

**Finding of No Significant Impact (FONSI)  
And  
Final Decision and Decision Rationale (DR)**

For the  
**Crab Race Timber Sale**  
Implementing Project 1, Density Management Thinning  
of the Crab Race Environmental Assessment

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T. 11 S., R. 3 E., Sections 7 and 8

Crabtree Creek 5<sup>th</sup> Field Watershed  
Upper Crabtree Creek 6<sup>th</sup> Field Watershed  
Linn County Oregon

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BLM/OR/WA/AE-13/056+1792

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# ***FINDING OF NO SIGNIFICANT IMPACT (FONSI)***

## ***CRAB RACE TIMBER SALE***

### **1. INTRODUCTION**

I have prepared a Finding of No Significant Impact (FONSI) determination for the Crab Race density management thinning project. The Crab Race Environmental Assessment (EA) (#DOI-BLM-OR-S040-2011-0002-EA) documents the environmental analysis of the project and is incorporated by reference in this Finding of No Significant Impact (FONSI) determination. The analysis in the EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS).

The proposed density management thinning activities have been designed to conform to the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP) and related documents which direct and provide the legal framework for management of BLM lands within the Salem District (*EA Section 1.3*). The EA and draft FONSI were made available for public review from May 08, 2013 to June 07, 2013. Substantive comments received during the public review period are addressed in section 10 of the Final Decision and Decision Rationale (DR) for the Crab Race Timber Sale.

The selected action is described in section 2 of the Final Decision and Decision Rationale (DR) for the Crab Race Timber Sale. The DR is attached to and incorporated by reference in this Finding of No Significant Impact (FONSI) determination.

### **2. FINDING OF NO SIGNIFICANT IMPACT**

Based upon review of the Crab Race Environmental Assessment (EA) and supporting documents, I have determined that the proposed actions are not major federal actions and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, supplemental or additional information to the analysis in the RMP/FEIS in the form of an environmental impact statement (EIS) is not needed. This finding is based on the following discussion:

**Context** [40 CFR 1508.27(a)]: Potential effects resulting from the implementation of the proposed action have been analyzed within the context of the project area boundaries, and the Upper Crabtree 6<sup>th</sup> field watershed. This project would affect approximately 1.7 percent of the 26,774 acre 6<sup>th</sup> field watershed.

**Intensity** refers to severity of impact [40 CFR 1508.27(b)]. The following text shows how that the proposed project would not have significant impacts with regard to ten considerations for evaluating intensity, as described in 40 CFR 1508.27(b).

1. [40 CFR 1508.27(b) (1)] – *Impacts that may be both beneficial and adverse*: The effects of commercial thinning are unlikely to have significant (beneficial and/or adverse) impacts (EA Chapter 3) for the following reasons:

The proposed treatments described in EA section 2.3.1.1 and the project design features described in EA section 2.3.1.3 (Table 4) would reduce the risk of effects to affected resources to be within RMP management actions and direction, and to be within the effects described in the RMP/EIS.

*Vegetation and Forest Stand Characteristics (EA section 3.3)*: Effects to these resources would not have significant impacts because:

- The proposed action would not adversely affect BLM Special Status Species plants or former Bureau Assessment Species plants because no suitable habitat for any species known or likely to be present would be lost or altered to a degree that may impact existing populations. Therefore, the project would not contribute to the need to list any BLM Special Status Species.
- Any increases in the number of invasive/non-native plants are expected to be short lived because areas with exposed soil (e.g. constructed/renovated roads, culvert replacement sites) would be revegetated with native species (EA Table 4 #54); and BLM experience with previous timber harvest areas near to the project area has noted no evidence to indicate that adverse impacts from invasive/non-native plants would occur as a result of the project (EA section 3.3.1.1).

*Hydrology, Fisheries and Aquatic Habitat (EA sections 3.4.1; 3.5.1)*: Effects to these resources would not have significant impacts because the project effects on water quality would comply with Oregon Department of Environmental Quality (ODEQ) water quality standards:

- The project would maintain current stream temperatures by retaining the current vegetation and shading in the primary shade zone (stream protection zones, or SPZ) and most of the current levels of shading provided by the secondary shade zone. (EA sec. 2.3.1.1; and Table 4 #9-11)
- Water quality would be maintained because logging, road construction/renovation, culvert replacement, road maintenance and timber haul project design features (EA Table 4 #1-3, 9-11, 13, 15, 29-43) and SPZ are expected to prevent sediment from reaching streams and causing sediment/turbidity that would exceed ODEQ water quality standards.
- Water quality would also be maintained because road construction would occur on gentle, stable slopes so no mass movement would be expected which could increase sediment. Runoff from new roads would drain to stable, vegetated slopes where it would infiltrate into the soil rather than connect to stream channels to transport sediment or augment peak flows. (EA Table 4 #29, 30)
- No changes in project area hydrology due to project actions are likely to be detectable, including mean annual water yield, base flow and peak flows.
- The project would not impact stream channels, aquatic habitat or fish populations because it would not cause water quality impacts that exceed ODEQ water quality standards (EA Table 4 #32-36) and would not detectably change project area hydrology.

*Soils (EA section 3.6.1)*: Effects to this resource would not have significant impacts because:

- Soil compaction is limited to no more than 10 percent of the project area acreage (EA Table 4 #1), which is within RMP Best Management Practices (BMP) (RMP C-2, C-9) which were analyzed in the RMP/FEIS.
- No loss of growth and yield would be expected at the stand level because thinning treatments typically lead to acceleration of average tree growth and compacted soils affect less than half of

the rooting area of individual trees. (*EA Table 4 #1, 13-19*) (Also see EA section 3.3.1, Vegetation)

- Following completion of harvest, the majority of understory vegetation and root systems and organic matter would remain. (Also see *EA section 3.3.1, Vegetation; and 3.8.1, Fire*)
- The project would not lead to any measurable increase in surface erosion and overall erosion would remain within the natural range of background erosion rates.
- The project would maintain sufficient mycorrhizae populations because the root systems of most vegetation would remain undisturbed and there is no evidence that past disturbance of the area has affected mycorrhizae populations.

*Wildlife (EA section 3.7.1):* Effects to this resource would not have significant impacts because:

- Stands proposed for thinning are not presently functioning as late-successional old growth habitat.
- No remnant old-growth trees would be affected because none are present. (See also *EA sec. 3.3.1, including Table 9*)
- Existing snags and coarse woody debris (CWD) would be retained on site. Fewer than 10 percent of existing large snags ( $\geq 15$  inches and  $\geq 15$  feet tall) would be felled for safety or knocked over by logging operations and they would be retained as CWD. Fewer than 10 percent of CWD would be impacted by logging and all existing CWD would remain on site. (*EA Table 4 # 45, 46*)
- No suitable habitat for BLM Special Status species (SSS) which are known or likely to be present in the project area would be lost. Therefore the project would not contribute to the need to list any SSS.
- Thinning would not significantly change species richness (a combination of species diversity and abundance) of the Migratory and Resident Bird community. No species would be extirpated in stands as a result of thinning.
- See Intensity Point #10 (below) for effects to northern spotted owl.

*Air Quality and Fire Hazard/Risk (EA section 3.8.1):* Effects to this resource would not have significant impacts because:

- After 3 to 5 years the fine fuels generated by thinning would be decayed in the units and the risk of surface fire would decrease to near current levels.
- The thinning itself would decrease the risk of a canopy fire.
- The proposed action would comply with State of Oregon Air Quality Standards by strict adherence to smoke management regulations.

*Carbon Storage, Carbon Emissions and Climate Change (EA section 1.8.3):* Effects to this resource would not have significant impacts because the incremental increase in carbon emissions as greenhouse gasses that could be attributable to the proposed action is of such small magnitude that it is unlikely to be detectable at global, continental or regional scales or to affect the results of any models now being used to predict climate change.

*Recreation, Visual Resources, and Rural Interface (EA section 3.9.1):* Effects to this resource would not have significant impacts because:

- Changes to the landscape character would comply with Visual Resource Management (VRM) class 4 objectives which allow major modifications of the character of the landscape.
- Changes from the Crab Race timber sale operations would comply with VRM guidelines to minimize visual impacts because commercial thinning would maintain a forested setting and

not be a major modification to the character of the landscape. Some disturbance to vegetation would be observable after thinning activities and would be expected to develop an undisturbed appearance within five years.

2. [40 CFR 1508.27(b) (2)] - The degree to which the proposed action affects public health or safety (EA sections 1.8.2, 2.3.1 including Table 4, 3.4.1, 3.8.1, 3.9.1, 3.11 Table 18, 3.12):
3. The proposed project would not adversely affect public health or safety because:
  - Public access to much of the proposed project areas is restricted by private gates.
  - OSHA mandated health and safety regulations are applied to all project operations related to the proposed project implementation.
  - All actions of the proposed project must meet national and State of Oregon air and water quality standards, as provided for by the RMP/FEIS.
4. [40 CFR 1508.27(b) (3)] - Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas: Effects to these resources would not have significant impacts because:
  - The proposed project would not affect historical or cultural resources because on site cultural and historic surveys completed have not produced evidence to support the previous or present existence of artifacts of significant cultural or historical value. The single known cultural resource potentially impacted by the proposed projects (remains of a logging sled) would be protected from direct impacts. (EA Table 4 and section 3.10.1, 3.11 Table 18)
  - There are no park lands, prime farmlands or wild and scenic rivers to be impacted. (EA section 3.11 Table 18)
  - Treatment (individually designated trees) adjacent to wetlands are designed to enhance the wetlands by reducing encroachment of conifers. (EA sections 2.3, 3.3.1, 3.4.1, 3.7.1, 3.11 Table 18)
5. [40 CFR 1508.27(b) (4)] - The degree to which the effects on the quality of the human environment are likely to be highly controversial: The proposed project is not unique or unusual. The BLM has experience implementing similar actions in similar areas without highly controversial effects.
6. [40 CFR 1508.27(b) (5)] - The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks: The effects of the project do not have not uncertain, unique or unknown risks because the BLM has experience implementing similar actions in similar areas without these risks, no potential unique or unknown risks were identified by the BLM or by comments submitted in response to scoping, and project design features would minimize the risks associated with the project (EA sections 2.2.1, 2.3.1.3, 3.11 Table 18). See also # 4, above.
7. [40 CFR 1508.27(b) (6)] - The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration: The proposed actions would not establish a precedent for future actions beyond the time frames analyzed nor would they represent a decision in principle about a further consideration for the following reasons:
  - The project is in the scope of proposed activities documented in the RMP EIS.

- The BLM has experience implementing similar actions in similar areas without setting a precedent for future actions or representing a decision about a further consideration. See #s 4 and 5, above.
8. [40 CFR 1508.27(b) (7)] - Whether the action is related to other actions with individually insignificant but cumulatively significant impacts: The Interdisciplinary Team (IDT) evaluated the project area in context of past, present and reasonably foreseeable actions and determined that there is a potential for cumulative effects on water quality and fisheries, and carbon storage and emissions. These effects are not expected to be significant for the following reasons:

*Water Quality/Fisheries:* The proposed action would be expected to temporarily increase stream sediment and turbidity as a result of culvert replacement, road maintenance, and road use (*EA Sections 3.4.1, 3.5.1, 3.11 Table 18*). These effects are not expected to be significant for the following reasons:

- Any sediment increase resulting from thinning would be too small to be discernible relative to background sediment yields, would not be expected to exceed ODEQ water quality standards and would decrease quickly over time, returning to current levels within three to five years as vegetation increases (Dissmeyer, 2000).
- The limited magnitude of sediment inputs (non-detectable on 7<sup>th</sup> field watershed scale, not visible more than 800 meters downstream of crossings) and duration (primarily major storm events during the first year following disturbance at culvert replacement sites) of this effect would likely be insignificant for water quality on the watershed scale. Cumulatively, the proposed action and connected actions would be unlikely to result in any detectable change for water quality on a 7<sup>th</sup> field watershed scale (even less effect on the larger 6<sup>th</sup> field watershed scale) and would be unlikely to have any effect on any designated beneficial uses, including fisheries.
- Road use restrictions, road design and maintenance, protection measures and monitoring of road conditions would prevent increases in turbidity that exceed ODEQ standards to maintain water quality. (*EA section 2.3.1.3 Table 4 #29-43*)

*Carbon storage and carbon emissions (EA section 1.8.3):* The proposed thinning would contribute to cumulative effects to carbon storage and carbon emissions. The effects are not significant for the following reasons:

- The incremental increase in carbon emissions as greenhouse gasses that could be attributable to the proposed action is of such small magnitude, as determined by analysis of similar projects, that it is unlikely to be detectable at global, continental or regional scales or to affect the results of any models now being used to predict climate change.
  - The net carbon emissions would be of short duration, as determined by analysis of similar projects.
9. [40 CFR 1508.27(b) (8)] - The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources: The project would not affect these resources because no districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places exist within or near the proposed project vicinity. (*EA section 3.10*)
10. [40 CFR 1508.27(b) (9)] - The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under

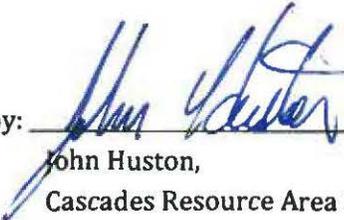
the Endangered Species Act (ESA) of 1973: The proposed project is not expected to adversely affect ESA listed species or critical habitat for the following reasons:

*ESA Wildlife - Northern spotted owl (EA Section 3.7.1, 3.11 Table 18):* Effects to the species are not significant because: The project is not located in Critical Habitat, or stands which meet the criteria for Recovery Action 32 for the northern spotted owl; the project maintains dispersal and suitable habitat, and does not affect suitable owl habitat within and between known owl sites; habitat conditions are expected to improve as thinned stands mature (>20 years); residual trees would increase in size and be available for recruitment or creation of snags, culls and CWD for prey species and nesting opportunities, particularly in Riparian Reserves. Project 2 is designed to enhance late-successional habitat in the long term and project 3 would reduce disturbance to a known owl site and other habitat. ESA Consultation is described in EA section 5.1.1.

*ESA Fish – UWR Chinook salmon, UWR steelhead trout (EA Section 3.5.1):* Effects to ESA fish are not significant because thinning is not expected to affect these species for the reasons stated in the Hydrology section (EA section 3.4.1).

- Effects of road maintenance and log hauling are not significant because project design features would prevent sediment from entering streams in quantities sufficient to exceed ODEQ water quality standards. The primary ("north") haul route is designed and maintained to support year around use and direct most water and sediment onto stable slopes where it infiltrates rather than delivering it to streams. Condition related restrictions and monitoring would prevent generating and delivering sediment to streams. The secondary ("south") haul route accessing a small portion of the project area would be used only in the dry season when runoff would not be generated.
  - New road construction would be located in stable locations and would not contribute to degradation of aquatic habitat.
  - ESA Consultation is described in EA section 5.1.2.
11. [40 CFR 1508.27(b) (10)] - Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment: The proposed thinning activities have been designed to follow Federal, State, and local laws (EA section 1.7)

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

  
John Huston,  
Cascades Resource Area Field Manager

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

7/30/2013

# ***FINAL DECISION AND DECISION RATIONALE (DR)***

## ***CRAB RACE TIMBER SALE***

### **1. INTRODUCTION**

The Bureau of Land Management (BLM) has conducted an environmental analysis for the Crab Race projects which analyzed three separate projects: density management thinning; snag and coarse woody debris recruitment; and Crabtree Complex ACEC road closure. This environmental analysis is documented in the Crab Race Environmental Assessment (EA). I presented a draft Finding of No Significant Impact (FONSI) for public review and comment in the Crab Race EA and made it and the EA available for public review from May 08, 2013 to June 07, 2013 (DR section 5). The FONSI for Project 1, Density Management Thinning, will be released concurrently with this Final Decision and Decision Rationale. The EA and FONSI are incorporated by reference into this Final Decision and Decision Rationale.

The BLM will issue separate Decisions and FONSI for Projects 2 (snag and coarse woody debris recruitment) and 3 (Crabtree Complex ACEC road closure) when a decision is made on each of those projects.

### **2. DECISION**

#### **THE SELECTED ACTION**

I have decided to implement the Crab Race Timber Sale as a timber sale consisting of the following units analyzed in the EA, as adjusted by final layout and acreage determination: 12A,B,C,D,E; 13A; 7A,B,C&D; 8C&D (EA pp. 28, 29-34, 55-56) (DR Section 7, Table 2)<sup>1</sup>. The following is a summary of the decision, hereafter referred to as the “selected action” in this Decision Rationale (DR). The selected action:

#### ***Complies with Direction:***

The analysis documented in the Crab Race EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS). The Crab Race projects, including the selected action, were designed under the *Salem District Record of Decision and Resource Management Plan*, May 1995 (1995 RMP) and related documents which direct and provide the legal framework for management of BLM lands within the Salem District (EA pp. 13- 16). All of these documents may be reviewed at the Cascades Resource Area office. The project also complies with authorities described in EA section 1.7 and the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011).

The selected action (Crab Race timber sale), conforms to the Salem District Resource Management Plan/Forest Land and Resource Management Plan as amended by the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, other Mitigation Measures Standards and Guidelines* (2001 ROD); and the Pechman Exemptions (October 2006, Exemption A, stands less than 80 years old).

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<sup>1</sup> DR Table 2 (*DR section 7*) shows the selected action by section and the crossover between EA and Timber sale units. The Decision Maps (*DR section 9*) show the selected action.

***Is Consistent with the EA:***

- Answers the Need for Action for Project 1 described in the Crab Race EA (EA section 1.3.1);
- Fulfills the Purposes (Objectives) for Project 1 (EA section 1.4.1). EA section 1.6 identifies that the decision factors for alternative selection are how well the alternative meets the objectives, both individually and collectively. EA section 3.11.3, Comparison of Alternatives with Regard to the Objectives for the Projects documents how the proposed action and the No Action alternatives fulfill the project objectives. DR section 3 - Decision Rationale, below documents how the selected action fulfills the project objectives;
- Complies with the four components and nine objectives of the Aquatic Conservation Strategy (ACS), as documented for the proposed action (EA section 3.11.1);
- Is consistent with the Salem District Record of Decision and Resource Management Plan (RMP) and related documents which direct and provide the legal framework for management of BLM lands within the Salem District (EA section 1.7);
- Complies with the relevant statutes and authorities (EA sections 1.7.1 and 3.11);
- Complies with current direction and court decisions for Survey and Manage species;
- Complies with guidance in the Willamette Late Successional Reserve Assessment (consultation with LSR Working Group, the successor to the Regional Ecosystem Office (REO) for LSR issues);
- Will not adversely affect spotted owls, is not likely to affect spotted owl Critical Habitat, and is not likely to diminish the effectiveness of the conservation program established under the NWFP to protect the spotted owl and its habitat (EA section 5.1.1 - US Fish and Wildlife Service (USFWS) letter of concurrence issued in June 2012, reference #01EOFW00-2012-I-0105);
- Will not affect essential fish habitat and is not likely to adversely affect designated critical habitats for listed fish (NMFS letter of concurrence, June 10, 2013);
- Will not have impacts on the affected elements of the environment beyond those already anticipated and addressed in the RMP/EIS (EA sections 0 and 3.11);
- Is economically viable. This sale will produce revenue for the Federal Government and O&C Counties (Crab Race Timber Sale appraisal), and provide jobs for Oregonians;
- Addresses the issues raised in EA section 1.8.2;
- Uses existing roads and the minimum length of new roads for the transportation system to facilitate implementation of the project (EA section 2.3.1).

***The selected action includes:***

***Commercial Thinning:***

- Thin approximately 396 acres (DR Table 2). This harvest includes:
  - Thin approximately 377 acres (DR Table 2) to a density of approximately 60-140 trees per acre (TPA) (EA pp. 55-56).
  - Low Density Thinning Patches: Thin approximately 19 acres in one-acre patches to a density of 10-12 TPA (EA pp. 30, 31; DR Table 2; DR section 9 – maps).
- Selectively cut and remove approximately 130 marked trees in approximately two acres of wet meadow edge treatment adjacent to DR units 1A and 4B to reduce conifer encroachment into the wet meadow. (EA pp. 31, 60-61, 64, 99; DR section 9, maps)
- Clear approximately two acres of right-of-way for constructing new roads. (EA sec. 2.3.1.2; DR sec. 9, maps)

### *Logging Systems and Unit Layout:*<sup>2</sup>

Approximately 53 percent (211 acres) of the 396 acres of harvest area, plus two acres of wet meadow edge treatment and two acres of right-of-way clearing, is designated to be logged using ground based yarding systems; 30 percent (119 acres) is designated to be logged with a skyline yarding system; and 17 percent (66 acres) is designated for special yarding.

Project design features for logging include: (EA section 2.3.1.3)

- Limit the area compacted by logging operations to no more than ten percent of the harvest area in each unit, not including road rights-of-way. (PDF 1, 4, 5, 13, 14, 18)
- Design logging and related operations to prevent: erosion, excessive soil disturbance and compaction, OHV access and impacts to streams and their associated stream protection zones. (PDF 2, 3, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19)
- Design logging and related operations to prevent or manage impacts to retained trees to meet resource objectives for timber value (in Matrix) and stand structure such as snags, CWD and asymmetrical tops for habitat. (PDF 10, 11, 12, 19, 20)
- Locate unit boundaries to provide Stream Protection Zones to protect water quality and aquatic habitat. (PDF9)

### *Road Construction, Renovation, Closure, Use and Maintenance: (EA sec. 2.3.1.2, 2.3.1.3, [PDF 29-43], 3.4.1.1, 3.3.5.1.1, 3.6.1.1, 3.9.1.1)*

Construct approximately 0.36 mile of new road on BLM managed land (EA analyzed 0.4 mile). New roads are designed to be the minimum amount needed to provide for safe and efficient logging while meeting other resource objectives. Roads will be constructed to prevent impacts to water quality and streams as described in the EA. New roads 12-1E-12.11 and 12.12 are in locations mapped as Matrix and may be rocked at the purchaser's expense. New road 12-1E-12.10 is at least partly in Riparian Reserve and will be natural surface only. New roads will be closed and stabilized as described below after logging is completed.

Road construction includes clearing approximately two acres of vegetation within rights-of-way averaging less than 30 feet wide, moving earth to shape the roadbed, compacting the road surface, and potentially applying rock. Road construction design features to prevent sedimentation include: drain surface water to stable slopes, avoid channeling road runoff to streams, construct roads only on stable ground, limit construction operations to soil and weather conditions that would not generate sediment, and stabilize roads prior to the wet season.

After logging and fuel reduction operations are complete, close and stabilize all new roads and roads which were closed by the BLM prior to this decision. Roads may be closed to vehicles by earth and debris barricades and may also include placing debris and roughening the road surface. Design features to stabilize roads include: closing natural surface roads to vehicles, draining water to stable slopes, seeding, mulching, covering with logging slash and/or other site-specific techniques.

Renovate approximately 12.87 miles of existing road on BLM managed land (13 miles analyzed in EA). Renovation includes blading, roadside brushing, ditch cleaning, and cleaning the inlet, outlet

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<sup>2</sup> Ground-based logging systems move logs to the landing with skidders, harvesters, shovels and other machinery that moves off-road with wheels or tracks on the ground. Skyline yarding systems use a carriage that moves up and down a cable suspended above the ground which pulls logs to the cable, then under the cable to a tower on a landing. Cable yarding is a generic term that includes skyline yarding as well as other systems that pull logs to a landing with cables. Special yarding is a site-specific combination of ground based and cable yarding systems designed by the operators (and subject to BLM review and approval) to use their particular equipment and capabilities to log the area efficiently and meet BLM resource objectives. A "swing" uses one type of logging system/equipment to move logs to an intermediate point where another piece of equipment or another logging system is then used to move the logs to a landing.

and barrel of all existing culverts. This applies both to roads currently in drivable condition and roads not currently in drivable condition. Roads which are not currently drivable are shown on the DR maps (DR section 9) as "Renovation". Drivable roads are shown simply as "Roads".

Road use (timber haul, equipment and personnel transport) on the "north haul route" will be permitted whenever weather and road conditions and operating practices prevent transporting sediment to streams in quantities to exceed ODEQ water quality standards as described in the EA. This includes all roads not specifically listed below for the "south haul route".

Operating practices include: BLM monitoring of turbidity at stream crossings, suspending hauling when weather and road conditions potentially generate and transport sediment that would increase turbidity as analyzed, sediment traps, rock and other site specific techniques designed as needed.

Road use on the "south haul route" will be restricted to dry season only and dry conditions (no water running off of the road surface) within the dry season to prevent generating sediment that would enter streams. If the private road owner upgrades the private roads during the contract period, the BLM will evaluate it and reconsider this restriction. The "south haul route" includes roads: 11-2E-22.0 Private; 11-2E-14.0 BLM & Private; 11-2E-13.1 (part) BLM & Private; 11-2E-13.2 BLM; 11-2E-13.4 BLM & Private; and 11-2E-13.3 BLM.

Two culverts will be replaced. Replacement will be done during the in-water work season (July 15 through August 31) using work practices that prevent sediment from exceeding ODEQ water quality standards, as analyzed in the EA.

Remove approximately 3,000 cubic yards of pit run rock (PRR) from the existing Harry Mountain Rock Pit for use on roads and landings.

Permanent BLM roads will be maintained according to standard operating procedures. Private roads will be maintained according to the owner's policies and road use agreements.

#### *Fuels Treatment:*

Reduce fuels on 24 acres (EA analyzed up to 30 acres). Treatments include: creating, covering and burning approximately 49 landing piles; machine piling, covering and burning slash in the low density thinning areas (17 acres machine piled, 2 acres hand piled); and creating fuel reduction corridors adjacent to private land by machine piling and burning (approximately 2 acres).

The total amount of slash debris expected to be piled for burning is estimated to be between 400 and 1400 tons. Burning will be done after the fall rains begin and soils are damp. All burning will be done in compliance with Oregon Smoke Management requirements.

There are two potential scenarios that could reduce the amount of slash and woody debris burned in landing piles:

- Some of the slash may be used as mulch to cover roadbeds during stabilization (see EA section 2.3.1.3, PDR 7, 38, 39, 43).
- Some of the material may be removed as biomass for energy production, though the BLM considers this to be unlikely because there is little or no foreseeable market for this material during the time of the Crab Race Timber Sale project.

#### *Snag and CWD recruitment:*

Initiate snag recruitment within thinning units by topping 150 trees (cutting the tree top off within the crown) and base girdling 150 trees (removing a ring of bark near the base). This is in addition to reserved trees (trees which are designated for retention) that must be felled to facilitate logging which will be left on site as CWD (not sold or removed) and trees that are broken or otherwise damaged by logging operations.

### *Special Forest Products:*

Make permits available for collecting Special Forest Products (SFP) (1995 RMP p. 49) from the harvest units if there is a demand for the products and collection will not interfere with project operations. Special Forest Products are salable natural products that can be found in the forest and may include: edible mushrooms, firewood, posts and poles. Transplants of native plants from road rights-of-way, skid trail locations and landings will be available for permit. Access to the area will be controlled through the Special Forest Products permit requirements.

### *PROJECT LAYOUT AND PROJECT DESIGN FEATURES*

The project layout implements the unit boundaries, general logging plan and road design for the units I have chosen as the selected action. The project design features described in EA section 2.2.1.3 (EA pp. 35-43) and standard contract provisions are incorporated into the Timber Sale contract.

Comments submitted to me in response to the EA addressed some specific topics related to implementing the selected action. Detailed responses to these and other EA comments are found in DR section 10. The following EA project design features (PDF) and contract provisions directly address the topics raised in these comments:

The selected action:

- Provides for use of a variety of ground-based, skyline and other cable logging systems to meet the BLM resource objectives analyzed in the EA while providing flexibility for the operator to log safely and efficiently. (EA sections 2.3.1.1 – 2.3.1.3)
- Provides for protection of water resources while allowing roads to be used for logging and log hauling from most of the contract area during at least part of the wet season as well as dry season (EA sections 2.3.1.2 – especially pp. 33-34; 2.3.1.3 - especially PDF # 29-43; pp. 71, 77-78; and 7.1 - maps.) by:
  - Renovating selected existing roads and constructing new spur roads to provide access for modern logging systems. Selecting roads for renovation or construction is based on field evaluations of logging feasibility, economic efficiency and potential impacts to resources. (See EA p. 45, Access to Units)
  - Allowing optional rocking of spur roads and landings to provide for efficient logging and resource protection (prevent erosion).
  - Allowing wet season/wet weather hauling on well designed and maintained roads (the north haul route) that access most of the timber sale units based on actual conditions and monitoring to prevent sediment from entering streams.
  - Restricting wet season/wet weather hauling on poorly designed and maintained roads (the south haul route) that access a small part of the timber sale which would channel sediment directly to streams if used during the wet season or wet conditions.
  - Replacing two failing culverts.
  - Closing and stabilizing new roads and roads which are currently closed.
- Immediately introduces elements of structurally complex forest habitat across the landscape by:
  - thinning 398 acres in 24 units/subunits that range from 1 to 91 acres in size (DR map);
  - creating 19 low density thinning areas of up to one acre each within those thinning units (DR map, PDF 53);
  - selectively cutting trees that are encroaching into wet meadows (DR map);
  - creating coarse woody debris (CWD) by leaving reserve trees 21 inches diameter and larger on site when they must be cut to facilitate logging in Riparian Reserve and LSR stands (PDF 52); and

- creating 300 snag and asymmetrical topped trees habitat within thinning units (contract provision based on PDF 52, within thinning units it also implements the initial pulse of project 2 analyzed in the EA).
- Unit boundaries were located to provide stream protection zones (SPZ): (EA p. 36 – PDF 9; pp. 80-82; DR section 9 - Maps)
  - Units which are entirely more than 1,000 feet from ESA listed fish habitat and have SPZ minimum widths of 30 feet on intermittent streams and 60-85 feet on perennial streams: 1A,B; 4B; 5A,B; 6; 7A,B,C; 8A,B; 9A,B,C,D and 11A,B.
  - Units in which part of the unit boundary is within 1,000 feet from ESA listed fish habitat and have SPZ minimum widths of 50 feet on intermittent streams and 100 feet on perennial streams for those parts of the boundaries: 2A, B; 3A, B, C; 4A and 10. Where GIS indicated that unit boundaries were mapped within 100 feet of mapped stream locations, unit boundaries were field checked and confirmed to provide SPZ at least 100 feet wide, slope distance.

**TABLE 1: PROJECT, UNTREATED AREA AND YARDING SYSTEMS ACRES AND PERCENTAGES**

LUA	Project Vicinity *	LUA Percent of Project Vicinity	Untreated Area	Project Area*	LUA Percent of Project Area	Yarding Systems - Acres		
						Ground-Based	Skyline	Special
<b>GFMA</b>	235	9	92	143	39	72	51	20
<b>RR/GFMA</b>	402	16	326	76	14	36	22	18
<b>LSR</b>	893	34	801	92	29	71	15	6
<b>RR/LSR</b>	1069	41	984	85	18	32	31	22
<b>Total</b>	2599	100	2203	396	100	211	119	66
<b>Percent</b>			<b>Percent of Project Vicinity Acres</b>			<b>Percent of Project Area Acres</b>		
			85	15		53	30	17

\*Project Vicinity is BLM managed lands in the sections that contain the Project Area. The Project Area is the area proposed for treatment. Includes commercial thinning area only – does not include 2 acres of right-of-way (1 ac. GFMA, 1 ac. RR) or two acres of special (blue) mark in Riparian Reserve adjacent to wet meadows. Total affected area is 400 acres and does not change the rounding for percent of area calculations.

### 3. DECISION RATIONALE

I selected the alternative that best individually and collectively meets the objectives for Project 1, Density Management Thinning described in EA section 1.4.1, pp. 17-21.

I am not including these alternatives in the comparison of alternatives, below:

- The proposed action analyzed in the EA is substantially similar to the selected action, so it is not discussed separately in this section.
- The IDT considered other alternatives and variations of the proposed action but dropped them from further analysis as described in EA section 2.3.1.5. These alternatives are not discussed in this section of the DR because I concur with the IDT rationale for dropping them from further analysis as described in EA section 2.3.1.5.

The following is a comparison of the selected action and the No Action alternative with regard to those objectives:

## Overall RMP Objectives (RMP p. 1)

1. *Contribute to a healthy forest ecosystem with habitat that will support populations of native species and provide protection for riparian areas and waters.*

Both the No Action alternative and the selected action meet this objective. The No Action alternative maintains current habitat and development trajectories throughout the project vicinity, including both natural processes and non-commercial silvicultural actions. It also protects riparian areas and waters by maintaining current conditions, which are stable.

The selected action maintains current habitats and trajectories on most (85 percent, see Table 1 above) of the project vicinity and provides additional diversity in both the short and long terms (EA sec. 3.3.1.1, 3.7.1.1). Selection of treatment areas (units) and project design features (PDF) provide undisturbed buffers to protect riparian areas and waters, would not be likely to cause detectable/measurable changes in watershed hydrology or water quality at the 6<sup>th</sup> field watershed level, and would not impact beneficial uses downstream. (EA 3.4.1.1)

2. *Contribute to providing a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies and contribute valuable resources to the national economy on a predictable and long-term basis.*

The No Action alternative does not meet this objective since it would not contribute to the supply of timber, does not increase harvest of other forest products to meet this economic objective.

The selected action meets this objective by providing approximately 7.7 million board feet of timber to the market place with an appraised value of \$1,049,794.40. In the GFMA LUA the selected action contributes to providing a sustainable supply of timber because it implements proven silvicultural practices to do so. It is not expected to increase harvest of other forest products, though such harvest may be allowed.

In stands in the Matrix LUA, the silvicultural prescription is applied according to proven principles and practices to provide a sustainable supply of timber in the long term, and other benefits. In stands in Riparian Reserve and Late-Successional Reserve LUAs, the silvicultural prescriptions are applied to develop specific stand characteristics that will increase habitat variability in the watershed.

*The specific objectives that this project is designed to implement are described below:*

**Objectives Common to All Land Use Allocations (RMP p. 1. See additional references specific to each LUA, below)**

3. *Implement an environmentally sound and economically viable timber sale that contributes to meeting the overall RMP Objectives described above and accomplishes specific objectives described below for each Land Use Allocation.*

The No Action alternative does not meet this objective because no timber sale would be implemented and the other RMP objectives that would be accomplished by operations under a timber sale would not be achieved.

The selected action would meet this objective because it is specifically designed to achieve all of the objectives for this project. The timber sale will be economically viable because it uses standard logging practices that can be accomplished with a variety of equipment and techniques while meeting RMP and interdisciplinary team (IDT) resource protection objectives. Economic viability is objectively demonstrated by the BLM's appraised price (see Objective 2, above), and BLM

experience with offering similar timber sales has shown that competitive bidding for this type of sale results in a sale price higher than the appraised value. See objective 8, below.

The project design and layout, and the contract stipulations which implement specific project design features (PDF) analyzed in the EA are designed to accomplish the non-timber objectives, as analyzed in the EA.

4. *Protect, manage, and conserve federal listed and proposed species and their habitats to achieve their recovery in compliance with the Endangered Species Act and Bureau special status species policies (RMP p. 28).*

See Objective 1, above. Both the No Action alternative and the selected action meet this objective. The No Action alternative meets this objective because it would maintain current habitats and stand development trajectories determined by natural processes.

The selected action meets this objective by introducing additional stand structure variety/complexity across the landscape at the 6<sup>th</sup> field watershed level, which improves overall habitat availability for a variety of those species, while also maintaining current habitat conditions and trajectories in most of the watershed where no timber harvest is proposed. Specific stand characteristics promoted by the silvicultural practices of the selected action include: large diameter trees for large snag/CWD recruitment (natural or manual) sooner than would be possible without thinning, tree morphology with larger crowns and limbs compared to unthinned stands, understory vegetation growth due to increased light reaching the forest floor, and immediate recruitment of snags and CWD. (EA sec. 3.3.1.1, 3.7.1.1)

5. *Maintain and develop habitat and forage for wildlife species in addition to special status species (IDT defined objective).*

Both the No Action alternative and the selected action meet this objective because both alternatives maintain habitat and forage, see discussions above for Objectives 1 and 4. In addition to maintaining habitat and forage, the selected action actively maintains forage in parts of the edges of wet meadows by reducing conifer encroachment and develops forage by implementing low density thinning patches.

6. *Maintain and develop a safe, efficient and environmentally sound road system (RMP p. 62) and reduce environmental effects associated with identified existing roads within the project area (RMP p. 11) by:*
  - *Providing appropriate access for timber harvest, silvicultural practices, and fire protection needed to meet these objectives;*
  - *Perform road maintenance to prevent road deterioration or failure and to prevent road generated sedimentation that exceeds ODEQ standards.*

Both the No Action alternative and the selected action meet this objective. The No Action alternative generally maintains current access, conditions, trends and maintenance schedules. The possible exceptions are the two failing culverts (EA p. 69) which currently contribute some sediment from eroding fills and are at risk for failure, and potential private operations on the private road system which could cause sediment generation under either the No Action alternative or the selected action.

The selected action would provide safe and efficient access as needed to support logging, silvicultural and fire operations and would use and maintain roads in ways that prevent sediment generation that would exceed ODEQ water quality standards. In addition, the selected action would

replace the two failing culverts to prevent potential failure and would implement PDF that prevent exceeding ODEQ water quality standards for turbidity. (EA sec. 2.3.1.2, 2.3.1.3, pp. 74-75, 77, 85)

**Objectives Specific to the Matrix LUA (RMP pp. 20, 46, D-2):**

7. *Manage developing timber stands<sup>3</sup> on available lands to promote tree survival and growth to:*
- *Achieve a balance between wood volume production, quality of wood, and timber value at harvest;*
  - *Increase the proportion of merchantable volume in the stand;*
  - *Produce larger, more valuable logs;*
  - *Harvest small trees as commercial wood products instead of letting them decline in vigor and die as the stand develops<sup>4</sup>; and to*
  - *Maintain good crown ratios and stable, wind-firm trees (RMP p. D-2) by applying silvicultural treatments to manage density with a commercial thinning.*

The No Action alternative does not meet this objective because no silvicultural treatments would be implemented to manage developing stands.

The selected action meets this objective because it implements a commercial thinning using proven silvicultural treatments specifically designed to achieve these objectives. See objectives 2 and 3 above.

8. *Supply a sustainable source of forest commodities (primarily timber) from the Matrix LUA to provide jobs and contribute to community stability (RMP pp. 1, 46-48) by developing timber sales that can be successfully offered to the market place. Select logging systems based on the suitability and economic efficiency of each system to successfully implement the silvicultural prescription, protect soil productivity and water quality, and meet other land use objectives (RMP p. 47).*

The No Action alternative does not meet this objective because no silvicultural treatments would be implemented to manage developing stands.

The selected action meets this objective by offering a timber sale contract specifically designed to meet these objectives. See objective 3, above.

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<sup>3</sup> A “forest stand” is a contiguous group of trees which is similar enough, and growing on a site that is uniform enough, to be identifiable. “Forest stand” - or simply “stand” - is used in this document as a generic term that does not indicate management objectives. “Timber stand” - or simply “timber” - is used for forest stands (all in GFMA) where commercial wood production is a major objective. Other terms such as “habitat” are used to provide context for other objectives.

<sup>4</sup> The RMP term for this is “anticipate mortality”, p. D-2.

**Objectives Specific to the Riparian Reserve<sup>5</sup> LUA (RMP pp. 2, 5-6, 7-8, 9-15, D-6; NWFP pp. B-31, C-32):**

9. *Maintain and restore water quality standards, aquatic ecosystem functions and stream conditions embodied in ACS objectives 1-7 by designing the project to comply with Oregon Department of Environmental Quality (ODEQ) water quality standards:*
- *Maintain effective shade for streams pursuant to BLM's agreement with the State of Oregon.*
  - *Develop, maintain and use new and existing roads to comply with ODEQ water quality standards for peak flows and sediment.*

Both the No Action alternative and the selected action meet this objective. The No Action alternative maintains water quality because no changes would be made to current conditions and trends.

The selected action meets this objective because stream protection zones (SPZ) and other PDF will maintain effective shade. Roads will comply with ODEQ water quality standards because road construction will not add to the stream network, PDF (including weather and road condition use restrictions) will prevent introducing sediment that exceeds ODEQ standards. (EA sec. 3.4.1.1, 3.5.1.1)

10. *Maintain and restore the species composition and structural diversity of forest plant communities embodied in ACS objectives 8 and 9 by designing the project to<sup>6</sup>:*
- *Apply silvicultural treatments in the RR to develop forest stand characteristics that maintain and/or restore the hydrology and sediment regimes of the watershed.*

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<sup>5</sup> The Riparian Reserve Land Use Allocation is a defined management allocation intended to protect riparian ecosystems; provide for the aquatic, hydrologic and terrestrial functions embodied in the Aquatic Conservation Strategy Objectives; and to provide connectivity between upland habitat blocks. Riparian Reserves include both riparian area and upland area. RMP pp. 2, 5-6, 7-8, 9-15)

"Riparian area", as used in this EA, refers to the aquatic habitat and the terrestrial zone where biotic and hydrologic elements interact with and affect each other directly. It is basically the area where plants grow rooted in the water table of streams, springs, wet meadows, etc. Related terms include aquatic zone/habitat, riparian zone/habitat and riparian buffer zone. These related terms are sometimes used in other documents as synonyms, and sometimes to indicate specific parts or functions of the overall riparian area, especially the terrestrial part of the riparian area. (RMP/FEIS 1994, Chp. 6 p. 12; Helms (Editor), 1998, *The Dictionary of Forestry*.)

Another related term used in this EA is Stream Protection Zone which is designated on the ground to include the riparian area and enough additional upland area to protect habitat in the riparian area and water quality. Related terms used in other documents include: stream buffer, riparian buffer, protection buffer, no-entry buffer or no-harvest buffer.

<sup>6</sup> Additional Notes (presented in EA pp. 19-20): The NWFP/ROD (p. B-31) states that "Active silvicultural programs will be necessary to restore large conifers in Riparian Reserves." The NWFP/ROD (p. C-32) and the RMP (p. 11) direct the BLM to apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives. These objectives would be accomplished by applying density management treatments within the Riparian Reserve LUA concurrent with treatments in the adjacent Matrix or LSR treatment unit. Treatment would be accomplished with commercial thinning that removes merchantable material only when it is consistent with the purposes for which the Riparian Reserves were established (RMP pp. 9-15, D-6, NWFP p. B-31). The RMP (p. D-6) states that merchantable logs may be removed "where such action would not be detrimental to the purposes for which the Riparian Reserves were established". EA section 3.11.1 describes the project's compliance with the Aquatic Conservation Strategy, including the nine ACS objectives.

- *Apply silvicultural treatments in the RR to provide a diverse vegetation community to provide riparian and wetland functions and habitat to support populations of riparian-dependent plant and animal species.*
- *Apply silvicultural treatments in the RR to develop long-term structural and spatial diversity, and other elements of late-successional forest habitat.*
- *Conduct thinning operations in forest stands up to 80 years old, regardless of origin, to develop large conifers and hardwoods for habitat and to recruit future large coarse woody debris, large snag habitat and in-stream large wood.*

The No Action alternative partially meets this objective by maintaining species composition and plant communities in their current condition and trajectory. It does not implement the elements of the objective designed to restore structural diversity.

The selected action meets the objective to restore structural diversity within the watershed because it is designed specifically to implement the four sub-objectives listed above. It meets the objective to maintain species and plant communities in the watershed because it does not implement any action on 85 percent of BLM forest stands in the project vicinity (2599 ac.) and less than 2 percent of the 6<sup>th</sup> field watershed (26,774 ac.). See Table 1, above.

**Objectives Specific to the Late-Successional Reserve LUA7 (RMP pp. 16-18; WLSRA pp. 25-26, 29, 32-35, 108, 111-113, 117, 120; and objectives defined by the IDT):**

**11. Accelerate attaining late-successional characteristics both spatially and temporally across the landscape to improve connectivity and habitat for late-successional species. Accelerate this development of late-successional characteristics along the pathways from the current Stem-Exclusion stage to the Understory Re-initiation stage, with some early elements of the Shifting Gap stage, that are normally associated with much older forests than are present in the project area. (Willamette LSR Assessment pp. 33-37)**

*Specific late-successional forest characteristics to develop include:*

- *Introduce (create and recruit) some CWD and Snag habitat (> 20 inches diameter<sup>8</sup>) immediately to compensate for the current lack of these habitat features carried over from the previous stands and begin recruiting additional inputs of larger diameter CWD and Snags for the future.*

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<sup>7</sup> (From EA p. 20) The overriding goal for managing LSR is to create, protect, enhance and maintain late-successional ecosystems for the benefit of late-successional forest associated species. (RMP p. 15; WLSRA pp. 33, 108) The Willamette LSR (WLSRA) provides additional guidance and the objectives presented are similar to those in the RMP, but more detailed.

Objectives for creating late-successional conditions can be accomplished by treating mid-seral stands (biological criteria) up to 80 years old (administrative criteria), regardless of their origin, to accelerate attaining late-successional characteristics (RMP, p. 16). Dense, uniform stands would be the primary focus for manipulating vegetation to provide the structural conditions associated with late-successional habitat. The WLSRA (p. 161) identifies the Crabtree watershed portion of the Quartzville LSR as a high priority for treatment.

<sup>8</sup> 20 inches diameter is the minimum diameter, large end, for CWD to meet RMP standards. In the *Willamette LSR Assessment* and timber sales, 21 inches is often used because even numbers are used to indicate the mid-point of 2-inch diameter classes and 21 inches is the upper end of the 20-inch diameter class. As used in these documents, “21 inches” in the LSR and timber sale documents, and “larger than 20 inches” in the EA are functionally the same size.

- *Overstory trees with healthy crowns and large limbs that will become large (32-48" diameter) and giant (48" +) trees that are currently absent in these stands.*
- *Medium size (21-32") shade tolerant trees.*
- *A cohort of healthy small and pole size trees with crowns developed at different levels of the forest overstory.*
- *Gaps with low tree densities to provide forage and brushy thicket habitat.*

The No Action alternative does not meet this objective because no treatment would be done to accelerate any aspect of stand development.

The selected action meets this objective by implementing silvicultural treatments, as a commercial thinning, to accelerate these aspects of stand development.

***12. Maintain variability in treated and untreated areas to provide for any unknown elements, functions and processes that may not fully develop in accelerated late-successional pathways.***

The No Action alternative partially meets this objective since it maintains untreated areas to allow natural processes to govern stand development. It does not provide additional variability since no silvicultural treatments would be done.

The selected action meets this objective by retaining 89 percent of the LSR and Riparian Reserve (2364 ac.) as untreated areas in the project vicinity to provide one trajectory of stand development while treating the other 11 percent of these LUAs in the project vicinity to provide additional variability and accelerate development of some late-successional characteristics. (Calculated from data in Table 1.)

## 4. ALTERNATIVES CONSIDERED BUT NOT SELECTED, AND THE RATIONALE FOR NOT SELECTING THEM

***NO ACTION*** (EA section 2.3.1.4, EA p. 44):

No commercial timber management actions will occur. Only normal administrative activities and other uses (e.g. road use, programmed road maintenance, harvest of special forest products on public land) will continue on BLM land within the project area.

I did not select the No Action alternative because it does not meet the full range of project objectives as fully as the selected action does.

***PROPOSED ACTION*** (EA section 2.3.1.1 – 2.3.1.3, EA pp. 29-44):

The proposed action analyzed in the EA was a proposal to thin approximately 460 acres of 42-54 year old forest stands. Approximately 178 acres are in General Forest Management Area (GFMA) portion of the Matrix LUA; 62 acres are in the Riparian Reserve LUA overlay on Matrix; 135 acres are in the Late Successional Reserve (LSR) LUA and 85 acres are in the Riparian Reserve overlay on LSR. The proposed action included 260 acres of ground based yarding, 133 acres of skyline yarding, and 67 acres of special yarding. (See Footnote 2, p. 4 for description of yarding methods.)

Connected Actions included constructing 0.4 mile of new road to provide access to the proposed thinning units for logging and hauling. New construction included clearing vegetation within the road right-of-way (r-o-w) using ground based logging equipment. Connected actions also included renovating approximately 1.1 miles of existing roads and reducing forest fuel accumulations on approximately 18 acres.

I did not select the full proposed action as analyzed in the Crab Race EA, project 1 (EA section 2.3.1, pp. 29-44) because additional field work indicated that some full or partial units did not sufficiently meet project objectives and because final unit boundaries and more precise mapping resulted in fewer acres than were included in the proposed action.

- I selected EA units 12A,B,C,D,E; 13A; 7A,B,C&D; 8C&D (EA pp. 28, 29-34, 55-56) (DR Table 2) with modified unit boundaries based on final field work as the Crab Race Timber sale, documented as the selected action in section 2, above.
- I did not select EA units 8A and 8B because: 1) additional analysis of field data, including lower than anticipated timber volume and higher than anticipated logging costs, showed that these units are not economically viable at this time; and 2) the wildlife biologist and silviculturist on the IDT determined that treatments to diversify habitat and accelerate developing target late-successional characteristics could be done successfully later as well as now.

#### **Alternatives Considered But Not Analyzed In Detail** (EA section 2.3.1.5, EA pp. 44-45).

I did not select any of the following alternatives because they do not meet project objectives and I concur with the IDT recommendations to not analyze them in any further detail.

Alternatives initially considered by the IDT but dropped from further consideration during the planning process include:

- Treatment of other forest stands within the Riparian Reserve LUA overlay on GFMA: Other stands were evaluated according to two criteria (potential benefit from thinning and operability in conjunction with adjacent GFMA unit). Stands not meeting both criteria were dropped from further consideration for treatment.
- Additional units in the LSR were considered and were dropped from further consideration during IDT development of the proposal for various reasons.
- Alternate routes for roads to facilitate logging in Unit 2 (EA unit 12A) were considered. A route from the north was dropped from further consideration because it would impact a small stand of remnant trees. A route from the west was dropped from further consideration because it required a large temporary culvert on a perennial stream and the selected access provided a more economical and less impacting solution.
- Reserving the stands for carbon storage was not analyzed in detail because it is essentially identical to the No Action alternative which was analyzed and because it does not conform to either the purpose and need for the project or the RMP.
- EA units 8A and 8B were dropped from the proposal after the EA was completed when additional field work showed that thinning the units is not economically viable at this time. These units may be evaluated for treatment in the future.

## 5. PUBLIC INVOLVEMENT/CONSULTATION/COORDINATION

### SCOPING

The Interdisciplinary Team (IDT) of BLM resource specialists conducted internal scoping through the project planning process which includes record searches, on-site field examinations of the project area by IDT members, professional observation and judgment, literature review and IDT discussion. In the project planning process the IDT considered elements of the environment that are particular to this project as well as elements of the environment that are common to all similar timber management projects.

The BLM conducted external scoping for this project by means of a scoping letter sent out to approximately 59 federal, state and municipal government agencies, nearby landowners, tribal authorities, and interested parties on the Cascades Resource Area mailing list on July 22, 2010.

The BLM received approximately seven comment letters/emails during the scoping period. The scoping and EA comment letters/emails/postcards are available for review at the Salem District BLM Office. EA section 1.8.2 addresses the issues raised in the comments and by the IDT. EA Chapter 8 presents specific scoping comments and the BLM response to those comments.

## EA COMMENT PERIODS AND COMMENTS

BLM made the Crab Race EA and unsigned draft FONSI (Finding of No Significant Impact) available for public review and comment from May 8, 2013 to June 7, 2013. Three comment letters/emails/postcards were received during the EA comment period. These comments are available for review at the Salem District BLM Office, 1717 Fabry Rd. SE, Salem, Oregon. Responses to substantive comments are described in DR section 10.0.

## ESA SECTION 7 CONSULTATION

### **1. U.S. Fish and Wildlife Service (USFWS)**

EA section 5.1.1 describes consultation with USFWS. The Crab Race selected action may affect, but is not likely to adversely affect the northern spotted owl due to the modification of dispersal habitat. The Crab Race selected action will not affect spotted owl Critical Habitat or diminish the effectiveness of the conservation program established under the NWFP to protect the spotted owl and its habitat on federal lands within its range (EA pp. 99-100, 132-133):

- The selected action will alter 398 acres of dispersal habitat. The habitat will be maintained as dispersal habitat after harvest (EA p. 100).
- No dispersal or suitable habitat will be downgraded by the project within or outside the provincial home range of any known spotted owl sites, except as described below;
- None of the units are located in Critical Habitat for spotted owl;
- Dispersal habitat conditions will be maintained after treatment on all of the acres in the selected action;
- 2 acres of dispersal habitat will be converted to linear openings as road rights-of-way.

### **2. National Marine Fisheries Administration (NMFS)**

On June 10, 2013 the National Marine Fisheries Service (NMFS) issued a letter of concurrence (LOC) to the BLM for the Crab Race Timber Sale. This letter of concurrence concluded: “[Based on the analysis contained within the letter], NMFS concludes that all effects of the proposed action are NLAA [not likely to adversely affect] UWR Chinook salmon, UWR steelhead, and designated critical habitats.”

This analysis was based on the biological assessment (BA) and accompanying request for ESA section 7 consultation submitted to NMFS on May 15, 2013 and the design features and analysis included in the EA. NMFS determined that “Because of the use of [Project Design Features], including no-cut buffers, restrictions on yarding corridors, road maintenance, road reconstruction, road construction, haul route inspections, and suspension of wet-season hauling to prevent road surface degradation and generation of sediment, as well as the limited scope of the project, and the general site-specific characteristics, it is reasonably certain that any associated effects on listed species will be of such small magnitude that they would not be meaningfully measured, detected, or evaluated... Furthermore, the combined effects from the proposed action on UWR Chinook salmon and UWR steelhead are reasonably certain to be insignificant or discountable.

“...NMFS also analyzed the combined effects from the proposed action on designated and proposed critical habitat and is reasonably certain that the combined effect to critical habitat will also be insignificant or discountable...All of this information was used to make an overall project effect determination.” (LOC pp. 22-23)

## STATE HISTORICAL PRESERVATION OFFICE - CULTURAL RESOURCES SECTION 106 CONSULTATION

A summary report of the cultural resource inventory will be sent to the State Historic Preservation Office detailing findings of the cultural resource surveys which were conducted throughout the sale area in June and July 2012 (EA section 5.1.3, p. 133). No additional consultation is required because of the nature of the resources found.

## REGIONAL ECOSYSTEM OFFICE (REO) - INTERAGENCY LATE-SUCCESSIONAL RESERVE (LSR) WORK GROUP

The BLM requested concurrence for the Crab Race and Mighty Moose Commercial treatments in LSR on June 14, 2013. This concurrence was signed on July 9, 2013 and received by the BLM on July 12, 2013. The REO recommended the following changes or additions to the Proposed Action described in the Crab Race EA:

- Set an upper diameter limit of 22-24 inches dbh for harvest of large trees. BLM Response: No trees larger than 24 inches are designated for harvest in the Crab Race Timber Sale.
- Specify a maximum gap size in thinned areas varying from 17-33 feet. BLM Response: The marking guides for the selected action accomplish this recommendation.
- Display a diameter distribution of trees before and after harvest. BLM Response: This information is included in the ORGANON stand modeling done for developing the silvicultural prescription and some of the results are displayed in Table 9 of the EA (p. 55).
- Document and discuss the effect of thinning on recruitment of dead wood through time. BLM Response: The recommendation goes on to acknowledge that the Crab Race EA discusses these effects "at length".

The letter concluded: "The Interagency REO LSR Work Group concurs with the assessment of the Cascades Resource Area that the...Crab Race...[project is] consistent with the LSR objectives if the included recommendations are implemented."

## 6. CONCLUSION

### DECISION

I have decided to implement the selected action as the Crab Race Timber Sale. The selected action is described in DR section 2. The Crab Race Environmental Assessment (EA) documents the environmental analysis of the proposed commercial thinning and connected actions and the EA is incorporated by reference in this Decision Rationale.

### FINDING OF NO SIGNIFICANT IMPACT (FONSI)

I have prepared a Finding of No Significant Impact (FONSI) determination which I am signing and releasing concurrently with this Decision Rationale.

### 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 August 14, 2013. The planned sale date is September 11, 2013.

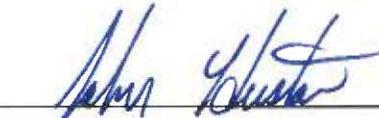
To protest this decision a person must submit a written protest to John Huston, Cascades Field Manager, 1717 Fabry Rd. SE, Salem, Oregon 97306 by the close of business (4:30 p.m.) on August 29, 2013. The regulations do not authorize the acceptance of protests in any form other than a signed, written and printed original that is delivered to the physical address of the advertising BLM office.

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. In turn, the Resource Area will prepare a formal response to the protest and serve a decision in writing on the protesting party (43 CFR 5003.3).

#### IMPLEMENTATION DATE

If no protest is received within 15 days after publication of the notice of decision, this decision will become final. For additional information, contact Chris Papen (503) 375-5633, Cascades Resource Area, Salem BLM, 1717 Fabry Road SE, Salem, Oregon 97306.

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



John Huston

Cascades Resource Area Field Manager

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

8/6/2013



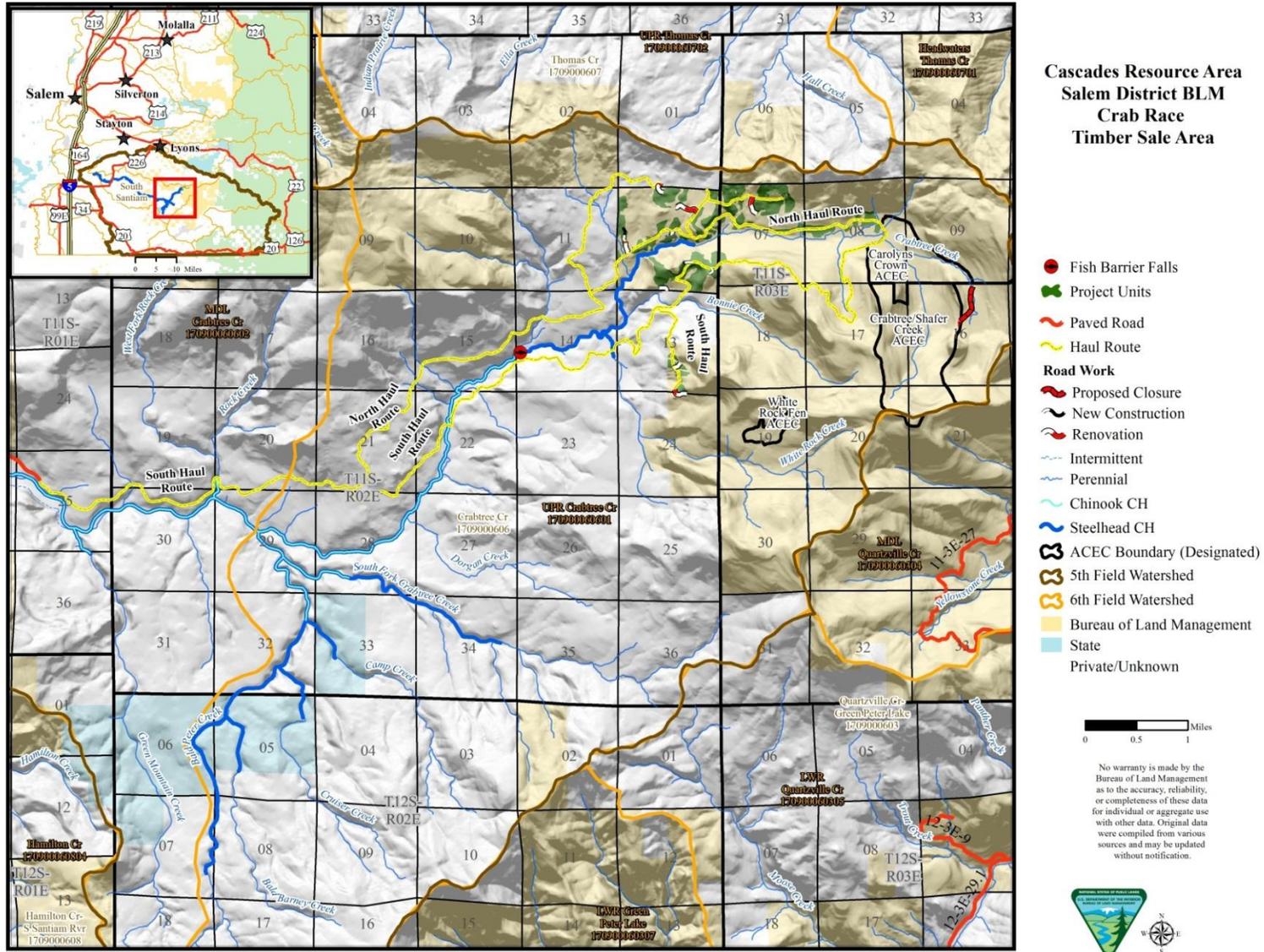
## 8. ERRATA

The following errors, omissions and clarifications needed in the EA are identified and corrected here:

- p. 9, "Wildlife", bullet 3, replace with: Existing snags and coarse woody debris (CWD) would be retained on site. Fewer than 10 percent of existing large ( $\geq 15$  inches and  $\geq 15$  feet tall) would be felled for safety or knocked over by logging operations and they would be retained as CWD. Fewer than 10 percent of CWD would be impacted by logging and would remain on site.
- p. 33, subheading, replace with: Road Work (EA Section 7.2-Maps):
- p. 100, line 1, replace with: occur in dispersal habitat within the provincial home range of three known spotted owl sites (KOS). *[Note: Also other locations incl. p. 121, KOS is the acronym for Known Owl Sites.]*
- p. 119, Remarks for Migratory Birds, replace with: This project is in compliance with this direction because treatments would increase habitat diversity for migratory birds and increase species richness. Impacts would be short term and not reduce persistence of any bird species. Addressed in text (EA Section 3.3, 3.7).
- p. 120, Remarks for Wetlands, replace with: This project is in compliance with this direction because no wetlands are within the thinning units. Adjacent wetlands would be protected by buffers except for two acres where cutting and removing selected trees along the edges of two wet meadows would be done to retard conifer encroachment. (EA Sections 1.3, 2.3, 3.3, 3.7)
- p. 121, see note above for p. 100, replace with: TR6. Coordinate management and protection around KOSs (known owl sites)...

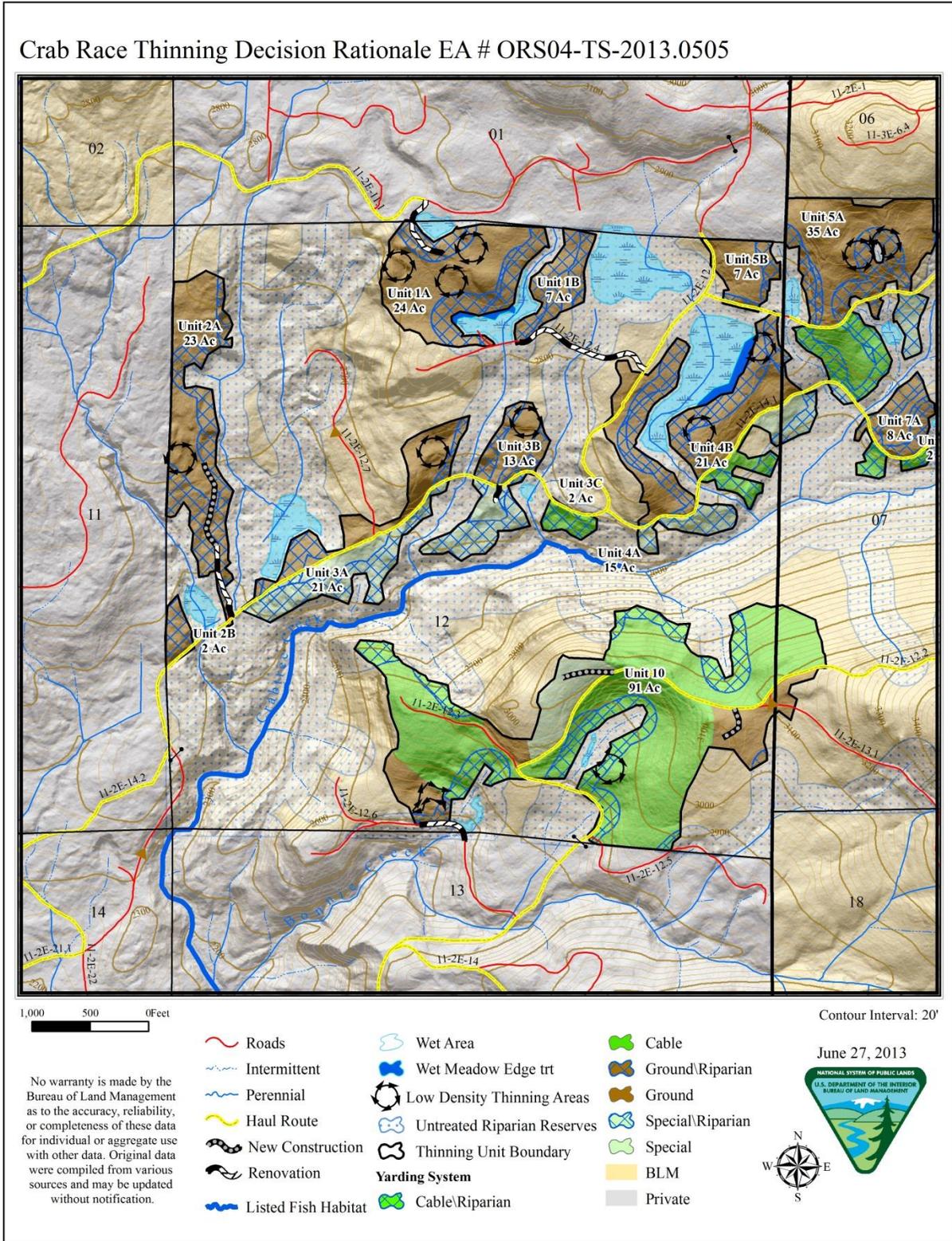
# 9. DECISION MAPS

MAP 1: VICINITY MAP – T. 11 S., R. 2 AND 3 E., W.M.



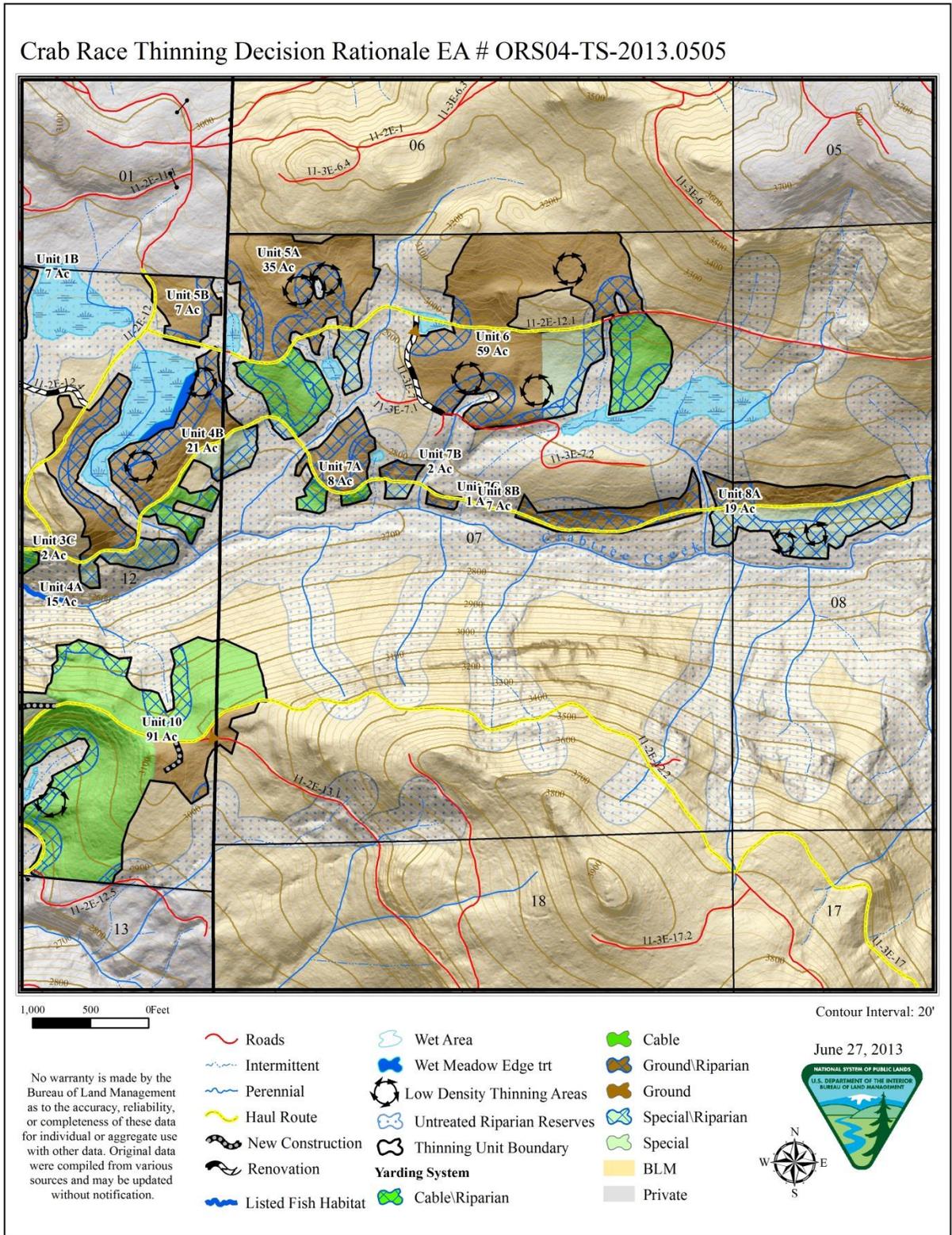
MAP 2 – T. 11 S., R. 2 E., SECTION 12, MATRIX

Crab Race Thinning Decision Rationale EA # ORS04-TS-2013.0505



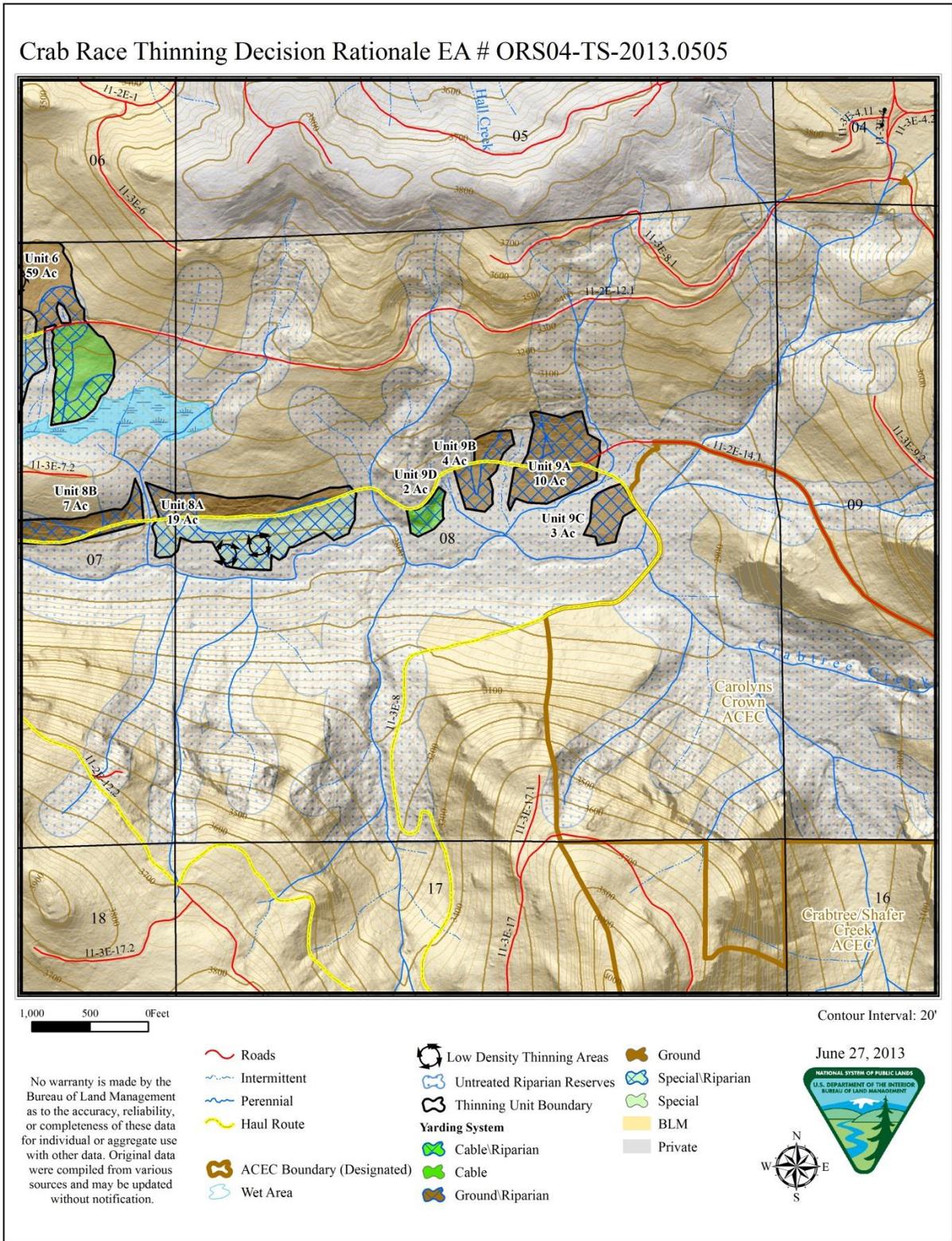
MAP 3 – T. 11 S., R. 3 E., SECTION 7, LSR

Crab Race Thinning Decision Rationale EA # ORS04-TS-2013.0505



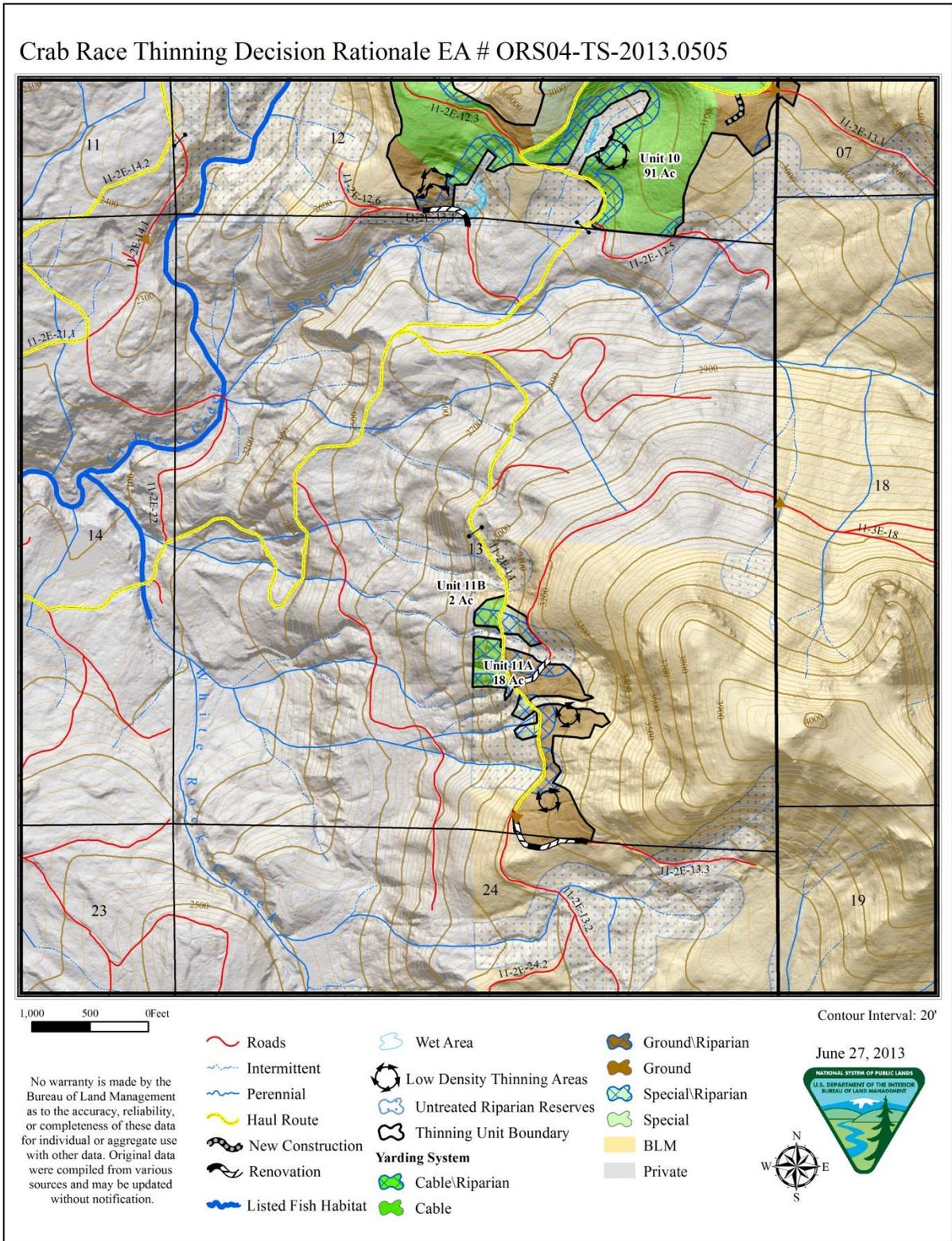
MAP 4 – T. 11 S., R. 3 E., SECTION 8, LSR

Crab Race Thinning Decision Rationale EA # ORS04-TS-2013.0505



MAP 5 – T. 11 S., R. 2 E., SECTION 13, LSR

Crab Race Thinning Decision Rationale EA # ORS04-TS-2013.0505



## 10. PUBLIC COMMENTS ON THE EA AND BLM RESPONSES

The BLM received three letters/emails commenting on the EA. These letters may be viewed in the Salem District office. Comments on projects 2 and 3 analyzed in the EA will be addressed in the DR for each of those projects. The substantive comments, on project 1 only, from these three letters are excerpted and summarized below, with BLM responses to those comments. These letters/emails were submitted from, in the order received by the BLM:

- American Forest Resource Council (AFRC), an Oregon nonprofit corporation that represents the forest products industry.
- K.S., an individual.
- Oregon Wild (OW), an Oregon nonprofit organization whose mission is to “protect and restore Oregon’s wildlands, wildlife and waters...”

The BLM compiled the comments from all three commenters by topic, excerpting the comments for brevity and application to the Crab Race EA and timber sale, then responding to the compiled comments. Comment categories are listed in alphabetical order of the heading. Individual comments are listed in the order comment letters were received: AFRC, KS and OW.

### 1. Economic Efficiency, Logging Systems and Landings

I received comments expressing concern that sale design and selection of logging systems be economically efficient and asking for clarification on some EA content. Specific comments include:

- ...include the intent of the O&C Act in...analyses and decision making process; particularly the mandate to distribute timber receipts to O&C counties. ...look for ways to achieve efficiency in order to create more profitable timber sales. There are many ways to cut costs and increase revenues that timber sales on O&C lands generate, and thus better meet the objectives... (AFRC)*
- AFRC would like to see all timber sales be economically viable. Our membership depends on sawlog volume to keep their mills running and employees working. ... the value of these sales...will generate income to the counties.*
- One way to create efficient timber sales is by treating as much of the project area as possible [and reduce scattering units across multiple sections].*
- Appropriate harvesting systems should be used to achieve an economically viable sale... (AFRC)*
- Consistent and steady operation time throughout the year is important for our members... (AFRC)*
- ...what is “special yarding”? (KS)*
- ...why are there so many landings? With respect to landings ([project design features] 4 and 5), why wasn’t there a Design Feature which emphasized choosing locations already altered as roads, etc.? (KS)*

**Response to 1:** The BLM acknowledges the importance of economic efficiency to project design, logging systems and operations to accomplish RMP objectives for resource management and protection described in EA sections 1.3.1 (Purposes (Objectives) of Project 1) and 3.11.2 (Comparison of Alternatives with Regard to the Objectives for Project 1).

Special yarding is now described in footnote 2 on page 4 of this DR. The number of landings is an estimate based on BLM’s analysis of a potential logging plan and probably includes more landings than will actually be

used so that the EA analyzes the highest anticipated level of potential impacts. Since landings are the place where logs are loaded onto trucks, they are essentially always on roads (existing or planned).

## 2. Fuels Management

The specific questions and comment I received concerning fuels management are:

- a) *For PDF 25, is the plastic sheeting removed before the piles are burned? If not, isn't the plastic a source of air pollution? (KS)*
- b) *Burning should be minimized, with other methods used to reduce fuel loadings in specific areas. (KS)*

**Response to 2:** The BLM does not remove plastic from the piles and it is burned with the pile. The Oregon Department of Forestry, Smoke Management program has determined that the plastic may be burned if it is limited to one sheet per pile, no larger than 10X10 feet (100 sq. ft.), and no thicker than 4 mil (0.004 in.). Operationally, it is difficult and costly to remove the plastic since it is tied and weighted to prevent it from blowing off, and in our experience it is often dangerous because people may be injured climbing on the piles with unstable footing to remove plastic. Used plastic which has been removed is typically torn and useless, so it is generally thrown in the garbage. The smoke particles released are included in the overall calculations of smoke generated and its environmental effects.

Many methods of fuel reduction are analyzed by the Fuels Specialist on the IDT for effectiveness and efficiency. Piling and burning is often the selected method because it is effective (the fuel no longer exists to burn in a wildfire) and cost efficient. Pull-back, lop-and-scatter, mastication (chopping it up) and using slash to cover disturbed soil are also used to reduce fuels and wildfire danger where appropriate. The IDT determined that pile and burn is likely to be the preferred method in this instance, but the fuels specialist will assess the actual fuel loading before implementing a final decision.

## 3. Objectives and Overall Project Design

I received comments expressing opinions about how the Crab Race Timber Sale meets RMP and project level objectives. Specific comments include:

- a) *AFRC is glad to see straightforward and accurate objectives identified for this project by the BLM. Recognition of RMP objectives such as a balance between wood volume production, quality of wood, and timber value at harvest is an important aspect of the BLM's mission that often gets omitted from the decision making process, and we thank the Salem BLM for including it in this analysis. Additionally, the direction to manage for sustainable supplies of timber, which is crucial for the long term viability of our membership and the communities they support. (AFRC)*
- b) *Nowhere in the NWFP or in the Salem RMP is direction given to manage riparian reserves as if they were de facto LSR's; yet page 15 of the EA describes that treatments in riparian reserves were designed to "develop late-successional habitat components to help meet RMP objectives for Riparian Reserve lands." While the RMP does have objectives for maintaining certain levels of late-successional habitat on Matrix lands (at least 15%), these levels are not required on riparian reserves and we would like the BLM to make this distinction clear. We would like the BLM to keep options open to meet all aspects of the ACS. (AFRC)*
- c) *Supporting local mills and generating funds to support local government should be a primary goal for all timber sales on federal lands that return receipts to the counties, and we would like the BLM*

*to recognize this goal and keep it in mind while laying out the timber sales that this EA generates. (AFRC)*

- d) This is a good, straightforward thinning project done at an appropriate stand age. (KS)*
- e) ...86% of the [Riparian Reserves] in the project vicinity will be left alone to develop naturally, based on appropriate selection criteria. The small (15%) percentage of LSR acres to be thinned...and the selection of criteria for untreated acres is again appropriate... (KS)*
- f) The process by which the IDT reduced the project size from 700 to 460 acres is well described and commendable in terms of the reasons for deleting particular stands from the project. The same comment applies to the eventual selection of haul routes (EA p. 45). (KS)*
- g) The effects analysis is good. Given the homogeneous nature of these young stands, it is difficult to criticize a project that interjects some eventual habitat variety while harvesting merchantable timber and providing employment. However, a selling point for me remains that 80% of these midseral stands will be left untreated, allowing natural stem exclusion to occur and create smaller snags and downed wood. (KS)*
- h) We urge that Project 1 (thinning young stands) be adjusted to better mitigate adverse effects on the purposes for which the reserves were established. (OW)*
- i) We urge BLM to adopt more mitigation for the cumulative loss of dead wood habitat for both aquatic and terrestrial wildlife by establishing untreated "skips" in riparian reserves, by providing wider no-treatment buffers, and/or felling and leaving a portion of the trees that are cut in riparian reserves. (OW)*
- j) We appreciate that BLM leaving some untreated portions of the landscape and that serves to partially mitigate for the loss of dead wood recruitment in thinned areas, but we are concerned that this mitigation may not last because BLM is not making a decision to leave those areas untreated. Just because they are not treated in this project does not mean they will remain untreated long enough to grow and recruit natural levels of snags and dead wood. (OW)*

**Response to 3:** The Crab Race timber sale was developed specifically to implement economic and resource management objectives described in the RMP. The project specific comments I received indicate that the commenters generally agree that the project contributes to meeting these objectives. These supportive comments will help me to evaluate alternatives for future projects. I will focus the remainder of the response to topic 3 on the questions and disagreements presented.

RMP objectives for Riparian Reserves are to meet the Aquatic Conservation Strategy (ACS) Objectives (ACSO) and to provide habitat for special status, SEIS special attention and other terrestrial species (RMP p. 9). Managing for timber or other forest products is not a Riparian Reserve objective. RMP p. 11 specifically directs the Salem BLM to "Neither conduct nor allow discretionary timber harvest...with exception of the following:...Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives. Riparian Reserve acres are not included in calculations of the allowable sale quantity."

The IDT evaluated the Riparian Reserve stands throughout the project vicinity in light of the four ACS Components and the nine ACS objectives. The IDT determined that the only recommended management actions to achieve these objectives at this time were to thin some of the stands and to begin snag and CWD recruitment concurrent with thinning to accelerate developing late-successional habitat components which are underrepresented in the project vicinity (EA sec. 1.3.1, 1.4.1, 3.11.1, 3.11.3). Long term (one to four decades)

snag and CWD recruitment is the focus of project 2 analyzed in the EA, which will be addressed in a separate DR.

The timber sale was designed so that it will meet BLM resource objectives and so that it can be logged safely and economically with a variety of commonly available equipment and techniques. The BLM selected project design features (PDF) to protect resources from damage and to achieve resource objectives. I recognize that some of these PDF increase logging costs and have carefully considered whether these PDF are necessary to achieve BLM resource management objectives before requiring them. I dropped two units from the Crab Race timber sale when timber volume data and logging analysis showed that they cannot be economically logged at this time and that it would be reasonable to treat these stands later when the trees are larger.

Commenter OW generally states that the Crab Race timber sale should be “adjusted to better mitigate adverse effects”, but does not identify any specific errors in the EA analysis or project design features. The IDT Lead/EA Writer for the Crab Race timber sale has reviewed the *Scientific Synthesis* document referred to and excerpted by commenter OW. He finds that the project conforms substantially to the 15 key points in the executive summary and detailed descriptions in the body of the document, and does not conflict with any of them. Specifically:

- Thinning is most beneficial in dense young stands, younger than 80 years and especially less than 50 years old. The Crab Race project thins overstocked stands from 39 to 54 years old.
- The modeling results are highly variable and accurate assessments require site specific information. BLM used data from Stand Exams in ORGANON modeling and interpreted the information in light of extensive field review by IDT specialists.
- Commercial (conventional) thinning accelerates or helps develop some late-successional characteristics (such as large trees, crown development) and reduces or delays others (such as dead wood in the first decades after thinning). The authors conclude that diversity across the landscape is essential and that no single treatment (or lack of treatment) on a large scale will provide that diversity and that “...light to moderate levels of thinning will accelerate the development of live tree densities typical of mature, late-successional forests.” (*Synthesis* pp. 16-17) Commenter OW recognizes that the BLM is leaving “some” portions of the landscape untreated. The BLM is treating 15 percent of the project vicinity, leaving 85 percent untreated.
- The authors focus much of their attention on in-stream wood. Due to the project design, including untreated stream protection zones (SPZ), “Potential changes to LW [large wood, or in-stream wood] from thinning would be so small that effects to listed fish habitat would be immeasurable.” And “Thinning adjacent to SPZ on tributaries to Crabtree Creek is unlikely to affect LW supplies to Crabtree Creek...tributary channels...” EA section 3.5.1.1, p. 85. Therefore the project is not in conflict with the authors’ general assessments and reflects their conclusion that “...stream wood input rates decline exponentially with distance from the stream and varies by stand type and age...” (*Synthesis* p. 18). See response to comment 5 for additional discussion of dead wood and riparian management.

Some of the areas not included in the Crab Race timber sale are likely to be treated in future decades. Such treatment would be based on management plans and site assessments current at that time. Many areas, such as remnant old growth forest stands and biotic/hydrologic riparian zones would not be thinned under any foreseeable management plan.

#### 4. Protected Species and Invasive Species

One commenter addressed protected and invasive species specifically in the Crab Race timber sale area.

- a) *BLM should...monitor the incidence of scotch broom and other invasive species in these stands over time. (KS)*
- b) *...the text does not state which of the three spotted owl sites are actually occupied by spotted owls. I am particularly curious about the site...near Crabtree Lake. (KS)*

**Response to 4:** The BLM has a continuous, ongoing program to identify and manage invasive species on BLM lands, including the Crab Race timber sale area.

To protect spotted owls from disturbance, the BLM has established a practice of not providing detailed information on spotted owl sites in widely distributed documents. Appropriate information may be obtained directly from BLM Wildlife Biologists on request.

#### 5. Riparian Reserve Management and Dead Wood (Snags, CWD and In-stream Wood)

All three commenters addressed Riparian Reserve management and dead wood from differing perspectives. Specific comments include:

- a) *AFRC is glad to see that the BLM is being proactive in treating riparian reserves. ...thinning in riparian areas accelerates the stand's trajectory to produce large conifer trees... Removal of small diameter suppressed trees has an insignificant short-term affect on down wood, and ultimately a positive effect on long-term creation of large down woody debris and large in stream wood, which is what provides the real benefit to wildlife and stream health. (AFRC)*
- b) *AFRC presents summaries of research related to dead wood [Summary, not excerpted. Full citations provided]:*
  - *Nearly all wood that falls into stream channels may influence aquatic habitat (Dolloff and Warren, 2003).*
  - *Small wood in streams deteriorates quickly (Naiman et al., 2002; Keim et al. 2002).*
  - *Field surveys (McEnroe, 2010) indicate relatively large amounts of functional wood in and available to small streams adjacent to previously harvested stands, and the vast majority of this down wood originated within 50 feet of stream channels.*
  - *In second-growth coniferous riparian forests 70-84 percent of total in-stream wood was recruited from within 15 meters (49 feet) of stream channels (Minor, 1997).*
  - *80 percent of wood loading occurred within 20 meters (66 feet) of stream channels in coniferous forests (McDade et al., 1990).*
  - *90 percent of wood loading occurred within 20 meters (66 feet) of stream channels in coniferous forests (Welty et al., 2002).*
- c) *...the SPZs should be wider than 30' on intermittent streams (should be 50') and 60'-85' on perennial streams (should be 100'), even if they are not listed fish habitat. ...the integrity of the aquatic/riparian systems would be better protected by wider SPZs—50' for intermittent streams and 100' for perennial streams. (p.4) The effects analysis on page 84 for density thinning is somewhat*

*conclusory, simply stating that SPZs are adequate to protect aquatic resources without even giving their widths. (p.5) (KS)*

- d) ...any damaged trees larger than 21” should also be retained in the Matrix [which is also] deficient in snags and CWD. Even if they are eventually logged in 20 years, they will serve as valuable habitat in the meantime. (KS)*
- e) The two criteria used to select Riparian Reserve stands for thinning are excellent, from a practical as well as ecological standpoint. (KS)*
- f) The “No Action” effects analysis...makes a good case for both the thinning project and snag creation. Of relevance to both projects is that untreated adjacent stands will continue to provide snags naturally (albeit small ones) during the time period that the thinned stands will not. [from p. 5, ed.] ...80% of these midseral stands will be left untreated, allowing natural stem exclusion to occur and create smaller snags and downed wood. (KS)*
- g) [Regarding EA p. 106 statement] that snag/CWD recruitment will only be done where there are “sufficient green trees” at least 21” dbh and an identified need for more snags/CWD... Can the term “sufficient” be quantified? ...concerned that large green trees will be sacrificed to create snags/CWD when they themselves are in short supply. [from p. 6, ed.] ...the text for ACSO 8 states that the proposed action would “immediately” recruit some snags and CWD by girdling or felling some trees larger than 21” in diameter. It was my impression that additional snag creation would be delayed until the thinning project was completed, since numerous snags will be unavoidably created by the logging operation itself. [from p. 7, ed.] For Objective 12 and Project 2, I repeat my concern that large green trees not be sacrificed to create snags or CWD, since they are in short supply, with no remnant old growth at all in these stands. ...I am...least supportive of the snag/CWD creation, since this can occur at the expense of green trees. (KS)*
- h) The EA discusses the effects of logging on wood recruitment to streams but the EA needs to discuss the effects of logging on all the values for which the reserves were established - fish being just one of those purposes. Riparian reserves were established for a wide range of organisms other than fish and many of those species depend on wood recruitment to uplands. ... Thinning will export more of the productive capacity of these stands. Thinning will delay and reduce recruitment of dead wood that is already in short supply. (OW)*
- i) The EA (p 103) does not adequately weigh and balance the competing effects of logging on dead wood. The EA says: [reprints first sentence of paragraph 1 under cumulative effects – Snags and Down Logs (CWD) and second paragraph of the same section, ed.] ... First, the adverse effects may be more significant and long-lasting than the beneficial effects. The EA should try to quantify these competing effects so the public and the decision-maker can better understand the consequences of logging. Second, it's risky for mitigation to rely on future management activities, like artificial snag creation, which depends on future appropriations which may not be forthcoming. Natural processes are better because they are more reliable. Logging in riparian reserves must be reconsidered in light of new information showing that logging does NOT increase the recruitment of large wood, and any increase in very large wood is very minor and comes at great cost in terms of a significant reduction in recruitment of functional wood in size classes smaller than “very large.” (OW)*
- j) [OW reprinted the “Key Points” from the Executive Summary of Spies et al. (2013) Effects of Riparian Thinning on Wood Recruitment: A Scientific Synthesis (Scientific Synthesis)as part of their comments. OW followed the Key Points by presenting commentary on them and closing with the*

following general statement. Full citation attached. Ed.] *Thinning to produce very large wood in the distant future at the expense of more abundant wood recruited over time is not advised. The SAT Report, upon which the ACS is founded, was clear that continuous input of wood is important. “Riparian zones along larger channels need protection to limit bank erosion due to trampling, grazing, and compaction, to ensure an adequate and continuous supply of large wood to channels ...” 1993 SAT Report. Ch 5, p 455. (OW)*

**Response to 5:** The approaches to Riparian Reserve management and dead wood management reflect varying perspectives and values of the commenters. I have considered the comments above and have concluded that the selected action accomplishes the project objectives and complies with RMP management direction. Specifically:

Riparian Reserve stands were individually evaluated and selected for treatment or no-treatment based on IDT specialists’ evaluations of abundance/deficiency of habitat types in the project vicinity; stand development and trajectory; impacts of treatment/logging on multiple resources; and technical feasibility/economic efficiency of treating these stands with commercial thinning. In developing the project the IDT considered current conditions, expected stand development with and without treatment, areas where treatment is generally precluded (old-growth stands, ACECs, riparian zones/SPZ), other projects such as non-commercial treatments in the LSR and anticipated management practices on private lands in the watershed. These are reflected in the cumulative effects analysis for each resource as described in the EA.

Two commenters presented information from published sources about in-stream wood recruitment and the third expressed opinions on SPZ widths. Minimum widths for SPZ comply with direction from the RMP, Salem District revised guidance of October 8, 2010, and NOAA direction. SPZ are often wider than the minimums based on topography, vegetation and logging feasibility. SPZ have been field reviewed for adequacy by IDT specialists and project design features including SPZ have been presented for review by other agencies including Oregon Department of Fish and Wildlife, US Fish and Wildlife Service, NOAA and the City of Jefferson, Oregon (municipal watershed). The NOAA Letter of Concurrence is documented in DR section 5.

Table 3 below, compiled from the summaries of published sources presented by commenters for BLM’s consideration support my conclusion that the SPZs are adequate to protect source areas for naturally recruiting in-stream wood, as well as to protect water quality as documented in EA sections 3.5.1.1 and 3.5.1.2:

**TABLE 3: CONTRIBUTION OF IN-STREAM WOOD BY DISTANCE FROM STREAM CHANNEL**

Source	Distance from Stream Channel	Total Percent of In-stream Wood	Additional Distance from Stream Channel	Additional Percent of In-stream Wood
Minor, 1997	49 ft. (15 m)	70-84%	Base Distance and Base Percent	
McDade et al., 1990	66 ft. (20 m)	80%	17 ft. (5 m)	≤10 %
Welty et al., 2002	66 ft. (20 m)	90%	17 ft. (5 m)	6-20%
Spies et al., 2013	82 ft. (25 m)	95%	33 ft. (10 m)	11-25%
Range of Distances	148 ft. (45 m)	95%	99 ft. (30 m)	11-25%

Table 3 confirms the conclusion in the *Synthesis* (Spies et al. 2013) that “...stream wood input rates decline exponentially with distance from the stream and varies by stand type and age [internal references omitted].”

Trees damaged by logging are generally retained in our timber sales, unless they need to be removed for safe and efficient logging operations. In the Crab Race timber sale, 150 trees will be saw-topped and 150 trees will be base-girdled – some of those are likely to be in Matrix.

BLM wildlife biologists and silviculturists determine where there are both “sufficient” large green trees from which to recruit snags/CWD and a need for additional snag/CWD habitat. While it may be possible to quantify these numbers, I would still rely on the professional judgment of BLM wildlife biologists and silviculturists to

make the final determination in the field based on their professional judgment. Available stand examination data, aerial photo interpretation, satellite imagery and data from new technologies such as LIDAR are also available for their use, but final implementation relies on field conditions rather than calculated numbers. Therefore, I do not intend to spend additional time and money to generate and analyze data to quantify prescriptions any more than is needed to implement contracts for treatment.

The EA addresses multiple resources and objectives including Riparian Reserves and dead wood. For each LUA the EA discusses the Need for Action (sec. 1.3.1), Objectives (1.4.1), Conformance with Plans/Statutes/Regulations (1.7), and how alternatives meet Objectives (3.11.3). In addition, EA chapter 3 describes multiple resources and the effects of both action and no-action alternatives on these resources. These resources include many more aspects of resource management at both project and landscape scales than the simple focus on dead wood and in-stream wood within and adjacent to project units as presented in comments 5h and 5i.

The Crab Race timber sale project is only one part of long-term, landscape level management of the Upper Crabtree Creek Watershed in particular and BLM lands in general. I find that the Crab Race timber sale is consistent with the following key statements from pp. 16-17 of the *Synthesis* (Spies et al., 2013) presented by commenter OW:

- “The loss of dead wood production due to thinning with removal can be offset or even reversed using thinning prescriptions...Thinning with dead wood creation...would produce more dead wood in riparian areas and streams in the short term than a stand that is left unthinned where dead trees slowly accumulate as a result of competition, disease, disturbance and other factors...such actions could have the added benefit of accelerating the future production of very larger [sic] diameter (greater than 40”) trees.”
- “At the landscape level, variation in thinning regimes can create variation in the size and diameter of dead wood and live trees...By varying thinning prescriptions, a diversity of forest conditions can be produced that may be more reflective of the variability that occurs within unmanaged riparian areas. Using a variety of treatments is also consistent with the tenets of adaptive management in situations where the outcomes of treatments are uncertain.”
- “...managed Douglas-fir stands in northwest Oregon are growing at higher densities than is typical of natural stands, and...light to moderate levels of thinning will accelerate the development of live tree densities typical of mature, late-successional forests.”

The BLM is creating dead wood by topping/girdling 300 trees in addition to trees cut to facilitate logging but not sold and removed from the forest and trees damaged by logging operations (PDF 12, 20). Across the landscape the combination of commercial thinning, non-commercial thinning LSR enhancement (current/past projects are outside of the Project Vicinity described for the EA, so were not analyzed in the EA), ACECs, late-successional stands and untreated areas provide a diversity of forest conditions.

## 6. Road Work and Use

I received comments and questions about road work (construction, renovation, decommissioning) and use from two commenters:

- a) The language on page 40 & 78 of the EA regarding haul restrictions does a good job of focusing on outcome based factors. However, page 83 of the EA seems a bit contradictory to page 40 by stating “the south haul route would be used only during the dry season and dry conditions.” (AFRC)*
- b) ...under point 9 (EA p. 19) new road construction possibly in a Riparian Reserve...could this project have proceeded without it? ...my admonition to “avoid road building”; why was this not possible? (KS)*

- c) *How far away from the creek is the western segment of the new road construction in section 7 (EA p. 137)? [from p. 4, ed.] ...on p. 76 I would have liked a more detailed description of the .36 mile of new road construction, i.e., how far the western segment in Section 12 is from the creek. What is “well away from streams”?* (KS)
- d) *The potential impact of roads on hydrology is described well on p. 71, in great detail for pertinent factors. [from p. 5, ed.] Table 13 shows in detail how the chosen haul routes will not negatively impact listed fish habitat.* (KS)

**Response to 6:** BLM civil engineering technicians, hydrologist, fisheries biologist and foresters evaluated the haul routes and determined that the poorly engineered and constructed roads on private lands which are key sections of the “southern haul route” are not suitable for winter or wet conditions haul in their current condition (EA p. 71). The BLM did not consider upgrading these roads to suitable winter haul standards because: 1) The BLM does not have an agreement with the private landowner/road owner to do so; and 2) It would not be cost effective because the small amount of timber hauled over this road system would not bear the cost of such road improvement and summer logging is a viable option.

The BLM only builds roads when the IDT determines that they are needed to achieve project objectives, which are based on RMP objectives and management direction. Building roads to effectively manage BLM lands is specifically provided for in RMP Management Direction/Actions (pp. 11, 17, 62-64) and identified as objective 6 for the Crab Race timber sale (EA sec. 1.4.1, 3.11.3).

From context and page references I believe that “section 7” is a typographical error and that both excerpts refer to the road in section 12. The new construction portion of the road in unit 2 appears to be (field observation and map distance) at least 200 feet from the nearest stream. The renovation portion is approximately 200 feet from the perennial stream to the west and 100 feet from the discontinuous ephemeral (high precipitation event only) stream to the east. The remainder of the 0.36 mile of new road is short spur roads as shown on the map.

## 7. Miscellaneous

I received comments and questions from two commenters that do not fit any of the above categories. I address them individually:

- a) *The charts on page 54 of the EA do a great job quantifying [age class distribution] issues... We appreciate the Cascades Resource Area implementing low density thinning areas to promote at least a small amount of early seral habitat ... 10 acres will not solve the issue of sustainable timber supply, it is recognition that some early seral conditions are important for both wildlife and long-term timber supply...* (AFRC)

**Response to 7a:** Comment noted. I will continue to consider this issue in developing future projects. See also comment and response 7e referring to the same tables in the EA.

- b) *...many sideboards the BLM must adhere to and page 45 of the EA discusses some of these sideboards. We encourage the BLM to continue to illustrate these reductions and sideboards in their analyses. We believe it is important to elaborate on just how small a percentage of the landbase the BLM is actually allowed to harvest timber on, which was done well on pages 7 & 31 of the EA. We encourage the BLM to continue to summarize this information; possibly with a table or chart that shows how the BLM gets from a 27,000 acre watershed down to 460 acres of treatment units.* (AFRC)

**Response to 7b:** The IDT for each project goes through a similar process to develop a final proposal. I will continue to document the process in future EA since two commenters have identified it as helpful and informative from different perspectives. See comment and response 7e.

- c) *[In] the EA...the BLM references “old growth trees.” Neither the Salem RMP nor the NWFP defines old growth as a tree, but rather as a stand. The NWFP glossary defines an “Old-growth forest” as a “forest stand usually at least 180-220 years old.” The table and glossary in the RMP/FEIS that is referenced on page 41 of the EA also does not mention old growth trees. The glossary defines both an “old growth seral stage” and an “old growth conifer stand,” and the table describes “old growth blocks.” We would like the Salem BLM to recognize this distinction when writing their EA’s and to stay consistent with the definitions in their guiding documents.*

Response to 7c: Noted. I will consider alternative wording in future documents.

- d) *Which “native plants” are allowed to be transplanted? (KS)*

**Response to 7d:** Potential species for transplants include: conifer seedlings; vine maple and other brush species; sword fern, salal, Oregon grape and perhaps other ground cover species which would be destroyed by road renovation or construction. However, in the Crab Race timber sale I anticipate demand for transplants to be extremely limited or non-existent. I included them in the EA because RMP objectives and management actions/direction on pp. 49-50 of the EA provide for harvest of special forest products (SFP), including transplants. The Cascades Resource Area has a programmatic SFP Categorical Exclusion that provides additional specific direction.

- e) *Tables 6-8 [EA p. 54] are valuable in illustrating the importance of managing federal lands for ecological purposes in an environment where private lands are on very short rotations (30-60 years). Table 9 [p. 55] makes a strong case for the thinning project, in terms of the greater growth of trees remaining in the ensuing 20 years. (KS)*

**Response to 7e:** Noted. This comment shows that this information was also useful in understanding the project and IDT process from a different perspective. I will continue to present such information, as appropriate, for future projects. See comments and responses 7b and 7c.

- f) *The effects analysis is sound...The photographs (Figures 4-7) ably illustrate the lack of ground cover and understory in dense stands, as well as their development in thinned stands. BLM should continue to document, with photographs, these stands as they develop over time. (KS)*

Response to 7f: Noted. Specific feedback such as this and comments 7b,c,e about useful features of the EA will be useful in preparing future documents.

- g) *...is habitat still designated as for ESA listed fish species if those species can’t reach that habitat because of a change in stream structure, as happened here with the creation of the falls? Can there still be steelhead and CH above the falls...?(KS)*

Response to 7g: The habitat is still currently designated to the former limits of ESA listed fish use. Surveys have been done and no steelhead or Coho have been found above the current barrier since it formed.

- h) *Are the “feet” distances for cutthroat trout equivalent to the widths of the Stream Protection Zones? (KS)*

Response to 7h: The distances are from unit boundaries to the nearest stream segment that supports cutthroat trout. These distances correspond to the SPZ width when the unit is immediately adjacent to cutthroat habitat. For units further away from cutthroat habitat, the distance and SPZ widths are unrelated to each other.

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