

## Mighty Moose Timber Sale

### Final Decision, Decision Rationale and Finding of No Significant Impact (DR)

Environmental Assessment (EA) Number **DOI-BLM-OR-S040-2013-0003-EA**

July, 2014

United States Department of the Interior  
Bureau of Land Management, Oregon State Office  
Salem District, Cascades Resource Area

Willamette Meridian,  
T. 12 S., R.3 E., Sections 8, 9, 10, 15 and 17

Lower Quartzville Creek 6<sup>th</sup> field Watershed  
Linn County Oregon

Responsible Agency: USDI - Bureau of Land Management

Responsible Official: John Huston, Field Manager  
Cascades Resource Area  
1717 Fabry Road SE  
Salem, OR 97306



As the Nation's principal conservation agency, the Department of Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering economic use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

BLM/OR/WA/AE-14/035+1792

## 1.0 Introduction

The Bureau of Land Management (BLM) completed the *Mighty Moose Thinning Environmental Assessment (EA) and Finding of No Significant Impact (FONSI)*. This EA, which is incorporated by reference in this document, concluded with a Finding of No Significant Impact (FONSI) dated May 2, 2014. The Cascades Resource Area, Salem District initiated planning and design for this project on September 17<sup>th</sup>, 2012 to conform and be consistent with the Salem District's 1995 Record of Decision and Resource Management Plan. The proposed action alternative analyzed approximately 1300 acres of thinning treatment in 35-62 year old forest stands.

This decision, the Mighty Moose Timber Sale decision, selects 506 acres to thin located in T. 12 S., R.3 E., Sections 8, 9, 10, 15 and 17 (Appendix B, Map 1). The remaining acres analyzed in the Mighty Moose EA will be addressed in future decisions; the BLM anticipates offering two additional timber sales from the units analyzed in the EA.

The treatment area includes lands within Matrix, Riparian Reserve, and Late-Successional Reserve Land Use Allocations (LUA). All units lie in the Lower Quartzville Watershed and drain into Green Peter Lake.

## 2.0 Decision

Based on the EA, the project record, RMP management direction, and public input I have decided to implement the Mighty Moose Timber Sale. The decision selects 14 units of the Proposed Action described in the EA (pp. 15-22). Namely, the Mighty Moose Timber Sale will implement thinning in units 8A, 9A, 9B, 9C, 9D, 9E, 9F, and 15A, 15B, 15C, 15D, 15E, 15F, and 17A (DR Appendix A, Table 1).

The decision incorporates the project design features described in the Mighty Moose EA (pp. 24-27). These design features incorporate site specific measures to avoid or minimize resource impacts.

The following details the decision, hereafter referred to as the "selected action".

### Timber Harvest

Harvest approximately 506 acres (DR Table 1) providing approximately 12 million board feet (MMbf) of timber. This harvest includes:

- o Thinning 503 acres within the following 1995 RMP Land Use Allocations (LUA):
  - 252 acres within Matrix LUA
  - 221 acres within the Riparian Reserve (RR) LUA
  - 33 acres within the Late Successional Reserve (LSR) LUA
- o Thinning four areas, one-half to one acre in size, to a density of 10-12 trees per acre (TPA) within the GFMA LUA

Clearing approximately three acres of vegetation within the road rights-of-way accessing units in the Timber Sale.

## Logging Systems

Approximately 57 percent (288 acres) of the area, including clearing for road construction, will be logged using ground based yarding systems. Approximately 43 percent (217 acres) will be logged with a skyline yarding system (Appendix B, Maps 2 and 3).

## Road Work:

Road work will be completed as identified in the EA (Table 2, pp. 20-22) for the selected harvest units in sections 8, 9, 15, and 17. Appendix A (Table 2) in this decision displays the selected actions. Road work associated with the Mighty Moose Timber Sale includes:

- o Construct approximately 1.2 miles of new natural surface road to access thinning units. Roads will be closed and stabilized following project implementation.
- o Renovate approximately 1.9 miles of existing road to the minimum standard necessary for hauling, including blading, spot rocking, brushing, curve alignment, and tree removal.
- o Improve approximately 1.3 miles of existing road. Improvement may include widening of the road, culvert replacement, minor re-alignment of the road, small slide/slump repairs, clearing brush from cut and fill slopes, cleaning or replacing culverts, and applying rock surfacing material to depleted surfaces.
- o Maintain approximately 18.3 miles of existing, usable road. Maintenance typically includes blading and shaping of the roadbed and ditches, repairing slide/slumps, road-side brushing, and adding surface rock.
- o Stabilize and Close all 1.2 miles of newly constructed natural surface roads and 2.6 miles of improved and renovated road surfaces. Actions include:
  - o Seeding with native plant species and mulching with logging slash or approved sterile mulch to establish effective ground cover prior to the wet season;
  - o Reestablishing natural drainage patterns by removing all culverts, using water bars or other drainage features to prevent water erosion of exposed soil;
  - o Blocking vehicle access, typically with earth/debris barricades.
- o One-half acre expansion of rock quarry in section 30 for needed aggregate (EA p. 23).

## Fuels Treatments

Residual woody debris from logging on 60 acres will be reduced after harvest operations. Woody debris that accumulates in low density thinning areas and at logging landings will be piled and covered. In addition, fuels loads along property lines and roads as well as within portions of units will be piled and covered. After the fuels dry, the piles will be burned in compliance with the Oregon Smoke Management Plan.

## **Refinements to the Project since the EA was published**

Project boundaries and acreage: The EA analyzed 533 acres for the Mighty Moose Timber Sale: 276 acres in Matrix, 222 acres in Riparian Reserves, and 35 acres in LSR. These draft boundaries and fixed-width buffers provided an area for analysis for the Interdisciplinary Team. Throughout the planning process, the boundaries were refined to reflect and address on-the-ground conditions, logging feasibility, and resource needs. The final project area was determined using GPS and Geographic

Information Systems data in 2013. The final timber sale unit area amounted to 506 acres (Table 1).

### 3.0 Alternatives Considered

The EA analyzed the effects of the No Action and Proposed Action alternatives. No unresolved conflicts concerning alternative uses of available resources (section 102(2) (E) of NEPA) were identified. Complete descriptions of the two alternatives are contained in the EA, pp. 14 to 23. The project team considered other alternative actions, but did not analyze them in detail (EA Appendix C).

### 4.0 Decision Rationale

This decision rationale, based on the Decision Factors described in the Mighty Moose EA (p. 11), addresses the anticipated environmental effects, as well as the effectiveness of the selected actions in meeting the project objectives (EA p.11). Table 1 presents the Decision Factors and comparison among alternatives.

The Selected Action:

- Best meets the Purpose and Need (EA pp 9-11) established for the project, as shown in Table 1.
- Complies with the Salem District’s Record of Decision and Resource Management Plan (1995 ROD/RMP).
- Will not have significant impact on the affected elements of the environment (FONSI) beyond those already anticipated and addressed in the RMP FEIS.
- Is economically viable. This sale will produce revenue for the Federal Government and provide jobs.
- Meets the Aquatic Conservation Strategy Objectives (EA pp. 84-87).
- Facilitates development of late-successional habitat.

The No Action alternative was not selected because it does not meet the Purpose and Need directly, or delays the achievement of the Purpose and Need as shown in Table 1.

Table 1: Decision Factors and Comparison of Alternatives

Decision Factors and Project Objectives	Comparison of Alternatives
<p><b><u>Matrix LUA</u></b></p> <p>1) Supply a sustainable source of forest commodities from the Matrix LUA to provide jobs and contribute to community stability (RMP pp. 1, 46-48) by developing economically viable timber sales accounting for unit volume, logging systems and transportation design.</p> <p>2) Through silvicultural treatments, provide for the development and</p>	<p>1) The <b>Selected Actions</b> will provide over 12 million board feet of timber, providing needed jobs in the community, materials for mill operations and contribute to county revenues; each contributing to community stability.</p> <p>The prescriptions retain 56-119 trees per acre designed to increase growth rate following thinning. The high residual stocking and improved growing conditions will ensure a sustainable, future source of commodities.</p> <p>The selected unit volumes, logging systems and transportation system provide an economical sale. As described in the EA (pp. 106-107) the project team dropped many units due to low volume or high operational costs. In addition, the team identified areas with stable roads (rocked, good drainage) for winter work,</p>

Decision Factors and Project Objectives	Comparison of Alternatives
<p>maintenance of ecologically valuable structural components such as down logs, snags, and large trees (RMP p. 20).</p>	<p>providing job opportunities through the winter.</p> <p>The <b>No Action Alternative</b> will neither provide commodities to the market place nor create job opportunities for local communities. This alternative will not meet the purpose and need for the project.</p> <p>2) The <b>Selected Actions</b> will retain at least 90% of all existing snags; those felled will be left on-site as coarse woody debris. All large, old growth trees will be retained. Thinning will accelerate development of large tree structure for future large snags and down wood, and will facilitate species diversity. The project maintains habitat conditions for the northern spotted owl.</p> <p>Under the <b>No Action Alternative</b> current vegetation trends will continue with no silvicultural treatments to accelerate development of large tree structure or species diversity.</p>
<p><b><u>Riparian Reserve LUA</u></b></p> <p>1) Apply commercial thinning treatments to reduce stocking levels and create stand heterogeneity intended to: increase species and structural diversity; develop late successional habitat characteristics; and provide future recruitment opportunities for large snags and coarse woody debris (RMP pp. 6, 10, 11).</p>	<p>1) The <b>Selected Actions</b> apply treatments in riparian areas exhibiting simple structural and species diversity. Riparian thinning will result in tree density variability, creating structural complexity. Thinning will increase growth rates and facilitate large tree development for terrestrial and aquatic habitat. Thinning will also increase growing space for understory vegetation development and species diversity. At the landscape level, connectivity for species such as the northern spotted owl is expected to improve as late-successional conditions develop in the Riparian Reserves.</p> <p>Streamside buffers will maintain stream shade, protecting water temperature and preventing sediment from entering any water ways. The selected treatments, existing conditions, and objectives are consistent with the RMP guidelines for treating Riparian Reserves. The selected actions will meet ACS objectives.</p> <p>The <b>No Action Alternative</b> will not reduce stocking or expedite stand structural or species diversity. Tree mortality would occur, creating snags and down wood, but development of large standing and down wood characteristic of late-successional habitat will occur over a longer time period. Species diversity will remain low until a disturbance such as fire or windthrow removes overstory trees, allowing light to reach the understory.</p>
<p><b><u>Late-Successional Reserve LUA</u></b></p> <p>1) Through silvicultural prescriptions and commercial thinning treatments, increase structural and species diversity that benefit and enhance</p>	<p>1) The <b>Selected Actions</b> will provide tree spacing variability, retain largest dominate and co-dominate trees, and create small (1/2-1 acre) openings for early-seral habitat. Thinning forest stands will expedite increased tree growth, size, branch diameter, crown ratios, and understory development. The increase in structural diversity improves habitat by providing more opportunities for foraging, nesting/breeding, resting, hiding and escape/ cover</p>

Decision Factors and Project Objectives	Comparison of Alternatives
late-successional habitat (RMP p.16).	<p>habitat. These characteristics enhance landscape conditions of late-successional habitat since there is an abundance of simplified mid-seral stands in the Lower Quartzville Watershed.</p> <p>The <b>No Action Alternative</b> offers no opportunity to expedite large late-successional forest structure. Tree mortality would occur creating snags and down wood but development of large standing and down wood characteristic of late-successional habitat would occur over a longer time period. Understory and ground cover species development would not be established until a disturbance such as fire or windthrow removes overstory trees, allowing light to reach the understory.</p>

**5.0 Compliance with Direction and Planning updates**

The BLM designed the Mighty Moose project to comply with the *Salem District Record of Decision and Resource Management Plan* (1995 ROD/RMP). The analysis supporting this decision tiers to the *Final Salem District Proposed Resource Management Plan/Environmental Impact Statement* (USDI 1994). The 1995 ROD is also supported by and consistent with the *1994 Final Environmental Impact Statement on Management of Late-Successional and Old Growth related Species Within the Range of the Northern Spotted Owl* and its associated *Record of Decision* (USDA/USDI 1994).

The Mighty Moose Timber Sale (TS) is consistent with the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines*, January 2001 (2001 ROD), as modified by the October 2006 US District Court provisions for certain exemptions (Peckman exemptions).

I reviewed the Mighty Moose TS in consideration of the stipulated exemptions. Because the timber sale does not include regeneration harvest and includes thinning only in stands less than 80 years old, I determined that the project meets exemption A of the Peckman Exemption and may proceed to be offered for sale.

The project also complies with authorities described in the EA (pp. 12-13 and 82-84).

ESA Section 7 Consultation

**US Fish and Wildlife Service (USFWS):** The BLM submitted the Biological Assessment (BA) containing the Mighty Moose thinning proposal for consultation with U.S. Fish and Wildlife Service (USFWS) as provided in Section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1536 (a)(2) and (a)(4) as amended) during the FY2014 consultation process. The Letter of Concurrence (LOC) (FWS reference #01EOFW00-2013-I-0187) concurred that the habitat modification activities described in the BA, including the Mighty Moose project, are not likely to adversely affect spotted owls and will have no effect on Critical Habitat (LOC, p. 47, 73, 92). All applicable General Standards described in the Letter of Concurrence have been incorporated into the proposal (LOC pp.

17-19).

**National Marine Fisheries Service (NMFS):** Consultation with the National Marine Fisheries Service (NMFS) on effects of the Mighty Moose Thinning Project on Upper Willamette River (UWR) Chinook salmon and winter steelhead trout is not required because the thinning sale will have no effect on these species or on essential fish habitat. The Proposed Action of tree harvest by thinning and associated road activities will have no effect, predominantly because of the long distances from project actions to listed fish habitat, and because of project design features that result in little to no impacts to aquatic habitats. Thinning units adjacent to Green Peter Reservoir (Quartzville Creek subbasin) are >6 miles upstream of listed fish habitat, with Green Peter Reservoir located between project areas and listed fish habitat.

### **Compliance with the Aquatic Conservation Strategy**

The BLM reviewed the No Action and Proposed Action alternatives against the ACS objectives at the project scale. The No action Alternative does not retard or prevent the attainment of any of the nine ACS objectives because this alternative will maintain current conditions (EA pp. 84-87).

The Selected Actions do not retard or prevent the attainment of any of the nine ACS objectives. Over the long-term, the selected actions will aid in meeting ACS objectives by speeding the development of older forest characteristics in the Riparian Reserves. In addition, more open stands will allow for the growth of important riparian species in the understory. The Mighty Moose Timber Sale promotes stand and species diversity and accelerates development of large tree structure (EA pp. 84-87).

## **6.0 EA Public Review and Comments**

The BLM solicited comments from affected tribal governments, adjacent landowners, interested publics, and state and local governments. The BLM made the Mighty Moose EA and FONSI available for review from May 7th to June 6th, 2014. The BLM received four comment letters/emails during the EA comment period. Appendix C of this decision record provides responses to substantive public comments relative to the Mighty Moose TS.

## **7.0 Conclusion**

### **Review of Finding of no Significant Impact**

I have determined that a modification to the Finding of No Significant Impact (FONSI, May 2014) for the Mighty Moose TS is not necessary because I have considered and concur with information in the EA and FONSI. I reviewed the comments on the EA and no information was provided in the comments that lead me to believe the analysis, data, or conclusions are in error or that the selected action needs to be altered. There are no significant new circumstances or facts relevant to the selected action or associated environmental effects that were not addressed in the EA.

### **Administrative Review Opportunities**

The decision described in this document is a forest management decision and is subject to protest by the public. In accordance with Forest Management Regulations at 43 CFR 5003, protests of this decision may be made within 15 days of the publication of a notice of decision in a newspaper of

general circulation. The notice for this decision will appear in the *Albany Democrat-herald* newspaper on July 30, 2014. The planned sale date is August 27, 2014.

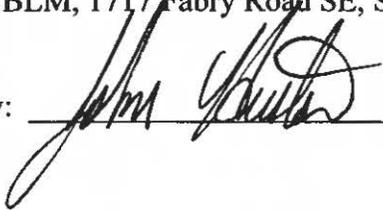
To protest this decision a person must submit a written protest to John Huston, Cascades Field Manager, 1717 Fabry Road, SE, Salem, Oregon 97306 by the close of business (4:30 p.m.) on August 14, 2014. A protest electronically submitted (e.g. email, facsimile, or social media) will not be accepted as a protest. Only written, signed hard copies of protests delivered to the Salem District Office will be accepted.

The protest must clearly and concisely state the reasons why the decision is believed to be in error. Any objection to the project design or my decision to go forward with this project must be filed at this time in accordance with the protest process outlined above. If a timely protest is received, this decision will be reconsidered in light of the statements of reasons for the protest and other pertinent information available, and the BLM shall serve a decision in writing on the protesting party (43 CFR 5003.3).

### **Implementation**

If no protest is received within 15 days after publication of the notice of decision, this decision will become final. For additional information, contact David Simons (503) 375-5612, Cascades Resource Area, Salem BLM, 1717 Fabry Road SE, Salem, Oregon 97306.

Approved by: \_\_\_\_\_



Date: \_\_\_\_\_

7/18/2014

John Huston  
Cascades Resource Area Field Manager

## Appendix A. Tables – Selected Actions

Table 1: Selected Thinning action by Land Use Allocation

Unit Number	Unit Acres total	General Forest Management Areas		Riparian Reserve	Late Successional Reserve
		Thin	LDTA*		
15A	80	32	1	27	21
15B	18	9	1	9	
15C	33	10		11	12
15D	211	107	1	104	
15E	8	2		6	
15F	2	1		1	
8A	27	9		18	
17A	10	6		4	
9A	43	38		5	
9B	6	6		0	
9C	19	13	1	6	
9D	2	0		2	
9E	5	0.1		5	
9F	42	19		23	
<b>Unit Acres Total</b>	<b>506</b>	<b>252</b>		<b>221</b>	<b>33</b>

\* Low Density Thinning Area - included within matrix thin acres

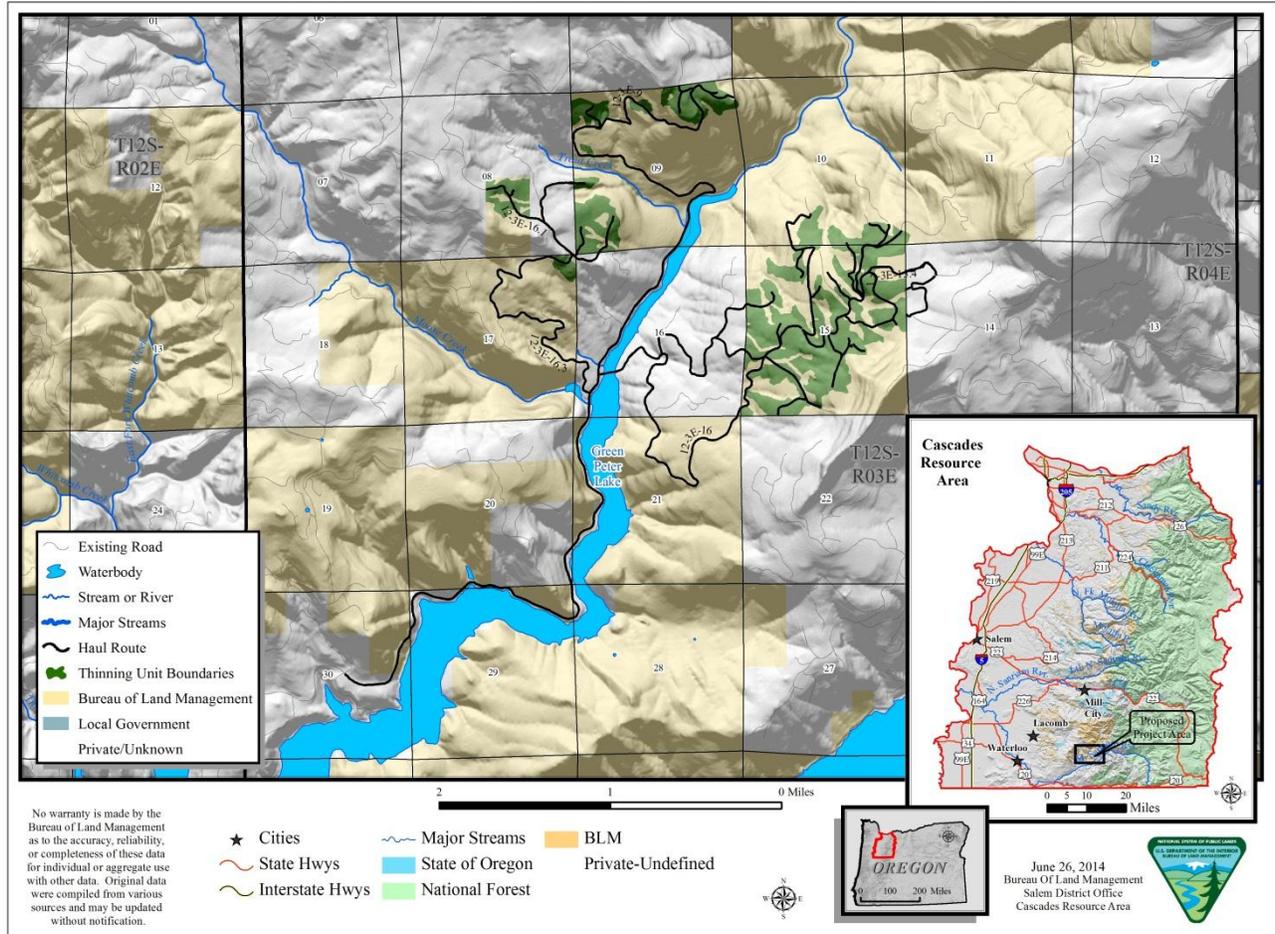
Table 2. Selected Road Actions

Road ID		Temporary New Construction, Natural Surface	Maintenance	Renovation	Improvement	Stabilize & Close	Associated Unit
EA	DR	Miles					EA
12-3E-8.1	12-3E-8.1		0.20				9E
12-3E-8.6	12-3E-8.6		0.28				9E
12-3E-8.6 EXT	12-3E-8.6 EXT			0.06		0.06	9E
12-3E-8	12-3E-9		1.44				9A-D
12-3E-9	12-3E-9		1.08				9A-D
12-3E-9.0	12-3E-9.1		0.29				9A
12-3E-9.1	12-3E-9.2			0.05			9A
12-3E-9.3	12-3E-9.3		0.30				9F
12-3E-9.4	12-3E-9.4			0.07			9F
12-3E-9.6	12-3E-9.6			0.11			9A
12-3E-10	12-3E-10			0.30			15A
12-3E-10.1	12-3E-10.1		0.42				15A
12-3E-14, A-B	12-3E-14, A-B		0.43				15A, 15B
12-3E-14.1	12-3E-14.1	0.04				0.04	15A
12-3E-14.2	12-3E-14.2	0.03				0.03	15B
12-3E-15	12-3E-15			0.38		0.38	15D
12-3E-15.1	12-3E-15.1			0.22		0.22	15D
12-3E-15.1 EXT	12-3E-15.1 EXT				0.14	0.14	15D
12-3E-15.3	12-3E-15.3		1.33				15C, 15D
12-3E-15.4	12-3E-15.4		0.25				15A, 15B
12-3E-15.4 EXT.	12-3E-15.4 EXT.				0.24	0.24	15A, 15B
12-3E-15.4 EXT.	12-3E-15.4 EXT.	0.30				0.30	15A, 15B
12-3E-16	12-3E-16		4.58				15A-F
12-3E-16.1	12-3E-16.1		0.92				8A, 9E, 9F
12-3E-16.3	12-3E-16.3		1.20				8A, 9E, 9F, 17A
12-3E-17.1	12-3E-17.1		0.94				8A, 9E, 9F, 17A
12-3E-29.1	12-3E-29.1		4.60				8, 9A-F, 15A-F, 17A
Spur 1	12-3E-15.7			0.08		0.08	15D, 15E
Spur 2	12-3E-16.5			0.29		0.29	15D, 15E
Spur 3	12-3E-16.5	0.06				0.06	15E
Spur 4	12-3E-15.6			0.22		0.22	15D

Spur 5	12-3E-15.8	0.10				0.10	15D
Spur 6	12-3E-15.9				0.13	0.13	15D
Spur 7	12-3E-15.10	0.15				0.15	15D
Spur 8	12-3E-15.11				0.20	0.20	15C
Spur 9	12-3E-15.12				0.39	0.39	15A
Spur 10	12-3E-15.13	0.23				0.23	15A
Spur 11	12-3E-9.7				0.14	0.14	9C
Spur 12	12-3E-9.7	0.10				0.10	9C
Spur 13	12-3E-17.5	0.20				0.20	9F
Spur 14	12-3E-8.7			0.05		0.05	8A
	<b>Totals</b>	<b>1.21</b>	<b>18.26</b>	<b>1.83</b>	<b>1.24</b>	<b>3.75</b>	

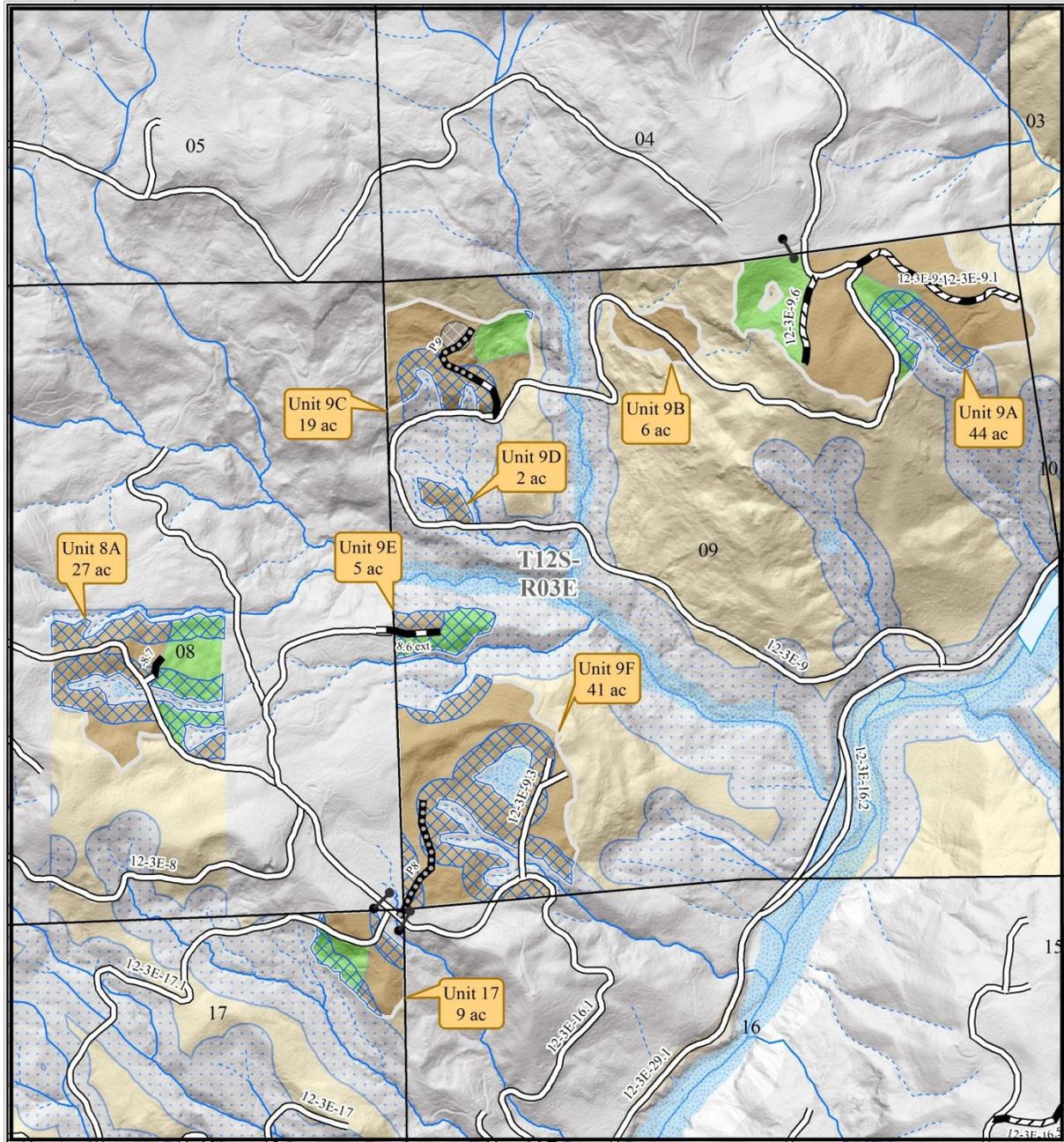
# Appendix B – Project Maps

Mighty Moose Decision Rationale Location Map (EA # OR-S040-2013-0003)



# Mighty Moose Thinning Decision Rationale EA # S040-2013-0003-EA

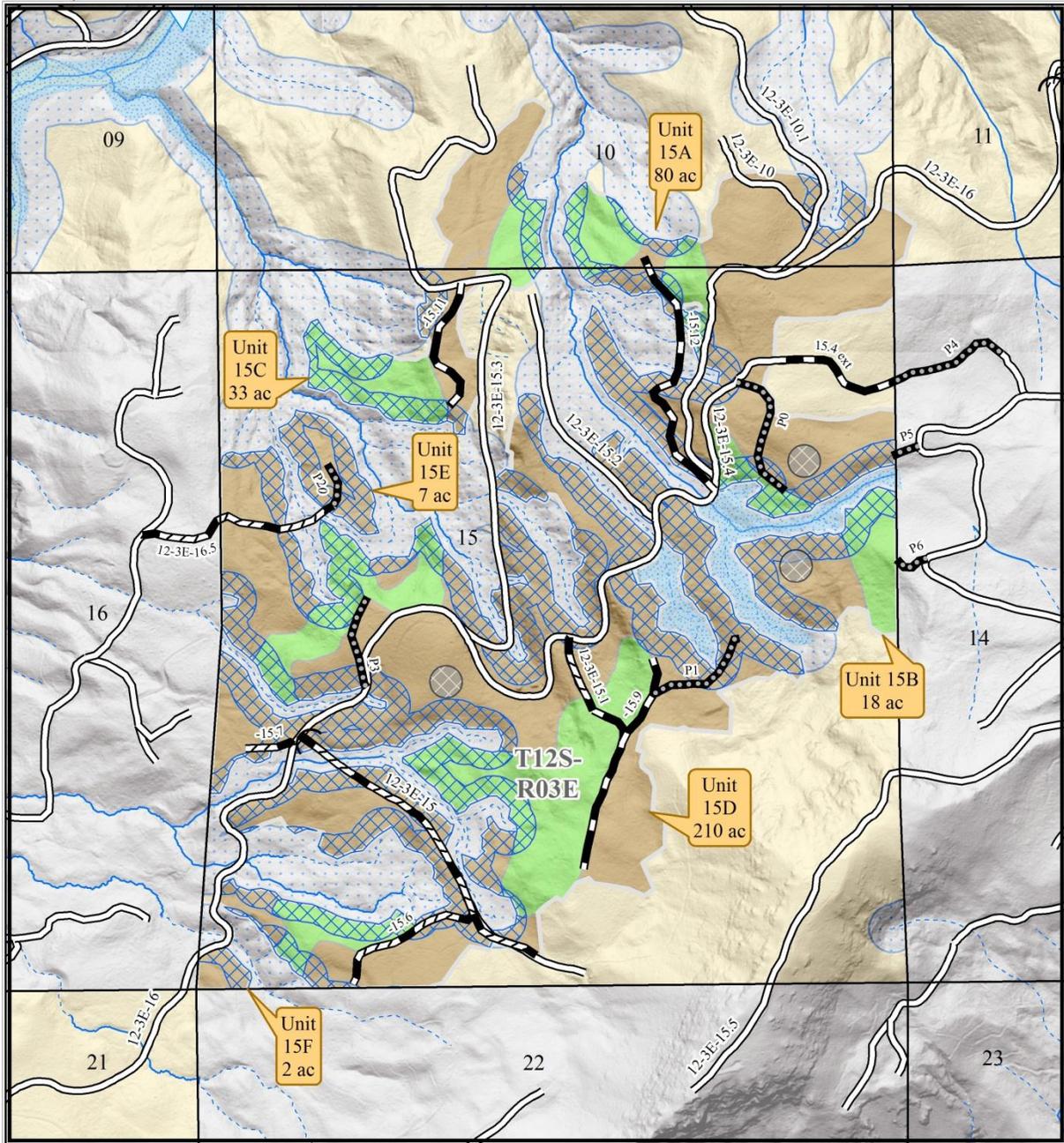
June 25, 2014



<p>No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.</p>	<p>1,000 500 0feet</p>	<ul style="list-style-type: none"> <li> Gate</li> <li> Existing Road</li> <li> Intermittent</li> <li> Perennial</li> <li> Wet Areas</li> <li> Improve</li> <li> Renovation</li> <li> Temporary Construction</li> <li> Riparian Reserves</li> <li> Low Density Area</li> <li> Untreated Riparian Reserve</li> <li> Thinning Unit Boundary</li> <li> Cable Yarding</li> <li> Ground Yarding</li> </ul>	<ul style="list-style-type: none"> <li> BLM</li> <li> Private/Unknown</li> </ul>	<p>NATIONAL SYSTEM OF PUBLIC LANDS U.S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT</p>
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# Mighty Moose Thinning Decision Rationale EA # S040-2013-0003-EA

June 25, 2014



1,000 500 0 Feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

- |               |                            |                 |
|---------------|----------------------------|-----------------|
| Earth Berm    | Temporary Construction     | BLM             |
| Existing Road | Riparian Reserves          | Private/Unknown |
| Intermittent  | Low Density Area           |                 |
| Perennial     | Untreated Riparian Reserve |                 |
| Wet Areas     | Thinning Unit Boundary     |                 |
| Improve       | Cable Yarding              |                 |
| Renovation    | Ground Yarding             |                 |



## Appendix C: Response to Public Comments Received on the Mighty Moose EA

The BLM received four comment letters during the comment period for the Mighty Moose EA. The BLM's responses address substantive comments/questions related to the Mighty Moose Timber Sale. Many of the comments received were opinions, generic in nature, or do not pertain to the Mighty Moose Timber Sale. These non-substantive comments will not be addressed except for points of clarification. Comments are in italics. The BLM response follows each comment.

**Comment:** *Thinning captures mortality and results in a long term reduction of dead wood. The EA does not disclose that logging will capture mortality, reducing recruitment of snags and down wood. The EA must show the need to treat riparian reserves.*

Response: The EA analysis tracked the riparian thinning issue, describing the need, anticipated effects and compliance with the RMP. The Mighty Moose thinning analysis concluded thinning will not result in long-term negative impacts to dead wood. As stated in the EA, stand history in the Mighty Moose project area included clear-cutting, seeding, and thinning to even spacing. Consequently, the stands have high canopy cover, little understory development, low live crown ratios, and lack vertical and species diversity. Desired vegetation characteristics required for proper Riparian Reserve function include large trees, abundant and well-distributed mature and understory conifers, diverse shrub species, and large wood debris. The Riparian stands proposed for thinning lack these elements (EA 32-33, 35, 42).

In these stand conditions, the RMP provides guidance to enhance riparian reserve functions and conditions. The BLM developed the purpose and need for the Riparian Reserves portion of the sale based on the guidance in the Salem RMP, NWFP, and the applicable watershed analyses (EA section 1.2.2), stating "Apply commercial thinning treatments to reduce stocking levels and create stand heterogeneity intended to: increase species and structural diversity; develop late-successional habitat characteristics; and provide future recruitment opportunities for large snags and coarse woody debris. The EA objectives and Selected Actions comply with the RMP recommendations to apply silvicultural practices to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics for attaining ACS objectives (RMP, p. 11).

The Mighty Moose EA addressed the effects of thinning on future dead wood and compliance with the ACS objectives. The EA analysis disclosed that thinning reduces competition, increases growth rates and vigor, and will accelerate the development of larger trees needed for large standing and down wood (EA pp. 34-35, 42-43, 44-45). The analysis directly acknowledges that because thinning removes the smaller suppressed and intermediate trees, future tree mortality and snag creation would be reduced. However, the analysis (EA pp. 44, 50) also acknowledged that 60 percent of the stands in similar age class in the watershed will be left untreated. Hence, the project provides for suppression mortality and opportunities to accelerate large tree development lacking in these stands.

The ACS compliance review (EA pp. 84-87) found that the proposed actions are consistent with the objectives and directions.

**Comment:** *Thirty foot buffers along intermittent streams are not enough and a 35inch DBH harvest diameter limit is too high to protect future snags.*

As stated in the EA approximately 90% of the Riparian Reserves will not be treated. Untreated stands will provide for small diameter snags and denser growing conditions across the landscape. The intent

of thinning in the identified stands is to accelerate the development of larger trees and increase diversity, conditions lacking in this landscape.

Each stream will have a Stream Protection Zone (SPZ) - a zone with no activity. The project team analyzed a minimum buffer width of 30 feet. The analysis determined that with a minimum distance of 30 feet the SPZ adequately protects both terrestrial and aquatic resources. The wildlife analysis (EA pp. 44, 46, 50) concluded thinning will enhance and facilitate development of late-successional habitat. Similarly, the hydrology (EA pp. 61-66) and fisheries (EA pp. 72-74) analyses concluded thinning will not affect hydrology, water quality, or channel morphology; hence, there will be no effects to fish species.

However, actual SPZs vary depending on topographic and vegetative site characteristics. For the Mighty Moose TS, stream protection zones for intermittent channels ranged from 30 to 200 feet. Outside this SPZ canopy cover will be a minimum of 50%.

The silviculture prescriptions for riparian areas retains the dominant and co-dominant trees (EA p. 16); the prescription is a thinning from below approach. All the largest trees will be retained. While the prescription includes a diameter limit of 35 inches, this does not equate to the project proposing to take all trees up to 35 inches. The 35 inch limit applies to Matrix LUA as well, and was designed to ensure that all legacy trees will be protected. Timber cruising data collected in 2014 show that the largest, non-reserved trees in the project lie in the 24-26 inch DBH range. These trees were not in the Riparian Reserves.

**Comment:** *A question regarding the difference between variable thinning in Matrix and riparian reserves.*

**Response:** A variable thinning prescription is proposed for both Matrix and Riparian Reserve LUAs. In Matrix, variability will be accomplished through tree spacing by diameter class (the larger the tree the larger the spacing), retaining hardwoods and large remnant trees, and creating low density thinning areas. In Riparian Reserves variability will be accomplished through untreated areas, retention of hardwoods and the largest trees, and 25-75% variability in tree spacing.

Both prescriptions result in stand variation across the units and project area. However, the variability created on Matrix will result in greater harvest volume than the prescriptions for Riparian Reserves.

**Comment:** *What will the buffers be around the small seasonal ponds and talus slopes in units 29A and 9.*

**Response:** All wet areas less than one acre will be protected by excluding the area, delineated by the extent of riparian vegetation, from all activity. All talus slopes are excluded from the treatment area.

**Comment:** *Please describe Survey and Manage categories B and F.*

**Response:** The Survey and Manage EIS defines categories of species. Category B refers to species that are not practical to survey and F refers to species with unknown persistence and status.

**Comment:** *What is the correct EA reference under ACS #1 page 84.*

**Response:** The EA incorrectly stated sections 3.3.1 and 3.3.5. The correct reference is EA sections 3.1 and 3.2.

**Comment:** *There is a discrepancy of disclosed untreated riparian reserve acres in the EA.*

Response: The ACS objectives review cited both 3,660 and 4,128 acres of untreated Riparian Reserve. The correct number is 3,660 Riparian Reserve acres not treated and 468 acres of treatment for a total of 4,128 acres of Riparian Reserve.

**Comment:** *Low density thinning areas need to be larger to provide for greater benefit of early seral habitat for big game.*

Response: The BLM agrees with the comment that larger “gaps” results in greater persistence of early seral habitat. However, the EA identified and assessed for ½-1 acre in size. Larger areas for low density will be addressed in future projects.