



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10**

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OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

July 18, 2016

Elysia Retzlaff
NEPA Planner
McKenzie River Ranger District
57600 McKenzie Highway
McKenzie Bridge, OR 97413

Dear Ms. Retzlaff:

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the proposed Green Mountain Project on the McKenzie River Ranger District of the Willamette National Forest in Lane County, Oregon (EPA Project Number 14-0018-AFS). Our review was conducted in accordance with EPA responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act.

The DEIS analyzes the range of effects of three alternatives: the no action alternative and two action alternatives. The action alternatives are designed to provide a sustainable supply of timber products, increase vegetative habitat complexity and hardwood composition along streams, shift age class, and improve structural diversity. Alternative 2 (the preferred alternative) proposes to treat 4,398 acres and includes regeneration harvest and harvest within northern spotted owl (NSO) suitable habitat while Alternative 3 proposes treatments on 3,957 acres with no treatments in NSO suitable habitat, no regeneration harvest and no treatment in stands over eighty years old. Both alternatives include thinning in riparian reserves (901 acres under Alternative 2 and 894 under Alternative 3).

The EPA is supportive of the project goals to increase vegetative complexity and improve riparian habitat. We appreciate the discussion about the project and connection to other planning documents including the Northwest Forest Plan and threatened and endangered species consultation. The project involves active management in NSO habitat and the discussion about re-evaluating the Green Mountain project as a result of the 2012 northern spotted owl critical habitat rule was particularly informative. The proposal also includes activities within riparian reserves. While we agree with the need to actively manage riparian areas under certain scenarios, we believe that the proposed scale and type of treatments located in riparian areas could impact water quality, particularly for temperature.

Our recommendations regarding treatment in riparian reserves, proposed road treatments and consultation under Endangered Species Act are attached in the detailed comments. Based on our review of the DEIS, we are rating the DEIS as EC-2 (Environmental Concerns- Insufficient Information).

We appreciate the opportunity to review and comment on the DEIS, and we look forward to furthering our understanding of this project. If you have any questions about our review, please contact me at (206) 553-1601, or by email at littleton.christine@epa.gov or you may contact Lynne Hood of my staff at 208-378-5757 or by email at hood.lynne@epa.gov.

Sincerely,

A handwritten signature in blue ink that reads "Christine B. Littleton". The signature is written in a cursive style with a large initial 'C'.

Christine B. Littleton, Manager
Environmental Review and Sediment Management Unit

Enclosure:

1. EPA Region 10 Detailed Comments – Green Mountain Project DEIS
2. U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements

EPA Detailed Comments Green Mountain Project

Treatment in Riparian Reserves

The proposed action includes thinning 901 acres in riparian reserves. Riparian treatments include no-cut buffer widths on fish bearing streams ranging from 60 to 360 feet depending on conditions. While we acknowledge that active management in riparian areas may be necessary to improve watershed conditions, we have concerns regarding the proposed no-cut buffer widths for fish bearing/perennial streams.

Page 95 of the DEIS states that in many cases, significant changes in stream temperature are not observed with partial no-harvest buffers within the Riparian Reserve width. The DEIS goes on to state that buffer distances less than one site potential tree have been shown to protect water temperature, and that in overly dense riparian stands, optimum shade can be provided by the primary shade zone alone. We are concerned that this characterization of shade and temperature dynamics is overly simplified and does not reflect the full spectrum of recent science. In addition, we believe that the proposed minimum canopy closure in the outer zone (50%) may not adequately be protective of stream temperature.

The EPA recently utilized the Oregon Department of Environmental Quality (ODEQ) mechanistic shade model¹ to estimate the relationship between buffer widths and shade reduction for a planning effort in Western Oregon. Our work determined that impacts to shading from harvest are variable and dependent upon initial canopy closure, no-cut buffer widths, stream aspect and other factors. Attachments 1 and 2 provide a tabular view of those modeling results. Attachment 2 shows that thinning down to a 50% canopy closure outside of a 60 foot no cut buffer can result in over 7 percent shade loss. This is concerning in light of a recent study conducted on forested streams in Western Oregon² where at sites which exhibited an absolute change in shade of greater than 6 percent, stream temperatures increased in the period from pre-harvest to postharvest.

Other modeling and field studies have also shown that stream temperature response can vary widely under different buffer widths. The Washington Department of Ecology studied a range of buffers across 1,000 acres and found that stream temperature can increase up to 1.5 degrees Celsius.³ Research related to the effects of reducing riparian buffers in British Columbia and Oregon demonstrated that implementing a patch cut treatment with 30 meter buffers increased stream temperature 2 degrees Celsius.⁴ A key point noted in the literature is that the local hydrology can be a main driver in a stream's response to treatments. Any potential temperature increases would be of particular concern given the NWFP temperature Total Maximum Daily Load and the narrow temperature range for species such as bull

¹ The "shade.xls" model is available at <http://www.ecy.wa.gov/programs/eap/models.html>

² Groom J. D., L. Dent, L. Madsen, J. Fleuret. 2011. Response of western Oregon (USA) stream temperatures to contemporary forest management. *Forest Ecology and Management* 262(8):1618-1629

³ Washington Department of Ecology. 2007. Modeling the Effects of Riparian Buffer Width on Effective Shade and Stream Temperature. Publication No. 07-03-028

⁴ R. D. Moore, D. L. Spittlehouse, and A. Story. 2005. Riparian Microclimate and Stream Temperature Response to Forest Harvesting: A Review. *Journal of American Water Resources Association*.
<http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/ThreatenedHabitats/Aquatic/AquaticRiparian-Moore05.pdf>

trout (less than 12 degrees Celsius (54 degrees F)).⁵ Therefore, careful consideration should be given when planning active management to avoid increased solar radiation in the riparian zone or to reduce impacts to influential hyporheic/groundwater inflow.

The EIS includes Appendix G, which lists each harvest unit along with a prescribed buffer. It also includes a brief rationale for the buffer (e.g., “well on its way in meeting ACS objective”). While the table in Appendix G also outlines the various buffers across vegetation treatment units, it would be helpful to have a better understanding of the conditions of each stream reach where a reduced buffer width would be applied on fish bearing streams (e.g., 60 feet). Given this uncertainty, we recommend that the riparian reserves remain intact based on the ACS, unless additional analysis can be provided demonstrating that shade loss would be avoided and water temperature would not be increased. Furthermore, we recommend including a measure that can more clearly describe and/or quantify the condition of riparian/stream function and prescription rather than basing it on general statements such as, “well on its way in meeting ACS objectives” and “wildlife would like a quarter acre gap.”

Road Treatments

Sediment

The proposed action includes 10.3 miles of temporary road construction, 130 miles of roads maintained, 2 miles of road decommissioning, and 21.1 miles of road placed in storage for potential future use. The EIS states that overall, the proposal would reverse declining road conditions on an estimated 130 miles of road.

We support road maintenance and decommissioning in a hydrologically stable manner, in order to reduce sediment delivery to streams and improve habitat connectivity (e.g., elk habitat). However, we are unclear about the rationale for not considering additional road miles to decommission across alternatives (both alternatives propose 2 miles). We recommend that the EIS consider additional opportunities for decommissioning and provide clear comparison and contrast in evaluating options across alternatives.

Additionally, the DEIS does not discuss the underlying need to decommission the identified 2 miles of road. For example, are these the only sections that pose a risk to water quality/habitat or are there other factors limiting the consideration of decommissioning additional routes? We recommend that the final EIS provide more information regarding the need for decommissioning roads in the project area and the purpose for selecting specific routes.

As mentioned previously, the proposal also includes placing 21.1 miles of road in storage. The EIS includes design features (Table 9) to reduce environmental effects and ensure compliance with standards and guidelines and Best Management Practices. Stored roads left unmaintained can become unstable and introduce additional sediment loading to streams. We recommend that EIS provide additional information about management activities that would occur to ensure that closed roads are hydrologically stable.

Road Density

The EIS states that the open road density would be reduced in the watershed by 26 miles. Although closures would reduce the open road density, since they are not being decommissioned, it would not

⁵ USFWS. 2015. Recovery plan for the coterminous United States population of bull trout (*Salvelinus confluentus*).

reduce existing road density- a measure of watershed condition.⁶ The open road density in the document is described as currently meeting the Forest Plan standard in all but two emphasis areas: Green Ridge and Hardy. The EIS includes Figure 28 illustrating road activities associated with harvest and includes the general location of streams. Appendix D lists road treatment per USFS route. However, the EIS does not assess road activities by watershed or emphasis area. Therefore, it is unclear how proposed actions for roads will promote watershed function and reduce density in areas not meeting Forest Service standards. We suggest clearly linking road treatments to management areas/priority drainages and exploring additional opportunities to further reduce road density where needed.

Threatened and Endangered Species

The DEIS states that species listed under the Endangered Species Act, such as northern spotted owl (NSO), Upper Willamette River Chinook salmon, and Columbia River bull trout exist in the project area. Consultation with the U.S. Fish and Wildlife was completed for NSO and informal consultation with the USFWS and the National Marine Fisheries Service for spring Chinook salmon and bull trout is currently in progress.

The USFS re-evaluated the project after the 2012 northern spotted owl critical habitat rule and found that a portion of the project was determined to exist within the Critical Habitat Unit West Cascades South. After the final revised critical habitat determination and consultation with USFWS (2012 Biological Opinion), Alternatives 2 and 3 were modified to reduce harvest acres in critical habitat. The Northern Spotted Owl Recovery plan⁷ includes overarching recommendations: protect high quality NSO habitat, revitalize forest ecosystems through active management and reduce competition from the encroaching barred owl. The plan also promotes an ecological forestry approach in managing federal lands and continually refining active management techniques to enhance habitat.

We appreciate the details regarding consultation and support the proposed reductions to protect NSO critical habitat. The DEIS did not discuss an ecological forestry approach, although treatments appear to include components of such an approach (fuels treatment to reduce catastrophic wildfire and thinning to promote larger tree size distribution). We recommend that the EIS include a discussion of how the project supports the USFWS recommendations to employ ecological forestry principles, as well as a discussion about monitoring to assess treatments in order to inform future management.

The USFS Biological Evaluation found that the project “may affect, and is likely to adversely affect” spring Chinook salmon and bull trout. This analysis also found that there would not be any adverse modification of designated critical habitat for either species. A Biological Assessment is currently being prepared to enter into formal consultation with USFWS and NMFS with a Biological Opinion anticipated prior to publication of the final EIS. The EIS notes that the project will be required to comply with the terms and conditions provided by the USFWS and NMFS in the Biological Opinion. We support incorporating any protective measures outlined by the Service, and we recommend that the final EIS include the BO as an appendix and outline any terms and conditions that would need to be met.

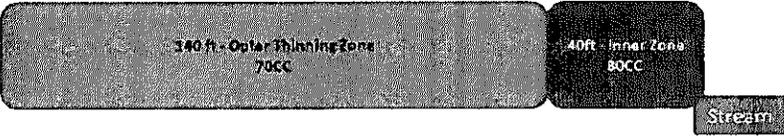
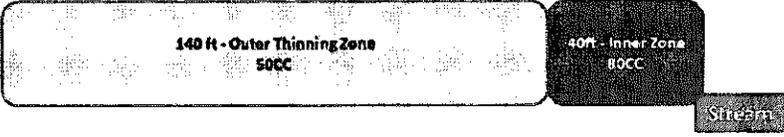
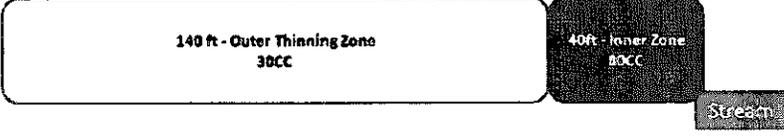
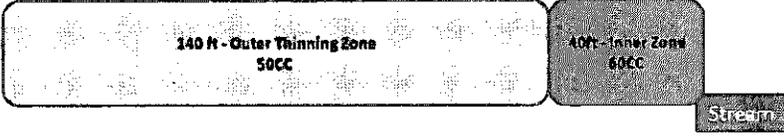
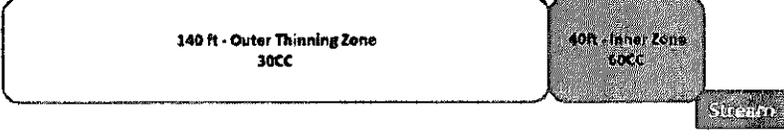
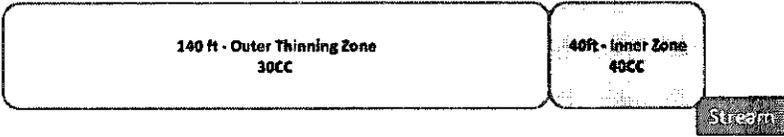
⁶ USDA, Forest Service. 2011. Watershed Condition Framework.

http://www.fs.fed.us/sites/default/files/Watershed_Condition_Framework.pdf

⁷ USFWS. 2011. Northern Spotted Owl Recovery Information Site, Recovery Plan.

<https://www.fws.gov/oregonfwo/species/Data/NorthernSpottedOwl/Recovery.asp>

Attachment 1: Modeled percent shade loss for a 180 foot wide riparian buffer with a 40 foot inner “no-touch” buffer at various thinning intensities and initial canopy cover conditions. Over 3 % shade loss (highlighted yellow) considered to present risk of stream temperature reponse.

Scenario (Two Sided Treatments)	Stream Aspect			Average
	North South	NW/SE	East West	
Pre-harvest Condition - 80% Canopy Cover				
	5.1	4.8	3.3	4.4
	7.4	6.4	4.6	6.1
	10.8	8.8	6.1	8.5
Pre-harvest Condition - 60% Canopy Cover				
	13.3	12.6	12.0	12.7
	18.2	16.1	14.6	16.3
Pre-harvest Condition - 40% Canopy Cover				
	23.9	23.3	26.4	24.5

Attachment 2: Modeled percent shade loss for a 180 foot wide riparian buffer with a 60 foot inner “no-touch” buffer at various thinning intensities and initial canopy cover conditions. Over 3 % shade loss (highlighted yellow) considered to present risk of stream temperature reponse.

Scenario (Two Sided Treatments)	Stream Aspect			
	North South	NW/SE	East West	Average
Pre-harvest Condition - 80% Canopy Cover				
<p>120 ft - Outer Thinning Zone 70CC</p> <p>60ft - Inner Zone 80CC</p> <p>Stream</p>	1.7	1.6	0.9	1.4
<p>120 ft - Outer Thinning Zone 50CC</p> <p>60ft - Inner Zone 80CC</p> <p>Stream</p>	2.9	2.3	1.3	2.2
<p>140 ft - Outer Thinning Zone 30CC</p> <p>60ft - Inner Zone 80CC</p> <p>Stream</p>	4.5	3.3	1.6	3.1
Pre-harvest Condition - 60% Canopy Cover				
<p>120 ft - Outer Thinning Zone 50CC</p> <p>60ft - Inner Zone 60CC</p> <p>Stream</p>	6.6	6.1	5.6	6.1
<p>140 ft - Outer Thinning Zone 30CC</p> <p>60ft - Inner Zone 60CC</p> <p>Stream</p>	10.1	8.4	6.9	8.4
Pre-harvest Condition - 40% Canopy Cover				
<p>140 ft - Outer Thinning Zone 30CC</p> <p>60ft - Inner Zone 40CC</p> <p>Stream</p>	14.7	13.9	16.2	15.0

**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 U.S. 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

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

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

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.