June 27, 2019

Jeffrey Davis
Bureau of Land Management
Myrtlewood Field Office
1300 Airport Lane
North Bend, OR 97459

In Reply to: Big Weekly Elk Forest Management Project Scoping Document

Dear Mr. Davis:

Introduction

On behalf of the American Forest Resource Council (AFRC) and its members, thank you for the opportunity to comment on the Big Weekly Elk Forest Management (BWE) Project.

AFRC is a regional trade association whose purpose is to advocate for sustained yield timber harvests on public timberlands throughout the West to enhance forest health and resistance to fire, insects, and disease. We do this by promoting active management to attain productive public forests, protect adjoining private forests, and assure community stability. We work to improve federal and state laws, regulations, policies and decisions regarding access to and management of public forest lands and protection of all forest lands. AFRC represents over 50 forest product businesses and forest landowners throughout the West. Many of our members have their operations in communities adjacent to the Myrtlewood Field Office (MFO), and the management on these lands ultimately dictates not only the viability of their businesses, but also the economic health of the communities themselves. The state of Oregon's forest sector employs approximately 61,051 Oregonians, with AFRC's membership directly and indirectly constituting a large percentage of those jobs. Rural communities, such as the ones affected by this Project, are particularly sensitive to the forest product sector in that more than 50% of all manufacturing jobs are in wood manufacturing.

Tiering

AFRC would like the MFO to utilize tiering to the 2016 ROD/RMP wherever possible in order to increase analysis efficiencies. The *Griffin Half Moon EA* on the Ashland Field Office describes tiering on page 11, "This document and the effects analysis tier to the 2016 PRMP/FEIS for Western Oregon. Tiering refers to using the coverage of general matters in broader NEPA

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documents in subsequent narrower NEPA documents. Tiering allows agencies to narrow the range of alternatives, narrow the scope of analysis, and reach a Finding of No Significant Impact for an action that may otherwise potentially have significant impacts. Where issue has already been sufficiently addressed by the analysis in the 2016 PRMP/FEIS, the issue is generally not addressed in detail in this EA, or if it is, the EA analysis is generally a site-specific extension of the FEIS analysis." AFRC would like the MFO to include this type of language in the ensuing NEPA document.

Purpose and Need

AFRC is glad to see the MFO proposing vegetation management on their Harvest Land Base (HLB), Riparian Reserve (RR), and Late Successional Reserve (LSR) Land Use Allocation (LUA) lands that will likely provide useful timber products to our membership. Our members depend on a predictable and economical supply of timber products off Bureau of Land Management (BLM) land to run their businesses and to provide useful wood products to the American public. The treatments on the BWE Project will likely provide short-term products for the local industry and we want to ensure that this provision is an important consideration for the decisionmaker as the Project progresses. As we will discuss later in this letter the importance of our members' ability to harvest and remove these timber products from the timber sales generated off this Project is paramount. We would like the BLM to recognize this importance by **adding economic viability & support to the local infrastructure to the purpose and need** of the BWE Project. Supporting local industry and providing useful raw materials to maintain a robust manufacturing sector should be a principal objective to any Project proposed on BLM land, particularly those lands designated as HLB, but also on land designated as LSR. Additionally, the Northwest Oregon BLM District's Upper Willamette Field Office included providing opportunities for winter logging as a purpose and need for their *London Road Timber Management Project*. These additional objectives for a project are extremely important and are needs in the logging community which allows the BLM to implement its RMP. Including language like this helps the BLM bolster its ability to get meaningful work done on their lands.

AFRC would like to point out that the 2016 Northwestern & Coastal Oregon Record of Decision/Resource Management Plan (2016 NCO ROD/RMP) identifies Management Objectives and Direction in the BLM's LSR on pg. 64-67. Table 3 in the scoping document utilized information from the Late-Successional Reserve Assessment, Oregon Coast Province, Southern Portion (RO267, RO268), which was developed solely from data collected from the Siuslaw National Forest. The document states on page 55, "These structural element data represent the averages of mature conifer stand conditions. They should not be targeted as an average stand condition." The BLM no longer falls within this assessment as the new 2016 NCO ROD/RMP changed the designated spatial extent for the LSR LUA.

O&C Lands and Models

AFRC has been advocating for sustainable timber management on O&C Lands for well over a decade. Our membership depends on a BLM timber program that is designed to sustain itself into the future. We have expressed our concerns with how the past management paradigm under the Northwest Forest Plan of exclusive thinning impacted the BLM's ability to achieve this sustainability. When that plan was conceived in 1994, the BLM assured the public that the timber resources on O&C Lands would be managed based on the principles of sustained yield. This assurance was based on a carefully crafted harvest plan that included both regeneration and thinning treatments directed by detailed modeling effort. Those models, and particularly the regeneration harvest, were largely ignored during the 20 years following completion of the plan—regeneration harvest was deferred in favor of a management scheme based solely on thinning. A similar modeling effort was completed again for the 2016 RMP's. Once again, the BLM assured that their timber resources would be managed based on the principles of sustained yield as directed by the O&C Act, and this assurance was once again supported by a carefully crafted set of models that included a combination of regeneration harvest and thinning. AFRC wants to ensure that the implementation failures of the Northwest Forest Plan described above are not replicated under the current Resource Management Plan (RMP). A failure to implement would be characterized by the BLM ignoring the sustained yield models and proposing treatments in conflict with those models.

The BLM recognized this fact in a 2012 RMP Evaluation Report on the implementation of what then was their current RMP. Among other findings, this report led the BLM to the following two realizations:

- The determination of the Allowable Sale Quantity (ASQ) is based upon an assumed; mix, intensity and cycle of regeneration and thinning harvest. Adherence to the principles of sustained yield, at the declared ASQ harvest level, is based on implementation of these assumptions.
- Accelerated rates of thinning without replenishment of younger forest stands through regeneration harvest means that opportunities for thinning will eventually be exhausted. The current approach to a forest management regime that deviates so considerably from the RMP assumptions used in determination of the ASQ is **not sustainable** at the declared ASQ level.

A similar modeling effort was completed for the 2016 RMPs, published by BLM last summer. Once again, BLM assured that their timber resources would be managed based on the principles of sustained yield as directed by the O&C Act, and this assurance was once again supported by a carefully crafted set of models that included a combination of regeneration harvest and thinning, AFRC wants to ensure that these well documented implementation failures of the Northwest Forest Plan validated in the 2012 RMP Evaluation Report are not replicated under the current RMP.

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On page 2 the scoping document states that, "[p]roposed actions within the HLB would consist of regeneration harvest". There is no mention of thinning in the HLB, yet on page 4 of the scoping document the second *Project Objective (Purpose)* states, "Within the HLB conduct commercial thinning to produce timber to contribute to the attainment of the declared ASQ". Table 1 identifies the modeled output from the Environmental Impact Statement (EIS) completed for the 2016 ROD/RMP. These models were used to create the ASQ for each Sustained Yield Unit (SYU). The Project Area contains both the HLB – Light Intensity Timber Area (LITA) LUA and HLB-Moderate Intensity Timber Area (MITA) LUA. Within both of these LUAs, the stand age is primarily classified as <40 or 40-80 years of age. According to Table 1, all of the stands in the LITA and MITA (other than those over 80 years in the LITA) are modeled to have either regeneration or thinning.

Please develop an alternative that uses the modeling completed for the RMP FEIS to determine prescriptions for a sustained yield of timber from the HLB.

Table 1: RMP FEIS Modeled Management Activities for the Coos Bay SYU

Coos Bay SYU			
	Age Group 2013	First Decade	
		Regeneration	Thinning
LITA	1) 0-30	-	-
	2) 40-70	123	427
	3) 80-110	213	-
	4) 120-150	13	-
	5) 160-190	21	-
	6) 200+	139	-
Total		**510**	**427**
MITA	1) 0-30	-	-
	2) 40-70	1,072	743
	3) 80-110	808	100
	4) 120-150	429	-
	5) 160-190	234	-
	6) 200+	75	-
Total		**2,618**	**843**

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Table 2: Currently planned and completed HLB treatments (All of Upper Rock EA)

Coos Bay SYU					
	Age Group 2013	First Decade			
		Regeneration Acre	Thinning Acre	Regeneration % Attained	Thinning % Attained
LITA	1) 0-30	-	-	-	-
	2) 40-70	172	6	139.84%	1.41%
	3) 80-110	-	-	-	-
	4) 120-150	-	-	-	-
	5) 160-190	-	-	-	-
	6) 200+	-	-	-	-
Total		**172**	**6**	**139.84%**	**1.41%**
MITA	1) 0-30	-	-	-	-
	2) 40-70	425	16	39.65%	2.15%
	3) 80-110	244	-	30.20%	-
	4) 120-150	-	-	-	-
	5) 160-190	-	-	-	-
	6) 200+	-	-	-	-
Total		**669**	**16**	**25.55%**	**1.90%**

Table 2 identifies current levels of harvest completed and planned in the HLB under the Upper Rock EA. As shown, if the MFO regenerates all of the acres it has proposed in the Upper Rock EA, LITA within the 40-70 age group, it will be in conflict with the models. The MFO should think critically about where it proposes regeneration or thinning within the LITA and MITA as to follow the models.

The ASQ for the Coos Bay SYU is only sustainable if these models are followed as closely as possible. For example, if the Coos Bay SYU fails to implement 808 acres of MITA regeneration harvest in stands in the 80-110 year age group in the first decade, then the District's ASQ will eventually be unattainable. Likewise, if the Coos Bay SYU chooses instead to focus their LITA regeneration harvest in stands in the 40-70 year age group above 123 acres, the ASQ will eventually be unattainable. In order to ensure that this last scenario does not occur, the MFO needs to coordinate their Decision Documentation and implemented actions off of the BWE Project along with actions in the HLB authorized from other analyses across the entire Coos Bay SYU. AFRC also believes that regenerating the oldest stands first makes the most logical sense silviculturally by allowing younger stands to be thinned and then regenerated. Older stands are more likely in a state where regeneration will most greatly benefit the stand.

Please identify how this project conforms with the greater strategy of following the modeled outputs to sustainably acquire the Annual and Decadal ASQ.

Maximizing Treatment Area

The consideration of active management on every acre of appropriate land, regardless of its land allocation, is important to our membership as each year's timber sale program is a function of the treatment of aggregate forested stands across the landscape. Based on the scoping notice, it appears that the MFO has the opportunity to propose treatment on 100% of the Project Area under BLM ownership within the HLB, RR, and LSR LUAs. The MFO identified 29,735 acres of ownership within the Project Area. This includes Inner Zone RRs and District Designated Reserves which are not proposed for commercial harvest. We urge the MFO to look for ways to maximize treatment in the Project Area and to avoid deferring units or setting aside portions of units for what is often referred to as "skips". Skips within the watershed are plentiful, what is not plentiful are openings. If the MFO truly wants to diversify the landscape, then it should focus on creating openings in the forest and minimizing untreated areas within the Project Area. The scoping notice indicates that gaps will be considered in the LSR and RR. The size of these cuts will have to be tailored to each land allocation, but we believe that they can be used to meet objectives for each of these three allocations.

We also urge the MFO to consider a range of thinning intensities when developing prescriptions in the LSR and RR. Thinning from below ends up being the most common thinning method utilized by the BLM. AFRC urges the BLM to thin through a diameter range, thin from above, and use group selection/ gap creation. Remember that every time a stand is treated a legacy is left on the land. We recommend the MFO review the following PNW paper if you have not already:

> *Garman, Steven L.; Cissel, John H.; Mayo, James H. 2003. Accelerating Development of Late-Successional Conditions in Young Managed Douglas-fir Stands: A Simulation Study. Gen. Tech. Rep. PNW-GTR-557. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.*

This study suggests that heavy thinning promoted rapid development of large boles, vertical diversity, and tree-species diversity, but required artificial creation of dead wood. Treatments that retained more than 40 percent of the overstory delayed attainment of late-successional conditions by 10 to 30 years but resulted in higher levels of most late-successional attributes at the end of a rotation. We would like the MFO to consider this study and to weigh these tradeoffs and consider a variety of thinning intensities to achieve desired outcomes. A mixture of heavier treatments that may remove northern spotted owl dispersal habitat could accelerate development of late-seral conditions, provide diverse understory species, and result in a higher level of overall diversity within the stands.

Economics and Operating Restrictions

AFRC would like to pose a few issues to the BLM:

1) How would the proposed activities affect the socioeconomics of the local communities?
2) How would the proposed activities be paid for?
3) How would the proposed activities allow for a sustainable flow of timber?

The timber products provided by the BLM are crucial to the health of our membership and local economy. Without the raw material sold by the BLM, these mills would be unable to produce the amount of wood products that the citizens of this country demand. Without this material, our members would also be unable to run their mills at capacities that keep their employees working, which is crucial to the health of the communities that they operate in. These benefits can only be realized if the BLM sells their timber products through sales that are economically viable. This viability is tied to both the volume and type of timber products sold and the manner in which these products are permitted to be delivered from the forest to the mills. There are many ways to design a timber sale that allows a purchaser the ability to deliver logs to their mill in an efficient manner while also adhering to the necessary practices that are designed to protect the environmental resources present on BLM forestland. Logging contractors must average 10 months of work per year in order to be profitable. Please consider the economic viability of the Project and make sure that it is designed in a way that makes sense for the market.

In addition, we urge the BLM analyze the economic effect of a "No Action" alternative. Stressing the importance of timber harvest on local economies and the need for industry to stay vibrant to fund other work in the woods. Please help us tell the sustainability story of conscious timber harvest across landscapes. The "what would happen if industry went away" story that often is neglected in the No Action alternative.

AFRC would like to see the effects to the socioeconomics in the local communities analyzed for this Project. When a Project is analyzed and subsequent timber sales do not sell, AFRC is left wondering what happened in the planning phase. Without an economic or socioeconomic analysis, AFRC cannot help the BLM assess possible changes to create more economic sales. There are not many BLM Projects that have analyzed the effects to the local economics or socioeconomics. AFRC sees this as an oversight and would like the BLM to disclose this analysis to the public. We have provided five examples of this type of assessment from the Forest Service for the BLM to review. Each example contains specific analysis topics AFRC would like to see utilized in the ensuing NEPA document. They have been identified below and should provide ample ideas for the MFO to get started. To be clear, we are advocating that you consider the economic viability of the Project and make sure that it is designed in a way that makes sense for the market.

1. *Lowell County EA* – Willamette National Forest (Economics, pg. 173-178)
    - AFRC believes this analysis includes most of the key factors of a thoughtful economic analysis, but not all of them. Those included are:

- Log prices
- Agency Costs
- Estimated Volume and Profit

2. *Chetco Bar Fire Salvage EA* – Rogue River-Siskiyou National Forest (Economics, pg. 3-61 to 3-65)
    - This analysis covers a few main topics, but what AFRC appreciates the most is the table below (pg. 3-64). This table allows AFRC to develop a better understanding for how the Agency developed its final cost and profit values. Without this information it is difficult for AFRC to help the Agency more accurately determine the net return of a Project.

Table 17. Costs for Determining Project Revenue.

Zone Averages Costs per Mbf	$/Mbf
Tractor Logging - Stump to Truck	$187
Skyline Logging - Stump to Truck	$245
Helicopter Logging – Stump to Truck	$400
Haul Costs	$87
Road Maintenance	$26
Road Reconstruction	$25
Brush Disposal	$9
Other Contract Costs	$11

3. *Black Torch EA* – Chequamegon-Nicolet National Forest (Socioeconomics, pg. 123-133)
    - AFRC likes the use of these 5 distinct Economic Indicators to analyze the socioeconomic effects of the Project. They provide solid metrics to compare the different alternatives.
        - Twenty Five Percent Fund, Payment in Lieu of Taxes Act of 1976, Secure Rural Schools and Community Self-Determination Act of 2000
        - Employment
        - Income Generated
        - Harvest Volume
        - Potential Biomass Harvest

4. *Shores EA* – Hiawatha National Forest (Economics, pg. 134-136)
    - The acknowledgment that costs outweigh profit of the Project is key in this analysis. AFRC would like to point out that the acres/volume in a sale effect the overall return on investment in a Project. Had this Project included more acres or if more volume per acre was removed, this Project may have had a net positive return (even in a downturned market). Understanding the reason for a net negative return is important and an economic analysis can help determine the factors for this return.

5. *Niagara EIS* – Hiawatha National Forest (Financial and Economic Efficiency Analysis, pg. 128)
    - AFRC appreciates the use of a very simple and easy to understand table.

Table 28. Comparison of Estimated Tangible Costs & Returns for the Niagara Project.

	Proposed Action	No Action	Alt. 1	Alt. 2
	ESTIMATED COST			
Timber sale preparation & admin	($291,400)	$0	($150,400)	($413,600)
Handtool site preparation for natural	($10,313)	$0	($4,181)	($14,618)
Mechanical site preparation for natural	($14,111)	$0	($10,005)	($14,111)
Full plant	($43,800)	$0	($31,000)	($31,000)
Regeneration survival checks	($15,529)	$0	($7,358)	($22,008)
New system road construction	($51,336)	$0	($41,540)	($51,336)
Temporary road construction	($14,921)	$0	($12,529)	($14,921)
Close existing roads	($6,900)	$0	($6,900)	($6,900)
Decommission roads	($15,773)	$0	($15,773)	($15,773)
Construct log landings	($5,562)	$0	($5,464)	($5,562)
TOTAL COSTS	($469,645)	$0	($285,149)	($589,827)
	ESTIMATED RETURNS			
Volume	12.4 MMBF	0	6.4MMBF	17.6MMBF
Volume (07/07 monetary value)	$636,368	$0	$317,564	$938,492
25% return to counties	($159,092)	$0	($79,391)	($234,623)
10% return to roads & trails fund	($63,637)	$0	($31,756)	($93,849)
TOTAL RETURNS TO TREASURY	($56,006)	$0	($78,735)	$20,193

The primary issues affecting the ability of our members to feasibly deliver logs to their mills are firm operating restrictions. As stated above, we understand that the BLM must take necessary precautions to manage their resources; however, we believe that in many cases there are conditions that exist on the ground that are not in step with many of the restrictions described in BLM Environmental Assessment (EA) and contracts (i.e. dry conditions during wet season, wet conditions during dry season). We are glad to see that the MFO is shifting their methods for protecting resources from that of firm prescriptive restrictions to one that focuses on descriptive end-results. There are a variety of operators that work in the MFO market area with a variety of skills and equipment. Developing an EA and contract that firmly describes how any given unit shall be logged may inherently limit the abilities of certain operators.

For example, restricting certain types of ground-based equipment rather than describing what condition the soils should be at the end of the contract period unnecessarily limits the ability of certain operators to complete a sale in an appropriate manner with the proper and cautious use of their equipment. We feel that there are several ways to properly harvest any piece of ground, and certain restrictive language can limit some potential operators. Though some of the proposed area is planned for cable harvest, there are opportunities to use certain ground equipment such as feller bunchers and processors in the units to make cable yarding more efficient. Allowing the use of

processors and feller bunchers throughout these units can greatly increase its economic viability, and in some cases decrease disturbance by decreasing the amount of cable corridors, reduce damage to the residual stand, and provide a more even distribution of woody debris following harvest.

The newest operating system is tethered logging. This system allows ground based equipment to operate on slopes greater than 35% by decreasing the PSI of the machine and therefore the ground disturbance. Please do not write yourself out of using this innovative technology. **We recommend phrasing the language in your ensuing NEPA document to focus on desired end results for soil conditions rather than prescribing the type of equipment necessary to meet those conditions.**

Roads

Constructing forest roads is essential if active management is desired, and we are glad that the BLM is proposing the roads that are needed to access and treat as much as the Project area as possible in an economically feasible way. Proper road design and layout should pose little to no negative impacts on water quality or slope stability. Consistent and steady operation time throughout the year is important for our members not only to supply a steady source of timber for their mills, but also to keep their employees working. These two values are intangible and hard to quantify as dollar figures in a graph or table, but they are important factors to consider. The ability to yard and haul timber in the winter months will often make the difference between a sale selling and not, and we are glad the MFO working to accommodate this by proposing rock application to roads that include cable yarding systems.

Because there is a significant amount of work proposed within the BWE Project, AFRC would like the MFO to simply use words such as "approximately" or "roughly" when disclosing road lengths in the Project area. In other words, if you cannot determine the exact amount of road miles to be constructed during the analysis process, do not explicitly define an exact amount of road miles in the analysis document.

We see in the scoping notice that several roads are being proposed for decommissioning, however, these roads are not identified on the attached scoping notice map. We would still like the district to identify these roads so that the public can have a chance to review the location of these roads. AFRC is particularly concerned about an in-tact road system that facilitates the active management on appropriate lands, specifically those lands designated as Matrix where sustainable timber management is required. Sustainable timber management is unlikely to occur in an economical manner without a quality road system in place. We would like the BLM to closely consider each road proposed for decommissioning from the perspective of future management needs.

Riparian Area Treatment

AFRC is happy to see the BLM considering treating their RR's. After visiting several stands proposed for treatment it's clear that the undesired forest conditions (overly dense and uniform stands) that exist in the uplands also exist in the riparian reserves. The forest health benefits that you expect to attain through upland thinning treatments can therefore also be achieved in riparian areas with similar active management prescriptions, and so we urge the BLM to strive toward maximizing the acres of riparian reserve treated to meet those objectives. It has been well documented that thinning in dense, uniform forest stands accelerates the stand's trajectory to produce large conifer trees, vertical diversity, and tree-species diversity (Garman, Steven L.; Cissel, John H.; Mayo, James H. 2003.); all characteristics that we assume are desirable in riparian areas as much as they are desirable in the uplands.

The tradeoffs that the BLM will likely be considering through the ensuing environmental analysis will be between achieving these forest health benefits and potentially having adverse impacts to streams. These impacts to streams typically include stream temperature, wood recruitment, and sedimentation associated with active management. Additionally, AFRC wants to point out that thinning in the RR is necessary adjacent to regeneration harvests as well. Considerations to logging feasibility should be reviewed, although thinning in RR should not be deferred next to regeneration harvests solely because of the difference in harvest method. Thinning in the RR is easier when the RR runs perpendicular to the yarding corridor in cable units. Ground Based units should always include the riparian thinning where it is silviculturally appropriate due to the ease of weaving through trees with a machine versus a yarding corridor with a cable system.

We would like the BLM to review the literature cited below and incorporate its findings into your environmental analysis that will shape the level of management permitted to occur in riparian reserves.

Stream temperature

Janisch, Jack E, Wondzell, Steven M., Ehinger, William J. 2012. Headwater stream temperature: Interpreting response after logging, with and without riparian buffers, Washington, USA. *Forest Ecology and Management*, 270, 302-313.

Key points of the Janisch paper include:

- The amount of canopy cover retained in the riparian buffer was not a strong explanatory variable to stream temperature.
- Very small headwater streams may be fundamentally different than many larger streams because factors other than shade from the overstory tree canopy can have sufficient influence on stream temperature.

Anderson P.D., Larson D.J., Chan, S.S. 2007 Riparian Buffer and Density Management Influences on Microclimate of Young Headwater Forests of Western Oregon. *Forest Science,* 53(2):254-269.

Key points of the Anderson paper include:

- With no-harvest buffers of 15 meters (49 feet), maximum air temperature above stream centers was less than one-degree Celsius greater than for un-thinned stands.

Riparian reserve gaps

Warren, Dana R., Keeton, William S., Bechtold, Heather A., Rosi-Marshall, Emma J. 2013. Comparing streambed light availability and canopy cover in streams with old-growth versus early-mature riparian forests in western Oregon. *Aquatic Sciences* 75:547-558.

Key points of the Warren paper include:

- Canopy gaps were particularly important in creating variable light within and between reaches.
- Reaches with complex old growth riparian forests had frequent canopy gaps which led to greater stream light availability compared to adjacent reaches with simpler second-growth riparian forests.

Wood Recruitment

Burton, Julia I., Olson, Deanna H., and Puettmann, Klaus J. 2016. Effects of riparian buffer width on wood loading in headwater streams after repeated forest thinning. *Forest Ecology and Management*. 372 (2016) 247-257.

Key points of the Burton paper include:

- Wood volume in early stages of decay was higher in stream reaches with a narrow 6-meter buffer than in stream reaches with larger 15- and 70-meter buffers and in un-thinned reference units.
- 82% of sourced wood in early stages of decay originated from within 15 meters of streams.

Benda, L.D. Litschert, S.E., Reeves, G. and R. Pabst. 2015. Thinning and in-stream wood recruitment in riparian second growth forests in coastal Oregon and the use of buffers and tree tipping as mitigation. *Journal of Forestry Research.*

Key points of the Benda paper include:

- 10-meter no-cut buffers maintained 93% of the in-stream wood in comparison to no treatment.

Sedimentation

Rashin, E., C. Clishe, A. Loch and J. Bell. 2006. Effectiveness of timber harvest practices for controlling sediment related water quality impacts. *Journal of the American Water Resources Association*. Paper No. 01162

Key points of the Rashin paper include:

- Vegetated buffers that are greater than 33 feet in width have been shown to be effective at trapping and storing sediment.

Dry Forests

Messier, Michael S., Shatford, Jeff P.A., and Hibbs, David E. 2011. Fire Exclusion effects on riparian forest dynamics in southwestern Oregon. *Forest Ecology and Management*. 264 (2012) 60-71.

Key points of the Messier paper include:

- Fire exclusion has altered the structure, composition, and successional trajectory of riparian forests in fire-prone landscapes.
- Fire exclusion has been associated with increase in tree density and recruitment of shade-tolerate species that may replace large diameter, more decay-resistant Douglas-fir trees.
- A hands-off management regime for these riparian forests will have ecologically undesirable consequences.

Collectively, we believe that this literature suggests that there exists a declining rate of returns for "protective" measures such as no-cut buffers beyond 30-40 feet. Resource values such as thermal regulation and coarse wood recruitment begin to diminish in scale as no-cut buffers become much larger. We believe that the benefits in forest health achieved through density management will greatly outweigh the potential minor tradeoffs in stream temperature and wood recruitment, based on this scientific literature.

Silviculture and T&E Species

The primary driver of LSR treatments in this Project, as it's written in the scoping notice, is "to promote the development and retention of large, open-grown trees and multi-cohort stands, develop diverse understory plant communities, increase or maintain vegetative species diversity, promote or enhance the development of structural complexity and heterogeneity, and to adjust

composition or dominance". AFRC believes that this objective is best met by developing silvicultural treatments across the Project Area that best achieve desired forest health conditions. Due to the Project's location within the range of the northern spotted owl (NSO) and marbled murrelet (MAMU) the BLM will have to consider impacts to these threatened species. Often, habitat conditions such as canopy cover that are accepted thresholds for NSO life-cycle needs are in conflict with desired forest health outcomes. We understand that some treatments will likely require modifications to mitigate impacts around active NSO centers. However, we think that the decision-maker needs to see the full range of forest health benefits possible by treating every stand to meet those objectives. The Roseburg BLM District is in the process of implementing the Third Rock EA and finishing up the NEPA for the Deadman's Folley EA. In both of these Projects, the Roseburg District utilized an adaptive management strategy for their HLB to implement alternative harvest methods and prescriptions to avoid incidental take of NSOs. AFRC suggests analyzing for the most impactful and necessary treatment with an adaptive management strategy if an NSO or MAMU come into the area and the proposed treatments would then result in incidental take based on consultation with the US Fish and Wildlife Service. Please remember the direction for treating in the HLB and do not treat it the same way as the LSR.

Effects on NSO

In addition to the effects to NSO habitat, this Project may also have short-term effects to the NSO (based on the presence of actual owls) due to the assumption that any type of forest management activity, including those that maintain habitat types, will have a negative impact on owls and their prey. This assumption is typically based on a few scientific pieces of literature published over the past decade. We would like the MFO to consider a recently published study conducted by NCASI when assessing treatment areas and their potential affects to owls:

> *Larry L. Irwin, Dennis F. Rock, Suzanne C. Rock, Craig Loehle, Paul Van Deusen. 2015. Forest ecosystem restoration: Initial response of spotted owls to partial harvesting*

Among other findings, this study concluded that partial-harvest forestry, primarily commercial thinning, has the potential to improve foraging habitats for spotted owls.

In addition, tall patches of trees may be more important for the vitality of NSOs. We suggest looking at this article to understand why downgrading habitat may be better than maintaining canopy cover.

> *North, M. P., Kane, J. T., Kane, V. R., Asner, G. P., Berigan, W., Churchill, D. J., . . . Whitmore, S. (2017). Cover of tall trees best predicts California spotted owl habitat. Forest Ecology and Management, 405, 166-178. doi:10.1016/j.foreco.2017.09.019*

Key Points:

- Focus on preserving patches of large/tall trees rather than canopy cover
- High canopy cover does not incorporate important habitat components

Impacts of the Proposed Action on Carbon Sequestration and Climate Change

Carbon sequestration as it relates to climate change is a topic that often gets broadly analyzed in NEPA documents. The analysis that the BLM will likely be conducting through the ensuing environmental analysis will discuss forest health benefits, effects on carbon sequestration and storage potential and meeting the purpose and need all within the context of an economically viable timber sale. We would like the BLM to review the following summary of information and incorporate this into its environmental analysis. AFRC believes this will help educate the public about and disclose localized effects to the forested landscape regarding carbon sequestration, carbon storage, and climate change as a whole.

Carbon Sequestration

Regeneration and Patches

When a forest stand is harvested, the stored carbon removed is transferred into other pools. It could go into the carbon sequestration of harvested wood products (HWP pool), into the soil organic carbon (SOC pool) or released into the atmosphere due to decomposition or slash burning. The small portion that is released into the atmosphere is captured again through increased photosynthesis of the remaining or new stand in a short period of time. Davis et al. (2009) suggested that just after 55 years, carbon sequestration was similar in harvested as un-harvested forests. Not only can forests have equal sequestration over the long term, but it is suggested that the recovery of the ecosystem can be extremely elastic as well. Amiro et al. (2010) discovered that, "A clear GPP[1] recovery occurred within about the first 20 years following a stand replacing harvest." AFRC acknowledges the fact that there is a reduction in the short term in net primary production (NPP[2]) following a harvest. However, when a long-term (>40years) scale is used, harvesting older trees or thinning overstocked stands will always increase positive climate change benefits because of long term storage of carbon in furniture, houses, etc., the substitution effect and increased CO2 sequestration due to increased photosynthesis.

Some may argue that maintaining canopy cover or a continuous forest will best allow for trees to remain as secure carbon storage on the landscape while thinning underneath can provide the wood the timber industry needs, but "[t]he long-term annual average carbon stock change in living trees is close to zero for a continuous cover forest while an annual net increase occurs on

[1] (Gross primary production (GPP) is the total amount of carbon dioxide "fixed" by land plants per unit time through the photosynthetic reduction of CO2 into organic compounds."

[2] Net primary production (NPP) of plant structural biomass in stems, leaves, and fruit, labile carbohydrates such as sugars and starch, and, to a much lesser extent, volatile organic compounds used in plant defense and signaling.

production forests where clear-cuts are utilized." (Lundmark et al. 2016). This shows how forests that grow in a patchy environment will always have higher increment growth with greater carbon sequestration potential than continuously thinned stands.

Harvested Wood Products (HWP)

The utility that forest products provide humans in their day to day lives is paramount. Products connected to the forest are used every day by everyone. "If forested ecosystems are to be managed with carbon sequestration in mind, then wood product market fluctuations must be considered in addition to ecosystem responses to harvest" (Davis et al., 2009). Often when carbon pools are brought up, the HWP pool is left out or misrepresented. The fact is that humans use wood products that do not decompose quickly; in fact, "only 30% of the carbon from paper and 0–3% of the carbon from wood are ever emitted as landfill gas. The remaining carbon … remains in the landfill indefinitely. Some of this carbon may be removed during leachate treatment, but a large portion is permanently sequestered where its impact on global warming is negligible. The placement of forest products in landfills serves as a significant carbon sink, and its importance in the global carbon balance should not be overlooked" (Micales & Skog, 1997). Carbon is stored securely in HWP of all kinds. The potential of any given acre to store carbon is exponentially increased when active management occurs on that piece of land because of harvesting and storing wood in the HWP pool, the substitution effect, and replanting after final harvest. When carbon is stored in houses, furniture, fences, light poles and other products, the wood is not only storing carbon, but serving a tangible benefit as well. Many of these products will outlive the tree/s they came from due to insects, disease, or fires that would have otherwise killed the tree, released the stored carbon and had its carbon legacy taken away. The homes, dresser, rocking chair, or local bar all get to live on.

Fire Risk

In Oregon Forest & Industries Council's (OFIC) October 2018 newsletter a forestry specialist from the University of California Berkley is highlighted who spoke at their 2018 Annual Meeting. Dr. William Stewart's research focuses on carbon impacts of active management of private forestlands compared to the "not-so-active" management on federal forestlands. He uses comprehensive forest carbon modeling systems to do this. Stewart's research suggests that private landowners are sequestering significantly more carbon than USFS. His research proposes this phenomenon is due to institutional decisions not climate change. Stewart's research also points to the probability of federal forest reserves burning and releasing carbon emissions being three times more likely now than in previous decades. Stewart thinks the prognosis is clear, less active management on federal forests slowed net growth across Oregon, California, and Washington. Conversely, active management clearly moves carbon out of the forest and into products which decreased the likelihood of mass carbon dumps from fire into the atmosphere.

In summary, any analysis of the effects of timber harvest on CO2 emissions or sequestration must be made using a long term, life cycle approach incorporating long term storage of currently sequestered carbon, net primary production of forest stands, and the net increase of CO2 emissions associated with the use of substitute materials. Much research has been done on these subjects which supports the position that managing forests using regeneration timelines related to NPP will result in greater net carbon sequestration than non-management approaches. Research also supports positive potential climate change effects of thinning to promote increased growth and vigor. Fire should also be included in this type of analysis due to their large carbon loading into the atmosphere. Generally, all of the silvicultural tools need to be used to maximize the positive benefits trees and forests provide for the world. To find more information about Oregon's forest benefits you can view a report by the OFIC here. OFIC does a wonderful job at explaining just how wonderful an environment Oregon is to grow trees and the fantastic carbon sequestration power they have here.

References

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Monitoring

AFRC recognizes all the demanding work put into completing NEPA. Therefore, we would like to see a detailed monitoring methodology for implementation and post implementation (pre-sale and post cut-out). It is not always clear if and how all the arduous work on the front end is coming to fruition. It is paramount quality control occurs. If site specific prescriptions are not written correctly or if those prescriptions are not implemented correctly, then all the work put into the NEPA is moot.

To assist in this effort AFRC would like to see a table with unit numbers, ages, LUA, pre-harvest basal area, approximate post-harvest basal area, pre-harvest relative density, and approximate post-harvest relative density in future NEPA documents. These are numbers the BLM should already be keeping track of.

Thank you for the opportunity to provide scoping comments on the BWE Project. We look forward to following this Project as it moves forward.

Sincerely,

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