
105	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Salvage	NA	NA	30-60	15	H	218
105	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Salvage	NA	NA	30-60	15	S	32
105	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2/DFB	Salvage	NA	NA	30-60	15	T	24
106	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Manual/Rx Fire	SL/HP	NA	0-30	5	NA	412
107	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Manual/Rx Fire	SL/HP	NA	0-30	5	NA	53
108	S-R	LITTLE SLEEPING CHILD	2	2	L	VRU2	Manual/Rx Fire	SL/HP	NA	0-30	11	NA	87
109	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	WUI	Salvage/Salvage/Regen	NA	P	30-80	40	H	237
109	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	WUI	Salvage/Salvage/Regen	NA	P	30-80	40	S	39

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
110	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	VRU2	Salvage/Salvage/Regen	HP	N	30-60	52	H	42
110	S-R	LITTLE SLEEPING CHILD	2	2	H/M/L	VRU2	Salvage/Salvage/Regen	YT	N	30-60	52	S	14
111	S-R	LITTLE SLEEPING CHILD	2	3	M/L	VRU2	Salvage	SL/HP	NA	30-60	30	H	27
112	S-R	LITTLE SLEEPING CHILD	2	2	M/L	VRU2	Salvage/Salvage/Regen	NA	P	30-60	30	H	117
113	S-R	LITTLE SLEEPING CHILD	1/2	2	M/L	VRU2	Salvage/Salvage/Regen	NA	P	30-60	33	H	57
114	S-R	LITTLE SLEEPING CHILD	1	2	H	VRU2	Salvage/Salvage/Regen	NA	P	40-80	64	H	24
114	S-R	LITTLE SLEEPING CHILD	1	2	H	VRU2	Salvage/Salvage/Regen	NA	P	40-80	64	S	35
116	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Salvage/Regen	NA	P	30-80	22	S	8
116	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Salvage/Regen	NA	P	30-80	22	H	72
118	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	Salvage/Regen	JP	P	50-80	76	H	75
118	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	Salvage/Regen	WT/HP	P	50-80	76	S	25
121	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	FUELS	Salvage/Salvage/Regen	YT	P	30-80	64	S	269
121	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	FUELS	Salvage/Salvage/Regen	YT	P	30-80	64	T	40
122	S-R	MIKE	2	2	H	VRU2	Salvage/Regen	NA	P	30-50	15	S	30
123	S-R	MIKE	2	2	M/L	VRU2	Intermediate	NA	P	30-50	11	S	15
124	S-R	MIKE	2	2	H	VRU2	Salvage/Regen	WT	P	40-80	86	S	32
126	S-R	MIKE	2	2	H	VRU2	Salvage/Regen	WT/HP	P	40-80	31	S	24
127	S-R	BURKE	2	2	H/M	VRU2	Salvage/Regen	NA	P	50-80	30	H	64
127	S-R	BURKE	2	2	H/M	VRU2	Salvage/Regen	NA	P	50-80	30	S	64
128	S-R	BURKE	2	2	M	VRU2	Salvage/Regen	NA	P	50-80	36	H	45
129	S-R	BURKE	2	2	H/M	VRU2	Salvage/Regen	NA	P	50-80	59	S	100
130	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	NA	P	50-80	38	S	31
131	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	NA	P	50-80	30	S	16
132	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	NA	P	50-80	38	S	22
133	S-R	BURKE	1/2	2	M/L	REFO	Salvage/Regen	NA	P	40-80	39	H	167
134	S-R	DEER HOLLOW	2	2	L	VRU2	Salvage	NA	NA	30-50	23	H	162
135	S-R	DEER HOLLOW	2	2	L	VRU2	Salvage	SL/JP	NA	30-50	65	H	44
136	S-R	JERRYS GULCH	2	3	H/L	REFO	Salvage/Regen	NA	P	50-80	44	S	16
137	S-R	HARLAN	2	3	M/L	FUELS	Salvage/Salvage/Regen	NA	P	40-80	50	T	7
137	S-R	HARLAN	2	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	50	S	39
138	S-R	HARLAN	2	2	M/L	VRU2	Salvage	NA	NA	30-50	15	H	96
138	S-R	HARLAN	2	2	M/L	VRU2	Salvage	NA	NA	30-50	15	S	20
139	S-R	ROAN	2	3	M/L	REFO	Salvage/Salvage/Regen	NA	P	50-80	48	S	103
139	S-R	ROAN	2	3	H/M	REFO	Salvage/Regen	NA	P	50-80	48	T	191
140	S-R	ROAN	2	2	L	VRU2	Manual/Rx Fire	SL/UB	P	30-60	28	NA	112
141	S-R	N RYE	1	4	H/M/L	REFO	Salvage	WT/YUM	P	40-80	29	S	59
142	S-R	N RYE	1	4	H/L	VRU2	Salvage/Salvage/Regen	NA	P	40-80	30	H	45
142	S-R	N RYE	1	4	H/L	VRU2	Salvage/Salvage/Regen	NA	P	40-80	30	S	53

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
143	S-R	N RYE	1	2	H/M	VRU2	Salvage/Regen	SL/HP	P	40-80	45	S	34
144	S-R	LOWMAN	1	3	M/L	VRU2	Salvage	NA	NA	30-60	25	T	86
145	S-R	LOWMAN	1	2	M/L	VRU2	Salvage/Regen	WT	P	40-80	47	S	27
145	S-R	LOWMAN	1	2	M/L	VRU2	Salvage/Regen	WT	P	40-80	47	T	33
146	S-R	LOWMAN	1	3	M/L	REFO	Salvage/Regen	NA	P	40-80	25	S	58
147	S-R	LOWMAN	1/2	3	M	REFO	Salvage/Regen	NA	P	40-80	31	S	38
147	S-R	LOWMAN	1/2	3	M	REFO	Salvage/Regen	NA	P	40-80	31	T	38
148	S-R	DUGOUT	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	14
152	S-R	N RYE	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	57
154	S-R	N RYE	2/3A	3	M	REFO	Salvage/Regen	SL/JP	P	40-70	66	H	68
154	S-R	N RYE	2/3A	3	M	REFO	Salvage/Regen	WT	P	40-70	66	S	20
154	S-R	N RYE	2/3A	3	M	REFO	Salvage/Regen	WT	P	40-70	66	T	9
155	S-R	N RYE	3A	3	M	REFO	Salvage/Regen	NA	P	40-70	35	H	5
156	S-R	N RYE	3A	3	M	REFO	Salvage/Regen	SL/JP	P	40-70	32	H	94
156	S-R	N RYE	3A	3	M	REFO	Salvage/Regen	YT	P	40-70	32	S	11
156	S-R	N RYE	3A	3	M	REFO	Salvage/Regen	YT	P	40-70	32	T	6
157	S-R	N RYE	3A	3	H/M	REFO	Salvage/Regen	SL/JP	P	40-70	32	S	22
157	S-R	N RYE	3A	3	H/M	REFO	Salvage/Regen	SL/JP	P	40-70	32	T	52
158	S-R	N RYE	2	3	H	REFO	Salvage/Regen	SL/JP	P	40-70	34	H	107
160	S-R	N RYE	1	2	H/M	VRU2	Salvage/Regen	WT	P	50-80	48	TLM	8
160	S-R	N RYE	1	2	H/M	VRU2	Salvage/Regen	WT	P	50-80	48	TLM	79
161	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	50-80	48	TLM	48
161	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	50-80	48	TLM	12
162	S-R	N RYE	1	3	H/M	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	40-60	25	NA	19
163	S-R	N RYE	1	3	H/M	REFO	Manual/Rx Fire	SL	P	50-80	61	NA	165
164	S-R	N RYE	1	4	M	REFO	Salvage/Regen	NA	P	50-80	30	T	98
164	S-R	N RYE	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	14
165	S-R	N RYE	1	3	M/L	REFO	Salvage/Regen	NA	P	50-80	25	TLM	24
165	S-R	N RYE	1	3	M/L	REFO	Salvage/Regen	NA	P	50-80	25	TLM	94
166	S-R	N RYE	1	3	M	REFO	Salvage/Regen	WT	P	50-80	62	T	49
167	S-R	N RYE	1	3	M/L	FUELS/DFB	Salvage	SL/HP	NA	30-60	25	NA	56
169	S-R	N RYE	1	3	H/M/L	FUELS/DFB	Salvage	YT	NA	30-60	40	TLM	6
170	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	50-80	25	S	67
170	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	NA	P	50-80	25	T	7
170	S-R	N RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	18
171	S-R	N RYE	1	3	H/M	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	121
172	S-R	N RYE	1	3	M/L	FUELS/DFB	Salvage	SL	NA	30-60	68	H	70
173	S-R	N RYE	1	3	M	REFO	Salvage/Regen	SL	P	50-80	101	H	62

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
174	S-R	N RYE	1	3	M	REFO	Salvage/Regen	SL/JP	P	50-80	63	H	102
175	S-R	N RYE	1	3	M/L	REFO	Salvage/Regen	WT	P	50-80	70	T	45
176	S-R	N RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	27	T	45
177	S-R	N RYE	1	3	M	REFO	Salvage/Regen	SL	P	50-80	97	H	114
178	S-R	SLEEPING CHILD	1	4	H/L	REFO	Salvage/Regen	SL/JP	N	50-80	63	H	243
178	S-R	SLEEPING CHILD	1	4	H/L	REFO	Salvage/Regen	WT	N	50-80	63	S	172
178	S-R	SLEEPING CHILD	1	4	H/L	REFO	Salvage/Regen	WT	N	50-80	63	T	178
179	S-R	SLEEPING CHILD	1	4	H/M	REFO	Salvage/Regen	SL	N	50-80	60	H	79
180	S-R	SLEEPING CHILD	1	4	H/M	REFO	Salvage/Regen	HP	N	50-80	83	H	178
181	S-R	RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	52
182	S-R	RYE	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	65
182	S-R	RYE	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	51
183	S-R	RYE	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	26
184	S-R	RYE	1	3	M/L	REFO	Planting Only	NA	P	NA	NA	NA	37
185	S-R	RYE	1	3	M/L	FUELS/REFO	Planting Only	NA	N	NA	NA	NA	81
186	S-R	RYE	1/2	3	M/L	FUELS/REFO	Planting Only	NA	N	NA	NA	NA	83
187	S-R	RYE	1/2	3	H/M	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	74
187	S-R	RYE	1/2	3	H/M	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	68
188	S-R	RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	99
188	S-R	RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	8
188	S-R	RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	8
189	S-R	RYE	1	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	86
189	S-R	RYE	1	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	29
190	S-R	RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	39
190	S-R	RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	70
190	S-R	RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	47
191	S-R	RYE	1	3	H/M	FUELS/DFB	Planting Only	NA	P	NA	NA	NA	22
191	S-R	RYE	1	3	H/M	FUELS/DFB	Planting Only	NA	P	NA	NA	NA	15
192	S-R	RYE	1	3	M/L	REFO	Planting Only	NA	P	NA	NA	NA	214
193	S-R	RYE	1	3	M/L	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	14
193	S-R	RYE	1	3	M/L	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	127
194	S-R	RYE	1/2	3	M/L	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	230
194	S-R	RYE	1/2	3	M/L	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	99
195	S-R	RYE	1/2	3	M/L	FUELS/DFB	Planting Only	NA	P	NA	NA	NA	99
195	S-R	RYE	1/2	3	M/L	FUELS/DFB	Planting Only	NA	P	NA	NA	NA	114
195	S-R	RYE	1/2	3	M/L	FUELS/DFB	Planting Only	NA	P	NA	NA	NA	14
196	S-R	RYE	2	3	M/L	FUELS/DFB	Planting Only	NA	P	NA	NA	NA	53
196	S-R	RYE	2	3	M/L	FUELS/DFB	Planting Only	NA	P	NA	NA	NA	42

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
196	S-R	RYE	2	3	M/L	FUELS/DFB	Planting Only	NA	P	NA	NA	NA	11
197	S-R	RYE	1/2	2	M	VRU2	Planting Only	NA	P	NA	NA	NA	132
198	S-R	RYE	2	2	H/M/L	VRU2	Salvage	NA	NA	20-50	15	T	480
199	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	20-50	26	H	227
200	S-R	RYE	2	2	H/M/L	VRU2	Salvage	NA	NA	20-30	15	H	171
200	S-R	RYE	2	2	H/M/L	VRU2	Salvage	NA	NA	20-30	15	S	21
200	S-R	RYE	2	2	H/M/L	VRU2	Salvage	NA	NA	20-30	15	T	21
201	S-R	RYE	2	2	H	VRU2	Salvage/Regen	NA	P	50-80	19	S	29
201	S-R	RYE	2	2	H	VRU2	Salvage/Regen	NA	P	50-80	19	T	10
201	S-R	RYE	2	2	H	VRU2	Planting Only	NA	P	NA	NA	NA	26
202	S-R	RYE	2	3	H/M	REFO	Salvage/Regen	NA	P	50-80	25	T	10
203	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	40-60	25	S	29
203	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	40-60	25	T	114
204	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	WT	NA	20-50	45	S	11
204	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	WT	NA	20-50	45	T	11
205	S-R	RYE	2	3	H	REFO	Salvage/Regen	NA	P	50-80	27	S	89
205	S-R	RYE	2	3	H	REFO	Salvage/Regen	NA	P	50-80	27	T	59
205	S-R	RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	7
206	S-R	RYE	2	3	H/L	REFO	Salvage/Regen	NA	P	50-80	37	H	574
206	S-R	RYE	2	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	128
207	S-R	RYE	2	2	H/L	WUI/VRU2	Salvage/Regen	SL	P	50-80	31	H	373
207	S-R	RYE	2	2	H/L	WUI/VRU2	Salvage/Regen	WT	P	50-80	31	S	280
207	S-R	RYE	2	2	H/L	WUI/VRU2	Salvage/Regen	WT	P	50-80	31	T	280
207	S-R	RYE	2	2	H/L	WUI/VRU3	Planting Only	NA	P	NA	NA	NA	23
208	S-R	RYE	2	2	H/L	WUI	Salvage	SL/JP	NA	50-80	32	H	72
208	S-R	RYE	2	2	H/L	WUI	Salvage	YT	NA	50-80	32	S	56
208	S-R	RYE	2	2	H/L	WUI	Salvage	YT	NA	50-80	32	T	51
209	S-R	RYE	3A	3	H/M	WUI/DFB	Salvage/Regen	NA	P	50-80	33	T	21
209	S-R	RYE	3A	3	H/M	WUI/DFB	Salvage/Regen	NA	P	50-80	33	S	24
209	S-R	RYE	3A	3	H/M	WUI/DFB	Salvage/Regen	NA	P	50-80	33	H	411
210	S-R	RYE	2/3A	2	M/L	WUI	Salvage	NA	NA	30-60	15	H	35
210	S-R	RYE	2/3A	2	M/L	WUI	Salvage	NA	NA	30-60	15	S	7
210	S-R	RYE	2/3A	2	M/L	WUI	Salvage	NA	NA	30-60	15	T	7
211	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-50	30	H	13
211	S-R	RYE	2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-50	30	S	6
212	S-R	RYE	2	3	H/M/L	FUELS/DFB	Salvage	NA	NA	30-50	25	H	13
212	S-R	RYE	2	3	H/M/L	FUELS/DFB	Salvage	NA	NA	30-50	25	S	14
213	S-R	RYE	3A	3	M/L	WUI	Salvage	NA	NA	30-50	45	S	10

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
214	S-R	RYE	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	23	H	286
214	S-R	RYE	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	23	S	9
216	S-R	WHITESELL	3A	3	M/L	FUELS/DFB	Salvage	NA	NA	40-60	25	S	11
218	S-R	ROBBINS	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	20	H	76
218	S-R	ROBBINS	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	20	S	75
218	S-R	ROBBINS	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	40-80	20	T	226
219	S-R	ROBBINS	2	2	M/L	VRU2	Salvage/Regen	NA	P	40-80	25	S	203
219	S-R	ROBBINS	2	2	M/L	VRU2	Salvage/Regen	NA	P	40-80	25	T	50
220	S-R	ROBBINS	2	2	M/L	WUI	Salvage	NA	P	30-60	17	H	104
220	S-R	ROBBINS	2	2	M/L	WUI	Salvage	NA	P	30-60	17	T	12
221	S-R	SPADE	2	2	H/M/L	WUI	Salvage/Regen	SL	P	40-80	42	H	342
222	S-R	SPADE	3A	3	H	WUI	Salvage/Regen	SL	P	40-80	62	H	132
223	WF	W FK BITTERROOT	2/3A/3C	3	H/M/L	WUI/DFB	Intermediate	NA	NA	40-60	19	H	708
225	WF	W FK BITTERROOT	3A	2	M/L	WUI	Intermediate	NA	NA	10-30	7	H	106
228	WF	W FK BITTERROOT	3A	3	L	FUELS/DFB	Salvage	NA	NA	40-60	27	H	53
229	WF	W FK BITTERROOT	3A	2	L	WUI	Intermediate	NA	NA	10-40	10	H	65
230	WF	W FK BITTERROOT	3A	3	M/L	WUI/DFB	Intermediate	NA	NA	30-50	15	H	160
231	WF	W FK BITTERROOT	3A	3	H/M/L	WUI/DFB	Intermediate	NA	NA	30-60	30	H	42
233	WF	W FK BITTERROOT	3A	3	H/L	WUI	Salvage	NA	NA	20-80	22	H	201
236	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage	NA	NA	40-80	31	TLM	59
238	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Regen	NA	P	10-40	16	H	2
238	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Regen	NA	P	10-40	16	S	9
238	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Regen	NA	P	10-40	16	T	8
238	EF	MEDICINE TREE	2	2	H/L	VRU2	Planting Only	NA	P	NA	NA	NA	97
242	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	NA	P	40-80	27	H	22
243	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage	NA	NA	30-40	18	TLM	30
243	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage	NA	NA	30-40	18	H	5
243	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage	NA	NA	30-40	18	S	25
244	EF	MEDICINE TREE	2	2	M	VRU2	Salvage/Regen	NA	P	40-80	63	S	90
245	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage	NA	P	10-50	15	T	70
246	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Salvage/Regen	NA	P	10-80	15	S	42
246	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Salvage/Regen	NA	P	10-80	15	T	170
247	EF	MEDICINE TREE	2	3	L	FUELS/REFO	Manual/Rx Fire	SL/HP	P	20-60	25	NA	118
248	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	NA	P	10-30	42	S	39
248	EF	MEDICINE TREE	2	2	M/L	VRU2	Planting Only	NA	P	NA	NA	NA	11
249	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	WT	P	10-40	60	T	88
250	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	HP	P	40-80	43	H	23
250	EF	MEDICINE TREE	2	2	M/L	VRU2	Salvage/Regen	NA	P	40-80	43	S	23

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
251	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	HP	P	30-50	67	S	19
251	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	NA	P	30-50	67	T	10
252	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	NA	P	40-80	48	TLM	12
253	EF	MEDICINE TREE	2	2	H/M	VRU2	Salvage/Regen	NA	P	40-60	35	TLM	24
254	EF	MEDICINE TREE	2	3	M/L	REFO	Salvage/Regen	SL/HP	P	40-80	33	S	13
254	EF	MEDICINE TREE	2	3	M/L	REFO	Salvage/Regen	SL	P	40-80	33	T	49
254	EF	MEDICINE TREE	2	3	M/L	REFO	Planting Only	NA	P	NA	NA	NA	51
255	EF	MEDICINE TREE	2	2	H/M/L	VRU2	Salvage/Regen	NA	P	10-30	26	S	58
255	EF	MEDICINE TREE	2	2	H/M/L	VRU2	Salvage/Regen	WT	P	10-30	26	T	87
256	EF	MEDICINE TREE	2	2	H/M/L	VRU2	Salvage/Regen	WT	P	20-50	25	T	87
256	EF	MEDICINE TREE	2	2	H/M/L	VRU2	Planting Only	NA	P	NA	NA	NA	22
257	EF	MEDICINE TREE	2	3	H/L	REFO	Salvage/Regen	NA	P	40-80	39	S	129
257	EF	MEDICINE TREE	2	3	H/L	REFO	Salvage/Regen	NA	P	40-80	39	T	14
258	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	YT	P	10-20	27	S	38
259	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	WT	P	20-30	30	T	10
260	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	NA	P	30-60	33	S	14
260	EF	MEDICINE TREE	2	2	H	VRU3	Salvage/Regen	NA	P	30-60	33	T	14
261	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	WT	P	20-40	46	S	47
262	EF	MEDICINE TREE	2	2	H	VRU2	Salvage/Regen	WT	P	20-40	75	T	7
265	EF	WHISKEY	3A	2	M/L	WUI	Salvage/Regen	NA	P	10-40	35	H	105
269	EF	ELK GULCH	3A	2	H/M	WUI	Salvage/Regen	NA	P	30-60	15	H	298
270	EF	ELK GULCH	3A	2	H/L	WUI	Salvage/Regen	SL/HP	P	30-60	21	H	186
274	EF	DICKSON	3A	3/4	H/L	WUI/DFB	Salvage/Salvage/Regen	NA	P	40-80	48	H	155
275	EF	DICKSON	3A	3	M/L	WUI/DFB	Salvage/Salvage/Regen	HP	P	10-50	28	H	64
276	EF	BLIND DRAW	2	3	H/M/L	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	163
277	EF	LAIRD	2	2	H/L	WUI	Salvage/Salvage/Regen	NA	P	40-80	15	T	289
278	EF	LAIRD	2	2	H/M	WUI	Salvage/Regen	NA	P	40-80	16	TLM	26
279	EF	LAIRD	2	2	H/M/L	WUI	Salvage/Salvage/Regen	NA	P	30-60	27	H	5
279	EF	LAIRD	2	2	H/M/L	WUI	Salvage/Salvage/Regen	NA	P	30-60	27	T	3
279	EF	LAIRD	2	2	H/M/L	WUI	Salvage/Salvage/Regen	NA	P	30-60	27	S	14
280	EF	LAIRD	1/2	3	H/M/L	WUI	Salvage/Salvage/Regen	NA	P	40-80	31	H	60
280	EF	LAIRD	1/2	3	H/M/L	WUI	Salvage/Salvage/Regen	NA	P	40-80	31	T	8
281	EF	LAIRD	1/2	3	H/M/L	WUI/DFB	Salvage	NA	NA	30-60	24	H	35
282	EF	LAIRD	1/2	3	H/L	WUI/DFB	Salvage/Salvage/Regen	JP	P	40-80	52	H	151
283	EF	LAIRD	1/2	3	H/M/L	WUI	Salvage/Salvage/Regen	WT	P	40-80	49	S	26
283	EF	LAIRD	1/2	3	H/M/L	WUI	Salvage/Salvage/Regen	WT	P	40-80	49	H	368
284	EF	LAIRD	2/3A	2	H/M/L	WUI	Salvage/Regen	JP	P	30-70	36	H	270
284	EF	LAIRD	2/3A	2	H/M/L	WUI	Salvage/Regen	WT	P	30-70	36	S	301

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
284	EF	LAIRD	2/3A	2	H/M/L	WUI	Salvage/Regen	WT	P	30-70	36	T	30
284	EF	LAIRD	2/3A	2	H/M/L	WUI	Planting Only	NA	P	NA	NA	NA	16
285	EF	LAIRD	2	3	H/M	REFO	Salvage/Regen	WT	P	20-80	71	S	5
287	EF	LAIRD	1	4	H	REFO	Salvage/Regen	HP	P	40-80	49	H	11
287	EF	LAIRD	1	4	H	REFO	Salvage/Regen	HP	P	40-80	49	S	99
288	EF	LAIRD	1	4	H/L	REFO	Salvage/Regen	NA	N	40-80	42	H	55
291	EF	LAIRD	1	3	H/M	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	49	S	17
291	EF	LAIRD	1	3	H/M	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	49	H	39
292	EF	LAIRD	1	3	M	FUELS/REFO	Salvage/Salvage/Regen	HP	N	40-80	54	H	17
292	EF	LAIRD	1	3	M	FUELS/REFO	Salvage/Salvage/Regen	WT	N	40-80	54	T	7
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	Salvage/Regen	HP	P	40-80	28	H	183
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	Salvage/Regen	YT	P	40-80	28	S	231
295	EF	LORD DRAW	2/3A	2	H/M/L	WUI	Salvage/Regen	YT	P	40-80	28	T	66
296	EF	LORD DRAW	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	41	H	26
296	EF	LORD DRAW	2/3A	2	H/M	WUI	Salvage/Regen	NA	P	40-80	41	S	80
297	EF	LORD DRAW	2/3A	2	H	VRU2	Salvage/Regen	JP	P	40-80	49	T	99
297	EF	LORD DRAW	2/3A	2	H	VRU2	Salvage/Regen	WT	P	40-80	49	H	12
298	EF	WARM SPRINGS	2	2	H/M/L	VRU2	Planting Only	NA	P	NA	NA	NA	73
299	EF	WARM SPRINGS	2	3	L	FUELS/DFB	Salvage	NA	NA	40-60	22	S	27
303	EF	WARM SPRINGS	2	3	H/L	REFO	Salvage/Regen	SL/JP	N	30-60	49	H	18
307	EF	WARM SPRINGS	1/2	3	H/M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	43	H	65
308	EF	WARM SPRINGS	1/2	3	H/M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	41	H	278
310	EF	WARM SPRINGS	2	3	M/L	VRU2	Salvage	NA	NA	40-60	25	H	59
311	EF	WARM SPRINGS	2	2	M/L	WUI	Intermediate	NA	N	40-70	36	H	304
313	EF	WARM SPRINGS	2/3A	2	M/L	WUI	Intermediate	NA	NA	30-60	20	H	128
314	EF	WARM SPRINGS	3A	2	M/L	WUI	Intermediate	NA	NA	30-60	21	H	109
316	EF	E FK BITTERROOT	3A	2	H/L	WUI	Intermediate	NA	NA	30-60	14	H	108
316	EF	E FK BITTERROOT	3A	2	H/L	WUI	Intermediate	NA	NA	30-60	14	S	18
318	EF	E FK BITTERROOT	2/3A	2/3	H/M/L	WUI	Intermediate	SL	N	40-70	49	H	325
318	EF	E FK BITTERROOT	2/3A	2/3	H/M/L	WUI	Intermediate	SL	N	40-70	49	S	33
319	EF	MAYNARD	2/3A	2/3	H/M/L	VRU2	Salvage/Salvage/Regen	SL	N	40-80	47	H	256
319	EF	MAYNARD	2/3A	2/3	H/M/L	VRU2	Salvage/Salvage/Regen	WT	N	40-80	47	S	38
320	EF	MAYNARD	2	3	H/L	REFO	Salvage/Regen	SL/HP	N	40-80	78	H	70
321	EF	MAYNARD	2	3	H	REFO	Salvage/Regen	SL/HP	N	40-80	60	H	78
322	EF	MAYNARD	1	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	30-60	24	H	89
322	EF	MAYNARD	1	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	30-60	24	S	89
323	EF	MAYNARD	1	3	H/M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	38	H	44
323	EF	MAYNARD	1	3	H/M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	38	S	13

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
324	EF	MAYNARD	2	3	H/L	FUELS/DFB	Salvage	NA	NA	30-60	31	H	24
324	EF	MAYNARD	2	3	H/L	FUELS/DFB	Salvage	NA	NA	30-60	31	T	45
325	EF	MAYNARD	1/2	3	H/L	REFO	Salvage/Regen	WT/HP	P	40-80	83	S	28
325	EF	MAYNARD	1/2	3	H/L	REFO	Salvage/Regen	WT	P	40-80	83	T	29
326	EF	MAYNARD	1	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	40-80	46	S	32
328	EF	MAYNARD	1/2	4	H/L	REFO	Salvage/Regen	SL/JP	N	40-80	73	H	15
328	EF	MAYNARD	1/2	4	H/L	REFO	Salvage/Regen	WT	N	40-80	73	T	48
328	EF	MAYNARD	1/2	4	H/L	REFO	Salvage/Regen	WT/JP	N	40-80	73	S	8
329	EF	MAYNARD	1	3	H/L	REFO	Salvage/Regen	SL/JP	N	40-80	84	H	31
330	EF	MAYNARD	1	3	H/L	REFO	Salvage/Regen	JP	N	40-80	66	TLM	98
330	EF	MAYNARD	1	3	H/L	REFO	Salvage/Regen	WT	N	40-80	66	T	24
331	EF	MAYNARD	1	3	M/L	FUELS/DFB	Salvage	NA	NA	40-60	31	H	25
331	EF	MAYNARD	1	3	M/L	FUELS/DFB	Salvage	NA	NA	40-60	31	S	24
332	EF	MAYNARD	1	4	H	REFO	Salvage/Regen	SL/HP	N	40-80	63	H	20
332	EF	MAYNARD	1	4	H	REFO	Salvage/Regen	WT/HP	N	40-80	63	S	15
333	EF	ANDREWS	2/3A	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	SL/UB	P	30-60	88	H	6
333	EF	ANDREWS	2/3A	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	SL/UB	P	30-60	88	S	10
333	EF	ANDREWS	2/3A	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	SL/UB	P	30-60	88	T	3
340	EF	PRAINE	1/3A	3	H/M/L	REFO	Salvage/Regen	WT/SL/HP	P	40-80	50	H	114
341	EF	ANDREWS	3A	2	H	WUI	Salvage/Regen	HP	P	40-80	45	H	36
342	EF	ANDREWS	3A	2	H	WUI	Salvage/Regen	SL/HP	P	40-80	40	H	13
343	EF	WAUGH	1/2	3	H/L	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	38	H	63
346	EF	CAMP	3A	2	M/L	WUI	Salvage	YT/HP	P	30-60	30	H	43
346	EF	CAMP	3A	2	M/L	WUI	Salvage	YT/HP	P	30-60	30	S	65
347	EF	CAMP	1/2/3A	3	H/M/L	WUI	Salvage/Regen	YT	N	40-80	63	H	282
348	EF	W FK CAMP	2/3A	2	H/L	WUI	Salvage	SL/HP	NA	30-60	35	H	68
348	EF	W FK CAMP	2/3A	2	H/L	WUI	Salvage	SL/HP	NA	30-60	35	T	9
350	EF	DICK	1/2	3	H/M/L	WUI	Salvage/Regen	YT	P	40-80	59	H	106
350	EF	DICK	1/2	3	H/M/L	WUI	Salvage/Regen	YT	P	40-80	59	S	96
351	EF	DICK	1/2	2	H	WUI	Salvage/Regen	SL	P	40-80	56	H	185
351	EF	DICK	1/2	2	H	WUI	Salvage/Regen	WT	P	40-80	56	S	47
354	EF	CAMP	2/3A	2	H/L	WUI	Manual/Rx Fire	SL/HP	P	30-60	32	NA	43
354	EF	CAMP	2/3A	2	H/L	WUI	Manual/Rx Fire	SL/HP	P	30-60	32	NA	23
355	EF	CAMP	2	2	H/L	WUI	Salvage/Regen	SL/HP	N	30-60	48	H	15
355	EF	CAMP	2	2	H/L	WUI	Salvage/Regen	NA	N	30-60	48	S	5
356	EF	CAMP	3A	2	L	WUI	Manual/Rx Fire	SL	P	30-60	24	NA	22
356	EF	CAMP	3A	2	L	WUI	Manual/Rx Fire	SL	P	30-60	24	NA	28
356	EF	CAMP	3A	2	L	WUI	Manual/Rx Fire	SL	P	30-60	24	NA	12

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
357	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	SL/HP	P	30-60	38	H	24
357	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	NA	P	30-60	38	S	26
357	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	NA	P	30-60	38	T	12
358	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	NA	P	30-60	36	H	54
358	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT/YUM	P	30-60	36	S	10
358	EF	CAMP	2/3A	2	H/L	WUI	Salvage/Regen	WT/YUM	P	30-60	36	T	4
359	EF	CAMP	3A	2	H/L	WUI	Intermediate	SL/HP	NA	30-60	28	H	97
359	EF	CAMP	3A	2	H/L	WUI	Intermediate	YUM	NA	30-60	28	S	48
359	EF	CAMP	3A	2	H/L	WUI	Intermediate	YUM	NA	30-60	28	T	16
360	EF	CAMP	3A	2	H/M/L	WUI	Intermediate	NA	P	30-60	23	H	34
360	EF	CAMP	3A	2	H/M/L	WUI	Intermediate	NA	P	30-60	23	T	34
361	EF	CAMP	3A	2	H/L	WUI	Salvage	HP	NA	30-60	34	H	20
362	EF	CAMP	3A	2	M/L	WUI	Salvage	HP	NA	30-60	34	H	3
363	EF	CAMP	3A	2	H/M/L	WUI	Salvage	SL/HP	NA	30-60	21	H	86
363	EF	CAMP	3A	2	H/M/L	WUI	Salvage	SL/HP	NA	30-60	21	S	26
363	EF	CAMP	3A	2	H/M/L	WUI	Salvage	SL/HP	NA	30-60	21	T	79
364	EF	REIMEL	2/3A	3	H/M	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	37	H	126
364	EF	REIMEL	2/3A	3	H/M	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	37	TLM	154
364	EF	REIMEL	2/3A	3	H/M	FUELS/REFO	Salvage/Salvage/Regen	NA	N	40-80	37	T	16
365	EF	REIMEL	2/3A	2	M/L	WUI	Salvage	NA	NA	30-60	15	H	45
369	EF	REIMEL	2	2	H/L	VRU2	Manual/Rx Fire	SL/HP	N	30-60	15	NA	24
372	EF	TOLAN	2	3	L	FUELS/DFB	Salvage	NA	NA	40-80	26	H	71
373	EF	TOLAN	3A	2	L	VRU2	Intermediate	NA	NA	30-60	23	H	35
374	EF	TOLAN	3A	3	L	FUELS/DFB	Salvage	NA	NA	40-60	25	H	26
375	EF	TOLAN	3A	2	L	VRU2	Salvage	NA	NA	30-60	16	H	33
376	EF	E FK BITTERROOT	2	3	L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	40-80	31	NA	14
377	EF	JENNINGS	1	3	L	FUELS	Manual/Rx Fire	SL/HP	NA	10-40	25	NA	45
379	EF	GUIDE	2	3	H/M	FUELS/DFB	Salvage/Regen	YT	P	10-40	25	S	9
379	EF	GUIDE	2	3	H/M	FUELS/DFB	Salvage/Regen	YT	P	10-40	25	T	9
381	EF	CAMERON	3A	2	H/L	WUI	Salvage/Regen	NA	P	40-80	25	H	501
382	EF	CAMERON	2/3A	2	H/M/L	VRU2	Salvage/Regen	SL/HP	P	40-80	38	H	831
382	EF	CAMERON	2/3A	2	H/M/L	VRU2	Planting Only	NA	P	NA	NA	NA	6
383	EF	CAMERON	2	2	H/M/L	VRU2	Salvage/Regen	WT	P	40-80	31	T	109
384	EF	CAMERON	2	3	M/L	REFO	Salvage/Regen	NA	P	40-80	25	T	118
384	EF	CAMERON	2	3	M/L	REFO	Planting Only	NA	P	NA	NA	NA	9
385	EF	CAMERON	2	3	H/M/L	REFO	Salvage/Regen	NA	P	40-80	41	S	192
386	EF	CAMERON	2	2	H/M	VRU2	Salvage/Salvage/Regen	NA	P	40-80	25	S	107
386	EF	CAMERON	2	2	H/M	VRU2	Salvage/Salvage/Regen	YT	P	40-80	25	T	107

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
386	EF	CAMERON	2	2	H/M	VRU2	Salvage/Salvage/Regen	YT	P	40-80	25	H	107
386	EF	CAMERON	2	2	H/M	VRU2	Planting Only	NA	P	NA	NA	NA	14
387	EF	CAMERON	2	2	H	FUELS/REFO	Salvage/Salvage/Regen	WT	P	40-80	34	S	119
387	EF	CAMERON	2	2	H	FUELS/REFO	Salvage/Salvage/Regen	SL/JP	P	40-80	34	H	119
387	EF	CAMERON	2	2	H	FUELS/REFO	Salvage/Salvage/Regen	WT	P	40-80	34	T	237
387	EF	CAMERON	2	2	H	FUELS/REFO	Planting Only	NA	P	NA	NA	NA	14
388	EF	HART	2	3	M	FUELS/REFO	Salvage/Salvage/Regen	NA	P	20-60	27	S	46
388	EF	HART	2	3	M	FUELS/REFO	Salvage/Salvage/Regen	NA	P	20-60	27	T	46
389	EF	HART	2	2	H/M	VRU2	Salvage/Salvage/Regen	NA	NA	30-60	22	H	105
389	EF	HART	2	2	H/M	VRU2	Salvage/Salvage/Regen	NA	NA	30-60	22	S	45
390	EF	HART	2	2	H	VRU2	Salvage/Regen	WT	P	40-80	41	S	33
391	EF	HART	2	2	L	VRU2	Salvage	NA	NA	30-60	27	S	21
391	EF	HART	2	2	L	VRU2	Salvage	NA	NA	30-60	27	T	22
392	EF	HART	2	2	H/M/L	VRU2	Salvage/Salvage/Regen	NA	P	30-60	35	S	39
392	EF	HART	2	2	H/M/L	VRU2	Salvage/Salvage/Regen	NA	P	30-60	35	T	156
393	EF	CAMERON	1	3	M	REFO	Salvage/Regen	NA	P	40-80	25	S	23
395	EF	JENNINGS	2	3	L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	10-40	25	NA	90
396	EF	JENNINGS	1	3	H/M	FUELS/DFB	Salvage/Regen	WT	N	10-40	25	S	167
398	EF	MEADOW	1	3	H/M	REFO	Salvage/Regen	WT/YUM	N	40-80	78	S	48
399	EF	BUGLE	1	2	H/M	REFO	Salvage/Regen	NA	P	30-70	21	T	53
400	EF	MEADOW	1	3	H/M	VRU2	Planting Only	NA	P	NA	NA	NA	25
401	EF	MEADOW	1	3	H/L	REFO	Salvage/Regen	NA	N	40-80	53	H	94
402	EF	MEADOW	1	3	H/L	REFO	Salvage/Regen	NA	N	30-60	32	H	97
403	EF	MEADOW	1	4	H/M/L	REFO	Salvage/Regen	NA	N	40-80	49	H	187
403	EF	MEADOW	1	4	H/M/L	REFO	Salvage/Regen	YT	N	40-80	49	S	214
404	EF	MEADOW	1	4	H/M	REFO	Salvage/Regen	SL/JP	N	40-80	73	H	132
404	EF	MEADOW	1	4	H/M	REFO	Salvage/Regen	WT/YUM	N	40-80	73	S	41
405	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	44	H	115
405	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	44	S	64
405	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	44	T	59
406	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	54	H	313
406	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	YT	N	50-80	54	S	105
406	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	YT	N	50-80	54	T	57
407	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	37	H	206
407	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	37	T	52
408	EF	TOLAN	1	4	H/L	REFO	Salvage	YT	N	50-80	47	T	52
410	EF	TOLAN	1	4	H/M/L	REFO	Salvage/Regen	SL/JP	N	50-80	53	H	718
411	EF	TOLAN	1	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	43	H	72

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
411	EF	TOLAN	1	4	H/M/L	REFO	Salvage/Regen	NA	N	50-80	43	S	141
414	S-R	DALY	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	2
415	S-R	DALY	3A	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	20
416	S-R	LITTLE SLEEPING CHILD	2	2	M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	24	NA	48
417	S-R	LITTLE SLEEPING CHILD	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	56
418	S-R	SKALKAHO	1	4	M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	62	NA	32
419	S-R	LITTLE SLEEPING CHILD	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	28
420	S-R	SKALKAHO	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	62
421	S-R	SKALKAHO	1	4	M/L	REFO	Planting Only	NA	P	NA	NA	NA	54
422	S-R	LITTLE SLEEPING CHILD	2	3	M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	30	NA	24
423	S-R	LITTLE SLEEPING CHILD	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	19
424	S-R	SKALKAHO	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	33
425	S-R	LITTLE SLEEPING CHILD	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	60
426	S-R	SKALKAHO	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	33
427	S-R	SKALKAHO	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	56
428	S-R	SKALKAHO	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	2
429	S-R	LITTLE SLEEPING CHILD	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	22
430	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	43
431	S-R	LITTLE SLEEPING CHILD	2	3	H/M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	33	NA	42
432	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	5
433	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	8
434	S-R	LITTLE SLEEPING CHILD	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	19
435	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	28
436	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	97
437	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	20
438	S-R	LITTLE SLEEPING CHILD	2	3	H/M/L	REFO	Planting Only	NA	P	NA	NA	NA	53
439	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	30
440	S-R	LITTLE SLEEPING CHILD	2	3	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	12
441	S-R	LITTLE SLEEPING CHILD	1	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	31
442	S-R	SKALKAHO	2	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	20
443	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	22	NA	8
444	S-R	LITTLE SLEEPING CHILD	2	3	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	22	NA	42
445	S-R	LITTLE SLEEPING CHILD	2	2	H/L	REFO	Planting Only	NA	P	NA	NA	NA	27
446	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	44
447	S-R	SKALKAHO	2	4	H	REFO	Planting Only	NA	P	NA	NA	NA	12
448	S-R	LITTLE SLEEPING CHILD	1	4	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	22
449	S-R	SKALKAHO	1	4	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	35
450	S-R	SKALKAHO	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	35

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
451	S-R	SKALKAHO	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	18
452	S-R	SLEEPING CHILD	1	4	H/L	REFO	Planting Only	NA	P	NA	NA	NA	18
453	S-R	SLEEPING CHILD	2	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	14
454	S-R	RYE	2	3	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	70
455	S-R	LITTLE SLEEPING CHILD	1	3	H/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	29	NA	51
456	S-R	SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	34
457	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	19
458	S-R	SLEEPING CHILD	1	4	M	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	11
459	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	12
460	S-R	SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	10
461	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	16
462	S-R	SLEEPING CHILD	2	4	M	REFO	Planting Only	NA	P	NA	NA	NA	92
463	S-R	LITTLE SLEEPING CHILD	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	88
464	S-R	SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	44
465	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	77
466	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	14
467	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	11
468	S-R	SLEEPING CHILD	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	20
469	S-R	SLEEPING CHILD	2	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	35
470	S-R	LITTLE SLEEPING CHILD	1	4	H	REFO	Planting Only	NA	P	NA	NA	NA	146
471	S-R	SLEEPING CHILD	1	4	H/M	REFO	Planting Only	NA	P	NA	NA	NA	11
472	S-R	LOWMAN	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	12
473	S-R	LOWMAN	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	13
474	S-R	LOWMAN	2	4	H	REFO	Planting Only	NA	P	NA	NA	NA	89
475	S-R	N RYE	2	4	M/L	REFO	Planting Only	NA	P	NA	NA	NA	65
476	S-R	N RYE	2	3	M/L	REFO	Planting Only	NA	P	NA	NA	NA	60
477	S-R	BURKE	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	19
478	S-R	BURKE	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	5
479	S-R	LOWMAN	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	13
480	S-R	BURKE	1	2	H	REFO	Planting Only	NA	P	NA	NA	NA	11
481	S-R	N RYE	1	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	41
482	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	56
483	S-R	LOWMAN	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	5
484	S-R	LOWMAN	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	26
485	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	51
486	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	29
487	S-R	N RYE	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	37
488	S-R	N RYE	1	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	50

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
489	S-R	N RYE	1	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	57
490	S-R	RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	14
491	S-R	RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	26
492	S-R	RYE	1	4	M	REFO	Planting Only	NA	P	NA	NA	NA	5
493	S-R	N RYE	1	2	M	REFO	Planting Only	NA	P	NA	NA	NA	26
494	S-R	N RYE	1	3	M	REFO	Planting Only	NA	P	NA	NA	NA	35
495	S-R	N RYE	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	22
496	S-R	CAMERON	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	4
497	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	30
498	EF	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	87
499	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	15
500	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
501	S-R	N RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	36
502	S-R	RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	11
503	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	9
504	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	23
505	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	91
506	S-R	N RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	18
507	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	29
508	S-R	RYE	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	11
509	S-R	RYE	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	80
510	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	43
511	EF	DORAN	3A	3	M	REFO	Planting Only	NA	P	NA	NA	NA	15
512	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	8
513	EF	MEDICINE TREE	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	32
514	EF	MEDICINE TREE	3A	2	H/L	REFO	Planting Only	NA	P	NA	NA	NA	21
515	S-R	RYE	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	19
516	S-R	RYE	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	16
517	EF	MEDICINE TREE	1	2	H	REFO	Planting Only	NA	P	NA	NA	NA	5
518	EF	CAMERON	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	11
519	EF	MEDICINE TREE	3A	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	15
520	EF	MEDICINE TREE	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	35
521	EF	LYMAN	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	51
522	EF	MEDICINE TREE	3A	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	15
523	S-R	RYE	2	3	H/M/L	REFO	Planting Only	NA	P	NA	NA	NA	33
524	EF	CAMERON	1	2	M	REFO	Planting Only	NA	P	NA	NA	NA	44
525	EF	CAMERON	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	13
526	EF	LYMAN	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	13

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
527	EF	DORAN	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	3
528	EF	LYMAN	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	6
529	EF	CAMERON	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	19
530	EF	DORAN	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
531	EF	LYMAN	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	15
532	EF	MEDICINE TREE	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	27
533	EF	LYMAN	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
534	EF	LYMAN	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	14
535	EF	MEDICINE TREE	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	12
536	EF	LYMAN	2	3	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	33	NA	13
537	EF	LYMAN	3A	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	13
538	EF	MEDICINE TREE	3A	2	M/L	REFO	Planting Only	NA	P	NA	NA	NA	74
539	EF	MEDICINE TREE	3A	2	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	28	NA	14
540	EF	MEDICINE TREE	1	2	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	25	NA	17
541	EF	MEADOW	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	122
542	EF	MEDICINE TREE	1	2	H	REFO	Planting Only	NA	P	NA	NA	NA	4
543	EF	MEADOW	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	6
544	EF	TOLAN	3A	4	NI	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	16
545	EF	LAIRD	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	19
546	EF	LAIRD	3A	3	H/L	REFO	Planting Only	NA	P	NA	NA	NA	59
547	EF	WARM SPRINGS	3A	3	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	32	NA	31
548	EF	WARM SPRINGS	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	65
549	EF	WARM SPRINGS	3A	3	H	REFO	Manual/Rx Fire	SL/HP	P	10-50	32	NA	21
551	EF	LAIRD	3A	2	M/L	REFO	Planting Only	NA	P	NA	NA	NA	23
552	EF	LAIRD	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	52
553	EF	WARM SPRINGS	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	19
554	EF	WARM SPRINGS	3A	3	M/L	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	81
555	EF	WARM SPRINGS	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	38
556	EF	ANDREWS	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	8
557	EF	ANDREWS	3A	3	M	REFO	Planting Only	NA	P	NA	NA	NA	3
558	EF	ANDREWS	3A	4	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	26	NA	49
559	EF	ANDREWS	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	3
560	EF	ANDREWS	3A	3	H	REFO	Planting Only	NA	P	NA	NA	NA	23
561	EF	ANDREWS	2	3	H	REFO	Planting Only	NA	P	NA	NA	NA	7
562	EF	WAUGH	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	12
563	EF	WAUGH	3A	2	H	REFO	Planting Only	NA	P	NA	NA	NA	24
564	EF	REIMEL	2	2	H/M	REFO	Planting Only	NA	P	NA	NA	NA	11
565	WF	LITTLE BLUE JOINT	3A	2	M	REFO	Planting Only	NA	P	NA	NA	NA	27

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
566	WF	LITTLE BLUE JOINT	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	7
567	WF	LITTLE BLUE JOINT	2	2	H	REFO	Planting Only	NA	P	NA	NA	NA	30
568	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	10
569	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	9
570	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	30
571	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	12
572	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	32
573	WF	LITTLE BLUE JOINT	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	11
574	WF	LITTLE BLUE JOINT	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	15
575	WF	LITTLE BLUE JOINT	2	3	M	REFO	Planting Only	NA	P	NA	NA	NA	11
576	WF	COAL	2	2	M	REFO	Planting Only	NA	P	NA	NA	NA	7
577	WF	COAL	1	2	NI	REFO	Manual/Rx Fire	SL/HP	P	10-50	40	NA	22
578	WF	COAL	3A	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	57
579	WF	WEST	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	38
580	WF	COAL	2	3	L	REFO	Manual/Rx Fire	SL/HP	P	10-50	27	NA	69
581	WF	WEST	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	30
582	EF	TOLAN	1	4	H/M	REFO	Salvage/Regen	SL/HP	N	40-80	59	H	220
584	EF	W FK CAMP	3A	4	H/L	REFO	Salvage/Regen	SL/JP	P	40-80	47	H	80
584	EF	W FK CAMP	3A	4	H/L	REFO	Salvage/Regen	NA	P	40-80	47	T	98
589	S-R	SLEEPING CHILD	1	3	H/M/L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	40-60	65	NA	30
590	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	FUELS	Salvage/Regen	NA	P	30-80	22	T	7
591	S-R	BURKE	1/2	2	M/L	REFO	Salvage/Regen	JP	P	40-80	33	H	118
592	S-R	N RYE	1	3	H/M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	50-80	25	S	42
592	S-R	N RYE	1	3	H/M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	50-80	25	T	42
593	EF	MEDICINE TREE	2	3	M/L	FUELS/REFO	Salvage/Salvage/Regen	NA	P	20-60	25	T	66
594	EF	LAIRD	2	2	H/L	WUI	Salvage/Salvage/Regen	NA	P	40-80	15	T	27
595	EF	LAIRD	2	2	H/L	WUI	Salvage/Salvage/Regen	NA	P	40-80	15	T	22
598	EF	MAYNARD	3A	2	H/L	WUI	Intermediate	JP	P	40-70	56	H	260
598	EF	MAYNARD	3A	2	H/L	WUI	Intermediate	WT/JP	P	40-70	56	S	6
599	EF	MAYNARD	1	3	H/M/L	REFO	Salvage/Regen	WT/JP	P	40-80	59	S	27
599	EF	MAYNARD	1	3	H/M/L	REFO	Salvage/Regen	WT/JP	P	40-80	59	T	27
601	EF	GUIDE	1	3	H/M	FUELS/DFB	Salvage/Regen	NA	P	10-40	38	H	14
602	EF	JENNINGS	2	3	L	FUELS/DFB	Salvage	NA	NA	10-40	37	S	12
603	EF	JENNINGS	2	3	L	FUELS/DFB	Salvage	WT	NA	10-40	43	S	4
604	EF	JENNINGS	2	3	H/M	FUELS/DFB	Salvage/Regen	WT	N	10-40	63	T	13
605	S-R	LITTLE SLEEPING CHILD	1	2	M/L	VRU2	Salvage	HP	P	20-40	15	T	4
606	S-R	BURKE	2	2	H	VRU2	Salvage/Regen	WT/YUM	P	50-80	62	S	31
607	S-R	RYE	1	3	H/M	FUELS/DFB	Planting Only	NA	P	NA	NA	NA	153

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
608	S-R	LITTLE SLEEPING CHILD	1	3	H/M/L	VRU2	Salvage	NA	N	10-30	25	S	94
610	B	COW	3A	2	H	WUI	Planting Only	NA	P	NA	NA	NA	14
611	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	WT	P	30-70	54	H	27
611	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	WT	P	30-70	54	T	83
611	B	SHEAFMAN	3A	2	H/M/L	WUI	Salvage/Regen	WT/YUM	P	30-70	54	S	165
613	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	NA	N	40-70	24	H	23
613	S-R	S FK SKALKAHO	1	3	H/M	REFO	Salvage/Regen	NA	N	40-70	24	S	6
614	S-R	S FK SKALKAHO	1	3	H/L	REFO	Salvage/Regen	NA	P	40-70	28	H	97
614	S-R	S FK SKALKAHO	1	3	H/L	REFO	Salvage/Regen	NA	P	40-70	28	S	97
702	WF	OVERWHICH	2	3	H	REFO	Manual/Rx Fire	SL/HP	P	50-80	43	NA	28
703	WF	PAINTED ROCKS LAKE	3A	3	L	WUI/DFB	Intermediate	SL/HP	NA	30-60	53	H	65
704	WF	OVERWHICH	2	3	H	REFO	Salvage/Regen	NA	P	50-80	35	S	20
705	WF	OVERWHICH	2	3	H/L	FUELS	Salvage/Salvage/Regen	WT	P	30-60	43	S	21
705	WF	OVERWHICH	2	3	H/L	FUELS	Salvage/Salvage/Regen	WT	P	30-60	43	T	39
706	WF	BLUE JOINT	3A	3	H/M/L	WUI	Salvage/Regen	NA	P	40-80	32	S	127
707	WF	LITTLE BLUE JOINT	2	3	H/M	REFO	Salvage/Regen	NA	P	40-80	25	S	16
707	WF	LITTLE BLUE JOINT	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	16
708	WF	LITTLE BLUE JOINT	2	3	H/M	REFO	Salvage/Regen	NA	P	40-80	49	S	6
708	WF	LITTLE BLUE JOINT	2	3	H/M	REFO	Planting Only	NA	P	NA	NA	NA	10
709	WF	LITTLE BLUE JOINT	1/2	3	H/M	REFO	Salvage/Regen	SL/JP	P	40-80	53	H	425
712	EF	JENNINGS	2	2	M/L	WUI	Salvage/Salvage/Regen	SL	P	30-60	66	S	30
713	EF	JENNINGS	2	4	H/M	REFO	Salvage/Regen	WT	N	40-80	44	TLM	21
714	EF	WARM SPRINGS	2	2	M/L	WUI	Manual/Rx Fire	SL/HP	NA	10-50	52	NA	47
715	EF	WARM SPRINGS	2	3	M/L	FUELS/DFB	Salvage	NA	NA	30-60	22	S	69
716	EF	WAUGH	2	2	L	WUI	Intermediate	WT	P	30-60	40	T	28
716	EF	WAUGH	2	2	L	WUI	Intermediate	WT/YUM	P	30-60	40	S	106
717	EF	CAMP	3A	2	H	WUI	Salvage/Regen	SL/HP	P	30-60	43	T	19
717	EF	CAMP	3A	2	H	WUI	Salvage/Regen	SL/HP	P	30-60	43	S	173
718	EF	REIMEL	2/3A	2	H/L	VRU2	Salvage	SL	N	30-60	48	H	174
719	EF	E FK BITTERROOT	2/3A	3	L	FUELS/DFB	Salvage	NA	NA	40-80	51	H	92
720	EF	TOLAN	3A	2	L	VRU2	Salvage	NA	NA	30-60	49	H	119
721	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	45	H	341
721	EF	TOLAN	1	4	H/L	REFO	Salvage/Regen	NA	N	50-80	45	T	55
722	EF	MEADOW	1	3	H/M	VRU2	Salvage/Regen	SL	N	30-60	47	H	145
722	EF	MEADOW	1	3	H/M	VRU2	Salvage/Regen	SL	N	30-60	47	T	17
723	S-R	ROAN	2	2	L	VRU2	Intermediate	SL	P	30-60	47	H	137
723	S-R	ROAN	2	2	L	VRU2	Intermediate	WT/YUM	P	30-60	47	T	46
724	S-R	SLEEPING CHILD	3A	3	H/M/L	FUELS/DFB	Manual/Rx Fire	SL/HP	NA	40-60	32	NA	17

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
725	S-R	SLEEPING CHILD	3A	3	M/L	FUELS/REFO	Manual/Rx Fire	SL/HP	NA	40-60	32	NA	26
726	S-R	SLEEPING CHILD	3A	3	M/L	FUELS/REFO	Salvage/Regen	NA	P	50-80	27	S	34
727	S-R	LITTLE SLEEPING CHILD	1/2	2	M/L	VRU2	Salvage/Regen	NA	P	30-60	50	S	30
728	S-R	JERRYS GULCH	2	3	H/L	REFO	Manual/Rx Fire	SL/HP	P	50-80	62	NA	5
729	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Salvage/Regen	HP	P	30-80	55	T	36
729	S-R	LITTLE SLEEPING CHILD	1	2	H/M/L	VRU2	Salvage/Salvage/Regen	HP	P	30-80	55	S	114
730	S-R	MIKE	2	2	H	VRU2	Salvage/Regen	NA	P	30-50	35	S	44
730	S-R	MIKE	2	2	H	VRU2	Salvage/Regen	NA	P	30-50	35	T	19
731	S-R	LITTLE SLEEPING CHILD	1	3	L	FUELS/DFB	Manual/Rx Fire	WT/YUM	NA	40-60	65	NA	24
732	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	NA	P	50-80	34	S	11
733	S-R	BURKE	2	4	M/L	VRU2	Salvage/Regen	SL/HP	P	50-80	54	H	99
733	S-R	BURKE	2	2	M/L	VRU2	Salvage/Regen	WT/YUM	P	50-80	54	S	13
734	S-R	BURKE	2	2	H/M	VRU2	Salvage/Regen	WT	P	50-80	57	T	88
735	S-R	N RYE	1	4	H/M	REFO	Salvage/Regen	NA	P	40-80	40	H	41
735	S-R	N RYE	1	4	H/M	REFO	Salvage/Regen	NA	P	40-80	40	S	41
736	S-R	DUGOUT	2	3	H	REFO	Salvage/Regen	WT	P	40-80	34	H	40
738	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	WT/YUM	P	50-80	76	S	36
738	S-R	N RYE	1	3	H/M	REFO	Salvage/Regen	WT	P	50-80	76	T	36
739	S-R	BURKE	1	2	H	VRU2	Salvage/Regen	NA	P	50-80	30	T	40
740	S-R	N RYE	1	3	H/M/L	FUELS/DFB	Salvage	NA	NA	40-60	25	T	25
741	S-R	LITTLE SLEEPING CHILD	1	3	M/L	FUELS	Salvage	NA	NA	40-60	25	T	11
744	EF	LAIRD	2	2	M/L	WUI	Salvage/Salvage/Regen	WT	P	40-80	67	T	109
746	EF	MEDICINE TREE	2	2	H/L	VRU2	Salvage/Salvage/Regen	HP	P	10-40	15	T	24
748	S-R	ROBBINS	2	2	H/M/L	VRU2	Planting Only	NA	P	NA	NA	NA	12
750	EF	MEDICINE TREE	2	2	H	VRU2	Planting Only	NA	P	NA	NA	NA	126
751	S-R	SLEEPING CHILD	2/3A	3	L	WUI/DFB	Salvage	NA	NA	30-60	30	H	122
752	EF	CAMP	3A	2	H	WUI	Salvage/Regen	WT/HP	P	30-60	37	S	17
754	S-R	SLEEPING CHILD	1	3	H	REFO	Salvage/Regen	NA	P	50-80	32	S	16
754	S-R	SLEEPING CHILD	1	3	H	REFO	Salvage/Regen	NA	P	50-80	32	T	11
754	S-R	SLEEPING CHILD	1	3	H	REFO	Planting Only	NA	P	NA	NA	NA	42
755	B	SHEAFMAN	3A	2	M/L	WUI	Intermediate	WT	NA	10-50	28	S	26
758	EF	JENNINGS	1/3A	3	H/M	FUELS/DFB	Salvage/Regen	NA	P	10-40	52	H	73
759	S-R	N RYE	1	3	H	FUELS/REFO	Salvage/Salvage/Regen	NA	P	50-80	27	S	65
759	S-R	N RYE	1	3	H	FUELS/REFO	Salvage/Salvage/Regen	NA	P	50-80	27	T	15
760	S-R	BAD NEWS	1	2	M/L	VRU2	Salvage	NA	NA	30-60	42	S	122
761	S-R	BLACKTAIL	2	3	H	REGEN	Manual/Rx Fire	SL/HP	P	50-80	47	NA	129
762	S-R	RYE	2	3	M/L	FUELS/DFB	Manual/Rx Fire	SL/JP	NA	10-40	27	NA	35
763	EF	JENNINGS	2	3	L	FUELS/DFB	Salvage	WT/YUM	N	10-40	66	S	29

Fuel Reduction Unit Information - Alternative F

Unit Number	Geo Area	Watershed	MA	VRU	Burn Severity	Treatment Purpose	Treatment Prescription	Fuels Treatment	Regen Method	% Stem Removal	Current Fuel Level	Logging System	Acres
764	S-R	BAD NEWS	1	3	H/M/L	REFO	Salvage/Regen	WT	N	40-80	52	TLM	87

Alternative G

Unit Number	Geo Area	Watershed	MA	VRU	Treatment Prescription	Fuels Treatment	Regen Method	Current Fuel Level	Logging System	Acres
4	B	SHEAFMAN	3A	2	Place/Burn	NA	P	38	NA	6
5	B	SHEAFMAN	3A	2	Place/Burn	NA	P	39	NA	166
33	S-R	BAD NEWS	1	2	Place/Burn	NA	P	21	NA	106
56	WF	BLUE JOINT	2/3A	3	Place/Burn	NA	P	48	NA	4
99	S-R	LITTLE SLEEPING CHILD	1	2	Place/Burn	NA	P	56	NA	134
100	S-R	LITTLE SLEEPING CHILD	1	2	Place/Burn	NA	P	68	NA	85
101	S-R	LITTLE SLEEPING CHILD	1	2	Place/Burn	NA	P	44	NA	43
114	S-R	LITTLE SLEEPING CHILD	1	2	Place/Burn	NA	P	64	NA	38
124	S-R	MIKE	2	2	Place/Burn	NA	P	86	NA	32
126	S-R	MIKE	2	2	Place/Burn	NA	P	31	NA	24
127	S-R	BURKE	2	2	Place/Burn	NA	P	30	NA	128
128	S-R	BURKE	2	2	Place/Burn	NA	P	36	NA	45
129	S-R	BURKE	2	2	Place/Burn	NA	P	59	NA	101
130	S-R	BURKE	1	2	Place/Burn	NA	P	38	NA	30
131	S-R	BURKE	1	2	Place/Burn	NA	P	30	NA	16
132	S-R	BURKE	1	2	Place/Burn	NA	P	38	NA	25
133	S-R	BURKE	1/2	2	Place/Burn	NA	P	39	NA	167
140	S-R	ROAN	2	2	Place/Burn	NA	P	28	NA	112
143	S-R	N RYE	1	2	Place/Burn	NA	P	45	NA	34
145	S-R	LOWMAN	1	2	Place/Burn	NA	P	47	NA	59
157	S-R	SLEEPING CHILD	3A	4	Planting	NA	P	32	NA	74
160	S-R	N RYE	1	2	Place/Burn	NA	P	48	NA	87
201	S-R	RYE	2	2	Fell/Buck/Pile/Burn	NA	P	19	NA	65
207	S-R	RYE	2	2	Place/Burn	NA	P	31	NA	810
218	S-R	ROBBINS	2	2	Fell/Buck/Pile/Burn	NA	P	20	NA	360
219	S-R	ROBBINS	2	2	Place/Burn	NA	P	25	NA	322
221	S-R	SPADE	2	2	Place/Burn	NA	P	42	NA	124
222	S-R	SPADE	3A	3	Place/Burn	NA	P	62	NA	67
238	EF	MEDICINE TREE	2	2	Fell/Buck/Pile/Burn	NA	P	16	NA	423
248	EF	MEDICINE TREE	2	2	Place/Burn	NA	P	42	NA	51
249	EF	MEDICINE TREE	2	2	Place/Burn	NA	P	60	NA	72
251	EF	MEDICINE TREE	2	2	Place/Burn	NA	P	67	NA	29
255	EF	MEDICINE TREE	2	2	Place/Burn	NA	P	26	NA	144

Unit Number	Geo Area	Watershed	MA	VRU	Treatment Prescription	Fuels Treatment	Regen Method	Current Fuel Level	Logging System	Acres
256	EF	MEDICINE TREE	2	2	Place/Burn	NA	P	25	NA	97
258	EF	MEDICINE TREE	2	2	Place/Burn	NA	P	27	NA	38
259	EF	MEDICINE TREE	2	2	Place/Burn	NA	P	30	NA	9
261	EF	MEDICINE TREE	2/8B	2	Place/Burn	NA	P	46	NA	43
262	EF	MEDICINE TREE	2/8B	2	Place/Burn	NA	P	75	NA	17
278	EF	LAIRD	2	2	Fell/Buck/Pile/Burn	NA	P	16	NA	26
279	EF	LAIRD	2	2	Place/Burn	NA	P	27	NA	21
280	EF	LAIRD	1/2	4	Place/Burn	NA	N	31	NA	7
283	EF	LAIRD	1/2	3	Place/Burn	NA	P	49	NA	146
284	EF	LAIRD	2/3A	2	Place/Burn	NA	P	36	NA	617
295	EF	LORD DRAW	2/3A	2	Place/Burn	NA	P	28	NA	564
296	EF	LORD DRAW	2/3A	2	Place/Burn	NA	P	41	NA	106
297	EF	LORD DRAW	2/3A	2	Place/Burn	NA	P	49	NA	123
298	EF	WARM SPRINGS	2	2	Fell/Buck/Pile/Burn	NA	P	18	NA	73
346	EF	CAMP	3A	2	Place/Burn	NA	P	30	NA	88
351	EF	DICK	1/2	3	Place/Burn	NA	P	59	NA	232
354	EF	CAMP	2/3A	2	Place/Burn	NA	N	32	NA	45
357	EF	CAMP	2/3A	2	Place/Burn	NA	P	38	NA	38
358	EF	CAMP	2/3A	2	Place/Burn	NA	P	36	NA	41
363	EF	CAMP	3A	2	Research	UB	NA	21	NA	86
363	EF	CAMP	3A	2	Research	SL/HP	NA	21	S	26
363	EF	CAMP	3A	2	Research	SL/HP	NA	21	T	79
383	EF	CAMERON	2	2	Place/Burn	NA	P	31	NA	113
386	EF	CAMERON	2	2	Place/Burn	NA	P	25	NA	334
387	EF	CAMERON	2	2	Place/Burn	NA	P	34	NA	489
389	EF	HART	2	2	Place/Burn	NA	P	22	NA	155
392	EF	HART	2	2	Place/Burn	NA	P	35	NA	195
414	S-R	DALY	3A	3	Planting	NA	P	9	NA	2
415	S-R	DALY	3A	4	Planting	NA	P	14	NA	20
417	S-R	LITTLE SLEEPING CHILD	2	2	Planting	NA	P	20	NA	56
419	S-R	LITTLE SLEEPING CHILD	2	3	Planting	NA	P	12	NA	28
420	S-R	SKALKAHO	1	4	Planting	NA	P	13	NA	62
421	S-R	SKALKAHO	1	4	Planting	NA	P	13	NA	54
423	S-R	LITTLE SLEEPING CHILD	2	2	Planting	NA	P	11	NA	19
424	S-R	SKALKAHO	1	4	Planting	NA	P	15	NA	33

Unit Number	Geo Area	Watershed	MA	VRU	Treatment Prescription	Fuels Treatment	Regen Method	Current Fuel Level	Logging System	Acres
425	S-R	LITTLE SLEEPING CHILD	2	2	Planting	NA	P	11	NA	60
426	S-R	SKALKAHO	1	4	Planting	NA	P	14	NA	33
427	S-R	SKALKAHO	1	4	Planting	NA	P	14	NA	56
428	S-R	SKALKAHO	1	4	Planting	NA	P	14	NA	2
429	S-R	LITTLE SLEEPING CHILD	2	2	Planting	NA	P	21	NA	22
430	S-R	SKALKAHO	1	4	Planting	NA	P	14	NA	43
432	S-R	LITTLE SLEEPING CHILD	2	3	Planting	NA	P	20	NA	5
433	S-R	LITTLE SLEEPING CHILD	2	3	Planting	NA	P	19	NA	8
434	S-R	LITTLE SLEEPING CHILD	2	3	Planting	NA	P	16	NA	19
435	S-R	SKALKAHO	1	4	Planting	NA	P	19	NA	28
436	S-R	SKALKAHO	1	4	Planting	NA	P	15	NA	97
437	S-R	SKALKAHO	1	4	Planting	NA	P	26	NA	20
438	S-R	LITTLE SLEEPING CHILD	2	3	Planting	NA	P	22	NA	53
439	S-R	LITTLE SLEEPING CHILD	2	3	Planting	NA	P	19	NA	30
441	S-R	LITTLE SLEEPING CHILD	1	3	Planting	NA	P	22	NA	31
442	S-R	SKALKAHO	2	4	Planting	NA	P	21	NA	20
445	S-R	LITTLE SLEEPING CHILD	2	2	Planting	NA	P	17	NA	27
446	S-R	LITTLE SLEEPING CHILD	1	3	Planting	NA	P	17	NA	44
447	S-R	SKALKAHO	2	4	Planting	NA	P	21	NA	12
450	S-R	SKALKAHO	1	4	Planting	NA	P	19	NA	35
451	S-R	SKALKAHO	1	4	Planting	NA	P	21	NA	18
452	S-R	SLEEPING CHILD	1	4	Planting	NA	P	19	NA	18
453	S-R	SLEEPING CHILD	2	4	Planting	NA	P	26	NA	14
456	S-R	SLEEPING CHILD	1	4	Planting	NA	P	26	NA	34
459	S-R	SLEEPING CHILD	1	4	Planting	NA	P	26	NA	12
460	S-R	SLEEPING CHILD	1	4	Planting	NA	P	26	NA	10
461	S-R	SLEEPING CHILD	1	4	Planting	NA	P	26	NA	16
462	S-R	SLEEPING CHILD	2	4	Planting	NA	P	25	NA	92
463	S-R	LITTLE SLEEPING CHILD	1	3	Planting	NA	P	18	NA	88
464	S-R	SLEEPING CHILD	1	4	Planting	NA	P	25	NA	44
465	S-R	SLEEPING CHILD	1	4	Planting	NA	P	25	NA	77
466	S-R	SLEEPING CHILD	1	4	Planting	NA	P	25	NA	14
467	S-R	SLEEPING CHILD	1	4	Planting	NA	P	25	NA	11
468	S-R	SLEEPING CHILD	1	4	Planting	NA	P	25	NA	20
469	S-R	SLEEPING CHILD	2	4	Planting	NA	P	25	NA	35
470	S-R	LITTLE SLEEPING CHILD	1	4	Planting	NA	P	26	NA	146

Unit Number	Geo Area	Watershed	MA	VRU	Treatment Prescription	Fuels Treatment	Regen Method	Current Fuel Level	Logging System	Acres
471	S-R	SLEEPING CHILD	1	4	Planting	NA	P	25	NA	11
472	S-R	LOWMAN	1	4	Planting	NA	P	26	NA	12
473	S-R	LOWMAN	1	4	Planting	NA	P	26	NA	13
474	S-R	LOWMAN	2	4	Planting	NA	P	31	NA	89
475	S-R	N RYE	2	4	Planting	NA	P	36	NA	65
476	S-R	N RYE	2	3	Planting	NA	P	31	NA	60
477	S-R	BURKE	2	3	Planting	NA	P	22	NA	19
478	S-R	BURKE	1	3	Planting	NA	P	22	NA	5
479	S-R	LOWMAN	2	3	Planting	NA	P	17	NA	13
480	S-R	BURKE	1	2	Planting	NA	P	21	NA	11
481	S-R	N RYE	1	3	Planting	NA	P	21	NA	41
482	S-R	N RYE	1	3	Planting	NA	P	31	NA	56
483	S-R	LOWMAN	1	3	Planting	NA	P	19	NA	5
484	S-R	LOWMAN	1	3	Planting	NA	P	19	NA	26
485	S-R	N RYE	1	3	Planting	NA	P	31	NA	51
486	S-R	N RYE	1	3	Planting	NA	P	19	NA	29
487	S-R	N RYE	1	3	Planting	NA	P	23	NA	37
488	S-R	N RYE	1	2	Planting	NA	P	29	NA	50
489	S-R	N RYE	1	2	Planting	NA	P	21	NA	57
490	S-R	RYE	1	3	Planting	NA	P	19	NA	14
491	S-R	RYE	1	3	Planting	NA	P	23	NA	26
492	S-R	RYE	1	4	Planting	NA	P	26	NA	5
493	S-R	N RYE	1	2	Planting	NA	P	21	NA	26
494	S-R	N RYE	1	3	Planting	NA	P	24	NA	35
495	S-R	N RYE	2	3	Planting	NA	P	24	NA	22
496	S-R	CAMERON	2	3	Planting	NA	P	25	NA	4
497	S-R	N RYE	2	3	Planting	NA	P	17	NA	30
498	EF	RYE	2	2	Planting	NA	P	21	NA	87
499	S-R	RYE	2	2	Planting	NA	P	24	NA	15
500	S-R	RYE	2	2	Planting	NA	P	22	NA	4
501	S-R	N RYE	2	2	Planting	NA	P	23	NA	36
502	S-R	RYE	2	3	Planting	NA	P	22	NA	11
503	S-R	RYE	2	2	Planting	NA	P	23	NA	9
504	S-R	N RYE	2	3	Planting	NA	P	22	NA	23
505	S-R	N RYE	2	3	Planting	NA	P	31	NA	91
506	S-R	N RYE	2	3	Planting	NA	P	22	NA	18
507	S-R	RYE	3A	2	Planting	NA	P	28	NA	29
509	S-R	RYE	2	2	Planting	NA	P	28	NA	80

Unit Number	Geo Area	Watershed	MA	VRU	Treatment Prescription	Fuels Treatment	Regen Method	Current Fuel Level	Logging System	Acres
510	S-R	RYE	3A	2	Planting	NA	P	21	NA	43
511	EF	DORAN	3A	3	Planting	NA	P	22	NA	15
512	S-R	RYE	3A	2	Planting	NA	P	25	NA	8
513	EF	MEDICINE TREE	3A	3	Planting	NA	P	22	NA	32
514	EF	MEDICINE TREE	3A	2	Planting	NA	P	16	NA	21
515	S-R	RYE	2	3	Planting	NA	P	22	NA	19
516	S-R	RYE	3A	2	Planting	NA	P	21	NA	16
517	EF	MEDICINE TREE	1	2	Planting	NA	P	16	NA	5
518	EF	CAMERON	3A	2	Planting	NA	P	20	NA	11
519	EF	MEDICINE TREE	3A	2	Planting	NA	P	20	NA	15
520	EF	MEDICINE TREE	2	2	Planting	NA	P	20	NA	35
521	EF	LYMAN	3A	2	Planting	NA	P	20	NA	51
522	EF	MEDICINE TREE	3A	2	Planting	NA	P	20	NA	15
523	S-R	RYE	2	3	Planting	NA	P	22	NA	33
524	EF	CAMERON	1	2	Planting	NA	P	21	NA	44
525	EF	CAMERON	2	2	Planting	NA	P	16	NA	13
526	EF	LYMAN	3A	3	Planting	NA	P	22	NA	13
527	EF	DORAN	2	3	Planting	NA	P	22	NA	3
528	EF	LYMAN	2	2	Planting	NA	P	25	NA	6
529	EF	CAMERON	3A	2	Planting	NA	P	25	NA	19
530	EF	DORAN	2	2	Planting	NA	P	24	NA	4
531	EF	LYMAN	3A	2	Planting	NA	P	29	NA	15
532	EF	MEDICINE TREE	2	2	Planting	NA	P	20	NA	27
533	EF	LYMAN	2	2	Planting	NA	P	24	NA	4
534	EF	LYMAN	3A	2	Planting	NA	P	19	NA	14
535	EF	MEDICINE TREE	2	2	Planting	NA	P	20	NA	12
537	EF	LYMAN	3A	2	Planting	NA	P	20	NA	13
538	EF	MEDICINE TREE	3A	2	Planting	NA	P	20	NA	74
541	EF	MEADOW	3A	3	Planting	NA	P	22	NA	122
542	EF	MEDICINE TREE	1	2	Planting	NA	P	20	NA	4
543	EF	MEADOW	2	3	Planting	NA	P	22	NA	6
545	EF	LAIRD	3A	2	Planting	NA	P	22	NA	19
546	EF	LAIRD	3A	3	Planting	NA	P	32	NA	59
548	EF	WARM SPRINGS	3A	2	Planting	NA	P	22	NA	65
551	EF	LAIRD	3A	2	Planting	NA	P	20	NA	23
552	EF	LAIRD	3A	3	Planting	NA	P	20	NA	52
553	EF	WARM SPRINGS	3A	2	Planting	NA	P	21	NA	19
563	EF	WAUGH	3A	2	Planting	NA	P	20	NA	24

Unit Number	Geo Area	Watershed	MA	VRU	Treatment Prescription	Fuels Treatment	Regen Method	Current Fuel Level	Logging System	Acres
564	EF	REIMEL	2	2	Planting	NA	P	21	NA	11
565	WF	LITTLE BLUE JOINT	3A	2	Planting	NA	P	20	NA	27
566	WF	LITTLE BLUE JOINT	2	2	Planting	NA	P	20	NA	7
567	WF	LITTLE BLUE JOINT	2	2	Planting	NA	P	20	NA	30
568	WF	LITTLE BLUE JOINT	2	2	Planting	NA	P	20	NA	10
569	WF	LITTLE BLUE JOINT	2	2	Planting	NA	P	20	NA	9
570	WF	LITTLE BLUE JOINT	2	2	Planting	NA	P	20	NA	30
571	WF	LITTLE BLUE JOINT	2	2	Planting	NA	P	20	NA	12
572	WF	LITTLE BLUE JOINT	2	2	Planting	NA	P	20	NA	32
573	WF	LITTLE BLUE JOINT	2	3	Planting	NA	P	21	NA	11
574	WF	LITTLE BLUE JOINT	2	2	Planting	NA	P	24	NA	15
575	WF	LITTLE BLUE JOINT	2	3	Planting	NA	P	18	NA	11
576	WF	COAL	2	2	Planting	NA	P	20	NA	7
578	WF	COAL	3A	3	Planting	NA	P	21	NA	57
579	WF	WEST	2	3	Planting	NA	P	22	NA	38
581	WF	WEST	2	3	Planting	NA	P	22	NA	30
591	S-R	BURKE	1/2	2	Place/Burn	NA	P	33	NA	118
606	S-R	BURKE	2	2	Place/Burn	NA	P	62	NA	31
611	B	SHEAFMAN	3A	2	Place/Burn	NA	P	54	NA	275
712	EF	JENNINGS	2	2	Place/Burn	NA	P	66	NA	41
717	EF	CAMP	3A	2	Place/Burn	NA	P	43	NA	187
723	S-R	ROAN	2	2	Place/Burn	NA	P	47	NA	183
729	S-R	LITTLE SLEEPING CHILD	1	2	Place/Burn	NA	P	55	NA	150
732	S-R	BURKE	1	2	Place/Burn	NA	P	34	NA	33
733	S-R	BURKE	2	2	Place/Burn	NA	P	54	NA	112
734	S-R	BURKE	2	2	Place/Burn	NA	P	57	NA	96
739	S-R	BURKE	1	2	Place/Burn	NA	P	30	NA	41
744	EF	LAIRD	2	2	Place/Burn	NA	P	67	NA	109
746	EF	MEDICINE TREE	2	2	Fell/Buck/Pile/Burn	NA	P	15	NA	28
750	EF	MEDICINE TREE	2	2	Fell/Buck/Pile/Burn	NA	P	16	NA	85
752	EF	CAMP	3A	2	Place/Burn	NA	P	37	NA	17
767	S-R	RYE	1	2	Log Erosion Barrier	NA	NA	NA	NA	189
768	S-R	RYE	2	2/4	Log Erosion Barrier	NA	NA	NA	NA	19
769	S-R	RYE	2	2/3/4	Log Erosion Barrier	NA	NA	NA	NA	382
771	WF	COAL	1	4	Log Erosion Barrier	NA	NA	NA	NA	289
772	WF	CHICKEN	1	2/3	Log Erosion Barrier	NA	NA	NA	NA	425

Description of Road Treatments

For Treatments 3, 4, and 5 below, small turn-around areas would be constructed at the junction of the retained road and the decommissioned road for public use.

1 These roads would remain open year long and would be reconstructed as needed to meet Montana Best Management Practices (BMP's) and this includes ditch relief culverts installed where existing ditches funnel water. Practices applied on these roads would be focused on reducing erosion from the cut and fill slopes and the road surface. Roads would be graded so that the road functions as either outsloped or insloped (depending on the design) to allow the water collected on the road surface to drain off onto slopes or into buffered areas before eroding the road surface. Cut and fill slopes would be stabilized where slumping and vegetated with grasses so that there is less erosion from these areas in the future. Slash filters would be placed at drive through dip and culvert outlets where there is not a wide enough buffer area between the road and stream to filter sediment from the road surface runoff before it reaches the stream channel. The outlets to drain dips or culverts on easily eroded fillslopes would be rip rapped to reduce erosion of the fill slope. Road prisms that had woody debris burned from inside of them, would be stabilized. Culverts will be added where needed so that drainage would not exceed the capacity of each individual culvert. These treatments are described in the publication Montana Forestry BMP's, Forest Stewardship Guidelines for Water Quality, 1991.

2 These roads would remain closed yearlong and reconstructed as needed to meet standards that are described in #1.

3 These roads are closed year long currently and would remain closed following some additional treatments. The culverts would be pulled, fill removed and the valley reshaped at the culvert locations. Where roads cross swales on the landscape, the road prism would be reshaped to allow drainage from the swale to continue down the natural drainage feature and not be diverted down the road. Where soils are disturbed, they would be revegetated. There would be no need to maintain these roads following treatment; they would be available for use in the long term.

4 The treatment would be similar to that explained for #3, except that the prism would be decompacted using a dozer with ripper teeth or an excavator with teeth attached to the bucket and the approach would be recontoured. The areas disturbed would be revegetated. The decompaction would allow for deep-rooted vegetation (shrubs and trees) to grow in the road prism more easily. There would be no need to maintain these roads following treatment; they would be available for use in the long term.

5 These roads are thought to either be excess- there are other roads nearby that provide access to the same area or they are erosion sources. The treatments would include those described in #4 and would include recontouring at portions or the entire road prism. This would reduce the risk of fillslope failure considerably and the road would no longer be available for future use. There would be no need to maintain these roads following treatment.

6 These roads currently have some sort of seasonal restriction and access would remain the same following treatments. Treatments would be the same as those described for #1.

7 Old jammer roads that were closed or inaccessible and stable before the fire because of vegetation, now they have been burned, access is possible and it is likely they are less stable because of lack of vegetation. They were developed for older logging systems and are not needed for today's technology. They would have any culverts removed, and natural drainage features would be restored as described in #3. Recontouring would occur over most of the length of this type of road. These roads would not be available for future use.

11 These roads are currently open and are a low standard road without a risk of sediment input to streams. Often they are located on ridges and could be defined as a "2-track" road. Treatment would include such things as draining wet potholes and revegetating eroding soils. The access on these roads would remain the same following treatment. Should these roads be located near streams or sediment contributing areas, BMP upgrades would be applied.

12 These roads currently have some type of closure that typically doesn't allow highway vehicle access yearlong. They will be partially recontoured or decompacted but a portion of the travel way will be maintained and could be used for horse, foot and ATV travel depending on current access allowed. Culverts will be pulled from live stream crossings and they will be armored to reduce sedimentation into the channel and degradation to the stream channel.

13 In the table below, the following symbols are used:

Sr	Surface rocking
cmp-xings	Culvert stream crossings
bmp's	Best management practices
ML	Road maintenance level
<	Less than, reduce or lower

>	More than, increase or raise
trvl	travel
mi	Miles of
temp	temporary
decomm	decommission

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative B	C&E	D	F	G	Rx Activity
Blodgett										
Mill-Fred Burr	438	3.7	3	Open	1	1	1	1	1	0.5 mi sr + cmp-xings, meet bmp's, maintain ML. Existing special use permits in place
Canyon/Blodgett	735	2.8	3	Open	1	1	1	1	1	0.7 mi sr + cmp-xings, meet bmp's, maintain ML
Canyon	736	2.1	3	Open	1	1	1	1	1	0.7 mi sr + cmp-xings, meet bmp's, maintain ML
Mill-Fred Burr	13105	1.7	1	Yr Long Restr	4	4	4	12	4	Reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. ***Special use permit used to access lower portion of road for spring box and water line located on NF lands. Access would need to be maintained to point allowed by SUP. Consult with permittee.*
Mill-Fred Burr	13106	0.2	3	Yr Long Restr	4	4	4	4	4	Reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Skalkaho Rye										
Rye	75	42.1	3	Open	1	1	1	1	5& 1	18.3 sr + cmp-xings, meet bmp's, maintain ML. Between Rd 311 and 369. Relocate connection by using Rds. 369, 5745, and lower end of 311. This would affect portion of road contributing sediment directly to Rye Creek. **Existing easements and special use permits in place for access to State and private lands. Closure would require court action and proposed to occur on 11.9 miles of Rd. 75.
Little/Lower Sleeping Child/Rye	273	15.9	3	Open	1	1	1	1	1	0.4 mi sr + cmp-xings, meet bmp's, maintain ML
Little Sleeping Child/Rye/Upper Bitterroot	321	17.8	3	Open	2	2	2	1	5	7.2 mi sr + cmp-xings, meet bmp's, maintain ML, upgrade segments not meeting bmp's, maintain trvl status
Rye	321	2.3	2	Open	0	0	0	0	5	Between Forest Boundary and Rd 1126. Relocate connection by using Rds. 75, 715, 1126. This would affect portion of road contributing sediment directly to No. Rye Creek.***Existing easements and permits in place, utilized for access to state and private lands, REA and Qwest. Remainder of road would be treated as described above.*
Rye	369	5.2	3	Open	1	1	1	1	5	0.7 mi sr + cmp-xings, meet bmp's, maintain ML. In Alt G travel status would be changed.
Upper Bitterroot	702	0.5	2	Seasonal	4 & 5	4 & 5	4 & 5	4	4 & 5	Temp-bmp's/decomm after harvest, < ML to decommissioned (rip-0.4mi-recontour the rest), trvl status change, reduce compaction-width/improv drainage, convert to trail-atv use
Upper Bitterroot	702	8	2	Seasonal	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Upper Skalkaho	711	10.2	2	Open	1	1	1	1	5	2.7 mi sr + cmp-xings, meet bmp's, maintain ML. Change in Alt G travel status
Lower Sleeping Child	718	4.8	2	Seasonal	1	1	1	6	1	sr cmp-xings, meet bmp's, maintain ML
Middle/Lower Sleeping Child/Upper Skalkaho	720	13.9	3	Open	1	1	1	1	1 & 5	1.4 mi sr + cmp-xings, meet bmp's, maintain ML. Alt G decommissions 7 miles, changes travel status.
Rye	1125	2.8	2	Seasonal	6	6	6	6	5	sr cmp-xings, use for harvest, meet bmp's, maintain ML, maintain trvl status(atv use); change travel status in Alt G
Rye	1128	1.7	2	Seasonal	6	6	6	6	5	sr cmp-xings, use for harvest, meet bmp's, maintain ML, maintain trvl status ***Existing easement in place, holders may need special access for Alt B, C, D, F. Alt G would require signature of Chief and probably court action. Change travel status in Alt G*
Rye	1301	4.5	3	Open	6	6	6	1	6	sr cmp-xings, use for harvest, meet bmp's, maintain ML, change trvl status. ***Existing easement in place, holder will need access for Alt. B, C, D, F, G*

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Upper Skalkaho	1371	7.5	3	Seasonal	6	6	6	6	5	sr cmp-xings, use for harvest, meet bmp's, maintain ML, maintain trvl status. ***Existing easement in place, easement holders need access maintained in Alt B, C, D, F, G. Change in travel status for Alt G.*
Rye/Upper Bitterroot	5601	1.7	2	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Rye	5607	5.71	2	Seasonal	6	6	6	6	5	sr cmp-xings, use for harvest, meet bmp's, maintain ML, maintain trvl status. Increased road miles by 1.21. Travel status change in Alt G
Rye	5609	1.5	2	Seasonal	6	6	6	6	5	sr cmp-xings, use for harvest, meet bmp's, maintain ML, maintain trvl status. Change in travel status-Alt G
Rye	5610	5.59	Hist	Yr Long Restr	5	5	12	4	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status except under Alt D (seasonal atv use), access change. Increased road miles +4.79.
Lower East Fk/Rye	5727	3.9	2	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML. **Existing permits in place.
Cameron/Rye	5745	0.7	1	Yr Long Restr	1	1	1	1	5	sr cmp-xings, temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, maintain trvl status. Existing special use permits in place. G would change travel status.
Cameron/Rye	10005	3.3	1	Yr Long Restr	2	2	2	2	2	upgrade segments not meeting bmp's, drainage, ML, maintain trvl status, use for harvest
Lower Sleeping Child	13211	1.2	2	Seasonal	4	4	4	4	4	sr cmp-xings, temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower Sleeping Child	13213	4.1	Hist	Yr Long Restr	4	4	12	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status except under alt D then change trvl status to seasonal atv use, Trail access
Little/Lower Sleeping Child	13214	3.2	2	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Middle Sleeping Child	13215	1.7	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Little/Lower Sleeping Child	13216	3.9	2	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Little/Lower Sleeping Child	13217	4.5	2	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. ***Existing easement in place, access needs to be maintained. In Alt G 3.52 miles obliterated*
Little Sleeping Child	13217	0.7	2	Seasonal	0	0	0	0	4	Pull culverts, leave prism in place. ***To close this road would require Easement termination. Signature of Chief required, probably court action.*
Upper Bitterroot	13219	2.5	2	Seasonal	6	6	6	6	6	sr cmp-xings, use for harvest, meet bmp's, maintain ML, maintain trvl status
Little Sleeping Child/Burke	13224	0.5	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	13233	1.1	Hist	Yr Long Restr	4	5	4	4	5	under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	13240	2.8	2	Seasonal	6	6	6	6	6	sr cmp-xings, use for harvest, meet bmp's, maintain ML, maintain trvl status. ***Existing easement in place, easement holders need access maintained in Alt B, C, D, F, G.*
Rye	13245	2.8	2	Seasonal	6	6	6	6	6	sr cmp-xings, use for harvest, meet bmp's, maintain ML, maintain trvl status
Rye	13251	0.7	2	Seasonal	5	5	12	4	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status except under Alt D (seasonal atv use), access change. Propose to decomm. last 0.7 mi of road on NF land. ***Cost-share road, to close would*

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
										require Easement termination, signature of chief, probably court action. FS owns last mile of road
Cameron/Rye	13256	4.8	2	Open	1	1	1	1	5+	sr cmp-xings, meet bmp's, maintain ML. Change travel status in Alt G
Upper Bitterroot	13262	0.8	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Rye	13283	1.6	1	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change travel status in Alt G
Rye	13284	0.9	2	Seasonal	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Change travel status in Alt G
N Rye, Dugout	13286	0.3	2	Seasonal	0	0	0	0	5	Change in travel status
Little/Lower Sleeping Child	13291	4.1	2	Seasonal	6	6	6	6	6	sr cmp-xings, use for harvest, meet bmp's, maintain ML, maintain trvl status. ***Existing easement in place, easement holders need access maintained in Alt B, C, D, F, G.*
Little Sleeping Child	13292	1.8	2	Seasonal	6	6	6	6	6	sr cmp-xings, use for harvest, meet bmp's, maintain ML, maintain trvl status
Little Sleeping Child	13294	0.6	2	Seasonal	0	0	0	0	5	Change in travel status
Upper Bitterroot	13295	0.6	1	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Little/Lower Sleeping Child	13296	2.6	2	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Camas-Ward	13297	1.1	2	Seasonal	11	11	11	11	11	upgrade drainage, reduce erosion, maintain ML, maintain trvl status
Upper Skalkaho	13298	1	2	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Upper Skalkaho	13299	0.7	1	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Cameron/Rye	13341	1.5	2	Open	11	11	11	6	5	upgrade drainage, reduce erosion, maintain ML, < trvl status, change in travel status for Alt G
Middle/Upper Sleeping Child	13872	1	1	Yr Long Restr	4	5	4	4	5	under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status.
Burke	16224			(Not on Rd Inv)	0	0	0	0	5	Probably overgrown before fire.
Little Sleeping Child	62403	0.6	2	Seasonal	0	0	0	0	5	Change in travel status
Middle/Upper Sleeping Child	62429	0.6	Hist	Yr Long Restr	4	5	4	4	5	under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Upper Bitterroot	62524	1.1	2	Seasonal	5	5	12	5	5	under alt D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under alt B/C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status, access change
Upper Bitterroot	62525	0.5	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Middle Sleeping Child	62529	0.4	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lowman	62532	0.1	2	Seasonal	0	0	0	0	5	Change in travel status
Rye	62534	0.7	2	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change in Alt G travel status
Lowman	62534	0.7	2	Seasonal	0	0	0	0	5	Change in travel status

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Upper Bitterroot	62537	0.3	2	Seasonal	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, maintain trvl status
Little Sleeping Child	62538	0.3	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Upper Bitterroot	62539	0.8	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Little Sleeping Child	62541	0.1	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Little Sleeping Child	62542	0.1	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye/Upper Bitterroot	62569	0.2	2	Open	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, < trvl status
Rye	62579	1	1	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change in Alt G travel status
N Rye, Dugout	62580	1	1	Seasonal	0	0	0	0	5	Change in travel status
N Rye, Dugout	62581	0.2	1	Seasonal	0	0	0	0	5	Change in travel status
Rye	62582	1.4	1	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. **Existing easement in place, maintain access for permitted users. Change in Alt G travel status
N Rye, Dugout	62583	1.7	1	Seasonal	0	0	0	0	5	Change in travel status
N Rye, Dugout	62584	0.8	1	Seasonal	0	0	0	0	5	Change in travel status
Rye	62586	0.4	2	Seasonal	5	5	12	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status except under Alt D (seasonal atv use)
Rye	62587	0.1	2	Seasonal	5	5	12	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status except under Alt D (seasonal atv use)
Rye	62589	0.7	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62591	1.3	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Rye	62639	1.2	2	Open	1	1	1	1	5	sr cmp-xings, use for harvest, meet bmp's, maintain ML. Change in Alt G travel status
Rye	62653	0.6	1	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Rye	62659	3.3	1	Yr Long	4	4	12	12	5	under alt B/C/E reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under alt D the same except convert to trail use; used by permittee to access water development using ATV. Change in Alt G travel status
Upper Skalkaho	62669	1.2	2	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change in Alt G travel status
Skalkaho	62670	0.8	1	Seasonal	0	0	0	0	5	Alternate access via nearby road available
Skalkaho	62671	0.7	1	Seasonal	0	0	0	0	5	Alternate access via nearby road available
Upper Skalkaho/MSC	62673	0.1	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status. Added /MSC to WS name /703 to HUC
Upper Skalkaho/MSC	62674	0.8	Hist	Yr Long Restr						under alt B/D full decomm, < ML to decommissioned, maintain trvl status,

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
					7	5	7	7	5	under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status. Added /MSC to WS name /703 to HUC
Upper Skalkaho	62677	0.7	1	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, maintain trvl status
Rye	62684	3.47	1	Yr Long Restr	2	2	2	2	5	upgrade segments not meeting bmp's, drainage, ML, maintain trvl status. Change in Alt G travel status. Increased road miles +1
Rye	62686	0.9	1	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Rye	62687	0.5	1	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Rye	62688	0.7	1	Seasonal	1	6	6	1	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status, under alt C/E/D improve drainage. Change in Alt G travel status.
Rye	62689	0.9	1	Seasonal	5	5	12	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, change trvl status except under Alt D (seasonal atv use)
Rye	62690	0.4	1	Yr Long Restr	5	5	12	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status except under Alt D (seasonal atv use)
Rye	62692	0.3	1	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Rye	62693	0.6	1	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Rye	62694	0.2	2	Open	11	11	6	11	5	under alt B/C/E sr cmp-xings, improve drainage, reduce erosion, maintain ML, < trvl status, under alt D meet bmp's, maintain ML, maintain trvl status. Change in Alt G travel status
Rye	62696	0.3	Hist	Yr Long Restr	5	5	12	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status except under Alt D (seasonal atv use)
Rye	62698	1.2	1	Seasonal	5	5	12	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status except under Alt D (seasonal atv use)
Cameron/Rye	62700	1	2	Open	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, < trvl status, Alt G changes travel status
Rye	62701	0.3	2	Open	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, < trvl status. Alt G changes travel status
Rye	62702	0.2	2	Open	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, < trvl status. Alt G changes travel status
Rye	62703	0.1	1	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status. Alt G changes travel status.
Rye	62704	0.3	2	Open	11	5	11	11	5	under alt B/D upgrade drainage, reduce erosion, maintain ML, < trvl status, under alt C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status. Alt G change travel status.
Rye	62705	0.1	2	Open	11	11	11	11	11	upgrade drainage, reduce erosion, maintain ML, < trvl status
Rye	62706	0.1	2	Open	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, < trvl status. Change in Alt G travel status
Rye	62707	1.4	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
										status
Rye	62708	0.3	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62709	0.2	1	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62710	0.3	Hist	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Rye	62712	0.6	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62713	0.2	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62714	0.6	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62715	0.2	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62716	0.3	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62717	0.8	Hist	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Upper Skalkaho	62725	0.1	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Upper Skalkaho	62726	2.73	2	Open	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, < trvl status. Incr miles +1.3. Change in Alt G travel status
Upper Skalkaho/MSC	62727	1.6	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status. Added /MSC to WS name /703 to HUC
Upper Skalkaho	62728	0.5	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Upper Skalkaho	62730	0.2	2	Open	4	4	12	4	5	under alt B/C/E reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under alt D the same except convert to trail use. Change in Alt G travel status
Skalkaho	62730	0.3	2	Open	0	0	0	0	5	in conjunction with 731
Skalkaho	62731	1.2	Hist	Yr long Restr	0	0	0	0	5	Decommission and provide access from nearby 75, or provide connecting route from lower road with Alt G
Divide	62736	3.5	2	Yr Long Restr	11	11	11	11	5	upgrade drainage, reduce erosion, < ML, maintain trvl status. Change in Alt G travel status

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Divide	62738	1.7	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Divide	62739	0.9	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Divide	62740	0.8	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Divide	62741	0.7	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62774	1.5	Hist	Yr Long Restr	5	5	12	2&4	5	FS owns last 0.3 miles, bmps on most of road, could store last 0.3 miles
Rye	62794	1.2	1	Seasonal	0	0	0	0	5	Change in travel status for Alt G.
Middle/Lower Sleeping Child	62795	1	1	Open	4	4	4	11	11	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML maintain trvl status with F and G
Middle Sleeping Child	62797	0.3	1	Open	4	4	4	11	11	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML maintain trvl status with F and G
Middle Sleeping Child	62798	1.1	1	Open	4	4	4	11	11	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML maintain trvl status with F and G
Middle Sleeping Child	62799	2	1	Open	4	4	4	11	11	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML maintain trvl status with F and G
Middle/Lower Sleeping Child	62800	1.2	1	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower Sleeping Child	62801	2	1	Open	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower Sleeping Child	62806	0.4	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower Sleeping Child	62807	2.09	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status. Incr miles by approx +1.
Lower Sleeping Child	62808	0.9	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower Sleeping Child	62809	0.5	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower Sleeping Child	62810	0.5	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower Sleeping Child	62811	0.3	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower Sleeping child	62812	0.5	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower Sleeping Child	62813	2.5	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Middle/Lower Sleeping Child/Rye	62817	3.5	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
										after harvest, < ML to decommissioned, maintain trvl status. Alt G changes travel status
Middle/Lower Sleeping Child	62818	0.4	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower Sleeping Child	62819	1.3	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower Sleeping Child	62820	0.8	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Middle Sleeping Child	62821	0.8	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Rye	62831	0.8	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62832	0.4	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62833	0.2	1	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62834	0.7	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62835	0.3	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62836	0.3	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62837	1.5	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62838	0.8	2	Seasonal	11	6	11	11	5	under alt B/D sr cmp-xings, improve drainage, reduce erosion, maintain ML, < trvl status, under alt C/E meet bmp's, maintain ML, maintain trvl status. Change in travel status for Alt G
Rye	62839	0.6	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62840	0.1	1	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62842	0.9	1	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Rye	62844	0.7	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62846	0.9	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62847	0.6	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62848	0.8	Hist	Yr Long Restr	3	5	3	3	5	under alt B/D pull cmp's, stabilize crossings, reduce erosion, maintain ML, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
										decommissioned, maintain trvl status
Rye	62849	0.8	1	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62850	0.2	1	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62852	0.3	1	Open	0	0	0	0	5	Change in travel status
Rye	62853	1.5	1	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change in Alt G travel status
Rye	62854	0.5	1	Open	0	0	0	0	5	Change in travel status
Rye	62855			(Not on Rd Inv)	0	0	0	0	5	Change in travel status
Rye	62860	0.6	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Rye	62861	0.2	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62862	0.3	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	62863	0.8	2	Seasonal	0	0	0	0	5	Change in travel status
Rye	62864	0.5	2	Seasonal	0	0	0	0	5	Change in travel status
Lower Sleeping Child	62979	0.2	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower Sleeping Child	62980	0.1	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Cameron/Rye	73191	1.2	1	Seasonal	1	1	1	1	5	sr cmp-xings, meet bmp's, maintain ML, change trvl status. Existing SUP and easements in place. Alt G would change travel status.
Rye	73763	0.2	1	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Little Sleeping Child/Camas-Ward	74895	5.4	1	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Upper Skalkaho	74896	0.94	2	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status. Changed miles from 1.5 to .94
Rye	74904	0.5	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74905	0.7	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74906	0.8	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74907	0.5	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Rye	74908	0.2	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74909	1.5	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74911	0.2	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74913	0.2	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74914	0.6	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74925	0.8	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74926	2.1	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74927	0.5	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74928	0.7	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74929	1	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74931	0.2	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74932	0.2	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Middle Sleeping Child	74955	0.2	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Middle Sleeping Child	74956	0.7	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Middle Sleeping Child	74957	0.9	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Rye	74961	0.4	Hist	Yr Long Restr	4	5	4	4	5	temp bmp's for harvest, under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74962	0.3	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74979	1.3	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Rye	74988	0.5	1	Seasonal	0	0	0	0	5	Change in travel status
Little/Lower Sleeping Child	13217A	0.7	1	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Little/Lower Sleeping Child	5600A	1.8	2	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Rye	5601A	0.9	2	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status, 1.2 miles impassible-slumping issues
Rye	No #				0	0	0	0	5	Sleeping Child burn roads in Sec 19, 20, 24, 30 would be

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
										decommissioned/obliterated, all culverts pulled.
Rye	100007	0.1		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
S. F. Skalkaho	1135	4.63		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Rye	13285	1.94		Seasonal	0	0	0	0	5	were accessed by RHCA road being obliterated
Rye	5612	4.09		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Rye	5613	6.64		Seasonal	0	0	0	0	5	were accessed by RHCA road being obliterated
Rye	62430	0.78		Seasonal	0	0	0	0	5	were accessed by RHCA road being obliterated
Rye	62435	0.37		Seasonal	0	0	0	0	5	were accessed by RHCA road being obliterated
Rye	62574	0.48		Seasonal	0	0	0	0	5	were accessed by RHCA road being obliterated
SF Skalkaho	62666	2.39		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Little Sleeping Child	62825	1.47		Seasonal	0	0	0	0	5	were accessed by RHCA road being obliterated
Camp	106	11.2	3	Open	1	1	1	1	1	2.0 mi sr + cmp-xings, meet bmp's, maintain ML
Cameron/Middle East Fk-Reimel + Interf	311	18	3	Open	1	1	1	1	1	6.0 mi sr + cmp-xings, meet bmp's, maintain ML
Rye	311	"	3	Seasonal	2	2	2	6	6	upgrade segments not meeting bmp's, drainage, ML, maintain trvl status. Would occur on portion of road currently with seasonal closure. ** *Existing easement in place, utilized as access for DNRC lands.*
Rye	311	1.4	3	Seasonal	0	0	0	0	5	1.4 miles of #311 would be obliterated in the Reimel Interfluve HUC with Alt G. The remainder would be treated as with the other Alts.
East Fork										
Lower East Fk-Laird Cr./Warm Spr	370	5	3	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Lower East Fk-Laird Cr./Warm Spr	370	6.2	3	Open	1	1	1	1	5	sr cmp-xings, meet bmp's, maintain ML except in Alt G where a portion of the road would be decommissioned.
Lower East Fk	446	1.2	3	Open	1	1	1	1	5	1.1 mi sr + cmp-xings, meet bmp's, maintain ML. **Existing permits in place.
Lower East Fk	446	1.3	2	Seasonal	1	1	1	1	5	1.0 mi sr + cmp-xings, belt drains, meet bmp's, maintain ML, maintain trvl status
Cameron	717	7.5	3	Seasonal	6	6	6	6	5	0.3 mi sr + cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change in Alt G travel status.
Middle East Fk-Reimel+Interf	723	8.7	3	Open	1	1	1	1	5	2.5 mi sr + cmp-xings, meet bmp's, maintain ML. Change in Alt G travel status. Add /504 to HUC
Reimel Interfluve	723	3	3	Open	0	0	0	0	5	Between East Fork Highway and Rd 5785. Jennings Camp Drainage accessed by 5785, 5786, 723. Affect portion of road contributing sediment to Jennings Camp Creek.
Meadow	725	14.8	3	Seasonal	6	6	6	6	6 & 5	4.0 mi sr + cmp-xings, meet bmp's, maintain ML, maintain trvl status. Alt G decommissions 3.9 miles, changes travel status.
Camp	727	4	2	Open	1	1	1	1	1 & 5	2.5 mi sr + cmp-xings. meet bmp's, maintain ML. Alt G decommissions 1.8 miles-changes travel status.
Camp	728	7.5	3	Seasonal	6	6	6	6	6	3.5 mi sr + cmp-xings, meet bmp's, maintain ML, maintain trvl status. Existing SUP and easements in place.
Cameron	1397	9.2	3	Open	1	1	1	1	1	10.0 mi sr + cmp-xings, meet bmp's, maintain ML. ***Existing easement on this road, DNRC. Our portion of road open, State has closed Rd. on State land.*
Cameron	1397	9.2	3	Open	0	0	0	0	0	Relocate gate saddle instead to State Land Boundary to allow for turn-around.
Cameron	1398	2.2	2	Seasonal	6	6	6	6	6	1.4 mi sr + cmp-xings, meet bmp's, maintain ML, maintain trvl status
Lower East Fk	5612	7.2	3	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Lower East Fk/Rye	5612	"	3	Open	1	1	1	1	1	same as abv.
Lower East Fk/Rye	5612A	2.8	3	Open	1	1	1	1	5	same as abv.
Lower East Fk-Laird Cr.	5613	6.3	2	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Lower East Fk-Laird Cr.	5615	3.2	1	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Warm Sprs	5728	6	1	Yr Long Restr	4	4	4	2	4	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. ** SUP in place, need to maintain access for permittees, and for District fire access
Warm Sprs	5730	4.6	3	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Lower East Fk-Laird Cr.	5731	5.1	3	Open	1	6	6	1	6	sr cmp-xings, meet bmp's, maintain ML, trvl status change under Alt C/E to Seasonal
Lower East Fk-Laird Cr.	5732	1	3	Yr Long Restr	4	4	4	4	5	reduce compaction-width/impr drainage-atv use, < ML to decomm(beyond sect 4 saddle), maintain trvl status. ***Road easement on this road to access private land. Need to maintain access up to private land. In Alt G would decommission entire road length--5.2 mi.*
Camp	5733	5.1	3	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Middle East Fk-Reimel+Interf	5753	9.8	3	Open	1	1	1	1	1	0.3 mi sr + cmp-xings, meet bmp's, maintain ML
Meadow/Reimel	5758	5.1	3	Open	1	1	1	1	5 & 1	Barrier at TH, sr cmp-xings, meet bmp's, maintain ML. Add: /Reimel to WS, /503 to HUC. Change in travel status for Alt G on 1.2 miles of this road.
Meadow	5759	6.2	2	Seasonal	6	6	6	6	6	0.6 mi sr + cmp-xings, meet bmp's, maintain ML, maintain trvl status
Meadow	5761	1.5	2	Open	1	1	1	1	1	Barrier at TH, sr cmp-xings, meet bmp's, > ML on first 0.8 mi
Meadow	5764	6.6	3	Open	1	1	1	1	1 & 5	0.5 mi sr + cmp-xings, meet bmp's, maintain ML. Alt G would decommisione1 mi. in 0404
Lower East Fk	5767	9.46	3	Open	1	1	1	1	5	sr cmp-xings, meet bmp's, maintain ML. Decrease road miles -1. Change in Alt G travel status.
Middle East Fk-Reimel+Interf	5792	4	2	Seasonal	11	11	11	11	5	sr cmp-xings, upgrade drainage, reduce erosion, < ML, maintain trvl status. Change in Alt G travel status
Lower East Fk	10007	1.5	1	Yr Long Restr	6	6	6	6	4	reduce compaction-width/impr drainage-atv use, maintain trvl status except in G
Lower East Fk-Laird Cr.	13300	1.2	2	Yr Long Restr	11	11	11	11	11	sr cmp-xings, upgrade drainage, reduce erosion, < ML, change trvl status
Camp	13301	0.9	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	13306	2.3	1	Seasonal	11	11	11	11	5	sr cmp-xings, upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Change in travel status for Alt G
Lower East Fk-Laird Cr.	13307	0.2	1	Seasonal	11	11	11	11	11	upgrade drainage, reduce erosion, maintain ML, maintain trvl status
Lower East Fork	13307	0.2	1	Yr long Restr	0	0	0	0	5	Change in Travel Status
Lower East Fork	13308	0.7	1	Yr long Restr	0	0	0	0	5	Change in Travel Status
Lower East Fork	13309	0.8	1	Yr long Restr	0	0	0	0	5	Change in Travel Status
Lower East Fork	13310	0.8	Hist	None	0	0	0	0	5	Change in Travel Status
Lower East Fork	13311	0.6	1	Yr long Restr	0	0	0	0	5	Change in Travel Status
Lower East Fork	13312	0.5	Hist	None	0	0	0	0	5	Change in Travel Status
Lower East Fk-Laird Cr.	13323	3.3	1	Yr Long Restr	2	2	2	2	2	upgrade segments not meeting bmp's, drainage, ML, maintain trvl status
Lower East Fk-Laird Cr.	13324	3.6	Hist	Yr Long Restr	11	11	11	11	11	upgrade drainage, reduce erosion, maintain ML and trvl status
Lower East Fk-Laird Cr.	13325	1.5	1	Seasonal	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, change trvl

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
										status
Lower East Fk-Laird Cr.	13326	1.2	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Camp	13334	1.8	2	Open	1	1	1	1	1	sr cmp-xings. meet bmp's, maintain ML
Camp	13340	1.2	2	Seasonal	12	12	12	12	5	0.7mi bmp's, maintain ML, change trvl status, 0.5 mi pull cmp, maintain trvl status, < ML. Change in travel status for Alt G
Reimel Interfluve	13347	0.2	1	Yr long Restr	0	0	0	0	5	Change in Travel Status
Cameron	13349	1.2	1	Seasonal	6	6	6	6	5	meet bmp's, maintain ML, maintain trvl status. Change in travel status for Alt G
Cameron/Lower East Fork	13350	0.7	1	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change in travel status for Alt G
Cameron/Lower East Fork	13351	1.2	1	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change in travel status for Alt G
Cameron	13354	1.4	1	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change in travel status for Alt G.
Camp	13368	0.4	1	Seasonal	11	11	11	11	5	sr cmp-xings, temp bmp's, after harvest upgrade drainage, reduce erosion, maintain ML, maintain trvl status Alt G would change travel status.
Lower East Fk-Maynard Cr	13369	0.8	1	Seasonal	11	11	11	11	5	sr cmp-xings, temp bmp's, after harvest upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Alt G would change travel status.
Lower East Fk-Maynard Cr	13370	1.2	1	Seasonal	11	11	11	11	5	sr cmp-xings, temp bmp's, after harvest upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Alt G would change travel status.
Lower East Fk-Maynard Cr	13371	0.6	1	Seasonal	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Alt G would change travel status
Lower East Fk	13372	0.5	1	Seasonal	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Alt G would change travel status
Lower East Fk	62577	0.3	1	Yr Long Restr	4	4	4	4	5	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk	62641	2.2	1	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change in travel status for Alt G
Lower East Fk	62643	1.2	Hist	Yr Long Restr	4	4	4	4	5	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk	62644	0.2	1	Yr Long Restr	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Change in Alt G travel status
Lower East Fk	62645	0.2	1	Yr Long Restr	4	4	4	4	5	temp bmp's-after harvest reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk	62646	0.6	1	Yr Long Restr	4	4	4	4	5	temp bmp's-after harvest reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fork	62647	0.6	1	Seasonal	0	0	0	0	5	Change in Travel Status
Lower East Fork	62649	2.4	1	Seasonal	0	0	0	0	5	Change in Travel Status
Lower East Fk	62650	0.4	1	Yr Long Restr	4	4	4	4	5	temp bmp's-after harvest reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk	62651	0.5	1	Seasonal	4	4	4	4	5	temp bmp's-after harvest reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk	62652	0.3	1	Seasonal	4	4	4	4	5	temp bmp's-after harvest reduce compaction-width/impr drainage-atv use, <

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
										ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk	62654	0.6	1	Seasonal	11	11	11	11	11	sr cmp-xings, upgrade drainage, reduce erosion, maintain ML, maintain trvl status
Lower East Fork	62654	1.1	1	Seasonal	0	0	0	0	5	Change in Travel Status
Lower East Fk	62655	0.6	1	Yr Long Restr	4	4	4	4	5	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk	62656	2.4	1	Yr Long Restr	2 & 3	2 & 3	2 & 3	2 & 3	2 & 3	upgrade segments not meeting bmp's, pull crossing cmp's, reduce erosion, < ML, maintain trvl status. 1.2 miles EHE code
Lower East Fk	62657	0.2	1	Yr Long Restr	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, maintain trvl status
Lower East Fk	62663	1	1	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk	62665	0.6	1	Seasonal	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Change in Alt G travel status
Lower East Fk	62668	0.5	1	Seasonal	11	11	11	11	5	upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Change in Alt G travel status
Lower East Fk	73211	0.7	1	Seasonal	11	11	11	11	5	sr cmp-xings, upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Alt G changes in Travel Status. **Existing SUP in place, need to maintain access for permittee, DNRC.
Lower East Fk	73212	1.2	1	Seasonal	11	11	11	11	5	sr cmp-xings, upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Alt G change travel status.
Lower East Fk	73213	8.5	1	Seasonal	4	5	12	4	5	under alt B-reduce compaction-width/impr drainage-atv use, < ML to decomm, change trvl status, under alt C/E temp-bmp's, decomm after harvest, < ML to decommissioned, change trvl status, under alt D same as alt C/E except for (seasonal atv use)
Lower East Fk	73214	2.6	1	Seasonal	11	11	11	11	5	sr cmp-xings, upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Change in travel status for Alt G
Lower East Fork	73214	2.6	1	Seasonal	0	0	0	0	5	Change in Travel Status
Lower East Fk	73215	0.6	1	Seasonal	6	6	6	6	5	meet bmp's, maintain ML, maintain trvl status. Change in travel status for Alt G
Lower East Fk	73248	0.8	1	Yr Long Restr	4	4	4	4	4	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower East Fk	73249	0.6	1	Yr Long Restr	4	4	4	4	4	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower East Fk	73250	1.9	1	Yr Long Restr	11	11	11	11	11	sr cmp-xings, upgrade drainage, reduce erosion, maintain ML, maintain trvl status
Lower East Fk	73251	1	Hist	Yr Long Restr	4	5	4	4	5	under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Middle East Fk-Reimel+Interf	73252	0.7	Hist	Yr Long Restr	4	5	4	4	5	under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status. Accessed by Jennings Camp Rd, 723. Following decommissioning of 723, this road would no longer be accessible.
Middle East Fk-Reimel+Interf	73253	1.4	Hist	Yr Long Restr	5	5	5	4	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
										status. Accessed by Jennings Camp Rd, 723. Following decommissioning of 723, this road would no longer be accessible.
Middle East Fk-Reimel+Interf	73255	0.5	Hist	Yr Long Restr	4	5	4	4	5	under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Middle East Fk-Reimel+Interf	73256	0.4	Hist	Yr Long Restr	4	5	4	4	5	under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status. Accessed by Jennings Camp Rd, 723. Following decommissioning of 723, this road would no longer be accessible.
Reimel Interfluve	73257	0.8	1	Seasonal	0	0	0	0	5	Accessed by Jennings Camp Rd, 723. Following decommissioning of 723, this road would no longer be accessible.
Middle East Fk-Reimel+Interf	73258	0.7	1	Yr Long Restr	4	4	4	4	4	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Middle East Fk-Reimel+Interf	73259	1.9	1	Yr Long Restr	4	4	4	4	4	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Reimel Interfluve	73259	1.9	1	Yr Long Restr	0	0	0	0	5	Accessed by Jennings Camp Rd, 723. Following decommissioning of 723, this road would no longer be accessible.
Middle East Fk-Reimel+Interf	73260	0.9	1	Yr Long Restr	4	5	4	4	5	under alt B/D reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status. Accessed by Jennings Camp Rd, 723. Following decommissioning of 723, this road would no longer be accessible.
Middle East Fk-Reimel+Interf	73261	0.3	1	Yr Long Restr	4	4	4	4	4	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Accessed by Jennings Camp Rd, 723. Following decommissioning of 723, this road would no longer be accessible.
Middle East Fk-Reimel+Interf	73262	0.4	1	Yr Long Restr	4	4	4	4	4	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Middle East Fk-Reimel+Interf	73313	0.8	Hist	Yr Long Restr	4	4	4	4	4	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Camp	73350	0.1	Hist	Yr Long Restr	4	4	4	4	4	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower East Fk-Maynard Cr	73365	3.4	1	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Lower East Fk-Laird Cr.	73425	0.3	1	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status . Decommission with Alt G.
Warm Sprs	73426	0.8	2	Yr Long Restr	11	11	11	11	11	sr cmp-xings, upgrade drainage, reduce erosion, < ML, maintain trvl status. Alt G changes travel status
Lower East Fk	73447	2	1	Seasonal	11	11	11	11	5	sr cmp-xings, upgrade drainage, reduce erosion, maintain ML, maintain trvl status. Alt G changes travel status.
Lower East Fk-Laird Cr.	73654	1	Hist	Yr Long Restr	4	4	4	4	5	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk-Laird Cr.	73655	0.5	Hist	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, after reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk-Laird Cr.	73656	1.5	Hist	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, after reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Lower East Fk-Laird Cr.	73657	1.5	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73658	0.6	2	Open	4	4	4	4	5	reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk-Laird Cr.	73659	1	2	Open	11	11	11	11	11	sr cmp-xings, upgrade drainage, reduce erosion, maintain ML, maintain trvl status
Lower East Fork	73660	0.9	1	Open	0	0	0	0	5	Change in Travel Status
Lower East Fk-Laird Cr.	73661	0.4	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73662	0.4	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73663	0.4	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73664	0.8	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status. ***Existing easements in place for access to State and private lands. Closure would require court action.*
Lower East Fk-Laird Cr.	73665	0.3	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73669	0.6	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73670	0.4	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73671	0.2	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73672	0.3	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's / decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73674	1.3	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73677	1.2	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73678	0.6	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73680	0.2	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73681	0.3	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73682	1.2	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Lower East Fk-Laird Cr.	73683	1	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73684	0.7	Hist	Yr Long Restr	7	5	7	7	5	under alt B/D full decomm, < ML to decommissioned, maintain trvl status, under C/E temp-bmp's/decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fork	73685	0.4	1	Yr long Restr	0	0	0	0	5	Change in Travel Status
Warm Sprs/Lower East Fk	73689	1.5	Hist	Yr Long Restr	11	11	11	11	11	sr cmp-xings, upgrade drainage, reduce erosion, > ML, maintain trvl status
Warm Sprs/Lower East Fk	73690	0.5	Hist	Yr Long Restr	11	11	11	11	11	sr cmp-xings, upgrade drainage, reduce erosion, > ML, maintain trvl status
Warm Sprs	73692	0.8	1	Seasonal	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status
Warm Sprs	73701	0.5	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, after reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Lower East Fk-Laird Cr.	73728	0.1	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73730	0.5	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73731	0.6	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73732	0.5	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's decomm after harvest, < ML to decommissioned, maintain trvl status
Lower East Fk-Laird Cr.	73734	0.1	Hist	Yr Long Restr	5	5	5	11	5	temp-bmp's decomm after harvest, < ML to decommissioned, maintain trvl status, PVT access. Change in Alt G travel status
Lower East Fk-Laird Cr.	73735	0.1	2	Open	11	11	11	11	11	meet bmp's, improve drainage-auto use, < ML
Lower East Fk-Laird Cr.	73736	0.1	Hist	Yr Long Restr	5	5	5	11	11	temp-bmp's decomm after harvest, < ML to decommissioned, maintain trvl status, PVT access
Lower East Fk-Laird Cr.	73748	0.6	1	Seasonal	11	11	11	11	5	meet bmp's, improve drainage-auto use, maintain ML.N263. Alt G changes travel status.
Lower East Fork	73765	0.2	1	Seasonal	0	0	0	0	5	Change in Travel Status
Lower East Fk-Laird Cr.	73771	0.3	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's decomm after harvest, < ML to decommissioned, maintain trvl status
Warm Spr.	73773	0.6	Hist	Yr Long Restr	4	4	4	4	5	temp bmp's for harvest, after reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status. Change in Alt G travel status
Lower East Fk-Laird Cr.	73991	0.6	Hist	Yr Long Restr	5	5	5	5	5	temp-bmp's decomm after harvest, < ML to decommissioned, maintain trvl status
Camp	74818	0.4	Hist	Yr Long Restr	4	4	4	4	4	temp bmp's for harvest, after reduce compaction-width/impr drainage-atv use, < ML to decomm, maintain trvl status
Reimel	106A	2.3	2	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Lower East Fk	5612A	3.5	2	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Meadow	725B	1.7	3	Open	1	1	1	1	1	1.5 mi sr, meet bmp's, maintain ML
Cameron	10005	0.1		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	1143A	0.16		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	1143B	0.27		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Cameron	13345	0.8		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Reimel/Cameron	13346	1.08		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Reimel/Cameron	13348	0.66		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	370B	0.14		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs/Lower EF	5729	0.8		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	5762	6.44		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73069	1.56		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Reimel/Cameron	73231	1.19		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Reimel	73270	0.33		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Reimel	73271	0.34		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Reimel	73272	3.68		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Reimel	73345	0.94		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs/Lower EF	73419	1.06		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73420	0.96		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73421	0.63		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73422	0.24		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs/Lower EF	73423	0.94		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73424	0.74		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Camp	73490	1.74		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
East Fk Bitterroot	73491	1.93		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
East Fk Bitterroot	73492	0.26		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
East Fk Bitterroot	73494	0.32		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
East Fk Bitterroot	73496	0.79		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
East Fk Bitterroot	73497	0.85		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73605	1.47		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73606	0.76		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73607	1.41		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73608	0.36		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73609	5.51		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73610	1.72		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73611	0.17		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73612	0.32		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73613	0.27		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73614	1.99		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73615	1.31		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73616	0.6		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73617	0.19		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73618	0.1		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73619	0.33		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73620	0.42		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73621	0.69		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73622	0.6		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Meadow	73623	1.53		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73624	1.07		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73625	0.66		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73626	0.46		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73627	0.37		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73628	0.34		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73629	0.17		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73630	1.05		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73631	1.71		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73673	0.64		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73676	0.78		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73679	1.65		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73687	0.26		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs/Lower EF	73691	1.1		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73693	0.94		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73694	0.7		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73695	0.27		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73696	0.39		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73697	0.39		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73698	0.39		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73699	0.3		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73700	0.14		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73702	0.87		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73703	0.6		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73704	1.14		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73705	0.93		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73706	0.67		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73707	0.2		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73708	0.2		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73709	0.18		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73711	0.26		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73712	0.56		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73713	0.77		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73714	0.2		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73715	0.23		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73716	0.03		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73737	0.39		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73738	0.19		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73742	0.53		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower East Fork	73745	0.23		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73749	0.15		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Warm Springs	73750	0.33		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73752	0.11		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs/Lower EF	73753	0.29		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73754	0.52		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73772	0.21		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73774	0.14		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Warm Springs	73775	0.14		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Camp	73778	0.18		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73805	0.28		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73806	0.2		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73807	0.12		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73808	0.2		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73809	0.19		Closed	0	0	0	0	5	were accessed by RHCA road being obliterated
Meadow	73810	0.92		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Cameron/Rye	62685	0.71		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
West Fork										
Piquett	731	7.2	3	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Slate/Upper WF Intrflve	1133	8.95	3	Open	1	1	1	1	5	2.0 mi sr + cmp-xings, meet bmp's, maintain ML
Blue Joint	5656	4	3	Open	1	1	1	1	5	sr cmp-xings, meet bmp's, maintain ML. Change in Alt G Travel Status
Blue/Little Blue Joint	5658	5.3	3	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Little Blue Joint	5660	8.6	3	Open	1	1	1	1	1	2.5 mi sr + cmp-xings, meet bmp's, maintain ML
Little Blue Joint	5662	1.6	3	Open	1	1	1	1	1 & 5	Barrier at TH (mp-1.6), sr cmp-xings, meet bmp's, maintain ML. In Alt G decommission 1.1 miles, change travel status.
Blue Joint	5662	3.4	3	Open	0	0	0	0	5	Access change, Outfitter authorized to use for summer trail rides
Piquett	5723	3.6	3	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Piquett	5724	1.9	3	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Blue/Little Blue Joint	13407	3	2	Open	1	1	1	1	1	sr cmp-xings, meet bmp's, maintain ML
Piquett	13430	1	1	Yr long Restr	0	0	0	0	5	Decommission 1st mile and connect to 13431 for last 0.5 mile, stacked road.
Piquett	13431	1.8	2	Open	4	4	4	4	4	sr cmp-xings, upgrade drainage, reduce erosion, < ML, maintain trvl status
Slate	13833	2	1	Seasonal	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, maintain trvl status. Change of travel status in Alt G
Blue Joint	74112	1.85	1	Yr Long Restr/ATV ok	0	0	0	0	5	ATV access okay. Changed Miles from 2.4 to 1.85
Blue Joint	74113	0.8	1	Yr Long Restr/ATV ok	0	0	0	0	5	ATV access okay
Blue Joint	74118	0.3	1	Yr Long Restr/ATV ok	0	0	0	0	5	ATV access okay
Blue Joint	74131	0.2	1	Open	0	0	0	0	5	Access change
Blue Joint	74132	0.6	1	Open	0	0	0	0	5	Access change
Blue Joint	74134	0.3	1	Open	0	0	0	0	5	Access change
Blue Joint	74135	1.8	1	Yr Long Restr/ATV ok	0	0	0	0	5	ATV access okay

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Blue/Little Blue Joint	74137	0.4	1	Yr Long Restr	12	12	12	12	12	pull cmp's, stabilize soils, convert to non-motorized trail use, < maint ML
Blue/Little Blue Joint	74138	0.4	1	Yr Long Restr	12	12	12	12	12	pull cmp's, stabilize soils, convert to non-motorized trail use, < maint ML
Blue Joint	74139	0.8	1	Open	0	0	0	0	5	ATV trail for outfitters, leave ATV tread and harden crossings
Blue Joint	74140	1.1	1	Yr long Restr	0	0	0	0	5	ATV trail for outfitters, leave ATV tread and harden crossings
Blue Joint	74141	0.9	1	Yr long Restr	0	0	0	0	5	ATV trail for outfitters, leave ATV tread and harden crossings
Blue Joint	74142	0.7	1	Yr long Restr	0	0	0	0	5	ATV trail for outfitters, leave ATV tread and harden crossings
Coal	74155	0.4	2	Open	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, change trvl status
Coal	74156	0.5	2	Open	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, change trvl status
Coal	74157	1.2	2	Open	6	6	6	6	6	sr cmp-xings, meet bmp's, maintain ML, change trvl status
Coal	74158	0.6	2	Open	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, change trvl status
Coal	74159	1.1	2	Open	6	6	6	6	5	sr cmp-xings, meet bmp's, maintain ML, change trvl status
Little Blue Joint	74160	0.8	2	Yr Long Restr	3	3	12	3	3	under alt B/C/E cmp's are pulled, crossings stabilized, reduce erosion, < ML, maintain trvl status, under alt D sr cmp-xings, reduce erosion, < ML, maintain trvl status, convert to trail use
Overwhich	74220	0.6	1	Yr long Restr	0	0	0	0	5	Located in Gentile Cr, Currently KH, but ATV ok
Overwhich	74221	1.5	1	Yr long Restr	0	0	0	0	5	Located in Gentile Cr, Currently KH, but ATV ok
Overwhich	74222	0.5	1	Yr long Restr	0	0	0	0	5	Located in Gentile Cr, Currently KH, but ATV ok
Piquett	74603	0.2	1	Yr Long Restr/ATV ok	0	0	0	0	5	Road looks open and used on photos ATV access ok except during hunting season
Piquett	74605	1.4	1	Yr Long Restr/ATV ok	0	0	0	0	5	Road looks open and used on photos ATV access ok except during hunting season
Piquett	74606	0.73		Yr Long Restr/ATV ok	0	0	0	0	5	Road looks open and used on photos ATV access ok except during hunting season. Added in road miles +.73
Overwhich	74756	1	1	Seasonal	0	0	0	0	5	ATV accessible, include unnumbered adjacent road.
Piquett	13403	2.55		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13421	0.63		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13422	0.22		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13423	1.45		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13424	2.4		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13425	1.58		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13434	2.19		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower West Fork	13449	2.42		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Upper WF Interfluve	13459	2.35		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13464	2.29		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13465	1.56		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Upper WF Interfluve	13810	0.14		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Slate/Upper WF Intrflve	13811	0.88		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13824	0.33		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower West Fork	13829	3.41		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower West Fork	13830	1.74		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Lower West Fork	13831	1.32		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13832	0.65		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated

Watershed Name	Road	Rd Mi	ML	Travel Mgmt Status	Alternative					Rx Activity
					B	C&E	D	F	G	
Piquett	13834	0.32		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13839	0.82		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13840	1.6		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13841	1.34		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13842	1.22		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13851	0.42		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Slate	13858	0.42		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	13885	0.5		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Blue Joint	362	3.22		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Blue Joint	5652	0.65		-	0	0	0	0	5	were accessed by RHCA road being obliterated
Overwhich	5703	2.76		open	0	0	0	0	5	were accessed by RHCA road being obliterated
Blue Joint	74133	0.37		open	0	0	0	0	5	were accessed by RHCA road being obliterated
Slate	74230	0.25		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Slate	74231	0.3		open	0	0	0	0	5	were accessed by RHCA road being obliterated
Upper WF Interfluve	74234	0.47		Open	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74319	0.73		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74320	0.19		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74321	0.53		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74324	0.2		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74326	0.64		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74327	0.34		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74328	0.24		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74330	0.19		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74331	0.75		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74332	2.16		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74337	0.57		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74338	0.77		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74339	1.65		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74600	0.24		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74601	0.98		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74607	0.34		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74608	0.98		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	74611	0.13		Yr Long Restr	0	0	0	0	5	were accessed by RHCA road being obliterated
Piquett	49	12.66		Yr Long Restr	0	0	0	0	5	Decommission 1.5 miles of road that is within sediment contributing reach of stream between 5724 and 5724 as well as beyond trailhead.
Piquett	49	2.25		Yr Long Restr	1	1	1	1	1	BMP upgrades on this portion of road.

APPENDIX C

Mitigation,
Management Requirements,
And
Monitoring

MITIGATION AND MONITORING

Introduction

This monitoring plan is tiered to and developed from the recommendations in the Bitterroot Forest Plan (pgs IV-3 to IV-5). Generally, the effects to be measured correspond to those described and listed in Table IV-1, Monitoring and Evaluation Requirements in the Forest Plan (pages IV-6 to IV-9).

While Forest Plan monitoring does not necessarily assess all aspects of individual projects, some aspects of this proposal, if implemented, would be included under various Forest Plan Monitoring items along with other similar activities on the forest. The Forest prepares an annual Monitoring and Evaluation Report to document the results.

There are currently about sixty-five Forest Service and independent research projects ongoing on the Bitterroot National Forest, many are fire and fire recovery related (http://www.fs.fed.us/r1/bitterroot/planning/research/research_proj_list.htm). Complementary research is also ongoing or proposed at the Regional and national levels, some of which is occurring on the Bitterroot (http://www.fs.fed.us/r1/pgr/afterfire/research/). Regional efforts are focusing on fire and fire recovery research related to watersheds, soils, riparian areas, invasive weeds, social effects, and native seed application and effectiveness in revegetation. New information and findings from these and other studies will be reviewed periodically to assess relevance to any decision made from this proposal.

Project Monitoring

This project monitoring plan will be followed if Alternative B, C, D, E, F, or G is selected. The plan focuses primarily on "implementation monitoring" to assure the alternatives and mitigations are implemented on the ground as designed and achieve the desired results. More importantly, it is designed wherever possible to catch and assess problems before or when they occur so corrective actions can be taken. As such, it is also a quality control / quality assurance plan.

By its nature, implementation monitoring, to be effective, requires an adaptive approach to management. That means when undesirable or unexpected results or conditions are identified through monitoring the project will be assessed and altered as needed to meet the intent of the mitigation or proposed activity. This is explicitly described in some activities (i.e. if new heritage sites or sensitive plants are identified, unit boundaries or treatment types will be modified as necessary to protect the resource) but is also implicit for the project as a whole. If or when these situations arise, project adjustments will be made on the basis of the desired and predicted outcomes discussed in the Record of Decision and this EIS.

Several monitoring items are intended to measure and evaluate the effectiveness of specific practices proposed in these alternatives. This effectiveness monitoring provides useful information to determine whether these practices should be used, or modified for use in the future.

This monitoring is discussed in two parts. The first part briefly introduces established monitoring and quality control procedures used in project development, design, contract preparation, and project administration. This is only summarized here, as much of this is required procedure and further requirements are documented in Forest Service Manuals and Handbooks.

The second monitoring section describes the project specific items to be monitored. Mitigations measures to be monitored are identified along with their objectives and estimated effectiveness. While most of the project is monitored through standard procedures and established practices described above, special additional monitoring items are described where appropriate.

At the end of this appendix are the selected Best Management Practices for this project that are referenced in Chapter II. These describe the prescribed practice and also identify its expected effectiveness.

Implementation Monitoring Plan

Introduction

Project implementation generally involves the efforts of a variety of individuals with both specialized and general skills and training. Employees are accustomed to working together to achieve the desired project objectives. For example, it is common for a contract preparation forester or contract administrator to discuss on a regular basis specific ground or project conditions with the wildlife biologist or hydrologist to apply the best practices on the ground. Joint field reviews are conducted as needed. These steady informal communications allow for incremental project adjustment throughout implementation to achieve the desired results. In addition to these less formal monitoring procedures, the following quality control and monitoring procedures take place.

Planning, Design, Contracts, And Project Administration

A series of quality controls are standard Forest Service or Bitterroot National Forest procedure and are built into the process. Initial monitoring commences during the NEPA process when the ID Team uses site-specific information, local knowledge and resource issues in order to develop viable alternatives. Each specialist identifies specific mitigation measures for their individual resource concern and develops specific monitoring plans as needed to assure protection objectives are met. The ID Team reviews each mitigation and monitoring plan. The ROD selects and incorporates the final mitigation measures and monitoring plans into the final decision.

The Core ID Team reviews the mitigations and the monitoring plans with the Implementation Team. Overall resource concerns and site-specific mitigation measures are identified and explained for each resource.

The implementation personnel initiate project layout. During the layout process, resource specialists and layout personnel continually coordinate in order to find practical solutions for implementation. For example, if layout personnel identify an area of high severity burn within a treatment area mapped as low severity, the resource specialists would help identify the appropriate prescription and mitigations to be applied based on the intent of the ROD and FEIS. The adjustments would be documented and tracked.

The field data and the final mitigation measures are incorporated into a formal contract. Specialists, the appropriate Line Officer and the Contracting Officer review the contract prior to award. Signatures are required by all.

After award but prior to commencement of work, a pre-operations meeting is conducted between the Forest Service, the Contractor, and sub-contractors. All mitigations (now contract provisions) and their objectives are reviewed and the intent of the EIS and Record of Decision is explained.

Individuals are identified in writing and assigned a specific delegation of authority as part of the project or contract administration team. These individuals conduct the daily operations of project monitoring and administration in the field. Contract administration is done frequently and regularly to ensure that contract clauses are adhered to and effective in adequately protecting the resources.

Resource specialists are encouraged to be engaged during implementation. They are required to be involved when questions arise that are specific to their resource. Specialists coordinate with the contract inspectors and provide the Contracting Officer with practical solutions to any problems encountered. The Contracting Officer is responsible for making final determinations that comply with the Record of Decision and in the best interest of the government.

Upon completion of the project, additional monitoring trips are coordinated with the Forest Plan Monitoring Program. This program reviews and evaluates how effectively the project complies with Forest Plan direction, objectives, and standards as well as project specific objectives.

Project Specific Mitigation and Implementation Monitoring

Coarse Woody Debris Standards And Fuel Objectives Monitoring

Coarse woody debris and fuel levels will be monitored both during and after treatments. Since they are comprised of the same material, the same procedures will be used for both aspects of project monitoring.

Type Of Monitoring: Implementation

What Is Being Monitored: Coarse woody debris and fuel remaining on site after treatments

Why Monitored: To assure prescribed levels are left and standards are met.

Methods: Planar transects and fixed radius plots in each unit at early phases of the project, ocular estimates, or photo-series comparisons if reliable in later phases of the project. Evaluations of transect results for each unit and for groups of units will be needed to determine if trends are developing.

Responsible: Zone Silviculturists are responsible for this accomplishment. The wildlife biologists and fuels specialists will evaluate results relative to meeting wildlife and fuels objectives.

Threshold For Change Or Action: If coarse woody debris falls below established minimums or if fuel reduction objectives are not achieved consistently.

Actions To Take: Before other areas are started - re-assess beginning fuel loads, and adjust contract provisions to assure minimums will be met. After treatments – evaluate reasons for falling below minimums; adjust other areas so they do not fall below the minimums.

Soil Resource Area

Mitigation measures designed to assure compliance with soil quality standards and productivity objectives outlined in the Forest Plan (standard F-h-6-7-8) and/or Forest Plan water quality standards. These mitigations further define the Best Management Practices selected for this proposal (incorporated at the end of this appendix).

Mitigation

General Operations – Dry Season-Conditions

All activities will be within Soil Quality Standards of less than 15% detrimental soil conditions.	B, D, E, F, G
Areas where activities cause soil displacement (FMS R1 Supplement 2500-99-1) will be rehabilitated as needed. Follow-up seeding and fertilizing will occur as needed.	B, C, D, E, F, G
A soil resource specialist will inspect each unit where past ground-based activities have occurred to prescribe soil amelioration as appropriate.	B, D, E, F, G
Minimize the size and number of landings to that needed for safety and equipment operation.	B, D, E, F, G
Skyline yarding operations will suspend the leading end of the log off the ground. All cable corridors must be rehabilitated as needed as soon as possible by anchoring large woody debris in the cable corridors to act as waterbars, or breaching the berm with water bars, and pulling adjacent woody debris to cover bare areas of the corridors.	B, D, E, F, G
Designated skid trails will be used by low ground pressure equipment (a ground pressure rating of less than 10 PSI) over slash mats where available, only in areas of low severity burns, on slopes less than 35%, and when the soil moisture content of the surface is low. Ground-based equipment on moderate and high severity burn areas is limited to winter operations.	D, F
In tractor and skyline units, equipment use will be limited to one entry to accomplish fuel reduction treatments.	F
All harvest and fuel treatments on high severity burns will leave enough slash evenly scattered over the unit to contribute to 30-60 % effective ground cover, if available.	B, D, E, F
Piling of fuels using a walking excavator can occur in fuel reduction units, on dry slopes, where slopes do not exceed 50%.	D
Alternative guidelines designed to meet the end result to comply with R1-Soil Quality Standards can be proposed by the contractor, but must be approved in writing by the Contracting Officer and the Project Soil Scientist prior to use.	F
Harvest will be limited to slopes less than seventy-five percent. Skyline yarding may cross steeper inclusions.	B, D, E, F

General Operations – Winter Season-Conditions

Ground-based equipment is limited to winter operation.	B, G
All ground-based and skyline yarding operations are limited to winter operation.	E
Skyline yarding operations will suspend the leading end of the log off the ground and can be conducted only when soils are frozen to a 4-inch depth or on 24 inches of settled snow in the following units: 32, 75, 121, 125, 126, 131, 132, 137, 193, 197, 201, 203-205, 246, 254, 255, 257, 261, 325, 334, 379, 385, 398, 592, 608, 706-708,727, 754, 759.	F
Dispersed skidding using ground-based systems may occur on slopes less than 35% only if soils are frozen to a depth of 4 inches or on 24 inches of settled snow. Ground-based skidding will be restricted to slopes less than 35% downhill and to 20% uphill.	B, D, E, F, G

General Operations – Decommissioning Temp Roads and Landings

Ripping will rehabilitate landings associated with temporary roads, seeding, and scattering slash over them. Those landings along classified roads will be evaluated on a case-by-case basis and either cleaned up and used as a turnout for the road or be rehabilitated by being ripped, seeded, and scattering slash over them.	B, D, F
Decommission temporary roads by ripping or re-contouring, seeding with native or non-invasive species, and spreading available slash over the former road surface. This will be done as soon as possible after logging operations are complete using an excavator to reclaim the temporary roads. During construction of the temporary roads, topsoil will be retained to the extent possible and be replaced after use to encourage faster recovery of vegetation.	B, D, F
On Forest roads proposed for decommissioning: remove the culverts; rip, partially re-contour, seed and fertilize, and scatter available slash over the roadbed; and block or re-contour the entrance.	B, C, D, E, F, G

Objective: To conduct project activities in such a manner that they will not contribute to detrimental soil conditions or adverse loss of site productivity through accelerated surface erosion. Sites with existing detrimental conditions shall be ameliorated, when and where feasible, as part of the proposed activity so long as the end result moves the site toward meeting soil quality standards.

Effectiveness: Effectiveness of these mitigations is described below as well as in the descriptions of the Best Management Practices (BMP's) selected for this proposal and incorporated at the end of this appendix.

Effectiveness of some of these mitigations and Best Management Practices are dependant on proper application and monitoring to assure design and operational limits (season, weather, topography, etc.) aren't exceeded. Therefore project design includes an additional monitoring pre-activity review and soil resource prescriptions by a soil resource specialist on the most sensitive areas and close implementation monitoring as identified below in Soils Items 1 and 3, Water Resources Items 1 and 2, and Fish Items 1-3. These will help assure that the right prescriptions get implemented and, should problems occur, they can be quickly corrected and similar situations identified and avoided in other parts of the project.

Given these design and monitoring conditions, all listed mitigation measure and BMPs have a high probability of being adequately and correctly implemented. As noted above and further described below, each measure has inherent limits to its effectiveness, but these design and monitoring criteria should assure that each mitigation item performs at or near its highest potential effectiveness.

The winter operating restrictions are being specifically prescribed for some cable skyline units where moderate risk, landslide prone, land types occur. Burn severity on these land types can range between moderate and severe. Yarding over the snow or frozen ground is designed to reduce the amount of ground disturbance and potential soil compaction created by retrieving suspended logs uphill to a landing. Depending on the harvest prescription and the number of trees per acre, numerous logs can be yarded up each cable corridor. Corridors are typically placed 100 to 170 feet apart depending on terrain conditions and the length of the haul back line. Skyline corridors are generally around 10 to 12 feet wide, but the disturbance is primarily in the center of this corridor. Ground disturbance and the amount of exposed soil left by the yarding operation are highly variable during typical dry season operations, although ground disturbance is greater closest to the landing site. By allowing the ground to freeze down to a 4-inch depth or having a 24-inch blanket of settled snow covering helps to cushion the impacts or make the surface more resistant to disturbance.

Forest Plan monitoring on past timber sales logged over the snow provided local results for ground-based operations only (Forest Monitoring Rpt., Item 31-1994-1996). Ground based results have been variable, only moderately successful, and usually are inconsistent from unit to unit, sale to sale. In other words it has been effective one time on one unit and not effective on another unit. Factors such as weather, elevation, terrain, operator schedule, snow conditions, air temperatures, operator errors, etc., all come into play under ground-based operations. Conclusions about the past effectiveness of the mitigation are mixed.

Winter season mitigation measures on this proposal have a high probability of being adequately and correctly implemented given the implementation monitoring level proposed, and results are expected to be more consistent than previous Forest Plan monitoring (post activity) has found. The proposed monitoring plan provides checks both during design/layout and during actual implementation, close communication between project/contract administrators and soils personnel, and allows operations to be quickly halted should conditions change (i.e. weather turns warmer).

Winter logging at the higher elevations has generally not been done on the Bitterroot National Forest because of economics, since deep snow can bury felled timber and the cost of snow plowing and digging out the logs is higher. Physically, it can be done but at higher cost. Results of past winter skyline logging have not been reported after reviewing 10 years of Forest Monitoring reports (1989-1999). As cold weather conditions tend to be more reliable and less variable at these sites, it can be assumed the seasonal restrictions will be more consistently effective at higher elevations and northerly aspects than on more variable lower elevation sites.

Monitoring

Soils Item 1

Type Of Monitoring: IMPLEMENTATION

What Is To Be Monitored? A soil resource specialist will inspect each unit where past ground-based activities have occurred and prescribe soil amelioration as appropriate. Soil conditions would be inspected and evaluated for past effects and rehabilitation needs identified for inclusion into the unit prescription.

During new activity implementation, on-going inspections and/or interim monitoring visits would be conducted to check the application and function of specifically planned mitigation measures. Contract/project administrators or inspectors would monitor all activity areas and BMP application. Soil resource specialists and/or the monitoring team would also review at least 12% of the ground based and cable skyline activities. Selection criteria will prioritize on the potential risk (e.g. slope, landtype, burn severity, type of activity, etc.). After treatment, follow up site monitoring would again be conducted to establish ending results, whether full application and correct use of the design measure(s) occurred, and whether activities comply with the policy and the standard.

Why Monitor? To assess existing soil conditions and assure we apply the right treatment or soil amelioration practice/technique, which then shall meet or exceed current soil quality standards and objectives. In addition, establish a more reliable soil condition/restoration tracking data record.

Methodologies: Pre-activity inspections would be conducted by a soil scientist or trained technician(s) familiar with soil characteristics, management practices, and rehabilitation techniques. During implementation of the activity a soil scientist, trained technician(s), or the contracting representative (COR/TSO) would be responsible for monitoring. A soil scientist or a small interdisciplinary team of resource specialists would conduct the ongoing/post activity monitoring looking at the following needs: 1) The degree and extent of soil displacement and detrimental compaction on a representative sample set of the harvested units, 2) estimate tonnage and overall application of coarse woody debris (CWD) and whether ground cover (slashing) objectives are met, 3) determine if appropriate mitigation measures were applied and whether they are properly functioning, 4) document the results and findings needing further follow up attention. Start any follow up actions, file final reports, and record the data sets into the database. Pre-activity condition assessments will use an ocular type Soil Resource Condition Assessment (Howes, 2000) or a similar assessment method.

Who Is Responsible For Doing It? Soil Scientist/Hydrologist or trained Soil/Water Technicians, Project Contract Administrator, Contracting Representative.

Threshold For Change Or Action: Where existing soil conditions with proposed ameliorations would not meet the standard or where current conditions, already at standards, would be exceeded despite proposed ameliorations by the new project activity.

Actions To Be Taken If Needed: Pre-activity inspections would set the stage for rehabilitation needs prior to implementation. Adjustments to the treatment prescription, unit layout, mitigations, or contract clause/language would be made to assure compliance with management goals, objectives, and standards necessary to meet minimum requirements. During project implementation contractual adjustments would be made as needed to prevent adverse results. Post activity evaluations would document results and the means to improve or correct any problems with application or techniques so that new projects or remaining untreated project units are assured corrective actions. Good documentation for the record would pass on the changes in practices or techniques to future project planning efforts. Feedback may result in new or improved standards.

Soils Item 2

Monitoring designed to evaluate the overall effectiveness of winter operating restrictions on moderate to high burn severity landscapes.

Type Of Monitoring: EFFECTIVENESS

What Is To Be Monitored? Selected cable skyline harvest units with moderate risk landslide prone land types requiring the above listed mitigation measures to be applied.

Why Monitor? Winter logging restrictions over frozen ground with a depth of 4-inches or ground covered with at least 24-inches of settled snow pack is a common mitigation measure to reduce effects on soil quality. Its application is more typically applied to ground-based operations, yet will be applied to skyline harvest under this project to mitigate logging effects on burned landscapes with moderate landslide risks.

Methodologies: Monitoring shall be conducted on four of the listed treatment units in the above mitigation list. Two of the units will be on south and west aspects and two units will be on north and east aspects. Two of the units will be at an elevation lower than 5,000 feet. Two of the four units would be for summer operations and two for winter operations; one each at low elevation and one each at high elevation.

All four units will be located within the same project vicinity or watershed. Drainage selection will include similar physical factors like geologic character, parent rock materials, moderate to steep slope gradients, have moderate landslide prone land types, have moderate to high burn severity, similar volume harvested, comparable corridor lengths, and similar soil profiles.

Each sample unit would receive similar post harvest fuel reduction, coarse woody debris, and erosion control measures. Each unit selected for monitoring will receive a pre-activity ocular soil resource condition assessment (Howes, 2000) discussed under implementation monitoring. General landscape photographs will be taken and filed to establish a base line character look. Any existing landslide, draw disturbance, slope slump, drainage network etc. needs to be described, photographed, and mapped.

Once the contract has been awarded, the COR/TSO and a Soil Scientist will work with the contractors to establish the cable corridor locations based on the landing locations. This selection work must be done in the dry season. Once the corridors are established and marked on the ground, a technician crew can come out to document existing soil conditions by establishing three 100-foot lineal transects with photo points on at least 50% of the total number of proposed corridors across each unit, minus the outer corridor on each side. Transects shall be established at three points on the slope; top 1/3, mid-slope, and bottom 1/3. Unit size needs to be similar in acres with no more than a 20-acre variability. Sampling would be conducted before logging, right after logging, and 2-3 years after all post harvest activity is completed. A fourth round of sampling could be conducted again after 5-6 years to gauge restorative effects.

This monitoring project would try to determine whether winter operating restrictions are indeed effective techniques in meeting Forest soil quality standards and whether designed measures did in fact meet our intended objective for minimizing impacts on burned landscapes with moderate landslide risks. It should assess the effects on soil quality condition tiered to: 1) the amount of detrimental compaction found, 2) the amount of exposed bare ground (area in square feet) created, 3) the percent of surface erosion (rill, sheet, or gully) started, and 4) the percent rate of returning ground cover vegetation. Validate whether this mitigation did in fact reduce expected adverse impacts on moderate risk landscapes.

Who Is Responsible For Doing It? Soil Scientist/Hydrologist or trained Soil/Water Technicians, Contract Administrator, Contracting Representative.

Threshold For Change Or Action: Where the proposed logging system is changed or modified. Where the selected units are dramatically modified in treatment prescriptions.

Actions To Be Taken If Needed: Pre-activity inspection and assessment would set the stage for establishing a localized base line. Once the logging contractor filed an operating plan, working with them to establish the corridor locations is key. Getting the transects set up and documenting ground conditions before harvest activity and the winter season become critical for the subsequent sampling and overall comparisons to follow later on. If the transects are not established on time then a replacement set of four sample units in an alternate drainage would be needed to restart the monitoring project. Sampling of all transects must be conducted in the same year in order to maintain validity. Good documentation for the record and annual reporting is also needed to track monitoring progress.

Soils Item 3

Monitoring designed to assess and validate overall BMP effectiveness by looking specifically at key Soil and Water Conservation Practices (SWCP's) outlined in Forest Service handbook 2509.22.

Type Of Monitoring: IMPLEMENTATION/EFFECTIVENESS

What Is To Be Monitored? Montana State "High Risk" BMPs and Forest soil and water conservation practices by a Forest Interdisciplinary Team of Specialist for effective application and compliance.

Why Monitor? Montana State administrative rule (16.20.603), Clean Water Act –Section 319, Agency Policy, and Regional MOU agreements. To employ the Montana State, five-point scale, audit process using a Forest interdisciplinary team made up of a soil scientist, a hydrologist, a fisheries biologist, a Forester, and a Logging System Specialist. This team shall be responsible for evaluating whether Forest and State "high risk" and other appropriate BMPs are correctly applied and if they were effective in limiting non-point source pollution from entering Fire Recovery Area streams. Water quality standards and conditions of the beneficial uses will serve as an evaluation criteria for EIS monitoring.

Methodologies: Contract/project administrators or inspectors would monitor all activity areas and BMP application. Additionally, an interdisciplinary monitoring team would select approximately 12% of the harvest units with at least 1/3 ground based, 1/3 cable skyline, and 1/3 helicopter, within the Skalkaho/Rye, East Fork of the Bitterroot, and West Fork of the Bitterroot geographical areas for further evaluation. Selection criteria will prioritize high severity burn sites first, moderate burn sites second, and low burn sites third. The team will use the State's audit team field review approach.

Who Is Responsible For Doing It? Contracting COR/TSO, Zone or Forest Soil Scientist, and the selected Specialist Review Team.

Threshold For Change Or Action: When soil quality is being adversely affected and continued activity could lead to severe soil loss with long-term damage to site productivity.

Actions To Be Taken If Needed: When the practice is not being applied or incorrectly applied, contracting adjustments will then be made to correct the implementation problem. Issues raised during the audit reviews will be reported and either the practice modified or new practices designed to resolve the issue before the next planned project. Field corrective actions will be instituted to restore or stabilize the impacted sites.

Water Resource Area

Water Resources Item 1. Measures to assure water-related beneficial uses are protected and that project activities are in compliance with Montana State Water Quality standards and meet Forest Plan goals and objectives for water management. These mitigations further identify and define the Best Management Practices selected for this proposal (incorporated at the end of this appendix).

Mitigation

General Operating Conditions – Upland Landscapes

All activities will comply with Bitterroot National Forest BMPs to protect beneficial uses (BMPs are filed in the project record).	B, C, D, E, F, G
Boundaries of wetlands and RHCAs will be flagged to exclude equipment in fuel reduction units. Ground-based equipment will be prohibited from entering Riparian Habitat Conservation Areas (RHCAs) without the appropriate variance from Montana DNRC.	B, C, D, E, F, G
Any BAER slope stabilization or fireline that was previously rehabilitated that is disturbed during fuel reduction or harvest operations will be repaired as soon as possible.	B, D, E, F, G

General Operating Conditions – Roads

Roads scheduled for road width reduction, storage, and/or decommissioning will have waterbars or cross drains installed where necessary.	B, C, D, E, F, G
Forest roads will be protected from unwarranted damage during haul operations. Dust abatement and snowplowing specifications will be consistent with mitigation measures in the Bull Trout Road Maintenance BA.	B, C, D, E, F, G

Objective: The Bitterroot Forest Plan specifically addresses water quality under Chapter II-h-3, forest wide management standards. This standard states that site-specific water quality effects will be evaluated and control measures designed to assure that all planned projects meet Forest water quality goals and State water quality standards. Projects not able to meet the standards, primarily State, would be redesigned, rescheduled, or dropped. Management objectives are to maintain sufficient in-stream flows to support quality fish habitat, manage municipal watersheds to assure sustained yields of high quality water, and to manage riparian areas to prevent adverse effects on channel stability and in-stream fish habitat. The over riding Forest goal is simply to maintain water quality and quantity. The above listed mitigation measures are designed to meet this direction through; the application of appropriate Forest and Montana State BMPs, application of INFISH direction for managing riparian zones, and the protection of the Burn Area Emergency Recovery "erosion control" measures implemented right after the fire was declared out.

Effectiveness: Effectiveness ratings are identified for each BMP in its description provided at the end of this appendix.

Monitoring

Type Of Monitoring: IMPLEMENTATION

What is to be monitored? Montana State "High Risk" BMPs and Forest soil and water conservation practices by a Forest Interdisciplinary Team of Specialist for effective application and compliance.

Why Monitor? Montana State administrative rule (16.20.603), Clean Water Act –Section 319, Agency Policy, and Regional MOU agreements.

Methodologies: Contract/project administrators or inspectors would monitor all activity areas and BMP application. An interdisciplinary team would select approximately 12% of the harvest units with at least 1/3 ground based, 1/3 cable skyline, and 1/3 helicopter, within the Skalkaho/Rye, East Fork of the Bitterroot, and West Fork of the Bitterroot geographical areas for further evaluation. Selection criteria will prioritize high severity burn sites first, moderate burn sites second, and low burn sites third. The team will use the State's audit team field review approach.

Who Is Responsible For Doing It? Contracting COR/TSO, Zone or Forest Soil Scientist, and the selected Specialist Review Team.

Threshold For Change Or Action: When water quality could be adversely affected and continued activity could lead to degraded beneficial uses.

Actions To Be Taken If Needed: When the practice is not being applied or incorrectly applied, contracting adjustments will then be made to correct the implementation problem. Issues raised during the audit reviews will be reported and either the practice modified or new practices designed to resolve the issue before the next planned project. Field corrective actions will be instituted to restore or stabilize the impacted sites.

Water Resources Item 2

Type Of Monitoring: IMPLEMENTATION

What Is To Be Monitored? Montana State "High Risk" BMPs and Forest soil and water conservation practices listed above by a Forest Interdisciplinary Team of Specialist for effective application and compliance.

Why Monitor? Montana State administrative rule (16.20.603), Clean Water Act –Section 319, Agency Policy, and Regional MOU agreements.

Methodologies: Contract/project administrators or inspectors would monitor all activity areas and BMP application. Interdisciplinary team would select approximately 12% of the harvest units with at least 1/3 ground based, 1/3 cable skyline, and 1/3 helicopter, within the Skalkaho/Rye, East Fork of the Bitterroot, and West Fork of the Bitterroot geographical areas for further evaluation. Selection criteria will prioritize high severity burn sites first, moderate burn sites second, and low burn sites third. The team will use the State's audit team field review approach.

Who Is Responsible For Doing It? Contracting COR/TSO, Zone or Forest Soil Scientist, and the selected Specialist Review Team.

Threshold For Change Or Action: When water quality could be adversely affected and continued activity could lead to degraded beneficial uses.

Actions To Be Taken If Needed: When the practice is not being applied or incorrectly applied, contracting adjustments will then be made to correct the implementation problem. Issues raised during the audit reviews will be reported and either the practice modified or new practices designed to resolve the issue before the next planned project. Field corrective actions will be instituted to restore or stabilize the impacted sites.

Aquatic Fish Species

Fisheries Item 1

To protect, preserve, or enhance riparian and aquatic habitats by addressing INFISH objectives, standards, and guidelines through the application of like measures identified below.

Mitigation

No harvest or felling of trees will occur within INFISH RHCAs and wetlands, except for safety reasons as noted below. A map of all RHCAs is located in the Project File. The RHCAs for Alternatives B, C, and D include lands: - Within 300 feet of fish-bearing streams. - Within 150 feet of permanently flowing streams that do not have fish; and ponds, lakes, and wetlands > 1 acre. - Within 100 feet of intermittent streams, wetlands < 1 acre, and landslide prone areas.	B, C, D,
No harvest or felling of trees will occur within INFISH RHCAs and wetlands, except for safety reasons as noted below. A map of all RHCA's is located in the Project File. The RHCAs for Alternatives E, F, and G include lands: - Within 300 feet of fish-bearing streams. - Within 200 feet of permanently flowing streams that do not have fish; and ponds, lakes, and wetlands > 1 acre. - Within 200 feet of intermittent streams, wetlands < 1 acre, and landslide prone areas (applies to the following areas: all portions of the Blodgett fire, the Skalkaho Creek drainage, the Sleeping Child Creek drainage, the Warm Springs Creek drainage, the Meadow Creek drainage, and the West Fork drainage above Painted Rocks Dam). - Within 150 feet of wetlands > 1 acre. - Within 100 feet of wetlands < 1 acre.	E, F, G
In RHCAs trees may be felled only when they pose a safety risk. Felled hazard trees in RHCAs will be left on-site to contribute to instream woody debris, unless a fisheries biologist determines it would be detrimental to the stream banks or riparian function (INFISH standard RA-2).	B, C, D, E, F, G
Temporary roads will not be allowed to enter or cross RHCAs.	B, D, F
No new landings will be constructed in RHCAs.	B, D, E, F, G
No fuel storage or equipment refueling will occur in RHCAs. If there are no other alternative areas, refueling sites in RHCAs must be approved by a fisheries biologist and have an approved spill containment plan prior to use (INFISH standard RA-4).	B, C, D, E, F, G
All new culverts and bridges will be sized to accommodate the 100-year flood, including associated bedload and debris (INFISH standard RF-4).	B, C, D, E, F, G
Fish passage will be provided or maintained at all applicable road crossings (INFISH RF-5).	B, C, D, E, F, G

Objective: Water quality and fish habitat is inseparably related to the integrity of the upland slopes and the riparian zone in each individual watershed. Applicable INFISH standards and guidelines are intended to maintain or restore water quality, stream channel integrity, flow regimes, riparian plant diversity, and habitat to support viable populations of well-distributed native vertebrate and invertebrate populations. Under a burn area recovery effort these standards may well become mitigations measures designed to prevent and protect undamaged, partially damaged, or damaged aquatic/riparian ecosystems from further degradation. Monitoring would be used to gage proper application, end net results, and whether successful compliance is accomplished.

Effectiveness: Current INFISH direction is an interim strategy for managing inland native fish producing watersheds. In 1995, this new policy direction amended current National Forest Plans within the existing range of native Bull Trout populations in western Montana. The listing of Bull trout as threatened in 1998 heightened protection measures under Section-7 of the Endangered Species Act. In addition, native Westslope Cutthroat trout occupy similar habitat as Bull trout and do remain warranted, but precluded as a federal candidate species. They are presently listed as a sensitive species in

Region-1 and viewed in the Forest Plan as a management indicator species of concern used best to gage the sensitivity of the occupied watersheds.

Minimum bench mark management levels required by NFMA (Title 36, CFR 219.12e and 219.27) are designed to provide adequate fish and wildlife habitat in order to maintain viable populations, as well as, protect soil productivity and water quality by controlling timber harvest intensity, logging systems, road density, fuel treatments, site preparation methods, as they affect watershed condition. The burn area has impacted, to some degree, nearly 126 named streams across the Bitterroot Forest and portions of 35 watersheds. There are 27 distinct Bull trout subpopulations identified in the sub-basin drainage with 7 impacted by the fire. Over 162 miles of perennial fish bearing riparian zone have been burned over at the moderate to severe burn intensity. The above RHCA mitigation measures have a high probability of being implemented as intended and a moderately high effectiveness level in avoiding further direct degradation of Bull trout or Cutthroat trout waters. Short-term effects (1-3 years) are expected on some streams in some of the affected watersheds as recovery project implementation progresses. However, the long-term net end results of improved connectivity, lowered sedimentation risks, increased woody debris cover, more diverse substrate composition, and elevated water yield would benefit the viability of each species.

Monitoring

Type Of Monitoring: IMPLEMENTATION

What Is Being Monitored? Eight INFISH mitigation measures listed above for application and compliance as planned and designed.

Why Monitor? To assure prescribed RHCA buffers are properly implemented and that no fuel treatment activity takes place within the protection “buffer” zones. To meet management obligations for managing listed or candidate species under the Endangered Species Act and to ensure objectives and goals in the Forest Plan are carried forth for management area 3b-(c)-1,2,34,5,6,8. To assure that the measures comply with stated INFISH standards.

Methodologies: Through visual field observations by a biologist, trained technician (s), or the contract administrator (COR/TSO) sometime before or during implementation of a specific recovery project. This would be followed by an interdisciplinary team of resource specialists (IDT) reviewing and evaluating at least 12% of the restorative projects for compliance after completion. Good documentation using general landscape photography, established photo points, inspection checklists, contract inspection forms, review Team field notes, and any project summary reports will be conducted and filed in the project records.

Who’s Responsible For Doing It? Zone or Forest level Fishery Biologist, project layout foresters, project Contracting Officers Representative or Contracting Officer, and/or the Recovery Project Implementation Coordinator. Project wildlife biologist will review results relative to terrestrial wildlife values.

Threshold For Change Or Action: When appropriate INFISH field marking has not been correctly instituted, when a violation of the no action RHCA objective occurs, when the action fails to meet compliance, which then will lead to undesired affects on the Riparian Management Objective (RMO) habitat elements.

Actions To Be Taken If Needed: The Pre-activity period may need to have marking corrections made in the field or contractual language adjusted to ensure the project does meet required objectives and standards. The Post-activity period needs clear and concise evaluations on compliance and documented reasons for violations or unsuccessful applications, so other activity sites with similar measures would be amended to correct the problems. Field reviews by the specialist ID-Team would provide feedback information on ineffective practices or techniques to instill rapid change or correction in the on-going recovery process.

Fisheries Item 2

To minimize sediment delivery into stream channels through the application of Montana State and Bitterroot National Forest best management practices (BMPs) during implementation of the proposed watershed improvement projects. Application of the appropriate BMP measures and adherence to in-stream work periods during culvert replacement and removal actions shall assure temporary and low impacts on listed and sensitive fish species.

Mitigation

During culvert removals and replacements, all of the applicable Bitterroot National Forest Best Management Practices (BMPs) will be used to minimize sediment delivery to streams. A copy of the BMPs is located in the Project File. Where roads are encroaching on the stream or floodplain at crossings, the road fill will be removed from the stream and floodplain and placed on hillslopes, in valley bottom non-wetland sites, or spread on road surfaces. Stream crossings will be re-contoured to a stable slope angle, an adequate floodplain formed, and stream banks restored to fit up and downstream channel geometry. Placement of large rock or log weirs and large woody debris will be used to dissipate stream energy on steep gradients.	B, C, D, E, F, G
All work in live streams will occur between May 15th and September 1st to avoid the period of bull trout spawning, egg incubation, and early rearing. Filter cloth will be used across the stream below the culvert to trap sediments created during culvert removal, and the trapped sediment will be disposed of outside of the floodplain or wetland areas.	B, C, D, E, F, G

Objective: Under the existing Forest Plan and a large-scale burn area recovery effort, mandated Montana State BMPs along with those adopted by the Bitterroot Forest become operating guidelines for controlling non-point pollution sources into surface waters. The law states that no person may violate the following specified water quality standards for classified B-1 waters.

1) A single degree (F) increase above naturally occurring water temperature is allowed within the range of 32 to 66 degrees (F).

2) Maximum allowable increase above naturally occurring turbidity is five nephelometric turbidity units except where individually permitted.

3) No increases are allowed above naturally occurring sediment concentrations … where conditions are likely to be a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety welfare, livestock, wild animals, birds, fish, or wildlife.

These BMP measures are the foundation of water quality standards for the State. Documentation in (ARM 16.20.603) means "land and management activities must not generate pollutants in excess of those that are naturally occurring, regardless of the stream's classification." Naturally occurring is defined as; water quality conditions resulting from surface runoff or subsurface percolation over which man has no control or from managed developed lands where all "reasonable" soil and water conservation practices (BMPs) have been applied.

In the State of Montana all National Forest lands are classified as B-1 lands with associated beneficial uses being drinking water, culinary and food processing after conventional treatment, recreational swimming or bathing, salmonid fish propagation and growth, waterfowl habitat, furbearer habitat, agricultural irrigation, and industrial operations. Application and use of the appropriate BMP measures associated with soil and water directly interact with the aquatic/riparian ecosystems. Avoidance and prevention of more harmful effects, above which is naturally occurring and exceeds the capacity of the aquatic ecosystem to effectively absorb without major alteration is the goal and objective of this mitigation. Monitoring would be used to gage proper application, net results, and successful compliance.

Effectiveness: Use of these BMP measures outside of the RHCA zones and during implementation of either the commercial harvest activity or the watershed improvement actions has a high probability of being successful and would in effect reduce or minimize upland and road generated surface sediment input into the local drainage network. Minimizing management produced short-term sediment, such as that produced during the replacement of an in-stream road culvert to improve fish passage and flood stage capacity, can lead to long-term watershed benefits for aquatic species and their ecosystems over time. Avoidance of the more chronic sediment producing problem areas, like high landslide prone land types, would lead to the prevention of more serious large scale and long lasting "adverse" stream impacts. These BMP mitigation measures go beyond just protecting the valley bottom, but rather views the whole terrain as a connected watershed entity.

Monitoring

Type Of Monitoring: IMPLEMENTATION

What Is Being Monitored? Best Management Practices applied to management activities causing new disturbance to existing soil and water conditions in the watershed, above and beyond the wild land fire effects. Monitoring shall look at

the BMP mitigation measures listed above for correct application, proper function, and completion as designed and planned.

Why Monitor? To assure prescribed BMP measures are enforced and properly implemented during commercial harvest, fuel reduction, and watershed improvement activities. To meet management obligations for managing listed or candidate species under the Endangered Species Act and to ensure objectives and goals in the Forest Plan are carried forth for management area 3b-(c)-1,2,34,5,6,8. To assure that State water quality standards are being met.

Methodologies: Through visual field observations by a biologist, trained technician (s), or the contract administrator (COR/TSO) sometime before or during implementation of a specific recovery project. This would be followed by an interdisciplinary team of three resource specialists (IDT) reviewing and evaluating at least 12% of the restorative projects for compliance. Documentation using general landscape photography, established photo points, inspection checklists, contract inspection forms, review Team field notes, and inspection summary reports. State DEQ officials on an alternating every other year basis where commercial timber harvest has been completed may conduct independent field inspection audits.

Who's Responsible For Doing It? Zone or Forest level Fishery Biologist, project layout foresters, project Contracting Officers Representative or Contracting Officer, and the Recovery Project Implementation Coordinator.

Threshold For Change Or Action: When appropriate BMP standards have not been properly instituted or when the functionally of the measure, practice, or technique has become ineffective during or following implementation.

Actions To Be Taken If Needed: Pre-activity period may need to have marking adjustments made in the field or contractual language corrected to ensure the project does meet required minimum standards and objectives. Post-activity period needs clear and concise evaluations on compliance and documented reasons for violations or unsuccessful applications, so other activity sites with similar ground conditions would be changed to correct problems. Field reviews would provide feedback information on ineffective practices or techniques to instill rapid correction.

Fisheries Item 3

Mitigation Measures Required Or Implied Through The Endangered Species Act, Consultation-Section-7 Requirements, Which Involve Biological Assessments And Regulatory Approved Biological Opinions And/Or Compliance Letters For Listed Individual Fish Species Dealing With The Effects Of The Proposed "Project" Action.

Mitigation

The mitigation measures in the bull trout programmatic BA will be followed for all prescribed fires (USDI, Fish and Wildlife Service. 2001b, April).	B, D, E, F, G
Drafting water from streams will follow the mitigation measures described in the Bull Trout Programmatic BA for road maintenance and prescribed fire.	B, C, D, E, F, G

Objective: Under the existing Endangered Species Act all federally managed lands are required to manage for the protection and recovery of listed, proposed, or candidate species and their designated critical habitats. The Forest Plan has a goal (IIb-7), which states that management shall provide habitat in support of viable populations of native and non-native, yet desirable fish and wildlife species. Management shall also maintain habitat for the possible recovery of threatened or endangered species. This mitigation measure meets the intent of the ESA law and the Forest Plan Goal for fish and wildlife species.

Effectiveness: Use of the programmatic Biological Assessment (BA) mitigation measures during implementation of any ground disturbing action will have a high probability of being successful and would in effect reduce or minimize detrimental effects of prescribed fire and road management on a listed species population or its habitat. Through the Section-7, Consultation review process, common biological effects on Bull trout which may constitute a "take" action through the application of controlled burning and road management practices are identified and evaluated in relation to the local watershed environmental base line. Programmatic mitigations were then developed in concert with the USFWS to minimize or reduce expected effects from the actions on existing habitat conditions. The measures are designed to control and lower overall effects down to an acceptable level, which would not constitute harm and therefore jeopardize recovery of the individual species.

Monitoring

Type Of Monitoring: IMPLEMENTATION

What Is Being Monitored? Mitigation measures applicable to common practices or techniques, which have been pre-approved by the Regulatory Agency, based upon an independent biological assessment of the environmental base line

covering the watershed, and would be acceptable for use during implementation in minimizing direct, indirect, and possibly cumulative effects on the species population or its existing habitat condition. These designed measures would help prevent a “Take “ situation and not jeopardize the species with further adverse degradation. Monitoring shall look at the individual measures stated within either the Biological Opinion, under terms and conditions, or the Letter of Concurrence, referencing Chapter V-Effects in the BA document. Then assess project implementation for proper application and correctness as designed and planned.

Why Monitor? To assure the BA measures are implemented and correctly applied as designed and planned. To meet management obligations for managing listed or candidate species under the Endangered Species Act and to ensure objectives and goals in the Forest Plan are carried forth for management area 3b-(c)-1,2,34,5,6,8.

Methodologies: Through filed visual observations by a fish biologist or trained technician (s) during or after implementation of a specific recovery project. This would be followed by an interdisciplinary team of three resource specialists (IDT) reviewing and evaluating at least 12% of the restorative projects for BA /BO and BMP compliance. Documentation using general landscape photography, established photo points, inspection checklists, contract inspection forms, review Team field notes, or the inspection summary reports.

Who’s Responsible For Doing It? A zone or Forest level Fishery Biologist or a trained biological technician assigned to monitoring projects and supervised by the professional biologist.

Threshold For Change Or Action: When appropriate BA measures are not properly instituted or when there functionally has become ineffective during or following application.

Actions To Be Taken If Needed: Pre-activity period may need to have ground marking adjustments made in the field or contractual language corrected to ensure the project does meet the intent of the approved measure. Post-activity period needs to be evaluated on compliance and documented reasons for violations or unsuccessful applications, so other activity sites with similar ground conditions could be changed to any correct problems. Field reviews would provide feedback information on ineffective practices or techniques to instill rapid correction.

Sensitive Plants and Noxious Weeds

Sensitive Plants

Mitigation

Logging operations will be completed on ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by helicopter in unit 217 to avoid impacting Lemhi penstemon plants and habitat.	B, D
Logging operations will be completed on ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by helicopter in units 218 and 295 to avoid impacting Lemhi penstemon plants and habitat.	B, F
Slash piling will avoid Lemhi penstemon plants in unit 295 (see pile size mitigation above).	B, D, E, F
Where piles are burned, limit pile size so the area burned is no more than 20' in diameter and 100 feet in length to minimize the potential for creating habitat for noxious weeds, and to protect the organic soil layer and plant roots.	B, D, E, F
Piling for fuel reduction with a walking excavator will not be allowed where sensitive plants are located unless the ground is frozen to a depth of 4 inches or over 24 inches of settled snow.	B, D, E
All temporary road, tracked line machine (TLM), and landing sites will be reevaluated by a botanist for survey needs prior to implementation to ensure sensitive plant populations or habitat are not adversely impacted.	B, D, F, E

Objective: To protect Lemhi penstemon plants and habitat using low ground-disturbance methods. To protect the viability of Lemhi penstemon (*Penstemon lemhiensis)*, a regionally endemic sensitive plant species, threatened by spotted knapweed competition.

Effectiveness: Past harvest operations under the above conditions have shown that impacts to vegetation is minimal to non-existent as long as conditions for winter harvest outlined above are met.

Monitoring: Monitoring of the above mitigation measures would occur before, during, and after timber harvest operations to determine the effectiveness of mitigation on Lemhi penstemon plants and habitat. If it is determined that mitigation measures are not effectively protecting species' viability then logging operations would be shut down. Conditions warranting a shut down could include thawing of ground to less than four inches deep or lack of snow cover sufficient to settle at a 24-inch depth. Other undesirable conditions might include an unacceptable level of soil disturbance from either winter or helicopter harvest, direct impacts on Lemhi penstemon plants resulting in potential mortality, or the introduction of noxious weed seed during harvest activities.

Possible actions to continue logging operations should a shut down occur would: include waiting for improved snow or frozen ground conditions to prevent soil disturbance and impacts on vegetation; continuing harvest with helicopter if winter conditions are not satisfactory; changing to a non-commercial harvest; and cleaning equipment more thoroughly to avoid weed seed contamination.

Provisions will be included in the Contract. The Contract Administrator will make visits during operations to determine if conditions on site meet the mitigation measure. A botanist should accompany the contract administrator periodically to determine if mitigation measures are being implemented as intended and that mitigations are effective.

Mitigation

Skyline cable corridors should be located to avoid sensitive plants in units 73 (Rocky Mountain paintbrush), 207 (dwarf onion), 706 and 707 (hollyleaf clover).	B, D, F
Skyline cable corridors should be located to avoid hollyleaf and woolly-head clover plants in unit 61.	B, D
Skyline cable corridors should be located to avoid Rocky Mountain paintbrush plants in unit 69.	F
Skid trails will avoid dwarf onion populations in portions of unit 207 where tractor harvest occurs.	D
Slash piling will avoid dwarf onion plants in units 207, and 358 (see pile size mitigation above).	B, D, E
Slash piling will avoid dwarf onion plants in units 353, 354, and 357 (see pile size mitigation above).	B, D, E, F
Slash piling will avoid dwarf onion plants in unit 369 (see pile size mitigation above).	D, F
Slash piling will avoid hollyleaf clover plants in unit 56 (see pile size mitigation above).	B, D, E, F
Slash piling will avoid hollyleaf clover plants in unit 703 (see pile size mitigation above).	B, D, F
Slash piling will avoid woolly-head clover plants in unit 58 (see pile size mitigation above).	B, D, F
Slash piling will avoid Rocky Mountain paintbrush plants in unit 73 (see pile size mitigation above).	B, F
Where piles are burned, limit pile size so the area burned is no more than 20’ in diameter and 100 feet in length to minimize the potential for creating habitat for noxious weeds, and to protect the organic soil layer and plant roots.	B, D, E, F
Piling for fuel reduction with a walking excavator will not be allowed where sensitive plants are located unless the ground is frozen to a depth of 4 inches or over 24 inches of settled snow.	B, D, E
All temporary road, tracked line machine (TLM), and landing sites will be reevaluated by a botanist for survey needs prior to implementation to ensure sensitive plant populations or habitat are not adversely impacted.	B, D, F, E

Objective: Protect Rocky Mountain paintbrush, dwarf onion, hollyleaf clover, and woolly head clover plants. To avoid direct impacts to the above listed sensitive plants.

Effectiveness: These mitigation measures have not been used adequately to be definitive on their effectiveness. However, it would appear that the avoidance of these plant species during ground-disturbing activities would protect the plants. As determined in the effects analysis (Chapter 3), there may be impacts to these species’ habitat as a result of noxious weed encroachment into sensitive plant habitat due to ground-disturbing activities. Proper and expeditious revegetation of disturbed areas should reduce this risk.

Monitoring: To ensure proper application of the above mitigations, a botanist would need to be onsite during identification of cable corridor, skid trail, and slash pile locations to identify sensitive plants. This would need to occur when the plants are visible above ground: spring or early summer for dwarf onion and woolly-head clover; late spring to mid-summer for hollyleaf clover and Rocky Mountain paintbrush; summer thru fall for Lemhi penstemon.

If layout of skid trails, cable corridors, or slash piles cannot be accomplished without avoiding Lemhi penstemon plants, then an alternative harvest method will be selected; unit boundaries will be altered to avoid plants; or activities will be shut down. Alternative methods that would be acceptable include harvesting over 4 inches of frozen ground or 24 inches of settled snow; or helicopter harvest.

Provisions will be included in the Contract. The Contract Administrator will make visits during operations to determine if conditions on site meet the mitigation measure. A botanist should accompany the contract administrator periodically to determine if mitigation measures are being implemented as intended and that mitigations are effective.

Mitigation

Logging operations will be completed on ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by helicopter in units 17,26,29,60,182,183, 188,189,329 330, 398, and 614 to protect candystick habitat.	B, D
Logging operations will be completed on ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by helicopter in units 322,331,332,403,404,405,406, and 411 to protect candystick habitat.	B, D, F
Logging operations will be completed on ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by helicopter in unit 16 to protect candystick habitat.	D, F
Logging operations will be completed on ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by helicopter in unit 407 to protect candystick habitat.	F
Logging operations will be completed on ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by helicopter in unit 179 to protect candystick habitat.	D
Green tree harvest will avoid candystick plants in units 21, 274, and 722.	B
Green tree harvest will avoid candystick plants in units 185, 187, 188, 329, 331, 274, and 722.	D
Machine piling will only occur over ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by hand, in units 173, 179, 180, and 722 to protect candystick habitat.	B, D
Ground-based harvest will occur only on ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by helicopter in units 21, 25, and 178, 187, 188, 274, and 722 to protect candystick habitat.	D
Ground-based harvest will occur only on ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by helicopter in units 187, 188, 274, and 722 to protect candystick habitat.	B
Ground-based harvest will occur only on ground frozen to a depth of 4 inches, over 24 inches of settled snow, or by helicopter in unit 722 to protect candystick habitat.	F
Slash piling will avoid candystick plants in units 173, 179, 180, and 722.	B, D, F
Where piles are burned, limit pile size so the area burned is no more than 20’ in diameter and 100 feet in length to minimize the potential for creating habitat for noxious weeds, and to protect the organic soil layer and plant roots.	B, D, E, F
Piling for fuel reduction with a walking excavator will not be allowed where sensitive plants are located unless the ground is frozen to a depth of 4 inches or over 24 inches of settled snow.	B, D, E
All temporary road, tracked line machine (TLM), and landing sites will be reevaluated by a botanist for survey needs prior to implementation to ensure sensitive plant populations or habitat are not adversely impacted.	B, D, F, E

Objective: To avoid impacts to candystick plants and habitat.

Effectiveness: Monitoring of the White Stallion and Buck Little Boulder Timber Sales have shown that mitigation measures, such as leaving green trees, winter harvest, and avoiding candystick plants in slash piles can prevent adverse impacts to candystick populations (USDA Forest Service 2000e). The protection of candystick habitat, as well as plants, is indicated by the appearance of new candystick plants sprouting in different locations from previously identified locations in the above monitoring.

Monitoring: To ensure proper application of the above mitigations, a botanist would need to be onsite during layout of green tree harvest and slash pile locations to identify candystick plants. This should occur when the plants are visible above ground: mid-summer to early fall; although old candystick stalks can be visible any time snow doesn’t cover the ground.

Provisions will be included in the Contract. The Contract Administrator will make visits during operations to determine if conditions on site meet the mitigation measure. A botanist should accompany the contract administrator periodically to determine if mitigation measures are being implemented as intended and that mitigations are effective.

Noxious Weeds

Mitigation

Leafy spurge populations present in the southern end of unit 77 will be avoided in all ground-disturbing activities.	B, C, D, E, F, G

Objective: To avoid further spreading leafy spurge on the Bitterroot National Forest or surrounding lands.

Effectiveness: Avoidance of noxious weed populations can be effective, however, there is always a risk of leafy spurge seed being present somewhere in the vicinity of the existing population, or of any activities nearby causing the ground disturbance preferred by leafy spurge seed. It is more likely that other more common weeds would be spread into disturbed areas.

Monitoring: To ensure proper implementation of the above mitigation, a botanist or weed specialist would need to be onsite during layout of landings, temporary roads, and skid trails for winter harvest in Unit 77 to identify leafy spurge plants or ensure leafy spurge isn't present in these areas of disturbance. This should occur when the plants are visible above ground: late spring to mid-summer. It would also be prudent to have anyone working in this unit be familiar with identification of leafy spurge. Monitoring should be done prior to harvest by a botanists or weed specialist to determine existing locations of leafy spurge and for several years after harvest to determine if leafy spurge has spread from the existing location to areas involved in harvest activities.

If leafy spurge plants cannot be avoided during layout of landings, temporary roads, or skid trails, then unit boundaries should be adjusted to exclude these areas completely. If leafy spurge is found in harvested areas after completion of activities, weeds should be treated with the most effective method following an environmental assessment.

Provisions will be included in the Contract. The Contract Administrator will make visits during operations to determine if conditions on site meet the mitigation measure. A botanist or weed specialist should accompany the contract administrator periodically to determine if mitigation measures are being implemented as intended and that mitigations are effective.

Mitigation

Requirements and recommendations for noxious weed management when conducting ground-disturbing activities, as outlined in Forest Service Manual 2000, Zero Code 2080 – Noxious Weed Management; R1 Supplement 2000-2001-1, will be used as a guideline for harvest, post-harvest, road decommissioning, watershed improvement, and temporary road construction activities.	B, C, D, E, F, G

Objective: To avoid spreading noxious weeds into areas that were weed-free or mostly weed free prior to implementation of ground-disturbing activities.

Effectiveness: Cleaning equipment prior to entering project areas can be effective in reducing the introduction of weed seed into relatively weed free areas. Revegetation of severely disturbed sites as soon as possible after disturbance can also be effective as germinating grass seed can compete with weed seed. These requirements and recommendations can only assist in reducing the risk of weed seed entering these mostly weed-free areas. Without implementing such measures there will be a much greater risk of weed seed entering the area on equipment coming from weed infested sites.

Monitoring: Temporary roads, tracked line machine locations, and harvest units would be monitored prior to and after implementation by a botanist or weed specialist to determine the extent of existing weed populations and the incidence of weed introduction or increase. If it is found that the mitigation measures are not effective in preventing the transfer of weed seed than an evaluation of weed spread and possible treatments should be completed.

Provisions will be included in the Contract. The Project Administrator will make visits during operations to determine if conditions on site meet the mitigation measure. A botanist or weed specialist should accompany the sale administrator periodically to determine if mitigation measures are being implemented as intended and that mitigations are effective.

Mitigation

Increase public awareness of weed prevention practices recommended for traveling by foot, stock, OHV, motor vehicle, or bicycle in burned areas. Emphasize methods from FSM 2080 (Noxious Weed Supplement).	B, C, D, E, F, G
During pre-work meetings with contractors, emphasize the prevention of spreading weed seed into weed-free areas and the consequences of introducing weed seed into these areas.	B, C, D, E, F, G

Objective: To avoid spreading noxious weeds into areas that were weed-free or mostly weed free prior to the 2000 fires or prior to implementation of ground-disturbing activities proposed in the FEIS.

Effectiveness: The prevention of noxious weed spread into areas with new ground disturbance is very difficult, particularly on the Bitterroot Forest where spotted knapweed is present on virtually all south or west-facing disturbed sites below 6500 feet. There is also a concern for weed spread into previously weed-free areas that were severely burned in 2000 and no longer have a protective tree canopy to shade out weeds. This mitigation measure can only assist in reducing the risk of weed seed entering these mostly weed-free areas. Without implementing such measures there will be a much greater risk of weed seed entering the area from weed infested sites.

Monitoring: Provisions will be included in the Contract. The Contract Administrator will recommend weed prevention methods contractors and their employees can use to reduce the risk of spreading weeds into weed free areas. A botanist or weed specialist should assist the contract administrator in reviewing weed prevention methods as needed.

Work areas would be monitored prior to and after implementation by a botanist or weed specialist to determine the extent of existing weed populations and the incidence of weed introduction or increase. If it is found that the mitigation measure is not effective in preventing the transfer of weed seed than an evaluation of weed spread and possible treatments should be completed. Other areas with the same mitigation should be assessed for an alternative method of weed prevention.

Wildlife

Note that other wildlife monitoring is incorporated in the CWD and RHCA monitoring items.

Mitigation

Snags will be left in all treated units as defined in Chapter 1 each VRU	B, D, E, F, G
Stand level prescriptions as approved by a certified silviculturist and wildlife biologist will address distribution, shape species, size, placement, and older snags as described below.	B, D, E, F, G
Distribution – Retain snags in groups distributed across a treatment area. Groups should be a minimum of 5 trees and generally will not exceed 2 acres in size. Smaller groups of trees are more appropriate in conventional logging systems and where visual quality objectives of partial retention or retention occur. Larger groups are appropriate in helicopter yarding systems. If an area larger than five acres without snags would result from grouping, then snags shall be retained as prescribed (without grouping), to at least the minimum numbers and sizes throughout that area.	B, D, E, F, G
Shape – Groups of snags should vary in size (see above), shape (circle, oblong, etc.), orientation (vertical – parallel to slope or horizontal - across slope), and snag stocking.	B, D, E, F, G
Species – The desired species of snags in order of preference is: western larch (Blodgett area only), ponderosa pine, Douglas fir, lodgepole pine, and Engelmann spruce. It is less desirable to retain subalpine fir or whitebark pine, however they may be left in groups.	B, D, E, F, G
Size of Individuals – The size in terms of diameter at breast height should reflect the size classes present in the stand, favoring larger diameter (15”+) snags where available.	B, D, E, F, G
Placement – Snag groups are preferred to be located in areas of blind leads, adjacent to RHCAs, or adjacent to untreated areas (wallows, seeps, islands of wet areas, patches of green/live trees, etc.) Snag groups should not be maximized to make up for the entire stand. In other words, one-10 acre group will not suffice for 100-acre unit.	B, D, E, F, G
Older snags - Older snags (snags which existed as snags prior to the fires) and broken top trees will be protected to the extent practicable. Groups of new snags should be focused in the area around older snags where the opportunity exists. OSHA standards for providing safety from falling snags shall be adhered to. Where conflicts between logging systems, safety, and the need to retain snags exist, a wildlife biologist will be consulted.	B, D, E, F, G
In treatment areas within lynx habitats leave snags in groups throughout unit. Concentrate snag leave groups in areas with downed coarse woody material, where available.	B, D, F, G

Objective: To provide habitat component needs for snag and cavity dependent wildlife species.

Effectiveness: Leaving trees as snags as outlined in Chapter 1 and 2 will be highly effective for meeting minimum habitat needs for snag and cavity dependent wildlife species. The proposed number of leave trees for snags is within ranges mentioned in Trees and Logs Important to Wildlife in the Interior Columbia River Basin (Bull et al 1997). Effectiveness increases with increasing number of snags left, effectiveness also increases when snags are left as groups with substantial numbers of larger trees. Effectiveness will be high at highest range and drop to moderate if left at minimum numbers or if large trees are removed.

Snag retention has a high probability of being implemented (e.g. contract provisions, administration of contract provision, compliance monitoring), and a high effectiveness of avoiding and reducing adverse affects on wildlife by retention of critical habitat components for snag and cavity dependent wildlife species.

Monitoring

Type Of Monitoring: IMPLEMENTATION

What Is Being Monitored: Pre-treatment snag designation and post treatment snag numbers

Why Monitored: To assure prescribed snag numbers are maintained and standards are met.

Methodologies: Project preparation crews will note numbers left and where on layout worksheets and assure proper provisions are included in contracts, contract administrators will monitor during ground activities, biologist will conduct post treatment evaluation by sampling 10% of all treated units by walking units and comparing trees and size classes left to pre-harvest snag numbers and size classes.

Who's Responsible For Doing It: Prep. Forester, Contract Administrator, Wildlife Biologist

Threshold For Change Or Action: If snag retention does not meet prescribed standards

Actions To Be Taken In If Needed: Prior to ground activities – adjust marking or contractual language to assure meeting minimum requirements. Post activity – evaluate reasons for not meeting desired snag numbers and adjust activities in other treatment areas to assure numbers are maintained.

Mitigation

Install gates to restrict access seasonally on about 2.4 miles of road.	B
Install gates to restrict access seasonally on about 5.4 miles of road.	C, E
Install gates to restrict seasonally on about 4.8 miles of road.	F

Objective: To reduce elk mortality during hunting season due to loss of cover caused by wildfires.

Effectiveness: Road closures have a low to moderate effectiveness in reducing elk mortality due to hunter access on the Bitterroot National Forest.

Monitoring

Type Of Monitoring: IMPLEMENTATION

What Is Being Monitored: Whether closures are implemented.

Why Monitored: To assure habitat effectiveness is being improved for elk.

Methodologies: Crews will install gates and biologist, law enforcement and/or field crews will monitor closure periods and/or violations of closures.

Who's Responsible For Doing It: Wildlife Biologist and law enforcement.

Threshold For Change Or Action: Consistent violations of road closures.

Actions To Be Taken In If Needed: Re-evaluate the situation and location of gate or closure and decide if there is a need for relocation of closure, road obliteration, or other measures to insure closure is maintained.

In treatment units 243,245,246,265,269,270 in Robbins to Sula Peak area and units 361,362,363,365,366, and 718 in the Reimel Creek area and units 372,373,374,375, and 720 in the Mink Creek area winter log only. Operating season shall be from November 1 to March 31.	F

Objective: To reduce potential for displacement of Flammulated owls during operations.

Effectiveness: Operating during the season before these owls arrive on their breeding grounds is expected to be highly effective in eliminating any potential for displacement.

Monitoring

Type Of Monitoring: IMPLEMENTATION

What Is Being Monitored: Whether harvest is being conducted outside the period when owls are present.

Why Monitored: To assure owls are not being displaced by harvest and related activities.

Methodologies: Provisions denoting season of operation will be placed in contract.

Who's Responsible For Doing It: Forester responsible for contract development. Project/contract administrator.

Threshold For Change Or Action: Operation during period owls are on-site.

Actions To Be Taken If Needed: Halt harvest operations.

Safety and Permittees

Safety

Mitigation

Provide signing for any road, trail, or area that will be closed or where access is restricted, as per the contract Traffic Control Plan. All projects will contain a traffic control and safety plan.	B, C, D, E, F, G
Trails and roads affected by logging or roadwork will be closed to travel (including snowmobiles) during operations when they pose a danger to Forest users. Safety plans will address hazards based on specific project activities and public users.	B, D, E, F
On roads designated KO (keep open) in project areas, traffic will not be delayed for more than 30 minutes at a time, unless posted otherwise.	B, D, E, F
Advance notice of road and/or trail closures will be issued/posted using a variety of means to reduce the hazard to Forest users from fuel reduction or watershed improvement work.	B, C, D, E, F, G
Dust abatement will be required on the West Fork Road within ¼ mile of Painted Rock recreation sites when hauling operations are occurring.	B, D, E, F
Dust will be abated when conditions warrant on Forest Service Roads (or roads with Forest Service Easements) near residences.	B, D, E, F
Helicopters will not fly directly over river users and private residences. Warnings will be placed at river access points during periods of logging activity.	B, D, E, F
No log hauling or roadwork will occur on any weekend or holiday throughout the big-game rifle season without Forest Service approval.	B, D, E, F, G
Directional fell trees away from system trails. Skidding will not be allowed on the system trails. If there is a need to skid across a trail, the contract administrator will consult with the Forest trail specialist on the West Fork RD before locating the skid trails on the ground to minimize damage to the system trail.	B, D, E, F
All trails and trailheads will be designated Protect Improvement on contract maps.	B, D, E, F

Objective: Mitigations are designed to reduce potential for unsafe conditions for other forest users.

Effectiveness: These measures have a high likelihood of being implemented as described above. Project design and contract preparation contain numerous checkpoints to assure mitigation measures are incorporated as described.

These measures are commonly used practices that have been effective in reducing safety hazards in the past. Project/activity specific traffic control plans are effective and flexible tools for identifying, regulating, and mitigating site-specific or changing traffic related hazards. Similarly, restrictions on weekend log haul during big game hunting season avoids potential conflicts outright. Both can be enforced contractually and by law enforcement.

The effectiveness of some mitigations vary dependant on the degree the Forest Service has control over the measure. For example, notices can be put in the paper, but it cannot assure everyone reads them. Similarly, roads or trails can be signed but individuals can choose to ignore the warnings.

Both agency law enforcement personnel and contract administrators do have a great deal of flexibility to adjust monitoring and enforcement levels with changing conditions and activity levels. Additionally, close working relations and communication between Forest Service and State and County law enforcement have been effective in anticipating and managing off-Forest traffic related hazards.

Given all of the above, the very best monitoring tends to come from local residents and forest users who typically are quick to contact the Forest when they have safety concerns.

Monitoring

Type Of Monitoring: IMPLEMENTATION

What Is Being Monitored: That measures are incorporated into project design and contracts and that they are implemented on the ground promptly and appropriately.

Why Monitored: To assure activities are carried out safely

Methodologies: Project design and contracts will be checked for appropriate application. Field conditions will be assessed regularly (as often as deemed necessary dependant on the level of project activity and risks involved.

Who's Responsible For Doing It: Project or contract administrator is responsible for assuring contract and field provisions are applied and maintained. Project leader and the Forest Public Affairs Officer will coordinate public notices. Contract administrator and law enforcement will monitor hazards and assess risks.

Threshold For Change Or Action: When real or potential hazards are identified or when operations change or start into a new area.

Actions To Be Taken In If Needed: Operations can be halted anytime safety is a concern. Temporary road or trail closures can be issued if necessary. Additional means to notify public of hazards may be appropriate. State and County officials and law enforcement will need to be informed and involved in off-Forest risk assessment and enforcement. Additional law enforcement or contract administrators would be brought in as needed to monitor and regulate activities as needed.

Permittees

Mitigation

Permit administrators will work to resolve conflicts with authorized outfitters and permittees who are directly impacted by logging operations, fuel reduction operations, or watershed improvement activities.	B, C, D, E, F
The proposed helicopter landing at Piquett Creek is presently used as an outfitter parking area. After completion of logging, slash will be removed from the landing, it will be seeded with the appropriate Forest seed mix, and left in a suitable condition to park vehicles.	B, D
Timber harvest operations in the Piquett Creek and Castle Creek drainages will be prohibited from September 1 to November 30.	B, D
Cutting, skidding, or hauling in the following units will begin after December 1, 2001: 307-311, 313-316, 318-334, 407, and 598-600.	B, D, E, F
Contract activities behind the gate on Maynard Creek Road #728 will be by permit only until December 1, 2001.	B, D, E, F
Established research plots in units 259, 258, 166, and 717 will be protected and not have any fuel treatments within a 200 foot buffer around the research areas.	B, D, E, F, G
Fuel reduction activities will be delayed until after September 1, 2002, to accommodate the completion of land bird monitoring research data collection in the following units: 54, 317, 331, 332, 599, 600, and 718.	F

Objective: Mitigations are designed to reduce conflicts with other forest uses.

Effectiveness: These measures have a high likelihood of being implemented as described above. Project design and contract preparation contain numerous checkpoints to assure mitigation measures are incorporated as described.

These measures are highly likely to reduce potential conflicts. Most are timing restrictions that will avoid project and permittee activities from occurring at the same time and place.

Monitoring

Type Of Monitoring: IMPLEMENTATION

What Is Being Monitored: That the mitigation is applied.

Why Monitored: To reduce conflicts and avoid disrupting other permitted uses.

Methodologies: Project design and contracts will be checked for appropriate application. Potentially affected permits will be monitored for real or potential conflicts

Who's Responsible For Doing It: Project or contract administrator is responsible for assuring contract and field provisions are applied and maintained. Permit administrators will monitor the applicable permits for potential conflicts

Threshold For Change Or Action: Potential conflicts.

Actions To Be Taken In If Needed: Forest Service, permittees, and project contract representatives will work together to remedy conflicts.

Air Quality / Prescribed Fire

Mitigation

Prescribed burns will only be conducted when weather forecasts assure that Federal and State ambient air quality standards will be met.	B, D, E, F, G
Burn prescriptions will specify weather and fuel moisture conditions that minimize smoke production per unit area, and retain sufficient fuels to meet CWD requirements.	B, D, E, F, G
The appropriate mop-up category will be prescribed to ensure that actions are taken to reduce the impacts of residual smoke.	B, D, E, F, G

Objective: To protect air quality and human health while conducting prescribed fire and wildland fire for resource benefits. To minimize or prevent smoke impacts to communities while using fire to accomplish land and resource management objectives.

Effectiveness: Effectiveness is high. Effectiveness ratings are based on past use and resulting compliance with federal, state, county and local air quality rules, regulations, and standards. As a member of the Montana/Idaho State Airshed Group the Bitterroot National Forest is required to apply for and receive an annual burning permit from the Montana Department of Environmental Quality. Specific operational procedures must be conducted to apply for, and maintain, the annual burning permit.

Members of the Montana/Idaho Airshed Group report planned burns to the Smoke Monitoring Unit in Missoula. Burns are reported by "airshed" (geographical areas identified by the Airshed Group with similar topography and weather patterns) and "impact zones" (communities identified by the Airshed Group susceptible to smoke intrusions). The Smoke Monitoring Unit meteorologist/program coordinator evaluates proposed burns, existing air quality, and forecasted weather conditions including atmospheric stability and transport winds. This information, in consultation with the Montana and Idaho air quality regulators, is used to issue daily burn restrictions for members of the Airshed Group. Burn restrictions are issued primarily from spring through fall. Montana DEQ prohibits prescribed burning in the winter (December – February) except for those few burns deemed "essential" and approved by them.

Monitoring

Type Of Monitoring: Implementation and Effectiveness

What Is Being Monitored: The amount, concentration, and dispersion of smoke and particulate matter produced by Proposed Prescribed Burning.

Why Monitored:

- To ensure the protection of air quality resources through the Air Quality Regulatory Framework set by federal, state, and local laws, rules, regulations, policies and management frameworks (plans and directions).
- To protect non-attainment areas, impact zones, and Class I areas (defined in the FEIS) from deterioration of air and visual quality resources.
- To protect human health as the smoke from fire contains a number of pollutants, including tiny particles called "particulate matter" (PM). Exposure to particulate matter can cause significant health problems, especially for people suffering from respiratory illnesses. Fine particles 10 microns and smaller (PM-10 or PM- 2.5) are inhaled into lungs and pose a greater threat to public health and visibility than the larger particles.
- To provide for public and fire fighter safety by providing air and visual quality information for smoke sensitive areas, such as downwind population centers, hospitals, highways, recreational areas, etc.

Methodologies: Air quality samplers provide 24-hour averages of particulate matter at Stevensville and Hamilton. These air quality samples provide a measure of smoke concentrations at a specific geographic point during a period of time, such as 24 hours.

"Test fires" will be implemented to confirm prescription will meet objectives.

In 1988, the U.S. Forest Service became a primary participant in the national visibility-monitoring program titled Interagency Monitoring of Protected Visual Environments (IMPROVE). An IMPROVE monitor is located at Sula Peak Lookout. Land managers, air quality regulators, and industry planners, use data collected at this site to understand and protect the visual air quality resource in Class I areas. Data from this site indicates visibility can be as great as 340 km (211 miles) and as limited as 20 km (12 miles

Who's Responsible For Monitoring: Particulate matter has been monitored in Ravalli County by Montana Department of Environmental Quality, and the Forest Service at Stevensville and West Fork Ranger Stations since 1994. The Department of Environmental Quality also monitors particulate matter in Hamilton.

The Clean Air Act's State Implementation Plan (SIP) requires air quality monitoring. The SIP is a plan prepared by an Air Quality Regulatory Agency, which describes how the state will attain and maintain air quality so as to not violate National Ambient Air Quality Standards.

Managing smoke from prescribed burning in forested areas and monitoring air quality began in 1978, when Federal, State, and local government agencies formed the Montana State Airshed Group (now the Montana/Idaho Airshed Group). The Group operates under the guidelines of a Smoke Management Plan (SMP) and State Implementation Plan (SIP) developed under the direction of the state air regulatory authorities.

Threshold For Change Or Action: Exceeding the National Ambient Air Quality Standards. Land managers must consider using techniques that minimize prescribed fire emissions and the adverse impacts of smoke on public health and the environment.

Violation of the State Implementation Plans (SIP's, the SIP's describe the actions the State will take to achieve and maintain the "national ambient air quality standards".)

Violation of federal, state, local air quality laws, rules, regulation, and policies.

Violation of the Montana/Idaho Airshed Group operating procedures.

Actions To Be Taken If Needed: If needed, local authorities will be contacted to take safety precautions in the event visibility will be compromised on local roadways.

If needed, the Smoke Monitoring Unit will be contacted to take safety precautions in the event air quality standards would be compromised.

If necessary, ignition would be halted and mop-up initiated to minimize further smoke emissions.

Heritage Resources

Mitigation

Heritage specialists will be notified of the selected alternative, the proposal will be reviewed, and additional cultural resource inventory will be conducted prior to implementation, where necessary.	B, C, D, E, F, G
If previously unknown cultural resource sites are encountered during implementation, activities will be halted and the Heritage Program manager will be notified immediately. Modifications will be made to mitigate if deemed necessary.	B, C, D, E, F, G
Culturally sensitive areas in or near harvest activity units will be protected during operations by "area of avoidance" designation on contract maps, by modification of unit boundaries, or by elimination of the unit.	B, C, D, E, F, G
Historical peeled trees (dead or live) will be protected during fuel treatment activities.	B, D, E, F, G

Objective: To protect cultural resources, including archaeological sites, historic structures, cambium-peeled trees, and areas of cultural sensitivity.

Effectiveness: Professional experience has shown that these mitigations, coupled with on-site monitoring by Heritage specialists, are successful in avoiding adverse effects to known cultural resources and minimizing the potential for damage to previously undiscovered sites.

Monitoring: Type of monitoring: On-site monitoring by Heritage specialists during and after implementation.

What Is Being Monitored: Avoidance of adverse effects to cultural resources.

Why Monitored: To ensure that known cultural sites are avoided and that appropriate mitigation and consultation occurs in the event previously unknown sites are discovered during implementation.

Methodologies: Heritage specialists will observe and inspect proposed treatment activities in progress and after completion. Where necessary, screening of soil disturbance, shovel tests or other monitoring procedures will be performed.

Who's Responsible For Doing It: Forest Heritage Program Manager and Heritage staff.

Threshold For Change Or Action: Potential or actual adverse effects to cultural resources result from implementation of treatment activities.

Actions To Be Taken In If Needed: Activities will be halted and consultation with the State Historic Preservation Office and interested Tribes will be reopened as required by Sec. 106 of the National Historic Preservation Act. If necessary, additional mitigation measures will be formulated during that consultation and implemented prior to resumption of activities.

Visuals

Mitigation

Harvest and fuel treatment units in MA-3a and 3c (partial retention) will have at least 20-30% of burned or green trees left in each unit to retain visual texture to the blackened area.	B, D, E, F
Units within MA-3a (partial retention) will remain subordinate to the characteristic landscape and fire patterns as viewed from Skalkaho Road, Sleeping Child Road, Highway 93, and the East Fork Road.	B, D, E, F, G
Landings along the Skalkaho Highway, Highway 93, East Fork Road, West Fork Road, and Sleeping Child Road will be rehabilitated after work is complete.	B, D, E, F
Units 5,59,61,76,154-157,209,216,284,295,316,317,333,334,353,354,356-359,363,364,589,611,706,716,717,726,752 will be logged using winter skyline or helicopter.	B, D, E, F, G
Units within MA-3a will utilize snag groups to break up any straight line that may occur when units are adjacent to private property.	B, D, E, F
Slash will be used in units 316 and 598 to visually break up vertical lines created by cable corridors	B, D, F
The ridgeline along the boundary of Unit 295 will retain more trees in a gradient (NE ¼ SE 1/4., Sec 2).	B, D, E, F
Unit 356 will have a maximum of 30% merchantable tree removal.	B, D, F

Objective: To assure meeting visual quality objectives during and following implementation.

Effectiveness: Winter logging the cable units is highly effective at minimizing visual effects because it retains vegetation in the corridors and minimizes soil exposure. Skyline corridors may become noticeable in the winter as black soot from the burned trees falls on to the corridor leaving a black line until the next snow or when the snow melts off.

Leaving at least 20% of burned or green trees in a unit gives the unit vertical and fine texture.

Snag clumps at boundary lines are moderately effective in breaking up any straight lines that may occur along private boundary lines.

Using slash in association with intermediate harvest is low to moderately effective in breaking up cable corridors. Slash would be placed at irregular intervals within the cable corridor to break up the vertical line. Portions of the cable corridor would still be visible from some locations but the overall result is more natural appearing openings on the landscape.

Monitoring: The visual specialist on the forest will evaluate the effectiveness of this mitigation on meeting partial retention VQO by completing field reviews of at least 16 of the winter skyline units. If it is determined that harvested units do not meet visual quality objectives, additional measures (adaptive mitigation) would be taken such as feathering cable corridors. Feathering the cable corridor is moderately effective in breaking up the straight vertical lines caused by the cable corridors. Combined with winter skyline logging, this is a highly effective method of breaking up straight lines.

Photo points will be established to monitor implementation results based on different logging system (heli, skyline, tractor), with various harvest methods used (intermediate, salvage, salvage/regeneration) in different burn severities (high, moderate, low).

Mitigation

Harvest and fuel treatment units in MA-3a and 3c (partial retention) will have at least 20-30% of burned or green trees left in each unit to retain visual texture to the blackened area.	B, D, E, F
Units 223 and 224 within MA-3c (retention) will be designed so there are no readily apparent human made alterations to the landscape when seen from the West Fork Road.	B, D, E, F

Objective: To assure meeting visual quality objectives following implementation.

Effectiveness: The treatment planned for units 223 and 224 is an intermediate harvest that removes 40-60% of merchantable trees using helicopter logging. The harvest prescription leaves 60 to 40% of existing large trees (10 inches DBH and greater) in the unit. Coupled with the fact that these units have been designed so that there would be no temporary roads built, no slash piles in the units and no helicopter landings within the units, this is a highly effective method of meeting retention.

Leaving at least 20% of burned or green trees in a unit gives the unit vertical and fine texture.

Monitoring: The visual specialist on the forest will evaluate the effectiveness of this mitigation measure on meeting retention VQO by completing a field review of the two units that are within MA-3c.

Photo points will be established to monitor implementation results based on different logging system (heli, skyline, tractor), with various harvest methods used (intermediate, salvage, salvage/regeneration) in different burn severities (high, moderate, low).

Mitigation

For any vegetative treatment near a trail, stumps within two chain lengths (132 feet) of the trail will be back cut or flush cut.	B, D, E, F
Slash piles will be located at least one chain (66 feet) off the trails.	B, D, E, F

Objective: To reduce visual impacts along system trails during implementation.

Effectiveness: Flush cutting or back cutting stumps within two chain lengths (132 feet) effectively minimizes the light coloration of the cut face of the stump. This helps in blending the cut stump into the landscape. Locating slash piles at least 66 feet away from the trail helps reduce the impact of fuel treatment along system trails. Slash piles will be burned within 1 to 2 years when conditions are met for burning.

Monitoring: The visual specialist on the forest in conjunction with a trail specialist will evaluate the effectiveness of these mitigation measures on reducing visual impacts to trails. At least five trails will be reviewed after implementation. Contract administration will assure that these mitigation measures are implemented.

Reforestation

All stands proposed for regeneration harvest and/or reforestation will be reviewed by a certified silviculturist.	B, C, D, E, F, G
In salvage regeneration units, where natural regeneration is prescribed and monitoring reveals that adequate stocking is not assured within 5 years of harvest, seedlings will be planted.	B, D, E, F
Artificial regeneration will be from seed sources locally adapted to the site and will be planted in protected areas with appropriate shade. The microsite requirements of each unit will be selected based on the specific site requirements. Coarse woody debris will be used to assure shade for adequate planting spots. Planting spots will be selected that are free of competing vegetation or the planter will clear away vegetation in the planting operation to increase available water.	B, C, D, E, F, G
Flexible netting, rigid tubes, and commercially available repellants will be used to protect seedlings in areas expected to receive heavy browse damage or if damage occurs.	B, C, D, E, F, G
The following units may have inclusions of habitat types that require special mitigation to insure successful regeneration: 5, 33, 38, 57, 60, 64, 65, 72, 73, 78, 99, 109, 121, 133, 142, 145, 147, 160, 161, 178, 201, 207, 209, 214, 218, 219, 221, 238, 242, 244, 245, 246, 249, 250, 254, 255, 256, 257, 258, 261, 262, 265, 269, 270, 274, 277, 278, 284, 295, 296, 297, 319, 333, 341, 346, 350, 354, 355, 356, 357, 358, 360, 364, 369, 381, 382, 383, 387, 404, 591, 610, 611, 702, 704, 705, 717, 721, 729, 732, 738, 744, 746, 752. The mitigation may include: dropping or modifying portions of units, further evaluating the need for planting, retaining more snags or coarse woody debris for shade, specifying the appropriate stocking requirements, or specifying the appropriate stock type.	B, D, E, F
Units that occur within existing grazing allotments will be protected from grazing damage to natural and/or artificial regeneration. A list of these units and the allotments that they occur in can be found in the project file.	B, C, D, E, F, G

Objectives: To ensure reforestation of areas proposed in the action alternatives.

Effectiveness: Effectiveness is described in the site-specific unit prescription as written and/or approved by a certified silviculturist. Reforestation is a well established agency process and the Bitterroot National Forest has consistently achieved regional standards in the past (Forest Plan Monitoring Reports).

Monitoring

Type Of Monitoring: Implementation And Effectiveness

What Is Being Monitored: Reforestation

Why Monitored: Bitterroot National Forest Plan And The National Forest Management Act Of 1976 requires that regeneration methods provide reasonable assurance of restocking within 5 years after the final harvest.

Methodologies:

- Seed crops in ponderosa pine and Douglas fir will be monitored so seed collection planning can Take advantage of good cone production years.
- Seedling production at the nursery,
- Treatment, handling, and storage of seedlings prior to planting,
- Care and handling during preparation for planting and during planting,
- Contract inspections according to regional standards to assure compliance with contract specifications,
- First and third year plantation survival surveys, according to regional standards, in order to verify that stands are adequately stocked to regional standards, and that new stands are “free to grow” with no other immediate needs.

Who Is Responsible For The Monitoring: Certified Culturists And Certified Silviculturists on the Bitterroot National Forest

Any Critical Threshold Where Further Action Should/Would Be Taken: These are site-specifically identified in the individual unit prescription written and/or approved by a certified silviculturist.

What Actions Would Be Taken If Thresholds Were Surpassed: The unit would be evaluated for the need to plant, re-plant, prescribe additional site preparation, and/or animal damage control measures.

Bark Beetles Activity

Type Of Monitoring: Implementation, effectiveness and validation

What Is Being Monitored: Bark Beetle Populations. All live stands proposed for salvage or intermediate harvest will be monitored on a yearly basis prior to harvesting to determine the amount of mortality from beetles. The amount of mortality could change the type of treatment needed (as described in Chapter 1). Based on past experience on the Bitterroot National Forest, aerial surveys and stand level surveys, particularly in combination, have proven to be quite effective in determining where forest pest populations are and the amount of mortality occurring (FP Monitoring and Evaluation Reports).

Why Monitored: To monitor beetle mortality in units proposed for salvage and/or intermediate harvest. Bitterroot National Forest Plan standard states that silviculture prescriptions will utilize integrated pest management strategies and treatments that reduce long-term losses due to insects and disease.

Who Is Responsible For The Monitoring: Silviculture shop on the Bitterroot and Forest Health Protection in the Regional Office.

Methodologies:

- Aerial detection surveys completed by forest health protection
- Determining stands with high/moderate hazard rating within the burned area and within close Proximity to the burned area
- Surveying those stands with high/moderate rating to identify where populations are active as well as the amount of mortality the stand is experiencing.
- Documentation of the surveys will be completed.

Any Critical Threshold Where Further Action Should/Would Be Taken: See discussions Chapter I and II.

APPLICABLE MONTANA STATE AND BITTERROOT NATIONAL FOREST (BMP'S)

Introduction

Best Management Practices (BMP's) are the primary mechanism to enable the achievement of water quality standards set forth by the Environmental Protection Agency (1987) under the Clean Water Act of 1973. This monitoring appendix shall identify and describe in detail those best management practices, which are applicable and required for use in meeting soil and water quality objectives as set forth in a memorandum of understanding (MOU) between the Forest Service and the State of Montana. Best Management Practices include, but are not limited to structural and non-structural controls, operations, and maintenance procedures. They can be applied before, during, and after pollution-producing activities in order to reduce or eliminate the introduction of pollutants into waterways (Title 40, CFR 130.2).

The Bitterroot National Forest Plan states: "Soil and Water Conservation practices will be a part of the project design and implemented to ensure soil and water resource protection (Forest Plan, page II-25)." Montana State Water Quality Standards require the use of reasonable land, soil, and water conservation practices as the controlling mechanism for non-point pollution. Therefore, the selected monitoring Practices are tiered directly to the EIS Interdisciplinary (NEPA) planning process, as well as, guidelines set forth under an Agency handbook (FSH 2509.22). These individual Practices are those deemed most appropriate for meeting soil and water quality standards under the Burn Area Recovery Project.

The Agency strategy is to control non-point sources through implementation of preventive practices necessary for the protection of specifically identified beneficial water uses. The Montana State Department of Environmental Quality has classified the Bitterroot River Sub-Basin as B-1 waters with the associated beneficial uses being: 1) drinking water, 2) culinary and food processing purposes, 3) after conventional treatment, bathing, swimming, and recreational use, 4) growth and propagation of salmonid fishes and associated aquatic life, 5) waterfowl and furbearers, 6) agricultural and industrial water supplies. The Bitterroot Forest Plan recognizes these beneficial uses in cooperation with the State.

Monitoring Approach

This monitoring approach will employ the Montana State five-point scale BMP audit process, using a Forest interdisciplinary team, made up of a soil scientist, a hydrologist, a fisheries biologist, a Forester, and a Logging System Specialist. This team will be responsible for determining whether the eight "high risk" State BMPs and the listed Forest BMPs are correctly applied and were effective in reducing or preventing non-point pollution from entering Recovery Area streams.

Defining Effectiveness Rating

The following rating procedure is used by the State to evaluate how well BMP's protect soil and water resources. Five numerical rating guides and a brief description of each are listed below:

Rate	Description
1	**Major and Prolonged** impacts on soil and water resources
2	**Major and Temporary** or **Minor and Prolonged** impacts on soil and water resources
3	**Minor and Temporary** impacts on soil and water resources
4	**Adequate** protection of soil and water resources
5	**Improved** protection of soil and water resources over pre-project conditions

Terms used in the rating guides are further defined as:

- **Adequate** - Means small amount of material eroded; the material does not reach a draw, channel, or floodplain.
- **Minor** - Means some material erodes and is delivered into a draw, but not a channel or floodplain.
- **Major** - Means material erodes and is delivered into streams and floodplains.
- **Temporary** - Means impacts lasting one year or less: no more than one runoff cycle.
- **Prolonged** - Means impacts lasting more than one year.
- **Improved** - Means conditions are better than pre-activity conditions.

Therefore, the eight **"higher risk" State Practices** identified below are the only ones to be singled out for specific focus under this monitoring plan; based primarily on their direct potential to affect soil and water quality and after ten years of State wide monitoring audits, they were the BMP's consistently found to depart from acceptable limits.

State BMP

- **III.C.1** – Provide adequate road surface drainage for all roads.
- **III.C.6** – Route road drainage through adequate filtration zones before it enters a stream.
- **III.D.2** – Stabilize erodible soils (i.e., seeding, benching, and mulching).
- **III.E.2** – Maintain erosion control features (dips, ditches, and functional culverts).
- **IV.A.5** – Design and locate skid trails to avoid concentrating surface runoff.
- **IV.B.5** – Adequate drainage for temporary roads, skid trails, fire lines.
- **IV.C.8** – Limit water quality impacts associated with prescribed fire.
- **V.C.4** – Prevent erosion of road culvert and bridge fills (i.e., armor inlets and outlets).

Using just eight State practices to determine the effectiveness of our mitigation measures, does not alone illustrate a very clear and conclusive picture of effectiveness due to the narrow evaluation scope. Therefore, the following Forest Practices covering all mechanical treatment units, subject to surface soil displacement, compaction, or ground disturbance, will also be included in the monitoring evaluation process providing a broader scope in which to capture any inherit variability in application. Selection and design of the BMP's are dictated by local water quality objectives, soils, topography, geology, vegetation, and climate. All sample units will be evaluated against applicable Forest BMP's listed below.

Watershed Management

- **Practice 11.01** -- Determination of Cumulative Watershed Effects.
- **Practice 11.02** -- Watershed Improvement of Roads, OHV Trails and Skid Trails.
- **Practice 11.13** -- Sanitary Guidelines for Construction of Temporary Labor, Spike, logging, and Fire camps, and Similar Installations.

Vegetation Manipulation

- **Practice 13.03** -- Tractor Operation Excluded from Wetlands, Bogs, and Wet Meadows.
- **Practice 13.04** -- Re-vegetation of Surface Disturbed Areas.
- **Practice 13.05** -- Inclusion of INFISH (7/95) Objectives/Standards/Guidelines.

Timber

- **Practice 14.03** -- Use of Sale Area Maps for Designating Soil and Water Protection Needs.
- **Practice 14.04** -- Limiting the Operating Period of Timber Sale Activities.
- **Practice 14.05** -- Protection of Unstable Areas.
- **Practice 14.06** -- Stream Side Management Zone Rules, Riparian Area Designation.
- **Practice 14.08** -- Tractor Skidding Design.
- **Practice 14.10** -- Log Landing Locations and Design.
- **Practice 14.11** -- Log Landing Erosion Prevention and Control.
- **Practice 14.12** -- Erosion Prevention and Control Measures During Timber Sale Operations.
- **Practice 14.14** -- Re-vegetation of Areas Disturbed by Harvest Activities.
- **Practice 14.15** -- Erosion Control on Skid Trails.
- **Practice 14.16** -- Meadow Protection During Timber Harvesting.
- **Practice 14.17** -- Stream course Protection (Implementation and Enforcement).
- **Practice 14.18** -- Erosion Control Structure Maintenance.
- **Practice 14.19** -- Acceptance of Timber Sale Erosion Control Measures Before Sale Closure.
- **Practice 14.20** -- Slash Treatment in Sensitive Areas.
- **Practice 14.22** -- Modification of the Timber Sale Contract.

- **Practice 14.23** -- Reforestation Requirement.
- **Practice 14.24** -- On-site Large Woody Residue and Soil Litter Retention.
- **Practice 14.25** -- Winter Logging.

Roads and Trails

- **Practice 15.03** -- Road and Trail Erosion Control Plan.
- **Practice 15.04** -- Timing of Construction Activities.
- **Practice 15.06** -- Mitigation of Surface Erosion and Stabilization of Slopes.
- **Practice 15.07** -- Control of Permanent Road Drainage.
- **Practice 15.11** -- Servicing and Refueling of Equipment.
- **Practice 15.13** -- Controlling In-Channel Excavation.
- **Practice 15.14** -- Diversion of Flows Around Construction Sites.
- **Practice 15.15** -- Stream crossing on Temporary Roads.
- **Practice 15.16** -- Bridge and Culvert Installation (Disposition of Surplus Material and Protection of Fisheries).
- **Practice 15.18** -- Disposal 0f Right-of-Way and Roadside Debris.
- **Practice 15.21** -- Road Maintenance.
- **Practice 15.22** -- Road Surface Treatment to Prevent Loss of Materials.
- **Practice 15.23** -- Traffic Control During Wet Periods.
- **Practice 15.24** -- Snow Removal Controls.
- **Practice 15.25** -- Obliteration of Temporary Roads.

Fire Suppression and Fuels Management

- **Practice 18.02** -- Formulation of Fire Prescriptions.
- **Practice 18.03** -- Protection of Soils and Water Conditions From Prescribed Fire Effects.

Full Description Of The Selected Forest (2000) BMP's

Classes Of SWCP (BMP)

A = Administrative

G = Ground Disturbance Reduction

E = Erosion Reduction

S = Stream Channel Protection/Stream Sediment Reduction

W = Water Quality Protection

Format Of The BMP's

Each Soil and Water Conservation Practice (SWCP) is described as follows:

Title: Includes the sequential number of the SWCP and a brief title

Objective: Describes the SWCP objective(s) and the desired results for protecting water quality.

Effectiveness: Provides a qualitative assessment of expected effectiveness that the applied measure will have on preventing or reducing impacts on water quality. The SWCP effectiveness rating is based on literature & research, administrative studies, and professional experience. The SWCP is rated High, Moderate, or Low based on the following criteria:

a. Literature/Research (must be applicable to area)
b. Administrative studies (local or within similar ecosystem)
c. Experience (judgment of an expert by education and/or experience)
d. Fact (obvious by reasoned [logical] response)

Implementation: This section identifies: 1) the range of site-specific water quality protection measures to be implemented and 2) how the practices are expected to be applied effectively.

Items Common To All Soil And Water Conservation Practice

Responsibility for Implementation

The District Ranger is responsible for ensuring the factors identified in the following SWCP's are incorporated into the correct Timber Sale Contract provision, that the provisions are included in the Timber Sale Contract, or public works contract through the inclusion of specific contract clauses, and implemented on the ground. Specific Timber Sale Contract clauses are often included in the BMPs for further reference, and the clauses start with a "B" or a "C" followed by number (e.g. B6.4).

Unless otherwise specified, the Presale Forester is responsible for insuring that the factors identified in the following SWCP's are incorporated into the correct Timber Sale Contract B and/or C provision and that the provisions are included in the Timber Sale Contract.

The contracting officer, through his/her official representatives out on the ground (sale administrator (TSO) and/or engineering representative (ER) on timber sale contracts and contracting officers representative (COR) on public works contracts), is responsible for insuring that the clauses are properly administered.

Monitoring

Unless otherwise noted, the SWCP's will be monitored by the TSA as part of BMP Implementation Monitoring of timber sale activities, and by the COR on public works road construction work.

Abbreviations

TSC = Timber Sale Contract

TSA = Timber Sale Administrator

COR = Contract Officers Representative

SAM = Sale Area Map

Practice 11.01 - Determination Of Cumulative Watershed Effects

Class A

Objective: To insure that impacts from individual actions do not cause cumulative effects in the larger area.

Effectiveness: Moderate

Implementation: Watershed conditions and effects analysis may be evaluated using Equivalent Clear Cut Area (ECA) and Road Impact Factor (RIF). ECA is an index of water yield increased by the effects of vegetation manipulation across the landscape at the watershed scale; included are all of the acres previously harvested, developed into roads, and those acres treated by prescribed fire projects. ECA describes the total watershed area existing in a logged and burned "clear cut" status with high road densities. ECA is determined by adding together all of the area acres actually treated, developed into roads, with an equivalent clear cut area conversion for burned areas, partial or selection cut areas, and recovering plantation areas. Water yield increases are a function of the amount of a watershed disturbed by management actions covering roads, fuel treatments, and timber harvest; together with the size, shape, aspect, elevation, precipitation and temperature regimes associated with harvest units, the percent of crown cover removed and/or recovered, and the depth and texture of soil profiles. ECA can be estimated and/or calculated by using harvest acres and the elapsed time since harvest with re-growth or recovery indicated by tree density and tree heights as well as other vegetation. Recent aerial photos are an excellent means of estimating ECA. ECA is further described under Hydrology Part II (1975).

Water yield effects caused by roads located on deep soils, north aspects, wet hill slopes, and in areas with high precipitation requires a site-specific cumulative effects evaluation. Interception of subsurface hill slope water by roads can create surface water, which flows more rapidly than subsurface water. Roadside ditches may actually increase the drainage paths in a watershed. Roads often concentrate water from several drainages moving surface waters into fewer and more concentrated channels. The road surface itself is impervious to rain and snowmelt, making overland flow, which is rapid and often times erodes fine materials before carrying them into streams raising sediment yields. In summary, roads increase water yields and may accentuate peak flow volumes and timing dramatically resulting in elevated sediment yields.

Normally, timber harvest and forest fires produce small sediment pulses resulting in short-term yield increases. Where as, roads can produce 90 percent or more of the annual sediment yield produced by managed watersheds. The Road Impact Factor (RIF) is an index of sediment yield effects. RIF is a measurement of road density that is weighted by proximity to stream channels and is calculated by multiplying road density (miles of road/square mile of watershed) by stream crossing density (number of road stream crossings/square mile of watershed). Road density within a watershed is directly related to the amount of disturbed soils and erosion sources. Thresholds for RIF and ECA on general stream types and geology have been established and are discussed in the Bitterroot Sensitive Watershed Analysis (1991). These thresholds are listed in the table below.

Road Impact Factor

Stream type (general)	Highly Erosive Geologic Types *	Less Erosive Geologic Types	Equivalent Clearcut Area (watershed % harvested)
A	15	25	25
B	12	20	20
C	10	15	15

* Highly weathered granitic and glacial till outwash derived from granites are the highly erosive geologic types, while quartzite, hard granite, and calc-silicates are less erosive.

Streams are separated into general classification characteristics (Rosgen types) with different types being more or less sensitive to increases in water or sediment yield. Type "A" streams are steep, confined, and usually composed of boulders and large cobble substrates where stream banks are very stable. Type "B" streams are less confined, less steep, smaller substrates, banks are moderately stable, and generally are more sensitive to changes in water and sediment yield than type "A" streams. Type "C" streams have a low gradient, are meandering, usually have small to fine substrates, banks can be moderately to highly unstable, and have a much higher sensitivity to increases in water and sediment yields than the other two types.

When the above thresholds of concern for watershed management are equaled or exceeded, the risk of effects to hill slopes and stream channel conditions increases. ECA and RIF analysis should be used in combination with field data, such as soils and stream surveys that identify existing hill slope and stream channel conditions. Healthy watershed conditions have low risk to management indicated by ECA and RIF being within thresholds of concern coupled with healthy landscapes and stream conditions. Moderately sensitive watersheds have either or both ECA and RIF thresholds of concern exceeded and will need field investigation of soil conditions, stream shape, road status, and harvest area recovery condition. Higher risk watersheds have both ECA and RIF thresholds of concern exceeded by two or more times desired conditions, which require field evaluation of soils and streams for watershed cumulative effects supported by management recommendations for reducing these effects; the likelihood being that watershed improvement will be mandated prior to any new management actions.

Water resource effects analyses can also be made with the WATSED model (R1-WATSED, USDA Forest Service, Jan. 1992). This model simulates the cumulative effects of timber harvest, road construction, and fire on sediment and water yield. Stream channel condition with respect to stability, morphology, and fish habitat are determined by the interpretation of water and sediment yield effects estimates. This WATSED model is the combination of two models that have been used in this area for a number of years; the R1/R4 SED model and a water yield prediction model, called Bitterroot Water Yield Analysis Procedure (WYAP). References to all three models will be made in this BMP.

The R1/R4 SED model (Guide for Predicting Sediment Yields From Forested Watersheds, R. Cline et al., 1981, USDA Forest Service and Users Guide to R1/R4 Sed, Hennis et al., USDA Forest Service, 1985) quantifies estimates of sediment for natural watersheds and predicts sediment yield changes in response to management activities such as logging, road construction and fire. These estimates are based on the amount of ground disturbance and the expected erosion for each landtype group in the watershed. The model also estimates how much of the eroded material will be routed to the stream reach in question, based on the amount of ground disturbance, the expected erosion for each landtype group in the watershed, topography and proximity to stream channels.

The R1/R4 SED model was developed for use with the Idaho Batholithic formation. It has been adapted for use on the Bitterroot National Forest by adjusting erosion estimates and sediment delivery characteristics to fit local conditions. It is assumed that new road construction will use BMPs, including seeding and fertilizing cut and fill slopes, and using slash filter windrows along road fills in sediment contributing zones. Additional measures may be included for new road construction, such as placing gravel surfacing and excelsior netting on cut and fill slopes at stream crossings and other sediment contributing areas.

Indirect effects of the proposed action on quantity and timing of water yields are predicted using the Bitterroot WYAP portion of the WATSED model (Herb Garn, 1974) with computerization and amendments by (Bob Hammer, Forest Hydrologist, 1978). On-site water equivalents are estimated, based on elevation, precipitation and habitat types for the natural condition and proposed treatment. The potential elevation in water equivalents is routed to the stream reach in question to address indirect effects on those yields. Changes in timing of water yields and changes in peak flows are estimated, based on site-specific conditions and how the proposed treatments affect shading and melt rates. Cumulative changes in water yields of past, proposed, and reasonably foreseeable actions are estimated.

Both water and sediment yield portions of the WATSED model use a watershed approach and simplify for analysis purposes complex physical systems from a limited database. Although specific quantitative values for sediment and water yields are generated, the results should be treated as broad estimates of how real systems may respond. **Therefore, each model's use is realistically limited to providing a means of comparison between alternatives, rather than used as an absolute measure against verifiable standards.** The results will be compared to thresholds as a means of risk assessment, realizing that this use is limited. When predicted yields approach or exceed a given threshold, it means that the risk of major long-term impact is increased.

Existing closed roads will be modeled at a maximum sediment mitigation of 90 percent when there is no evidence of surface erosion, the road is well-vegetated and drained, not traveled and not maintained. Closed roads and open roads will be field inspected. If there is evidence of erosion in sediment contributing areas or roadway rutting, then sediment mitigation may be as low as zero for such road segments.

Existing open and closed road sediment mitigation will normally be modeled at 40 percent, depending upon field inspection. Existing road sediment mitigation is dependent upon road drainage effectiveness and road cut and fill slope vegetation.

New road construction using Forest Plan standards for grass seeding and fertilization on all road cut and fill slopes and slash filter windrow emplacement at toe of road fill slopes in sediment contributing areas will be modeled at 60 percent sediment mitigation. Effectiveness of slash filter windrows depends upon the use of hydraulic excavators in road pioneering. Measures such as road surfacing in sediment contributing areas and mulching or netting on sensitive slopes can increase the total sediment mitigation modeling factor to a maximum of 80 percent.

Adjustment of road sediment mitigation coefficients used in the R1R4SED model are and will continue to be coordinated with Montana Department of State Lands and neighboring National Forests for assessing cumulative watershed effects. Research support for road sediment mitigation coefficients is documented in a paper by Edward R. Burroughs, Jr. and John G. King of the Intermountain Research Station, titled, "Reduction of Soil Erosion on Forest Roads," July, 1989, Forest Service General Technical Report INT-264.

The sediment prediction model will use the mitigation coefficients discussed above and will be adjusted to reflect local landtypes and geology. Localization of the model results in routed natural sediment yields which range from about 5-tons/square mile/year on quartzitic landtypes to 25-tons/square mile/year on steep grussic, granitic, landtypes. Most of the Forest is less weathered granite, which yield sediment levels near the Forest average of 13.4-tons/square mile/year.

Practice 11.02 - Watershed Improvement Of Roads, OHV Trails, & Skid Trails

Class E

Objective: To reduce compaction and sediment input, restore soil infiltration and hill slope hydrology and reduce stream encroachment from roads and skid trails that are being abandoned.

Effectiveness: High

Implementation: General guidelines for implementing watershed improvement actions that will reduce sediment are described below. Roads selected for these treatments will be determined by an Interdisciplinary Team (IDT), which may include different resource specialists, a transportation planner, a range conservationist (when appropriate) and a representative from the small sales program to ensure that the resource objectives for the area are met. When improvements are implemented, timing requirements to reduce or limit impacts to sensitive fish and wildlife species may be needed. Other wildlife and ecosystem benefits can be accomplished with these treatments.

A. Culvert Removal: Excavators and/or backhoes with thumb to grasp culverts are used to dig out and remove culverts on roads to be abandoned. When roads are encroaching on the stream or floodplain, road fill will be removed from stream and

floodplain and placed on hill slopes or in valley bottom in non-wetland sites. Road stream crossings will be re-contoured to original valley shape, and stream banks will be restored to fit upstream and downstream channel geometry. Restoring bankfull width and a floodplain appropriate for the stream type is crucial. If stream gradient is steep and culvert long, placement of large rock or log weirs and large woody debris will be used to dissipate stream energy to avoid channel erosion. Often, two or three rock and/or log weirs per average culvert are needed. Generally upstream weirs work best on small, steep headwater streams. Place large clumps or plugs of streamside vegetation like willows, alders and dogwood on the stream banks using the excavator when necessary to enhance re-vegetation of bared soil areas along stream. Mulch netting will regularly be used on sizeable and/or steep stream banks, with large woody debris scattered by hand or excavator. Grass seeding will be immediately accomplished on bared soils.

Permits for stream work are needed from Montana Fish, Wildlife, and Parks, Montana Department of Environmental Quality and sometimes the Army Corps of Engineers.

B. Re-contouring: Excavators and/or backhoes will rip road bed to remove compaction to a depth of approximately 18 inches, then re-contour to the original hill slope angle. Re-contouring will normally occur only on selected road reaches, particularly those encroaching on streams along steep slopes, or where culverts are removed on steep hill slopes, or at obliterated road connection with main use road.

C. Road Decompaction: Since roads have had soils removed and compacted, road ripping can only partially and temporarily restore road prism infiltration capability. Pulling some soils with plugs of living plants from fills can help, and adding organic matter is the major key to restoring hydrologic function to road prisms. Areas to be decompacted will be determined based upon case by case evaluation of onsite vegetation and microclimate, hill slope hydrology, slope position, soils, geology, rock content, proximity to streams, existence of springs, and long-term objectives all carefully considered. Often when roadbed vegetation is knee high or higher with shrubs and trees, the ripping may be avoided since root systems are slowly decompacting the sub-soils. If roads are ripped, then the roadbeds may be out sloped and will have adequate drainage provided. Water bars will be installed on ripped roads according to the spacing guide in practice 14.15.

When emergent springs in the road cut are encountered, the value of that created wetland will be evaluated together with the stability of the roadbed. Generally, Bitterroot NF road cuts have intercepted subsurface hill slope flows creating emergent springs on stable hill slopes and stable roadbeds. Roads may be re-contoured to bury the spring if the roadbed is first ripped or otherwise decompacted before being re-contoured, and if the roadbed will not slump. Each spring site should be evaluated on a site-specific basis. Springs are often left undisturbed.

Small to medium dozers or large excavators with teeth will be used to reduce soil compaction of road surface, especially the tire tracks. With dozers, a pass each way will be used, moving the dozer over for a second pass, to assure more surface area "plowed." Dozers will have 3 or 4 ripper teeth normally. Sub-soiling will be used if available for road decompaction. Dozer teeth will be 18 inches or longer, and ripping will as deeply as possible, recognizing that rocky areas will not be ripped. Streamside skid trails and roads will have careful vegetation and soils evaluation in deciding whether ripping next to live water is necessary or whether to leave the road or segments of the road. Sometimes segments of the road encroaching on the stream will be pulled back or re-contoured. Grass seeding will be done on the ripped roads within one season. Ripped roads will be planted to trees when feasible. Woody debris will be scattered on ripped roads to every extent possible. Mulch netting will be applied to steep and/or sensitive areas.

D. Re-vegetation: Grass seed mixtures will follow practice 13.04. Tree planting will follow suitable guidelines for climate, elevation, aspect, soils, and geology of the road reaches involved. When possible, local site plants will be used as in willow plugs mentioned.

E. Monitoring: Infiltration rates of ripped roads, re-vegetation of ripped roads and culvert removal areas, and stream channel condition of culvert removal areas are to be monitored to evaluate effectiveness of watershed improvements. Monitor until soils and streams are stabilized.

Practice 11.13 – Sanitary Guidelines For Construction Of Temporary Labor, Spike, Logging, And Fire Camps And Similar Installations.

Class W

Objective: To eliminate water pollution and other potential environmental and health impacts from the disposal of human waste and wastewater from temporary camps of all kinds within riparian zones.

Effectiveness: Moderate

Implementation: Latrines or pits for camps will be located at least 150 feet down stream from a camp, outside of the RHCA (Riparian Habitat Conservation Area, INFISH), and 4 feet above high ground water. Latrines will be replaced with chemical toilets or similar units as soon as practicable.

Practice 13.03 – Mechanical Ground-Based Machine Operation Excluded From Wetlands, Bogs, And Wet Meadows. Practice 14.16 – Meadow Protection During Timber Harvesting.

Class G and E

Objective: Same riparian objectives as outlined under Practice 13.05 – INFISH, 1995.

All wetlands, bogs, and/or wet meadows will be marked on the ground and mechanical entry excluded as per INFISH standards and guidelines.

Effectiveness: High

Implementation: Dozers, skidders, fell-buncher machines, and track line machines regardless if they are low ground pressure rated, will not be permitted to enter or cross through a wet riparian area under most management activities; except for when performing watershed improvement contracts directly related to the site or under pre-approved site-specific winter operating conditions, where the ground is covered by at least 24 inches of settle snow pack or frozen more than 4 inches deep and located above 5, 000 feet. These sites need to be dominated by grass and sedges and only have an open space landscape. Entry shall be very short-term (i.e., walking a piece of equipment from one unit to another unit located on the opposite hill slope. A one time pass through type event).

Practice 13.04 – Re-Vegetation Of Surface Disturbed Areas

Class E

Objective: To protect soil productivity and water quality by minimizing soil erosion.

Effectiveness: Moderate

Implementation: All roads, landings, and skid trails would be seeded as soon as possible following use. Site-specific actions include treating the disturbed areas with a grass seed mix and fertilizer. Seed mixes and fertilizer specifications are incorporated into TSC provision C6.601 (Erosion Control Seeding). Following are general recommendation for seeding on the Bitterroot National Forest, May 1997:

All seed and mulch material should be certified weed free.

1. The following seed mix should be used on highly disturbed, harsh, dry sites, such as road cuts, where native species are not likely to re-colonize the area and weed and erosion control are a major concern:

Common Name	Scientific Name	lbs/acre
Pryor slender wheatgrass	Elymus trachycaulus	8
Covar sheep fescue	Festuca ovina	4
Critana thickspike wheatgrass	Elymus lanceolatusssp. dasystachyum	8

- Substitute Durar hard fescue if Covar sheep fescue is unavailable.
- Substitute Sodar stream bank wheatgrass if thick spike wheatgrass is unavailable.
- Hydro-mulch these sites and use a low nitrogen slow release fertilizer when possible.

2. For moist areas, where natives are likely to re-colonize the site, use the following:

Common Name	Scientific Name	lbs/acre
Bromar mountain brome	Bromus marginatus	10
Pryor slender wheatgrass	Elymus trachycaulus	8
Canbar Canby's bluegrass	Poa canbyi	2

- If a hydro seeder is used, apply hydro-mulch. Don't use fertilizer near or in riparian areas.

3. For skid trails on dry, low elevation sites (think about adding native seed collection to timber contracts to re-vegetate skid trails):

Common Name	Scientific Name	lbs/acre
Pryor slender wheatgrass	Elymus trachycaulus	8
Junegrass	Koeleria cristata	2
**Sandberg's bluegrass	Poa sandbergii	2

Conifer seedlings at time of reforestation.

** Substitute Canbar Canby's bluegrass if Sandberg's is unavailable.

- Seed in the fall before snow flies to aid in seeding success.
- Plant appropriate species of tree seedlings when unit is reforested, using larger quantities on skid trail.

4. For skid trails on cooler sites (these sites should revegetate on their own; may need some mulch if topsoil is completely gone):

Common Name	Scientific Name	lbs/acre
Bromar mountain brome	Bromus marginatus	10

Conifer seedlings at time of reforestation.

- Seed in fall before snow flies to aid in seeding success.
- Plant appropriate tree seedlings when site is reforested, using larger quantities on skid trails.

5. For emergency fire rehabilitation or other emergency rehabilitation where natives are expected to re-colonize the site:

Common Name	Scientific Name	lbs/acre
Annual ryegrass	Lolium multiflorum	35

6. On dozer fire lines use mountain brome (moist sites) or slender wheatgrass (dry sites), after pulling back as much of the topsoil as possible and installing water bar features. This is one idea; need to evaluate sites individually.

7. Use mix No. 1 for trailheads and campgrounds in areas that are highly disturbed and noxious weeds is an issue. Consult Forest Botanist or Forest Noxious Weed Coordinator if uncertain. For trail reconstruction and wilderness watershed recovery vegetation projects or other special projects consult with the Forest Botanist before proceeding. The native vegetation in these areas should be maintained whenever feasible for biodiversity, esthetic, recreational, and wilderness management reasons.

8. Granite Seed Company; 1697 West 2100 North; Lehi, UT 84043; (801) 768-4422, is the best source for this seed, at this time. Prices are significantly less expensive than buying locally, it is a reputable seed company and they have quantities of some of the harder to get species. Timber sale purchasers/contractors in particular need to be made aware that the seed is available and where they can get it. Granite can provide seed in a couple of days and will hold the mixes we want.

Fertilizer recommended with both seed mixes is 150 lbs/ac of ammonium phosphate-nitrate (27-12-0). If recommended by the soils scientist, TSC provision C6.623 (Temporary Road, Skid Trail/Skid Road and Landing) will be included in the contract to incorporate specific requirements for scarification of skid trails and landings prior to seeding. Specified roads that will be closed to vehicle access and travel will be scarified no deeper than four (4) inches unless the soil is highly compacted with dense, platy structure. It is recommended that the depth of ripping be what provides an acceptable rooting environment for the each site and increases infiltration and gas exchange. A Soil Scientist shall determined site-specific depths. This will be incorporated into TSC provision C6.601 (Erosion Control Seeding).

Practice 13.05 - Protection Of Riparian Habitat Conservation Areas, (INFISH, 7/95)

Class W

Objective: To minimize effects of management activities on fish habitat by maintaining or improving Riparian Habitat Conservation Areas (RHCA's).

Effectiveness: High

Implementation: Riparian Habitat Conservation Areas (RHCAs) would be delineated in every watershed on the Bitterroot National Forest.

Riparian Habitat Conservation Areas are portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines. Riparian Habitat Conservation Areas

include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by (1) influencing the delivery of coarse sediment, organic matter, and woody debris to streams, (2) providing root strength for channel stability, (3) shading the stream, and (4) protecting water quality.

Interim RHCA widths apply where watershed analysis has not been completed. Site-specific widths may be increased where necessary to achieve riparian management goals and objectives, or decreased where interim widths are not needed to attain RMO's or avoid adverse effects. Establishment of RHCA's would require completion of watershed analysis to provide the ecological basis for the change. However, interim RHCA's may be modified by amendment in the absence of watershed analysis where stream reach or site-specific data support the change. In all cases, the rationale supporting RHCA widths and their effects must be documented.

Standard Default Widths Defining Interim RHCA's

The four categories of stream or water body and the standard widths for each are:

Category 1 - **Fish-bearing streams:** Interim RHCA's consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet, including both side of the stream channel), whichever is greatest.

Category 2 - **Permanently flowing non-fish-bearing streams:** Interim RHCA's consist of the steam and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year flood plain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet, including both sides of the stream channel), whichever is greatest.

Category 3 - **Ponds, lakes, reservoirs, and wetlands greater than one acre:** Interim RHCA's consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or to the extent of moderately and highly unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake, whichever is greatest.

Category 4 - **Seasonally flowing or intermittent streams, wetlands less than one acre, landslides, and landslide-prone areas:** This category includes features with high variability in size and site-specific characteristics. At a minimum the interim RHCA's must include:

a. The extent of landslides and landslide-prone areas
b. The intermittent stream channel and the area to the top of the inner gorge
c. The intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation
d. For Priority Watersheds, the area from the edges of the stream channel, wetland, landslide or landslide-prone area to a distance equal to the height of one site-potential tree or 100 feet horizontal slope distance, whichever is greatest
e. For watersheds not identified as Priority Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one-half site potential tree, or 50 feet slope distance, whichever is greatest

In non-forested rangeland ecosystems, the interim RHCA width for permanently flowing streams in categories 1 and 2 is the extent of the 100-year flood plain.

Standards and Guidelines

The standards and guidelines listed below apply to all RHCA's and to projects and activities in areas outside RHCA's that are identified through NEPA analysis as potentially degrading RHCA's. The standards and guidelines listed below amended any existing standards in the 1987 Bitterroot Forest Plan.

Timber Management

TM-1 - Prohibit timber harvest, including fuel woodcutting, in Riparian Habitat Conservation Areas, except as described below:

a. Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuel wood cutting in Riparian Habitat Conservation Areas only where present and future woody debris needs are met, where cutting would not retard or prevent attainment of other Riparian Management Objectives, and where adverse effects can be avoided to inland native fish. For priority watersheds, complete watershed analysis prior to salvage cutting in RHCA's.

b. Apply silvicultural practices for Riparian Habitat Conservation Areas to acquire desired vegetation characteristics where needed to attain Riparian Management Objectives. Apply silvicultural practices in a manner that does not retard attainment of Riparian Management Objectives and that avoids adverse effects on inland native fish.

Roads Management

RF-1 - Cooperate with Federal, Tribal, State, and county agencies, and cost-share partners to achieve consistency in road design, operation, and maintenance necessary to attain Riparian Management Objectives.

RF-2 - For each existing or planned road, meet the Riparian Management Objectives and avoid adverse affects to inland native fish by:

a. Completing a watershed analyses prior to construction of new roads or landings in Riparian Habitat Conservation Areas within priority watersheds
b. Minimize road and landing locations in Riparian Habitat Conservation Areas
c. Initiating development and implementation of a Road Management Plan or a Transportation Management Plan. At a minimum, address the following items in the plan:
    1. Road design criteria, elements, and standards that govern construction and reconstruction.
    2. Road management objectives for each road.
    3. Criteria that govern road operation, maintenance, and management.
    4. Requirements for pre-, during-, and post-storm inspections and maintenance.
    5. Regulation of traffic during wet periods to minimize erosion and sediment delivery and accomplish other objectives.
    6. Implementation and effectiveness monitoring plans for road stability, drainage, and erosion control.
    7. Mitigation plans for road failures.
d. Avoiding sediment delivery to streams from the road surface:
    1. Out sloping of the roadway surface is preferred, except in cases where out sloping would increase sediment delivery to streams or where out sloping is infeasible or unsafe.
    2. Route road drainage away from potentially unstable stream channels, fills, and hill slopes.
e. Avoiding disruption of natural hydrologic flow paths.
f. Avoiding side casting of soils or snow. Side casting of road material is prohibited on road segments within or abutting RHCA's in priority watersheds.

RF-3 - Determine the influence of each road on the Riparian Management Objectives. Meet Riparian Management Objectives and avoid adverse effects on inland native fish by:

a. Reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards, or that have been shown to be less effective than designed for controlling sediment delivery, or that retard attainment of Riparian Management Objectives, or do not protect priority watersheds from increased sedimentation.
b. Prioritizing reconstruction based on the current and potential damage to inland native fish and priority watersheds, the ecological value of the riparian resources affected, and the feasibility of options such as helicopter logging and road relocation out of Riparian Habitat Conservation Areas.
c. Closing and stabilizing or obliterating, and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential damage to inland native fish in priority watersheds, and the ecological value of the riparian resources affected.

RF-4 - Construct new, and improve existing, culverts, bridges, and other stream crossings to accommodate a 100-year flood, including associated bed load and debris, where those improvements would/do pose a substantial risk to riparian conditions. Substantial risk improvements include those that do not meet design and operation maintenance criteria, or that have been shown to be less effective than designed for controlling erosion, or that retard attainment of Riparian Management Objectives, or that do not protect priority watersheds from increased sedimentation. Base priority for upgrading on risks in priority watersheds and the ecological value of the riparian resources affected. Construct and maintain crossings to prevent diversion of stream flow out of the channel and down the road in the event of crossing failure.

RF-5 - Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.

Recreation Management

RM-1 - Design, construct and operate recreation facilities, including trails and dispersed sites, in a manner that does not retard or prevent attainment of the Riparian Management Objectives and avoids adverse effects on inland native fish. Complete watershed analysis prior to construction of new recreation facilities in Riparian Habitat Conservation Areas within priority watersheds. For existing recreation facilities inside Riparian Habitat Conservation Areas, assure that the facilities or use of the facilities would not prevent attainment of Riparian Management Objectives or adversely effect inland native fish. Relocate or close recreation facilities where Riparian Management Objectives cannot be met or adverse effects on inland native fish cannot be avoided.

RM-2 - Adjust dispersed and developed recreation practices that retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closure are not effective in meeting Riparian Management Objectives and avoiding adverse effects on inland native fish, eliminate the practice or occupancy.

RM-3 - Address attainment of Riparian Management Objectives and potential effect on inland Native fish in Wild and Scenic Rivers, Wilderness, and other Recreation Management plans.

Fire/Fuels Management

FM-1 - Design fuel treatment and fire suppression strategies, practices, and actions so as not to prevent attainment of Riparian Management Objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function or inland native fish.

FM-2 - Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of Riparian Habitat Conservation Areas. If the only suitable location for such activities is within the Riparian Habitat Conservation Area, and exemption may be granted following a review and recommendation by a resource advisor. The advisor would prescribe the location, use conditions, and rehabilitation requirements, with avoidance of adverse effects to inland native fish a primary goal. Use an interdisciplinary team, including a fishery biologist, to predetermine incident base and helibase locations during pre-suppression planning.

FM-3 - Avoid delivery of chemical retardant, foam, or additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or following a review and recommendation by a resource advisor and a fishery biologist, when the action agency determines an escape fire would cause more long-term damage to fish habitats than chemical delivery to surface waters.

FM-4 - Design prescribed burn projects and prescriptions to contribute to the attainment of the Riparian Management Objectives.

FM-5 - Immediately establish an emergency team to develop a rehabilitation treatment plan to attain Riparian Management Objectives and avoid adverse effects on inland native fish whenever Riparian Habitat Conservation Areas are significantly damaged by a wildfire or a prescribed fire burning out of prescription.

General Riparian Area Management

RA-1 - Identify and cooperate with Federal, Tribal, State and local governments to secure in-stream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.

RA-2 - Trees may be felled in Riparian Habitat Conservation Areas when they pose a safety risk. Keep felled trees on site when needed to meet woody debris objectives.

RA-3 - Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard or prevent attainment of Riparian Management Objectives and avoids adverse effects on inland native fish.

RA-4 - Prohibit storage of fuels and other toxicants within Riparian Habitat Conservation Areas. Prohibit refueling within Riparian Habitat Conservation Areas unless there are no other alternatives. Any refueling sites within a Riparian Habitat Conservation Area, must be approved by the Forest Service or Bureau of Land Management, and have an approved spill containment plan.

RA-5 - Locate water drafting sites to avoid adverse effects to inland native fish and in-stream flows, and in a manner that does not retard or prevent attainment of Riparian Management Objectives.

Watershed and Habitat Restoration

WR-1 - Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to attainment of Riparian Management Objectives.

WR-2 - Cooperate with Federal, State, local, and Tribal agencies, and private landowners to develop watershed-based Coordinated Resource Management Plans (CRMP's) or other cooperative agreements to meet Riparian Management Objectives.

Fisheries and Wildlife Restoration

FW-1 - Design and implement fish and wildlife habitat restoration and enhancement actions in a manner that contributes to attainment of the Riparian Management Objectives.

FW-2 - Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of the Riparian Management Objectives or adversely affect inland native fish. For existing fish and wildlife interpretive and other user-enhancement facilities inside Riparian Habitat Conservation Areas, assure that Riparian Management Objectives are met and adverse effects on inland native fish are avoided. Where Riparian Management Objectives cannot be met or adverse effects on inland native fish avoided, relocate or close such facilities.

FW-3 - Cooperate with Federal, Tribal, and State wildlife management agencies to identify and eliminate wild ungulate impacts that prevent attainment of the Riparian Management Objectives or adversely affect inland native fish.

FW-4 - Cooperate with Federal, Tribal, and State fish management agencies to identify and eliminate adverse effects on native fish associated with habitat manipulation, fish stocking, fish harvest, and poaching.

Practice 14.03 - Use Of Sale Area Maps For Designating Soil & Water Protection Needs

Class A

Objective: To delineate the location of protection areas and special treatment areas, to insure their recognition, proper consideration, and protection on the ground.

Effectiveness: High

Implementation: The following features will be designated on the SAM:

a. Streamcourses (perennial and ephemeral) to be protected under standard TSC provision B6.5 (Streamcourse Protection)
b. Wetlands and Riparian Areas (meadows, lakes, pot holes, etc.) to be protected per TSC provision C6.61. (Wetlands Protection)
c. Special treatment areas, including riparian areas with planned harvest, where logging and site prep will differ from adjoining units as identified in TSC provision C6.4 and C6.7. (Riparian Areas)
d. Active and inactive slumps and areas with moderate or high mass failure hazard
e. Areas of highly erodible soil

The Purchaser and the Sale Administrator prior to harvesting will review these features on the ground.

Monitoring: The IDT Hydrologist and soil scientist will insure that the above features have been designated on the Sale Area Map during contract development.

Practice 14.04 - Limiting The Operating Period Of Timber Sale Activities And Practice 15.04 - Timing Of Construction Activities

Class A and E

Objective: To minimize soil erosion and sedimentation and loss in soil productivity by insuring activities, including erosion control work, road maintenance, etc., are done in a timely manner: 1) within the time period specified in the TSC; or 2) when ground conditions are such that erosion and sedimentation can be prevented, such as frozen or snow covered conditions.

Effectiveness: High

Implementation: Within the treatment area, the following limitations for operating periods have been identified and recommended by the IDT:

a. Operating seasons and requirements will be incorporated into TSC provision C6.316 if identified as necessary by the soils scientist or hydrologist.
b. Standard TSC provision B6.31 allows operations outside Normal Operating season, subject to requirements in B6.6, B6.65 and C5.46.

Practice 14.05 - Protection Of Unstable Areas

Class A

Objective: To protect unstable areas and to avoid triggering mass movements of the soil mantle and resultant erosion and sedimentation.

Effectiveness: High

Implementation: Dozers will not be permitted in wet areas, nor will incised skid trails normally be permitted on slump blocks. If the slump must be crossed, the forest soil scientist must be involved in trail location. Slumps should be crossed in the upper 1/3 of the slump if at all possible. If the interdisciplinary team determines that current or prospective logging methods would result in unacceptable watershed impact, the harvest is deferred.

Practice 14.06 - Riparian Area Designation And Protection (State Of Montana SMZ Law, Mostly Superseded By Infish.)

Class A

Objective: To minimize the adverse effects on riparian areas with prescriptions that manage riparian area vegetation manipulation as well as nearby logging and related land disturbance activities. Riparian areas will be managed as an ecosystem to maintain flora, fauna, water quality, and water-related recreation activities. Refer to 15.12 (Control of Construction in Riparian Areas) and 18.03 (Protection of Soil and Water from Prescribed Burning Effects) for further riparian area protection practices.

Effectiveness: High

Implementation: Riparian management will be done in accordance with Montana Streamside Management Zone Act. The following are the requirements of the Act:

1. This subchapter applies to forest practices conducted within a timber sale in the streamside management zone. Such practices, as defined at 77-5-302(3), MCA, include the following activities when conducted within a "timber sale" as that term is defined below:
    a. The harvesting of trees
    b. Road construction or reconstruction associated with harvesting and accessing trees
    c. Site preparation for regeneration of a timber stand
    d. Reforestation
    e. Management of logging slash
2. Wherever used in this subchapter, unless a different meaning clearly appears from the context:
    a. "Alternative practices" means forest practices conducted in the SMZ that are different from the practices required by the standards provided in 77-5-303, MCA, and are approved by the department either by adoption of this subchapter or on a site-specific basis upon application of the operator.
    b. "Broadcast burning" means spreading fire through a continuous fuel cover. The fuels consist of slash resulting from forest practices, surface litter, and duff. Fuels are left in place, fairly uniform, and ignited under certain conditions with the intent to meet planned management objectives in the desired area.
    c. "Class 1 stream segment" means a portion of stream that supports fish; or a portion of stream that normally has surface flow during 6 months of the year or more; and that contributes surface flow to another stream, lake, or other body of water.

d. "Class 2 stream segment" means a portion of stream that is not a class 1 or class 3 stream segment. Two common examples of class 2 stream segments are:

   1). A portion of stream which does not support fish; normally has surface flow during 6 months of the year or more; and contributes surface flow to another stream, lake, or other body of water; or

   2). A portion of stream that does not support fish; normally has surface flow during 6 months of the year or more; and does not contribute surface flow to another stream lake, or other body of water.

e. "Class 3 stream segment" means a portion of a stream that does not support fish; normally has surface flow during less than 6 months of the year; and rarely contributes surface flow to another stream, lake, or other body of water.

f. "Clearcutting" means removal of virtually all the trees, large and small, in a stand in one cutting operation. Virtually all woody vegetation is removed from the site preparatory to establishment of new trees.

g. "Construction" means cutting and filling of earthen material that results in a travel-way for wheeled vehicles.

h. "Diameter at breast height" (abbreviated "dbh") means the diameter of a tree measured 4 1/2 feet from the ground level. Ground level is the highest point of the ground touching the stem.

i. "Eastern Zone" means the counties of Big Horn, Blaine, Carter, Chouteau, Custer, Daniels, Dawson, Fallon, Fergus, Garfield, Golden Valley, Hill, Liberty, McCone, Musselshell, Petroleum, Phillips, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Toole, Treasure, Valley, Wibaux, and Yellowstone.

j. "Established road" means an existing access or haul route for highway vehicles that is passable under one or more of the following circumstances:

   1). Without any work

   2). With clearing of windfall or small woody vegetation

   3). With surface blading

   4). With replacement of stream crossing structures and drainage structures that were removed to restrict access

   5). With removal of constructed access barriers

k. "Hazardous or toxic material" means substances which by their nature are dangerous to handle or dispose of, or a potential environmental contaminant, and includes petroleum products, pesticides, herbicides, chemicals, and biological wastes.

l. "Lake" means a body of water where the surface water is retained by either natural or artificial means, where the natural flow of water is substantially impeded, and which supports fish.

m. "Ordinary high water mark" means the stage regularly reached by a body of water at the peak of fluctuation in its water level. The ordinary high water mark is generally observable as a clear natural line impressed on the bank. It may be indicated by such characteristics as terracing, changes in soil characteristics, destruction of vegetation, presence or absence of litter or debris, or other similar characteristics.

n. "Other body of water" means ponds and reservoirs greater than 1/10th acre that do not support fish; and irrigation and drainage systems discharging directly into a stream, lake, pond, reservoir or other surface water. Water bodies used solely for treating, transporting, or impounding pollutants shall not be considered surface water.

o. "Road" means a travel-way suitable for highway vehicles.

p. "Salvage" means harvesting trees that have been killed or damaged or are in imminent danger of being killed or damaged by injurious agents other than competition between trees.

q. "Sidecasting" means the act of moving excess earthen material over the side of a road during road maintenance operations.

r. "Slash" means the woody debris that is dropped to the forest floor during forest practices. Timber slash consists of stems, branches, and twigs left behind after forest practices.

s. "Slope distance" means the length of a line between two points on the land surface.

t. "Stream", as defined at 77-5-302(7), MCA, means "a natural watercourse of perceptible extent that has a generally sandy or rocky bottom or definite banks and that confines and conducts continuously or intermittently flowing water."

u. "Streamside management zone" or "zone" (abbreviated "SMZ"), as defined at 77-5-302(8), MCA means "the stream, lake, or other body of water and an adjacent area of varying width where management practices that might affect wildlife habitat or water quality, fish, or other aquatic resources need to be modified. The streamside management zone encompasses a strip at least, 50 feet wide on each side of a stream, lake, or other body of water, measured from the ordinary high-water mark to include wetlands and areas that provide additional protection in zones with steep slopes or erosive soils."

v. "Timber sale", as defined at 77-5-302(9), MCA, means "a series of forest practices designed to access, harvest, and regenerate trees on a defined land area for commercial purposes."

w. "Wetlands" means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include marshes, swamps, bogs, and similar areas.

3. This subchapter became effective March 15, 1993. (History: Sec. 77-5-307, MCA; IMP, Sec. 77-5-307, MCA; NEW, 1993 MAR p. 14, Eff. 3/15/93.)

26.6.602 Width Of Streamside Management Zone - Marking Boundary

1. The slope of the SMZ is measured perpendicular to the stream or lake from the ordinary high water mark to a point 50 feet slope distance from the ordinary high water mark.

2. The SMZ width is 50 feet slope distance on each side of streams, lakes, and other bodies of water measured from the ordinary high water mark, in all cases except:

a. Where wetlands exist adjacent to the stream, lake, or other body of water, the SMZ extends to include the wetlands;

b. On class 1 and 2 stream segments and lakes where the slope of the SMZ is greater than 35 percent, the SMZ width is 100 feet, except:

1. Where an established road exists between 50 and 100 feet from the ordinary high water mark, the SMZ boundary is located at the toe of the road fill; or

2. Where the slope of the SMZ decreases to 15 percent or less to form a bench that is 50 to 100 feet from the ordinary high water mark and at least 30 feet wide, the SMZ boundary is located at the edge of the bench nearest the stream.

3. Where forest practices that are prohibited in the SMZ will be conducted adjacent to the SMZ boundary on a class 1 or class 2 stream segment, the SMZ boundary must be clearly marked prior to conducting such practices. (History: Sec. 77-5-307, MCA; IMP, Sec. 77-5-301, 302(8), MCA; NEW, 1993 MAR p. 14, Eff.3/15/93.)

26.6.603 Broadcast Burning

1. Broadcast burning in the SMZ is prohibited unless approved by the department under a site-specific alternative practice. (History: Sec. 77-5-307, MCA; IMP, Sec. 77-5-303, MCA; NEW, 1993 MAR p. 14, Eff. 3/15/93.)

26.6.604 Equipment Operation In The SMZ

1. Operation of wheeled or tracked equipment in the SMZ except on established roads is prohibited except as provided in this rule.

2. In order to permit timber harvest on wetlands under conditions that protect the integrity of the SMZ, an operator may, as an alternative practice without site-specific approval, operate wheeled or tracked equipment from the outside edge of an SMZ to within 50 feet of the ordinary high water mark wherever:

a. The SMZ extends beyond 50 feet from the ordinary high water mark to include adjacent wetlands;

b. There exist winter conditions with adequate snow or frozen ground; and

c. Operation of the wheeled or tracked equipment:

1). Does not cause rutting or displacement of the soil;

2). Protects and retains shrubs and sub-merchantable trees to the fullest extent possible;

3). Does not remove stumps; and

4). Otherwise conserves the integrity of the SMZ.

3. In order to minimize road construction and skid trails necessary for timber harvest on lands adjacent to the SMZ, an operator may, as an alternative practice without site-specific approval, cross the SMZ and the stream or other body of water with wheeled or tracked equipment on a class 3 stream segment or other body of water at locations spaced approximately 200 feet apart or more provided that:

a. Crossings are located in areas where the stream or other body of water is dry and the banks and bottoms are stable;
b. Excavation is minimized;
c. The capacity of the stream channel or other body of water is maintained; and
d. The distance traveled through the SMZ is minimized.

4. In order to minimize road construction necessary for timber harvest on lands adjacent to the SMZ, an operator may, as an alternative practice without site-specific approval, operate wheeled or tracked equipment inside the SMZ off of established roads on the side of the road away from the stream wherever:

a. An established road exists inside the SMZ or construction of a road inside the SMZ is authorized under ARM 26.6.606;
b. The toe of the road fill nearest the stream is at least 25 feet from the ordinary high water mark; and
c. Operations are conducted in such a manner that:
    1). Wheeled or tracked equipment stays out of wetlands except under winter conditions as provided in (2) above;
    2). All skidding of logs takes place on designated skid trails located approximately 200 feet apart or more;
    3). All skid trails in such areas are reclaimed by installing erosion control measures and reestablishing vegetative cover;
    4). Drainage features are established or reestablished on all roads used under this section;
    5). Logs are not decked on the side of the road toward the stream; and
    6). No landings are constructed in the SMZ.

5. When logs are being winched or cable yarded across a class 1 or 2 stream segment by equipment located outside the SMZ, logs must be fully suspended unless otherwise authorized pursuant to the Natural Streambed and Land Preservation Act of 1975, 75-7-101 et seq., MCA.

6. The department may also approve operation of wheeled or tracked equipment in the SMZ as a site-specific alternative practice only under conditions that:

a. Conserve the integrity of the SMZ;
b. Do not cause rutting of the soil; and
c. Protect the residual stand of shrubs and trees.

(History: Sec. 77-5-307, MCA; IMP, Sec. 77-5-301, 303, MCA; NEW, 1993 MAR p. 14, Eff. 3/15/93.)

26.6.605 Retention Of Trees In The SMZ - Clearcutting

1. The forest practice of clearcutting is prohibited in the SMZ unless approved by the department under a site-specific alternative practice.

2. Further, in order to provide large woody debris, stream shading, water filtering effects, and to protect stream channels and banks, merchantable and sub-merchantable trees must be retained in the first 50 feet of the SMZ beyond the ordinary high water mark and in the entire SMZ where the SMZ is extended for wetlands under ARM 26.6.602(2) (a), on each side of streams, and along lakes and other bodies of water as follows:

a. On each side of class 1 stream segments and lakes retain 50 percent of the trees greater than or equal to 8 inches dbh, or 10 trees greater than or equal to 8 inches dbh in each 100 lineal feet of the SMZ, whichever is greater.
    1). If less than 10 trees greater than or equal to 8 inches dbh are present in any 100 lineal foot segment of the SMZ, then a minimum of 10 trees of the largest diameter available must be retained in that segment.
    2). Trees retained must be representative of the species and size of trees in the pre-harvest stand.
    3). Shrubs and sub-merchantable trees must be protected and retained in the entire SMZ to the fullest extent possible when conducting forest practices in the SMZ.

b. On each side of class 2 stream segments retain 50 percent of the trees greater than or equal to 8 inches dbh, or 5 trees greater than or equal to 8 inches dbh in each 100 lineal feet of the SMZ, whichever is greater.

1). If less than 5 trees greater than or equal to 8 inches dbh are present in any 100 lineal foot segment of the SMZ, then a minimum of 5 trees of the largest diameter available must be retained in that segment.

2). Trees retained must be representative of the species and size of trees in the pre-harvest stand.

3). Shrubs and sub-merchantable trees must be protected and retained in the entire SMZ to the fullest extent possible when conducting forest practices in the SMZ.

c. On each side of class 3 stream segments and other bodies of water, shrubs and sub-merchantable trees must be protected and retained in entire SMZ to the fullest extent possible when conducting forest practices in the SMZ.

3. Hardwood trees and snags meeting diameter standards of (2) above may be counted toward retention tree requirements in the same approximate proportion as their occurrence in the stand prior to commencement of forest practices.

4. Trees retained pursuant to this rule must be distributed within the SMZ as guided by the following criteria:

c. Favor bank-edge trees;

d. Favor trees leaning toward the stream and those that cannot be felled without falling into the stream;

e. Where the SMZ is greater than 50 feet wide and harvesting will result in the minimum stocking of trees required to be retained under section (2) (a) and (b), concentrate retained trees within 50 feet of the stream.

5. Trees retained pursuant to this rule may be salvaged only under the following conditions:

a. Trees to be harvested meet the definition of salvage at ARM 26.6.601 (2) (p); and

b. The minimum tree retention requirements of section (2) are met by standing live trees, or by dead or fallen trees where sufficient standing live trees are not available; and

c. All trees that have fallen across or in the stream must be retained, unless salvage of such trees is approved as a site-specific alternative practice subject to other federal and state laws and regulations.

6. All practices which deviate from the tree-distribution criteria provided in (2) and (4) above require approval as site-specific alternative practices. (History: Sec. 77-5-307, MCA; IMP, Sec. 77-5-301, 303, MCA; NEW, 1993 MAR p. 14, Eff. 3/15/93.)

26.6.606 Road Construction In The SMZ

1. The construction of roads in the SMZ is prohibited except when necessary to cross a stream or wetland unless approved by the department under a site-specific alternative practice or as provided in this rule. The construction of roads across streams, wetlands or other bodies of water is not regulated by these rules but may be subject to other state and federal laws and regulations.

2. Road fill material must not be deposited into the SMZ except as needed to construct crossings.

3. In order to minimize excavation for road construction on erosive soils characteristic of Eastern Montana, an operator may, as an alternative practice without site-specific approval, construct or locate a road inside the SMZ on class 3 stream segments in the eastern zone only wherever:

a. The slope of the SMZ immediately adjacent to the stream is 10 percent or less for a distance of at least 25 feet from the ordinary high water mark;

b. There exists in the outer portion of the SMZ a hillside with slopes in excess of 35 percent; and

c. The road is constructed or located on the gentler slopes in such a manner that:

1). Cutting and filling of earthen material is minimized;

2). The toe of the road fill is located at least 15 feet from the ordinary high water mark;

3). The road is located as far away from the ordinary high water mark as is practical; and

4). Road drainage features are installed as needed to minimize sediment delivery to streams. (History: Sec. 77-5-307, MCA; IMP, Sec. 77-5-301, 303, MCA; NEW, 1993 MAR p. 14, Eff.3/15/93.)

26.6.607 Hazardous Or Toxic Materials

1. The handling, storage, application, or disposal of hazardous or toxic materials in the SMZ in a manner that pollutes streams, lakes, or wetlands or that may cause damage or injury to humans, land, animals, or plants is prohibited.

2. Any application of herbicides or pesticides must be done in a manner that such materials are not introduced to streams, lakes, wetlands, or other bodies of water through surface runoff or sub-surface flow.

3. Any application of herbicides or pesticides must be done in a manner that does not destroy vegetation in the SMZ to an extent that impairs the capacity of the SMZ to provide shade or to act as an effective sediment filter.

4. Any application of herbicides or pesticides in the SMZ must be in accordance with all label directions and in compliance with all applicable laws and regulations regarding the use of such material.

5. Dust abatement agents which do not contain waste oil may be applied on roads in the SMZ provided that such material is not directly introduced into a stream, lake, or other body of water. (History: Sec. 77-5-307, MCA; IMP, Sec. 77-5-303, MCA; NEW, 1993 MAR p. 14, Eff. 3/15/93.)

26.6.608 Side-Casting Of Road Material

1. The side-casting of road material into a stream, lake, wetland, or other body of water during road maintenance operations is prohibited in the SMZ. (History: Sec. 77-5-307, MCA; IMP, Sec. 77-5-303, MCA; NEW, 1993 MAR p. 14, Eff. 3/15/93.)

26.6.609 Depositing Slash

1. Depositing slash in streams, lakes, or other bodies of water is prohibited unless approved by the department under a site-specific alternative practice subject to other state and federal laws and regulations. (History: Sec. 77-5-307, MCA; IMP, Sec. 77-5-303, MCA; NEW, 1993 MAR p. 14, Eff. 3/15/93.)

26.6.610 Site-Specific Alternative Practices

1. The owner or operator shall comply with the management standards stated in 77-5-303(1), MCA, and this subchapter, unless approval has been obtained from the department for alternative practices designed for site-specific conditions encountered during a timber sale prior to conducting such practices.

2. The department may approve a proposed alternative practice only if such practice would be otherwise lawful and the department determines with reasonable certainty that the proposed alternative practice would conserve the integrity of the streamside management zone and would not significantly diminish the function of the zone as stated in 77-5-301, MCA:

a. To act as an effective sediment filter to maintain water quality;

b. To provide shade to regulate stream temperature;

c. To support diverse and productive aquatic and terrestrial riparian habitats;

d. To protect stream channel and banks;

e. To provide large, woody debris that is eventually recruited into a stream to maintain riffles, pools, and other elements of channel structure; and

f. To promote floodplain stability.

3. In order to obtain department approval of alternative practices, the owner or operator shall submit to the department an application describing the proposed practices and location. Applications must provide all data specified by the department and must be submitted on forms provided or approved by the department.

4. Within 10 working days of receipt of the application for approval of alternative practices the department shall determine if the application is approved, approved with modification, disapproved, incomplete, requires additional information or environmental analysis, or requires a field review. The department shall notify the owner and the applicant of its decision in writing.

5. If the department determines a field review is necessary, the field review must be made at a mutually agreeable time. The owner or his designee must be present at the field review.

6. Within 10 working days after all necessary field review is complete, the department shall determine whether the application is approved, approved with modification, disapproved, incomplete, or requires additional information or environmental analysis. The department shall notify the owner and the applicant of its decision in writing.

7. The department may notify the applicant in writing that it declines to conduct further environmental analysis of an application if it determines that the proposed alternative practices are complex, or affect an environmentally sensitive area, or involve a high degree of uncertainty that the proposed alternative practices will have a significant impact on the quality of the human environment. The notice must briefly describe the department's reasons for declining to conduct further analysis. In this case, the applicant may conduct further environmental analysis and submit documentation to the

department. The department shall independently review any further environmental analysis and documentation of the proposed alternative practices provided by the applicant and may adopt such documentation if it is adequate under the Montana Environmental Policy Act (75-1-101 et seq., MCA) and rules adopted thereunder (ARM 26.2.628-663). If so adopted, the department may utilize such environmental documentation in further consideration of the application for alternative practices.

8. In the event the department determines that an application for alternative practices may be of significant interest to the public, the time provided in this rule for considering such application may be extended in order to allow time for the public to be notified and participate in the department's decision pursuant to 2-3-101 et seq., MCA, and ARM 26.2.701-707.

9. Persons applying for approval of alternative practices shall agree in writing that approved alternative practices, including any additional conditions imposed by the department, shall have the same force and authority as the standards contained in 77-5-303, MCA, and shall be enforceable by the department under 77-5-305, MCA, to the same extent as such standards. Persons responsible for conducting alternative practices shall comply with all conditions of such practices. In determining whether to approve applications for alternative practices, the department may consider past violations of such standards or of the requirements of previously approved alternative practices by the applicant.

10. Authorization to conduct alternative practices is valid for two years from the date of approval or for such period as may be specified by the department. (History: Sec. 77-5-307, MCA; IMP, Sec. 77-5-302, 307, MCA; NEW, 1993 MAR p. 14, Eff. 3/15/93.)

PRACTICE 14.08 - Tractor Skidding Design, and ***PRACTICE 14.10 - Log Landing Location and Design***

Class E

Objective*:* To insure that timber harvest unit design will secure favorable conditions of water flow, maintain water quality and soil productivity by locating/designing landings and skidding patterns to best fit the terrain and to minimize soil erosion, compaction, and displacement.

Effectiveness: High

Implementation: TSC provisions C6.3 (Plan of Operation) and B6.422 (Landings and Skid Trails) require that the location of all skid trails and landings must be agreed upon before construction. Specific items that will be addressed during sale-layout and pre-work with the operator will include the following:

Unit Boundaries

A. Design and locate unit boundaries which provide log skidding, site preparation, and slash treatment opportunities which minimize disturbance to soils, stream channels, and riparian areas.

Skid Trails

A. Design and locate skid trails and skidding operations to minimize soil disturbance. Forest Plan direction is to maintain long-term soil productivity by minimizing the amount of soil disturbance. Ground-disturbing activities can cause displacement of the nutrient rich litter and mineral soil surface layers, compaction of the upper soil layers, and soil puddling (e.g. ruts). Severe burning due to prolonged excessively high temperatures during slash disposal can negatively affect soil properties. Current proposed (as of March, 1999) soil quality standards (FSM 2500; R1 Supplement 2500) require that 85% of an activity area (such as timber sale unit) must remain in acceptable soil quality condition. Cumulatively, no more than 15% of the activity area may have detrimentally compacted, displaced, puddled, or severely burned soil upon project completion. The supplement also defines "detrimentally damaged" for these four categories. Most heavily used skid trails, landings, temporary roads or similar disturbances usually qualify as detrimentally damaged. Essentially 100 percent of the main and secondary skid trails had soil displacement in recent studies (Clayton, 1990; Froelich et al., 1983) and soil monitoring on this forest indicates similar effects. Research also indicates that skid trails become significantly more compacted than adjacent undisturbed areas and that only a few passes with heavy equipment cause this soil damage. The effects of displacement and compaction are long term and have repeatedly been shown to cause significant reductions in tree growth (Froelich et al., 1980; Froelich, et al, 1983; Helms, 1983).

The following practices will help minimize soil damage:

- Use of designated skid trails that should comprise no more than 15 percent of the activity area. Trails should be designed to maximize potential to cable winch logs to the trail rather than having the skidder go off the trail to retrieve logs.
- Directional felling of trees to allow skidders to cable winch logs to the skid trail.

- Use of log-forwarding equipment that employs full suspension of logs off of the ground. For this practice to be effective, it may require that the forwarder operate over slash generated by the log processor.
- Use of rubber-tired skidders rather than tractor type skidders. Rubber-tired skidders tend to disturb less soil when operating off the skid trail than track equipment (Clayton, 1990 and Froelich et al., 1983).
- Minimize site preparation by heavy equipment. Utilize small hand scalps (less than 2 square feet) as much as possible.

B. Locate skid trails to avoid concentrating runoff and to provide breaks in grade and waterbars.

C. Locate skid trails and landings away from natural drainage systems, and divert runoff to stable areas.

Landings

A. Landings, log decks and/or burn piles will be located outside the RHCA, so that direct (unfiltered) entry of sediment, bark, or ash and burning products to the streams will not occur (TSC Provision C6.422). In addition, landings and log decks should be located outside the RHCA and a minimum of 100 feet from wetlands and non-wetland riparian areas.

References:

Clayton, J.L. 1990. Soil disturbance resulting from skidding logs on granitic soils in Central Idaho. USDA Forest Service, Intermountain Research Station, Research Paper INT-436.

Froelich, H.A., J. Azevedo, P. Cafferata, and D. Lysne. Predicting soil compaction on Forested land. Final Project Report to USDA Forest Service, Pacific Northwest Forest and Range Experiment Station and Missoula Equipment Development Center, Cooperative Agreement No. 228.

Froelich, H.A, D.W. Miles, Richard Robbins, and J.K. Lyons. 1983. Soil monitoring project report on Payette National Forest and Boise Cascade Lands. Forest Engineering Department, Oregon State University, Corvallis, OR.

Helms, J.A. 1983. Soil compaction and stand growth. Final Report to UDSA Forest Service, Amendment of Supplement 42, Master Agreement 21-395.

Practice 14.11 - Log Landing Erosion Prevention And Control, Practice 14.12 - Erosion Prevention And Control Measures During Timber Sale Operations, Practice 14.15 - Erosion Control On Skid Trails.

Class E

Objective: To protect water quality by minimizing erosion and subsequent sedimentation derived from log landings and skid trails.

Effectiveness: High

Implementation: The following criteria will be used in controlling erosion and restoring landings and skid trails so as to minimize erosion.

General

Standard TSC provision B6.6 requires the purchaser to conduct operations in a reasonable fashion to minimize erosion. Additionally, specific erosion requirements will be spelled out in TSC Provisions such as C6.4, C6,6, C6.601, C6.602, C6.622, C6.623.

It is the responsibility of the certified sale administrator to insure that these practices are properly administered on the ground with the assistance of the technical resource staff as needed. (ref. 14.11).

Skid trails and landings will be seeded with a mix specified in C6.601. Vegetative cover will be established within two years.

Equipment shall not be operated when ground conditions are such that excessive impacts will result.

Landings

a. During period of use, landings will be maintained in such a manner that debris and sediment are not delivered to any streams, wetlands, or non-wetland riparian areas**.**

b. Landings will drain in a direction and manner that will minimize erosion and will preclude sediment delivery to any stream, wetlands, or non-wetland riparian areas

c. Standard TSC provision B6.63 (Landings) requires that after landings have served the Purchaser's purpose, the Purchaser shall ditch or slope them to permit the water to drain or spread.

Skid Trails

Skid trails will be water-barred, using the **FOLLOWING SPACING GUIDE:**

Percent Slope	Soils with "low" surface erosion hazard; landtype inventory	Soils with "moderate" surface erosion hazard; landtype inventory	Soils with "severe" surface erosion hazard; landtype inventory
<5%	400 ft.	350 ft.	300 ft.
5 - 10%	275 ft.	250 ft.	200 ft.
11 - 15%	200 ft.	175 ft.	150 ft.
16 - 20%	150 ft.	125 ft.	100 ft.
21 - 30%	100 ft.	75 ft.	50 ft.
31 - 45%	60 ft.	45 ft.	30 ft.
> 45%	30 ft.	25 ft.	20 ft.

Water-bars will be designated and constructed in such a way that collected water is diverted off the trail onto vegetated sites adjacent to the trail and so that the integrity of the water-bar is maintained at least until the skid trail is sufficiently revegetated.

Practice 14.17 - Stream Channel Protection (Implementation And Enforcement)

Class S

Objectives: (1) To protect the natural flow of streams; (2) to provide unobstructed passage of stormflows; (3) to reduce sediment and other pollutants from entering streams; and (4) to restore the natural course of any stream as soon as practicable if the stream is diverted as a result of timber management activities. Stream channels are to be protected to secure favorable conditions of streamflow, the natural stability and function in storage and transmission of water and sediment are to be maintained. Refer to 14.06 (Riparian Area Designation and Protection) for stream channel riparian area woody debris recruitment guidelines, sale area map identification, cable yarding, and directional felling guidelines.

Effectiveness: High

Implementation: The following items will be incorporated into the TSC via the identified B and C provisions:

a. Location and method of stream crossings will be agreed to prior to construction. (B6.422 Skid Trails and Landings)

b. All project debris shall be removed from streamcourse, in an agreed and timely manner, which will cause the least disturbance. (B6.5 Streamcourse Protection)

c. Wheeled or tracked equipment shall not operate within 50 feet slope distance of the apparent high water mark of streamcourses designated for protection on the Sale Area Map. (C6.6 Erosion Prevention and Control)

d. Material from temporary road and skid trail stream crossings will be removed and streambanks restored to an acceptable condition. (B6.62 Temporary Roads)

Practice 14.18 - Erosion Control Structure Maintenance

Class E

Objective: To insure that constructed erosion control structures are stabilized and working effectively.

Effectiveness: High

Implementation: TSC provision B6.66 requires that during the period of the contract, the Purchaser shall provide maintenance of soil erosion control structures constructed by the Purchaser until they become stabilized, but not for more than one year after their construction. After 1 year, any erosion control work needed is accomplished through available

funding sources. TSC provision C6.6 (F) requires the Purchaser to maintain erosion control structures concurrently with his operation under the sale and as soon as feasible following completion of skidding on each unit or subdivision.

Practice 14.19 - Acceptance Of Timber Sale Erosion Control Measures Before Sale Closure

Class A

Objective: To assure the adequacy of required erosion control work on timber sales.

Effectiveness: High

Implementation And Responsibility: TSC provision B6.35 requires that upon the Purchaser's written request and assurance that work has been completed the Forest Service shall perform an inspection. One area the Purchaser's might request acceptance for is specific requirements such as logging, slash disposal, erosion control, or snag felling. In evaluating acceptance the following definition will be used by the Forest Service: "Acceptable" erosion control means only minor deviation from established standards, provided no major or lasting impact is caused to soil and water resources. Certified TSA's will not accept as complete, erosion control measures that fail to meet these criteria.

Practice 14.20 - Slash Treatment In Sensitive Areas

Class E

Objective: To protect water quality by protecting sensitive tributary areas from degradation that would result from using mechanized equipment for slash disposal.

Effectiveness: Moderate

Implementation: The following requirement will be incorporated into TSC Provision C6.7:

All sensitive areas, including riparian harvest areas, bogs, meadows and soils having severe compaction or displacement hazard will be identified on the sale area map, the slash treatment map, and in the contract.

Practice 14.22 - Modification Of The Timber Sale Contract

Class A

Objective: To modify the Timber Sale Contract if new circumstances or conditions indicate that the timber sale will cause irreversible damage to soil, water, or watershed values or if ground conditions or other circumstances indicate a need to change specified logging systems and equipment.

Effectiveness: High

Implementation: Should a minor problem arise during the implementation of the timber sale contract with resource protection, the Contracting Officer should attempt to obtain agreement to correct the concern with the Timber Sale Purchaser. In cases such as this, modifications to the TSC would occur under provision B2.37 (Minor Changes). If damage to the resource is high or the risk of damage is high, the CO would need to pursue an environmental modification of the timber sale contract. In either case, appropriate notification and involvement of the IDT should occur.

Practice 14.23 - Reforestation Requirement

Class A

Objective: To promote prompt reforestation and to limit disturbance on areas with limited regeneration potential.

Effectiveness: High

Implementation And Responsibility: All areas projected for regeneration harvest have been reviewed for silvicultural opportunities and regeneration will be progressing within 5 years. Soil and site data contained in the Forest Landtype Inventory, or provided by the soil scientist should be included in the assessment of regeneration potential. The regeneration method has been identified in site-specific silvicultural prescriptions by unit, and will be checked with Standard Regeneration Surveys.

Monitoring: Regeneration Survey results are included in stand records.

Practice 14.24 - On-Site Large Woody Residue And Soil Litter Retention

Class G

Objective: To help maintain long-term soil productivity by retaining adequate amounts of large woody residue and organic litter on the soil surface.

Effectiveness: High

Implementation: Large woody residue left on site benefit soil productivity by providing habitat for beneficial mycorrhizal fungi, nutrient cycling, and soil moisture storage (Harvey et al., 1987). This large woody residue should consist mainly of fresh logs about 6 to 8 inches in diameter that contain heartwood. A few logs per acre that are somewhat larger than this diameter are also desirable for wildlife habitat. Land management practices such as timber harvest operations, site preparation, and fuels reduction have the potential to remove too much of this material from the site.

On droughty, harsh sites about 10 to 15 tons per acre of large woody residue as defined above should be left on site. This can include logs that are suspended above the ground. Well-decayed woody residue, such as cubical rotted wood, does not count toward these 10 to 15 tons. On some dry sites it may not be possible to achieve these amounts of fresh woody residue because there is not enough of such materials available even before treatment. In such cases the direction is to leave all available large logs on the surface. If the 10 to 15 tons per acre can't be achieved naturally, it may be beneficial to slash a few non-merchantable trees per acre, if they are available, and leave them lying across (perpendicular) to the slope. Other non-merchantable trees and snags left standing to provide vertical diversity for snag dependent wildlife species will eventually fall and ensure the continuity of supply of large woody debris.

On more moist sites, a minimum of about 25 tons per acre of large woody residue as defined above should be left on the soil surface. Again, this does not include existing well-rotted wood, but it can include suspended logs. The above woody residue guides are implemented by TSC C(T)6.7#.

The retention of as much of the soil litter layer as possible is also encouraged. This is another source of soil productivity and it also protects the mineral soil from erosion and other degrading processes (Harvey et al., 1987). Research has shown significant reductions in tree growth for moderate to high levels of soil displacement (Clayton et al., 1987). These reductions occurred when more than 25 percent of the activity area had the soil surface layer displaced. It appears that any treatment should retain at least 75 percent of the activity area with a litter cover in order to minimize losses in soil productivity. In addition, small diameter twigs should also be left on site, to the degree acceptable for fuel concerns, to provide nutrients and organic matter to the soil surface.

Experience on the Bitterroot National Forest has shown that on many sites these guides can best be achieved by spring burning for slash treatment. At that time of year moisture conditions of the organic fraction and the upper mineral soil are higher and the burns tend to be cooler. More woody material and more litter cover are likely to remain on the soil surface. Site objectives for fuels management and wildlife habitat can also be attained under spring burning. Spring burning should be utilized whenever possible, if adequate site prep can be achieved. Site prep should retain a litter cover evenly distributed on a minimum of 75 percent of the unit; except that on pinegrass types, 30 to 60 percent bare soil may be needed if broadcast burning is utilized and natural regeneration is being relied upon. Implement through the Burning Plan.

Scarification for stand regeneration should be restricted to the degree necessary to achieve site preparation objectives. Scarification spots should be as small as possible, generally less than 2 feet on a side. Larger scarified spots have the potential to affect soil productivity but may be necessary on pinegrass sites where, scalps 3 feet on a side may be needed to assure regeneration. In order to minimize negative impacts on soil productivity, the sum of these small scarification spots should not exceed about 25 percent of the activity area, except in heavy pinegrass stands where more scarification may be needed. Pinegrass and elk sedge have very shallow root systems and only the top couple inches of soil should need to be scarified. Implement through the Silvicultural Prescription.

Soil and Water Conservation Practice 14.02 discusses impacts of skidding on soil productivity and proposes mitigation to minimize those impacts.

References:

Clayton, J.L., G. Kellogg, and N. Forrester. 1987. Soil disturbance-tree growth relations in Central Idaho clearcuts. UDSA Forest Service, Intermountain Research Station, Research Note INT-372.

Harvey, A.E., M.F. Jurgensen, M.J. Larsen, and R.T. Graham. 1987. Decaying organic materials and soil quality in the Inland Northwest: a management opportunity. USDA Forest Service, Intermountain Research Station, General Technical Report INT-225.

Practice 14.25 - Winter Logging To Limit Soil Disturbance

Class G

Objective: To reduce or limit the amount of soil disturbance and compaction that occurs during timber harvest and to minimize weed spread.

Effectiveness: High

Implementation: Winter logging can provide a means of harvesting and yarding logs resulting in few impacts to soils or sedimentation.

The presence of solidly frozen soil and of adequate snow cover lowers impacts to soil during winter logging.

1) Frozen Soil and Snow Cover. The Bitterroot area is in a transitional position between the warm, wet northwestern climate and the dry, cold continental climate and the occurrence of frozen soils under snowpack is variable. Factors such as depth and timing of snowfall, as well as winter air temperatures, determine the distribution of frozen soil. Monitoring of winter soil conditions on this forest indicates the following: a very deep snowpack at high elevations tends to hold ground heat in near the soil surface and results in unfrozen soil. On warm aspects, at low to moderate elevations, snow cover often varies with short-term weather patterns; soil may alternate between frozen and unfrozen conditions throughout the winter. On cooler aspects in low to moderate elevations with thin snow cover, the soils tend to freeze quite well. Fall rains generally are needed to provide the soil moisture required to solidly freeze the soil; dry soil frosts do not provide adequate soil support.

The following guidelines define soil and snow conditions necessary to reach nearly full mitigation of logging impacts on soil productivity, related stream sedimentation and normal ecosystem processes. The guidelines apply to skidding with tracked and rubber-tired skidders as well as with "Thiokol" snow cat skidding.

Dispersed Skidding

Required conditions for dispersed skidding are: 4 inches of solidly frozen soil with or without snow cover or more than 24 inches of snow where only a couple of turns of the machine are needed. Where equipment will make numerous passes on the same trail, the minimum cover should be more than 6 inches of compacted snow if soils are not frozen to a four-inch depth. This does not preclude the need to closely monitor impacts to the soil during winter logging as slope variables, weather shifts, and equipment operation can contribute to variable soil effects.

Designate Skid Trails Where Needed

A minimum of four inches of solidly frozen soil is required on skid trails used for more than a couple of passes. If four inches of frozen soil is not present under the snow cover it may be possible to provide for it by pre-trailing during cold periods. Pre-trailing is the removal or packing down of the snow on the skid trail by one or two passes with heavy equipment. With no snow cover or with a compacted snow cover lacking insulative air spaces, the soil in the skid trail is likely to freeze after a couple of days. The removal of snow must be done carefully in order to minimize soil damage and may be difficult in areas of significant downfall. Compacting the snow may require a couple of passes to cover the whole skid trail width.

The compacted snow layer needs to be at least six inches thick to provide soil protection. As stated above, close monitoring of soil impacts is still needed.

Snow Cats

The use of "Thiokol" snow cats provides for minimal soil disturbance and may be used along with a "skid-plate" which cradles the front of the skidded logs. This combination results in no soil disturbance if used on 18 or more inches of snow. An additional benefit is that Thiokols have a low center of gravity that enables them to work on steeper slopes than conventional skidders.

Administration/Weather

Operators and sale administrators must be watchful for indications of soil thaw and soil damage. The surface layer of soil is very susceptible to damage during melt periods, especially if the subsurface soil material is still frozen. Shutdown of

operations when soil damage is first observed is necessary to maintain the productivity and water handling ability of the soil.

Haul Roads

Hauling and other timber sale related road use should be halted during extended warm periods or spring breakup. Sale preparation should involve a review of haul road drainage and how winter plowing can best be conducted to maintain proper road drainage.

Snow Roads

Further watershed protection may be achieved through the use of "snow roads" which are roads built of packed snow across the land that can be used for skidding and hauling. Small landings may also be constructed of snow in order to reduce the area soil disturbance. No soil impacts are anticipated by the use of snow roads and landings.

Stream And Wet Area Designation

Identification and mapping of shallow drainage ways and small wetlands should occur prior to snowfall, (as specified in other Forest BMPs) will prevent heavy equipment from inadvertently operating in these areas. (Reference Bitterroot National Forest 11/29/93 File Letter concerning winter logging, Hammer, Decker, McBride) MODIFIED 2/9/99.

Practice 15.03 - Road And Trail Erosion Control Plan

Class E

Objective: To prevent, limit, and mitigate erosion, sedimentation, and resulting water quality degradation prior to the initiation of construction and maintenance activities through effective contract administration during construction and timely implementation of erosion control practices.

Effectiveness: Moderate

Implementation: The following erosion control objectives and mitigation measures have been developed by the IDT and will be reflected in contract specifications and provisions. To maximize effectiveness, erosion control measures must be in place and functional prior to seasonal precipitation or runoff. The Engineer will certify that the Contractors Erosion Control Plan meets the specifications of Std. FS Spec. Section 204:

a. Vegetation will be re-established as soon as possible on exposed cut and fill slopes. Various operating seasons on varied units and sales within the FEIS Area will require seeding and fertilization specs to vary. Mulching will be required on erodible slopes where vegetative re-establishment difficulty is anticipated.
b. Rapid response to potential erosion problems - Prompt attention to potential erosion problems, both anticipated and un-anticipated, before they become a water quality issue, will be required. Stock piling of straw bales on-site for immediate use when needed, and erosion cloth or suitable substitute stored off-site but available will also be required.
c. Filter windrows will be used on all significant fill slopes where there is a possibility of erosion or sedimentation into a nearby stream or channel (Std. FS Spec. 201 and Special Project Specification).
d. Dewatering of culvert installations and other construction sites, and immediate placement of permanent culverts during road pioneering is required. Measures will be taken to preclude delivery of construction-related turbid water into stream channels, such as pumping to a location where settling can occur.
e. Cross drains and relief culverts will be installed so as to minimize effects from the intercepted water (see also Practice 15.02 f (3)).
f. Equipment shall not be operated when ground conditions are such that excessive ground impacts will occur unless these impacts are mitigated through other Conservation Practices and documented.

Prior to the start of construction, the Contractor shall submit a schedule for proposed erosion control work as required in the Standard Specifications. The schedule shall include all erosion control items identified in the specifications. Erosion control work to be done by the Contractor will be spelled out in Standard Specification 204 and/or in the Drawings. The schedule shall consider erosion control work necessary for all phases of the project. The Contractor's construction schedule and plan of operation will be reviewed in conjunction with the erosion control plan to insure their compatibility before any schedules are approved.

Practice 15.04 - Timing Of Construction Activities

Class E

Objective: To minimize soil erosion, sedimentation, soil and productivity loss by insuring activities, including erosion control work, road maintenance, etc., are done within the time period specified in the TSC; or when ground conditions are such that erosion and sedimentation can be prevented.

Effectiveness: Moderate

Implementation: Within the sale area, the following specifications relating to operating periods have been identified and recommended by the IDT:

Earthwork shall be postponed during wet periods if, as a result, erodible material would enter streams.

Timber sale contract provisions allow for operations to occur outside the Normal Operating Season subject to requirements in B6.31 (B clauses)

The following requirements apply to operations outside the Normal Operating Season:

1. Drain dips will be built into skidtrails and temporary roads as directed by the TSA; logging over adequate snow cover or solidly frozen soil to a depth of four inches does not require drainage dips. Where drain dips are not feasible, or are not functioning, trails and temporary roads will be waterbarred and maintained as necessary and/or prior to any prolonged shutdown.
2. Pioneering on specified road construction will be limited to intervals of 1,000 feet after October 31.
3. Temporary Roads will be seeded as directed by TSA.
4. All surface erosion and stabilization activities will be placed prior to November 1 of each year.

The following requirements apply to winter operations:

1. Prior to shutdown, slash and/or cull logs may be placed into skid trails to approximate waterbars.
2. Breaks will be provided in the snow berm during snowplowing activities.
3. All streams and channels within harvest units will be flagged or otherwise identified.

Operations will be discontinued if conditions change and activities are no longer operating on frozen or snow covered ground, the intent of winter logging. See also BMP 14.25, Winter Logging.

Practice 15.06 - Mitigation Of Surface Erosion And Stabilization Of Slopes.

Class E

Objective: To minimize soil erosion from road cutslopes, fillslopes, and travelway and to minimize weed spread.

Effectiveness: Moderate

Implementation: The following provisions will be implemented:

a. All roads will be designed to facilitate re-establishment of vegetative cover on disturbed areas within a reasonable time, not to exceed three years, after termination of a contract. If the road is necessary as a permanent addition to the National Forest transportation system, and will remain open to travel, then roadbed revegetation is not required.
b. Machine marks will be left on cut slopes to catch seed and fertilizer. Cut slope seeding and fertilizing shall be completed during the first season of construction and fill slopes immediately after final blading. Native vegetation will be encouraged on permanently and temporarily closed roads. On harsh, droughty sites, as delineated by the forest landtype inventory, revegetation success is very questionable unless mulching of the seed is provided. Mulching, either as matting, tackified hand spread straw or hydromulch should be standard mitigation on these sites. Consult the soil scientist for mulching recommendations. Seed and fertilizer mix will be specified in TSC provision C6.601#.
c. Sections of roads with soils that may become rutted during wet weather should be surfaced to provide an all-weather surface and prevent erosion.

Practice 15.07 - Control Of Permanent Road Drainage

Class E

Objective: To minimize the erosive effects of concentrated water and the degradation of water quality by proper design and construction of road drainage systems and drainage control structures.

Effectiveness: Moderate

Implementation:

A. *For New Construction* - The following criteria will be incorporated into new road design:

1. Provide adequate drainage from the surface of all permanent and temporary roads through use of sloping, dips, grade changes, etc.
2. Ditch relief culverts will be designed to handle anticipated ditch flow
3. Provide energy dissipaters or downspouts where necessary at the downstream end of ditch relief culverts to reduce erosion energy of the emerging water.

B. *For Existing Roads* - At a minimum, the following items will be added to or improved in the existing road system that will be used for proposed timber haul:

1. Energy dissipaters or downspouts will be placed below problem culvert outlets (Reconstruction Item).
2. In all areas where ditch erosion is significant at this time, relief culverts that drain onto suitable areas will be installed (Reconstruction Item).
3. Roads restricted after use will also have erosion control measures in place prior to final pullout. (TSC B/C 6.6, B6.65)
4. For all native surface roads to be restricted after use, the travelway will be seeded and fertilized; and will have the surface roughened to accept seed germination and establishment where necessary and beneficial (TSC C6.601).

Practice 15.11 - Servicing And Refueling Of Equipment

Class S

Objective: To prevent contamination of waters from accidental spills of fuels, lubricants, bitumens, raw sewage, wash water, and other harmful materials.

Effectiveness: High

Implementation: The Contracting Officer, Engineering Representative, or certified Sale Administrator will designate the location, size and allowable uses of service and refueling areas. They will also be aware of actions to be taken in case of a hazardous spill, as outlined in the Forest Hazardous Substance Spill Contingency Plan (SWCP 11.07) TSC B6.34, C6.341, and C6.34.

Practice 15.13 - Controlling In-Channel Excavation

Class S

Objective: To minimize stream channel disturbances and related sediment production, and to make sure activities comply with the FG-124 Process as agreed upon between the Forest Service and the State of Montana.

Effectiveness: High

Implementation: Construction equipment may cross, operate in, or operate near streamcourses only where so designated by the Forest Service or as necessary in the construction or removal of culverts and bridges, in compliance with the specifications and mitigation required in the FG-124 Permit and included in the project specifications. The FG-124 Form will be sent to MDFWP, approved or modified, and returned prior to actual channel work.

Unless otherwise approved, no in-channel excavation shall be made outside of de-watered areas, and the natural streambed adjacent to the structure shall not be disturbed without approval of the Forest Engineer. If any excavation or dredging is made at the site of the structure before caissons, cribs, or cofferdams are sunk in place, all such excavations will be restored to the original ground surface or the streambed will be protected with suitable stable material. Material from foundation or

other excavation shall not be discharged directly into live streams but shall be pumped to settling areas shown on the drawings or approved by the Forest Engineer. If the channel is damaged during construction, it should be restored as nearly as possible to its original configuration without causing additional damage to the channel. Excavations for stream crossings will conform to the State of Montana Stream Preservation Act using Fish, Wildlife, and Parks form FG-124 criteria, including timing restrictions. (as well as Std. FS Spec 206, 206A, and applicable SPS's).

Practice 15.14 - Diversion Of Flows Around Construction Sites

Class S

Objective: To minimize downstream sedimentation by insuring that all stream diversions are carefully planned and executed.

Effectiveness: High

Implementation: Flow in streamcourses may only be diverted if the Forest Service deems it necessary for the Contractor to do the job. Such a diverted flow shall be restored to the natural streamcourse as soon as practicable and, in any event, within period stated in FG-124. Stream channels impacted by construction activity will be restored to their natural grade, condition, and alignment. The FG-124 will be filed as specified in Practice 15.13 (Std. FS Spec. 206, 206A, and applicable SPS's).

Practice 15.15 - Stream Crossings On Temporary Roads

Class S

Objective: To keep temporary roads from unduly damaging streams, disturbing channels, or obstructing fish passage.

Effectiveness: Moderate

Implementation: Culverts, temporary bridges, low-water crossings, or log-fords will be required on all temporary roads and crossings. Streams that will have flowing water during the life of the temporary crossing will normally use culverts or a bridge. The number of temporary crossings will keep to the minimum needed for access.

a. Temporary crossings on temporary roads will be removed when no longer needed, and any fills will be removed and the channel restored to pre-project condition (TSC B5.2, B6.5, C5.2). A Stream Preservation Act form FG-124 will also be required.

b. Temporary crossings on system roads will be removed following use but protected fills, including constructed abutments, may remain.

c. Temporary crossings on temporary roads will only be allowed where anticipated or calculated flow is 40 CFS or less (approximately 48 inch diameter culverts will carry 40 CFS). Flow situations greater than this will normally not allow temporary crossings. Larger temporary crossing structures may be allowed following IDT review.

Practice 15.16 - Bridge And Culvert Installation (Disposition Of Surplus Material And Protection Of Fisheries)

Class S

Objective: To minimize sedimentation and turbidity resulting from excavation for in-channel structures.

Effectiveness: High

Implementation: The following preventive measures will be included in contract specifications for such installations:

a. Diverting stream flow through or around project sites if needed during construction in order to minimize erosion and downstream sedimentation. Live stream culvert installations will be de-watered.

b. Erodible material shall not be deposited into live streams.

c. Any material stockpiled on floodplains shall be removed before rising waters reach the stockpiled material.

d. During excavation in or near the streamcourse, it may be necessary to use suitable coffer dams, caissons, cribs or sheet piling. This will usually be the case where groundwater is contributing a significant amount of water to the

immediate excavation area. If any of the aforementioned devices are used, they will be practically watertight and no excavation will be made immediately outside of them.

e. Water pumped from foundation excavation shall not be discharged directly into live streams, but shall be pumped into settling ponds or into locations where sediment will not re-enter water.

f. When needed, bypass roads should be located to have the minimal disturbance on the streamcourse.

g. The construction activity in or adjacent to the stream will be limited to specific times to protect beneficial water uses (i.e., fisheries).

h. Operation of mechanical equipment in live streams shall be kept to the amount agreed upon through the FG-124 Process.

(TSC B 5.2, B6.5, C5.2; FG-124; Std. FS Spec. 206, 206A, and 203).

Practice 15.18 - Disposal Of Right-Of-Way And Roadside Debris

Class E

Objective: To insure that debris generated during road construction is kept out of streams and to prevent slash and debris from subsequently obstructing channels.

Effectiveness: High

Implementation: Construction debris and other newly generated slash developed along roads near streams shall be disposed of by the following means as applicable:

a. On-Site
   1. Windrowing
   2. Scattering
   3. Burying
   4. Chipping
   5. Disposal in Cutting Units
   6. Piling and Burning
   7. Embankment Placement

a. Removal to agreed upon locations.

b. A combination of the above.

(Std. FS Spec. 210, and SPS 201)

Practice 15.21 - Maintenance Of Roads

Class E

Objective: To maintain all roads in a manner which provides for soil and water resource protection by minimizing rutting, failures, sidecasting, and blockage of drainage facilities.

Effectiveness: Moderate

Implementation:

A. For roads in active timber sale areas - Standard TSC provision B5.4 (Road Maintenance) requires the Purchaser to perform or pay for road maintenance work commensurate with the Purchasers use. C5.4 (Road Maintenance) road maintenance is the preservation of the road facility including surface, shoulders, miscellaneous structures, drainage, sight distance, and all such traffic control devices required to insure safe and efficient use by established road users and adequately protect adjacent resources. Purchaser's maintenance responsibility shall cover the before, during, and after operation period during any year when operations and road use are performed under the terms of the timber sale contract.

Purchaser shall perform road maintenance work, commensurate with Purchaser's use, on roads controlled by Forest Service and used by Purchaser in connection with this sale except for those roads and/or maintenance activities which are identified for required deposits in C5.411# and C5.412#.

All maintenance work shall be done currently, as necessary, in accordance with timber sale contract road maintenance specifications, called T-specifications, except for agreed adjustments (TSC C5.4- T301, 310).

B. For roads not in an active timber sale area - Road maintenance must still occur at sufficient frequency to protect the investment in the road as well prevent deterioration of the drainage structure function. This will be accomplished by scheduling periodic inspection and maintenance, including cleaning dips and cross drains, repairing ditches, marking culvert inlets to aid in location, and cleaning debris from ditches and culvert inlets to provide full function during peak runoff events (FSH 7709.15).

C. Roads to be used for proposed timber harvest should be brought up to current BMP standards to the extent feasible. If road drainage and erosion control need improvements, these should be corrected concurrently or prior to the harvest actions. Road maintenance like culvert and drive-through dip additions, and road graveling at stream crossings are commonly needed on timber access roads to meet current standards of BMP's.

Practice 15.22 - Road Surface Treatment To Prevent Loss Of Materials

Class E

Objective: To minimize the erosion of road surface materials and consequently reduce the likelihood of sediment production.

Effectiveness: Moderate

Implementation: On timber sale roads, the Purchaser shall undertake measures to prevent excessive loss of road material if the need for such action has been identified. Road surface treatments may include: water, dust abatement, penetration oiling, sealing, aggregate surfacing, chip sealing, or paving.

Practice 15.23 - Traffic Control During Wet Periods

Class E

Objective: To reduce the potential for road surface disturbance during wet weather and to reduce sedimentation probability.

Effectiveness: Moderate

Implementation: Restrictions are placed on native and aggregate-surfaced roads when a FS Rep feels that damage will occur with further use. Roads that are restricted are so indicated in Forest Supervisor Orders, posted at FS Stations and in local media.

Practice 15.24 - Snow Removal Controls

Class E

Objective: To minimize the impact of snow melt on road surfaces and embankments and to reduce the probability of sediment production resulting from snow removal operations.

Effectiveness: High

Implementation: The following measures will be followed:

a. The Purchaser is responsible for snow removal in a manner that will protect roads and adjacent resources.
b. The timber sale administrator and/or watershed specialist will determine if rocking or other special surfacing and/or drainage measures may be necessary, before the operator is allowed to use the roads.
c. During snow removal operations, banks shall not be undercut nor shall gravel or other selected surfacing material be bladed off the roadway surface. Ditches and culverts shall be kept functional during and following roadway use. If the road surface is damaged, the Purchaser shall replace lost surface material with similar quality material and repair structures damaged in blading operations.
d. Snow berms shall not be left on the road surface or shall be placed to avoid channelization or concentration of melt water on the road or erosive slopes. Berms left on the shoulder of the road shall be removed and/or drainage holes opened at the end of winter operations and before the spring breakup. Drainage holes shall be spaced USING THE FOLLOWING GUIDE:

Slope Of Road Travel-Way	Soils With "Rilling" Or "Rutting" Hazard In Forest Landtype Inventory	Soils Without "Rilling" Or "Rutting" Hazard In Forest Landtype Inventory
0 TO 5 %	300 FT	350 FT
6 TO 10 %	200 FT	250 FT
> 10%	75 TO 100 FT	75 TO 100 FT

On insloped roads, drainage holes shall also be provided on the ditch side, but care taken to insure that culverts and culvert inlets are not damaged.

(TSC C5.46; Std. FS Spec. 203)

Practice 15.25 - Obliteration Of Temporary Roads

Class E

Objective: To reduce sediment generated from temporary roads by obliterating them at the completion of their intended use.

Effectiveness: High

Implementation: Effective obliteration is generally achieved through a combination of the following measures:

a. Road effectively drained and blocked.
b. Temporary culverts and bridges removed and any modified channel slopes stabilized and revegetated.
c. Road returned to resource production through revegetation (grass, browse, or trees).
d. Sideslopes reshaped and stabilized.
e. Armor highly erosive slopes with rock or logging debris.
f. Construct slash windrows or silt-fence in areas of high erosion probability from obliteration operations.(TSC B6.62, C6.62, C6.622, C6.623)
g. Road ripping or scarification to reduce soils compaction on roadway for enhancement of rain and snowmelt infiltration as well as to assist vegetative regrowth on obliterated roadway

Practice 18.02 - Formulation Of Fire Prescriptions

Class A

Objective: To provide for soil and water resource protection while achieving the management objective through the use of prescribed fire.

Effectiveness: High

Implementation: Field investigations are conducted to identify site specific conditions that may affect the prescription. Both the optimum and tolerable limits for soil and water resource needs should be established. Prescription elements will include such factors as fire weather, slope, aspect, soil moisture, and fuel moisture that influence the fire intensity. These elements have a direct effect on whether or not a litter layer remains after burning and whether or not a water repellent layer is formed. Soils with a high risk of water repellency following moderate to severe fires are listed in the Forest Landtype Inventory. The amount of remaining litter significantly affects erosion rates, water quality and runoff volumes.

Practice 18.03 - Protection Of Soil And Water From Prescribed Burning Effects

Class E

Objectives: To maintain soil productivity, minimize erosion, and prevent ash, sediment, nutrients, and debris from entering surface water.

Effectiveness: High

Implementation: Forest Service and/or other crews are used to prepare the units for burning. This includes water barring firelines and reducing fuel concentrations. The interdisciplinary team identifies Riparian Areas and soils with water repellent tendencies as part of the environmental analysis. Some of the techniques used to prevent soil erosion and water quality degradation are: (1) construct water bars in fire lines; (2) reduce fuel loadings in drainage channels; (3) maintain the integrity of the Riparian Area; (4) avoid intense fires, which may promote water repellency, nutrient leaching, nitrogen volatilization and erosion; (5) retain or plan for sufficient ground cover to prevent erosion of the burned sites; and (6) removal of all debris added to stream channels as a result of prescribed burning, unless debris is prescribed to improve fisheries habitat.