

Elkhorn Creek Habitat Restoration

Environmental Assessment and Finding of No Significant Impact

Environmental Assessment Number OR-SO40-2009-0006

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United States Department of the Interior
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T. 9S, R. 3E, Section 1

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This environmental assessment discloses the predicted environmental effects of a proposal to place instream large wood and plant tree seedlings in the Elkhorn Creek floodplain on federal land located in Township 9 South, Range 3 East, Section 1, Willamette Meridian; and within the North Santiam River 5th field watershed.

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

BLM/OR/WA/AE-09/052+1792

FINDING OF NO SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (BLM) conducted an environmental analysis (Environmental Assessment Number OR-SO40-2009-0006) of the Elkhorn Creek Habitat Restoration project. The project includes the placement of large wood in main channel floodplain and side channel habitats on lower Elkhorn Creek to stabilize floodplain areas, provide high quality rearing habitat for listed Chinook salmon and steelhead trout; and planting tree seedlings to facilitate development of riparian forests to shade stream channels.

The project is located on BLM lands within Township 9S, Range 3E, Section 1, Willamette Meridian; within the Little North Santiam River 5th field watershed, approximately 21 miles east of the City of Stayton, Oregon. The project area is just upstream of the confluence of Elkhorn Creek with the Little North Santiam River at approximate river mile (RM) 14 (West boundary of T 9S, R 3E, Section 1).

The Elkhorn Creek Environmental Assessment (EA) documents the environmental analysis of the proposed project. 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 *Final Environmental Impact Statement for the Revision of Resource Management Plans of the Western Oregon Bureau of Land Management*, October 2008 (RMP/EIS). The Elkhorn Creek Habitat Restoration Project proposal conforms to *Record of Decision and Resource Management Plan- Salem District*, December, 2008 (2008 ROD/RMP). In addition, this project fully complies with the management objectives, actions, and direction of the resource management plan in place prior to December 30, 2008, which was the *Salem District Record of Decision and Resource Management Plan*, May 1995 (1995 RMP), as amended. The design of this project would not have differed under either the 2008 or the 1995 Plans. (EA Section 1.4).

The EA and FONSI will be made available for public review **July 8, 2009** to **July 23, 2009**. The notice for public comment will be published in a legal notice by the *Stayton Mail* newspaper. Comments received by the Cascades Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before **July 23, 2009** will be considered in making the final decisions for this project.

Finding of No Significant Impact

Based upon review of the Elkhorn Creek Habitat Restoration EA and supporting documents, I have determined that the proposed project is not a major federal action 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 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 project have been analyzed within the context of the Elkhorn Creek 6th field watershed, and the project area boundaries. The proposed project would occur on approximately 28 acres of BLM land, along approximately 0.5 mile of Elkhorn Creek [40 CFR 1508.27(a)].

Intensity:

1. The proposed project is unlikely to have significant adverse impacts on the affected elements of the environment [40 CFR 1508.27(b) (1)] for the following reasons:
 - Project design features described in *EA section 2.2.1* would reduce the risk of effects to affected resources. As a result of implementing these design features, any potential effects to the affected resources are anticipated to be site-specific and/or not measurable (i.e. undetectable over the watershed, downstream, and/or outside of the project area)
 - *Floodplains and Riparian Areas:* The proposed action is expected to have beneficial effects on floodplain habitat and on the river's ability to access its floodplain (*EA section 3.2.1, 3.10*).
 - *Threatened/Endangered Fish and Critical Habitat:* See FONSI bullet 6.
 - *Other fish species with special status:* No other special status fish species are present in Elkhorn Creek (*EA section 3.9*).
 - *Essential Fish Habitat:* The proposed action is expected to have beneficial effects on Essential Fish Habitat as designated under the Magnuson-Stevens Fishery Conservation Act. No adverse effects to Essential Fish Habitat are expected (*EA section 3.4.1*).
 - *Soils:* Effects to soils would be unlikely to result in any reduction in soil productivity or disturb normal soil processes because of the project effects would be light, discontinuous compaction of the surface horizon of the mineral soil in the tree selection and transport areas (*EA section 3.5*).
 - *Water Quality and Channel Function:* The planned alteration to channel morphology and hydraulics will directly increase habitat diversity, aquatic community complexity and structure, and the diversity of aquatic organisms to the benefit of aquatic species in the Elkhorn Creek, and also improve water quality by stabilizing floodplains and increasing stream shade. Any increase in turbidity resulting from the project activities is expected to be limited to the location of the disturbance and very short-term (hours) (*EA sections 3.6, 3.10*).
 - *Wild and Scenic rivers:* In the short term (for about one year) the primitive appearance of the reach would be slightly impacted by soil and vegetation disturbance resulting from felling and moving trees with the cable-yarder or articulated excavator. Over the long term impacts to primitiveness would be negligible as logs weather and other LW accumulates from upstream reaches (*EA section 3.7*).
 - *T & E Wildlife:* The proposed action would have no effects to T&E wildlife or habitat due to the nature and timing of the project. See FONSI bullet 6.
 - *Other wildlife species with special status and migratory birds:* The proposal would not contribute to the need to list any special status wildlife species due to the nature, duration and timing of the project (*EA sections 3.8.1 and 3.9*).
 - *Late Successional Stands and Wildlife Habitat Components (snags, CWD):* Late successional habitat would be maintained. Adequate amounts of CWD and snags would be maintained on site to meet or exceed Northwest Forest Plan requirements (*EA section 3.8*).

2. The proposed project 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, wilderness, or ecologically critical areas located within the project area (*EA section 3.9*); Districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, nor would the proposed project cause loss or destruction of significant scientific, cultural, or historical resources [40 CFR 1508.27(b)(8)] (*EA section 3.9*).
3. The proposed project is not unique or unusual. The BLM has experience implementing wood placement projects without highly controversial effects [40 CFR 1508.27(b) (4)], highly uncertain, or unique or unknown risks [40 CFR 1508.27(b) (5)] (*EA Section 3.0*).
4. The proposed project does 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)]. No hazardous materials or solid waste would be created in the project area. There would be no reduction in the amount of late-successional forest habitat on federal forestlands (NWFP p. C-44) (*EA Sections 2.2.1, 3.8, 3.9*). The proposed project would not retard or prevent the attainment of the ACS objectives (*EA Section 3.10.2*).
5. The interdisciplinary team evaluated the proposed project 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 Section 3.0*). The proposed project contributes to cumulative effects to the following resources:
 - Water and Fisheries Resource: The proposed project will stabilize floodplains, and facilitate the development of riparian forest stands to shade channels to maintain water quality. In addition, spawning and rearing habitat for threatened anadromous salmonids would improve in reaches downstream of the project as a result of improvement in water quality (*EA sections 3.2-3.4, 3.6, 3.9, 3.10*).
6. The proposed project is 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: Due to the nature, duration and timing of this project, no adverse effects to the northern spotted owls or their habitat are anticipated. No suitable habitat would be removed or downgraded, and suitable habitat would be maintained after individual tree removal for the project. The project would occur outside of the critical nesting season for spotted owls. The project area is not located in Critical Habitat and is not located within disturbance distance of any known spotted owl sites (*EA sections 3.8, 3.9, 5.2.1.1*).

Fish: The proposed action is expected to have beneficial effects on habitat for T & E fish, and consequently is likely to have positive effects on survival and production.

No adverse effects are expected because of design features that would be implemented to reduce the risk of effects to the environment, and because in-channel work would be limited to periods of low flow when any increase in turbidity from the placement of large wood is expected to be limited to the location of the disturbance and very short-term (hours) in duration. (EA sections 2.2.1, 3.2-3.4, 3.6, 3.9, 5.2.1.2).

7. The proposed project does 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 Marion 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 sections 1.4.1, 2.2.1). Additionally, the proposed project is consistent with applicable land management plans, policies, and programs (EA Section 1.4).

Approved by: Cindy Enstrom
Cindy Enstrom, Field Manager
Cascades Resource Area

7/01/2009
Date

ENVIRONMENTAL ASSESSMENT

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1.0 INTRODUCTION

1.1 Summary of the Proposed Project

The proposal is to place large wood (trees with attached roots) in main channel floodplain and side channel habitats on lower Elkhorn Creek to stabilize floodplains, provide high quality rearing habitat for listed Chinook salmon and steelhead trout, and to plant tree seedlings on floodplains to facilitate development of riparian forests to shade stream channels.

1.1.1 Project Area Location:

The project is located on BLM lands within Township 9S, Range 3E, Section 1, Willamette Meridian; within the Little North Santiam River 5th field watershed, approximately 21 miles east of the City of Stayton, Oregon. The project is just upstream of the confluence of Elkhorn Creek with the Little North Santiam River at approximate river mile (RM) 14 (West boundary of T 9S, R 3E, Section 1).

1.2 Purpose of and Need for Action

The Water Quality Restoration Plan for the North Santiam River sub-basin (including the Little North Santiam Watershed) identified the need to restore floodplain and riparian conditions on lower Elkhorn Creek to improve water quality and make progress towards Total Maximum Daily Load (TMDL) targets for water temperature for the sub-basin, lower Elkhorn Creek and the Little North Santiam River (USDI 2008b).

Spawning and rearing of federally threatened anadromous fish is an important beneficial use that is impaired by elevated water temperatures in the sub-basin. Two small sections of lower Elkhorn Creek have unstable floodplain surfaces and reduced levels of stream shade from riparian trees. Greater tree shading is needed to help maintain water quality (cool water temperatures). Additionally, much of the riparian area adjacent to lower Elkhorn Creek is vegetated with old-aged stands of alder (*Alnus rubra*) with little conifer or black cottonwood (*Populus trichocarpa*) tree recruitment needed to maintain stream shade and floodplain function over the long term (USDI 2008b).

Habitat surveys conducted by Oregon Department of Fish and Wildlife documented low levels of large wood (LW) in Lower Elkhorn Creek (USDI 1997, ODFW 1994). LW levels are inadequate to form complex stream habitats, and provide high quality spawning and rearing habitat for federally listed fish species. The addition of LW to lower Elkhorn Creek is needed to increase aquatic habitat complexity, provide high quality rearing habitat in stream side-channels for anadromous fish, and stabilize floodplain surfaces to facilitate the development of riparian forest and shrub (willow) stands to shade stream channels to maintain water quality (cool water temperatures). Planting tree seedlings is needed to maintain floodplain function and supply LW to Elkhorn Creek over the long term.

The desired future condition for Elkhorn Creek includes stable, well-shaded channels with complex aquatic habitats created by LW that provide high quality spawning and rearing areas for anadromous salmon and steelhead, and resident coastal cutthroat trout.

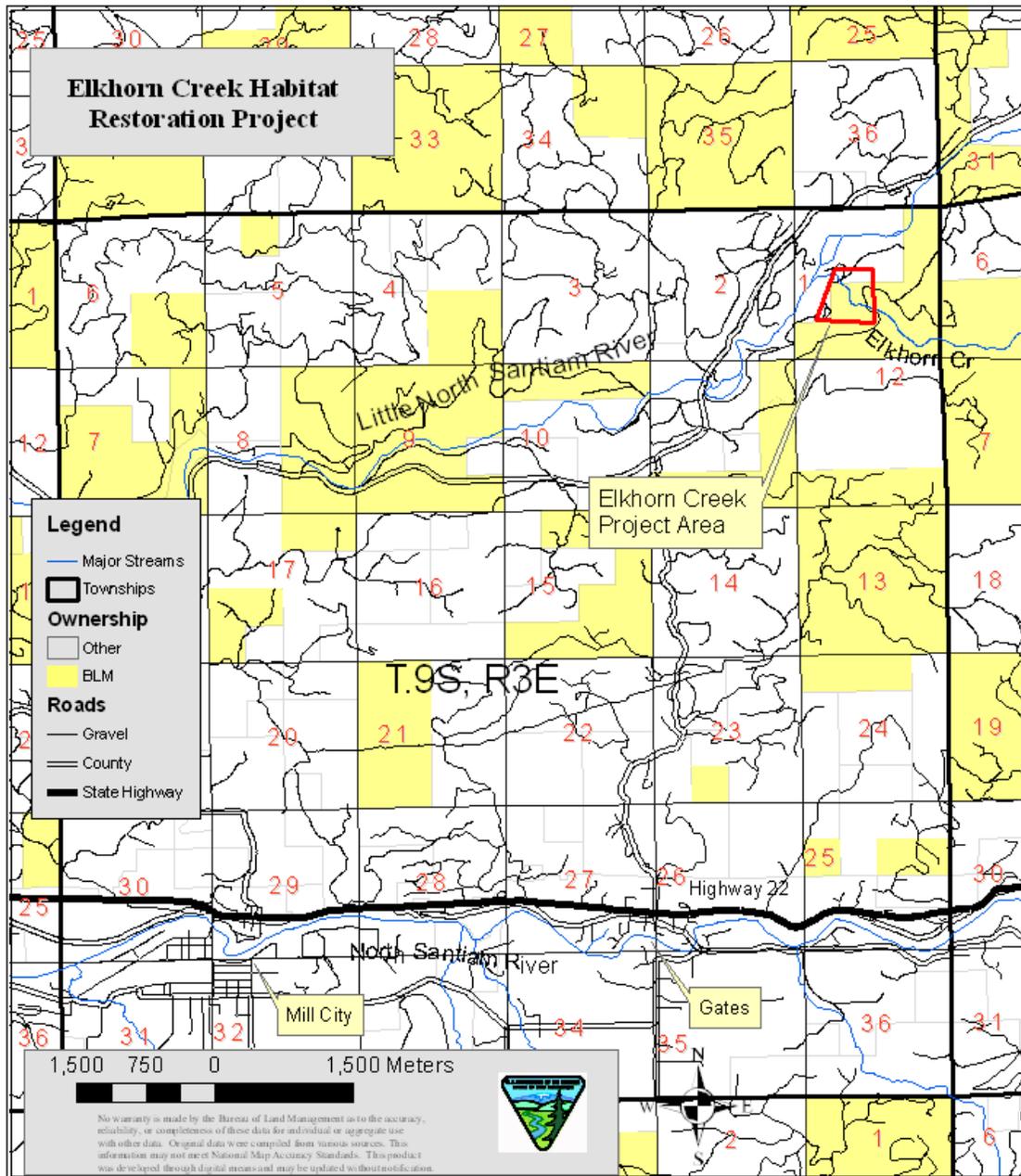
Additionally, the desired future condition includes providing high quality water for designated beneficial uses including salmonid spawning and rearing, and compliance with the TMDL for temperature for the North Santiam River sub-basin (USDI 2008b). The purpose of the project is to increase aquatic habitat complexity and stabilize floodplains of lower Elkhorn Creek through the addition of LW and planting riparian tree seedlings, thereby improving fish habitat and maintaining water quality over both the short and long term. The project is consistent with Resource Management Plan (RMP) objectives to “promote the rehabilitation and protection of at-risk fish stocks and their habitat” and “restore and maintain water quality to protect beneficial uses in district watersheds (USDI 1995).

1.3 Decision Criteria/Project Objectives

The Cascades Resource Area Field Manager will use the following criteria/objectives in selecting the alternative to be implemented. The field manager will select the alternative that would best meet these criteria. The selected action would:

- Meet the purpose and need of the project (Section 1.2);
- Comply with the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP); and related documents which direct and provide the legal framework for management of federal lands within the project area (Section 1.4);
- Not have significant impacts on the affected elements of the environment beyond those already anticipated and addressed in the RMP/EIS and the LRMP/EIS;
- Stabilize floodplains of Lower Elkhorn Creek and increase aquatic habitat complexity;
- Provide high quality rearing habitat in stream side-channels for anadromous fish;
- Facilitate the development of riparian forest and shrub (willow) stands to shade stream channels to maintain water quality; and
- Improve stream shade and floodplain function and supply LW to Elkhorn Creek over the long term.
- Minimize erosion and impacts to soil productivity; and
- Not contribute to the expansion of invasive/nonnative weed populations.

Map 1: Vicinity Map



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

The Elkhorn Creek Habitat Restoration Project proposal conforms to *Record of Decision and Resource Management Plan- Salem District*, December, 2008 (2008 ROD/RMP). In addition, this project fully complies with the management objectives, actions, and direction of the resource management plan in place prior to December 30, 2008, which was the *Salem District Record of Decision and Resource Management Plan*, May 1995 (1995 RMP; USDI 1995), as amended. The design of this project would not have differed under either the 2008 or the 1995 Plans.

The analysis in the Elkhorn Creek Habitat Restoration Project EA is site-specific and supplements analyses found in the *Final Environmental Impact Statement for the Revision of Resource Management Plans of the Western Oregon Bureau of Land Management*, October 2008 (RMP/EIS); *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS), 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), and the *Final Supplement to the 2004 Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*, June 2007.

The following documents provide additional direction in the development to the proposed action:

1. Little North Santiam Watershed Analysis (USDI 1997)
2. Water Quality Restoration Plan for the North Santiam River sub-basin (including the Little North Santiam Watershed; USDI 2008b)

The above documents are incorporated by reference in this environmental analysis and are available for review in the Salem District Office.

Survey and Manage Species Review

Surveys for former Survey and Manage species and protection for known sites are no longer required because the Secretary of Interior removed the Survey & Manage Mitigation Measure Standards and Guidelines from the BLM's Resource Management Plans (2007 SM ROD). Prior to the signing of the 2007 SM ROD, the BLM was under the August 1, 2005, U.S. District Court order in Northwest Ecosystem Alliance et al. v. Rey et al. which found portions of the January 2004 *Final Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (2004 SEIS) inadequate. Subsequently in that case on January 9, 2006, the Court ordered BLM to set aside the 2004 SEIS and reinstate the January 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines* (2001 ROD), including any amendments or modifications in effect as of March 21, 2004.

On October 11, 2006, the U.S. District Court provided for certain exemptions from the Survey and Manage requirements including riparian and stream improvement projects such as this proposal, which involve riparian planting, obtaining material for in-stream placement of large wood, and channel and/or floodplain restoration.

Aquatic Conservation Strategy Review

On March 30, 2007, the District Court, Western District of Washington, ruled adverse to the US Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA-Fisheries) and USFS and BLM (Agencies) in *Pacific Coast Fed. of Fishermen's Assn. et al v. Natl. Marine Fisheries Service, et al and American Forest Resource Council*, Civ. No. 04-1299RSM (W.D. Wash)(PCFFA IV). Based on violations of the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA), the Court set aside:

- the USFWS Biological Opinion (March 18, 2004),
- the NOAA-Fisheries Biological Opinion for the ACS Amendment (March 19, 2004),
- the ACS Amendment Final Supplemental Environmental Impact Statement (FSEIS) (October 2003), and
- the ACS Amendment adopted by the Record of Decision dated March 22, 2004.

Previously, in *Pacific Coast Fed. Of Fishermen's Assn. v. Natl. Marine Fisheries Service*, 265 F.3d 1028 (9th Cir. 2001)(*PCFFA II*), the United States Court of Appeals for the Ninth Circuit ruled that because the evaluation of a project's consistency with the long-term, watershed level ACS objectives could overlook short-term, site-scale effects that could have serious consequences to a listed species, these short-term, site-scale effects must be considered. EA section 3.0 describes how the Proposed Action meets the Aquatic Conservation Strategy in the context of PCFFA IV and PCFFA II.

1.4.1 Relevant Statutes/Authorities

This section is a summary of the relevant statutes/authorities that apply to this project. Additional statutes/authorities that apply to this project are shown in Table 2 (section 3.9).

- **Federal Land Policy and Management Act (FLPMA) 1976** – Defines BLM's organization and provides the basic policy guidance for BLM's management of public lands.
- **National Environmental Policy Act (NEPA) 1969** – Requires the preparation of environmental impact statements for Federal projects which may have a significant effect on the environment.
- **Endangered Species Act (ESA) 1973** – Directs Federal agencies to ensure their actions do not jeopardize threatened and endangered species.
- **Clean Air Act (CAA) 1990** – Provides the principal framework for national, state, and local efforts to protect air quality.
- **Clean Water Act (CWA) 1987** – Establishes objectives to restore and maintain the chemical, physical, and biological integrity of the nation's water.

1.5 Scoping

The BLM sent out a scoping letter describing the Elkhorn Creek Habitat Restoration project to federal, state and municipal government agencies, nearby landowners, tribal authorities, and interested parties on the Cascades Resource Area mailing list on May 18, 2009. One scoping comment was received. Joe Shane (ODFW) requested that the instream work (placement of LW) be conducted under the Oregon Department of State Lands (DSL) General Permit (GP) and Army Corps Regional General Permit (RGP) permitting process. The BLM already follows this process for all instream work and will do so for this project as well.

2.0 ALTERNATIVES

2.1 Alternative Development

Pursuant to Section 102 (2) (E) of the National Environmental Policy Act (NEPA) of 1969, as amended, 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" in this project area.

2.2 Proposed Action

The BLM proposes to place up to 25 pieces of large wood (LW) by use of a cable-yarder and/or an articulated excavator (Spyder) in Elkhorn Creek. Pieces would range from 15 to 36 inches in diameter at breast height and from 50 to 150 feet in length, and would be placed at up to 14 sites on a 0.5 mile long section of stream located at approximate RM 0.3. LW would be placed in configurations of 1–3 pieces per site. As many as possible of the pieces would have intact rootwads, and lengths would be kept as long as possible. Placement sites would be selected that have existing structural and geomorphic features determined most likely to retain the placed wood. Pieces would not be artificially secured to the bed or banks of the stream, but would be allowed to interact naturally with the stream system.

Large wood used for the project would be obtained from BLM lands. Some wood would come from 8 trees that blew down at Fisherman's Bend Park in January 2009, and some from stands of timber at the project area in T. 9S, R. 3E, Sec. 1, NE¼ of SW¼.

If trees are taken from project area stands, they would be limited to no more than 5 live trees or 2 dead trees in a dbh range of 18-34 inches, taken from within 150-200 feet of Elkhorn Creek on BLM land (see Tree Source Area on Map 2: Proposed Action). Trees would be pulled or pushed down with a cable-yarder or an excavator in order to keep the rootwads attached, then yarded (moved) to the LW placement sites. Up to 10 trees that are already blown down and on the forest floor would be taken from stands adjacent to Elkhorn Creek and yarded to LW placement sites by use of the cable-yarder or Spyder excavator.

Project implementation would take place between August 2009 and March 2010, depending on the timing of availability of materials and yarder or excavator. LW would be placed during the instream work period (July 15 through September), and tree seedlings planted in late winter to early spring 2010.

2.2.1 Project Design Features

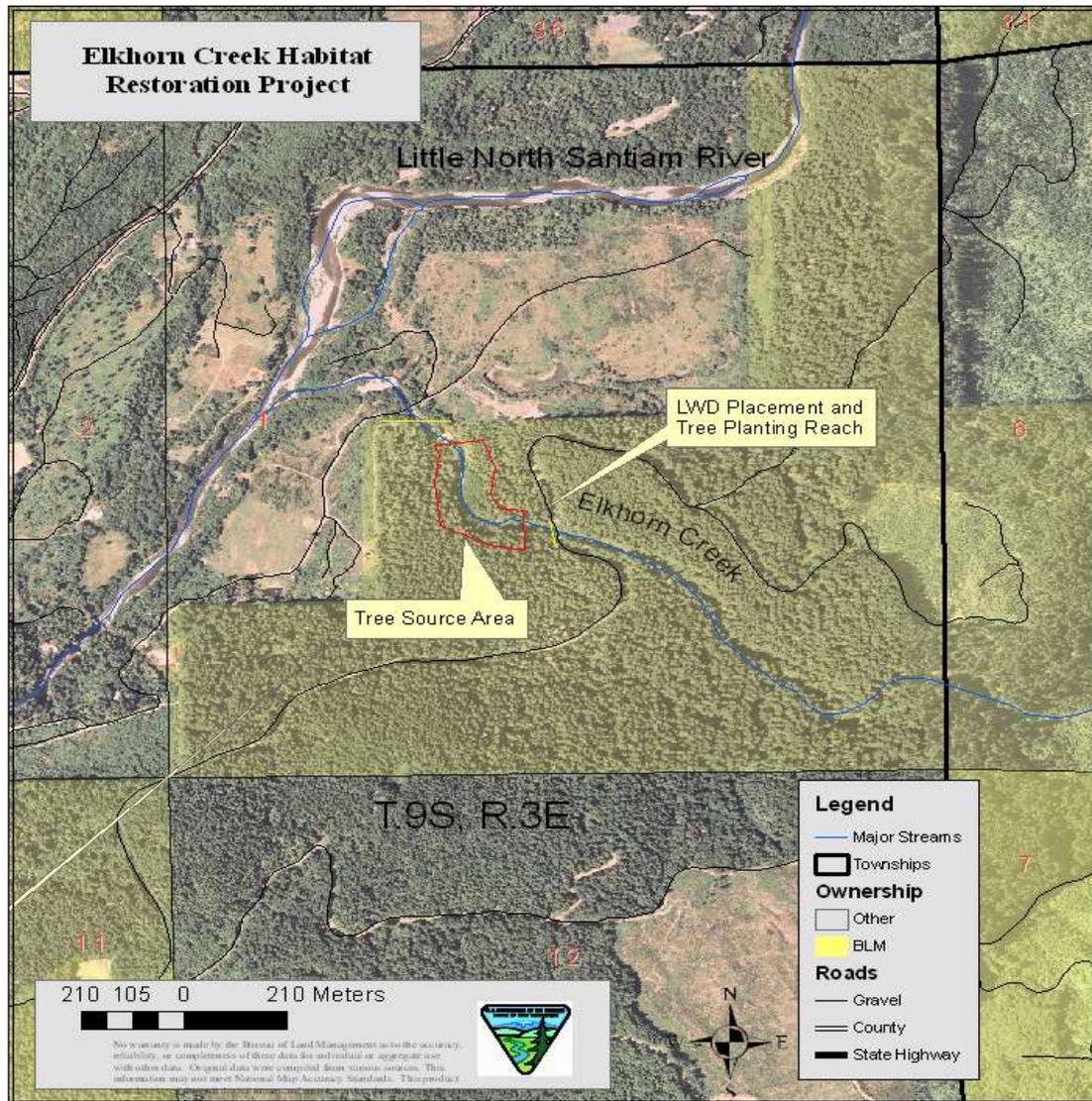
The following is a summary of the design features that reduce the risk of effects to the affected elements of the environment described in *Section 3.0*.

- Equipment would be cleaned to prevent spread of noxious weeds, free of fluid leaks, and in good operating condition prior to unloading at the project site.
- Contractor would be required to have a Spill Containment Kit and a Spill Prevention, Control, and Countermeasure Plan in case equipment leaks fuel or oil.
- The excavator would be operated (to move and place LW) only when soils are at high strength and soil moisture levels are low during July through October; turning and rocking of the excavator would be limited as much as practical to avoid displacing and gouging the mineral soil.
- In the tree removal area, excavator travel would be limited a single pass and treads kept on top of organic material and slash as much as practical to avoid disturbing the mineral soil.
- At least one end of a log would be suspended whenever possible when moving logs to project sites to minimize soil disturbance.
- No live trees would be removed from the primary shade zone of Elkhorn Creek.
- LW would be placed during the instream work period (July 15 through September 30).
- Breakage of trees and branches in the riparian zone would be minimized as much as practical.
- Implementation of the LW portion of the project would occur outside of the northern spotted owl critical nesting season (March 1 to July 15). Tree selection would be conducted in a manner that would not create openings in the stand or downgrade the suitability of the stand as habitat for the Northern spotted owl.

2.3 No Action Alternative

Under the No Action Alternative no LW placement would occur in Elkhorn Creek. Existing LW loading and the existing low habitat complexity in Elkhorn Creek would remain at current levels. No improvement in instream habitat quality of side channels for anadromous salmonid fishes would be likely to occur. A small proportion of the 0.5 mile reach of Elkhorn Creek located downstream of BLM road 9-3E-11.3 would continue to have unstable floodplain surfaces, and lower levels of stream shade. Recruitment of red cedar and black cottonwood trees on floodplains needed to replace stands of old-aged alders would be substantially slower than under the proposed action.

Map 2: Proposed Action



3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

The elements of the environment affected by the proposed restoration project are Floodplains and Riparian Areas, Threatened / Endangered Fish Species and Critical Habitat, Essential Fish Habitat, Soils, Water Quality and Channel Function, Wild and Scenic Rivers, and Wildlife. Sections 3.2-3.10 describe the current conditions and trends of those affected elements, and the environmental effects of the alternatives on those elements.

3.1 Existing Watershed Condition

The project is located within Little North Santiam 5th field watershed, which is located approximately 20 miles east of the town of Stayton. Elkhorn Creek is a 6th field subwatershed to the North Fork Santiam and flows into the Little North Santiam River at about river mile (RM) 14. About 70% of the land in the Little North Santiam watershed is federally managed (Table 2).

Table 1: Ownership in the Little North Santiam Watershed (Little North Santiam WA, Chpt. 2, p. 6)

Owner	% of Watershed
BLM	18
Forest Service	50
State	3
Private - Industrial	23
Private – non Industrial	6

Road densities are high (5+ miles/mi²) in the lower portion of the Little North Santiam watershed (Little North Santiam Watershed Analysis, USDI 1997). Instream habitat conditions of streams on federal lands in the eastern half of the watershed are fair to good (USDI 1997). Large wood (LW) recruitment potential in east side tributaries is generally good, but LW placement on the lower 0.5 mile of Elkhorn Creek was recommended in the Watershed Analysis (USDI 1997) and the Water Quality Restoration Plan (USDI 2008b).

Portions of lower Elkhorn Creek have unstable floodplain surfaces with reduced levels of stream shade from riparian trees needed to maintain water quality (cool water temperatures; USDI 2008b). Additionally, much of the riparian area adjacent to lower Elkhorn Creek is vegetated with old-aged stands of alder (*Alnus rubra*) with little conifer or black cottonwood (*Populus trichocarpa*) tree recruitment needed to maintain stream shade and floodplain function over the long term (USDI 2008B).

Upper Willamette River (UWR) steelhead trout (*Oncorhynchus mykiss*), and UWR chinook salmon (*O. tshawytscha*), both listed as threatened under the Endangered Species Act, inhabit the Little North Santiam watershed including the Little North Santiam River and lower Elkhorn Creek. Non-listed fish inhabiting Elkhorn Creek include coastal cutthroat trout (*O. clarki clarki*), and sculpins (*Cottus* spp.)

Critical habitat has been designated for UWR steelhead trout and UWR chinook salmon effective January 2006 by the National Marine Fisheries Service (70 FR 52,630, September 2, 2005). Designated critical habitat for chinook salmon is to RM 17 and for steelhead trout to RM 20 on the Little North Santiam River. Critical habitat for both species is designated to RM 2.25 on Elkhorn Creek.

3.2 Floodplains and Riparian Areas

Affected Environment

LW levels are low within the project area on Elkhorn Creek (USDI 1997, ODFW 1994). Within this reach of Elkhorn Creek the stream accesses several side channels at high flows. LW is lacking to stabilize portions of the floodplain. Additionally, side channel habitat complexity and flows are lower than that expected for the site because of low amounts of LW. Much of the riparian area adjacent to lower Elkhorn Creek is vegetated with old-aged stands of alder with little conifer or black cottonwood tree recruitment needed to maintain stream shade and floodplain function over the long term.

Environmental Effects

3.2.1 Proposed Action

The addition of LW to lower Elkhorn Creek would increase the stability of floodplain surfaces and allow riparian trees to colonize these sites. Addition of LW would increase habitat complexity and duration of flows in side channels. Planting tree seedlings would improve stream shade and floodplain function and supply LW to Elkhorn Creek over the long term. Riparian tree composition and structural diversity would improve with planting red cedar and cottonwood seedlings.

3.2.2 Cumulative Effects

No cumulative effects are expected for floodplain function because the project is small in scale and all effects are expected to be limited to the project area.

3.2.3 No Action Alternative

Floodplain access would likely improve over the long term as a result of LW delivery from upstream segments, but improvement in floodplain stability would be slower than that under the proposed action because less LW would be produced on site. Floodplain condition and side channel complexity would likely improve within 25-50 years as LW is delivered from upstream segments, compared to substantial improvement within 1-2 years under the proposed action. Tree diversity of riparian stands would lower than that of the proposed action.

3.3 Threatened / Endangered fish species and Critical Habitat

Affected Environment

Federally threatened UWR steelhead trout and UWR Chinook salmon spawn and rear in lower Elkhorn Creek (see Existing Watershed Condition). Habitat surveys conducted by Oregon Department of Fish and Wildlife documented low levels of large wood (LW) on lower Elkhorn Creek (ODFW 1994). LW levels are inadequate to form complex stream habitats, and provide high quality spawning and rearing habitat for federally listed fish species.

Two small sections of lower Elkhorn Creek have unstable floodplain surfaces and reduced levels of stream shade from riparian trees needed to maintain water quality (cool water temperatures). Additionally, much of the riparian area adjacent to lower Elkhorn Creek is vegetated with old-aged stands of alder (*Alnus rubra*) with little conifer or black cottonwood tree recruitment needed to maintain stream shade and LW supplies over the long term.

Environmental Effects

3.3.1 Proposed Action

Placement of LW in main and side channel habitats would increase habitat complexity in lower Elkhorn Creek. Increased structure from LW would result in localized reductions in the velocity of high flows, which will result in sorting and deposition of bedload materials. Retention of bedload materials composed of sand, gravel and cobble would improve and create spawning areas for steelhead trout and Chinook salmon. Increased habitat complexity would improve rearing habitat for steelhead trout, Chinook salmon, and resident cutthroat trout. Habitat quality would improve in the short term with LW placement. Habitat quality would also be maintained and improved over the long term as the result of increases in stream shade and LW production resulting from riparian tree plantings. Critical habitat for ESA listed fish would improve in the short and long term as the result of LW placement and riparian plantings.

The LW would create debris jams and woody complexes, stabilize floodplains, create scour pools in side channels for juvenile fish, and provide woody debris cover for juvenile and adult fish.

3.3.2 Cumulative Effects

Cumulatively this action would add to the recovery of habitat for threatened fish species. This action, in combination with other restoration actions planned in the Little North Santiam River watershed (USDI 1997) would improve instream habitat conditions for listed and resident fish, and the condition of Critical Habitat for ESA listed steelhead trout and Chinook salmon.

3.3.3 No Action Alternative

Over the long term with delivery of LW from upstream reaches, instream habitat conditions and the condition of Critical Habitat for ESA listed steelhead trout and Chinook salmon would be expected to improve, but at a slower rate than that of the proposed action.

3.4 Essential Fish Habitat

Affected Environment

Elkhorn Creek is designated as Essential Fish habitat under the Magnuson-Stevens Act because it is inhabited by Chinook salmon. Currently LW levels are inadequate to form complex stream habitats, and provide high quality spawning and rearing habitat for federally listed salmon. Two small sections of lower Elkhorn Creek have unstable floodplain surfaces and reduced levels of stream shade from riparian trees needed to maintain water quality (cool water temperatures). Additionally, much of the riparian area adjacent to lower Elkhorn Creek is vegetated with old-aged stands of alder with little conifer or black cottonwood tree recruitment needed to maintain stream shade and LW supplies over the long term.

Environmental Effects

3.4.1 Proposed Action

Placement of LW in main and side channel habitats would stabilize floodplains and increase habitat complexity in lower Elkhorn Creek. Increased structure from LW would result in localized reductions in the velocity of high flows, which will result in sorting and deposition of bedload materials. Retention of bedload materials composed of sand, gravel and cobble would improve and create spawning areas for Chinook salmon. Increased habitat complexity would improve rearing habitat for Chinook salmon. Habitat quality would improve in the short term with LW placement. Habitat quality would also be maintained and improved over the long term as the result of increases in stream shade and LW production resulting from riparian tree plantings. Condition of Essential Fish Habitat would improve both in the short and long term as the result of LW placement and riparian plantings.

3.4.2 Cumulative Effects

Cumulatively this action in combination with other restoration actions planned in the Little North Santiam River watershed (USDI 1997) would improve Essential Fish Habitat in the Little North Santiam River basin.

3.4.3 No Action Alternative

Over the long term with delivery of LW from upstream reaches, instream habitat conditions and the condition of Essential Fish Habitat would be expected to improve, but at a slower rate than that of the proposed action.

3.5 Soils

Affected Environment

Soils adjacent to Elkhorn Creek formed in alluvium associated with river deposition in flat areas or colluviums derived from the steep volcanic hillsides that constrain the stream. Soils in the source areas for trees are mapped as a Horeb loam on slopes of 2-20%, and a Whetstone stony loam on steeper slopes (USDA 2005).

Environmental Effects

3.5.1 Proposed Action

Use of a cable-yarder or an articulated excavator to pull or push over trees in stands adjacent to Elkhorn Creek and move them to the channel would have a direct effect on soil in that area. Soil bound to the root system of the trees, would be pulled up, inverted and disturbed as the trees are pushed over. This effect is analogous to what occurs when trees are blown down during large wind storms, and thus is similar to the natural disturbance regime and part of the normal process of soil formation in these forests. Yarding the trees to the channel would disturb the surface duff layer, but impacts to mineral soil would be minimized by following Project Design Features (See Section 2.2.1).

Removal of the pushed over trees or recently blown down trees that are on the forest floor is not part of the natural disturbance regime. Soil that remains attached to the tree roots would be removed from the site along with the organic material and nutrients stored in the trees.

Removal of 20 trees is equivalent to about 2% of the above ground biomass in the 25 acre project area. Removal of this material is unlikely to have a long lasting effect on overall site productivity or the nutrient status of the remaining stand and will be quickly regenerated.

Excavator travelling on soil surfaces and yarding downed trees to the channel would result in light compaction of the surface horizon of the soil (i.e., and increase in bulk density under 5%) in some locations. The surface compaction would be discontinuous and difficult to detect visually within one year of project completion. By carefully following Project Design Features (see section 2.2.1) disturbance to soils would be minimized. Surface duff layers and vegetation would buffer and protect mineral soil. For example, trees would be yarded while suspended from cables whenever possible. Soil compaction would be limited by allowing no more than one pass with the excavator along any individual route, and by operating the excavator on top of slash from the trees to help spread vehicular weight over a greater surface area.

Light discontinuous compaction of the surface horizon of the mineral soil would be unlikely to result in reduction in soil productivity or disturb normal soil process. Soil bulk density and processes would likely recover to pre-disturbance condition within one year following the project.

3.5.2 Cumulative Effects

Because the effects of the proposed action on soils are expected to be short-term, (maximum one year), and localized, no cumulative effects are expected.

3.5.3 No Action Alternative

No disturbance to soils would occur.

3.6 Water Quality and Channel Function

Affected Environment

Elkhorn Creek is subject to the conditions of the Willamette Basin TMDL completed by the Oregon Department of Environmental Quality (ODEQ) in 2005 (<http://www.deq.state.or.us/wq/TMDLs/docs/sandybasin/tmdlwqmp.pdf>). Essentially, the TMDL requires the recovery or maintenance of full potential shade along all perennial streams in the Willamette basin. The Water Quality Restoration Plan for the North Santiam River sub-basin (which includes the Little North Fork Santiam Watershed) identified the need to restore channel and riparian conditions on lower Elkhorn Creek to improve water quality and make progress towards TMDL targets for water temperature for the sub-basin (USDI 2008b). Two small sections of lower Elkhorn Creek have unstable floodplain surfaces and reduced levels of stream shade from riparian trees. Additionally, much of the riparian area adjacent to lower Elkhorn Creek is vegetated with old-aged stands of alder with little conifer or black cottonwood tree recruitment needed to maintain stream shade over the long term. The proposed project was identified in the North Santiam Water Quality Restoration Plan¹ as a high priority for restoration of water quality in the Little North Santiam watershed.

¹ Willamette Basin Water Quality Restoration Plan. April 16, 2008, Bureau of Land Management; Salem and Eugene Districts, Chapter 5 North Santiam WQRP p. 41.

Environmental Effects

3.6.1 Proposed Action

Water Quality

The addition of large wood (LW; trees with roots attached) to lower Elkhorn Creek would increase the stability of floodplain surfaces and allow increased colonization of these areas by willows and riparian trees. Increased vegetative cover on the channel would help restore full potential shade at the site. This action would have no immediate effect on water quality downstream of the project area because stream flow would be low during LW placement, such that little work would occur within the wetted channel that would mobilize fine sediment. Any increase in turbidity in the project area is expected to be limited to the location of the disturbance and very short-term (hours). Over the short term, water quality would be largely unaffected by this proposal; although some reduction in stream temperature could result from shading of surface waters by the increase in tree canopy, it would be difficult to detect. Sediment deposition may increase slightly in the short term as a result of LW locally reducing stream velocities.

Over the long term (years to decades) the proposed action is expected to help improve and maintain water quality by slowing the transport of sediment through the system and providing additional slow water velocity areas for the deposition of fine particles (silts, sand and clays). Restoring a stable vegetative community through LW placement and planting of riparian tree seedlings would help maintain cool temperatures in the springs that emerge in the source area of the project channel.

Channel Function

Placing LW into Elkhorn Creek would affect streamflow and channel morphology by altering channel roughness and geometry, reducing stream velocity, and redirecting flow around the obstructions. Site specific effects can be anticipated, but cannot be precisely predicted.

Effects include: reductions in stream gradient and flow velocity upstream of obstructions with consequent deposition of suspended materials and a fining of (i.e., reduction in the medium particle size) of channel substrates; bed scour and increased velocities in the vicinity of obstructions; increased bank erosion in areas where materials divert stream flow into the bank; reductions in bank erosion in areas where materials divert flows away from the banks.

Overall, the increase in roughness elements in the channel is expected to decrease transit time for organic and inorganic materials moving through the system, increase hydraulic “complexity,” increase the quantity of sediment transported in the channel but reduce its rate of transport, increase sediment storage, increase complexity and alter the ratio of bed forms (i.e., pools and riffles), and increase over bank flood flows (on a small scale adjacent to deposited materials).

All of these effects are anticipated to be highest immediately after LW placement with a gradual diminution until a form of dynamic equilibrium is reached. Again, this can be anticipated, but not precisely predicted because timing of this process will be highly dependent upon the timing, quantity and size of winter peak flow events, which are stochastic in nature.

In addition, over time the LW added by the project is expected to trap wood entering the stream from upstream riparian areas; trees in riparian zones will continue to grow, age and eventually fall into the channel. This will result in increases in the quantity and complexity of wood in the channel over the next century. For the reasons described above, it is anticipated that these alterations to channel morphology and hydraulics will directly increase habitat diversity, aquatic community complexity and structure, and the diversity of aquatic organisms to the benefit of aquatic species in the watershed.

3.6.2 Cumulative Effects

Cumulatively this action would add to the recovery of aquatic habitat, sediment transport regime and functional stream channels in the Little North Fork Santiam (see section 3.10). This could contribute to a long term reduction in the turbidity and stream temperature.

3.6.3 No Action Alternative

Over the long term with delivery of LW from upstream reaches, water quality would improve due to increased floodplain stability and riparian tree colonization of areas with low tree shading. Improvement in water quality would be at a slower rate than that of the proposed action. Additionally, with natural recruitment of LW channel function would also improve over the long term, but at a slower rate than under the proposed action. Water quality would likely improve within 50 years as LW is delivered from upstream segments and trees colonize floodplain areas stabilized by the LW, compared to a similar level of improvement within 15-25 years under the proposed action.

3.7 Wild and Scenic Rivers

Affected Environment

Two segments of Elkhorn Creek, totaling 6.4 miles, are designated as Wild and Scenic. The lower 1 mile of Elkhorn Creek is classified as Scenic with Outstandingly Remarkable Values consisting of Scenery and Wildlife. This portion of Elkhorn Creek meets scenic designation because it is free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible by roads in two places.

Environmental Effects

3.7.1 Proposed Action

The addition of Large Wood to lower Elkhorn Creek would increase the stability of floodplain surfaces and allow increased colonization of those sites by riparian trees. Planting tree seedlings would improve stream shade and floodplain function and supply LW to Elkhorn Creek over the long term. Increased floodplain stability and aquatic habitat complexity would contribute to greater primitive appearance of the stream segment over the long term. In the short term (for about one year) the primitive appearance of the reach would be slightly impacted by soil and vegetation disturbance resulting from felling and moving trees with the cable-yarder or articulated excavator. Over the long term impacts to primitiveness would be negligible as logs weather and other LW accumulates from upstream reaches. There would be no long term impacts to the Scenic Classification of the river, or the Outstandingly Remarkable Values of Scenery and Wildlife.

3.7.2 Cumulative Effects

No cumulative effects to the Scenic Classification or the Outstandingly Remarkable Values of Elkhorn Creek are expected through the implementation of this project. This project is short term (less than one month) and small in scale with effects limited to the immediate project area.

3.7.3 No Action Alternative

Over the long term with delivery of LW from upstream reaches, channel stability and instream habitat conditions and would be expected to improve. With improvement in channel stability the primitive appearance of the segment would also improve over the long term, but at a slower rate than that of the proposed action. No impacts to primitiveness would be expected over the short term.

3.8 Wildlife

Affected Environment

The project area is primarily late successional forest habitat in the mature seral stage, and riparian streamside habitat. The late successional habitat consists of Douglas-fir, Western hemlock, and few Western redcedar. The riparian habitat consists of big-leaf maple, red alder, Douglas-fir, Western hemlock, and Western redcedar. Understory shrub layers and ground cover is diverse and well developed with vine maple, huckleberries, salal, Oregon grape, and sword fern predominating. Large coarse woody debris and snags are abundant and present in all decay classes, and currently exceeds Northwest Forest Plan requirements (USDI 1995; p.21).

Oregon slender salamander, a Bureau Sensitive Species, is expected to occur in the project area. Habitat is generally described as conifer stands dominated by Douglas-fir with large rotten (decay class 3 to 5) Douglas-fir down logs.

A number of bat species of concern are suspected to occur in the project area. These species are associated with caves and mines, bridges, buildings, cliff habitat, or decadent live trees and large snags with sloughing bark.

A number of migratory birds which are associated with late successional forest are expected to breed in the project area.

Environmental Effects

3.8.1 Proposed Action

The project is expected to have effects on Oregon slender salamander due to disturbance of down CWD and the forest floor. Effects are expected to be minimal because the project would be of short duration and would occur during the summer when salamander activity is low. The down logs proposed for use in the project are harder material in the early stages of decay. Primary habitat for the Oregon slender salamander is large soft material in the more advanced stages of decay which would remain on site. Disturbance of this material is expected to be low.

Effects to bat species and habitat are expected to be low due to the nature and duration of the project. There are no caves and mines, bridges, buildings, cliff habitat present in the project

area. The snags that would be affected by this project would be hard snags in the early stages of decay, and no decadent live trees or large snags with sloughing bark would be affected.

Effects to migratory birds and habitat are expected to be low due to the nature, duration and timing of this project. The project would not be implemented until later in the summer when the majority of bird species have finished nesting.

3.8.2 Cumulative Effects

Due to the nature, duration and timing of this project, cumulative effects to wildlife species, including special status species and migratory birds, would be minimal. No habitat types would be changed, degraded or downgraded as a result of this project. The project area would remain late successional forest, and snag and CWD levels would remain well above Northwest Forest Plan requirements (USDI 1995; p.21).

3.8.3 No Action Alternative

Late Successional habitat in the project area would remain unchanged and undisturbed due to human activity. Due to the nature, duration and timing of this project, there few differences between the action and the no action alternatives from a wildlife perspective.

3.9 Other Elements of the Environment Based On Authorities and Management Direction

Table 2: Elements of the Environment to be analyzed based on Authorities and Management Direction

<i>Element of the Environment /Authority</i>	<i>Remarks/Effects</i>
Air Quality (Clean Air Act as amended (42 USC 7401 et seq.)	This project is in compliance with this direction because the project will have no affect on air quality.
Cultural Resources (National Historic Preservation Act, as amended (16 USC 470) [40 CFR 1508.27(b)(3)], [40 CFR 1508.27(b)(8)])	Inventories were completed prior to project implementation resulting in compliance with this direction. The project would have no effect on this element because no cultural resources are known or suspected to be present in the proposed project areas.
Ecologically critical areas [40 CFR 1508.27(b)(3)]	The project would take place outside of areas of critical environmental concern (ACEC).
Energy Policy (Executive Order 13212)	This project is in compliance with this direction because this project would not interfere with the Energy Policy (Executive Order 13212).
Environmental Justice (E.O. 12898, "Environmental Justice" February 11, 1994)	This project is in compliance with this direction because project would have no effect on low income populations.
Fish Habitat, Essential (Magnuson-Stevens Act Provision: Essential Fish Habitat (EFH): Final Rule (50 CFR Part 600; 67 FR 2376, January 17, 2002)	This project is in compliance with this direction because NOAA's Biological Opinion (2008) determined habitat restoration actions would not result in adverse modification of EFH. Addressed in text (<i>Section 3.4</i>)
Farm Lands, Prime [40 CFR 1508.27(b)(3)]	The project would have no effect on this element because no prime farm lands are present on BLM land within the Cascades RA.
Floodplains (E.O. 11988, as amended, Floodplain Management, 5/24/77)	This project is in compliance with this direction. Addressed in text (<i>Section 3.2</i>)

<i>Element of the Environment /Authority</i>	<i>Remarks/Effects</i>
Hazardous or Solid Wastes (Resource Conservation and Recovery Act of 1976 (43 USC 6901 et seq.) Comprehensive Environmental Response Compensation, and Liability Act of 1980, as amended (43 USC 9615)	The project is in compliance with this direction because the Contractor is required to have a Spill Containment Kit and a Spill Prevention, Control, and Countermeasure Plan (SPCC) in case the excavator or yarder leaks fuel or oil during the large wood work. The SPCC Plan will be reviewed and accepted by the Contracting Officer prior to initiating project work.
Healthy Forests Restoration Act (Healthy Forests Restoration Act of 2003 (P.L. 108-148)	This project is in compliance with this direction because the project would have no adverse effect on the Healthy forests restoration act.
Migratory Birds (Migratory Bird Act of 1918, as amended (16 USC 703 et seq)	This project is in compliance with this direction. Addressed in text (<i>Section 3.8</i>)
Native American Religious Concerns (American Indian Religious Freedom Act of 1978 (42 USC 1996)	This project is in compliance with the AIRFA because there no known Native American religious sites are in the project area and no concerns from any Tribes were received during the scoping period. Addressed in text (<i>Section 5.2</i>).
Noxious weed or non-Invasive, Species (Federal Noxious Weed Control Act and Executive Order 13112)	This project is in compliance with this direction because due to the manner in which material will be transported to, and moved on site, no adverse effect from invasive species is anticipated. Cable-yarder, excavator, and self-loader will be washed and inspected prior to entering public lands to insure that no invasive weeds will be transported to the project site (USDI 2003).
Park lands [40 CFR 1508.27(b)(3)]	No Parklands are present within the project area.
Public Health and Safety [40 CFR 1508.27(b)(2)]	The project would have no adverse concern on public health and safety because all actions would follow established safety procedures for operating equipment, minimizing emissions, and avoiding fuel spills.
Other Special Status Species (BLM Manual 6840)	<p>Fish -No other special status fish species are present in Elkhorn Creek.</p> <p>Plants - No Special Status Species (SSS) are known from the proposed project area. Habitat for some SSS (i.e. hypogeous and epigeous fungi) does exist in the proposed project area, however, impact to the habitat or any undiscovered SSS that might occur is not anticipated and will not contribute to the need to list any SSS as threatened or endangered under the ESA act.</p> <p>Wildlife: The proposal would not contribute to the need to list any special status wildlife species due to the nature, duration and timing of the project. Addressed in text (<i>Section 3.8</i>).</p>
Threatened or Endangered Species (Endangered Species Act of 1983, as amended (16 USC 1531)	<p>This project is in compliance with this direction because there would be no adverse effects on Threatened or Endangered Species.</p> <p><i>Fish</i> - Addressed in text (<i>Sections 3.3, 3.4, and 5.2.1.2</i>)</p> <p><i>Plants</i> - No T&E plant species or habitat are known or suspected to exist in the project area.</p> <p><i>Wildlife</i> - The proposed action would have no effects to T&E wildlife or habitat due to the nature, duration and timing of the project. Addressed in text (<i>Section 5.2.1.1</i>)</p>
Water Quality –Drinking, Ground (Safe Drinking Water Act, as amended (43 USC 300f et seq.) Clean Water Act of 1977 (33 USC 1251 et seq.)	This project is in compliance with this direction. Addressed in text (<i>Section 3.6</i>)
Wetlands (E.O. 11990 Protection of Wetlands 5/24/77) [40 CFR 1508.27(b)(3)]	This project is in compliance with this direction because no jurisdictional wetlands are in the project area. Addressed in text (<i>Section 3.2</i>)

<i>Element of the Environment /Authority</i>	<i>Remarks/Effects</i>
Wild and Scenic Rivers (Wild and Scenic Rivers Act, as amended (16 USC 1271) [40 CFR 1508.27(b)(3)])	This project is in compliance with this direction because the project follows direction for management within W&S rivers Addressed in text (<i>Section 3.8</i>)
Wilderness (Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.); Wilderness Act of 1964 (16 USC 1131 et seq.))	This project is in compliance with this direction because the project does not take place within Wilderness.

3.10 Compliance with the Aquatic Conservation Strategy

3.10.1 Compliance with the Aquatic Conservation Strategy

Table 3 shows compliance with the four components of the Aquatic Conservation Strategy for all Action alternatives (1/ Riparian Reserves, 2/ Key Watersheds, 3/ Watershed Analysis and 4/ Watershed Restoration).

Table 3: Compliance of Components of the Aquatic Conservation Strategy

<i>ACS Component</i>	<i>Project Consistency</i>
<i>Component 1 - Riparian Reserves</i>	The proposed project would not negatively affect the integrity of Riparian Reserves. Placement of LW and planting tree seedlings would improve riparian and floodplain functioning.
<i>Component 2 - Key Watershed</i>	The Little North Santiam is a Tier 1 key watershed. The proposed project has been designed to meet the Tier 1 objective of conserving anadromous and resident fish species.
<i>Component 3 - Watershed Analysis</i>	The Little North Fork Santiam Watershed Analysis (WA) was conducted by BLM in 1997. The WA recommended placement of LW on lower Elkhorn Creek to stabilize channels and floodplains and improve aquatic habitat complexity (WA, Ex. Sum, Pg. 5).
<i>Component 4 - Watershed Restoration</i>	The proposed project is a restoration project. The restoration objectives of the project are described in section 1.3.

3.10.2 Documentation of Consistency with the Nine Aquatic Conservation Strategy Objectives for all Action Alternatives

This project was reviewed against the ACS objectives at the project scale (IM-OR-2007-60). Table 4 describes the project's consistency with the nine Aquatic Conservation Strategy Objectives.

Table 4: Consistency with the Nine Aquatic Conservation Strategy Objectives

<i>Consistency with ACS Objectives</i>	<i>Reasoning</i>
<p>1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.</p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 1.</i></p>	<p>No Action Alternative: The No Action alternative would maintain the simplified aquatic habitat that currently exists. The current distribution, diversity and complexity of watershed and landscape-scale features would also be maintained.</p> <p>Proposed Action: The diversity and complexity of aquatic habitat would be enhanced. The aquatic system would be restored to more closely resemble that to which the species, communities and populations are adapted. (Section 3.3.1)</p>
<p>2. Maintain and restore spatial and temporal connectivity within and between watersheds.</p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 2.</i></p>	<p>No Action Alternative: Current connectivity within and between watersheds would be maintained.</p> <p>Proposed Action: Connectivity within the watershed may be improved through improvement of habitat complexity. (Section 3.3.1)</p>
<p>3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.</p> <p><i>The No Action Alternative may retard the attainment of ACS objective 3. The Proposed Action does not retard or prevent the attainment of ACS objective 3.</i></p>	<p>No Action Alternative: The current condition of physical integrity would be maintained or improve slightly over the long term</p> <p>Proposed Action: The physical integrity of shorelines, banks and bottom configurations would be restored by means of reintroduction of large structural elements and the retention of bedload that currently is routed rapidly through the system. (Section 3.2.1, 3.3.1, and 3.6.1)</p>
<p>4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.</p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 4.</i></p>	<p>No Action Alternative: The current condition of the water quality would be maintained.</p> <p>Proposed Action: Placement of LW and planting tree seedlings would improve water quality over the long term by increasing stream shade. Water quality would also be improved by increasing sediment deposition by placing LW to create areas of decreased stream velocities. (Section 3.6.1)</p>
<p>5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.</p> <p><i>The No Action Alternative may retard the attainment of ACS objective 5. The Proposed Action does not retard or prevent the attainment of ACS objective 5.</i></p>	<p>No Action Alternative: Sediment currently in Elkhorn Creek would be expected to route quickly through the system into the Little North Santiam River. Bedload transport would continue at a rapid pace with little instream structure to retain it.</p> <p>Proposed Action: The addition of LW structure would be expected to retain some of the bedload in Elkhorn Creek. Throughout the project area the sediment regime would be restored to one more closely resembling that under which the aquatic ecosystems evolved. (Sections 3.3.1 and 3.6.1)</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><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 6.</i></p>	<p>No Action Alternative: No change in in-streams flows would be anticipated.</p> <p>Proposed Action: The project is not expected to change instream flows, however, it would result in localized reductions in the velocities of high flows, and would restore patterns of sediment, nutrient and wood routing. (Sections 3.3.1 and 3.6.1)</p>

<i>Consistency with ACS Objectives</i>	<i>Reasoning</i>
<p>7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.</p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 7.</i></p>	<p>No Action Alternative: The current condition of flood plains and their likelihood of inundation, as well as the water table elevations in meadows and wetlands is expected to be maintained.</p> <p>Proposed Action: The Elkhorn Creek channel has limited floodplain habitat due to its confinement by canyon walls, however, the addition of large structure is likely to restore floodplain inundation and water table elevation to the extent that the channel allows. No meadows and wetlands are near the project area. (Section 3.2.1)</p>
<p>8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.</p> <p><i>Both the No Action and the Proposed Action Alternatives do not retard or prevent the attainment of ACS objective 8.</i></p>	<p>No Action Alternative: Development of physical complexity and stability will occur over the long term as LW is delivered to the project site from upstream reaches.</p> <p>Proposed Action: Riparian tree plantings will improve the species composition and structural diversity of riparian plant communities and improve supplies of LW over the long term. Restoration of plant composition would occur faster than under the no action alternative. (Section 3.2.1)</p>
<p>9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.</p> <p><i>The No Action Alternative may retard the attainment of ACS objective 9. The Proposed Action does not retard or prevent the attainment of ACS objective 9.</i></p>	<p>No Action Alternative: The aquatic habitat would remain in a simplified state and less capable of supporting well-distributed populations of native invertebrate and vertebrate populations.</p> <p>Proposed Action: Aquatic habitat in Elkhorn Creek would be more capable of supporting well-distributed populations of native invertebrate and vertebrate populations due to increased habitat complexity and diversity. (Section 3.3.1)</p>

4.0 LIST OF PREPARERS

<i>Resource</i>	<i>Name</i>	<i>Initials</i>	<i>Date</i>
<i>Cultural Resources</i>	Heather Ulrich	HU	6/30/09
<i>Hydrology/ Water Quality</i>	Patrick Hawe	PH	4/28/09
<i>Botany TES and Special Attention Plant Species</i>	Terry Fennell	TGF	4/28/09
<i>Wildlife TES and Special Attention Animal Species</i>	Jim England	JSE	5/22/09
<i>Fisheries</i>	Bruce Zoellick	BWZ	6/9/09
<i>Recreation Sites and Visual Resources Management and Rural Interface</i>	Zach Jarrett	ZSJ	6/30/09
<i>NEPA</i>	Carolyn Sands	CDS	7/1/09
<i>Soils</i>	Patrick Hawe	PH	4/28/09

5.0 CONTACTS AND CONSULTATION

5.1 Coordination with other Agencies and Organizations

Oregon Department of Fish and Wildlife (ODFW) biologists were consulted with regarding project impacts to salmon and steelhead habitats.

5.2 Consultation (ESA Section 7 and Section 106 with SHPO)

5.2.1 ESA Section 7 Consultation

5.2.1.1 US Fish and Wildlife Service

Consultation for proposed fish habitat restoration projects such as this one are included in the *Batched Biological Assessment for Projects with the Potential to Modify the Habitats of Northern spotted owls and/or Bald Eagles or Modify Critical Habitat of the Northern spotted owl for the Willamette Province - FY 2007-2008*. A Letter of Concurrence was issued on September 22, 2006 (FWS reference #1-7-06-I-0192). The only threatened or endangered species which this project could affect would be the northern spotted owl. Due to the nature, duration and timing of this project, no adverse effects to the northern spotted owls or their habitat are anticipated. No suitable habitat would be removed or downgraded, and suitable habitat would be maintained after individual tree removal for the project. The project would occur outside of the critical nesting season for spotted owls. The project area is not located in Critical Habitat and is not located within disturbance distance of any known spotted owl sites.

5.2.1.2 NOAA Fisheries (NMFS)

Determinations have been made that the project may affect, but is not likely to adversely affect Upper Willamette River (UWR) steelhead trout, and UWR Chinook salmon. Consultation with NOAA Fisheries would be conducted under the Aquatic Restoration Biological Opinion, dated April 28, 2007.

5.2.2 Cultural Resources - Consultation with State Historical Preservation Office:

Under the existing protocol with the State Historic Preservation Office consultation on this project is not required.

5.3 Public Scoping and Notification

A scoping letter was sent on May 18, 2009 to federal, state and municipal government agencies and interested parties on the Cascades Resource Area mailing list. The letter briefly described the project and included a map of the project area.

5.3.1 EA public comment period

The EA and FONSI will be made available for public review July 8, 2009 to July 23, 2009. The notice for public comment will be published in a legal notice by the *Stayton Mail* newspaper. Comments received by the Cascades Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before July 23, 2009 will be considered in making the final decisions for this project.

6.0 MAJOR SOURCES

6.1 Major Sources

ODFW (Oregon Department of Fish and Wildlife). 1994. *Physical Habitat Surveys 1994. Aquatic Inventories Project, Natural Production Program. Little North Fork Santiam River Basin.*

NOAA (National Oceanic and Atmospheric Administration). 2005. *Endangered and Threatened Species; Designation of Critical Habitat for 12 Evolutionarily Significant Units of West Coast Salmon and Steelhead in Washington, Oregon, and Idaho. Federal Register/Vol. 70, No. 170.*

USDA. Forest Service, USDI. Bureau of Land Management. 1994. *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.* Portland, Oregon

USDA. Forest Service, USDI. Bureau of Land Management. 1994. *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.* Portland, Oregon

USDA. Natural Resources Conservation Service. 2005. *Soil Data Mart.* Accessed <http://soildatamart.nrcs.usda.gov/> May, 2008.

USDI. Bureau of Land Management. 2008a. *Record of Decision and Resource Management Plan.* Salem, Oregon

USDI. Bureau of Land Management. 2008b. *Willamette Basin Water Quality Restoration Plan, Chapter 5 North Santiam WQRP.* Bureau of Land Management; Salem District & Eugene District. Salem, Oregon

USDI. Bureau of Land Management. 2003. *Environmental Assessment No. OR-080-02-02 and Finding of No Significant Impact, Cascades Resource Area Invasive Non-Native Plant Management.* Salem, Oregon

USDI. Bureau of Land Management. 2003. *Oregon and Washington Bureau of Land Management Special Status Species Policy. BLM Instruction Memorandum No. OR-2003-054.* Oregon State Office, Portland, OR.

USDI. Bureau of Land Management. 1997. *Little North Santiam Watershed Analysis.* Salem District, Salem, Oregon.

USDI. Bureau of Land Management. 1995. *Salem District Record of Decision and Resource Management Plan.* Salem, Oregon.

USDI. Bureau of Land Management. 1994. *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement.* Salem, Oregon

USDI. U.S. Fish and Wildlife Service, Oregon Fish and Wildlife Office. March, 2005. *Biological Opinion and Letter of Concurrence for Effects to Bald Eagles, Northern Spotted Owls and Northern Spotted Owl Critical Habitat from the U.S. Department of the Interior; Bureau of Land Management, Eugene District and Salem District, the U.S. Department of Agriculture; Mt. Hood National Forest and Willamette National Forest and the Columbia River Gorge National Scenic Area Calendar Years 2005-2006. Habitat Modification Activities within the Willamette Province. (FWS Reference Number 1-7-05-F-0228).* Portland, Oregon