

ENVIRONMENTAL ASSESSMENT and FINDING OF NO SIGNIFICANT IMPACT

Clear Dodger Projects - Reissue

Environmental Assessment Number OR080-03-03

October 31, 2005

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

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Abstract: This document is a reissue of the environmental analysis first documented in the Clear Dodger Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) (EA# OR080-03-03), dated March 31, 2003. This EA Reissue covers the same projects as the original EA, incorporating changes in Project 1 that were first documented in the Clear Dodger Timber Sale Decision Rationale, dated July 29, 2003. Project 1, the Clear Dodger timber sale, is a proposal to thin approximately 143 acres within the Matrix Land Use Allocation (LUA), as defined in the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP). Project 1 would also include the following road work: approximately 0.05 mile of new temporary road construction and decommissioning the new construction after project completion; 4.7 miles of road renovation; and blocking 1.5 miles of existing roads. Project 2, Riparian Restoration, is a proposal to girdle trees to create canopy gaps, wolf trees and snags without wood removal within the Riparian Reserve LUA, as defined in the RMP. The project area for both projects is located in Township 4 South, Range 4 East, Sections 13, 23, 24 and 25, Township 4 South, Range 5 East, Section 30, Willamette Meridian, and within the Lower Clackamas River and Middle Clackamas River 5th field Watersheds.

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FINDING OF NO SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (**BLM**) has conducted an environmental analysis (Environmental Assessment Number OR080-03-03) for proposals to do two projects located on BLM lands within Township 4 South, Range 4 East, Sections 13, 23, 24 and 25, Township 4 South, Range 4 East, Section 30, Willamette Meridian (*EA Section 1.0*):

- **Project 1** (Clear Dodger Timber Sale) is a proposal to **1/** thin approximately 143 acres of 65 to 90 year old timber stands in the Matrix Land Use Allocation (EA section 1.3) (See *Unit Maps, EA section 2.2.5*); **2/** construct up to 0.05 mile of new temporary road spurs and decommission the new construction after use; **3/** renovate and maintain up to 4.7 miles of existing roads. **4/** repair the gate on road 4-5E-30.00; **5/** storm proof, then block, 1.5 miles of existing road; **6/** block access to skid trails after operations; **7/** hand pile, cover and burn logging slash and debris adjacent to roads that are open to motor vehicle travel by the public; and **8/** top two green trees per acre.
- **Project 2** (Clear Dodger Riparian Restoration) is a proposal to create up to 8 snags per acre from green conifer trees greater than 20 inches in diameter within the Riparian Reserve Land Use Allocation (**LUA**) in sections 13, 23, 24 and 25 on approximately 150 acres (See *Unit maps, EA section 2.2.5, EA section 3.2.2*). Base girdling, top girdling, or a combination of both treatments would be utilized to accomplish the task. Additionally, in Section 25 base girdling up to 8 green understory trees per acre would take place. These habitat restoration treatments would be accomplished independent of the timber sale. No wood removal is proposed for these treatments.

The Clear Dodger Environmental Assessment (**EA**) documents the environmental analysis of the proposed projects. The EA is attached to and incorporated by reference in this Finding of No Significant Impact determination (**FONSI**). The analysis in this EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (**RMP/FEIS**). Projects 1 and 2 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 these projects (*EA Section 1.3*).

The EA and FONSI will be made available for public review **November 2, 2005** to **November 18, 2005**. The notice for public comment will be published in a legal notice by the *Sandy Post* newspaper. Comments received by the Cascades Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before **November 18, 2005** will be considered in making the final decisions for this project.

Finding of No Significant Impact

Based upon review of the Clear Dodger EA and supporting documents, I have determined that Project 1 - Clear Dodger Timber Sale, and Project 2 - Clear Dodger Riparian Restoration 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.

There are no significant impacts not already adequately analyzed, or no significant impacts beyond those already analyzed, in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS) to which this environmental assessment is tiered. Therefore, supplemental or additional information to the analysis in the RMP/FEIS in the form of a new environmental impact statement (EIS) is not needed. This finding is based on the following discussion:

Context: Potential effects resulting from the implementation of the proposed projects have been analyzed within the context of the Upper Clear Creek, Middle Clear Creek and Lower Clackamas River Tributary 6th field watersheds (See *EA section 1.2, Table 1*), and the project area boundaries. Project 1 would occur on approximately 143 acres of BLM land and Project 2 would occur on approximately 150 acres of BLM land; encompassing approximately 1 % of these Watersheds [40 CFR 1508.27(a)] (*EA section 2.4.3*).

Intensity:

1. Projects 1 and 2 are unlikely to have significant adverse impacts, as described in paragraph 1, on the affected elements of the environment [40 CFR 1508.27(b) (1)] for the following reasons:

Project 1 (Clear Dodger Timber Sale)

- Project design features described in *EA section 2.2.2.2* would reduce the risk of effects to affected resources to be within RMP standards and guidelines and to be within the effects described in the RMP/EIS.
- **Vegetation and Forest Stand Characteristics** (*EA section 2.4.1*): 1/ No special status plant species would be affected. 2/ “Survey and Manage” Species - Due to the protection buffers that have been established around each of the “Survey and Manage” fungi sites located within B2 (Unit 3) and B4 (Unit 8), no adverse effect to any identified “Survey and Manage” species or the microclimate surrounding them is anticipated. 3/ Noxious Weeds - No significant increase in the noxious weed identified during the field surveys is expected to occur. Any increase that does occur should be short lived due to revegetation by native species in areas of high light and ground disturbing activities. 3/ Stands that have been identified as late successional stands in the affected environment would remain late successional stands after thinning.
- **Soils, Hydrology, and Fisheries** (*EA sections 2.4.2-2.4.4*): All new road construction would occur outside of riparian reserves on low to moderate slopes with stable surfaces emanating from the existing road network. Within the harvest units there would be “full leave” riparian reserves, which mean that no commercial thinning would take place within the Riparian Reserve land use allocation. The “full leave riparian” reserves have high surface roughness which functions to trap any overland flow and sediment before reaching streams. Gentle to moderate slope gradients in this project area provide little opportunity for surface water to flow. There would be no change in shade within the primary and secondary shade zones. Soil Compaction is limited to no more than 10% of each unit’s acreage. Timber haul and road work (including culvert replacement) would take place during the dry season.
- **Wildlife** (*EA section 2.4.5*): 1/ Existing snags and coarse woody debris (CWD) would be largely retained through thinning in Matrix (Project 1), with a minor degree of loss anticipated as a result of falling and yarding operations, and safety considerations. Additional snags would be created within the project area under the proposed action. 2/ No suitable habitat for any “Survey and Manage” and BLM Special Status species known or likely to be present would be lost. Therefore, the project would not contribute to the need to list any BLM Special Status species.

3/ Thinning as described for Project 1 would not significantly change species richness (a combination of species diversity and abundance) of the Migratory and Resident Bird community. No species would be become extirpated in stands as a result of thinning, though some less common species would be likely to enter thinned stands immediately in response to reduced canopy closure and tree density. 4/ See # 6, for effects to northern spotted owl.

- **Visual Resources, Recreation and Rural/Urban Interface** (EA section 2.4.6): Changes to the landscape character are expected to be low and would comply with Visual Resource Management Class II guidelines. Some disturbance to vegetation would be observable after thinning activities and would be expected to return within five years. A forested setting would be maintained for recreational activities. No Rural Interface Areas are present and haul routes routinely receive log truck traffic from forest management activities by both private and public landowners.
- **Fire Hazard and Risk/Air Quality** (EA section 2.4.7): The thinning would result in an increased fire hazard risk from the slash but this would be mitigated by removing slash along the open roads where the opportunities for ignition are greatest. After 3 to 5 years the fine fuels will be gone in most of the units and the risk will decrease for a surface fire. The thinning itself will decrease the risk of a canopy fire. Piling and burning this slash along the road will have a very short duration impact on air quality, but strict adherence to smoke management regulations will result in little or no impact to the public.
- **Public Access and Use** (EA section 2.4.8): Unauthorized use would be curtailed by closing and/or blocking roads currently used for garbage dumping, off highway vehicles (OHVs), and timber theft.

Project 2 (Clear Dodger Riparian Restoration) is not a ground disturbing project. No trees contributing to shade in the primary and secondary shade zones would be girdled. Creating snags would be beneficial to snag and CWD dependent species (northern spotted owl associated prey, snag users such as birds and bats, CWD users such as salamanders and mollusks) (EA section 3.4).

2. Projects 1 and 2 would not affect:
 - Public health or safety [40 CFR 1508.27(b)(2)];
 - Unique characteristics of the geographic area [40 CFR 1508.27(b)(3)] - There are no historic or cultural resources, parklands, prime farmlands, wild and scenic rivers, wilderness, or ecologically critical areas located within the project area (EA sections 2.3, 3.4);
 - Districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, nor would the proposed projects cause loss or destruction of significant scientific, cultural, or historical resources [40 CFR 1508.27(b)(8)] (EA sections 2.3, 3.4).
3. Projects 1 and 2 are not unique or unusual. The BLM has experience implementing thinning timber sales in 60-95 year old timber stands (Project 1) and creating snags within Riparian Reserves (Project 2) without highly controversial effects [40 CFR 1508.27(b) (4)], highly uncertain, or unique or unknown risks [40 CFR 1508.27(b) (5)] (EA sections 2.4.1 – 2.4.8, 3.4).
4. Projects 1 and 2 do not set a precedent for future actions that may have significant effects, nor does it represent a decision in principle about a future consideration [40 CFR 1508.27(b)(6)] (EA sections 2.4.1 – 2.4.8, 3.4). Projects 1 and 2 would not retard or prevent the attainment of the ACS objectives (EA section 4.0). No hazardous materials or solid waste would be created in the sale area. There would be no reduction in the amount of late-successional forest habitat on federal forestlands (RMP p. 22) (EA section 2.4.1.1).

5. The interdisciplinary team evaluated Projects 1 and 2 in context of past, present and reasonably foreseeable actions [40 CFR 1508.27(b) (7)]. Potential cumulative effects are described in the attached EA (*EA sections 2.3.1.1, 2.4.3.2, 2.4.4.2, 2.4.5.2*). The Clear Dodger Timber sale contributes to cumulative effects to the following resources:

Project 1:

- Water and Fisheries Resource:
 - Peak Flows: The cumulative effect to peak flows is not significant because: The Clear Dodger timber contributes to a 0.4% increase in peak flows compared to the No Action Alternative. The length of cumulative effects to peak from all cumulative actions would last 10-20 years, the time it would take for the canopy to close within Clear Dodger thinning units. The change in peak flow discharge between the natural disturbance regime and the effect from the cumulative actions is approximately 11.6%. Stream channels observed in the project area have not shown adverse effects as a result of peak flows.
 - Sediment: Implementing road work at stream crossings would take place during the in-water work period, limiting the amount of sediment entering the stream associated with this project. Sediment is not likely to be observed > ¼ mile down stream from the place it would enter the stream.

Projects 1 and 2:

- Wildlife: By retaining and creating snags, federal lands are expected to have more snag habitat than adjacent private industrial forest lands. It is expected that some snag dependent species would move from this private land to snag habitat on federal land during and after the harvest of private lands. The cumulative beneficial effect to snag dependent species is not expected to be significant because of the low percentage of federal land present in the watershed that could provide refugia to these species that currently inhabit nearby private industrial forest land.
6. Projects 1 and 2 are not expected to have significant effects to Endangered or Threatened Species or habitat under the Endangered Species Act (ESA) of 1973 [40 CFR 1508.27(b) (9)].

No threatened or endangered plants or animals were observed in the area.

Northern spotted owl: The Clear Dodger proposal was submitted for Formal Consultation with U.S. Fish and Wildlife Service on September 3, 2002. A Biological Opinion (BO) was completed on February 27, 2003, FWS reference: 1-7-03-F-0008. Thinning and snag creation would not have significant effects to northern spotted owls because 1/ None of the proposed units are located in Critical Habitat for the northern spotted owl; 2/ all stands proposed for thinning would be maintained as dispersal habitat after harvest; 3/ habitat conditions are expected to improve as thinned stands mature (>20 years); 4/ residual trees would increase in size and be available for recruitment or creation of snags, and CWD for prey species and nesting opportunities, particularly in Riparian Reserves (**RR**), and; 5/ where applied, topping and base- girdling to create snags and CWD would further increase stand structure and diversity for future northern spotted owl habitat. The proposed projects follow terms and conditions outlined in the Biological Opinion. See *EA section 6.1.1.1*.

Fish: A determination has been made that this project would have no effect on Lower Columbia River steelhead trout, Lower Columbia River Chinook salmon or Upper Willamette River Chinook salmon (*EA section 2.4.4.1*). Consequently, no consultation with NOAA Fisheries is required. See *EA section 6.1.1.2*.

7. Projects 1 and 2 do not violate any known Federal, State, or local law or requirement imposed for the protection of the environment [40 CFR 1508.27(b) (10)]. The alternatives are consistent with other Federal agency and State of Oregon land use plans and with the Clackamas County land use plan and zoning ordinances. Any permit requirements associated with the implementation of this project would be obtained and complied with. Project design features would assure that potential impacts to water quality would be in compliance with the State of Oregon In-stream Water Quality Standards and thus the Clean Water Act (*EA section 2.2.2.2*). Additionally, the proposed projects are consistent with applicable land management plans, policies, and programs (*EA section 1.3*).

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10/28/05
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Oct. 31, 2005
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ENVIRONMENTAL ASSESSMENT

1.0 INTRODUCTION

1.1 Background

This document is a reissue of the environmental analysis first documented in the Clear Dodger Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) (EA# OR080-03-03), dated March 31, 2003. This EA Reissue covers the same projects as the original EA, incorporating changes in Project 1 that were first documented in the Clear Dodger Timber Sale Decision Rationale, dated July 29, 2003. The decision was protested and subsequently remanded back to the BLM. This EA Reissue clarifies recent changes in policy and some points in the original analysis. The EA has also been reformatted for clarity.

1.2 Project Area Location

The Clear Dodger projects are located on BLM-managed lands in Sections 13, 23, 24 and 25, Township 4 South, Range 4 East, and section 30 of Township 4 South Range 5 East, Willamette Meridian. The project area is approximately seven miles southeast of Estacada, Oregon in Clackamas County, Oregon, on the Hillockburn Road. The project area lies within the watersheds described in *Table 1*, below. The project area is shown on the *Clear Dodger Vicinity Map*.

Table 1: *Watersheds containing the Project Area*

<i>5th Field Watershed</i>	<i>6th Field Watershed*</i>	<i>T.S. R.E. Section</i>	<i>Watershed Analysis Covering The Area</i>
Lower Clackamas River	Middle Clear Creek	T.4 S. R. 4E. Section 13, 23, 24	<i>Upper Clear Creek Watershed Analysis, 1995</i> <i>Clear and Foster Creek Watershed Analysis, 2002</i>
	Upper Clear Creek	T.4 S. R. 4E. 23, 24 and 25; T.4 S. R. 5E. 30	
Middle Clackamas River	Lower Clackamas River Tributary	T.4 S. R. 4E. Section 13	<i>Lower Clackamas Watershed Analysis, 1996</i>

* *6th field watersheds lie within 5th field watersheds*

Key Watersheds: The *Clackamas River Corridor* portion of the *Lower Clackamas River Tributary* 6th field watershed has been designated as a key watershed (RMP p. 6). Areas under consideration for this project are not within or tributary to the Clackamas River corridor.

Municipal Watersheds: The Lower Clackamas River and Middle Clackamas River watersheds contain the water intakes for the Cities of Estacada, Clackamas, Milwaukee, Lake Oswego and other municipalities served by Clackamas River Water Providers.

1.3 Conformance with Land Use Plan, Statutes, Regulations, and other Plans

The following documents direct and provide the legal framework for *Clear Dodger Projects 1 and 2*:

1. *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP): The RMP has been reviewed and it has been determined that Projects 1 and 2 conform to the land use plan terms and conditions (e.g. complies with management goals, objectives, direction, standards and guidelines) as required by 43 CFR 1610.5 (BLM Handbook H1790-1). Implementing the RMP is the reason for doing these projects (RMP p.1-6). Proposed thinning units in Project 1 are within the Matrix Land Use Allocation (LUA) as described in the RMP, pp. 8 and 20-21. Road work associated with Project 1 is within the Matrix and Riparian Reserve LUAs as described in the RMP, pp. 8, 9-11, and 20-21. Project 2 is within the Riparian Reserve LUA as described in the RMP, pp. 8, 9-11.
2. *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl*, April 1994 (the Northwest Forest Plan, or **NWFP**);
3. *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines* January, 2001(**SM/ROD**); and *Implementation of 2003 Survey and Manage Annual Species Review*, December 2003.
4. *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl*, March 2004 (**SSSP/ROD**);
5. *Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource Management Plans for Nineteen National Forests within the Range of the Northern Spotted Owl, Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy*, March 2004 (**ACSROD**).

The analysis in the Clear Dodger 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 RMP/FEIS includes the analysis from the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl*, February 1994 (**NWFP/FSEIS**).

The RMP/FEIS is amended by the *Final Supplemental Environmental Impact Statement for Survey and Manage, Protection Buffers, and Other Mitigation Measures in the Northwest Forest Plan*, November 2000 (**SM/FSEIS**); *Final Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*, January 2004 (**SSSP/FSEIS**); and the *Final Supplemental Environmental Impact Statement, Clarification of Language in the 1994 Record of Decision for the Northwest Forest Plan National Forests and Bureau of Land Management Districts Within the Range of the Northern Spotted Owl*, October 2003 (**ACS/FSEIS**).

Survey and Manage Species and Special Status Species: With regard to Special Status and “Survey and Manage” species, the proposed projects were developed under and follow the survey requirements and protection buffers from the *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (SM/ROD, January, 2001 and Implementation of 2003 Survey and Manage Annual Species Review, December 2003*. The proposed projects were screened for and were found to comply with the *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl, March 2004 (SSSP)*.

Northern Spotted Owl (NSO) Status Review:

The following information was considered in the analysis of Clear Dodger Projects 1 and 2: a/ *Scientific Evaluation of the Status of the Northern Spotted Owl* (Sustainable Ecosystems Institute, Courtney *et al.* 2004); b/ *Status and Trends in Demography of Northern Spotted Owls, 1985-2003* (Anthony *et al.* 2004); c/ *Northern Spotted Owl Five Year Review: Summary and Evaluation* (USFWS, November 2004); and *Northwest Forest Plan – The First Ten Years (1994-2003)*: d/ *Status and trend of northern spotted owl populations and habitat, PNW Station Edit Draft* (Lint, Technical Coordinator, 2005). To summarize these reports, although the agencies anticipated a decline of NSO populations under land and resource management plans during the past decade, the reports identified greater than expected NSO population declines in Washington and northern portions of Oregon, and more stationary populations in southern Oregon and northern California.

The reports did not find a direct correlation between habitat conditions and changes in NSO populations, and they were inconclusive as to the cause of the declines. Lag effects from prior harvest of suitable habitat, competition with Barred Owls, and habitat loss due to wildfire were identified as current threats; West Nile Virus and Sudden Oak Death were identified as potential new threats. Complex interactions are likely among the various factors. This information has not been found to be in conflict with the NWFP or the RMP (*Evaluation of the Salem District Resource Management Plan Relative to Four Northern Spotted Owl Reports, September 6, 2005*).

The following documents provided additional direction in the development of Projects 1 and 2: 1/ *Upper Clear Creek Watershed Analysis*, (September, 1996); 2/ *Lower Clackamas Watershed Analysis*, (December, 1997); 3/ *Clear and Foster Creek Watershed Analysis*, (November 2002).

All of the above documents are available for review in the Salem District Office. Additional information about the proposed activities is available in the Clear Dodger EA Analysis File (CDAF), also available at the Salem District Office.

1.4 Projects Covered in This EA

Two projects will be analyzed in this EA.

- **Project 1** (Clear Dodger Timber Sale) is a proposal to **1/** thin approximately 143 acres of 65 to 90 year old timber stands in the Matrix Land Use Allocation (*EA section 1.3*) (See *Unit maps, EA section 2.2.5*); **2/** construct up to 0.05 mile of new temporary road spurs and decommission the new construction after use; **3/** renovate and maintain up to 4.7 miles of existing roads. **4/** repair the gate on road 4-5E-30.00; **5/** storm proof, then block, 1.5 of existing road;

6/ block access to skid trails after operations; 7/ hand pile, cover and burn logging slash and debris adjacent to roads that are open to motor vehicle travel by the public; and 8/ top two green trees per acre.

- **Project 2** (Clear Dodger Riparian Restoration) is a proposal to create up to 8 snags per acre from green conifer trees greater than 20 inches in diameter within the Riparian Reserve Land Use Allocation (LUA) in sections 13, 23, 24 and 25 on approximately 150 acres (See *Unit maps, EA section 2.2.5, EA section 3.2.2*). Base girdling, top girdling, or a combination of both treatments would be utilized to accomplish the task. Additionally, in Section 25 base girdling up to 8 green understory trees per acre would take place. These habitat restoration treatments would be accomplished independent of the timber sale. No wood removal is proposed for these treatments.

1.4.1 Relationship between Projects

Projects 1 and 2 are within the same project area (See *Unit maps, EA section 2.2.5*). The thinning portion of Project 1 would occur outside the Riparian Reserve Land Use Allocation (LUA). Some road renovation/maintenance (e.g. culvert repair or replacement) associated with Project 1 would take place within the Riparian Reserve LUA. Project 2 (Riparian Treatments) is entirely within the Riparian Reserve LUA.

1.5 Decision to be Made

The decision to be made by the Cascades Field Manager is:

- Whether to implement Projects 1 and 2 as proposed, not at all, or to some other extent.
- Whether site specific impacts would require supplementation of the analysis found in the RMP/FEIS through a new EIS.

2.0 PROJECT 1 – (CLEAR DODGER TIMBER SALE)

2.1 Purpose of and Need for Action

Stands within the project area generally average 65 to 90 years old and resource data has identified that these stands are ready for thinning. The following describe the purpose of and the need for action:

- **Matrix Land Use Allocation (LUA) (RMP p. 20-22):** To manage developing timber stands in the Matrix LUA in order to:
 - Develop timber sales that can be successfully offered to the market place; achieve a desirable balance between wood volume production, quality of wood, and timber value at harvest (RMP p. D-3); and provide a sustainable supply of timber as described in the RMP (p. 1, 46, 47);
 - Retain elements that provide ecosystem diversity (snags, old growth trees, etc.) so that a healthy forest ecosystem can be maintained with habitat to support plant and animal populations (RMP p.1, 20).
- **Roads:** To maintain and develop a safe, efficient and environmentally sound road system (RMP p. 62)] in order to:
 - Provide appropriate access for timber harvest, silvicultural practices, and fire protection vehicles needed to meet the objectives above;

- Reduce potential human sources of wildfire ignition and unauthorized uses (e.g. garbage dumping, unauthorized OHV use, timber theft) by controlling access;
- Reduce environmental effects associated with identified existing roads within the project areas (RMP p. 11).

2.2 Alternatives

2.2.1 Alternative Development

Pursuant to Section 102 (2) (E) of the National Environmental Policy Act of 1969, as amended (NEPA), Federal agencies shall "...study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." No unresolved conflicts concerning alternative uses of available resources (section 102(2) (E) of NEPA) were identified. No alternatives were identified that would meet the purpose and need of the project and have meaningful differences in environmental effects from the Proposed Action. Therefore, this EA will analyze the effects of the "Proposed Action" and the "No Action Alternative".

2.2.2 Proposed Action

The Proposed Action is to thin approximately 143 acres of mixed-conifer stands with an average age ranging from 65 to 90 years. Within the General Forest Management (GFMA) portion of the Matrix LUA, units would be thinned by removing suppressed, co-dominant, and occasional dominant trees (thinning from below). Generally, the largest trees would be left. Average canopy closure would be no less than 40 percent within GFMA/Matrix, See *Table 2* for a unit-specific summary of tree densities before and after thinning and logging systems by unit. Photos 1 and 2 show comparable forest stands before and after thinning.

Photo 1: *Before Treatment*

Photo 2: *After Treatment*



Table 2: Proposed Action

Unit Number	Proposed Thinning			Silvicultural Prescription Summary				
	Acres	Proposed Logging Systems (Acres)		Green Trees per acre		Average Tree Diameter		
		Skyline	Ground Based	Before	After	Before	After	
T. 4 S., R. 4 E., Sec. 13								
*B-1 (Unit 4)	20		20	160	110	16	17	
B-2 (Unit 3)	37		37	235	110	16	20	
B-3 (Unit 2)	6		6	265	130	12	14	
B-4 (Unit 8)	5		5	390	135	11	14	
B-5 (Unit 1)	7		7	390	135	11	14	
T. 4 S., R. 4 E., Sec. 23								
A-1 (1915)	(Unit 9)	4		4	215	85	16	20
	(Unit 5)	5		5				
A-1 (1940)	(Unit 5)	5		5	260	115	12	15
T. 4 S., R. 4 E., Sec. 24								
C-1 (unit 6)	35	8	27	160	95	18	21	
T. 4 S., R. 4 E., Sec. 25								
D-1 (unit 7)	19	1	18	155	100	16	18	
Commercial Thinning Acres	143	9	134	210	110	16	18	
Average Crown Closure		Before	After					
		77%	40-50%					

* The original Clear Dodger EA units had a letter and number designation (e.g. B-1 or B1). These units were adjusted during project layout, resulting in the current units (e.g. Unit 4), first shown in the original Clear Dodger Decision Rationale. This updated EA uses both designations.

Approximately 94 percent of the project areas would be harvested using conventional ground-based logging equipment, and approximately 6 percent would be harvested using skyline yarding systems.

2.2.2.1 Connected Actions

1. Road Work

- New Road Construction:** Approximately 0.05 mile of new temporary road construction would occur to access A1 (Unit 5) and to facilitate logging of a portion of C1 (unit 6). Up to 0.25 acre of vegetation would be cleared for the road rights-of-way, which includes the area needed for adjacent landings. New roads would be natural surface out sloped roads with good drainage structure. Roads would be of minimum width, typically 12-foot average running surface with 75-foot minimum curve radius and minimum clearing limits. Two new culverts would be installed in the existing ditch line of the Hillockburn Road, where new construction joins this road. New roads and landings would be decommissioned and blocked following timber harvest and site preparation operations. Decommissioning would include ripping compacted soils, reestablishing natural drainage patterns, out-sloping the road surface so that water drains quickly to stable slopes, seeding and fertilizing, blocking access, and/or scattering woody debris on the disturbed soil.

- **Road Renovation and Maintenance:** Up to 4.7 miles of existing roads under BLM and private control would be renovated as necessary to accommodate log-hauling. This would include brushing, blading, drainage structure improvement or replacement, and spot rocking at deficient locations. Maintenance or replacement would occur at nine culvert locations. Three culverts would be replaced (See *Unit Map - Sections 24, 25, EA Section 2.2.5*). The current culverts at these locations are damaged, have deteriorated or are too small to meet current 100 year storm event standards to prevent road failure and sedimentation of streams. The new culverts would be installed on intermittent streams and seeps, during the in-water work period described in *Table 6*. Approximately 0.5 miles of road would be blocked by repairing the gate on road 4-5E-30.00.
- **Road Storm-proofing and Blocking:** Approximately 1.5 miles of existing roads would be reshaped and waterbarred to stabilize drainage patterns. These roads would be blocked using a trench and berm.

Table 3: *Summary of Proposed Road Work*

<i>Road Work</i>	<i>Distance in miles</i>
New temporary construction (followed by decommissioning after timber sale)	0.05
Renovation and Maintenance	4.7
Blocking Existing Roads	
Repairing the gate on road 4-5E-30.00 – limiting vehicular access	0.5
Blocking using trench and berm after Storm-proofing road – eliminating vehicle access	1.5
Total blocking of existing roads	2.0

2. Fuels Treatments

- Trees would be directionally felled away from Hillockburn Road in order to reduce the amount of slash adjacent to the road. The timber sale contract would require the purchaser to remove all fuels created by their operations from within 40 feet of the Hillockburn Road. This logging slash and debris would be hand piled, covered and burned (RMP p. 65).
- After harvest operations are completed landing debris would also be piled, covered and burned.

3. Tree Topping:

- Two green trees per acre (Total of approximately 290 trees) would be topped for snag recruitment (RMP p.21).

4. Blocking Potential Off Highway Vehicle (OHV) Trails (RMP p. 41):

- Access to skid trails would be blocked off by leaving logging debris to prevent OHVs from driving on skid trails.

5. Special Forest Products (SFP) (RMP p. 49):

- Special Forest Products from the harvest units would be offered for harvest if market demand, product availability, and contract timing allow for such offerings.

2.2.2.2 Project Design Features

The following is a summary of the design features that reduce the risk of effects to the affected elements of the environment described in *EA section 2.3*. The proposed activities would follow the standards and guidelines described in the RMP from the pages specified in *Table 23*. Design features are organized by resource management objective.

Table 4: Design Features That Achieve Multiple Objectives

<i>Design Features That Achieve Multiple Objectives</i>	<i>Objectives</i>
All logging operations and road work would utilize currently available equipment and practices that can achieve the objectives of the <i>Best Management Practices</i> (RMP Appendix C) (BMPs) required by the Federal Clean Water Act (as amended by the Water Quality Act of 1987).	<i>Objective 1</i> - To limit soil productivity loss to within RMP standards and guidelines (S&G) <i>Objective 2</i> - To protect Hydrologic Functions
Skid trail patterns would be designed to avoid concentrating runoff water flows or directing them into streams.	<i>Objectives 1 and 2</i>
Coarse woody debris (CWD) already on the ground that is of a size suitable for Special Status Species terrestrial mollusk and amphibian habitat and that would provide a renewable supply of large down logs (generally 20" and larger, RMP p. 21) would be retained and protected to the greatest extent possible from disturbance during treatment (NWFP S&G p. C-40, RMP 21, p. D-2). If CWD needs to be moved, a section of the log would be cut to allow access, instead of moving the entire log.	<i>Objective 3</i> – To protect and enhance stand diversity and wildlife habitat components <i>Objective 6</i> - To protect Special Status, NWFP/FSEIS Special Attention, or uncommon Plants and Animals
<i>Riparian Reserves</i> : Within the harvest units there would be "full leave" riparian reserves, which mean that no commercial thinning would take place within the Riparian Reserve land use allocation.	<i>Objective 2</i> - To protect Hydrologic Functions <i>Objective 6</i> - To protect Special Status, NWFP/FSEIS Special Attention, or uncommon Plants and Animals (Fish)

1. To limit soil productivity loss to within RMP S&Gs (RMP Appendix C p. C-2):

- *General*: Tractor skidding trails and other ground-based logging equipment use, skyline yarding systems, road construction and landings would be designed to confine soil compaction and displacement to no more than 10 percent of each unit's area. For design features that apply to more than one resource management objective, see *Table 4*.
- *Road and Landing Construction*: Road and landing construction, maintenance, and use requirements would be designed to keep soil compaction and displacement within the minimum surface area needed for safe operations. Newly disturbed soil associated with road and landing construction and decommissioning would be seeded (with a locally adapted mix of native species seed) to stabilize the soil and prevent erosion.
- *Ground-based logging operations*: Tractor skidding operations would not be allowed when soil moisture is high (generally November through May) (RMP p. 23, 24, C-2). Slash, organic debris, and limited passes by equipment would be used on skid trails. Slash piles would be located to reduce the amount of soil surface area subject to heat damage. Ground-based log skidding equipment utilizing one-end suspension would be allowed to skid logs on slopes up to 35 percent. Full suspension log transport equipment (forwarders) and harvesters may operate on slopes up to 45 percent. Existing skid trails would be used whenever possible.

- *Skyline logging operations:* Yarding with one end suspension of logs and equipment with lateral yarding capabilities would be required. Lift trees and tail holds to optimize log suspension, including multi-span skyline systems may be located outside of harvest unit boundaries.

2. To protect Hydrologic Functions (e.g. Channels, Flows, Water Quality):

- *Riparian Reserves:*
 - No thinning would take place within the Riparian Reserves. See *Table 4*.
 - *Table 5* shows Riparian Reserve widths for this project.

Table 5: Riparian Reserve Widths

<i>Type of Stream or Wetland</i>	<i>Riparian Reserve Width (on each side of the stream)</i>			<i>Applies to Unit(s)</i>
	<i>Standard and Guideline (RMP p. 10)</i>	<i>Site potential tree height for this area (feet)</i>	<i>Riparian Reserve Width</i>	
Non-fish bearing streams and wet areas larger than one acre	Width = one site-potential tree height	180 feet	180 feet	A1 (Units 5 & 9), B1 (Unit 4), B2 (Unit 3), B4 (Unit 8), B5 (Unit 1), C1 (Unit 6), D1 (Unit 7)
		200 feet	200 feet	B3 (Unit 2)
Fish Bearing Streams	Width = two site-potential tree heights	180 feet	360 feet	South edge of A1 (Units 5 & 9) and the southwest corner of unit D1 (Unit 7).

- Replacement of stream culverts would be conducted during the in-water work period shown on *Table 6*.
- *Road work* would be conducted during dry conditions. Some natural surface roads needed to complete operations would be left open over the winter. Such roads would require erosion control measures that may include; erosion matting, drainage modification, seeding or other appropriate techniques to prevent soil loss. Waterbars would be constructed on roads as needed to minimize surface runoff and potential soil erosion. Where practical, vegetation in ditches within 200 feet above all stream crossings would be maintained.
- *Skidding and Yarding:* Skid trail patterns would be designed to avoid concentrating runoff water flows or directing them into streams. Waterbars would be installed on yarding corridors or skid roads as needed to prevent excessive erosion, gullying and sedimentation.
- *Hauling* would be restricted to conditions that would not contribute to erosion or sedimentation of streams. In general this would mean no hauling on unpaved roads during wet weather.
- For design features that apply to more than one resource management objective, see *Table 4*.

3. To protect and enhance stand diversity and wildlife habitat components:

- All old growth remnant trees would be reserved from harvest in all units.
- Snags (generally above 20" DBH) of all decay classes would be left standing to the greatest extent possible, with minor exceptions in order to meet contractual logging procedures and Occupational Safety and Health Administration (OSHA) requirements (RMP p. D-2). Any snags which are cut or knocked down during logging operations would remain on site.

- All dead wood that is on-site when timber marking takes place would remain on-site, either in the form of standing snags or as down logs, after thinning.
 - Minor conifer tree species and hardwoods would generally be left standing where they are uncommon. Open grown “wolf trees” would be reserved and maintained in an open-grown condition.
 - For design features that apply to more than one resource management objective (e.g. CWD requirements), see *Table 4*.
- 4. To protect against expansion of invasive and non-native plant species:**
- Prior to entering BLM lands, ground disturbing and off-road machinery would be washed so that it is free of noxious weed/invasive plants seed and plant parts (RMP p. 64).
- 5. To protect the residual stand:**
- Operations would be restricted during the spring growing season, when bark is easily damaged (typically May 01-June 30).
 - Directional falling would be used.
 - Skidding and yarding techniques designed to minimize damage to residual trees would be required.
 - Slash piles to be burned would be located and constructed to minimize heat damage to tree crowns or tree boles.
- 6. To protect Special Status, NWFP/FSEIS Special Attention, or uncommon Plants and Animals:**
- *General:* Operations may be shut down or restricted at any time if plant or animal populations that need protection (RMP p.29) are found.
 - *Northern Spotted Owl:* A seasonal restriction would be in place for spotted owls where appropriate. No activity except hauling would take place within spotted owl suitable habitat during the March 1 to July 15 critical nesting period. The seasonal restriction could be waived if surveys indicate no presence of nesting spotted owls within disturbance range (0.25 to 0.5 miles) of the units. Spotted owl dispersal habitat would be maintained (to an average range of 40 to 50 percent canopy closure on each unit) after timber harvest.
 - *Fish:* See *Objective 2, Tables 4 and 5*.
 - For design features that apply to more than one resource management objective (e.g. CWD requirements), see *Table 4*.
- 7. To reduce potential hazards to high-use recreation and rural interface areas and to protect visual resources:**
- Signs and barricades would be required where necessary to ensure public safety while thinning, hauling and fuel treatment activities are occurring.
 - *Visual Resources:* Greater tree densities would be retained within 200 feet of the Hillockburn Road. Road closure devices adjacent to the Hillockburn Road would be designed to minimize visual impacts, although safety and effectiveness would be the primary design features.
 - *Rural Interface Resources:* Log hauling would not be allowed on any Saturday, any Sunday, or weekdays which are part of the Memorial Day, July 4th and Labor Day holidays.

8. To reduce fire hazard risk and protect air quality:

- After road construction and harvest operations are completed landing debris would be piled, covered and burned adhering to smoke management regulations.
- Slash along open roads would also be treated. Treatment methods would likely be pile-and-burn (hand or machine-pile, cover with plastic, and burn) but may include mulching, lop-and-scatter, and pull-back (RMP p. 23, 24).
- All burning would occur under favorable smoke dispersal conditions in the fall, in compliance with the state Smoke Management Plan (RMP p. 22, 65).

9. To protect cultural resources:

- Operations may be shut down or restricted at any time if cultural resources that need protection (RMP p. 36) are found.
- All contracts for ground disturbing activities would carry a clause requiring an immediate suspension of all operations upon finding any cultural resources until such time as the BLM is able to evaluate the find and develop appropriate protection or mitigation measures.

10. Summary of seasonal restrictions and permitted operational periods:

Table 6: *Typical Seasonal Restrictions Calendar*

Restriction	Reason	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Most logging operations and road work	Owl nesting			Can be waived if “no nesting” is determined									
Falling and yarding	Bark slippage												
Tractor operations	Soil damage												
Road Construction / Decommissioning	Soil damage/erosion control												
In-water work, roads ¹	Protect fish species												
Key		Operations generally allowed.				Operations typically dependent on conditions.				Operations generally not allowed.			

1 – Includes stream culvert replacement on intermittent streams. See Section 2.2.2.2 for in-water work period for specific watersheds.

2.2.3 No Action Alternative

The Proposed Action and connected actions would not be implemented. Management activities and other uses (e.g. road use, harvest of special forest products on public land) would continue on Forest Service (USFS), BLM, and non-federal lands within and adjacent to the project area according to plans for those areas. This alternative also serves to set the environmental baseline for comparing effects to the Proposed Action.

2.2.4 Alternatives Considered and Dropped from Detailed Analysis

2.2.4.1 Regeneration Harvest

Regeneration Harvest was considered for B2 (Unit 3). This alternative was dropped after a review of the stand exam data revealed that the stand has not yet reached culmination of mean annual increment.

2.2.4.2 Decommissioning Existing Roads

SW corner of Section 13: One proposed alternative was to decommission an existing road that accesses the southwest corner of Section 13, and to restore the riparian reserve where this road traverses it. This alternative was dropped because the road is still needed for future management. Under the current proposed action this road would be blocked and storm proofed (*See Unit Map – Section 13, EA section 2.2.5*)

Other Road Decommissioning: Approximately 2,200 feet (0.4 mile) of existing roads were proposed for road decommissioning. During the analysis, it was determined that these roads were needed for future management. Therefore the Interdisciplinary Team (IDT) decided to block and storm proof the roads instead of decommissioning them.

2.2.4.3 Alternatives from the Public

Alternative – No New Road Construction: The amount of road construction has been reduced from 2,000 feet (.38 mile) in the original EA to 0.05 miles in the current Proposed Action. The new road construction consists of two road spurs to access portions of A-1 (Unit 5) and C-1 (Unit 6). The new road construction is described in *EA section 2.2.2.1* and follows project design features described in *EA section 2.2.2.2*. Effects associated with new road construction are described in *EA sections 2.4*. The potential effects of implementing the timber management action alternative without new road construction are within the scope of the alternatives analyzed.

2.2.5 Maps of the Proposed Action

2.3 Identification of Affected Elements of the Environment

The interdisciplinary team reviewed the elements of the human environment, required by law, regulation, Executive Order and policy, to determine if they would be affected by the Proposed Action. *Table 7* (Critical Elements of the Environment) and *Table 8* (Other Elements of the Environment) summarize the results of that review. Affected elements are **bold**. All entries apply to the Proposed Action, unless otherwise noted.

Table 7: Review of Critical Elements of the Environment (BLM H-1790-1, Appendix 5) for Project 1

<i>Project 1- Clear Dodger Timber Sale</i>				
<i>Critical Elements Of The Environment</i>	<i>Status: (i.e., Not Present, Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Yes/No</i>	<i>Remarks</i>	
Air Quality (Clean Air Act)	Affected	No	Addressed in Text, EA section 2.4.7.1.	
Areas of Critical Environmental Concern	Not Present	No		
Cultural Resources	Not Affected	No	All of the proposed units have been surveyed for cultural resources. No cultural resources were found. Addressed in text EA section 2.2.2.2.	
Energy (Executive Order 13212), Adverse Impacts	Not Affected	No	There are no known energy resources located in the project area. The Proposed Action would have no effect on energy development, production, supply and/or distribution.	
Environmental Justice (Executive Order 12898)	Not Affected	No	The Proposed Action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.	
Prime or Unique Farm Lands	Not Present	No		
Flood Plains (Executive Order 11988)	Not Present	No		
Hazardous or Solid Wastes	Not Present	No		
Invasive, Nonnative Species (plants) (Executive Order 13112)	Affected	Yes	Addressed in Text, EA section 2.4.1.1.	
Native American Religious Concerns	Not Affected	No	None were identified during the scoping process	
Threatened or Endangered (T/E) Species or Habitat Threatened or Endangered (T/E) Species or Habitat	Fish	Species Not Affected	No	Addressed in Text, EA sections 2.4.4.1 and 6.1.1.2.
		Habitat -Affected	No	
	Plant	Not Present	No	
	Wildlife - Bald Eagle	Not present	No	
	Wildlife - Northern spotted owl (NSO)	NSO Critical Habitat – Not Present; NSO Owl Core Areas – Not Affected	No	No designated critical habitat is present in this project area. Addressed in Text, EA section 2.4.5.1.
	Other NSO habitat - Affected	No	<i>Concern raised in Public Scoping: “ecologically important species and protected species.”</i> Addressed in Text, EA section 2.4.5.1.	

Project 1- Clear Dodger Timber Sale			
Critical Elements Of The Environment	Status: (i.e., Not Present, Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Water Quality (Surface and Ground)	Affected	Yes	<i>Concerns raised in Public Scoping: 1/ Impacts of timber harvest and road construction on water quality. 2/ Harvest on steep slopes</i> Addressed in Text, EA sections 2.4.2, 2.4.3, Table 9.
Wetlands/Riparian Zones (Executive Order 11990)	Wetlands: not present Riparian Zones: Affected (Road culvert work)	No	No wetland\pond complexes are identified on National Wetlands Inventory maps and\or in the Clackamas County Soil Survey in the project area. Addressed in Text, EA sections 2.4.3, 2.4.4.
Wild and Scenic Rivers	Not Present	No	
Wilderness	Not Present	No	

Table 8: Review of Other Elements of the Environment for Project 1

Project 1- Clear Dodger Timber Sale			
Other Elements of the Environment	Status: (i.e., Not Present, Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Coastal zone	Not Present	No	
Fire Hazard/Risk	Affected	No	Addressed in Text, EA section 2.4.7.
Other Fish Species with Bureau Status and Essential Fish Habitat (EFH)	EFH – Not Affected	No	There is no Essential Fish Habitat, as defined in the Magnuson-Stevens Fishery Conservation and Management Act, present within or adjacent to the project area. The project would have no effect on EFH where it exists downstream of the project area in Clear Creek or in the Clackamas River.
	Fish habitat - Affected	Yes	Addressed in Text, EA sections 2.4.4, 2.4.3.2, Table 9.
Land Uses (right-of-ways, permits, etc)	Not Affected	No	
Late Successional and Old Growth Habitat	Old Growth Habitat – Not Present	No	<i>Concern raised in Public Scoping: Old Growth habitat and</i> No old growth stands are present within the project area.
	Late successional Habitat - Affected	No	<i>Concern raised in Public Scoping: “ecologically important species and protected species.”</i> Addressed in Text, EA sections 2.4.1, 2.4.5.
Mineral Resources	Not Present	No	
Public Access and Use	Affected	No	<i>Concern raised in Public Scoping: Right of the public to have access to publicly owned land and BLM’s responsibility to protect those from garbage dumping, off road vehicle use and timber theft.</i> Addressed in Text, EA section 2.4.8.
Recreation	Affected	No	Addressed in Text, EA section 2.4.6.
Rural Interface Areas	Not Present	No	Addressed in Text, EA section 2.4.6.
Soils	Affected	No	Addressed in Text, EA section 2.4.2.

Project 1- Clear Dodger Timber Sale			
Other Elements of the Environment	Status: (i.e., Not Present, Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Special Areas outside ACECs (Within or Adjacent) (RMP pp. 33-35)	Not Present	No	
Other Special Status Species / Habitat	Plants	Not Affected	Addressed in Text, EA section 2.4.1.
	Wildlife	Affected	Concern raised in Public Scoping: “ecologically important species and protected species.” Addressed in Text, EA section 2.4.5.1
Visual Resources	Affected	No	Addressed in Text, EA section 2.4.6.
Water Resources – Other (303d listed streams, DEQ 319 assessment, Downstream Beneficial Uses; water quantity, Key watershed, Municipal and Domestic)	Not Affected	No	Addressed in Text, EA section 2.4.3.
Wildlife Structural or Habitat Components - Other (Snags/CWD/ Special Habitats)	Snags/CWD Affected	Yes, Beneficial Effect	Concern raised in Public Scoping: see other special status species – wildlife Addressed in Text, EA sections 2.4.5.1, 2.4.5.2, Table 9.

The affected elements of the environment will be discussed by the following resources in EA section 2.4 : Vegetation and Forest Stand Characteristics, Soils and Site Productivity, Water and Hydrology, Fisheries and Aquatic Habitat, Wildlife, Visual Resources, Recreation and Rural/Urban Interface, Fire Hazard and Risk/Air Quality, And Public Access and Use.

2.3.1.1 Cumulative Effects Analysis in this EA:

Tables 7 and 8 described which elements of the environment have cumulative effects. *Table 9* describes the affected resources, cumulative actions, and the section of the document where the cumulative effects are described. Cumulative effects are described by resource in EA section 2.4.

Table 9: Affected Resources, Cumulative Actions, and the Section of the Document Where the Cumulative Effects Are Described

Resource or Element of the Environment	Component	Scale for Cumulative Effects	Clear Dodger Projects Project 1: Clear Dodger Timber Sale Project 2: Riparian Restoration	Cumulative Actions		Section Of EA Describing Cumulative Effects
				Past Actions ¹	Present and Foreseeable Future Actions	
Water Quality and Fisheries (including T/E)	Peak Flows	Cumulative Effects Analysis Area (Cumulative Effects Analysis p. 1) See EA section 7.1.	Project 1: Using the WAR model, the project has a slight potential to contribute to Peak Flows (0.4%) from creating gaps in the canopy from thinning.	Peak flow increase in response to harvest on private land that has taken place in the last 10 years. Flow effects assumed to last 10 years	Regeneration Harvest on non-federal, assuming mature stands on private lands are harvested. The following sales on Federal Land: <u>Present:</u> <i>Hillock Thinning</i> Timber sale (BLM) Using the WAR model, gaps in the canopy created by thinning. <u>Future:</u> <i>Beeline Thinning</i> Timber Sale (BLM) – see Hillock	Section 2.4.3.2
	Sediment	Sediment is not likely to be observed more than ¼ mile downstream from the point source.	Project 1: Road work (culvert replacement) at intermittent stream crossings Timber haul on roads crossing streams.	Existing roads with stream crossings and /or adjacent to streams currently contributing stream sediment. Road work and haul from timber sales on non-federal land on same haul route that affect the same streams	Road work, haul from timber sales on same haul route and thinning and yarding in the Riparian Reserve LUA that affect the same streams on non-federal and federal land. The following sales on Federal Land: <u>Present:</u> <i>Hillock Thinning</i> Timber sale (BLM) -road work, haul and thinning and yarding in the Riparian Reserve LUA. <u>Future:</u> <i>Beeline Thinning</i> Timber Sale (BLM) - haul and thinning and yarding in the Riparian Reserve LUA.	Section 2.4.3.2
Wildlife	Snags, CWD dependent species	The Project area and lands currently in forest cover in all ownerships adjacent to project area units.	<i>Beneficial Effect:</i> Retaining snags and coarse woody debris in Matrix and Riparian Reserves (RRs) as a result of Projects 1 and 2, and creating snags in RRs as a result of Project 2, provide refugia for snag dependent species from private timber harvest.	Timber harvest on private industrial land has left very few snags	Timber harvest on private industrial land leaving very few snags Retaining snags and coarse woody debris on BLM sales	EA section 2.4.5.2

¹ CEQ interprets NEPA and CEQ's NEPA regulations on cumulative effects as requiring analysis and a concise description of the identifiable present effects of past actions to the extent that they are relevant and useful in analyzing whether the reasonably foreseeable effects of the agency proposal for action and its alternatives may have a continuing, additive and significant relationship to those effects. (CEQ Guidance on the Consideration of Past Actions in Cumulative Effects Analysis – June 24, 2005)

2.4 Affected Environment and Environmental Effects

This section describes the current condition and trend of those affected elements identified in section 2.3, and the environmental effects of the alternatives on those elements. Unless noted, the affected environment also applies to Project 2.

2.4.1 Vegetation and Forest Stand Characteristics

Affected Environment – Section 2.4.1

Stand Structure

Stand History: These are all natural stands of fire origin probably following a major stand replacement fire during the early 1900's. The ages range from approximately 65 to 90 years old. Most of the older stands were thinned in the mid-1970's. These stands were thinned from below. The younger stands have not been thinned and have no records of any past management.

Stand Structure

- **Previously Thinned Stands (A1 (Units 5 & 9), B1 (Unit 4), C1 (unit 6), and D1 (Unit 7)):** The stands that have been thinned in the past are composed of predominately even-aged Douglas-fir mixed with western hemlock, western red cedar and red alder. Skid trails and stumps are still evident throughout the stand. The overstory canopies are closing. They all have an understory development of western hemlock and western red cedar saplings and are beginning to show vertical structure. Understory shrub layers are dominated by vine maple, salal and sword fern.
- **Stand Structure – Unthinned Stands (A1 (Units 5), B2 (Unit 3), B3 (Unit 2), B4 (Unit 8), B5 (Unit 1)):** These stands are generally younger, more dense and predominately Douglas-fir. Canopies are closed and little understory tree regeneration is present. Understory shrub layer is rather sparse but is still dominated by vine maple, salal and sword fern. Although B2 (Unit 3) has not been thinned, it is similar in structure to the stands described in the previous paragraph.
- *Table 13* summarizes live residual old growth trees, snags, and coarse woody debris.
- *Table 10* summarizes Forest Stand information for this project.

Table 10: Summary of Forest Stand Information by Unit

<i>Land Use Allocation</i>	<i>Project Unit</i>	<i>Stand Age</i>	<i>Late Successional Forest? Yes/No</i>	<i>Proposed Thinning Acres</i>	<i>Previous Harvest Activity</i>
GFMA	A1 - Units 5 & 9	90	Yes	9	Thinned
	B1 - Unit 4	85	Yes	20	Thinned
	B2 - Unit 3	85	Yes	37	Unthinned
	C1 - Unit 6	80	Yes	35	Thinned
	D1 - Unit 7	90	Yes	19	Thinned
Acres of Late Successional Forest				120	
GFMA	A1 - Unit 5	65	No	5	Unthinned
	B3 - Unit 2	65	No	6	Unthinned
	B4 - Unit 8	65	No	5	Unthinned
	B5 - Unit 1	65	No	7	Unthinned
Acres that are not Late Successional Forest				23	

Late Successional Forest: At least 15% of the federal lands within the Lower Clackamas River and Middle Clackamas River 5th field watersheds are in a late-successional forest condition (RMP p.21, 22). Approximately 120 acres of the proposed thinning is late successional forest within the GFMA land use allocation. Most of these stands have been previously thinned (See *Table 10*).

Special Status / Special Attention and Survey and Manage Plant Species

The project area was surveyed for Special Status Species and former “Survey and Manage” species according to established protocols with the following results:

Special Status Species: *Cetrelia cetrarioide*, a Bureau Tracking (as well as a former Survey and Manage) lichen species was identified during field surveys of the original proposed sale area. This lichen and its associated habitat are no longer part of the current proposed sale area. No impact to this species or its associated habitat is anticipated as a result of the Proposed Action.

Former “Survey and Manage” Species: The following former Survey and Manage species that were found during field surveys: a/ Lichen: *Cetrelia cetrarioide*, b/ Fungi: *Ramaria stuntzii*, *Ramaria araiospora* var. *rubella*, and *Ramaria araiospora* var. *araiospora*. For this project, former Survey and Manage species identified within the proposed project area that were not given Special Status Species protection will maintain their protection buffers.

Invasive / Non-native Plant Species (including Noxious Weeds): The following invasive/non-native species are widespread and well-established throughout the Cascades Resource Area, and were found to occur within or adjacent to units throughout the project areas: Tansy ragwort (*Senecio jacobaea*), bull and Canadian thistles (*Cirsium vulgare* and *C. arvense*), St. John’s wort (*Hypericum perforatum*) and Scot’s broom (*Cytisus scoparius*).

Environmental Effects - Section 2.4.3

2.4.1.1 Proposed Action

Stand Structure

This proposal would increase the growth rates of the residual trees remaining after thinning. This would result in larger, healthier trees with fewer stems per acre. The total net yield for the site would increase and the final harvest volume would have larger and higher quality timber. The wider spacing of the residual trees would result in increased growth of understory trees and shrubs, which would provide a richer, more, diverse habitat for wildlife. For uncut trees within or near yarding trails, some scraping of bark and damage to roots can be expected from the logging operation. Implementing Project design features described in *EA section 2.2.2.2 (# 5 – To protect the residual stand)* would reduce the risk of damaging remaining trees.

Late Successional Forest: Stands that have been identified as late successional stands in *Table 10* would remain late successional stands after thinning because the age class of these stands would not change as a result of the proposed thinning.

Special Status / Special Attention and Former “Survey and Manage” Plant Species

Former Survey and Manage Species: No adverse effect to identified Survey and Manage species or the microclimate surrounding them is anticipated due to the protection buffers that have been established around each of the “Survey and Manage” fungi sites located within B2 (Unit 3), B4 (Unit 8). *Table 11* summarizes locations and buffer size by species.

Table 11: *Former Survey and Manage Species*

<i>Type</i>	<i>Species</i>	<i>Location/Remarks</i>	<i>Buffer on site/ Effects</i>
Lichen	<i>Cetrelia cetrarioides</i>	A2 (dropped early in analysis process), B4 (Unit 8), C1 (unit 6)	N/A - No longer within the unit boundaries.
Fungi	<i>Ramaria stuntzii</i>	Two locations within the unit boundaries of B2 (Unit 3). See <i>Unit Map – Section 13, EA section 2.2.5.</i>	50ft. radius protection buffers have been placed around these fungi sites. This buffer, combined with adjacent Riparian Reserves would provide protection for both the fungi and microclimate that surround it.
	<i>Ramaria araiospora var. rubella</i>	One location within the unit boundaries of B2 (Unit 3) along the northern unit boundary	A 50ft radius protection buffer has been placed around this fungi site. This buffer, combined with adjacent Riparian Reserves would provide protection for both the fungi and microclimate that surround it.
	<i>Ramaria araiospora var. araiospora</i>	One location along the northern property line within unit B4 (Unit 8).	A 50ft radius protection buffer has been placed around this fungi site. This buffer is expected to provide protection for both the fungi and microclimate that surround it.

Special Status Botanic Species: The Proposed Action is not expected to contribute to the need to list any Special Status Species known or expected to occur in the vicinity of the project area. If additional NWFP/FSEIS Special Attention Species or Special Status Species are discovered on site, appropriate mitigation would be implemented as described on pages 2-41 and 2-86 of the RMP. Thinning may have an effect on Special Status Species that are not practical to survey for, mainly hypogeous (underground fruiting) fungi species. However, with the exception of *Leucogaster citrinus* (Bureau Tracking) located in T.8S.,R.3E., Sec.25, these species have no known sites within the Cascade Resource Area.

Invasive / Non-native Plant Species: Adverse effects from invasive/non-native would not be anticipated. Existing populations of noxious weed species that are widespread and well-distributed could increase in vigor in the short term, as more sunlight reaches the forest floor after treatment. As the canopy closes over the next 20 years, it is anticipated that they would be shaded-out and be reduced again to low-vigor populations. Design features would be expected to reduce the risk of spread or new populations of noxious weeds as a result the Proposed Action (*Objective 4, EA section 2.2.2.2*).

2.4.1.2 No Action Alternative

Stand Structure: Without thinning, crowns would be expected to recede over the next 10 to 20 years, reducing the live crown ratio and slowing growth rates on the trees. Average tree size would continue to increase, but at a slower rate as competition for light and nutrients increases. Suppression mortality of smaller and weaker trees in the stand would be expected.

Declining vigor in understory and ground cover species would be expected with increased shading from the closed canopy. Denser wood (narrower growth rings) and longer clear boles would develop, compared to the Proposed Action.

Special Status Botanic Species: Under the No Action Alternative, these species would continue at approximately their current population levels and distribution until some natural disturbance (i.e. fire, wind, overcrowding and stagnation) caused substantial changes in habitat conditions. No effect would occur to species that are not practical to survey for, such as underground fruiting fungi.

Invasive / Non-native Plant Species (including Noxious Weeds): Without any new human caused disturbances in the proposed project areas, established invasive/non-native species population numbers would remain at or near current levels.

2.4.2 Soil and Site Productivity

Affected Environment - Section 2.4.2

General Description of Soil Characteristics:

The soils on and surrounding proposed units are, generally, deep and well-drained and formed in old alluvium and colluvium. The soils within the project area occur on rolling hills and high terraces. These are cool soils (frigid) and formed in andesite and tuff parent material at the foot of the mountains. The soils within the project area consist mainly of clay loams, silty clay loams and cobbly loams. The major soil series within the project area are: Klickitat-Kinney complex, Molalla cobbly loam, Cottrell silty clay loam, McCully gravelly loam, Alsbaugh clay loam and Aschoff-Brightwood complex. Soils in all units are suitable for timber harvest. *Table 11* shows average slope range and erodibility risk within the units.

Table 12: *Average Slope Range by Unit*

<i>Unit(s)</i>	<i>Average Slope Range within Unit</i>	Erosion Risk
A1 - Units 5 & 9	0-30 %	Low
B1 (Unit 4)	0-30 %	Low
B2 (Unit 3)	0-30 %	Low
B3 (Unit 2),	0-30 %	Low
B4 (Unit 8)	95% of the unit: 0- 30% 5% of the unit: 30-45%	Low to Moderate
B5 (Unit 1)	15-30 %	Low
C1 (unit 6)	0-30 %	Low
D1 (Unit 7)	90% of the unit: 0- 30% 10% of the unit: 30-45%	Low

Environmental Effects - Section 2.4.2

2.4.2.1 Proposed Action

Ground-based Yarding:

Soil compaction and topsoil displacement is expected on no more than ten percent of each unit as a result of skid trails and landings – consistent with RMP standards and guidelines (p. C-1-2). This estimate includes use of existing skid trails already compacted from historic logging. Limiting tractor operations to periods of low soil moisture, when resistance to compaction is higher, using one-end suspension on slopes less than 35 percent, and utilizing slash beds in skid trails would reduce the relative degree of soil compaction where tractors operate.

Logs would mostly be sorted and decked on ground adjacent to roads until transport; soil compaction in these places (out of the road prism) would not inhibit natural revegetation or biochemical soil processes more than approximately one to five years. In spots where equipment turns or backs-around multiple times, compaction and topsoil disturbance would be greater; here current biochemical soil processes and natural revegetation could be inhibited beyond several years. Surface erosion and dry ravel resulting from thinning would be minimal because the Proposed Action would leave the majority of the surface vegetation, root systems, and litter intact, and limbs from thinned trees would remain on site.

As trees age and become established, the negative effect on growth from soil compaction and displacement would become less pronounced and growth rates may approach that of trees on similar undisturbed sites. This is especially true where compaction and displacement tend to be in narrow strips (e.g. yarding trails and small landings).

Skyline Yarding: In areas that would be skyline-yarded, compaction would be relatively light (i.e. not expected to inhibit natural revegetation or biochemical soil processes more than approximately one to five years). Skyline yarding routes with one-end suspension of logs during in-haul would result in a compacted and disturbed trail two to four feet wide for each yarding route. Potential erosion down skyline corridors would be mitigated by constructing water bars and leaving slash on corridors where appropriate. Skyline landing construction and use would displace and compact soil (by cutting and filling to create the landings) in various locations along all roads where they pass through proposed harvest units. Constructing and using landings would inhibit natural revegetation and biochemical soil processes more than approximately three to five years.

Fuels Treatments: Pile burning, and rain impact on burned spots can decrease infiltration capacity until natural re-vegetation occurs. Displaced soil would be filtered and retained by the intact vegetation immediately surrounding the burn-pile spot. Since burning would occur during wet soil conditions, heat damage to the upper soil layer (A-horizon) would be moderated and only occur in scattered localized sites. See *EA Section 2.2.2* for additional information on pile burning.

Road Work:

New Road Construction:

Constructing up to 0.05 mile of new temporary natural surface spur roads would displace topsoil and compact subsoil on less than 0.25 acre, which includes compaction associated with adjacent landings. The compacted area is less than 0.2 percent of the 143 proposed project acres. This activity would locally decrease soil productivity in the short term (one to five years). There would be no net increase in roads or in land taken out of the productive timber base due to road construction. All of this new road construction would be unsurfaced and would be ripped following the completion of this timber sale harvest and site preparation.

The roads to be constructed would be on gentle topography, and the total width of the clearing would average 30 feet, which also include the area cleared for adjacent landings. Roads would be located and designed so that any resulting runoff would infiltrate rapidly into adjacent undisturbed soils, well away from riparian areas.

Road Renovation and Maintenance: Renovating and improving approximately 4.7 miles of existing dirt-surface roads would retain approximately 17 acres of current non-forest land in a non-forested condition. Encroaching vegetation along these older roads would be removed and surface rock would be added where needed. Cross drains and stream crossings (culverts) would be added, improved, or replaced to better withstand future high-water events. These improvements would enhance drainage and road surface conditions, decrease road surface erosion into streams, and lower risk of culvert or fill failure. Vegetation generally reestablishes within one or two seasons, and erosion rates return to levels at or near geologic rates thereafter. Road maintenance would occur during dry seasons to minimize soil erosion.

Road Storm-proofing and Blocking: Approximately 1.5 miles of road would be reshaped, waterbarred and blocked. Depending on expected future transportation needs, some of these road beds would be utilized in the next harvest cycle. The design features for treating these roads after operations would stabilize the soil surface while leaving the subgrade intact for use in future management operations. The subgrades would remain as non-forest land.

Cumulative Effects: No cumulative effects to soil resources would result from thinning or connected actions in the project areas. Effects would be contained within the project areas, and there would be no other uses affecting this resource.

2.4.2.2 No Action Alternative

Existing paved roads and maintained rocky roads would continue to be part of the transportation system and be maintained according to the Salem District transportation management plan, and would remain as non-forest land providing access for management activities and public use. Historic unmaintained skid trails, haul roads and landings would be left in their current condition, which range from virtually no evidence of recovery to advanced recovery where understory vegetation is similar to adjacent areas and trees are growing in the compacted area. Vegetation and other natural processes would continue to slowly break up compaction and continue the process of recovering productive capability over time, but would remain as non-forest land for the foreseeable future.

Soil development processes would continue at a typical rate; compacted areas would recover through tree root invasion, litter build up, decomposition, and weathering (e.g. freezing and thawing).

2.4.3 Water and Hydrology

Affected Environment - Section 2.4.3

The project area is located in the Oregon Western Cascades range at elevations between 1,300 - 2,000 feet, and is part of three sixth-field watersheds with approximately 45,731 acres (71.5 square miles) in drainage area. The primary streams draining the area are Clear Creek and the Middle Clackamas River, all tributaries to the Clackamas River. Thinning units range from one half to two miles from the Clackamas River (North Fork Reservoir), and approximately six to eight miles from the main stem of Clear Creek. Public lands comprise less than 20% of the affected watersheds.

Small headwater channels, mostly with an ephemeral or intermittent flow regime, predominate in the project area. In flat, stable areas near A1 (Units 5 & 9), B1 (Unit 4), C1 (unit 6), and D1 (Unit 7), low-gradient (>10%) channels are common. These channels are entrenched, with a low width/depth ratio and low sinuosity. Channel substrates are predominately in the gravel to sand size classes.

On the steeper terrain to the east of B2 (Unit 3), B3 (Unit 2), and B4 (Unit 8), debris-torrent channel types (high gradient and deeply entrenched) have formed. These channel types have high rates of sediment transport during episodic events, with long periods of valley-filling between events. These channels are also filled with large wood and debris, and adjacent slopes are moderately unstable. All the channels observed in the field are currently in “proper functioning condition” (U.S.D.I., 1998). Base-flow or low-flow occurs during late summer and early fall when mean stream discharge drops below 20% of the mean winter flow. Many small headwater channels dry up completely during this period. Approximately one-half of the project area is subject to rain-on-snow events (ROS) which have the potential to increase peak flows during winter or spring storms.

None of the project area streams are included in the state’s 1998 “303d List” of Water Quality Limited Streams. Recognized beneficial uses of in-stream flows for both watersheds include: salmonid rearing and spawning, resident fish and aquatic life, irrigation and domestic drinking water, and municipal drinking water (Cities of Estacada and Clackamas).

The *Clackamas River Corridor* portion of the *Lower Clackamas River Tributary* 6th field watershed has been designated as a key watershed (RMP p. 6). Areas under consideration for this project are not within or tributary to the Clackamas River corridor. These watersheds are part of the municipal watersheds for the Cities of Estacada, Clackamas, Milwaukie, Lake Oswego and other municipalities served by Clackamas River Water Providers.

Environmental Effects - Section 2.4.3

2.4.3.1 Proposed Action

Summary

Long-term measurable effects (five years or more) to watershed hydrology, channel morphology, and water quality as a result of the Proposed Action are unlikely. These actions are unlikely to permanently alter the aquatic systems of affected watersheds by affecting physical integrity, water quality, sediment regime or stream-flow.

All new road construction would occur outside of riparian reserves on low to moderate slopes with stable surfaces emanating from the existing road network. Therefore, the risk of road-related landslides in these locations is minimal. Since no additional stream crossings would be constructed, road construction in this proposal would not provide additional opportunities for road sediment from fill failures or ditch-line run-off to enter stream channels.

Overall, the Proposed Action would be unlikely to have any measurable effect on stream temperatures, pH, or dissolved oxygen. Any effects to these attributes as a result of the Proposed Action (including skid trails, landings, and road renovation and construction) would likely be within the range of effects disclosed in the RMP/FEIS (p. 4-14 to 4-19). Over the long-term (beyond three to five years), current conditions and trends in turbidity and sediment yield would likely be maintained under the Proposed Action.

Over the long term, the incremental improvement of forest stand characteristics (increased species diversity and wood recruitment) in RRs would support the improvement in these conditions that is anticipated throughout these watersheds in response to the Northwest Forest Plan. This would add to the improvement in the condition of stream channels and wetlands in the watersheds.

Watershed Hydrology:

Ground Water: It is unlikely the proposal would result in any measurable change to local ground water. The proposal would remove less than half the existing forest cover and the root systems of the conifers retained would quickly absorb any additional soil moisture. Proposed road construction would not involve excavation into side slopes where water tables could be intercepted.

Base Flow: It is unlikely that the proposal would result in any measurable change to local base flow. The Proposed Action would remove less than half of the existing forest cover, and root systems of the retained conifers would quickly absorb any additional soil moisture. In addition, thinning would take place outside Riparian Reserves.

Peak Flows:

- *Peak flow effects from harvest:* Since portions of the project area are above 1,500 feet, it can be assumed that the removal of portions of the conifer overstory would likely result in some small increase in water yield as a result of increases in snow accumulation and melting during ROS events. Due to the small area considered in this action, this effect is not likely to be directly measurable.
- *Peak flow effects from new road construction:* New (temporary) road construction under the Proposed Action would be limited to stable slopes outside of the Riparian Reserve LUA. Slopes in these areas are low to moderate, and would not require extensive full-bench or cut-and-fill construction. This is unlikely to have a detectable effect on peak flows because there would be no interception of surface or ground water no additional interception and routing of surface or ground water to stream systems.
- *Peak flow effects from existing roads:* Most of the roads that would be utilized under this proposal already exist. This proposal would not alter these roads in a way that would likely reduce or increase any existing effect to peak flows attributable to the current road network, and thus would maintain the current condition and trends relative to hydrology and stream flow contributed by existing roads. Improvement and repair of road surfaces would be implemented under the Proposed Action. Some of these actions may reduce existing road effects on local and watershed hydrology.

Stream channel morphology (physical integrity):

Under the Proposed Action (with the exception of stream crossing repairs) there would be no direct alteration of any stream channel. Refer to *Table 4*. Physical integrity of channels at existing stream crossings would be altered for one to several years following repair/maintenance. Within the road prism (estimated at 30 feet maximum width), the channel surface, banks and bed would be compacted (bulk density of soils increased by as much as 30%), and vegetation would be disturbed or removed. Due to the stable nature of channels at these locations, little to no additional disturbance to channel morphology would be expected either upstream or downstream from the crossing.

Water Quality

Sediment:

Yarding corridors are not expected to route surface water and sediment into streams for the following reasons.

- High levels of residual slash on yarding corridors (both machine and cable) is expected to reduce the accumulation of runoff by deflecting and redistributing overland flow laterally to areas where it would infiltrate into the soil;
- Gentle to moderate slope gradients in this project area provide little opportunity for surface water to flow;
- Riparian Reserve buffers have high surface roughness which functions to trap any overland flow and sediment before reaching streams, and;
- Small size of harvested trees would limit surface disturbance to minimal levels.

Riparian Reserve buffers are expected to trap up to 100% of sediment that may originate from thinning units. All proposed treatment units, road construction, and road renovation are outside of any steep unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting induced by loss of root strength are unlikely to result from this action. In addition, the minimal levels of surface disturbance under this proposal are unlikely to result in the concentration of runoff on mass wasting susceptible slopes.

Riparian Reserve buffers around all streams would eliminate most disturbance of stream side vegetation. Therefore, it is unlikely that this proposal would increase bank erosion or channel cutting by altering channel roughness, redirecting flows or altering bank stabilizing vegetation. The potential for increases in stream energy due to alterations of peak flows is discussed under cumulative effects.

In addition, project design features (including Best Management Practices such as stream and road buffers, minimum road widths, minimal excavation, ensuring appropriate drainage from road sites, and seasonal limitations on road use and ground-based harvest operations - RMP Appendix C, p. C-1 to C-9; EA Sec. 2.2.2) would reduce the potential for measurable sediment delivery to streams.

Beneficial effects to road storm-proofing: Spur roads to be storm-proofed and blocked and/or waterbarred to prevent vehicles from disturbing the road surface and creating mud, would minimize the likelihood of dumping, which could introduce contaminants into ground water and streams.

Temperature:

No shade-producing vegetation within the primary shade zone (PSZ), which is estimated to be no more than 60 feet from the active stream channel in all cases; or secondary shade zones of perennial streams would be removed under this proposal.

2.4.3.2 Cumulative Effects

Effects to hydrology were analyzed on a watershed basis because:

- Direct and indirect effects to hydrology, channel conditions or water quality as a result of the action, if they were observable, would be seen on a stream reach directly in or adjacent to the action.
- There is no physical mechanism for the Proposed Action in one watershed to translate across a topographic divide and directly affect a channel in a separate watershed.
- Nearly all riparian forest cover is retained under the alternative, thereby maintaining riparian microclimate conditions and protecting streams from increases in temperature.

Watershed Hydrology:

Ground Water and Base Flow:

No cumulative effects would be expected because the Proposed Action is not likely to result in measurable direct or indirect effects to ground water and base flow, and therefore would be unlikely to contribute to any potential cumulative effects.

Peak Flows

Potential increases in peak flows during rain on snow events and storms due to increasing openings in the forest canopy were estimated using the Water Available for Runoff (WAR) analysis. A percent change from estimated (theoretical) full forest conditions was calculated for the two alternatives (No Action and Proposed Action) assuming normal storm events and unusual storm events. The estimate accounted for timber harvest planned or sold (but still unharvested) over the next decade, and recently completed on BLM and Forest Service lands. An assumption was made that private landowners would harvest all available mature forest cover in this decade, as a worst-case scenario

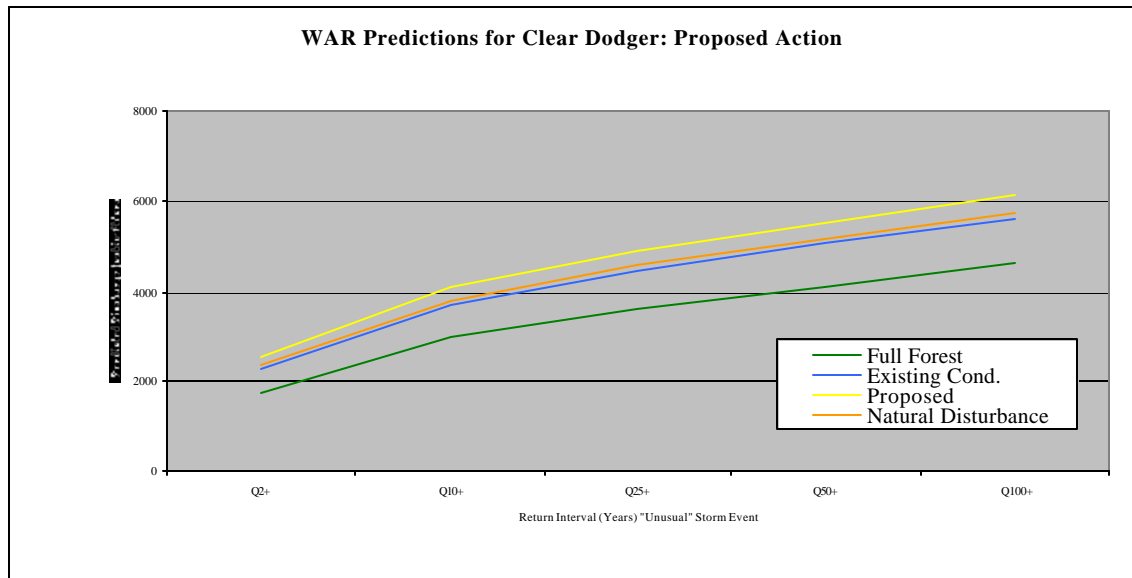
Under the No Action and Proposed Action alternatives, the WAR model estimated no increase in peak flows for any return interval under normal storm conditions. The increase in peak flow over current conditions resulting from a two-year event (unusual storm conditions) was 46.8 % for the No Action Alternative and 47.2 % for the Proposed Action. Only the difference between the No Action and the Proposed Action (a 0.4% increase) is attributable solely to actions proposed on the BLM. Thus, most of the estimated increase is a result of actions assumed to occur on private lands in this decade within the affected watersheds. This indicates that private actions alone are likely to push WAR values higher in this watershed irrespective of which alternative is chosen for this project. The assumption that private landowners would harvest all mature forest cover in this decade probably results in an overestimate of what would actually take place.

Further, WAR values resulting from the cumulative actions are approximately 11.6% higher than the range of peak flows that would result in the affected watersheds under the assumption of the natural disturbance regime (portions of the watershed are burned). These estimates place WAR values for the affected watersheds in ranges above the 10% level considered (by the model) to be below detection.

WAR values above the 10% level imply the possibility of adverse effects to the aquatic ecosystem and results in a sensitivity rating of “indeterminate”. This rating points only to the possibility of impacts to the aquatic ecosystem in these watersheds at some point during the ten-year analysis period, not the certainty of such impacts. However, when these possible peak flows are assessed in a context that evaluates actual risks to resources, it is likely that stream channels in the project area that might be sensitive to increases in peak flows have already adjusted to these increases.

If increased peak flows have affected stream channels in these watersheds, it is not apparent in those channels observed in the project area (as indicated earlier in this analysis, channels on BLM lands in the sale area are in functional condition).

Since public lands in these watersheds are less than 20% of the area, a 0.4% increase in unusual storm event peak flows over current conditions is highly unlikely to result in any adverse impact to public resources.



Stream Channel Morphology (Physical Integrity):

No cumulative effects would be expected because:

- Although physical integrity of channels at existing stream crossings would be altered for one to several years following culvert repair, maintenance, replacement, or removal, these alterations would be limited to the local area only (due to the stable nature of channels at these locations), so little to no additional disturbance to channel morphology would be expected either upstream or downstream from the crossing.
- Over the long term, the incremental improvement of forest stand characteristics (increased species diversity and wood recruitment) in the riparian reserves would support the cumulative improvement in these conditions that is anticipated throughout these watersheds in response to the Northwest Forest Plan. This would add cumulatively to the improvement in the condition of stream channels and wetlands in the watersheds.

Water Quality

Temperature:

No cumulative effects would be expected because canopy closure in the primary and secondary shade zones would be unaffected by this project since no thinning would take place in Riparian Reserves.

Sediment:

The Proposed Action could contribute cumulatively to the risk of short-term increases in stream turbidity levels directly below road/stream intersections, as a result of road repair (including any culvert replacement) and timber hauling.

Table 9 identifies affected elements of the environment, Clear Dodger actions, and cumulative actions associated with this effect. The scale for cumulative effects to sediment is in adjacent streams within and approximately ¼ mile downstream from the project area, the distance sediment is visible in the water. This scale was chosen because effects resulting from actions which overlap in time and space accumulate downstream from the separate actions where they occur in a shared watershed.

The effect would be of very limited magnitude; sediment would originate from areas generally no more than a few hundred square feet of surface area. For cumulative actions, the risk of short-term increase in stream turbidity resulting from live-stream culvert replacement would be episodic, occurring while the repairs are being made, and again after the first heavy rains have occurred. For the Clear Dodger project, with the implementation of project design features described in *EA section 2.2.2.2*, short term increases in sediment resulting from hauling and from stream culvert replacements would occur after the first heavy rains. Over the long-term (beyond three to five years after repairs are made and hauling is finished), conditions and trends in turbidity and sediment yield would likely return to current levels.

Effects to Water Quality: For the reasons cited above, the cumulative increase in stream turbidity is unlikely to result in a measurable change in water quality on the scale of the sixth or seventh-field watersheds, and would therefore be unlikely to have any effect on any designated beneficial uses.

2.4.3.3 No Action Alternative

The No Action Alternative would result in the continuation of current conditions and trends at this site as described in the Description of the Affected Resource sections of the individual project areas of this report. Effects to the watersheds would continue to occur from the development of private and other agency lands (primarily timber harvesting and road building).

2.4.4 Fisheries and Aquatic Habitat

Affected Environment - Section 2.4.4

General Fisheries Habitat

Upper Clear Creek and Middle Clear Creek 6th Field Watersheds within the Lower Clackamas River 5th Field Watershed

Two of the proposed thinning units are adjacent to fish-bearing streams. The north fork of Clear Creek flows adjacent to A1 (Units 5 & 9) in Section 23, and D1 (Unit 7) in Section 25. North Fork Clear Creek supports a population of resident cutthroat trout (*Oncorhynchus clarki*), and probably also supports sculpins (*Cottus, spp.*), although none were found during fish presence/absence surveys conducted on May 9, 2001.

Below the confluence of Clear Creek and North Fork Clear Creek, the mainstem of Clear Creek supports populations of winter steelhead trout (*O. mykiss*), resident and sea-run cutthroat trout and coho salmon (*O. kisutch*). Chinook salmon (*O. tshawytscha*) are found in the lower reaches of Clear Creek, as are dace (*Rhinichthys, spp.*), redbside shiner (*Richardsonius balteatus*), Pacific lamprey (*Entosphenus tridentatus*), Northern pikeminnow (*Ptychocheilus oregonensis*) and chiselmouth (*Acrocheilus alutaceus*). Upstream migration of fish is blocked just above the confluence of Clear Creek and North Fork Clear Creek by waterfalls in both forks.

Lower Clackamas Tributary 6th Field Watershed within The Middle Clackamas 5th Field Watershed:

B2 (Unit 3), B3 (Unit 2), and B4 (Unit 8) are located on flat ground at the top of the very steep slopes that descend to North Fork Reservoir. Four small streams drain the flat ground in the vicinity of the proposed units. All of the streams in the vicinity of these units flow in a northwesterly direction to North Fork Reservoir, and are too small and steep to support fish populations. No fish are present in these streams; therefore there would be no effect to fish within the streams associated with these units.

The fish species found in the Middle Clackamas River and North Fork Reservoir are similar to those found in Clear Creek, with the addition of hatchery stocks of summer steelhead and rainbow trout (both *O. mykiss*), mountain whitefish (*Prosopium williamsoni*) and suckers (*Catostomus, spp.*).

Threatened, Endangered and Special Attention Species:

Upper Clear Creek and Middle Clear Creek 6th field watershed within the Lower Clackamas River 5th field watershed:

Threatened species occurring in these 6th field watersheds include Lower Columbia River steelhead trout, Lower Columbia River coho salmon and Upper Willamette River Chinook salmon. Steelhead and coho salmon may be found in Clear Creek approximately two miles downstream from Unit A1 (Unit 9), which is the closest proposed unit to this habitat. In addition this habitat is:

- At least 2 miles downstream from all of the proposed units.
- At least 3 miles downstream from road construction and associated decommissioning activities and other road work (e.g. culverts).

Lower Clackamas Tributary 6th Field Watershed Within The Middle Clackamas 5th Field Watershed:

Chinook salmon, Coho salmon and Steelhead may be found in the Clackamas River, approximately 0.5 mile downstream from B2 (Unit 3), B3 (Unit 2), and B4 (Unit 8).

Environmental Effects - Section 2.4.4

2.4.4.1 Proposed Action

General Fisheries Habitat and associated (non T/E) fish species

The riparian reserve widths of one site potential tree on the non fish-bearing streams adjacent to the sale units and two site potential tree heights on the fish-bearing streams adjacent to A1 (Units 5 & 9) and D1 (Unit 7) would be adequate to protect the aquatic and riparian resources downstream in Clear Creek and in the Clackamas River from any effects of the proposed thinning, timber haul, and road construction and road decommissioning. Site potential tree height in the project area is 180 feet at all units except Unit B3 (Unit 2), which has a site potential tree height of 200 feet (see *Table 5*).

The proposed 0.05 mile of road construction in Sections 24 and 25 would have no impacts on fish or aquatic habitat. The road locations are flat and have no hydrologic connections. Additionally, all road construction and associated decommissioning would be conducted during the dry season, minimizing the potential for stream sedimentation.

A slight sediment increase may occur with the first rain event of the fall, affecting fish bearing streams associated with A1 (Units 5 & 9) in section 23 and D1 (Unit 7) in section 25, as a result of road renovation activities.

Proposed in-stream work (e.g. culvert replacement) would take place on intermittent streams within the in-water work period (*See Table 6*), when the least amount of water would be flowing in streams. Many intermittent streams are dry during this period.

Threatened and Endangered and Special Attention Species

Upper Clear Creek and Middle Clear Creek 6th Field Watersheds within the Lower Clackamas River 5th Field Watershed

The Proposed Action would maintain the current function of the following indicators of ESA listed fish habitat downstream from Clear Dodger A1 (Units 5 & 9), B1 (Unit 4), C1 (unit 6) & D1 (Unit 7):

Water Quality

- *Temperature, Chemical Contamination/Nutrients*: Water temperature would not be affected by any activities included in this proposal due to project design criteria that would prevent the removal of any vegetation that provides stream shade. No activities associated with the project would result in any increase in chemical or nutrient contamination.

- *Sediment/turbidity*: No increased sediment delivery to streams is anticipated as a result of *thinning, yarding, timber hauling, and road construction and associated decommissioning* for the following reasons:
 - No yarding activity would occur within any Riparian Reserves (RR).
 - Post-project leave tree densities of approximately 85-135 trees per acre (TPA).
 - Timber haul routes on non-paved roads from all of the Units within the Clear Creek watershed are very short (<0.5 mile) with approximately four stream crossings, none of which occur on fish-bearing streams. Timber haul would be conducted during dry weather conditions to prevent road related sediment from entering stream channels.
 - The semi-permanent new roads proposed for construction are located on relatively flat ground on ridgetops, would be constructed during the dry season and are located approximately 3 miles and 5 miles upstream of ESA listed fish habitat in Clear Creek. Decommissioning of the newly constructed roads would be conducted during the dry season, and would be covered under programmatic consultation.

Sediment deliveries to streams as a result of *culvert work* are anticipated to be non-measurable and limited in distance and duration for the following reasons.

- Sediment would not affect ESA listed fish because any increase in sediment is not expected to reach ESA listed fish habitat in Clear Creek, which occurs approximately 3-5 miles downstream from the culvert work.

- Any in-stream work would take place in the in-water work period (*See Table 6*), when the least amount of water would be flowing in streams. Many intermittent streams are dry during this period.
- The culverts to be replaced are on intermittent, non-fish bearing streams or seeps. A slight sediment increase may occur with the first rain event of the fall, but the culverts are approximately 3-5 miles upstream of ESA listed fish habitat in Clear Creek.

Habitat Access (Physical Barriers): No barriers to fish migration would be created by implementation of the project.

Habitat Elements (Substrate, Large Woody Debris, Pool Frequency, Pool Quality, Off-channel habitat, Refugia): No project activities would be in close enough proximity to fish bearing stream channels or result in a level of disturbance that would affect any of the above instream habitat elements in the streams within the project area or 2 miles or greater downstream in ESA listed fish habitat.

Channel Conditions and Dynamics (Width/Depth Ratio, Streambank Condition, Floodplain Connectivity): No project activities would be in close enough proximity to fish bearing stream channels or result in a level of disturbance that would affect any of the above stream channel conditions in the streams within the project area or 2 miles or greater downstream in ESA listed fish habitat.

Flow/Hydrology

- *Peak Flows*: The Water Available for Runoff (WAR) modeling conducted for the subwatersheds in which proposed project units are located predicted that for normal storm events, no increases in peak flow (relative to a fully forested condition) are expected under the proposal. For unusual storm events (Q2+) the WAR analysis predicted a potential 0.4% (7 CFS) increase in peak flows as a result of the proposal over current conditions, cumulatively in all the streams in the analyzed subwatersheds. Potential peak flow increases of less than a half percent in all of the streams draining the project area would have no effect on ESA listed fish habitat located 2+ miles downstream of the project area.
- *Drainage Network Increase*: The culvert removal proposed in Section 13 near Unit B1 (Unit 4) would restore the connectivity of the intermittent stream that flows through it, but would not change the drainage network increase due to roads because the road would be left in place. The topography along the road is flat and contributes little to road related runoff.

Watershed Conditions (Disturbance History): The project would not result in an increased level of disturbance. Post-project stand densities would be approximately 85-135 TPA; the only activity proposed within Riparian Reserves is the culvert work associated with the approximately 4.7 miles of road renovation (*EA section 2.2.2.1*). No activity would occur in unstable areas or refugia for sensitive aquatic species.

Watershed Conditions

Road Density & Location:

- Construction of two segments of temporary ridgetop road is proposed, totaling approximately 0.05 mile, which would result in a slight short-term increase in the subwatershed road density, but decommissioning this road after harvest activities would maintain the road density in the long-term.
- The construction and decommissioning of the new roads would have no effect on ESA listed fish or their habitat, due to the locations of the roads on ridgetops, the flat slope gradients that the roads would be constructed on, and the distance of the roads from ESA listed fish habitat, approximately 3-5 miles.

Riparian Reserves: The project would have no impact on the function of any Riparian Reserves (RR). See Watershed Conditions, above.

Lower Clackamas Tributary 6th Field Watershed Within The Middle Clackamas 5th Field Watershed:

The Proposed Action would not affect ESA listed fish habitat in the Clackamas River downstream from Clear Dodger B2 (Unit 3), B3 (Unit 2) and B4 (Unit 8). Implementation of the project design features described earlier in this section and in EA section 2.2.2.2 would reduce the risk of effects to streams, which drain into the reservoir. If any were to occur, they would have no effect on ESA listed fish species found in the reservoir or downstream due to the buffering effect of the reservoir.

2.4.4.2 Cumulative Effects

Threatened/Endangered Species: No cumulative effects to ESA listed fisheries are expected because the Proposed Action would maintain the indicators described in the previous section and there would be no direct or indirect effects to ESA listed fisheries.

Other Fish Species: Cumulative effects to fish bearing streams are described in the Hydrology effects, section 2.4.3.2.

2.4.4.3 No Action Alternative

Threatened/ Endangered Species: Since the project is predicted to result in no effect to ESA listed species and habitat, the environmental effects of the No Action Alternative are identical. The road work needed to reduce environmental effects associated with existing roads would not take place. This work includes culvert repair and replacement. There would be no effect to fish because these are non- fish bearing streams.

2.4.5 Wildlife

Affected Environment - Section 2.4.5

Live Residual Old Growth Trees, Snags and Coarse Woody Debris (CWD)

Table 13 summarizes live residual old growth trees, snags, and CWD within each thinning unit based on Stand Exam Data.

Table 13: *Summary Of Live Residual Old Growth Trees, Snags and Coarse Woody Debris (CWD) within each thinning unit, based On Stand Exam Data*

Unit	Location	Live Residual Old Growth Trees?	Snags per acre		Snags			CWD** counting toward 240 lineal feet (RMP p. 25)
			Decay class 1,2	Decay class 3,4,5	Mean DBH	Height Range (feet)	Old Growth Snags Present?	
A1 (Units 5 & 9)	4S-4E-23	Y	50*	2	11	18-56	Y	0
B1 (Unit 4)	4S-4E-13	N	0	0	NA	NA	Y	0
B2 (Unit 3)	4S-4E-13	N	29*	6	18	15-55	Y	0
B3 (Unit 2)	4S-4E-13	N	27*	1	13	28-51	N	0
B4 (Unit 8)	4S-4E-13	N	0	0	NA	NA	N	0
B5 (Unit 1)	4S-4E-13	N	0	0	NA	NA	N	0
C1 (Unit 6)	4S-4E-24	N	14*	4	25	15-56	Y	0
D1 (Unit 7)	4S-4E-25	Y	0	5	19	20-33	Y	0

* Smaller snags, usually slightly smaller than the mean DBH of the existing live trees

** CWD is defined in the Northwest Forest Plan (NWFP) as a “Portion of a tree that has fallen or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter. FEMAT” (NWFP p. F-4). CWD that would meet RMP and Northwest Forest Plan (NWFP) management direction are logs at least 20” in diameter at the large end, 20 feet in length, and in decay classes 1 and 2 (RMP p. 25, NWFP p. C-40).

Stand exam data indicate that:

Live Residual Old Growth Trees: Live residual old-growth trees are in low numbers, and are present in only two units in the project area (A1 (Units 5 & 9) and D1 (Unit 7)).

Snags: No snags are present within units B1 (Unit 4), B4 (Unit 8), and B5 (Unit 1). Decay class 1 and 2 snags are present in A1 (Units 5 & 9), B2 (Unit 3), B3 (Unit 2), and C1 (unit 6). These are generally smaller snags, usually slightly smaller than the mean DBH of the existing live trees, and would not provide CWD that would meet the size standards described in the NWFP and the RMP, when they fall to the forest floor. The largest snags present are in decay class 4 and 5, and are scarce throughout the units (0-6 per acre). In the near-term (less than three decades), there is likely to be a deficit of large snags in stands throughout the project area.

Coarse Woody Debris (CWD): CWD that would meet RMP management direction (RMP p. 21) is currently lacking in all units. Down woody material (in pieces at least 5” thick and 8’ long) in decay class 3, 4, and 5 is present throughout the project area (see *Table 13*).

Snag-Associated and Cavity Nesting Species

Birds

Snags currently within the proposed thinning units provide the appropriate size and decay classes (though not in great numbers) to accommodate nesting for *Hairy Woodpecker* and *Red-breasted Sapsucker*, which are relatively common species in the Cascades Resource Area. These two primary cavity excavators use snags with a minimum DBH ranging from 14 to 31 inches. Softer Snags suitable for nest cavities of *Chestnut-backed Chickadee* and *Red-breasted Nuthatch*, also common species, are also available in the project area (species accounts in Marshall, Hunter and Contreras 2003).

Snags suitable for *Pileated Woodpecker* nests are probably available to support at least one nesting pair in the general project area, though adequate numbers (averaged over the project area) of large roosting and foraging snags are not present now.

Vaux's Swift is a fairly common species in the Cascades Resource Area, and is expected in and around the project area. It uses large hollow snags for nesting and roosting, but may range far from nesting and roosting sites while foraging. Old growth snags are present in A1 (Units 5 & 9), B1 (Unit 4), B2 (Unit 3), C1 (Unit 6) and D1 (Unit 7). To the extent that entrances through broken tops, cavities created through natural processes such as heart rot or fire, or cavities excavated by woodpeckers are present in these snags, some suitable nesting and roosting habitat may be present.

Though not a cavity nester/user, *Brown Creeper* is expected throughout the project area. The species nests on sloughing bark of snags in the early stages of decay with a minimum DBH of 16 inches (two studies from the Oregon Coast Range cited in Marshall, Hunter and Contreras). It would use small diameter snags if larger snags are not available, but comparative nest success is not known (Wildlife Report p. 6).

Bats

Three former Protection Buffer bat species are possible within or adjacent to the project area (*silver-haired bat*, *long-eared myotis*, and *long-legged myotis*). These species are associated with caves and mines, bridges, buildings, cliff habitat, or decadent live trees and snags with sloughing bark. Large snags and standing dead trees with bark attached are used variously as solitary roosts, maternity roosts, and hibernacula by these species, and six other bat species associated with Douglas-fir forests (Christy and West 1993). Habitat requirements are similar to *Vaux's Swift*, and the likelihood of habitat availability would be essentially the same.

CWD Associated Species

CWD-associated species are addressed in the Survey and Manage and BLM Special Status and Species section (p.48). In general, habitat conditions are similar between terrestrial forest amphibians and mollusks with respect to required habitat features and microclimate conditions.

Special Habitats

Remote sensing and field surveys indicate that no special habitats such as rock out-crops, caves, mine shafts, talus slopes, or seeps and springs are included in any of the proposed units.

Federally Listed Species – Northern Spotted Owl

The proposed project is not within *northern spotted owl* Critical Habitat. All proposed thinning units are within the GFMA land use allocation. Habitat categories for northern spotted owl are described *Table 13*.

Table 14: *Habitat Categories for Northern Spotted Owl (NSO)*

<i>NSO Habitat Categories within proposed harvest units</i> ³	<i>Units</i>	<i>Acres</i>
Dispersal	A1 (Unit 5 = 5 acres), B3 (Unit 2), B4 (Unit 8), B5 (Unit 1)	23
Suitable	A1 (Units 5 = 5 acres) & Unit 9), B1 (Unit 4), B2 (Unit 3), C1 (unit 6), D1 (Unit 7)	120
Total NSO habitat proposed for thinning		143

Habitat Types:

- Dispersal habitat generally consists of mid-seral stage stands between 40 and 80 years of age with canopy closures of 40 percent or greater and an average DBH of 11". Spotted owls use dispersal habitat to move between blocks of suitable habitat; juveniles use it to disperse from natal territories. Dispersal habitat may have roosting and foraging components, enabling spotted owls to survive, but lack structure suitable for nesting.
- Suitable habitat consists of multi-storied stands 80 years of age or older, has sufficient snags and down wood to provide opportunities for nesting, roosting and foraging. The canopy closure generally exceeds 60 percent. Although the above units are snag deficient, they are still considered suitable owl habitat.

Within the Lower Clackamas and Middle Clackamas fifth-field watersheds, thinning would affect approximately 120 acres of suitable northern spotted owl habitat, and 23 acres of dispersal habitat. The closest known spotted owl activity center (RMP pp. 15, 32), along with its associated reserved habitat is located approximately 1.5 miles from the project area. The project area is out of the provincial home range (1.2 miles) for this owl activity center.

Bureau Sensitive, NWFP/FSEIS Special Attention, and Other Species of Concern

All Special Status Mollusk Species: Surveys for mollusks were conducted in 1999 and 2000 using the Survey Protocol for Survey and Manage Terrestrial Mollusk Species, Version 2.0 (1997). All mollusk species found during these surveys were recorded. No special status mollusk species on the most current Survey and Manage list (*2003 Annual Species summary*) or the current Special Status Species lists (SSSP/ROD) for Cascades Resource Area were found.

Bureau Sensitive

Oregon Slender Salamander: Oregon slender salamander is expected in portions of the project area where down wood of adequate size (generally >16" diameter at the large end and decay class 3, 4, and 5, FEMAT p. IV-149) is found within proposed thinning units. Stand exam data indicates that all of the proposed thinning units include decay class 3, 4 and 5 woody material, though the size of this material is not differentiated. Snags and down logs (large enough to provide long-lasting habitat) in a less-decayed state representing future habitat are present in some units.

Northern Goshawk: The proposed units and surrounding forest provide marginally suitable habitat for goshawks. Individual transient birds have been observed twice outside of breeding season within the South Fork Clackamas canyon, though none have been observed in the Clear Dodger project area. The species is more likely to breed in stands at higher elevations.

Former Survey and Manage Species

Mollusks: See Mollusks, above.

Red Tree Vole: Surveys to protocol (Survey Protocol for the Red Tree Vole, 2000) were conducted on all proposed units in 2001. Six trees with potential nests were identified. Climbers found two old bird nests and four debris piles, but no active or inactive *red tree vole* nests.

Migratory Birds

Studies conducted in western Oregon have helped to define a typical avian community that is most closely associated with even-aged Douglas-fir stands with high canopy closure and low structural diversity. The most common species, all of which are expected to occur in the project area, include *hermit warbler*, *golden-crowned kinglet*, *winter wren*, *red-breasted nuthatch*, and *Swainson's thrush*.

These species are also common (or sometimes more abundant) in stands with greater structural complexity. Based on current habitat conditions, no migratory or resident bird species with BLM special status are expected to occur in the project areas. See the description of cavity nesting birds in the Live Residual Old Growth Trees, Snags and Coarse Woody Debris (CWD) section of Affected Environment for this project area.

Environmental Effects - Section 2.4.5

2.4.5.1 Proposed Action

Live Residual Old Growth Trees, Snags and Coarse Woody Debris (CWD)

Live Residual Old Growth Trees: Design features would protect all of the existing live residual old growth trees. It is expected that any live residual old growth trees would also be protected and retained through future logging operations.

Large Snags (greater than 20" DBH): Design features would protect most, if not all, of existing large snags (at least 20" DBH). This would effectively reserve the best existing habitat features for primary excavators and secondary cavity users such as songbirds, bats and other small mammals. It is expected that any large snags would also be protected and retained through future logging operations. Though not likely, it is possible that snags of this size class may be cut for safety reasons, or fall incidental to thinning operations. Any large snag (greater than 20 inches) that falls for any reason as a result of thinning operations would remain on-site to become CWD habitat, as defined by the NWFP, providing important habitat for a different (but also) key group of dead-wood associated species (pp. 47- 48). All dead wood that is on-site when timber marking takes place would remain on-site, either in the form of standing snags or as down logs, after thinning.

Small Snags (smaller than 20" DBH): Though snags smaller than 20 inches (decay class 1 and 2) are not targeted for harvest, it is likely that at least some of these would be cut for safety reasons, or fall as an indirect result of timber falling and yarding operations. Although some species use snags in smaller (less than 20 inches) size classes, no species are dependent upon snags of this size. Therefore, the loss of these snags to down wood is unlikely to influence presence or abundance of any snag-dependent species.

Snag Enhancement: Decay class 1 and 2 snag numbers in thinning units would be enhanced by up to two per acre, depending on the mortality rate of affected trees. Also, by accelerating the growth of live trees, larger trees would be available sooner (than without thinning), from which additional snags could develop naturally or by management action.

Coarse Woody Debris (CWD): Topping two green trees per acre could contribute material that ultimately could provide CWD that meets RMP Management direction in the Matrix LUA (RMP p. 21). In addition, thinning is expected to increase the amount and size of material that would be available in the long-term, and at the time regeneration harvest, if or when it should occur.

The RMP minimum guideline (at least 20" in diameter at the large end, 20 feet in length, and in decay classes 1 and 2, at least 240 linear feet per acre), or an amount greater than called-for in the RMP, could be met at that time. In thinning units where trees are not now large enough to meet RMP management direction for down logs, the residual stands would take one to two decades for trees to attain adequate average diameter to meet RMP objectives.

Snag-Associated and Cavity Nesting Species

Within the GFMA Matrix Land Use Allocation (LUA), existing snags (especially those over 20 inches DBH) would be protected and maintained to the greatest extent possible, and growth of green trees that could become snags in future stands would be accelerated. Topping of two green trees per acre would enhance nest tree selection options for *Hairy Woodpeckers*, though reducing canopy closure would limit gains for *Pileated Woodpecker* to slightly increased availability of foraging snags. For other snag-dependent species (including bats), the retention of all or most of the existing snags (larger than 20 inches DBH) would maintain existing suitable nest structures, and accelerate the development of snags on two additional trees per acre, which would also be retained through any future regeneration harvest, should it occur. Project 1 would not change the current stand structure within the Riparian Reserve LUA.

CWD Associated Species

See Oregon salamander, p. 52 and mollusks pp. 52, 53.

Federally Listed Species – Northern Spotted Owl

The Clear Dodger proposal was submitted for Formal Consultation with U.S. Fish and Wildlife Service on September 3, 2002. Consultation results are described in *EA section 6.1.1.1. Table 15* summarizes effects to NSO habitat.

Table 15: Northern Spotted Owl (NSO) Habitat Modification as a result of the Proposed Thinning

<i>Proposed Thinning Treatment</i> ¹	<i>Change in NSO Habitat Type</i> ²	<i>Habitat Modification</i> ³	<i>Project Units</i>	<i>Acres Proposed</i>
Thinning in dispersal habitat	Dispersal to Dispersal	Degrade	A1 (Units 5 & 9 = 5 acres), B3 (Unit 2), B4 (Unit 8), B5 (Unit 1)	23
Thinning in suitable (NRF) habitat	Suitable to Dispersal	Downgrade	A1 (Units 5 & 9 = 9 acres), B1 (Unit 4), B2 (Unit 3), C1 (unit 6), D1 (Unit 7)	120
Total Thinning Acres				143

1) Proposed Thinning Treatment:

- Thinning in dispersal habitat can be for forest health or to improve the structural characteristics of a stand. The proposed thinning in dispersal habitat would maintain a minimum of 40 percent average canopy cover throughout the stand and can have long-term benefits to spotted owls by encouraging late-successional characteristics to occur more rapidly.
- Thinning in suitable habitat (Nesting, Roosting, Foraging - NRF) is the partial removal of the over story to meet the site-specific Purpose of and Need for Action (*EA section 2.1*). The proposed thinning in NRF habitat would maintain 40% to 60% average canopy cover.

2) NSO Habitat Types:

- Dispersal habitat generally consists of mid-seral stage stands between 40 and 80 years of age with canopy closures of 40 percent or greater and an average DBH of 11". Spotted owls use dispersal habitat to move between blocks of suitable habitat; juveniles use it to disperse from natal territories. Dispersal habitat may have roosting and foraging components, enabling spotted owls to survive, but lack structure suitable for nesting.
- Suitable (NRF) habitat consists of habitat used by owls for nesting, roosting and foraging. Generally this habitat is 80 years of age or older, multi-storied and has sufficient snags and down wood to provide opportunities for nesting, roosting and foraging. The canopy closure generally exceeds 60 percent.

3) Habitat Modifications:

- Degrade habitat means to affect the quality of spotted owl suitable or dispersal habitat without altering the functionality of such habitat (B.O. p. 5).
- Downgrade suitable habitat means to alter the functionality of spotted owl suitable habitat so that in the short term, the habitat no longer supports nesting, roosting, and/or foraging behavior, but still functions as dispersal habitat (B.O. p. 5). A minimum 60% crown closure is required for a thinned stand to remain suitable habitat, even when other elements, such as potential nesting structures, are protected and retained during thinning operations.

Designated NSO Critical Habitat:

No northern spotted owl Critical Habitat would be affected.

Short Term Effects (less than 20 years)

- 23 acres of dispersal habitat would be altered as a result of thinning these stands, but would be maintained as dispersal habitat after harvest (see degrade, from *Table 15*).
- 120 acres of suitable habitat would be downgraded to dispersal habitat as a result of thinning (See downgrade, from *Table 15*).
- Disturbance associated with thinning (logging, road-building, etc.) may have a temporary negative effect on owls, if present. However, thinning maintains a minimum of 40 percent average canopy cover throughout the stand, therefore maintaining the ability of the habitat to accommodate movement of birds after thinning is completed.

The seasonal restrictions on habitat modification activities (felling, yarding, and road building) on all units would minimize the risk of disturbance if nesting spotted owls are present within disturbance range (0.25 to 0.5 miles) of the units.

Long Term Effects (Greater than 20 years)

- Thinning treatments can have long-term benefits to spotted owls by encouraging late-successional characteristics to occur more rapidly. In the GFMA Matrix LUA, average residual tree diameters would increase (see *Table 2*). These trees would be available for the recruitment or creation of snags, deformed trees and CWD for prey species and nesting opportunities for *northern spotted owls*. As stands respond to thinning, suitable NRF habitat conditions would be attained (in both degraded dispersal and downgraded suitable NRF habitat) at the end of the second decade after thinning.

Bureau Sensitive, NWFP/FSEIS Special Attention, and Other Species of Concern

All Special Status Mollusks Species: Since no former Survey and Manage Mollusk species or current Special Status mollusk species are known to occur in the proposed units, none are expected to be affected. In general, habitat for terrestrial mollusks would be temporarily degraded due to changes in canopy closure and physical disturbance to up to ten percent of the forest floor habitat within the units, though no habitat would be lost. If or when topped trees decay to the point that they fall, habitat for terrestrial mollusks would be enhanced by the addition of long-lasting cover that would decay slowly.

Bureau Sensitive Species:

Oregon Slender Salamander: Habitat conditions where surveys were conducted elsewhere in the Cascades Resource Area indicate that Oregon slender salamander has been able to persist at sites which were subjected to regeneration harvest where sufficient quantities of CWD are retained at the site. Decay class 4 and 5 CWD is available in much of the project area to meet this species needs now. Based on this information, the species would be expected to persist through thinning operations at sites within stands after thinning is completed.

The amount of large wood in decay class 1, 2, and 3 is currently low and is still likely to be deficient for a period of one or more decades. Thinning would assist in making large material available sooner as a result of increasing overall average tree diameters in the next 10 to 20 years. Habitat could be augmented to a minor degree in the interim period by the eventual mortality of the two snags per acre that would be topped, and by smaller, less long-lasting material that falls due to windthrow, disease, insects, and other factors not directly resulting from thinning operations.

Design features would minimize disturbance to existing CWD, though some direct mortality could result from crushing or loss of wood/soil contact. Ground disturbance from tractor skidding trails and other ground-based logging equipment would be limited to ten percent of project unit areas, and therefore, no more than ten percent of potential Oregon slender salamander habitat within any unit. Some microhabitat drying would occur at the forest floor as canopies are opened-up, however, this would be minimal due to the high green tree retention after thinning. As canopies close (10 to 20 years), the effects of microhabitat drying would decrease. In addition, unthinned patches left for mollusk species no longer requiring protection and unthinned Riparian Reserves would provide areas within the project area in which microclimate would not change much, if at all.

Northern Goshawk: No northern goshawks are known to be present in the project area, so none are likely to be affected by thinning. The marginal Northern Goshawk habitat would be temporarily degraded in thinning units due to reduction of canopy closures below current levels. This habitat would become higher quality habitat as structural complexity of stands increases and larger trees become available for nest platforms.

Need to List Sensitive Species: Thinning in the project area would not be expected to contribute to the need to list any Bureau Sensitive species under the Endangered Species Act (IM OR-91-57, Oregon-Washington Special Status Species Policy) because habitat for the species that is known to occur in the project areas would not be eliminated, habitat connectivity would not be changed, any habitat alteration would have only short-term negative effects, and long-term effects would be beneficial.

Former Survey and Manage Species

Mollusks: See All Mollusks, above. Oregon Megomphix (snail) was removed from the most current Survey and Manage list (2003) after surveys were conducted. Seventeen sites were located during surveys. These sites were buffered within proposed units, and these buffers would remain intact (see *Unit Maps* in *EA section 2.5.3*). Since existing canopy closure would be maintained at these buffers, microclimate conditions would be relatively less altered, maintaining more optimal habitat conditions for a longer portion of the year.

Red Tree Vole: Since no nests were located during protocol surveys, no direct effects to any individual nest sites are anticipated. Suitable habitat in Riparian Reserves, areas dropped from the Proposed Action, and adjacent stands not included in the proposal (including Riparian Reserves in which snags are created) would provide refugia (in which average canopy closure is maintained) for the species during and after implementation.

Migratory and Resident Birds

Changes in habitat structure are expected to have an immediate effect on bird communities in thinned stands. Thinning densely-stocked conifer stands would be expected to immediately enhance habitat suitability for species which prefer a less dense conifer canopy, and reduce habitat suitability for a small number of species (<5) that prefer continuous conifer canopies. Individuals of some species would be displaced from thinned areas, but would likely find refugia in nearby unthinned patches, and slowly return as stands respond to thinning and canopy closes. No species would be likely to become extirpated in stands as a result of thinning, though some less common species would be likely to enter thinned stands immediately in response to reduced canopy closure and tree density.

After the initial disturbance from thinning has passed, overall bird species richness (a combination of species diversity and abundance) would be expected to gradually increase for up to 20 years (prior to the closing of the canopy again) as hardwood components of stand structure develop, plant species composition becomes more complex, and hardwood shrub layers, epiphyte cover, and snag density become more prominent within the stands.

2.4.5.2 *Cumulative Effects*

Live Residual Old Growth Trees and Snags (Projects 1 and 2):

The scale for assessing cumulative effects to these habitat features is the project area and lands currently in forest cover in all ownerships adjacent to project area units. This scale was chosen because overlapping effects to snag-dependent species could occur as a result of implementing Projects 1 and 2 as described at approximately the same time (one to five years) as timber harvest on surrounding private industrial forest land. Snag-dependent species generally have a moderate to high level of mobility between habitat patches, and are able to move between discontinuous habitat patches.

For the surrounding private industrial forests (**PIF**) in the affected watershed, it is presumed that:

- Snags and residual old growth trees are rare to non-existent;
- Where these habitat features exist, none are expected to be protected during regeneration harvest;
- No snag enhancement is likely to occur, since trees are harvested before reaching CWD size;
- Displacement of any snag-dependent species that are present is certain to occur as a result of regeneration harvest.

For federal lands in the affected watershed, it is presumed that:

- Most or all existing snags (greater than 20" DBH) would be protected and retained in thinning units and in Riparian Reserves;
- Any displacement of species would be accommodated some degree by the protection existing snags in thinning units and in Riparian Reserves.

Project 2 would result in the development of additional (future) snags, augmenting snags available for displaced species in Riparian Reserves adjacent or in the vicinity of the Clear Dodger proposed thinning units.

Beneficial cumulative effects to snag dependent species may occur as a result of implementing Projects 1 and 2. As a result of these projects, habitat conditions would be maintained (with minor losses to CWD as a result of Project 1) or enhanced (depending on the immediate results of Project 2) in the short term. In the near future, snag habitat created as a result of Projects 1 and 2 could accommodate species displaced as a result of regeneration harvest on private industrial forests.

Survey and Manage and BLM Special Status Species: Oregon slender salamander is not a very mobile species, with very limited ability to move between discontinuous habitat patches. Therefore, the scale for assessing cumulative effects to this species is the project area and lands in all ownership immediately adjacent to project area units.

It is presumed that BLM and U.S. Forest Service lands in the affected watershed would provide nearly all of the potential habitat for species that require CWD (as defined in the NWFP). Though Oregon slender salamander (and other CWD-dependent species) have probably persisted in PIF lands where CWD was left after the last regeneration harvest, trees on PIF land are unlikely to be allowed to grow large enough to augment existing CWD.

The cumulative effect to CWD-dependent species would be that suitable habitat conditions would be maintained in the short term in the project areas, providing refugia for low-mobility amphibians and invertebrates that would be displaced from portions of PIF harvest units that are immediately adjacent to BLM lands. Implementing the two projects would not eliminate connectivity between project units or adjacent untreated stands under BLM management.

Migratory and Resident Birds: The scale for assessing cumulative effects to bird species and bird communities is probably best defined at the landscape level, since all birds are highly mobile and do not require continuous habitat for dispersal. For the purposes of this analysis, this could be described as the fifth-field watershed. Regardless of the landscape scale that is chosen, the habitat changes resulting from the two projects would not eliminate any forest cover or change habitat patch size. Therefore, thinning and snag creation would not contribute to a fundamental change in the species composition of existing bird communities within the watershed. Therefore, no adverse cumulative effect would occur to migratory birds.

Northern Spotted Owl: The scale for cumulative effects for the northern spotted owl is the provincial home range of any known owl site. The scale was chosen because a goal for conservation and recovery for northern spotted owl would be to maintain suitable owl habitat within the provincial home range of known northern spotted owl sites (known owl sites), and maintain dispersal habitat between LSRs and known owl sites. The Proposed Action for both projects would not contribute to cumulative effects to northern spotted owls because the Proposed Action maintains dispersal habitat within and between known owl sites and maintain suitable habitat within known owl sites.

2.4.5.3 No Action Alternative

Live Residual Old Growth Trees, Snags and Coarse Woody Debris (CWD): Stand structural diversity would develop more slowly without thinning.

Stands would take longer to develop late successional habitat conditions, and animal communities would remain less diverse for a longer period of time. In GFMA Matrix areas, desirable habitat elements such as large trees, snags and CWD would not develop as quickly to provide a greater array of habitat options for a greater number of animal species over the life of the stand.

Federally Listed Species – Northern Spotted Owl: There would be no change in the development of spotted owl habitat conditions, and no effect to spotted owls. Suitable habitat would continue to be suitable habitat until thinning or regeneration is implemented at some future time. Dispersal habitat would take longer to develop suitable habitat conditions without thinning, developing slowly over time on its current trajectory.

Survey and Manage and BLM Special Status Species

There would be no change in the development of habitat conditions for Survey and Manage BLM Special Status Species. Specifically, terrestrial Mollusk and Oregon Slender Salamander habitat conditions would slowly become less suitable as existing well-decayed CWD disappears and no new of suitable size material (or material too small to last long) falls to the ground to replace it. Deficiencies in supplies of wood large enough to provide future habitat (in decay class 1, 2, and 3) would occur over the next two to three decades if the current stand development trajectory continues. This deficit of CWD of suitable size would last longer without thinning.

Habitat would be augmented to a minor degree in the interim period by the addition of smaller, less long-lasting material, primarily due to suppression mortality (competition for resources between trees), disease, insects, and other factors. If or when regeneration harvest occurs in GFMA Matrix stands, trees available for CWD would be smaller and not last as long on the forest floor.

Migratory and Resident Birds :

There would be no immediate change in the development migratory and resident bird habitat and no effect to these species. Habitat conditions would remain as described in the Affected Environment, and would continue to develop slowly over time. Species richness of bird communities would not reflect the enhancement of vegetative diversity, and include fewer species for a longer period of time.

2.4.6 Visual Resources, Recreation and Rural/Urban Interface

Affected Environment - Section 2.4.6

Visual Resources

The intermixed land ownership pattern between public and private forest land in the vicinity of the proposed units, greatly limits the BLM's ability to manage this area as a contiguous viewshed. Timber harvest activities near or adjacent to the units are observable on private and public lands.

VRM Class II: The Salem District RMP calls for managing Class II lands for low levels of change and retention of the existing landscape character. Management activities may be seen, but should not attract the attention of the casual observer.

Units B4 (Unit 8) and B5 (Unit 1): During a field review, several key observation points (See Key Observation Point Map and VRM Class 2 Photos, Recreation/Visual Resources Report, Clear Dodger NEPA File) were identified for Units B4 (Unit 8) and B5 (Unit 1) from Highway 224 and North Fork Reservoir. Within the two miles between Observation Points 1 through 6, intermittent views of one or both of the units are observable. The units are more observable traveling southeast rather than northwest on Highway 224.

Observation Point 4 is from along the shoreline of North Fork Reservoir from a concrete dock (accessed by Faraday Road). Portions of B5 (Unit 1) are observable. There is a recent harvest unit adjacent to Unit B5 (Unit 1) making it possible for observers to see a full profile of the trees in the unit. It appears that little or none of Unit B4 (Unit 8) is observable from this viewpoint. The length of time that Unit B5 (Unit 1) and possibly B4 (Unit 8) is observable from the reservoir would be dependent upon the location, duration and type of observer activity.

VRM Class III: The Salem District RMP calls for managing Class III lands for moderate levels of change and partial retention of the existing landscape character. Management activities may attract the attention, but should not dominate the view of the casual observer.

A1 (Units 5 & 9) and C1 (unit 6): During a field review, portions Hillockburn Road directly adjacent to or near the units were identified as the key observation points (See Key Observation Point Map). The units would be in view for less than a minute driving either direction along Hillockburn Road. Glimpses of the units from other locations may be possible, but no specific viewpoints were identified.

VRM Class IV: The Salem District RMP calls for managing Class IV lands for moderate levels of change with the allowance for major modifications to the existing landscape character. Management activities may dominate the view and be the major focus of viewer attention.

B1 (Unit 4), B2 (Unit 3), B3 (Unit 2) and D1 (Unit 7): These units are seldom seen. Little or none of the units appear to be observable from major public travel routes, recreation areas, residences, or other key observation points. No special visual features or specific concerns were identified.

Recreation: All of the proposed units are characterized by a forest setting and are accessed by either Hillockburn Road or gravel forest roads. Evidence of man-made modifications (roads, timber harvest, utilities, residential development) is common on both private and public lands in the general area around the units. Timber harvest activities are likely to continue on private and public forest lands in the vicinity of the units. There are no developed recreational facilities within or near any of the units. Hillockburn Road is frequently used by the public to access public lands. Roads leading to A1 (Units 5 & 9) and B1 (Unit 4) through B5 (Unit 1) are currently gated, limiting public motorized access. Spur roads leading into Unit C1 (unit 6) are also blocked.

Recreational use of the units appears to be low. Some of the recreational activities that may occur include camping, hunting, target shooting, hiking, and horseback riding. Off-road use by motorized vehicles was not evident in any of the units, but does occur in the general area.

Rural Interface: None of the proposed units are in a Rural Interface Area. There are several residences located along Hillockburn Road. There is a residence near the eastern boundary of C1 (unit 6). It is expected that haul routes would pass by these residences. Log truck traffic has historically occurred on Hillockburn Road and other nearby timber haul routes.

Environmental Effects - Section 2.4.6

2.4.6.1 Proposed Action

Visual Resources

B4 (Unit 8) and B5 (Unit 1): Changes to the landscape character are expected to be low and would comply with Class II guidelines. Some disturbance, during and shortly after thinning activities may be observable. This disturbance would be more evident in Unit B5 (Unit 1). Most of the disturbance would be associated with modifications to vegetation. The proposed thinning would maintain 40% canopy cover and seen portions of the units are expected to return to a more natural appearance within five years as disturbed understory vegetation returns. There would also be some short-term (days) decline in visual quality as a result of the smoke created if debris piles are burned. The units would be burned in compliance with state smoke management regulations.

A1 (Units 5 & 9) and C1 (unit 6): Changes to the landscape character are expected to be low and would comply with Class III guidelines. Impacts are similar to those described for B4 (Unit 8) and B5 (Unit 1).

B1 (Unit 4), B2 (Unit 3), B3 (Unit 2) and D1 (Unit 7): Changes to the landscape character are expected to be low and would comply with Class IV guidelines. Impacts are similar to those described for B4 (Unit 8) and B5 (Unit 1).

Recreation and Rural Interface

Recreational use of the proposed units would be restricted in the short term during the thinning operation. A forest setting would still be maintained, and vegetation disturbed by logging activities would be expected to return within five years. The thinning of the units would open up the stand, which may make it easier to walk through the units. Recreational use of the units behind gates is expected to remain low. There may be slight increases in use of units still accessible by a motorize vehicle. Off-road motorized vehicle use is not expected to increase substantially because roads opened during the thinning process would be closed or blocked after operations are completed.

Rural Interface: There may be some disturbance to nearby residences associated with logging and hauling activities (weeks).

2.4.6.2 No Action Alternative

Visual Resources: With the exception of unplanned changes (i.e. wildfire, disease etc.) no modifications to the landscape character of the proposed units would be expected to occur. Modifications to the landscape character in the general area around the units would still be expected, as a result of harvesting activities on other lands.

Recreation and Rural Interface: With the exception of unexpected changes (i.e. wildfire or disease), the proposed units would continue to provide a forest setting for dispersed recreational activities. A short-term increase in log truck traffic, or other disturbances related to the harvest of the units would not occur. Log truck traffic from other lands in the vicinity would most likely still occur.

2.4.7 Fire Hazard and Risk / Air Quality

Affected Environment - Section 2.4.7

Air Quality: There are a number of rural residents along the Hillockburn Road in the vicinity of the project area. These residents could be affected by residual smoke from burning piles. Smoke output is expected to be of short duration and burning would comply with the Oregon Department of Environmental Quality Smoke Management Program.

Fire Hazard and Risk: Fire is the primary natural disturbance factor over the landscape and causes the greatest ecological effects over space and time. The primary sources of fire ignitions are lightning and humans. Fire effects resulting from these fire sources are varied. Under normal conditions, fire starts cannot develop enough energy to do extensive damage to the landscape because of the required energy to evaporate the high amounts of internal water in the combustion phase of burning carbon-based fuels. With drought conditions and less water to evaporate, fire energy levels are much higher, and the outcome is greater fire effects over a wider geographical area. Fire effects may include: 1) total tree mortality, 2) elimination of the duff and litter layers, 3) reduction of the downed woody component, especially logs in later stages of decay, 4) increased erosion and sedimentation of water courses, and 5) formation of snags.

Environmental Effects - Section 2.4.7

2.4.7.1 Proposed Action

Air Quality: There would be some short-term (days) decline in visual quality as a result of the smoke created if debris piles are burned. The units would be burned in compliance with state smoke management regulations.

Fire Hazard and Risk: Thinning is expected to result in increased fire risk potential because of the increased slash (tops of trees, other limbs, etc). Reduction of the thinning slash along open roads would reduce the potential for a fire start to spread rapidly and increase the probability that the fire could be easily contained and controlled. Risk would be greatest during the first year "red needle stage". Fire risk along the roads would be reduced when slash piles are burned off.

The thinning from below also results in a reduction of canopy, ladder and surface fuels, thereby reducing both the intensity and severity of potential wildfires (Graham, etal, 2004). Directional felling along open roads/trails or private property would move the finer fuels further away from potential human caused ignition sources and leave a fuel free area.

Total fuel load for these project stands immediately following felling ranges between 40 to 60 tons/ac. After yarding occurs the dead fuel load left on site would range between 5 to 30 tons per acre with 10 to 20 tons being less than 3 inches in diameter (fine fuels). (Photo Series for Quantifying Natural Forest Residues In Common Vegetation Types of the Pacific Northwest, General Technical Report PNW-105, May 1980 and PNW-51, 1976 and Aids to Determining Fuel Models for Estimating Fire Behavior, GTR-INT-122, April 1982).

2.4.7.2 No Action Alternative

With the exception of unexpected changes (i.e. wildfire) there would be no change to air quality from current conditions. A short-term increase in smoke from pile burning, dust and exhaust from log truck traffic, or other disturbances related to the harvest of the units would not occur.

2.4.8 Public Access and Use

Affected Environment - Section 2.4.8

Approximately 2.75 miles of existing roads within the project area are behind locked gates, limiting vehicle access. On some open roads on public land feeding into the Hillockburn road, garbage dumping on public lands adjacent to roads, off road vehicle use and timber theft have occurred.

Environmental Effects – Section 2.4.8

Unauthorized use would be curtailed by closing and/or blocking roads currently used for garbage dumping, OHVs, and timber theft. Repairing gate on at the junction of 4-4E-24.00 and 4-4E-30 would limit access on an additional 0.5 mile of existing road (see *Table 3*). Approximately 1.5 miles of existing roads (4-4E-23, 4-4E-24.01, 4-4E-24.02, and 4-4E-24.03, 4-4E-30) would be newly blocked using a trench and berm (see item # 1 under the connected actions, *EA section 2.2.2.1*), eliminating vehicle access.

After implementing the Clear Dodger Project:

- Approximately 3.25 miles of existing road would be behind gates, limiting vehicle access (2.75 miles currently behind working gates and 0.5 mile behind the gate to be repaired).
- Approximately 1.5 miles of road existing road would be blocked using a trench and berm, eliminating vehicle access.
- Approximately 0.05 mile of new road construction would be decommissioned and blocked using a trench and berm, eliminating vehicle access.

2.4.9 Comparison of Alternatives With Regard to Purpose and Need

Table 16: Comparison of Alternative by Purpose and Need

Purpose and Need (EA section 2.1)	No Action	Proposed Action
Develop timber sales that can be successfully offered to the market place; achieve a desirable balance between wood volume production, quality of wood, and timber value at harvest (RMP p. D-3); and provide a sustainable supply of timber as described in the RMP (p. 1, 46, 47)	Does not fulfill.	Fulfills.
Retain elements that provide ecosystem diversity (snags, old growth trees, etc.) so that a healthy forest ecosystem can be maintained with habitat to support plant and animal populations (RMP p.1, 20).	Fulfills by maintaining current trends that develop diversity slowly (EA sections 2.4.1, 2.4.5).	Fulfills by accelerating changes in some parts of some stands to develop more elements of diversity faster (EA sections 2.4.1, 2.4.5).
Provide access for timber harvest and silvicultural practices.	Partially fulfills. Would delay maintenance on feeder roads, making access for silvicultural practices more difficult. Main routes would be maintained under both alternatives. Would not preclude future maintenance for management activities.	Fulfills. Would implement maintenance on feeder roads, allowing continued access for management activities.
Reduce potential human sources of wildfire ignition and unauthorized uses (e.g. garbage dumping, unauthorized OHV use, timber theft) by controlling access;	Partially Fulfills. Currently 2.75 miles of road are behind working gates. The gate on Road 4-4E-30 would not be repaired. Roads shown on the maps. Gates would not be repaired and roads would not be blocked Unauthorized use would continue. .	Fulfills. Currently 2.75 miles of road are behind working gates. This project also provides an opportunity to block access to several road spurs (See EA section 2.2.5) where unauthorized use is taking place. (EA section 2.4.8) Repairing the gate on Road 4-4E-30 would control access, reducing unauthorized use.
Reduce environmental effects associated with identified existing roads within the project area.	Does not fulfill: Replacing culverts that are not up to standards would not take place (EA sections 2.4.3).	Fulfills. Replacing culverts near D1 (Unit 7) would reduce the environmental associated with existing roads.

3.0 PROJECT 2 – (CLEAR DODGER RIPARIAN RESTORATION)

3.1 Purpose of and Need for Action

The *Upper Clear Creek Watershed Analysis* identifies that much of the landscape, including Riparian Reserves, has been altered by past management. The net result is that late-successional stand structure and the habitat it provides is limited across the watershed. There is a need to restore some complexity to a simplified Riparian Reserve network. It also recognizes that there is a general scarcity of standing and down dead wood in the early stages of decay across the watershed. There is an opportunity to restore to a small part of the watershed some of the structural attributes that are lacking due to past management.

In summary, the purpose of and need for action is to:

- Develop future large coarse woody debris, snag habitat, in-stream large wood and other elements of late-successional forest habitat (RMP p.1).
- Increase vegetative structural diversity in Riparian Reserves (e.g. increased crown development, clumps, and gaps).

3.2 Alternatives

3.2.1 Alternative Development

No unresolved conflicts concerning alternative uses of available resources (section 102(2) (E) of NEPA) were identified. No alternatives were identified that would meet the purpose and need of the project and have meaningful differences in environmental effects from the Proposed Action. Therefore, this EA will analyze the effects of the “Proposed Action” and the “No Action Alternative”.

3.2.2 Proposed Action

On approximately 150 acres, the BLM proposes to create up to 8 snags per acre from green conifer trees greater than 20 inches in diameter within the Riparian Reserve Land Use Allocation (LUA) in sections 13, 23, 24 and 25. (See EA project unit maps, *EA section 2.2.5*). Base girdling, top girdling, or a combination of both treatments would be utilized to accomplish the task. The girdled trees would be both clumped to create or expand existing canopy gaps to provide for enhanced understory development; and would be created individually across the landscape. Additionally, within the Riparian Reserve LUA in Section 25, base girdling up to 8 green understory trees, (less than 20 inches in diameter), per acre would take place. This treatment would also be done in clumps that coincide with overstory tree girdling. No wood removal is proposed for these treatments.

3.2.2.1 Project Design Features

Tree selection would be designed to ensure that there would be no increase in water temperature from loss of existing tree shade. The treatments may be accomplished in two pulses spaced four years between treatments to minimize risk of potential Douglas-fir bark beetle damage to residual green trees.

3.2.3 No Action Alternative

The Proposed Action and connected actions would not be implemented. Management activities and other uses (e.g. road use, harvest of special forest products on public land) would continue on USFS, BLM, and non-federal lands within and adjacent to the project area according to plans for those areas. This alternative also serves to set the environmental baseline for comparing effects to the Proposed Action.

3.3 Affected Environment

EA section 2.4 describes the affected environment for the Clear Dodger project area. This section describes the affected environment, specific to Project 2. The environmental effects of Project 2 are described in *Tables 17 and 18*.

3.3.1 Vegetation and Forest Stand Characteristics

Affected Environment – Section 3.3.1

Forest Stands within the Riparian Reserve Land Use Allocation

The following site descriptions of the Riparian Reserves within the Clear Dodger project area come from District records and field reconnaissance.

T.4S., R.4E. Sec 13

Approximately 10 percent of the Riparian Reserves in this section are classed as either non-forest or in an early successional stage with little or no structural development or species diversity. The remaining 90 percent is more of a mid-seral mix of stands, with age classes ranging from 40 to 80 years. Some of the 80-year-old acres were commercially thinned in the mid 1970's. Species composition is good, tree sizes range up to 28 inches DBH, but structural components such as Class 1 or 2 large down wood and large snags are not commonly found.

T.4S., R.4E. Sec 23

Approximately 50 percent of the Riparian Reserves here are classed as 50-year-old mid-seral stands. Species composition is a mix of conifers and hardwoods with little structural development. Tree sizes range up to 18 inches DBH, and there is little in the way of large down wood or large standing snags. The remaining 50 percent is an older mid-seral timber type of 80 years that is mostly conifer. Much of it was thinned in the mid-1970's and tree sizes range up to 28 inches. Structural attributes such as Class 1 or 2 large down wood and large snags are not commonly found.

T4S., R4E. Sec 24

One hundred percent of the Riparian Reserves here are classed as an older mid-seral conifer timber type of 80 years. These acres were also commercially thinned in the mid-1970's. Tree sizes range up to 28 inches DBH, but structural attributes such as Class 1 or 2 large down wood and large snags are not common. A large component of conifer understory trees was initiated when the stand was commercially thinned.

T.4S., R.4E. Sec 25

One hundred percent of the Riparian Reserves here are classed as an older mid-seral conifer timber type of 80 years. These acres were also commercially thinned in the mid-1970's. Tree sizes range up to 28 inches DBH, but structural attributes such as Class 1 or 2 large down wood and large snags are not common. A large component of conifer understory trees was initiated when the stand was commercially thinned. This is most pronounced in the Riparian reserve associated with the creek on the east property line. Here, the overstory supports approximately 65 large trees per acre with a thick understory of approximately 140 four to eight inch diameter trees per acre.

The understory development has been good, but is stagnating now due to lower available light afforded by the large, well developed crowns of the overstory, and the large numbers of understory trees on the site. The sizeable gap between these two canopy levels would remain for decades due to this stagnation.

3.4 Environmental Effects

The interdisciplinary team reviewed the elements of the human environment, required by law, regulation, Executive Order and policy, to determine if they would be affected by the Proposed Action. *Table 16* (Critical Elements of the Environment) and *Table 17* (Other Elements of the Environment) summarize the results of that review. Affected elements are **bold**. All entries apply to the Proposed Action, unless otherwise noted.

Table 17: Review of Critical Elements of the Environment (BLM H-1790-1, Appendix 5) for Project 2

<i>Project 2 - Clear Dodger Riparian Restoration</i>			
<i>Critical Elements Of The Environment</i>	<i>Status: (i.e., Not Present, Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Yes/No</i>	<i>Remarks</i>
Air Quality (Clean Air Act)	Not Affected	No	No burning would take place
Areas of Critical Environmental Concern	Not Present	No	
Cultural Resources	Not Affected	No	All of the treatment areas have been surveyed for cultural resources. No cultural resources were found. Addressed in text <i>EA section 2.2.2.2</i> .
Energy (Executive Order 13212), Adverse Impacts	Not Affected	No	There are no known energy resources located in the project area. The Proposed Action would have no effect on energy development, production, supply and/or distribution.
Environmental Justice (Executive Order 12898)	Not Affected	No	The Proposed Action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Prime or Unique Farm Lands	Not Present	No	
Flood Plains (Executive Order 11988)	Not Present	No	
Hazardous or Solid Wastes	Not Present	No	

Project 2 - Clear Dodger Riparian Restoration			
Critical Elements Of The Environment	Status: (i.e., Not Present, Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Invasive, Nonnative Species (plants) (Executive Order 13112)	Not Affected	No	The proposed tree girdling is not a ground disturbing project.
Native American Religious Concerns	Not Affected	No	None were identified during the scoping process
Threatened or Endangered (T/E) Species or Habitat	Fish	Not Affected	The proposed tree girdling is not a ground disturbing project. No trees contributing to shade within the primary or secondary shade zones would be girdled.
	Plant	Not Present	
	Wildlife - Bald Eagle	Not present	
	Wildlife - Northern spotted owl (NSO)	Affected - Beneficial	No
Water Quality (Surface and Ground)	Not Affected	No	The proposed tree girdling is not a ground disturbing project. No trees contributing to shade within the primary or secondary shade zones would be girdled.
Wetlands/Riparian Zones (Executive Order 11990)	Not Affected	No	The proposed tree girdling is not a ground disturbing project. No trees contributing to shade within the primary or secondary shade zones would be girdled.
Wild and Scenic Rivers	Not Present	No	
Wilderness	Not Present	No	

Table 18: Review of Other Elements of the Environment for Project 2

Project 2- Clear Dodger Riparian Restoration			
Other Elements of the Environment	Status: (i.e., Not Present, Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Coastal zone	Not Present	No	
Fire Hazard/Risk	Not Affected	No	
Other Fish Species with Bureau Status and Essential Fish Habitat (EFH)	EFH – Not Present Fish habitat – Not Affected	No	There is no Essential Fish Habitat, as defined in the Magnuson-Stevens Fishery Conservation and Management Act, present within or adjacent to the project area. The proposed tree girdling is not a ground disturbing project. No trees contributing to shade within the primary or secondary shade zones would be girdled.
Forest Health	Affected	No	After the girdled trees die, local Douglas-fir bark beetle population may increase. Because of the small scale of the proposal, and by implementing project design features with respect to minimizing potential bark beetle damage, the risk of sustaining additional mortality to residual green trees is considered to be low.

Project 2- Clear Dodger Riparian Restoration				
Other Elements of the Environment		Status: (i.e., Not Present, Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Land Uses (right-of-ways, permits, etc)		Not Affected	No	
Late Successional and Old Growth Habitat		Old Growth Habitat – Not Present	No	No old growth stands are present within the project area.
		Late successional Habitat – Affected (Beneficial)	No	The Proposed Action would have a beneficial effect on late successional habitat by increasing the number of large snags from overstory girdling. The placement of the girdled trees would create or enhance clumps and gaps within the Riparian Reserve Land Use Allocation.
Mineral Resources		Not Present	No	
Recreation		Not Affected	No	
Rural Interface Areas		Not Affected	No	
Soils		Not Affected	No	Since only tree girdling (either at the base or near the top of the tree) is proposed by this action, riparian reserve treatment would not impact soil resources or long-term site productivity. The proposed tree girdling is not a ground disturbing project.
Special Areas outside ACECs (Within or Adjacent) (RMP pp. 33-35)		Not Present	No	
Other Special Status Species / Habitat		Plants	Not Affected	The proposed tree girdling is not a ground disturbing project.
		Wildlife	CWD dependent Species Affected - Beneficial	No Northern Goshawk: No substantive effect would occur in RR areas in which snags are created. Oregon Slender Salamander: Habitat conditions in treated Riparian Reserves would be enhanced by an augmentation of CWD as the eight created snags per acre begin to fall over the next one to two decades. These portions of the project area would be expected to provide indefinite refugia for the species, with relatively stable microclimate conditions (barring catastrophic stand-replacement fire or loss to extreme windstorms) and the likelihood of more regular inputs of CWD. Addressed in Text, EA section 2.4.5.1
Visual Resources		Not Affected	No	The tree girdling at this scale would look like the surrounding forest.
Water Resources – Other (303d listed streams, DEQ 319 assessment, Downstream Beneficial Uses; water quantity, Key watershed, Municipal and Domestic)		Not Affected	No	

Project 2- Clear Dodger Riparian Restoration			
Other Elements of the Environment	Status: (i.e., Not Present, Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Wildlife Structural or Habitat Components - Other (Snags/CWD/ Special Habitats)	Snags/CWD Affected - Beneficial	Yes, Beneficial Effect	<p>Proposed Action: By creating up to eight snags per acre in the older conifer-dominated portions of the Riparian Reserves, the process of natural decay and snag recruitment would be enhanced and accelerated. In previously thinned stands, these treatments would accelerate the process of snag recruitment where the dead wood component that was largely eliminated at the time of previous logging operations. Limited tree girdling (up to 8 per acre) of the understory would provide less long-lived small woody material in the form of snags and down logs for one to two decades, and enhance crown development of adjacent residual understory trees.</p> <p>Snag-Associated and Cavity Nester Species: Snag creation would enhance habitat for all primary cavity excavating woodpeckers and other cavity excavating or cavity-nesting birds listed in the Wildlife report (pp. 5,6), providing key habitat conditions for an indefinite term. The combination of an increase in the number of hard snags for nesting, roosting and foraging, coupled with maintenance of canopy closure over 70 percent, would be especially beneficial for Pileated Woodpeckers.</p> <p>CWD Associated Species: Habitat conditions would be enhanced by an augmentation of CWD as the eight created snags per acre begin to fall over the next one to two decades. These portions of the project area would be expected to provide indefinite refugia for the species, with relatively stable microclimate conditions and the likelihood of more regular inputs of CWD.</p>
Wildlife Structural or Habitat Components - Other (Snags/CWD/ Special Habitats)	Snags/CWD Affected - Beneficial	Yes, Beneficial Effect	<p>No Action: Current conditions would continue. Dead wood habitat and structural diversity could remain at current low levels for potentially many more decades.</p> <p>Cumulative Beneficial Effects - Addressed in Text, EA section 2.4.5.2.</p>

4.0 COMPLIANCE WITH AQUATIC CONSERVATION STRATEGY

4.1 Compliance with the Four Components of the Aquatic Conservation Strategy

Table 19 shows the projects' compliance with the four components of the Aquatic Conservation Strategy, (1/ Riparian Reserves, 2/ Key Watersheds, 3/ Watershed Analysis and 4/ Watershed Restoration). Unless otherwise specified, this table applies to both projects.

Table 19: Compliance of Components of the Aquatic Conservation Strategy

<i>ACS Component</i>	<i>Project Compliance and Effects</i>
Component 1 - Riparian Reserves	<p><i>General:</i> The Riparian Reserve boundaries would be established in compliance with direction from the Salem District Resource Management Plan (p. 10), on pages 58 and 80 of the <i>Upper Clear Creek Watershed Analysis</i> and on page 6-3 of the <i>Lower Clackamas River Watershed Analysis</i>. Maintaining canopy cover along all streams and the wetlands would protect stream bank stability and water temperature. Additionally, there would be no road construction within the Riparian Reserve.</p> <p><i>Project 1:</i> Proposed Action - Commercial Thinning would take place outside of Riparian Reserves (RR's) and except for the thinning effect on the edges of the Riparian Reserves adjacent to the thinning units, there would be no impact to the Riparian Reserves. By thinning that forest immediately adjacent to the RR's, the trees on the thinned edge would receive an increase in light, water and nutrients. A slight increase in tree growth, as well as increased growth of the brush and shrub layers may be expected along this interface zone. Blocking roads would eliminate traffic and garbage dumping. Culvert repair and replacement would improve drainage structures within Riparian Reserves.</p> <p>No Action - The slight increase in tree and understory vegetation growth along the interface zone between the Riparian Reserves and the thinning units would not occur. Garbage would continue to pile up where secondary roads pass through reserves. The improperly installed and failing culvert on the road to B1 (Unit 4) would continue to be dysfunctional and contribute sediments to the aquatic system.</p>
Component 1 - Riparian Reserves	<i>Project 2</i> – Snag Creation: See <i>EA section 3.4</i> .
Component 2 - Key Watershed	The Lower Clackamas River 5 th field watershed is not a Key Watershed (RMP p. 6). The Clackamas River Corridor (within the Middle Clackamas 5 th field watershed) is a key watershed, however, the project area is not within the Clackamas River Corridor .
Component 3 - Watershed Analysis	The <i>Upper Clear Creek Watershed Analysis</i> (completed in September 1995) and the <i>Clear Creek/Foster Creek Watershed Analysis</i> (completed in November 2002) cover that portion of the project area within the Middle Clear Creek and Upper Clear Creek 6 th field watersheds (see <i>Table 1</i>). The <i>Lower Clackamas Watershed Analysis</i> (completed in December 1996) covers that portion of the project area within the Lower Clackamas River Tributary 6 th field watershed. Projects 1 and 2 are consistent with the recommendations in the Watershed Analyses.
Component 4 - Watershed Restoration	Project 2 would increase stand diversity in Riparian Reserve LUA by developing snags and large down woody debris, habitat features which are lacking in the project area. (Upper Clear Creek RR LUA) See component 1.

4.2 Compliance with the Nine Aquatic Conservation Strategy Objectives

Table 20: Evaluation of the Projects With Regard To the Nine Aquatic Conservation Strategy Objectives

Aquatic Conservation Strategy Objectives (ACSOs)	Project 1 – Timber Sale	Project 2 – Riparian Restoration
<p><i>1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features.</i></p>	<p>Does not prevent the attainment of ACSO 1. <i>Proposed Action within the Matrix LUA:</i> Thinning in the Matrix LUA would increase the growth rates of the residual trees remaining after thinning. This would result in larger, healthier trees with fewer stems per acre. The wider spacing of the residual trees would result in increased growth of understory trees and shrubs, which would provide a richer more diverse habitat for wildlife. <i>Proposed Action (Within Riparian Reserve LUA) and the No Action Alternative:</i> Under the Proposed Action, no thinning would take place in the Riparian Reserve LUA. The effects would be similar to the No Action Alternative. The No Action Alternative would maintain the development of the existing vegetation and associated stand structure at its present rate. The current distribution, diversity and complexity of watershed and landscape-scale features would be maintained. Faster restoration of distribution, diversity, and complexity of watershed and landscape features would not occur. Does not prevent the attainment of ACSO 1.</p>	<p>Does not prevent the attainment of ACSO 1. <i>Proposed Action:</i> The snag creation areas that are proposed offer the opportunity to restore to a small part of the watershed some of the structural attributes that are lacking due to past management. This added diversity would help to restore some complexity to a simplified Riparian Reserve network. <i>No Action Alternative</i> would assist in maintaining the current state of landscape scale features, but not provide for restoration.</p>
<p><i>2. Maintain and restore spatial and temporal connectivity within and between watersheds.</i></p>	<p>Does not prevent the attainment of ACSO 2. The project contains no activities that may reduce the existing watershed connectivity.</p>	<p>Does not prevent the attainment of ACSO 2. <i>Proposed Action:</i> The proposed Riparian Reserve treatments would have little direct effect on connectivity between watersheds due to the discontinuous ownership patterns that exist. However, by restoring stand structural elements that provide habitat and refugia, it is anticipated that it would help to strengthen watershed connectivity. The <i>No Action Alternative</i> would maintain the current quality of connectivity within and between stands and between watersheds and maintain the current rate of developing habitat complexity by having no disturbance within the Riparian Reserves.</p>

Aquatic Conservation Strategy Objectives (ACSOs)	Project 1 – Timber Sale	Project 2 – Riparian Restoration
<p>3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.</p>	<p>Does not prevent the attainment of ACSO 3. <i>Proposed Action:</i> See EA sections 2.2.2.2, 2.4.3 and 2.4.4. Blocking several existing road segments under the Proposed Action would reduce road related stormflow and assist in restoration of the physical integrity of the streams and riparian areas The <i>No Action Alternative</i> would maintain the existing physical integrity of the aquatic system</p>	<p>Does not prevent the attainment of ACSO 3. The <i>Proposed Action</i> would support maintenance and improvement of the physical integrity of aquatic reserves by hastening the development of desired vegetation characteristics adjacent to streams. Where trees were girdled and allowed to fall across and into stream channels under the Proposed Action they would help restore stream channel, bank and bottom structure. The <i>No Action Alternative</i> would support maintenance and eventual improvement of the physical integrity of aquatic systems on federal lands as Riparian Reserves mature.</p>
<p>4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.</p>	<p>Does not prevent the attainment of ACSO 4. <i>Proposed Action:</i> See EA sections 2.2.2.2, 2.4.3 and 2.4.4. The <i>No Action Alternative</i> would maintain the existing water quality on federal lands, including any detrimental effects resulting from leaving intact the roads proposed for storm-proofing and blocking.</p>	<p>Does not prevent the attainment of ACSO 4. Snag creation is not a ground disturbing project and would have no effect on water quality.</p>
<p>5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.</p>	<p>Does not prevent the attainment of ACSO 5. The <i>Proposed Action</i> would not prevent or retard restoration of the sediment regime. Post project sedimentation is estimated to be the same as pre-project implementation. Risk of sediment inputs are reduced by the employment of <i>Best Management Practices</i> (RMP Appendix C). See EA sections 2.2.2.2, 2.4.3 and 2.4.4. The <i>No Action Alternative</i> would maintain the existing sediment regime on federal lands, including any detrimental effects resulting from leaving intact the roads proposed for storm proofing and blocking</p>	<p>Does not prevent the attainment of ACSO 5. Snag creation would not change the sediment regime other than in a possible long-term restorative manner by retaining sediment behind in-stream large woody debris. The LWD could be developed as a result of creating snags.</p>
<p>6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.</p>	<p>Does not prevent the attainment of ACSO 6. The <i>Proposed Action</i> would protect habitats with Riparian Reserves, and impacts by sediment are estimated to be minor and short term. Proposed road storm-proofing blocking would serve to further improve natural routing of water and reduce the amount of runoff entering streams from road drainage. Peak flows would increase by less than one percent as a result of the Proposed Action and would not affect the magnitude, duration, or spatial distribution of flows. The <i>No Action Alternative</i> allows slow improvement of the current streamflow, sediment, nutrient, and wood routing regimes as the forest stands mature. However, existing roads would continue to impact streamflow and sediment routing to streams.</p>	<p>Does not prevent the attainment of ACSO 6. Trees girdled and allowed to fall into stream channels are expected to aid in retention of sediment and nutrients, as well as increase the supply of instream wood for future routing down the stream channels.</p>

Aquatic Conservation Strategy Objectives (ACSOs)	Project 1 – Timber Sale	Project 2 – Riparian Restoration
<p>7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.</p>	<p>Does not prevent the attainment of ACSO 7. <i>Proposed Action:</i> Riparian Reserve protection measures would maintain current floodplain inundation characteristics and contribute to the long range restoration of them by developing desirable stand characteristics and stream structure. All meadows and wetlands would also be protected under the Proposed Action. No activities associated with the Proposed Action are expected to have any detrimental effects on the timing, variability and duration of floodplain inundation or water table elevation. <i>No Action Alternative</i> would allow some restoration of flood plain inundation through full protection of Riparian Reserves.</p>	<p>Does not prevent the attainment of ACSO 7. Creating snags is expected to contribute to the long range restoration of them by developing desirable stand characteristics and stream structure. Girdling of trees and allowing them to fall into the stream channels would provide additional instream structure that is expected to aid in water retention which may help to restore the timing, variability and duration of floodplain inundation and increase the water table elevation. <i>No Action Alternative</i> would allow some restoration of flood plain inundation through full protection of Riparian Reserves.</p>
<p>8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands.</p>	<p>Does not prevent the attainment of ACSO 8. See ACSO #1.</p>	<p>Does not prevent the attainment of ACSO 8 <i>Proposed Action:</i> The proposed Riparian Reserve treatments would have no adverse effects on thermal regulation, nutrient filtering, or erosional processes within riparian zones or wetlands due to the small scope of the treatments, the untreated zones along stream channels, and because no materials would be removed from the sites treated. The treatments would help to restore some structural diversity currently lacking on these sites. The <i>No Action Alternative</i> would maintain the current species composition and rate of developing structural diversity of plant communities. Structural diversity would not develop as quickly as under the Proposed Action and some desirable large tree characteristics may not develop at all.</p>
<p>9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.</p>	<p>Does not prevent the attainment of ACSO 9. See ACSO # 1</p>	<p>Does not prevent the attainment of ACSO 9. <i>Proposed Action:</i> The proposal would be designed solely for restoring elements of structural diversity to the portions of Riparian Reserves selected for treatment. These attributes would help to provide resources currently lacking or of low quality, and over the long-term, would benefit both aquatic and terrestrial species. The <i>No Action Alternative</i> would maintain the current habitat which has been simplified by past management</p>

6.0 CONTACTS AND CONSULTATION

6.1 Consultation

6.1.1 ESA Section 7 Consultation

6.1.1.1 US Fish and Wildlife Service

Northern spotted owl: The Clear Dodger proposal was submitted for Formal Consultation with U.S. Fish and Wildlife Service on September 3, 2002. A Biological Opinion was completed on February 27, 2003, FWS reference: 1-7-03-F-0008.

According to the effect determination guidelines in the Biological Assessment (BA) the effect determination from US Fish and Wildlife resulted in a:

- “May Affect, Likely to Adversely Affect” determination for units A1 (Units 5 & 9 = 9 acres), B1 (Unit 4), B2 (Unit 3), C1 (unit 6), D1 (Unit 7) because the Proposed Action would, in the short term, downgrade suitable habitat by reducing canopy closure to less than 60 percent on 120 acres. In the long term, suitable habitat conditions would develop again in 1 to 2 decades. See *EA section 2.4.5.1*)
- “May affect, Not Likely to Adversely Affect” determination for units A1 (Units 5 = 5 acres), B1 (Unit 4), B2 (Unit 3), C1 (unit 6), D1 (Unit 7) on 23 acres.

Table 22: *Clear Dodger Effect Determination and the Modification of NSO Habitat*

<i>Proposed Thinning Treatment</i> ¹	<i>Change in Habitat Type</i> ²	<i>Habitat Modification</i> ³	<i>ESA Effect Determination as a result of consultation</i> ⁴	<i>Project Units</i>	<i>Acres Proposed</i>
Thinning in dispersal habitat	Dispersal to Dispersal	Degrade	May affect, not likely to adversely affect	A1 (Units 5), B3 (Unit 2), B4 (Unit 8), B5 (Unit 1)	23
Thinning in Suitable (NRF) habitat	Suitable to Dispersal	Downgrade	May affect, likely to adversely affect	A1 (Units 5 & 9), B1 (Unit 4), B2 (Unit 3), C1 (Unit 6), D1 (Unit 7)	120
Total Thinning Acres					143

The US Fish and Wildlife Service also reached the conclusion in this BO that the FY 2003-2004 Habitat Modification Projects in the Willamette Province (which the Clear Dodger proposed project is a part thereof) are not likely to jeopardize the continued existence or survival of the northern spotted owl (BO p. 45). In the case of the Clear Dodger project, the Proposed Action (Project 1):

- Would not affect designated Critical Owl Habitat because there is no designated Critical Habitat within the project area
- Maintains a minimum of 40 percent average canopy cover throughout the stand, therefore maintaining the ability of the habitat to accommodate movement of birds after thinning is completed.

- In general, over the long term (>20 years) as stands respond to thinning, northern spotted owl habitat conditions are expected to improve. In the GFMA Matrix LUA, residual trees would increase in size and be available for recruitment or creation of snags, deformed trees and CWD for prey species and nesting opportunities for northern spotted owls.
- The seasonal restrictions on habitat modification activities (felling, yarding, and road building) on all units would minimize the risk of disturbance if nesting spotted owls are present within disturbance range (0.25 to 0.5 miles) of the units.
- All applicable terms and conditions from the Biological Opinion would be incorporated into the project design features.

6.1.1.2 NOAA Fisheries (NMFS) – Endangered Species Act Determination of Effect for Lower Columbia River steelhead trout, Lower Columbia River Chinook salmon and Upper Willamette River Chinook salmon.

Project 1 – Clear Dodger Timber Sale

A determination has been made that this project would have no effect on Lower Columbia River steelhead trout, Lower Columbia River Chinook salmon or Upper Willamette River Chinook salmon (*EA section 2.4.4.1*). Consequently, no consultation with NOAA Fisheries is required.

Determination of Effect for Lower Columbia River steelhead trout, Lower Columbia River Chinook salmon and Upper Willamette River Chinook salmon

Lower Columbia River steelhead trout, Lower Columbia River chinook salmon and Upper Willamette River chinook salmon, all of which may be found in Clear Creek and in the Middle Clackamas River, are listed as ‘threatened’ under the Endangered Species Act of 1973 (ESA), as amended. Consultation with NOAA Fisheries is required for projects that ‘may affect’ listed species. A determination has been made that this proposed project would have ‘no effect’ on Lower Columbia River steelhead trout, Lower Columbia River chinook salmon or Upper Willamette River chinook salmon.

Generally, for the Clear Creek watershed the ‘no effect’ determination is based on the distance upstream of project activities from ESA listed fish habitat (~2 miles for the closest unit, 4-5 miles for the rest), and project design criteria that include no harvest activity within Riparian Reserves, minimal road construction, dry season hauling of timber and post-project leave tree densities of approximately 85-135 trees per acre.

For units in the Middle Clackamas River watershed the project design criteria are similar, but the ‘no effect’ determination is additionally based on the location of the proposed project units above North Fork Reservoir. Although no impacts to the stream channels that drain the vicinity of the units are anticipated, if any were to occur, they would have ‘no effect’ on ESA listed fish species found in the reservoir or downstream due to the buffering effect of the reservoir.

Project 2 – Riparian Reserve Restoration

A determination has been made that this project would have no effect on Lower Columbia River steelhead trout, Lower Columbia River Chinook salmon or Upper Willamette River Chinook salmon (*EA section 3.0*). Consequently, no consultation with NOAA Fisheries is required.

6.1.2 Cultural Resources - Section 106 Consultation and Consultation with State Historical Preservation Office:

All of the proposed units were surveyed for cultural resources in November and December of 2000 (CR report numbers C0107, C0108, C0109, and C0110). No cultural resources were found. Other surveys in and around the project area did not locate sites previously. In the process of thinning the proposed units, brush and undergrowth may be disturbed or removed increasing visibility for finding surface, below surface and low above surface cultural material. As a consequence, previously unknown cultural resources may be discovered. Since all of the areas have been previously harvested, it is possible that previously undiscovered sites that do exist will have been damaged. However, all contracts for ground disturbing activities will carry a clause requiring an immediate suspension of all operations upon finding any cultural resources until such time as the BLM is able to evaluate the find and develop appropriate protection or mitigation measures. At the conclusion of thinning operations, portions of the harvested areas would be reexamined for cultural artifacts, including ridgelines and areas of less than 10% slope.

Under the Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land management in Oregon, it is not necessary for BLM to consult with SHPO on projects in which no nationally significant, National Register of Historic Places listed or eligible properties are to be adversely affected.

6.2 Public Scoping and Notification

6.2.1 Tribal Governments, Adjacent Landowners, General Public, and State County and local government offices:

- a. In compliance with NEPA, the project first appeared in the September 2001 edition of the quarterly Salem District Project Update, which were mailed to over 1,000 addresses. Also, a scoping letter was mailed on September 4, 2002 to 23 potentially affected and/or interested individuals, groups, and agencies. Nine postcards and nineteen letters were received as a result of this scoping as of December 31, 2002. These letters are available for inspection in the project development file at the Salem District office. In addition, a representative of the Clackamas River Water Providers participated as a member of the Interdisciplinary Team (IDT) in planning meetings during the environmental analysis. The following concerns were raised during the scoping, comment period, protest and appeal periods from the original Clear Dodger EA/Decision.

Project 1 – Timber Management

1) Water Quality and Clackamas River Water Users

Comment or Concern: The impacts on water quality by timber harvest and by road construction.

Response: Design features and mitigation measures to protect water quality are incorporated into the Proposed Action and are described in *EA section 2.2.2.2*. Effects on water quality by timber harvest and road construction are described in *EA Sections 2.4.2, 2.4.3 and 2.4.4*.

2) Social Factors – Public Access vs. Misuse of Lands

Comment or Concern: The right of the public to have access to publicly owned land and BLM's responsibility to protect those lands. The project area shows considerable signs of abuse in the forms of garbage dumping, off road vehicle use and timber theft.

Response: Part of the purpose and need of this project is to address unauthorized use on roads within the project area. Unauthorized use is addressed in *EA section 2.4.8*.

3) Cumulative Effects of Logging

Comment or Concern: Several writers expressed concern about the cumulative effects of logging in the project area. The writer pointed out that the surrounding "private land is not protected and often show signs of recent logging and abusive logging practices." The writers stated that the land in the project area "would be put to better public use as preserved, unmanaged forest".

Response: To remove these lands from the Matrix Land Use Allocation goes far beyond the scope of the purpose and need of this document and cannot be addressed here. The cumulative effects of the proposal on the area are described in *EA sections 2.3, 2.4.3, 2.4.4, and 2.4.5*.

4) Old Growth and Ecologically Important and Protected Species

Comment or Concern: The bulk of the letters received expressed concerns about adverse effects to Old Growth habitat and "ecologically important species and protected species."

Response: It is not part of this proposed project to harvest any stands of old growth timber. In the areas proposed for thinning, thinning would be done from below, concentrating the cutting on the younger and smaller trees while leaving the larger dominant and many co-dominant trees.

Surveys were done to protocol for all Threatened and Endangered species as well as all Survey and Manage species that were likely to exist within the project area. Effects of timber harvest on late-successional species are described in *EA sections 2.4.1, 2.4.5*.

5) Steep Slopes

Comment or Concern: Some writers expressed concerns about harvesting timber on steep slopes.

Response: Although there are steep slopes in the vicinity of the project area, it is not part of the Proposed Action to harvest timber on them. Having said this, however, it must also be acknowledged that some areas within the Proposed Action are steeper than would be allowable for ground-based operations. Design features and mitigation measures to protect soils are incorporated into the proposed alternative and are described in *EA section 2.2.2.2*. The effects of the Proposed Action is addressed in *EA sections 2.4.2, 2.4.3, and 2.4.4*.

6) Roads

Comment or Concern: Concerns about the current road density and the construction of any new roads were raised, as was concern over the amount of garbage dumping along existing roads. An alternative for no new roads and the obliteration of current roads was suggested.

Response: An alternative for no new roads and the obliteration of current roads goes beyond the purpose and need identified for this action. Where roads are no longer needed for management or may not be needed for a significant period of time, closing or decommissioning will be considered.

7) Protection of Snags and down wood

Comment or Concern – Impacts to Legacy Features such as Snags and Down Wood

Response: Effects to snags, CWD and those species that use Snags and CWD are described in *EA section 2.4.5*.

- b. Public comment period: The EA and FONSI will be made available for public review **November 2, 2005** to **November 18, 2005**. The notice for public comment will be published in a legal notice by the *Sandy Post* newspaper. Comments received by the Cascades Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before **November 18, 2005** will be considered in making the final decisions for this project.

7.0 MAJOR SOURCES AND COMMON ACRONYMS

7.1 Major Sources

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Table 23: Summary of RMP References

RMP Topic	RMP page #
Air Quality	p. 22
Aquatic Conservation Strategy	pp. 5-7
<i>Best Management Practices</i>	Appendix C pp. C-1 to C-9
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Major Land Use Allocations	pp. 7-9
Matrix Land Use Allocation	pp. 20-22
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Special Forest Products	pp. 49-50
Special Status and NWFP/FSEIS Special Attention Species and Habitat –amended March 2004- see SSSP	pp. 29-33; Appendix B-1 pp. B-1-1 to B-1-7; Appendix B-2 pp. B-2-1 to B-2-2
Timber Resources	pp. 46-48
Visual Resources	pp. 36-37
Water and Soils	pp. 22-24
Wild and Scenic Rivers	pp. 37-38
Wildlife Habitat	pp. 24-26
Wilderness	pp. 38-39

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7.2 Common Acronyms

ACS - Aquatic Conservation Strategy
 BLM - Bureau of Land Management
 BMP - *Best Management Practices* (RMP Appendix C)
 BO - Biological Opinion
 CWD - Coarse Woody Debris
 DBH - Diameter Breast Height
 EA - Environmental Assessment
 EIS – Environmental Impact Statement

EFH – Essential Fish Habitat
ESA - Endangered Species Act
FONSI - Finding of No Significant Impact
GFMA - General Forest Management Area land use allocation (Matrix)
LSR - Late Successional Reserve
LUA - Land Use Allocation (RMP p. 8)
LWD - Large Woody Debris
NEPA - National Environmental Policy Act (1969)
NOAA - National Oceanic Atmospheric Administration (National Marine Fisheries Service (NMFS) is now called NOAA Fisheries)
NWFP - *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Related Species within the Range of the Northern Spotted Owl* (1994) (Northwest Forest Plan)
NWFP/FSEIS - *Final Supplemental Environmental Impact Statement Management of Habitat for Late Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*
OHV – off highway vehicle
PIF – private industrial forest
RMP - *Salem District Record of Decision and Resource Management Plan* (1995)
RMP/FEIS - *Salem District Proposed Resource Management Plan / Final Environmental Impact Statement* (1994)
RR - Riparian Reserves Land Use Allocation
SM – Survey and Manage
S&G – standards and guidelines
SFP – special forest products
TPA – trees per acre
USDA - United States Department of Agriculture
USDI - United States Department of the Interior
USFS - United States Forest Service
USFWS - United States Fish and Wildlife Service