Marys Peak Resource Area Noxious Weed Control Utilizing Glyphosate
Environmental Assessment and Finding of No Significant Impact

Environmental Assessment Number DOI-BLM-OR-S050-2010-0005-EA

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

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Abstract: This EA (Environmental Assessment) discloses the predicted environmental effects of herbicide (Glyphosate) applications to control Oregon Department of Agriculture listed noxious weeds in the Marys Peak Resource Area (MPRA), of the Salem District of the Bureau of Land Management (BLM). The project proposes to implement a long term herbicide plan to reduce and control noxious weed species throughout the MPRA. The action would occur within all land use planning areas including but not limited to; LSR (Late-Successional Reserve), RR (Riparian Reserve), AMA (Adaptive Management Area) and Matrix LUAs (Land Use Allocations) and ACECs (Areas of Critical and Environmental Concern). The number of acres treated annually would be based on available funding, weather, and size and vigor of noxious weed infestations. Herbicide use would be limited to 500 net acres per year (0.4 percent of the Resource Area), and would not treat more than 10 percent of the total riparian area (measured as adjacent stream length) in each sixth field (HUC) hydrologic unit code containing listed fish species,. In addition, this EA would comply with agency policies and guidelines regarding herbicide application. Only the herbicide Glyphosate would be applied.

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-10/017+1792

FINDING OF NO ADDITIONAL SIGNIFICANT IMPACT

Introduction

The BLM (Bureau of Land Management) has conducted an environmental analysis Environmental Assessment Number (DOI-BLM-OR-S050-2010-0005-EA) for a proposal to implement an herbicide application project to reduce and control (ODA) Oregon Department of Agriculture listed noxious weeds in the MPRA (Marys Peak Resource Area). It includes herbicide application in a variety of habitats within LSR (Late-Successional Reserve), RR (Riparian Reserve), AMA (Adaptive Management Area) and Matrix LUAs (Land Use Allocations) and ACECs (Areas of Critical and Environmental Concern). Herbicide use would be restricted to the herbicide Glyphosate.

Implementation of the proposed action would conform to management actions and direction contained in the attached MPRA Noxious Weed Control Utilizing Glyphosate EA .

The MPRA Noxious Weed Control Utilizing Glyphosate EA is attached to and incorporated by reference in this FONSI (Finding of No Significant Impact) determination. This EA (Environmental Assessment) is a programmatic analysis of the MPRA and supplements analyses found in the RMP/FEIS (*Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994) (EA p. 1). The MPRA Noxious Weed Control Utilizing Glyphosate project has been designed to conform to the ROD/RMP (*Salem District Record of Decision and Resource Management Plan*, May 1995) and related documents which direct and provide the legal framework for management of BLM managed lands within the MPRA (EA pp. 1-2). Consultation with U.S. Fish and Wildlife Service and NMFS (National Marine Fisheries Service) is described in Section 7.1 of the EA.

The EA and FONSI will be made available for public review from March 15, 2010 to April 14, 2010. The notice for public comment will be published in a legal notice by the following newspapers: *Gazette Times*, located in Benton County; *Itemizer Observer* located in Polk County; and the *Newport News Times* located in Lincoln County. Written comments should be addressed to Trish Wilson, Field Manager, Marys Peak Resource Area, 1717 Fabry Road S., Salem, Oregon 97306. Emailed comments may be sent to OR_Salem_Mail@blm.gov. Attention: Trish Wilson.

Finding of No Significant Impact

Based upon review of the MPRA Noxious Weed Control Utilizing Glyphosate EA and supporting documents, I have determined that the proposed action 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 site-specific environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, supplemental or additional information to the analysis done in the RMP/FEIS through a new environmental impact statement is not needed. This finding is based on the following information:

***Context**:* Potential effects resulting from the implementation of the proposed action have been analyzed within the context of the project area boundaries. Herbicide use would be limited to 500 net acres per year (0.4 percent of the MPRA), and would not treat more than 10 percent of the total riparian area (measured as adjacent stream length) in each sixth field HUC (hydrologic unit code) containing listed fish species, [40 CFR 1508.27(a)]. In addition, this EA would comply with agency policies and guidelines regarding herbicide application.

***Intensity**:*

1. The resources potentially affected by this project are: vegetation [(native, non-native, (T&E) (Threatened and Endangered species, other (SS) special status species)], recreation/visual/rural interface, wildlife (SS species), soils, water, and fisheries. The effects of implementing this project is unlikely to have significant adverse impacts on these resources [40 CFR 1508.27(b) (1)] for the following reasons:

   - *Project design features* described in *(EA section 2.2.3)* would reduce the risk of effects to affected resources to be within RMP standards and guidelines within the effects described in the RMP/EIS and included in the Record of Decision (September 2007) for vegetation treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement.

   - *Vegetation and Forest Stand Characteristics (EA section 3.1.1):* The implementation of this project would provide for a decrease in the amount (number of individuals and acres of infestations) of ODA listed noxious weeds which currently are known to occur on Federal lands managed by the MPRA. This proposal would restore areas currently dominated by noxious weed species and would allow for the re-introduction and establishment of natives to once again dominate the sites.

   - *Wildlife Special Status Species: (EA section 3.1.2*). The proposed action would have no short-term (less than10 years) negative impacts on any listed wildlife species. Managing the spread of noxious weeds in the forest would have positive long-term impacts for all native wildlife species since the project would restore native habitat currently dominated by noxious weed species, (these areas are generally considered non-habitat for wildlife).

   - *Fisheries (EA section 3.*1.3). Consultation with NMFS is required for all actions which 'May Affect' ESA listed fish species and critical habitat. Given the programmatic nature of the proposed activities, and extensive geographic coverage, it is likely that circumstances would arise where treatment of noxious weeds would occur within perennial or intermittent streams with ESA listed fish and their designated critical habitat or within perennial, intermittent, or ephemeral channels tributary to streams with ESA listed fish and their designated critical habitat.

     Since instream herbicide concentrations are difficult to quantify in absence of site specific analysis, potentially high runoff may occur in some situations, but cannot currently be calculated (due to unknown site conditions). For this reason a 'May Affect Likely to Adversely Affect' determination is warranted for ESA listed fish species and for the listed critical habitat. A following is a summary of project design features that would reduce the risk of affecting fish resources. For a complete list of project design features see EA section 2.2.3.

     - During project design, develop appropriate measures to ensure protection of aquatic and riparian habitats.
     - The resource area fisheries biologist shall be involved in project design to ensure protection of aquatic and riparian habitats. In some instances a buffer may be applied to protect streams as determined by the resource area fisheries biologist.
     - In riparian areas minimize soil disturbance to prevent adverse affects to stream channel or water quality conditions.
     - Restrict the use of BLM approved herbicides to one, Glyphosate. Aquatic labeled Glyphosate would be required within riparian areas.
     - No herbicides would be applied to submersed or floating vegetation.

- Only Oregon Certified Applicators or individuals under the direct supervision of Oregon Certified Applicators would apply herbicides in accordance with label instructions.

- *Soils*: (*EA section 3.1.4*). The proposed project would affect less than 0.4 percent of the MPRA annually. Also treatments would be restricted to less than 10 percent of the total riparian area within each 6th field per year. The proposed Glyphosate application would likely result in some soil contamination. Contamination would be short-term.. Research to date indicates that Glyphosate is not harmful to soil microorganisms under field conditions. In fact some studies indicate that it might be beneficial to some soil microorganisms.

- *Water (EA section 3.1.5)*: Replacing noxious weed infestations with native vegetation would improve riparian and upslope conditions which could result in beneficial effects on water quality. Only small areas would be chemically treated at any given time. Herbicide use would be limited to 500 acres per year (0. 4 percent of the public lands in the project area) and restricted to less than 10 percent of the total riparian area within each 6th field watershed per year. Consequently, the magnitude of effect is likely to be too small and spread out in time and space and not be discernible at the watershed scale.

- *Recreation/Visual Resources and Rural Interface (EA section 3.1.6*): Elimination and control of noxious weeds and promotion of native vegetation should serve to maintain a high quality experience for recreating visitors. Visual impacts would be short in duration (one or two years) while the site is restored with native vegetation. The effect of Herbicide spraying in rural interface areas would be a disturbance to visual resources where plants turn brown and die. Overtime, however, green native plants would provide visually pleasing scenery.

- *Public health or safety* [40 CFR 1508.27(b)(2)]: The project's effects to public health and safety would not be significant because the project occurs in a forested setting, removed from urban/residential areas, where the primary activities are forest management and timber harvest.

- Carbon Sequestration (Storage) and Climate Change- This project would remove noxious weeds from scattered locations throughout the MPRA, and would allow for the re-establishment of native species on the site. In general, native vegetation within any coniferous forest zone in NW Oregon would tend to have more vertical vegetative structure (overstory, understory, brush species) than a monoculture of a noxious weeds. The native vegetation would then have much more photosynthetic surface area per square foot. If there is more photosynthetic surfaces per square foot available through the implementation of this project, it would seem likely through photosynthesis more carbon would be stored with the implementation of this project than without the implementation of this project. Furthermore, the treatment areas in this proposal are generally scattered amongst native vegetation and most treatments are small in total area treated and any measurable change in carbon sequestration or liberation would be difficult if not impossible. It is our belief carbon storage would be increased in the long-term with the implementation of this project through native plant restoration projects.

2. The proposed MPRA noxious weed control utilizing Glyphosate EA:
   a. Would not adversely affect
      (1) unique characteristics of the geographic area [40 CFR 1508.27(b)(3)] - parklands, prime farmlands, wild and scenic rivers, wilderness, or ecologically critical areas located within the project area (*EA Section 3.1, Table 3);*

(2) districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor would the Proposed Action cause loss or destruction of significant scientific, cultural, or historical resources [40 CFR 1508.27(b)(8)] (*EA Section 3.1, Table 3).*

b. *Are not unique or unusual.* The BLM has experience implementing similar actions in similar areas without highly controversial [40 CFR 1508.27(b) (4)], highly uncertain, or unique or unknown risks [40 CFR 1508.27(b) (5)].

c. *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)].

d. *Are not expected to adversely affect Endangered or Threatened Species* listed under the Endangered Species Act (ESA) of 1973 [40 CFR 1508.27(b) (9)].

United States Fish and Wildlife Service (USFWS)
To address concerns for potential effects to northern spotted owls, the proposed action was consulted upon with the USFWS, as required under Section 7 of the ESA. Consultation for this proposed action was facilitated by its inclusion within a batched Biological Assessment (BA) that analyzed all projects that may modify the habitat of listed wildlife species on federal lands within the Northern Oregon Coast Range during fiscal years 2009 and 2010. The resulting Biological Opinion (issued 4/2/2009; Reference #13420-2009-F-0012; USDI-FWS 2009), concluded that this action would not result in jeopardy to listed species and would not adversely modify critical habitat for any species. This proposed action has been designed to incorporate all appropriate design standards set forth in the Biological Assessment and is in compliance with the Terms and Conditions included in the Biological Opinion.

National Marine Fisheries Service
On April 28, 2007 National Marine Fisheries Service (NMFS) completed their Biological Opinion (BO) *Endangered Species Act Section 7 Formal Programmatic Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Fish Habitat Restoration Activities in Oregon and Washington, CH2007-CY2012* which included NNP treatments. Adverse affects to ESA listed species and EFH and application of design features to minimize affects are covered by the Programmatic BA and BO. Conformance with the design criteria established in the NMFS BO would result in no additional consultation needs to implement the proposed activities. Any activities not covered by the Programmatic BO which "may affect" listed species would need to be consulted on separately.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended, requires an assessment of proposed action effects to EFH (Essential Fish Habitat) and consultation with NMFS is necessary for projects which may 'Adversely Affect' EFH. For purposes of this analysis stream reaches with known populations of Chinook, coho, chum, or sockeye salmon present, or considered highly likely to be present, are considered Essential Fish habitat. An 'Adverse Affect' determination was made on EFH for similar reasons as presented in the ESA affects determination.

e. *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)] (*EA Section 1.3*).

f. The Interdisciplinary Team (IDT) evaluated the project area in context of past, present and reasonably foreseeable actions [40 CFR 1508.27(b) (7)] and determined that there is not a potential for cumulative effects on the affected resources (*EA Section 4.-0*).

Approved by: _____ _____

Trish Wilson, Date

Marys Peak Resource Area Field Manager

Glossary: Abbreviations, Acronyms, and Terms

ACS	Aquatic Conservation Strategy
Alternative	Proposed project (plan, option, choice)
Anadromous Fish	Species that migrate to oceans and return to freshwater to reproduce.
BLM	Bureau of Land Management
BMP	Best Management Practice(s) design features to minimize adverse environmental effects
CEQ	Council of Environmental Quality, established by the National Environmental Policy Act of 1969
CEQ Regulations	Regulations that tell how to implement NEPA
Cumulative Effects	Past, present, and reasonably foreseeable effects added together (regardless of who or what has caused, is causing, and might cause those effects)
CWD	Coarse Woody Debris refers to a tree (or 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 as described in Northwest Forest Plan and FEMAT
EA	Environmental Assessment. NEPA document that describes a federal action(s) and analyzes the effects to the public and other agencies and tribes
EFH	Essential Fish Habitat
Emergent Vegetation	Refers to the portion of aquatic vegetation growing above the surface of water.
Endangered Species	Any species of plant or animal defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range, and published in the Federal Register
ESA	Endangered Species Act. Federal legislation that ensures federal actions would not jeopardize or elevate the status of living plants and animals
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy Management Act
FONSI	Finding of No Additional Significant Impact. NEPA document that describes why the proposed action within a EA would not significantly affect the quality of the human environment, individually or cumulatively
Fuels	Any combustible material left on site after treatments that is available for burning (ie. stems, leaves)
Glyphosate	Glyphosate is a broad-spectrum systemic herbicide used to kill weeds, especially perennials. It is typically sprayed and absorbed through the leaves, injected into the trunk, or applied to the stump of a tree, or broadcast or used in the cut-stump treatment as a forestry herbicide. Glyphosate is the most used herbicide in the USA.
Hydric	Hydric soils are those that are wet enough in the upper layer during the growing season to develop anaerobic conditions
Interdisciplinary Team	IDT. A group of individuals assembled to solve a problem or perform a task
Intermittent Stream	Any nonpermanent flowing drainage feature having a definable channel and evidence of scour or deposition. Includes ephemeral streams if they meet these two criteria
LSR	Late-Successional Reserve (a NWFP land use allocation) Lands that are to be protected or enhanced for the purpose of providing habitat for older forest related species
LSRA	Late-Successional Reserve Assessment for Oregon Coast Province – Southern Portion. Interagency document which facilitates appropriate

	management activities to meet LSR objectives
LUA	Land Use Allocation. Lands designated using objectives as described in the NWFP
LWD	Large Woody Debris. Generally the bole of a tree, usually a conifer that is larger than 20 inches in diameter.
Matrix	A NWFP designated land use allocation. These lands are managed primarily for timber production
MPRA	Marys Peak Resource Area
Native Plant:	Species that historically occurred or currently occur in a particular ecosystem and were not introduced
NEPA	National Environmental Policy Act (1969)
NMFS	National Marine Fisheries Service
Non-native Plant	Any species that historically does not occur in a particular ecosystem or were introduced
Non-Point	No specific site
Noxious Weed	A plant species designated by federal or state law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or diseases; or non-native, new, or not common to the United States
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)
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
Old-Growth	Usually 180-220 year-old trees
Perennial Stream	A stream that typically has running water on a year-round basis
Riparian area	Consists of all areas of aquatic systems and associated channels (including ephemeral streams) and includes all specialized riparian vegetation.
RMP	Salem District Record of Decision and Resource Management Plan (1995)
RMP/FEIS	Salem District Proposed Resource Management Plan / Final Environmental Impact Statement (1994)
ROD	Record of Decision
RR	Riparian Reserves (NWFP land use allocation) Lands on either side of streams or other water feature designated to maintain or restore aquatic habitat. The boundary of riparian reserves is a distance of two site potential tree heights(420 feet) from fish bearing streams and one site potential tree height(210 feet) from non fish bearing streams.
Rural Interface	BLM managed lands within ½ mile of private lands zoned forone to 20 acre lots. Areas zoned for 40 acres and larger with homes adjacent to or near BLM-managed lands
S&M FSEIS	Final Supplemental Environmental Impact Statement for Amendment to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (2000)
S&M ROD	Record of Decision and Standards and Guidelines for Amendment to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (2001)
Silviculture	The manipulation of forest stands to achieve desired structure

Skid Trails	Path through a stand of trees on which ground based equipment operates
Snag	A dead standing tree lacking live needles or leaves
Special Status Species	Plant, animal or fungal species falling in any of the following categories: Threatened or endangered, Proposed threatened or endangered, Candidate species, State listed species, Bureau sensitive species, or Bureau assessment species
Succession	A predictable process of changes in structure and composition of plant and animal communities over time. Conditions of the prior plant communities that are favorable for eh establishment of the next stage. The different stages in succession are often referred to as seral stages
Surfactant	A compound (in this EA, Li-700 and Agri-dex) added to a herbicide to allow for better penetration of the herbicide into the plant tissues.
Threatened Species	Those plant and animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future and published in the Federal Register
Turbidity	Multiple environmental sources which causes water to change conditions
USDI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
Viewshed	The landscape that can be directly seen from a viewpoint or along a transportation corridor
VRM	Visual Resource Management. Lands are classified from 1 to 4 based on visual quality ratings
Watershed	The drainage basin contributing water, organic matter, dissolved nutrients, and sediments to a stream or lake
Windthrow	Trees uprooted or blown over by wind events

Marys Peak Resource Area Noxious Weed Control Utilizing Glyphosate
ENVIRONMENTAL ASSESSMENT

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1.0 INTRODUCTION

The purpose of the MPRA (Marys Peak Resource Area) noxious weed control utilizing Glyphosate EA, hereafter referred to as this EA, is to clarify existing NEPA documentation and to increase the amount of acres treated annually to 500 net acres. The increase in acres is needed because recent inventories indicate widespread presence of some noxious weed species and because some treatments are needed for several years in the same location and this limits the MPRA's ability to treat new infestations while 'mopping up' sites treated in previous years.

This EA will analyze the impacts of noxious weed control treatments utilizing herbicides on the human environment in the MPRA

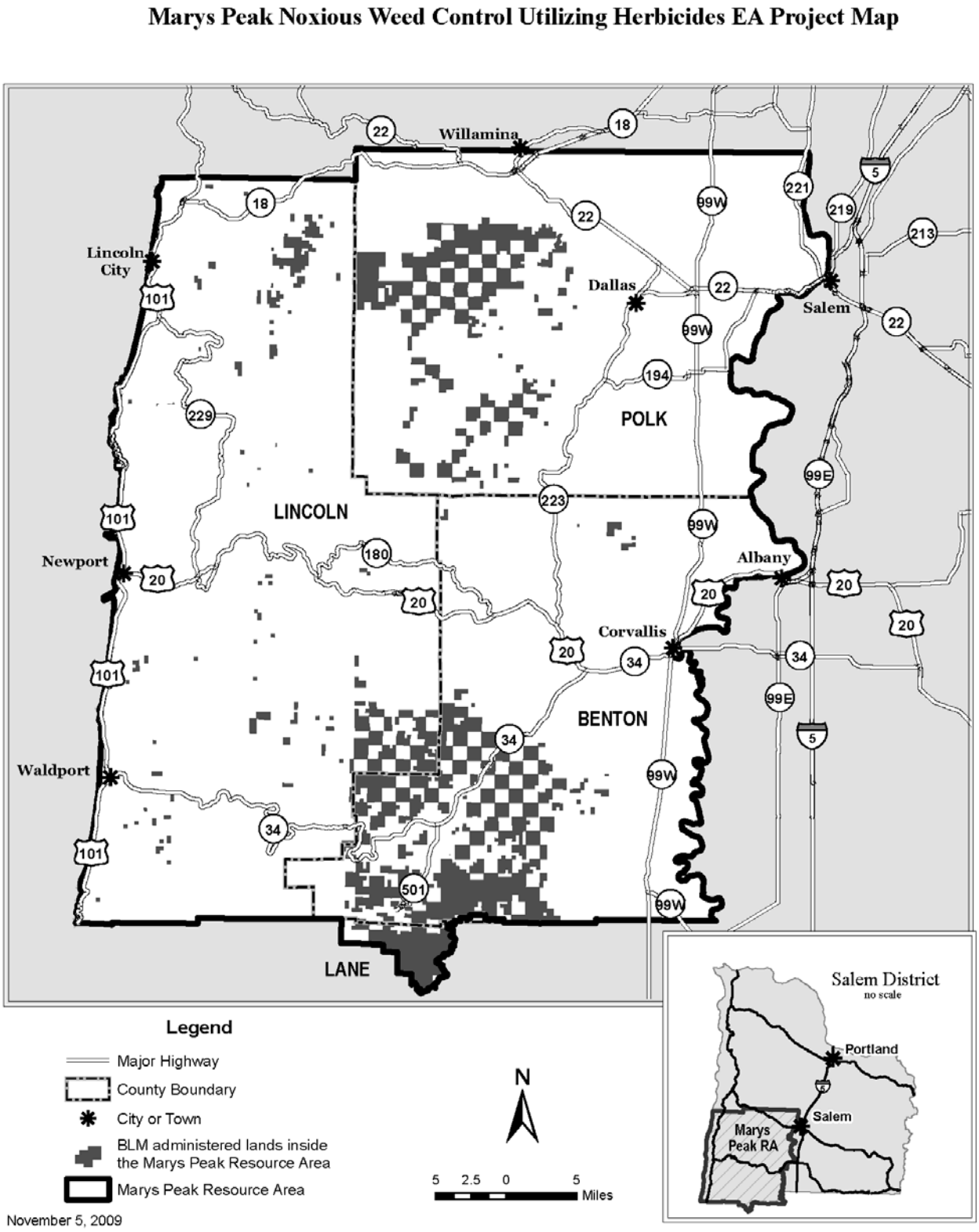
The EA will provide the decision-maker, the MPRA Field Manager, with current information to aid in the decision-making process. It will also determine if there are significant impacts not already analyzed in the Environmental Impact Statement for the Salem District's Resource Management Plan and whether a supplement to that Environmental Impact Statement is needed or if a Finding of No Significant Impact is appropriate.

Section 1 of this EA for the proposed MP noxious weed control utilizing Glyphosate project provides a context for what will be analyzed in the EA, describes the kinds of action we will be considering, defines the project area, describes what the proposed actions need to accomplish, and identifies the criteria that we will use for choosing the alternative that will best meet the purpose and need for this proposal.

1.1 Project Area Location

The project area is located on federal lands (approximately 128,382 acres) managed by the MPRA, Salem District of the BLM and private lands located within the boundaries of the MPRA located west of the Willamette Valley, Oregon in Benton, Lane, Lincoln, and Polk Counties (see EA Map p.2). The project area only includes private lands where federal dollars are providing funding for the treatment of noxious weeds and generally requires both parties to enter into a partnership or cost share agreement.

Map 1: Location Map



1.2 Conformance with Land Use Plans, Policies, and Programs

On July 16, 2009 the U.S. Department of the Interior, withdrew the Records of Decision (2008 ROD) for the Western Oregon Plan Revision and directed the BLM to implement actions in conformance with the resource management plans for western Oregon that were in place prior to December 30, 2008.

The MPRA noxious weed control utilizing Glyphosate project has been designed to conform to the following documents, which direct and provide the legal framework for management of BLM managed lands within the Salem District:

1/ *Salem District Record of Decision and Resource Management Plan* (ROD/RMP), May 1995: The RMP has been reviewed and it has been determined that the MPRA noxious weed plan control utilizing Glyphosate project conforms 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 ROD/RMP is the reason for doing this project (RMP p.64);

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 and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M ROD, January 2001.

4/ *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (2007 Final EIS and ROD) September 2007, and *BLM Northwest Area Noxious Weed Control Program EIS and ROD* (Weed Control EIS/ROD) December 1985, and the Supplement to the Northwest Area Noxious Weed Control Program (Weed Control FSEIS), March 1987.

The programmatic analysis of the MPRA noxious weed EA 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 Supplement to the 2004 FSEIS to Remove or Modify The Survey and Manage Mitigation Measure Standards and Guidelines, June 2007

The proposed action is located within the coastal zone as defined by the Oregon Coastal Management Program. This proposal is consistent with the objectives of the program, and the State planning goals which form the foundation for compliance with the requirements of the Coastal Zone Act. Management actions/directions found in the RMP were determined to be consistent with the Oregon Coastal Management Program.

All of the above documents are available for review in the Salem District Office. Additional information about the proposed project is available in the Integrated MPRA Noxious Weed Control Utilizing Glyphosate(non-native plant) Management Plan Project EA (EA #OR-080-06-09)Analysis File (NEPA file), also available at the Salem District Office.

Former Survey and Manage Review

The MPRA Noxious Weed Control Utilizing Glyphosate EA project is consistent with the 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines, as incorporated into the Salem District Resource Management Plan.

On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in *Conservation Northwest, et al. v. Rey, et al.*, No. 08-1067 (W.D. Wash.) (Coughenour, J.), granting Plaintiffs' motion for partial summary judgment and finding a variety of NEPA violations in the BLM and USFS 2007 Record of Decision eliminating the Survey and Manage mitigation measure.

Judge Coughenour deferred issuing a remedy in his December 17, 2009 order until further proceedings, and did not enjoin the BLM from proceeding with projects (including timber sales).

The project may proceed even if the District Court sets aside or otherwise enjoins use of the 2007 Survey and Manage Record of Decision. This is because the MPRA Noxious Weed Control Utilizing Glyphosate EA Project meets the provisions of the last valid Record of Decision, specifically the 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (not including subsequent Annual Species Reviews). Details of the project surveys are described below:

The implementation of this project would be considered as restoration of suitable habitat and not considered as a habitat disturbing action to survey and manage species. The implementation of this project would create suitable habitat by restoring native vegetation to areas which are currently infested with ODA listed noxious weeds. However, all project areas would be reviewed by the MPRA botanist and wildlife staff. If surveys are needed, they would be implemented as described under design features.

Compliance with the Aquatic Conservation Strategy

On March 30, 2007, the District Court, Western District of Washington, ruled adverse to the U. S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) 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 NMFS 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. Section 5.0 of the EA shows how the MPRA noxious weed control utilizing Glyphosate project meets the Aquatic Conservation Strategy in the context of PCFFA IV and PCFFA II. In addition, project design features (p. 8) would provide protection measures to meet ACS objectives.

1.3 Decision Criteria/Project Objectives

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

- Meet the purpose and need of the project (EA Section 1.6)
- 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 BLM-managed lands within the Salem District (EA Section 1.3)
- Would not have significant impact on the affected elements of the environment beyond those already anticipated and addressed in the RMP EIS.

1.4 Results of Scoping

A scoping letter, dated November 23, 2009, was sent to 31 potentially affected and/or interested individuals, groups, and agencies. No responses were received during the scoping period.

1.5 Purpose of and Need for Action

Purpose

Several federal laws, regulations and policies guide BLM management activities on public lands for the reduction of noxious weeds.

The *Carlson-Foley Act of 1968* and the *Plant Protection Act of 2000* (Public Law 106-224; includes management of undesirable plants on federal lands) authorize the BLM to manage noxious weeds and to coordinate with other federal and state agencies in activities to eradicate, suppress, control, prevent, or retard the spread of any noxious weeds on federal lands.

The *Federal Noxious Weed Act of 1974* established integrated management systems to control undesirable plant species. *Executive Order 11990, Protection of Wetlands*, ensures that federal agencies minimize the destruction, loss, or degradation of wetlands, and enhance and preserve the natural and beneficial values of wetlands. *Executive Order 13112, Invasive Species*, directs federal agencies to prevent the introduction of invasive species and provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.

In addition, the Salem RMP directs the Salem BLM to contain and/or reduce noxious weed infestations on BLM-administered lands using an integrated pest management approach (RMP p.64).

Need for Action

The MPRA currently has an EA in place for the application of herbicides, “Westside Salem Integrated Non-Native Plant Management Plan EA (January 2008)”. However, this plan limits the MPRA to treating only 50 acres of noxious weeds using herbicides annually. Based on current and new inventories of noxious weeds, (MPRA 'in-house' noxious weed surveys) and due to many sites needing

multi-year treatments, 50 acres treated per year is not sufficient to begin reducing the total acres inhabited by noxious weeds within the MPRA. The 'in-house' conducted surveys reveal several new invaders are appearing on the landscape (shining geranium, herb Robert, false brome and peavine) and many of the common species such as blackberry and Scot's broom are increasing in density along roadsides where they were previously known. The MPRA will continue to utilize an integrated weed management approach as designed in the Westside Salem NNP management plan which will continue to be valid for non-native plant control using cultural, physical and mechanical control methods within the MPRA.

This EA will clarify a few items contained in the Westside Salem NNP Management Plan EA and will differ from that EA by:

1) This EA will clarify that acres treated per year are recorded as ‘net’ acres. The 2008 EA simply stated acres treated and did not specify net or gross acres treated. The difference between gross and net acres treated can be quite large when only ‘spot’ spraying scattered patches (net) of noxious weeds within a large project area (gross) such as miles of roadsides.

2) This EA would increase the number of acres treated from 50 to 500 net acres (0.4 percent of MPRA lands). At the time the 2008 EA was written, the MPRA did not realized the extent of noxious weeds on their lands. Through subsequent inventories and the invasion of false brome on MPRA managed lands, it became apparent the MPRA had a greater need to use herbicides as a control measure. Although we don’t anticipate treating 500 net acres in 2010,there is a need to have flexibility in the ability to treat noxious weeds as new invaders become established within the MPRA and along with a need for a baseline for analysis purposes. We currently anticipate treating from 100 to 300 net acres in 2010.

3) This EA would limit herbicide treatments within each sixth field HUC containing listed aquatic species to no more than 10 percent of the total riparian area (measured as adjacent stream length) within a one year period. The 2008 EA restricted the following herbicide applications to which ever was less:

- Ten acres treated per year per sixth field watershed, or
- Ten percent of the total riparian area within each sixth field watershed per year. This direction was the result of a mis-interpretation from an Aquatic Restoration Biological Opinion (ARBO). The ten acre restriction in the 2008 EA did not allow for the implementation of control measures on a noxious weed species which may be a rapid invader and was currently known from one watershed and was more widespread than 10 acres. This is the case of false brome in the Upper Alsea River Watershed. The 2008 EA does not allow for treatments that are currently needed and funded.

4) This EA would incorporate all amended ARBO direction. The 2008 EA included direction from the original ARBO which was later amended. A DNA (Determination of NEPA adequacy) was prepared to incorporate the direction in the 2008 EA.

2.0 ALTERNATIVE DEVELOPMENT

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act 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 were identified. Therefore, this EA will analyze the effects of Alternative 1 (No Action) and Alternative 2 (Proposed Action).

2.1 Alternative 1 (No Action)

The No Action Alternative would allow continued implementation of current control measures to limit the spread and growth of NNPs within the MPRA. The MPRA currently operates their NNP program in compliance with NEPA document EA OR080-06-09 (March 2008) which includes cultural, physical, biological, and chemical control methods. Chemical use is limited to Glyphosate. Under this 2008 EA, chemical treatment on noxious weeds would occur on up to 50 acres per year and limited to which ever is less; to ten acres per year per sixth field watershed, or ten percent of the total riparian area within each sixth field watershed per year.

2.2 Alternative 2 (Proposed Action)

The Proposed Action would allow the MPRA to treat noxious weeds on up to 500 net acres (0.4 percent of the MPRA) of land using chemical (Glyphosate herbicide) control methods. The majority of treatment areas occur within the road prism and all treatments using motorized equipment would be restricted to existing roadways. Areas treated away from roads would be treated using non-motorized equipment (backpack & hand held sprayers).

Glyphosate use would be restricted to ODA plants designated as "noxious." See Appendix 1 for a current list of ODA listed noxious weeds. This list is generally updated annually and additional plants may be added in the future.

In general, Glyphosate use would be utilized after physical treatments, (especially on woody perennials to reduce the vegetative mass), or used as an initial treatment in areas where physical treatments are not feasible, effective, or in areas where physical treatments would disturb too much soil or on grasses and annual species. The only herbicide approved for use in this proposal is Glyphosate (aka. Round-up, Rodeo. etc) and only aquatic labeled Glyphosate (Aquamaster) would be applied in riparian reserves. Agri-dex and LI-700 are the only surfactants available for use under this proposal and both are rated for aquatic applications.

All applications would be consistent with directions included on the label and would be applied according to additional design features described in 2.2.3. Application of Glyphosate would only be allowed by the following treatment types and summarized in Table 1: stem injection, cut-stump, wicking and wiping, spot application (backpack or hand held sprayer, or hose & reel applications) or hack and squirt. Only stem injections and wicking and wiping applications would be used on emergent vegetation. Spot spraying emergent vegetation would require additional NEPA analysis. Aerial applications would not be permitted under this proposal.

All herbicide application would be applied by Oregon certified applicators or by applicators under the direct supervision of an Oregon certified applicator.

After treating areas infested with noxious weeds, native species would be established by one or both of the following methods depending on the size of the area to be treated:

- Passive establishment- where native species within the treatment area can become re-establish without the aid of additional sowing or planting, and

- Active establishment- where native species are sown or planted within the treatment areas to aid in the re-establishment of native species.

Table 1: Summary of Control Methods

Control Method	Treatment Type	Description
Herbicide Treatments	Stem Injection	Stems of actively growing species with a stem diameter larger than ½ inch are injected with herbicide usually near the base of the plant. Where stems are less than ½ inch stems may be severed and injected through the stem nodes. Commonly use for knotweed control.
	Cut-Stump	Herbicide is applied by spray, squirt, or wicking/wiping to the stump of a plant (usually a shrub or tree) shortly after the shoot or trunk is cut down.
	Wick & Wiping	Use a sponge or wick to wipe herbicide onto foliage, stems, or trunk. Use of wicking/wiping method reduces the possibility affecting non-target plants.
	Spot Application	Herbicide is directly sprayed onto target plants only, and spraying of desirable, non-target vegetation is minimized. Includes backpack or hand held sprayer, or hose & reel applications
	Hack & Squirt	Woody species are cut using a saw or axe or drilled; herbicide is then immediately applied to the cut with a backpack sprayer, squirt bottle, syringe, or similar equipment.

2.2.1 Priorities for Treatment

Inventories would be conducted within the MPRA to identify new noxious weeds infestations and to monitor the spread of known infestations. Inventories would identify NNP sites needing treatment and control efforts prioritized into two broad categories.

Priority 1

Oregon Department of Agriculture classified 'A' and 'T' (target) noxious weeds sites and any noxious weeds that are located within special management areas such as; recreation areas, ACECs, wetlands or areas designated as scenic by-ways and noxious weed locations where known bureau special status plants, fungi or animals occur. Any new invader species where a rapid response is needed for eradication would also be considered as a Priority 1 species.

Priority 2

Oregon Department of Agriculture classified 'B' noxious weeds which are regionally abundant, but may have limited distribution within the MPRA. Treatments to noxious weed infestations previously treated with physical control methods and have their vegetative mass reduced.

2.2.2 Monitoring

Treated sites would generally receive short and long-term monitoring to determine effectiveness of meeting treatment objectives, impacts on non-target species, and to determine the need for follow-up treatments. Monitoring would also allow for the early detection of new invader species.

2.2.3 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 3.1.

To comply with federal and state laws:

- Application of Glyphosate would be applied in a manner consistent with the label.

http://www.monsanto.com/monsanto/ag_products/pdf/labels_msds/aqua_master_label.pdf

The following design features would be implemented when a fisheries 'may effect' project determination is made. These proposed actions conform to the ARBO as amended and the EA. A schematic drawing of the proposed action is incorporated in Appendix C.

- Backpack sprayers would be allowed to the bankfull level on all stream channels, both intermittent and perennial;
- Spot spray with hand-held, hand-pumped spray, or squirt bottles (no backpack sprayers) would be allowed to the waters edge on perennial streams;
- Spot spray with hand-held, hand-pumped spray, or squirt bottles (no backpack sprayers) would be allowed within dry portions of intermittent and ephemeral channels;
- In addition to spot spray, wicking and wiping application would be allowed to the waters edge on perennial streams and on dry portions of intermittent and ephemeral channels.
- The only emergent plant to be treated is knotweed. Emergent knotweed with stems greater than 0.75 inches would be treated by stem injection. Smaller emergent knotweed less than 4 to 5 feet would be treated by wicking and wiping methods only.
- During project design, develop appropriate measures to ensure protection of aquatic and riparian habitats.
- The resource area fisheries biologist shall be involved in project design to ensure protection of aquatic and riparian habitats. In some instances a buffer may be applied to protect streams as determined by the resource area fisheries biologist.
- In riparian areas minimize soil disturbance to prevent adverse affects to stream channel or water quality conditions.
- Restrict the use of BLM approved herbicides to Glyphosate. Aquatic labeled Glyphosate would be required within riparian areas.
- No herbicides would be applied to submersed or floating vegetation.
- Only Oregon Certified Applicators or individuals under the direct supervision of Oregon Certified Applicators would apply herbicides in accordance with label instructions.

To minimize soil erosion as a source of sedimentation to streams and to minimize soil productivity loss from soil compaction, loss of slope stability, or loss of soil duff layer:
All large treatment areas would be sown or planted with desirable vegetation if soil erosion or the re-establishment of native species is a concern..

To meet the objectives of the "Aquatic Conservation Strategy (A*CS)*" RRs (ACS Component #1):
Application of Glyphosate would be applied in a manner consistent with the label. Spot spray with hand-held, hand-pumped spray, or squirt bottles (no backpack sprayers) is allowed to the waters edge on perennial streams and within dry portions of intermittent and ephemeral channels. In addition to spot spray, wicking and wiping application would be allowed to the waters edge on perennial streams and on dry portions of intermittent and ephemeral channels.

To maintain recreation management opportunities:

- All spraying within recreation areas would be applied when the areas are closed to the public or during times of low recreation use.
- All recreation area entries and access routes would be posted with signs notifying the public of herbicide use.

To protect native vegetation

- Use a low pressure pump system and larger drops to minimize drift and overspray.
- Treat large/tall noxious weed locations with physical means to reduce vegetative mass prior to treating with Glyphosate.

To protect Special Status Plant and Animal Species:

- Required pre-disturbance surveys and known-site management for any listed botanical, fungal, or animal species would be accomplished in accordance with BLM Manual 6840-*Special Status Species Management*, and. *Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M ROD, January 2001).
- The resource area biologist and/or botanist would be notified if any listed botanical, fungal or animal species are found occupying stands proposed for treatment during project activities. If the species is a federal listed ESA or Category A, B or E Survey and Manage species then all of the known sites would be withdrawn from any timber harvesting activity. If the species is other than a federal listed ESA or Category A, B or E Survey and Manage species, then appropriate mitigation action would be taken.
- For any listed botanical species whose characteristics make locating them with field surveys practical, clearances would generally be done by field surveys using intuitive controlled methods, field clearances, field reconnaissance, inventories, and/or habitat examinations. Clearances for fungi are considered "not practical" and surveys are not required.

To protect Cultural Resources:

The project area occurs in the Oregon Coast Range. Survey techniques are based on those described in Appendix D of the *Protocol for Managing Cultural Resource on Lands Administered by the Bureau of Land Management in Oregon. Post-project survey would be conducted according to standards based on slope defined in the Protocol appendix. This project does not incorporate any ground disturbing acti*vities. However, work would be suspended if cultural material is discovered during project work until an archaeologist can assess the significance of the discovery.

2.3 Alternatives Considered but not Analyzed in Detail

2.3.1 No-chemical Herbicides Alternative

An alternative of no-herbicide use was considered and not analyzed in detail because the MPRA currently has policies in place which allow for minimal use of chemicals for the control of ODA listed noxious weed species. In addition, this alternative would not meet the purpose and need.

2.3.2 Use of Additional Herbicides Alternative

An alternative utilizing the four BLM approved herbicides (Glyphosate, 2, 4-D, picloram and dicamba) and an alternative utilizing 14 herbicides as described in the 2007 EIS ROD was considered but not further analyzed due to concerns of high toxicity, lack of specific locations identified for application and the additional design features needed above those needed for the less toxic Herbicide Glyphosate. It was decided if any additional herbicides are needed for treatment of any Oregon State listed noxious weed, a site specific EA or EIS would be completed at that time.

2.4 Comparison of Alternatives With Regard To Purpose and Need

Table 2: Comparison of Alternatives by Purpose and Need

Purpose and Need (EA Section 1.6)	No Action (Alternative 1)	Proposed Action (Alternative 2)
Contain and/or reduce noxious weed infestations on BLM-administered lands using an integrated pest management approach (RMP p.64)	Allows for noxious weed control using an integrated pest management approach, but limit Herbicide use to 50 acres annually and which ever is less: 10 acres treated per year per sixth field watershed, or 10 percent of the total riparian area within each sixth field watershed per year	Allows for noxious weed control using an integrated pest management approach and limits Herbicide use to 500 net acres annually and in addition limits herbicide treatments within each sixth field HUC containing listed aquatic species to no more than 10 percent of the total riparian area within a one year period, measured as adjacent stream length.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

Review of Elements of the Environment Based On Authorities and Management Direction

Table 3: Elements of the Environment Review based on Authorities and Management Direction

Element of the Environment /Authority	Remarks/Effects
Aquatic Conservation Strategy	In compliance with PCFFA IV (Civ. No. 04-1299RSM), this project complies with the Aquatic Conservation Strategy described in the Northwest Forest Plan and RMP. This project also complies with the PCFFA II (265 F.3d 1028 (9th Cir. 2001) by analyzing the site scale effects on the Aquatic Conservation Strategy. EA sections 3.1.1, 3.1.3 and 3.1.5 and 5.0 show how the Noxious Weed using Herbicide project meets the Aquatic Conservation Strategy in the context of the PCFFA cases.
Air Quality (Clean Air Act as amended (42 USC 7401 et seq.)	This project is in compliance with this direction because no burning would occur.
Cultural Resources (National Historic Preservation Act, as amended (16 USC 470) [40 CFR 1508.27(b)(3)], [40 CFR 1508.27(b)(8)]	This project is in compliance with this direction and the project would have no effect on this element because cultural resource sites in the Oregon Coast Range, both historic and prehistoric, occur rarely. The probability of site occurrence is low because the majority of BLM managed Oregon Coast Range land is located on steep upland mountainous terrain that lack concentrated resources humans would use. Post-disturbance inventory would be conducted according to Appendix D of the *Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land Management in Oregon.* Inventoried areas would be based on percent slope and topographic features
Ecologically critical areas [40 CFR 1508.27(b)(3)]	This project would have no effect on this element because there are no ecologically critical areas present within the project area.
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).

Element of the Environment /Authority	Remarks/Effects
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)	Since instream herbicide concentrations are difficult to quantify in absence of site specific analysis, potentially high runoff may occur in some situations, but cannot currently be calculated (due to unknown site conditions). For this reason a may affect 'Likely to Adversely Affect' determination is warranted for ESA listed fish species and for the listed critical habitat.
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 Marys Peak RA.
Floodplains (E.O. 11988, as amended, Floodplain Management, 5/24/77)	This project is in compliance with this direction because the proposed action would not change or affect floodplain functions.
Hazardous or Solid Wastes (Resource Conservation and Recovery Act of 1976 (43 USC 6901 et seq.) Comprehensive Environmental Repose Compensation, and Liability Act of 1980, as amended (43 USC 9615)	This project would have no effect on this element because no Hazardous or Solid Waste would be stored or disposed of on BLM lands as a result of this project.
Healthy Forests Restoration Act (Healthy Forests Restoration Act of 2003 (P.L. 108-148)	This project is in compliance with this direction because treatments would help restore forests (EA Section 3.1.1)
Migratory Birds (Migratory Bird Act of 1918, as amended (16 USC 703 et seq)	This project is in compliance with this direction because treatments would restore natural resources that could degrade habitat for migratory birds. Addressed in text (EA Section 3.1.3.
Native American Religious Concerns (American Indian Religious Freedom Act of 1978 (42 USC 1996)	This project is in compliance with this direction because no Native American religious concerns were identified during the scoping period..
Noxious weed or non-Invasive, Species (Federal Noxious Weed Control Act and Executive Order 13112)	This project is in compliance with this direction because The overall effect of this proposal would reduce the amount of acres currently infested by noxious weeds within the MPRA and would allow native vegetation to become re-established within the project areas. This project would increase the amount of acres of native vegetation which currently exist within the MPRA (EA Section 3.1.1).
Park lands [40 CFR 1508.27(b)(3)]	The project would have no effect on this element because there are no parks within or adjacent to the project area.
Public Health and Safety [40 CFR 1508.27(b)(2)]	The project would have no effect on this element because the public would be restricted from the project area during operations and the project would not create hazards lasting beyond project operations.
Threatened or Endangered Species (Endangered Species Act of 1983, as amended (16 USC 1531)	This project is in compliance with this direction because there would be no adverse effects on Threatened or Endangered Species (EA Section 3.1.2).
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 because Project design features (Section 2.2.3) and label restrictions would minimize the potential for introduction of Glyphosate into water. No herbicides would be applied to submersed or floating vegetation or open water. Herbicides would be applied within some intermittent/ephemeral channels. However, because no water would be present in the channels when the herbicides are applied, no or little herbicide concentrations would reach downstream perennial channels.
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 wetlands are within the project area
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 there are no Wild and Scenic Rivers within or adjacent to the project area.

Element of the Environment /Authority	Remarks/Effects
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 there are no Wilderness Areas or areas being considered for Wilderness Area status in or adjacent to the project area.

3.1 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

Those elements of the human environment that were determined to be affected are *,noxious weeds, fish species/habitat, migratory birds, other special status species / habitat – wildlife, recreation, , rural interface areas, soils, threatened or endangered species – northern spotted owl, visual resources, and water quality,* This section describes the current condition and trend of those affected elements, and the environmental effects of the alternatives on those elements.

3.1.1 Vegetation

Affected Environment

General

The MPRA manages approximately 128,406 acres in Benton, Lane, Lincoln and Polk Counties in northwestern Oregon and occur mainly in the Oregon Coast Range Physiographic Province. These lands are located in the mid to southern portion of the Oregon Coast Range Mountains and are mostly dominated by coniferous forests.

The western hemlock (*Tsuga heterophylla*) plant association is the most widespread plant association on the landscape and occurs on both, east and west slopes of the Oregon Coast Range Mountains.

The Sitka spruce (*Picea sitchensis*) plant association occurs as a north-south narrow band along the Eastern Pacific Ocean in Oregon and located west of the western hemlock zone where it receives oceanic influences throughout much of the year. The Sitka spruce plant association is wetter (greater amounts of rainfall and number of days of rainfall) and mild (warmer temperatures) than the western hemlock plant association.

The Douglas-fir (*Pseudotsuga menziesii*) and grand fir (*Abies grandis*) plant associations occur on lower elevations to the east of the western hemlock plant association and adjacent and within the WVPP (Willamette Valley Physiographic Province).

At higher elevations (approximately 2700 feet) within the western hemlock plant association, the Pacific silver fir (*Abies amabilis*) plant association is often dominant. In the Oregon Coastal Range Mountains this association is mostly dominated by noble fir (*Abies procera*) instead of Pacific silver fir with the exception being at Saddlebag Mountain located in Lincoln County. Small open grassland meadows often occur at the summit of peaks and ridges within the Pacific silver fir plant association and are partially maintained by shallow, rocky soils and perhaps fire although there are rarely stumps or down woody debris within these areas.

Other naturally occurring plant associations which occur within the WVPP are Oregon oak (*Quercus garryana*) savannas, native meadow and grasslands. All of these plant associations tend to be drier than the western hemlock plant association.

Yaquina Head Outstanding Natural Area

Yaquina Head Outstanding Natural Area is unique in habit compared to the rest of the MPRA. It is an approximate 106 acre parcel of basalt headlands that overlook the Pacific Ocean. Prior to Federal ownership, this land was managed as a quarry which led to highly disrupted natural vegetation. Yaquina Head consists of at least 4 habitat types; grassland meadows, basalt outcrops and cliffs, shrub communities and coniferous forestlands.

The grasslands meadows are currently dominated by non-native species with native species lightly dispersed throughout. The basalt cliffs and boulder fields are mostly non-vegetated. The shrublands are dominated by native species such as; salal, salmonberry, thimbleberry, willow (*Salix hookeriana*) and black twin-berry (*Lonicera involucrata*). The higher elevations of Yaquina Head are forested and dominated by a canopy of Sitka spruce with a shrub layer of mostly salal. Lodgepole pine (*Pinus contorta*) occurs just below the Sitka spruce stands. The stands of lodgepole pine have a thick, dense canopy with little vegetation beneath. It is evident that the lodgepole pine forest is encroaching into the grassland meadows. However, the grassland meadows contain a high percentage of exotic species while the coniferous forested stands contain a high percentage of native plant species.

Special Habitats

Other special habitats such as exposed rock cliffs and talus slopes are uncommon in Benton, Lincoln and Lane Counties within the MPRA, but are not unusual in Polk County. Marys Peak lands in Benton, Lincoln and Lane Counties mostly occur west of the crest of the Oregon Coastal Mountains while MPRA lands in Polk County occur mostly east of the crest. Thus, MPRA lands in Polk County which occur east of the crest of the Oregon Coast Range Mountains support a drier habitat when compared to other portions of the resource area. This is especially true on south facing slopes in the Rickreall and Mill Creek Drainages.

There are approximately 1,394 linear miles of aquatic systems within the MPRA. Wetlands (bogs, fens, marshes) are few in the resource area. The biggest wetland occurs in Lincoln County at Lost Prairie ACEC (Area of Critical and Environmental Concern) and perhaps the second largest wetland complex occurs at the Little Sink Area ACEC located in Polk County.

The MPRA data obtained from operation inventory (OI) database breaks down the MPRA total acres into the following categories (excluding Yaquina Head):

Total acres dominated by conifers:	105,348	(82.04%)
Total acres dominated by hardwoods	4,027	(3.15%)
Total acres in mixed conifer and hardwoods	18,159	(14.14%)
Total acres in non-forest (non-riparian, rock, grass meadows)	785	(0.61%)
Total acres in non-forest wetlands (standing water)	44	(0.03%)
Other acres	43	(0.03%)
Total acres in MPRA	128,406	

Areas of Critical Environmental Concern

There are two ACEC's located within Benton County (Marys Peak and Grass Mountain). Both of these ACEC's were designated due to the true fir and natural meadow habitats.

There are no designated ACEC's within Lane County on Salem managed BLM lands and there are no recreation areas managed by the MPRA.

There are three designated ACEC's in Lincoln County; (Yaquina Head Outstanding Natural Area, Saddlebag Mountain and Lost Prairie). Saddlebag Mountain was designated due to the Pacific silver fir habitat and Lost Prairie was designated due to the wetland and diversity of unique bryophyte and vascular plants in the Oregon Coastal Range Mountains. Yaquina Head was designated as a Coastal headland, associated lighthouse and for high recreation values.

There are five designated ACEC's within Polk County (Valley-of-the-Giants, Rickreall Ridge, Little Sink, Mill Creek and Forest Peak).

Bureau SS Botanical and Fungal Species:

The MPRA has few Federal and/or Oregon State threatened or endangered known sites of listed species and hundreds of other bureau special status vascular plant, lichen, fungi and bryophyte species. The bureau special status species known sites are scattered throughout the MPRA and are known exclusively from natural occurring native vegetation or forested stands. Because of the unique vegetation types, many ACECs have several known sites of bureau special status plants, animals and fungi within the boundaries.

Invasive (Noxious Weeds, Invasive Non-native Species)

Noxious Weeds

The majority of noxious weed infestations within the MPRA occur along and adjacent to roadways and within managed road prisms. Other areas infested with noxious weeds are generally located in younger managed forested stands, generally less than 40 years in age which have an approximate canopy cover of less than 70 percent. Generally noxious weed infestations in younger conifer managed stands decline as the canopy begins to close and approaches 80 percent and above, but persist along managed right-of-ways and logging landings.

There are currently 4,493 vascular plant species in Oregon and approximately 1,003 of these are regarded as exotic (Oregon Flora Project, 2009). Out of the 1,003 exotic species there are 120 species currently listed or proposed noxious weeds on the ODA list for all of Oregon. Of the 120 species included on the ODA noxious weed list, only 50 are known to occur in the Oregon Coast Range Mountains of northwestern Oregon. Of the 50 species known to occur in NW Oregon, only 17 are currently known to occur on BLM lands managed by the MPRA. Fourteen of the 17 noxious weed species are well established and widespread throughout western Oregon (*MPRA weed assessment and action plan, 2010*). Eight of these species are considered widespread on lands managed by the MPRA lands.

These eight species include: Armenian blackberry (*Rubus armeniacus*), bull thistle (*Cirisium vulgare*), Canadian thistle (*Cirisium arvense*), false brome (*Brachypodium sylvaticum*), Giant

horsetail (*Equisetum telmateia*), Scotch broom (*Cytisus scoparius*), St. John's wort (*Hypericum perforatum*), and Tansy ragwort (*Senecio jacobaea*).

The other nine species have limited known distributions on BLM lands managed by the MPRA, but otherwise are considered widespread in distribution in Northwestern Oregon. These nine species include: English ivy (*Hedera helix*), Field bindweed (*convolvulus arvensis*), Herb Robert (*Geranium robertianum*), Meadow knapweed (*Centaurea x moncktonii*), Medusahead (*Taeniatherum caput-mudusae*), Perennial peavine (*Lathyrus latifolius*), Quackgrass (*Agropyron repens*), Shiny leaf geranium (*Geranium lucidum*), and Spotted knapweed (*Centaurea maculosa*).

Oregon Department of Agriculture classifies noxious weeds as "A", "B" or "T" weeds. Noxious weeds designated as an "A" noxious weed are generally found in limited abundance and eradication is generally possible in a fairly short period (one year or two). Weeds classified as "B" noxious weeds are generally more widespread (statewide or locally) and control or containment is not possible within a relatively short period of time. This classification often requires a statewide plan for eradication and often is treated with a biological control. A "T" designated weed may be either an "A" or "B" classified noxious weed and is targeted for control by the ODA (*See appendix 1 for ODA definitions*).

Only four of the 50 noxious weed species known to occur in NW Oregon are included on ODA's list "A" weed classification and none of these species are known from within MPRA lands. The other 46 species are included on ODA's "B" noxious weed list and 14 of the 50 are included on ODA's "T" list. Of the 17 noxious weeds known to occur on MPRA lands, all are included on ODA's "B" list and three are included on ODA's list of target ("T") species. These three species include: False brome, Spotted knapweed (*Centaurea maculosa*) and Tansy ragwort.

Environmental Effects

3.1.1.1 *Alternative 1 (No Action Alternative)*

The No Action Alternative would allow continued implementation of MPRA integrated pest management plan. This alternative would allow for the treatment of noxious weeds on up to 50 acres per year and on up to 10 acres per watershed. At this low treatment rate, noxious weed infestations would continue to infest more lands per year than are being treated and would result in a net increase of acres infested by noxious weeds per year. Habitat for T & E and bureau SS species would continue to decline as noxious weeds displace native vegetation. Infestations of aquatic noxious weed species or infestation which occur along streambanks would continue to destabilize banks, increase sedimentation, and reduce the quality of existing aquatic species habitat.

3.1.1.2 *Alternative 2 (Proposed Action)*

Effects on native vegetation:

Glyphosate is a non-selective herbicide which means it can kill any vegetation which comes in contact with it, if applied at a lethal rate. Annual plant species, seedlings and/or fleshy forbs and grasses are more susceptible than woody perennial species.

During application some native vegetation adjacent to the targeted vegetation would be killed. However, this proposal utilizes spot spraying (vs. broadcast spraying or aerial) because the targeted species (ODA noxious weeds) generally occur in non-continuous infestations amongst

native plant species. It would also require low pressure delivery systems and larger droplet sizes which both reduce drift during application and would minimize spraying native plant species (over spray). The amount of native vegetation killed during treatments would be considered minimal since the majority of native vegetation within the treatment areas is common, widespread and the maximum percent of the resource areas treated per year would be considered low (0.4 percent).

The overall effect of this proposal would reduce the amount of acres currently infested by noxious weeds within the MPRA and would allow native vegetation to become re-established within the project areas. This project would increase the amount of acres of native vegetation which currently exist within the MPRA.

Effects on Bureau Special Status Botanical and Fungal Species

Generally T & E and bureau special status and special attention vascular plant, bryophyte, lichen or fungi species do not occur in areas where native vegetation has been displaced by noxious weeds. The effects to Threatened and Endangered and bureau special status botanical and fungal species habitat would be positive since the treatments would restore native vegetation to areas currently dominated by non-native species. The transition from not suitable habitat to suitable habitat may take several years as the native species once again become dominant.

Noxious weeds:

Oregon Department of Agriculture designated noxious weeds would be treated with Glyphosate. Treatments would mostly be 'spot' sprayed which would concentrate application efforts on targeted plants. It is anticipated targeted plants would die. Up to 500 net acres of noxious weeds would be treated annually. With the implementation of this project, the overall net acres of noxious weeds infested on lands within the MPRA are expected to be reduced. Thus, the acres treated annually would exceed the amount of acres of newly infested noxious weeds. This is in part due to the fact the MPRA has established a noxious weed program for the removal of noxious weeds and includes monitoring and treating new road construction sites. This action alone reduces new available habitat for noxious weeds to become established. Over the past two years the MPRA has learned it takes a couple of years of treatments to successfully remove noxious weeds from known sites and it became apparent the need to increase the amount of acres that can be treated annually to be allowed to target other known infestations.

The areas treated for noxious weeds could become re-established with the same species or become infested with a new ODA noxious weed. In either case, the treatment area would be re-treated. Sowing or planting treatment areas with desirable plant species, (if needed) would help reduce future non-native plant re-infestations and allow the area to become established with native plant species.

3.1.2 Wildlife

Affected Environment

The great majority of acres to be treated under this action would occur along existing, well traveled forest roads. The small amount of off-road acres would most likely occur as small patches scattered throughout the resource area. The vegetation to be treated is considered non-habitat for all native species, both listed and unlisted.

Environmental Effects

3.1.2.1 *Alternative 1 (No Action Alternative)*

Native wildlife species are dependent on native vegetation for nest sites, for food, and, if a predator, for hunting. These activities are all vital life and population sustaining functions. The presence and spread of noxious weeds has negative short-term, long-term, and cumulative impacts on native wildlife species.

Many of the native forest and non-forest habitat types in the Oregon Coast Range have been invaded, to some extent, by noxious species, but the majority of infestation occur along existing roadways. Every infestation would have some impact on the composition, structure and functioning of the surrounding environment to provide suitable habitat for native fauna.

The greatest impacts to these conifer forest habitats from noxious invasions occur in the understory when small or large openings are created in the overstory forest canopy. Weed species impact wildlife by reducing the quantity and degrading the quality of foraging and nesting habitat, and modifying resting, hiding/escape habitat. These alterations change the way a species interacts with its environment, such as avoiding weed infestations which requires more energy and increases the threat of predation. As the size and/or density of infestations increases the greater the negative impact to wildlife.

If the proposed action is not implemented there would continue to be noxious weed control issues due to the limited number of acres that can be treated under the current program (only 50 acres per year). Additional native wildlife habitat would be converted to non-habitat; the more non-native habitat there is this year, the greater the seed source to create even more next year.

3.1.2.2 *Alternative 2 (Proposed Action)*

There would be no significant negative impacts, (short or long-term), to wildlife species or their habitats. Vegetation destruction would occur in non-habitat, primarily along existing, well traveled roads. Noise from motorized equipment would be limited to these roads and therefore not above ambient forest noise associated with logging roads. Any off-road treatments would utilize non-motorized equipment and is expected to have no disturbing or disrupting effects.

Over the long-term, the effects of noxious weed control would be beneficial because they would help restore degraded habitats and plant communities and prevent additional areas from being degraded due to further invasions. Controlling weeds and encouraging native plant growth would provide higher quality habitat for many wildlife species, including SS species, as well as ensure future productivity and use of the land for wildlife.

3.1.3 Fisheries/Aquatic

Affected Environment

There are many regionally important fisheries within the proposed project area. The BLM, U. S. Forest Service, and Coquille Tribes submitted a *Biological Assessment For Fish Habitat Restoration Activities Affecting ESA and MSA-listed animal and Plant Species found in Oregon and Washington* (BA) to NMFS for consideration of affect of multiple restoration actions including the treatments of invasive plant species with mechanical and chemical treatments on ESA and MSA listed species (USFS et al 2006). This BA included descriptions for the biology and habitat of multiple salmonids including: Chinook salmon, coho salmon, and steelhead trout. The BA also included population and habitat descriptions for a native non-salmonid, (Oregon

Chub), which potentially may occur in portions of the project area. All of these species could be affected by the proposed weed treatments covered by this EA.

Habitat Summary

The quality and quantity of fresh water habitat in much of the project area has declined dramatically in the last 150 years. Land management activities that have degraded habitat of salmonids (and other native fishes) include water withdrawals, unscreened water diversions, hydropower development, road construction, timber harvesting, stream cleaning of large wood, splash dams, mining, farming, livestock grazing, outdoor recreation, and urbanization (USDA and USDI 1994; Lee *et al*. 1997; Spence *et al*. 1996). In many river basins, land management activities have:

- ✓ reduced connectivity between streams, riparian areas, floodplains, and uplands;
- ✓ elevated fine sediment yields, filling pools and reducing spawning and rearing habitat;
- ✓ reduced instream and riparian large wood that traps sediment, stabilizes stream banks, and helps form pools;
- ✓ reduced or eliminated vegetative canopy that minimizes temperature fluctuations;
- ✓ caused streams to become straighter, wider, and shallower, which has the tendency to reduce spawning and rearing habitat and increase temperature fluctuations;
- ✓ altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior;
- ✓ altered floodplain function, water tables and base flows, resulting in riparian wetland and stream dewatering; and
- ✓ degraded water quality by adding heat, nutrients and toxicants (USDA and USDI 1994; Henjum 1994; Lee *et al* . 1997; McIntosh *et al* . 1994; Rhodes *et al* . 1994; Spence *et al* . 1996).

Coastal estuaries and marshes have also been significantly impacted. Estuarine wetlands and marshes close to seaports and urban centers have been particularly vulnerable to conversion. Losses of 50 percent to 90 percent have been reported for many estuaries and wetlands in Oregon and Washington (NRC 1996). Many of these marshes have been isolated from the adjacent estuaries by dikes (Frenkel and Morlan 1991) and in some cases completely or partly filled in to accommodate a variety of land uses (agriculture, recreational, residential, industrial) (Giannico 2005).

While there has been substantial habitat degradation across all land ownerships (including Federal lands); habitat in many headwater stream segments is generally in better condition than in the largely non-Federal lower portions of tributaries (Lee *et al*. 1997). Because Federal lands are generally forested and situated in upstream portions of watersheds, U.S. Forest Service and BLM lands now contain much of the highest quality salmon and steelhead habitat remaining in Oregon and Washington.

Fish Species description

Due to the scope of the project area, the following species accounts were developed in order to describe the biological considerations for the commercially and recreationally important native species known to be present within the project area. The various ESA listed species, described at the DPS (distinct population segments) level, are also presented within the project area species account and presented in Table 7.

Table 7: Native fish species, including distinct populations segments (DPS), known to occur within the Project area, including federal status and distribution within the analysis area.

DPS Name	Scientific Name	Status	Distribution within Project area
UWR[1] Spring Chinook salmon		Threatened	Willamette Basin – above Willamette Falls
OC[2] Chinook salmon		None	Oregon Coast
OC coho salmon		Threatened	Oregon Coast
Coho salmon		Introduced	Willamette Basin – above Willamette Falls
UWR steelhead	*Oncorhynchus mykiss*	Threatened	Willamette Basin - above Willamette Falls up to Calapooia River
OC steelhead		None	Oregon Coast
Rainbow Trout		None[8]	Local lakes & ponds
OC coastal cutthroat trout		None	Oregon Coast
White sturgeon	*Acipenser transmontanous*	None	Columbia River and estuaries/bays and large river channels of all Oregon Coast Rivers
Green sturgeon	*Acipenser medirostris*	None	Columbia River and estuaries/bays of most larger Oregon Coast river systems
Oregon chub	*Oregonichthys crameri*	Endangered	Historically present thru much of Willamette Basin lowlands.
Largescale sucker	*Catostomus macrocheilus*	None	Widely distributed
Northern Pike Minnow	*Ptychocheilus oregonensis*	None	Columbia and Willamette Basin
Speckled dace	*Rhinichthys osculous*	None	Widely distributed
Redside shiner	*Richardsonius balteatus*	None	Columbia and Willamette Basins
Threespine stickleback	*Gasterosteus aculeatus*	None	Columbia and Willamette Basins
Whitefish	*Prosopium williamsoni*	None	Columbia and Willamette Basin
Sandroller	*Percopsis transmontana*	None	Columbia and Willamette Basin
Chiselmouth	*Acrocheilus alutaceus*	None	Columbia and Willamette Basin
Peamouth	*Mylochilius caurinus*	None	Columbia and Willamette Basin
Sculpin species	*Cottus ssp.*	None	Widely distributed
Pacific lamprey	*Lampetra tridentata.*	None	Widely distributed
Western brook lamprey	*Lampetra richardsoni*	None	Widely distributed

3 – UWR = Upper Willamette River,
4 – OC = Oregon Coastal

Oregon Chub – Oregon chub occur at approximately 29 locations, including 21 naturally occurring populations and eight introduced populations (Scheerer *et al.* 2004). No chub populations are currently known to occur on BLM or U. S. Forest Service lands within the Willamette Basin portions of the project area. The proposed action includes treatments occurring on cooperative partner properties which may include water bodies that contain suitable chub habitat.

Chinook Salmon – Upper Willamette River (UWR), Spring Chinook salmon migrate into the Willamette River above Willamette Falls. The project area contains little if any spawning habitat for UWR spring Chinook. The lower reaches of many rivers draining the western side of the Willamette basin are largely thought to provide rearing and migratory habitat for out-migrant juveniles.

Coho Salmon – Coho salmon are widespread in small, low gradient streams of the coast and lower Columbia (ODFW 2005). Oregon coho salmon generally range along the Oregon coast where survival is closely related to upwelling of cool, nutrient-rich waters.

The Oregon Coast Coho Salmon ESU includes 19 populations in ocean tributaries from the Necanicum to the Sixes rivers (ODFW 2005). Until recently, escapements have been at or near record lows. However, numbers, distributions, and productivity have rebounded for most populations in the last four years following improved ocean productivity. These improvements have eased near-term risks, but it is not clear whether all underlying factors for the recent decline have been addressed or if this is just a temporary response to improved ocean conditions.

The coho salmon present above the Willamette Falls are part of an introduction effort which occurred during the 1900's (ODFW 1992). No active supplementation is known to occur in the Upper Willamette basin at this time. Currently, naturally produced coho are returning to tributaries of the western side of the Willamette River including the Rickreall Creek, Luckiamute River, and Yamhill River basins in the project area.

Steelhead trout – Steelhead trout are rainbow trout that migrate to the ocean. Two races of steelhead are found: summer and winter steelhead. Natural production in the proposed project area is largely dominated by winter steelhead runs, only the Upper Siletz River is known to contain native runs of summer steelhead in the project Area (BLM 1995). Summer steelhead are present in many of the affected watershed however these animals are largely of hatchery origin. There are no known self sustaining populations of summer steelhead on the Oregon Coast north of the Siletz River. Winter steelhead are widely distributed in small to moderate sized coastal, Willamette, and Columbia streams (ODFW 2005). In some streams, anadromous steelhead and resident rainbow trout populations are interrelated.

The UWR winter steelhead ESU occupies the Willamette River and tributaries upstream from Willamette Falls, extending to and including the Calapooia River. Rivers of the project area that contain naturally-spawning, UWR winter-run steelhead include the Yamhill, Rickreall, Luckiamute. Winter-run steelhead may be present in the Marys Rivers; however, their connection to the UWR EUS is not clear, and this population is not considered part of the ESU. Early migrating winter and summer steelhead have been introduced into the Upper Willamette Basin, but those components are not part of the ESU. Willamette Falls (RM 26) is a known migration barrier, and while winter steelhead and spring-run Chinook salmon historically occurred above the falls, summer-run steelhead, fall-run Chinook salmon, and coho salmon did not. Native winter steelhead within this ESU have been declining since 1971, and have exhibited large fluctuations in abundance. Habitat in this ESU has become substantially simplified since the 1800s by removal of large woody debris (LWD) to increase the river's navigability, by reduction in riparian vegetation, and by channel modifications.

Native steelhead of the Upper Willamette Basin is primarily late-migrating winter steelhead, entering freshwater primarily in March and April. This atypical run timing appears to be an adaptation for ascending Willamette Falls, which functions as an isolating mechanism for UWR steelhead. Reproductive isolation resulting from the falls may explain the genetic distinction

between steelhead from the Upper Willamette Basin and those in the lower river. UWR late-migrating steelhead is an ocean-maturing fish. Most return at age four, with a small proportion returning as five-year-olds (Busby *et al.*1996).

The Oregon Coast steelhead has more distinct populations (23) than any other ESU and all historical populations are still present (ODFW 2005). There is limited data available to describe overall abundance and productivity for this population.

Coastal Cutthroat Trout – Basins along the Oregon Coast and the Upper Willamette within the project area support multiple life history types of coastal cutthroat trout; resident, fluvial, and adfluvial populations (ODFW 2005). Anadromous cutthroat migration is known to occur within the Columbia and Coastal populations. Quantitative data on cutthroat trout populations within the project area are limited. Coastal cutthroat trout are distributed widely throughout the affected basins and abundance is thought to be relatively high. The populations appear to be very resilient and able to respond to events that reduce abundance. The sustainability of the cutthroat trout in the project area is not at risk.

White and Green Sturgeon – White sturgeon in Oregon were considered to all belong to one group, however, disjunct populations now exist on the Columbia and Snake Rivers due to poor passage conditions at multiple dams on these systems (ODFW 2005). White sturgeon is present in the Willamette River above Willamette Falls, but they are believed to be entirely supported by hatchery stocking and were not considered to be a population. Coastal estuaries support rearing populations of White Sturgeon derived from spawning populations in the Columbia River.

Green sturgeon in Oregon can be divided into two populations groups to reflect the DPS (distinct population segment) designations of NMFS (ODFW 2005). The Southern Green Sturgeon DPS consists of green sturgeon spawning in the Sacramento River, and found off the Oregon coast, and in coastal estuaries, including the Columbia River estuary. The Northern Green Sturgeon DPS consists of green sturgeon spawning in the Klamath and Trinity Rivers of California, in the Rogue River, Oregon, found off the Oregon coast, and in coastal estuaries, including the Columbia River estuary. Population boundaries for green sturgeon are not clearly understood.

Pacific and Western Brook Lamprey – These species are widely distributed throughout the Project area, but both distribution and abundance have likely decreased in recent years (ODFW 2005). Habitat loss and pollution have contributed to the decline of pacific and western brook lamprey. Passage barriers also play a role in Pacific lamprey population declines. Little is known about life history characteristics of lamprey in Oregon, and many critical uncertainties regarding lamprey status, biology, and requirements remain.

Other Species – Other native species may also reside in the project area (see Table 7). In addition, several non-native game fish species are present within the project area (Table 8). Striped bass are primarily limited to lower portions of mainstem coastal rivers in the project area. Warmouth, bluegill, pumpkinseed, crappie, and largemouth bass are located primarily in sloughs and backwaters of the larger river systems in the Willamette basin and have been introduced to ponds and small to medium water impoundments through much of the project area. Smallmouth bass are primarily limited to flowing water habitat in the Willamette River and larger tributary rivers of the project area

Table 8 – Introduced sport fish species known to occur within the project area including distribution within the analysis area.

DPS Name	Scientific Name	Distribution within Project area
Largemouth bass	*Micropterus salmoides*	Widely distributed
Smallmouth bass	*Micropterus dolomieu*	Widely distributed
Striped bass	*Morone saxatilis*	Lower reaches of several coastal rivers
Warmouth	*Lepomis gulosus*	Willamette Rivers.
Pumpkinseed	*Lepomis gibbosus*	Widely distributed
Bluegill	*Lepomis macrochirus*	Widely distributed
White crappie	*Pomoxis annularis*	Widely distributed
Black crappie	*Pomoxis nigromaculatus*	Widely distributed
Yellow perch	*Perca flavescens*	Widely distributed
Brown bullhead	*Ameiurus nebulosus*	Widely distributed
Yellow bullhead	*Ameiurus natalis*	Widely distributed
Channel catfish	*Ictalurus punctatus*	Widely distributed
Common Carp	*Cyprinus carpio*	Willamette Rivers.

*Juveniles found in North Coast estuaries.

Environmental Effects

3.1.3.1 *Alternative 1 (No Action Alternative)*

Under this alternative, herbicide treatments outlined in NEPA document EA OR080-06-09 (March 2008) on up to 50 acres of noxious weeds would continue. Noxious weeds would continue to dominate some riparian areas and provide a source for future infestations. Impacts related to contamination, sedimentation, and temperature would not occur. However, in some circumstances extensive monocultures of noxious weeds would continue to dominate stream channels and banks. The presence of dense monocultures of non native plant species can reduce natural transport potentials of stream beds thru root stabilization and reduce coarse and large woody debris recruitment from infested riparian areas.

3.1.3.2 *Alternative 2 (Proposed Action)*

Individual fish, and other aquatic animals, may be displaced for short periods of time during project implementation associated with perennial water bodies due to the small turbidity plumes from stream channel disturbances and activities in or near the water channel. These disturbances would affect fish for a very short duration, (only during project implementation activities) and a very small number fish would be affected.

The proposed use of Glyphosate is unlikely to have direct effects on fish species within the project area. The means of placing herbicide in direct contact with fish would most likely occur due to spilling or breaking containers which hold the herbicide, drift from spraying applications, accidental overspray of streams, or from spot spray application associated with treating aquatic or emergent noxious weeds.

The probability of breaking or spilling containers carrying any herbicide is considered highly unlikely; no instances are known to have occurred in the Salem District where herbicide use has been allowed. The probability that containers with chemical herbicides would break within or adjacent to stream channels would be even less likely. In order to minimize the potential impacts of contamination due to spilling or breakage, implementation of PDFs would limit the quantities

of herbicide transported over open water and transported daily to treatments sites to a small potential volume per site or per day (see PDFs).

Drift from hand held sprayers is unlikely to travel more than a few feet. Labatt-Anderson (2002) conservatively estimated that drift from backpack sprayers would amount to 0.001 percent at 25 feet. Spraying up to the bankful edge on perennial streams, a minute amount of herbicide may reach perennial streams during application. One study found that the maximum amount of herbicide transported by runoff was 1.85 percent of the applied amount, and that in each of the three study years, the first runoff event after treatment accounted for 99 percent of the total herbicide runoff (Norris *et al*. 1991). Any Glyphosate that enters surface waters is expected to be diluted fairly quickly. Any contaminates in flowing water are likely to move downstream and decline rapidly as mixing occurs and Glyphosate binds to particulates (Solomon and Thompson 2003).

A small amount of herbicide may be applied within intermittent/ephemeral channels; however, since no water would be present in the intermittent channels when the treatments are made, herbicide would not be delivered to downstream perennial channels. Glyphosate is considered immobile in soils, with rapid absorption by soil particles and some microbial breakdown (Norris et al 1991). Direct contamination of aquatic habitat would not occur from proposed intermittent channel treatment. The duration between treatment and rainfall onset would further limit the quantity of chemical transported from intermittent channels.

Most large diameter (greater than 0.75 inch) emergent knotweeds would be injected directly with Glyphosate; however, some emergent knotweed may be treated with spot spray and wicking and wiping. Spot spray applications over perennial water is limited to small emergent knotweed (less than 0.75 inch diameter). As a result of this application a very small quantity of aquatic Glyphosate may enter the stream watercourse. However, at this time, there are no known infestation of knotweed within riparian areas in the MPRA.
Weed eradication treatments may occur in areas near or adjacent to estuarine areas. However, the project design limits any potential impact to estuarine communities. In addition, tidal flushing would further reduce any potential impacts.

If contamination were to occur due to breakage, drift, overspray, or spot spraying, the direct effects to fish can be evaluated by using traditional concepts of toxicology and dose-response relationships (Norris et al 1991). The dosage needed for an acute toxicity effect to fish from Glyphosate is relatively high; however, formulations of Glyphosate such as Roundup are toxic at a lower dosage than the active ingredient Glyphosate itself. Application of Glyphosate with formulations specifically intended for treatments near waters, such as aquatic Glyphosate, do not have the surfactants that are believed to increase the mortality rates. The proposed application of aquatic Glyphosate to the perennial stream waters edge and to intermittent channels when dry is anticipated to have minimal to no direct impacts on aquatic species.

The magnitude of potential effects to non-target vegetation would be substantively reduced thru the use of design features intend to prevent or minimize impacts. The primary design feature intended to minimize herbicide use is the pre-emptive use of manual treatments (pulling, cutting, bagging, and removing) at infestation site prior to herbicide treatments. If manual treatments fail to eradicate the infestations, herbicides maybe utilized. Herbicides would be applied with either backpack or handheld sprayers, stem injections, or by hand-wicking of cut stems. Because manual treatments would generally precede chemical treatments, the extent and magnitude of herbicide applied to any infestation would be reduced.

Spot spraying and wicking treatments within intermittent or ephemeral stream channels would be limited to dry channel conditions. Herbicide spraying/wicking limited to dry channels is unlikely to directly enter a flowing stream during application and affect streamside vegetation.

Within perennial waters, project design features are intended to limit the use of herbicides that could negatively affect non-target vegetation within the riparian area and adjacent to the stream channels. Spot spraying may occur to the waters edge and treating emergent vegetation is restricted to stem injection and wicking and wiping. Stem injection with the herbicide, aquatic Glyphosate, may occur within perennial stream channels to large (greater than 0.75 inch) diameter vegetation such as knotweed plants. Limiting spot spraying to smaller (less than 0.75 inch) emergent plants is intended to keep the treatment area small and the amount of herbicide needed small. Stem injection is unlikely to directly enter the stream channels. With the application of these design criteria, the magnitude of herbicide likely to enter surface water is expected to be very small due to overspray. Any Glyphosate that does reach surface waters is expected to be diluted fairly quickly. Any contaminates in flowing water are likely to move downstream and decline rapidly as mixing occurs and Glyphosate binds to particulates (Solomon and Thompson 2003). Therefore the probability of negatively affecting nearby streamside vegetation is unlikely.

Indirect effects from modification of the riparian and stream bank habitat such as reduction in cover, shade, and sources of food from riparian vegetation could result due to herbicide utilization in a streamside zone (Norris et al 1991). In addition disturbance of minute amounts of sediment may occur due to accessing treatment locations which are emergent or adjacent to the stream. Weed eradication treatments would typically occur outside of the bankfull channel. Those activities occurring adjacent to or within perennial stream channels or within the intermittent channels would result in small amounts of sediment disturbance with small turbidity plumes, generally resulting from run-off rather than at the time of project implementation. Project related sediment introduced into the stream would occur at isolated sites and settle within a short distance of the project site and turbidity is expected to last only a few minutes.

Under most circumstances the proposed herbicidal treatments of invasive plant species in riparian areas are not likely to decrease shading of streams. However, in some situations, decreased shading is likely to result, increasing the amount of incident solar radiation reaching the stream, and could result in increased water temperatures thereby negatively effecting fish. Significant shade loss is likely to be rare, occurring primarily from treating streamside knotweed and blackberry monocultures. The loss of shade would persist until native vegetation reaches and surpasses the height of the invasive plants that were removed. Shade recovery may take one to several years, depending on the success of invasive plant treatment, stream size and location, topography, growing conditions for the replacement plants, and the density and height of the invasive plants when treated.

The proposed weed treatments activities is expected to restore riparian conditions over the long term by allowing reestablishment of conifers and other shade producing vegetation in areas currently infested by invasive plants. Increasing the amount of shading covering stream channels is expected to protect water temperatures and would indirectly positively benefit aquatic habitat and fish.

Endangered Species

Given the programmatic nature of the proposed activities, and extensive geographic coverage, it is likely that circumstances would arise where treatment of invasive plant infestations would occur within perennial, intermittent, or ephemeral channels tributary to streams with ESA-listed fish and their designated critical habitat. Since instream herbicide concentrations are difficult to quantify

in absence of site specific analysis, potentially high runoff may occur in some situations, but cannot currently be calculated (due to unknown site conditions). For this reason a may affect 'Likely to Adversely Affect' determination is warranted for ESA listed fish species and for the listed critical habitat.

3.1.4 Soils

Affected Environment

Noxious weed species currently infest a very small proportion of the MPRA. Infested sites occur on a wide variety of soil types. While many noxious species thrive on nutrient poor, shallow soils; some species, such as Himalayan blackberry, English ivy, and Japanese knotweed can prosper in deep, moist, nutrient rich soils.

The most common soil characteristic of noxious weed species infested sites is that their surface has been physically disturbed (displaced, compacted, scarred, or churned) and the mineral surface has been exposed to sunlight where there is little competition from other plants. As a general rule, the greater the amount and intensity of soil disturbance, the more likely a site would be infested by noxious weed species. Examples of disturbed sites where weeds are often found are rock pits, heavily used recreation trails and staging areas, logging skid trails and landings, roadsides, turnouts, stockpile areas, stream shorelines and islands, and ditch banks.

Soil properties are often negatively affected by noxious weed species. These negative effects include decreasing organic matter levels, altering soil structure and porosity, increasing soil temperature, increasing soil erosion, and altering nutrient and water availability. These changes can decrease the diversity and abundance of soil organisms and reduce soil productivity. Some noxious weed species can suppress growth and germination of other plants. Little is known about the effect that invasive plants have on soil mycorrhizal fungi. However, since many forest plants are strongly dependent on mycorrhizal fungi, it is likely that invasion of noxious weeds would affect the mycorrhizal fungi community.

Environmental Effects

3.1.4.1 *Alternative 1 (No Action Alternative)*

Under the no action alternative, herbicide control measures would be restricted to 50 total acres. At this small rate, noxious weeds would continue to infest more acres per year than are being treated. All potential effects (beneficial and detrimental) associated with treatments described above would be minimal. Without additional treatments to reduce and control infestation, noxious weed species would continue to spread rapidly displacing native vegetation throughout the MPRA resulting in mostly negative and potentially irreversible effects on soil quality. Soil quality degradation would increase to the approximate acreage of weed spread.

Scotch broom, false brome, meadow knapweed, knotweed and gorse (*Ulex europaeus*) are displacing native vegetation and altering soil properties. When they invade a site they increase the amount of nitrogen in a soil and thereby get a competitive advantage over the native species. Changes in soil properties are often difficult to reverse. In addition, soils occupied by noxious weed species tend to have higher erosion rates and lower site productivity.

Soil impacts across the project area would continue to occur on BLM and other lands as a consequence of forest management (e.g., timber harvest, broadcast burning, fertilizing, herbicide

applications, road construction, and timber haul), and agriculture activities on lands adjacent to BLM managed lands.

3.1.4.2 *Alternative 2 (Proposed Action)*

Herbicide Application / Soil Contamination - The proposed Glyphosate application would likely result in some soil contamination. It would be reduced or eliminated by the following:

- Herbicide treatments would generally not be used if other control methods, e.g., manual and cultural, are practicable;
- Its use would be limited by area and time. Herbicide use would be limited to 500 acres per year (0. 4 percent of the public lands in the project area) and restricted to less than 10 percent of the total riparian area within each 6th field per year. The 500 acre limit would be the sum of all treatments on BLM managed lands and all private lands treated using Federal dollars,
- It would be applied by selective or spot hand application. No broadcast or aerial spraying would be allowed;
- The maximum application rate of Glyphosate that would be allowed are currently substantially less (approximately 40 percent less) than allowed on the label; 5) The proposed action would incorporate a number project design features (Section 2.2.3) that would minimize potential chemical contamination by complying with requirement listed on the product label. Applications would be restricted to calm dry weather conditions and no treatments would occur during rain or high wind within 24 hours of spraying.

- Contamination would be short-term. Glyphosate strongly binds to soil particles, becomes immobile and is quickly broken down by microbial degradation. Research to date indicates that Glyphosate is not harmful to soil microorganisms under field conditions. In fact some studies indicate that it might be beneficial to some soil microorganisms.

3.1.5 Water

<u>Affected Environment</u>

There are twenty 5th field watersheds containing public lands within the MPRA. Eight watersheds have been identified by the ROD as Key Watersheds which serve as refugia crucial for salmonid and resident fish species. Ten of the 5th-field watersheds have been analyzed by district Watershed Analyses, with the remainder being incorporated into analyses completed by other agencies.

The main rivers within the MPRA are the Alsea, Luckiamute, Siletz, and Yaquina. BLM managed lands within the project area are generally located in the higher elevations. Most of the weed infested areas in and near waterways occur along smaller tributaries and headwaters. In addition to streams, there are also wetlands, ponds, marshes and some lakes on MPRA lands.

Elevations range from sea level to approximately 3,900 feet. The climate is characterized by mild temperatures, wet winters and relatively dry summers. The MPRA receive on average approximately 90 inches of precipitation annually. Most of the precipitation occurs as rain and comes during the winter months of November, December, and January.

According to the RMP, the beneficial uses within the MPRA are resident and anadromous fish, municipal water, domestic, irrigation use, and water contact recreation. The predominant non-consumptive use of the water on BLM managed lands is propagation of salmonids and other cold water fish and aquatic life. There are several municipal watersheds within the MPRA.

Water quality is generally very high within the MPRA. Most streams are currently in a proper functioning condition. Small, intermittent, headwater tributaries dominate the hydrology of the MPRA and streams are generally cold and clear.

The Oregon Department of Environmental Quality (ODEQ) is responsible for developing, protecting and enhancing Oregon's water. At the present time, the ODEQ is not requiring a National Pollutant Discharge Elimination System (NPDES) permit or other water quality permit for Herbicide applications provided the application is performed according to the approved label instructions.

Past land management activities such as timber harvest and road construction have disturbed soils and removed riparian vegetation and have had an adverse effect on water quality in parts of the project area. Sedimentation and turbidity are a concern in some areas, as is a lack of large woody debris in stream channels. A few streams are 303d listed as water quality limited by the Oregon Department of Environmental Quality (ODEQ), primarily for elevated summer temperatures. Some of the larger streams are also identified by the ODEQs 319 report for nonpoint source pollution concerns.

BLM has applied Glyphosate, within the project area since June of 2008. Other Herbicides; herbicides, fungicides, insecticides, and rodenticides are used by many of the adjacent landowners for forest site preparation and maintenance.

The only herbicide that would be used is the EPA and BLM approved Glyphosate. Only Oregon Certified Applicators or individuals under the direct supervision of Oregon Certified Applicators would be allowed to apply herbicides. Only the aquatic labeled Glyphosate and aquatic approved surfactants (LI 700 or Agri-Dex) would be used in riparian and aquatic environments.

Herbicide use would be limited to 500 acres per year (0. 4 percent of the public lands in the project area) and restricted to less than 10 percent of the total riparian area within each 6th field watershed per year. The 500 acre herbicide limit would be the sum of all treatments on BLM managed lands and all private lands treated using Federal dollars, excluding the projects listed in Appendix 6. It mainly would be applied during the growing season after the NNP species begin to grow.

The following information about Glyphosate comes mainly from a U.S. Forest Service risk assessment for Glyphosate (US Forest Service, 2003). The document gathered literature using PubMed, TOXLINE as well as the U.S. EPA CBI files:.

- Glyphosate is highly soluble and stable in water. It does not evaporate easily, and the potential for leaching is low.
- Glyphosate is not broken down by sun light or water. Instead it is removed from water by sediment adsorption and degradation by soil microbes. It would accumulate in sediment where it is held.

- It has a typical half-life in water ranging from 50 to 70 days in water. A "half-life" is the amount of time it takes for half of the original amount of herbicide to be deactivated. It's half-life in treams are typically shorter. In ponds, its half-life can be up to 10 weeks

In forestry, typical Glyphosate application rates by air or ground ranges from 0.5 to 3 pounds of active ingredient per acre, usually higher rates on upland sites and along roads than along riparian areas.

Environmental Effects

This section will analyze the effects of the proposed action and no action alternatives on sediment, water temperature, dissolved oxygen, channel stability and structural complexity, and water contamination. Hydrologic effects (peak flows, low flows, and water yields) were considered but were found not to have effects in any of the alternatives.

3.1.5.1 *Alternative 1 (No Action Alternative)*

Under the no action alternative, Glyphosate would be applied on up to 50 acres. Because current documents restrict the MPRA to treat up to 50 acres per year, many current noxious weed infestations would expand to other sites including streams, rivers, and wetlands.

Sediment – Some noxious weeds provide less ground cover and root holding strength than native plant species. Japanese knotweed plants, for example, have leaves that fall off in the fall and winter exposing the soil beneath it to rain. They also have shallower root systems than native plants. Stream banks colonized by Japanese knotweed tend to be unstable and have more slumping and erosion than those with trees and shrubs (Talmage, 2004).

Glyphosate application to control noxious infestations are unlikely to cause fine sediment or turbidity increases because they do not involve ground disturbance or remove extensive vegetative cover near streams.

Increased sediment deposition caused by other land management activities including logging, road building, timber hauling, and farming in the project area would continue to dwarf the amounts produced by NNP infestations and management methods to control them.

Water Temperature – Many noxious weeds are shrubs and herbs and provide less streamside shade than native hardwoods and conifers. A decrease in streamside shade can lead to increase water temperatures. The greatest potential for water temperature increases are wider (greater than 15 feet wide) and shallower (less than 2 feet deep) stream channels with large blocks of noxious weed infestations, especially on the south and westerly sides of streams. Any stream temperature increase from this alternative is expected to be very localized and small because noxious weed infestations are relatively small and few areas with noxious weed infestations meet those site conditions described above.

Current management activities including logging, road building, and NNP control on BLM managed lands are unlikely to be causing increased temperatures in project streams due to project design features to limit losses in effective stream shade.

Dissolved Oxygen – Some noxious weed species (e.g., Japanese knotweed leaves) produce large quantities of vegetative material each year. If a large quantity of organic matter fall into surface water, there could be a local increase in biological oxygen demand and a reduction in the amount

of dissolved oxygen. The greatest risk for water temperature increases are in ponds, and shallow, slow moving streams with elevated water temperatures.

The risk for this to occur under this alternative is low because noxious weed infestations near surface water are relatively small, there are few ponds, and most project streams are relatively turbulent and cool and are resistant to dissolved oxygen depletions. Current management activities are unlikely changing dissolve oxygen levels.

Channel Stability and Structural Complexity – Some noxious weeds can prevent the establishment of native trees along streams, potentially decreasing or delaying the future supply of large wood in stream channels.

Changes in channel stability and structural complexity from this alternative are unlikely, especially in the short-term, because noxious weed infestations are relatively small. Current management activities on BLM managed lands are unlikely changing future supply of large wood in stream channels. Levels of large wood in streams adjacent to many of the non-BLM managed lands are likely to continue to diminish due to logging and agricultural activities.

Chemical Contamination – Some noxious weeds contribute large amounts of organic matter, some of which can fall into streams. Sudden addition of large amounts of organic matter into streams can change its water chemistry by increasing the concentration of organic acids. The greatest potential for this alternative to change the water chemistry are areas near stream channels with large blocks of noxious weed infestations.

Under this alternative, due to the relative small size of noxious weed infestations, the risk of these effects would be small and probably not measurable. Any effects should be quickly mitigated by dilution or turbulence.

In summary, under this alternative without the ability to use herbicides, noxious weeds are likely to continue to spread and replace native vegetation. Any effects to water quality would be small and localized, probably not measurable at the 7th field watershed or larger scale. The risk of adverse effects to water quality would increase as noxious weed infestations expand and extend into more areas.

3.1.5.2 *Alternative 2 (Proposed Action)*

Sediment – The proposed action would be expected to result in little or no net increase in sediment deposition and turbidity. Herbicide application would kill noxious weeds and temporarily reduce ground cover in some treatment areas. This could potentially increase surface erosion and result in temporary delivery of fine sediment to streams. But the risk for this to happen is anticipated to be low due to the scattered treatment parcels.

Implementation of design features would minimize the risk of soil and sediment delivery. Only a small amount of area along streams would be treated at any one time (herbicide use would be limited to 500 acres per year (0. 4 percent of the public lands in the project area and restricted to less than 10 percent of the total riparian area within each 6th field watershed per year). Successful removal of noxious weeds and the re-establishment of native vegetation would increase ground cover and reduce the amount of sediment that could be delivered to streams.

Water Temperature – Changes in water temperature resulting from Glyphosate use would be unlikely. Most noxious weeds provide little to no streamside shade. No large blocks of dead

vegetation from herbicide application would be expected. Only small areas of streamside vegetation would be treated with backpack or hand operated sprayers at any one time and area. Re-establishment of native riparian vegetation in areas along streams in one to several years would increase shading and potentially reduce water temperature.

Dissolved Oxygen – The proposed action is unlikely to change dissolved oxygen contents in streams. The herbicide treatments would not result in large quantities of organic material being delivered to streams. Only small areas of streamside vegetation would be chemically treated. Treatments would be spread out in space and time. Most project streams are cold, turbulent and well aerated and are resistant to changes in dissolved oxygen concentrations from forest management activities. The chemical Glyphosate does not remove oxygen from the water column when it settles out into the sediment where it is broken down and deactivated.

Channel Stability and Structural Complexity – Successful removal of noxious weeds in riparian areas would allow the re-establishment of tree species. This would increase the future amount of large woody debris in a few small stream channels. The overall effect would be very limited at local treatment sites.

Chemical Contamination – The worst case scenario would be if there was a chemical spill of concentrated Glyphosate during measuring and pouring concentrated Glyphosate. However this activity would occur at least 100 feet from any surface water. Also, treatment sites with the highest potential for chemical contamination are knotweed treatment sites which occur in aquatic habitat and are stem injected with concentrated Glyphosate. However, the MPRA does not have any known knotweed sites on their lands at this time and the preferred method to date is by foliar spraying.

The most likely way Glyphosate would enter water under this proposal would be when it is applied (1 to 8 percent solution) to noxious weeds around streambanks or when it is sprayed by backpack sprayers to the water's edge (mostly knotweed projects). Contamination would be less likely to occur through surface runoff or leaching because Glyphosate binds strongly to soil particles, becomes immobile and is quickly broken down by microbial degradation.

Project design features (Section 2.2.3) and label restrictions would minimize the potential for introduction of Glyphosate into water. Label restriction would limit nozzle pressure and spray, and restrict herbicide application during high winds or expected precipitation . Herbicide treatments would generally not be used if other control methods, e.g., manual and cultural, are practicable. Herbicides would be applied by selective or spot hand application. No broadcast spraying would be allowed. The maximum application rate of Glyphosate that would be allowed are substantially less (approximately 40 percent less) than allowed on the label. Daily use quantities of herbicides would only be allowed to be transported to the project site.

Little contamination would be expected to occur with backpack foliar application. Any drift is unlikely to travel more than a few feet. While there are no known studies have been found that quantitatively assess drift after backpack applications, Labatt-Anderson (2002) conservatively estimated that it would amount to 0.001 percent at 25 feet.

No herbicides would be applied to submersed or floating vegetation or open water. Herbicides would be applied within some intermittent/ephemeral channels. However, because no water would be present in the channels when the herbicides are applied, no or little herbicide concentrations would reach downstream perennial channels.

Any contaminates in flowing water from spray or drip would likely decline rapidly in concentration as it moves downstream mixing with additional water and binding to sediment and organic matter particulates (Solomon and Thompson 2003). In conclusion, considering the above factors, this alternative is unlikely to result in adverse effects to water quality because the herbicide concentrations would be very low.

In summary, replacing noxious weed infestations with native vegetation would improve riparian and upslope conditions which could result in beneficial effects on water quality. Only small areas would be chemically treated at any given time. Herbicide use would be limited to 500 acres per year (0. 4 percent of the public lands in the project area) and restricted to less than 10 percent of the total riparian area within each 6th field watershed per year. Consequently, the magnitude of effect is likely to be too small and spread out in time and space and not be discernible at the watershed scale.

3.1.6 Recreation

Affected Environment

The MPRA has a range of recreational uses spreading from the Pacific Ocean to the Willamette Valley, north to Highway 22 in northern Polk County and south to Lane County. Recreational use of the area tends to increase each year. Some of the main recreational uses are fishing, hunting, hiking, picnicking, swimming, camping, target shooting, Off-Highway Vehicle (OHV) use and scenic driving.
The MPRA manages four recreation sites. They include: Yaquina Head Outstanding Natural Area, Alsea Falls campground and picnic areas, Missouri Bend and Mill Creek day use sites.

Yaquina Head Outstanding Natural Area (YHONA) is located north of the town of Newport on the Oregon Coast. Yaquina Head is located west of State Highway 101 and ends on a cliff overlooking the Pacific Ocean. Before YHONA was obtained by the United States Government, it was actively managed as a quarry site resulting in a heavily disturbed landscape. There are several paved roads and parking lots to access the lighthouse area, tide pool areas and the Interpretive Center. YHONA facilities consist of an interpretive center, maintenance building, entrance building, restrooms and lighthouse. Several hiking paths and trails occur throughout the area. Some of these are paved (concrete or asphalt) while others are either gravel or natural surfaced. Many NNP species occur at Yaquina Head and are discussed in the vegetation section.

Alsea Falls Campground is the only campground managed in the MPRA area. It is located southeast of the town of Alsea between the South Fork of the Alsea River and the South Fork Alsea River National Back Country Byway. It has a maintenance building, paved roadways, individual camping units, potable water, restrooms and hiking and biking trails. Alsea Falls Picnic Area is located just to the northwest of the Alsea Falls Campground and is connected by hiking trails. It has a paved parking area, individual picnic areas and restrooms. Small infestations of NNP and Oregon listed noxious weeds occur within these areas.

Missouri Bend Recreation Area is located west of the town of Alsea between State Highway 34 and the Alsea River. This recreation area consists of a parking lot, boat ramp, restroom, picnic sites and a short hiking trail. Small infestations of noxious weeds occur mostly around the boat launch and bathroom areas. In the past, these treatments have been reduced through physical treatments methods (mowing, cutting).

Mill Creek Recreation Area is located southeast of the town of Willamina. It has individual picnic sites and a restroom. Small infestations of widespread noxious weeds occur within the area.

Off-highway vehicle use is prevalent throughout the MPRA but most common on Flat Mountain, Prairie Peak and near the Alsea Falls recreation areas. Off-highway vehicle designations within the MPRA are open (83 percent), closed (2 percent) and limited (15 percent).

Rural Interface Areas

More than 36,380 acres of Salem District administered lands within one-half mile of private lands zoned for 1 to 20 acre lots are mapped rural interface areas. The MPRA contains 9,505 acres, only 26 percent in rural interface areas. Areas zoned for 40 acres or larger with a home is also considered rural interface, however these are not mapped.

Visual Resources

All recreation sites and Back Country Byways are within the VRM (visual resource management) Class 2, ACECs are within VRM Class 1, generally publicly viewed corridors are VRM Class 3 and the remaining BLM managed lands are VRM Class 4. The MPRA has approximately 110,387 acres in VRM 4; 7,214 acres in VRM class 3; 8,537 acres in VRM class 2, and 1,480 acres in VRM class 1. The proposed action complies with all VRM classes.

Environmental Effects

3.1.6.1 *Alternative 1 (No Action Alternative)*

Recreation

Under this alternative, noxious weed species would continue to slowly replace (out compete) native vegetation as described in section 3.1.1, especially along trails, roadways, buildings and parking lots. Increased infestations of NNPs would continue to increase in size, close trails and degrade permanent structures within recreation areas such as siding on buildings and pavement. Recreation maintenance and site maintenance is becoming more difficult and costly, as the recreation areas become increasingly infested with noxious weeds.

Visual Resources

Scenic quality could become degraded as infestations increase in size or new infestations become established. Although some noxious weed species have bright showy flowers, noxious weeds degrade the scenic quality of these sites by choking out native plants and wildflowers. Most treated sites would become brown as they die and would be visible for one season after treatment.

3.1.6.2 *Alternative 2 (Proposed Action)*

Recreation

Elimination and control of noxious weeds and promotion of native vegetation should serve to maintain a high quality experience for recreating visitors. It would also reduce noxious weed spread to other recreation sites and private residential or production lands.

The recreating public would have a potential of exposure to areas treated with herbicides. However, complications due to exposure to Glyphosate would be low because the toxicity of the product is low and the formulation of the product is low (less than 5 percent). In addition, treating known noxious weed infestations in recreation areas while they are closed and implementing other project design features would minimize any potential exposure hazard.

Off-highway vehicle use is prevalent throughout the MPRA due to the majority, (83 percent), BLM managed lands being open to that recreational activity. Any vehicle that has traveled within an area containing noxious weed species has potential of promoting the spread of the noxious weeds over a large area (Sheley Roger L. and Janet K. Petroff. 1999). It is common for OHV enthusiasts to participate in the sport in numerous geographic locations and varying terrains. Dirty OHV's often spread noxious weed species from an infested area to new locations. This is apparent along trails and roadways that receive OHV use.

Rural Interface Areas

Many rural interface residents do not want weed treatments along their property for various reasons, such as Herbicide treatments or the unsightly dead weeds. They post signs notifying sprayer equipment not to spray in their ditch line. Rural interface would be minimally affected due to the fact that MPRA has only 7 percent in this land classification. The effect of Herbicide spraying in rural interface areas would be a disturbance to visual resources where plants turn brown and die. Overtime, however, green native plants would provide visually pleasing scenery.

Visual Resources

Scenic quality would be improved unless large scale areas such as strips or blocks of land were treated or where total plant mortality occurred (especially-in rural interface areas near residential houses). Visual impacts would be short in duration (one or two years) while the site is restored with native vegetation. Where individual plants or small groups of plants are treated, the visual effects would be minimized and not noticeable to the average public land user.

4.0 CUMULATIVE EFFECTS

4.1 Vegetation

The proposed action to implement a plan to control noxious listed weeds in the MPRA would have a positive long term cumulative impact across the landscape by restoring native vegetation to areas fragmented by noxious weed infestations. This action would reduce the impacts that noxious weeds have on native plants especially in project areas which disrupt the soil. In addition, other Federal, State and private landowners efforts in reducing the spread of noxious weeds would have positive cumulative effects over the long-term.

The analysis area for cumulative effects to noxious weeds species is in the North Central Coast Range and western Willamette Valley throughout the MPRA. Examples of forest management activities and natural events within the affected area that would create soil disturbance, increase available light, and increase soil temperatures, all of which would influence the spread of noxious weeds are: commercial and pre-commercial timber density management projects; young stand maintenance; road construction, maintenance, renovation, de-commissioning, and culvert replacements; landslides, high flow sedimentation deposits; and off highway vehicle (OHV) activities.

Activities that do not necessarily create disturbance but influence the spread of weed seeds are recreational hiking, biking, horseback riding, fishing and hunting. Other sources of seed dispersal are from wildlife movement, water movement, natural dehiscence and wind. Many past and present management and non-management activities tend to open dense forest settings and disturb soils therefore providing opportunities for widespread noxious weed infestations to occur. Most noxious weeds are not shade tolerant and would not persist in a forest setting as they become out-competed for light as tree and/or shrub canopies close and light to the understory is reduced.

The implementation of this project would not contribute negatively to cumulative effects on vegetation due to the following:

- the proposal minimizes the number of acres treated annually with Glyphosate (500 acres) within the MPRA,
- this proposal only utilizes the herbicide Glyphosate which is less toxic than other BLM approved herbicides and has a high binding potential (non-leaching) to soil particle,
- this proposal limits the application of Glyphosate to hand held spot spraying only, (no aerial) and application only by certified individuals, and
- this project includes direct involvement with resource area specialists (wildlife biologist, botanist, soil scientist and fisheries biologist) prior to the implementation of any projects.

4.2 Wildlife

If no action is taken to increase efforts to control the spread of noxious weeds in the forest, the weed seed source would only increase each year and continue to have negative cumulative impacts by removing more and more native habitat and restricting the movements of native wildlife species to smaller and more fragmented landscapes.

The proposed action to implement a plan to increase control of the spread of noxious weeds in the conifer forests of the Oregon Coast Range would have a positive cumulative impact on wildlife by restoring native vegetation and habitat to areas fragmented with infestations. This action would improve the nesting, foraging, resting and escape habitat in the watersheds where it is applied.

4.3 Fisheries/Aquatic

Private land managers use a variety of manual, mechanical, and chemical means of controlling vegetation across the affected watersheds with varying levels of impact on the aquatic environment. The State of Oregon, the various counties, and the multiple municipal administrative units also treat invasive species using manual, mechanical, and chemical methods in all the affected watersheds of the project area. The combination of these activities could result in cumulative effects when combined with the proposed action.

The scale of the proposed project, incorporating the PDFs (section 2.2.3), are anticipated to result in such minimal site impacts that the proposed actions are unlikely to be detectable at a scale that may constitute a cumulative effect at a 5th field watershed analysis level. The soils and hydrology assessments, incorporated in the EA, indicated no cumulative effects to those resources would occur. Thus no cumulative impacts to the fisheries/aquatic resources would be anticipated with the implementation of the proposed project.

4.4 Soils

(No Action Alternative)

Cumulative impacts to soils across the project area would continue to occur. The magnitude of the effect from noxious weed infestations and current management activities to control noxious weed infestations would be negligible in comparison to the effects that are occurring from other management activities within the project area. Consequently, this alternative is not expected to result in measurable cumulative soil effect.

(Proposed Action)

Effects of the proposed action on soils are expected to be short-term, localized and not additive. Consequently cumulative effects to soils are not anticipated. There are no other known actions, aside from those described above, which would be enhanced or diminished by these proposed actions. Successful treatment of noxious weed species would improve soil quality to the approximate acreage of noxious weed species removed. Recovered areas in general would have less soil erosion, more soil organic matter, and higher soil productivity. Successful noxious weed species eradication would prevent dramatic changes to properties of soils from occurring from the occupation of weeds.

4.5 Water Quality

(No Action Alternative)

Cumulative impacts to water quality across the project area would continue to occur on BLM and other lands as a consequence of forest management (e.g., clear-cutting, broadcast burning, fertilizing, private land herbicide applications, road construction, and timber haul, and agriculture activities on lands adjacent to BLM managed lands.

(Proposed Action Alternative)

BLM lands are commonly intermingled with other land ownerships within the project area. Other land managers use a variety of manual, mechanical, and chemical methods of controlling vegetation. Herbicides, which include herbicides, fungicides, insecticides, and rodenticides, are commonly applied on other than BLM managed lands for a variety of forestry, agricultural, landscaping and invasive plant management purposes. Limited information on the type and quantity of Herbicides is known on these other ownership lands. However, because Herbicides are being applied on adjacent lands upstream of BLM managed lands, it is likely that some of that Herbicide is reaching waters on BLM.

The potential that these other land activities could result in cumulative affects when combined with the proposed action is negligible for the following reasons:

- Proposed treatments would be spread out in time and space.
- Little herbicide is expected to reach surface waters from the proposed action due to the implementation of project design features.
- Dilution of contaminants would occur over time and space by mixing from additional inflow from downstream tributaries and groundwater. This dilution would make it very unlikely that herbicide concentrations would be additive or synergistic at the 5th field watershed scale or have adverse cumulative effects to other downstream ownerships.

- Private landowners are required to follow all label directions to meet state standards for application to maintain water quality and soil productivity.

The proposed action would improve riparian and upslope conditions in treatment areas which could result in beneficial effects on water quality.

4.6 Recreation/Visual/Rural Interface

The South Fork Alsea River National Back Country Byways is generally brushed annually to improve sight distance and reduce vegetative encroachment on the road. Numerous county and privately owned roads throughout the project area have weed treatments occurring, including spraying and mowing roadside vegetation, especially near residential houses, (i.e. rural interface areas). The implementation of this action would be considered as a positive effect on recreation. There would be no cumulative effects on recreation considering approximately 500 acres per year would be treated, 0.4 percent of MPRA land base, and implementation of design features.

Scenic quality would be improved after two years while the site restores to native vegetation. Where individual plants or small groups of plants are treated, the visual effects would be minimized and not noticeable to the average public land user.

5.0 COMPLIANCE WITH THE AQUATIC CONSERVATION STRATEGY

Existing Watershed Condition

There are twenty 5th field watersheds containing public lands within the MPRA. Eight 5th & 6th field watersheds have been identified by the ROD as Key Watersheds which serve as refugia crucial for salmonid and resident fish species. Ten of the 5th-field watersheds have been analyzed by district Watershed Analyses, with the remainder being incorporated into analyses completed by other agencies.

The main rivers within the MPRA are the Alsea, Luckiamute, Siletz, and Yaquina. BLM managed lands within the project area are generally located in the higher elevations. Most of the weed infested areas in and near waterways occur along smaller tributaries and headwaters. In addition to streams, there are also wetlands, ponds, marshes and some lakes on MPRA lands.

Elevations range from sea level to approximately 3,900 feet. The climate is characterized by mild temperatures, wet winters and relatively dry summer. The MPRA receive on average approximately 90 inches of precipitation annually. Most of the precipitation occurs as rain and comes during the winter months of November, December, and January.

Review of Aquatic Conservation Strategy Compliance

Review of this analysis indicates that the project meets the Aquatic Conservation Strategy in the context of PCFFA IV and PCFFA II [complies with the ACS on the project (site) scale]. The following is an update of how this project complies with the four components of the Aquatic Conservation Strategy. The project would comply with:

<u>Component 1 – Riparian Reserves:</u> This project would maintain existing canopy cover along all streams and wetlands and would protect stream bank stability and water temperature. Riparian

Reserve boundaries would be established consistent with direction from the Salem District Resource Management Plan. Any proposed treatments are intended to enhance riparian condition. It is unknown at this time the exact acreage that would be treated with this proposal, but would remain less than 10 percent of stream miles per watershed. All treatments would maintain the existing native canopy cover when present and would be regarded as restoration of native vegetation projects and would be considered as beneficial.

Component 2 – Key Watershed: There are eight key watersheds in the analysis area. All treatments would follow label directions and incorporate design measures and meet state standards for maintaining water quality. The project would be regarded as restoration of native vegetation and would be considered beneficial.

Component 3 – Watershed Analysis: There are ten existing watershed analyses completed in the analysis area that describe the events that contributed to the current condition in the MPRA such as early hunting/gathering by aboriginal inhabitants, road building, agriculture, wildfire, and timber harvest. The following are watershed analysis findings that apply to or are components of this project:

Noxious weeds and other non-native plant species do not proliferate above an acceptable level (SFAWA p. 38)

Follow RMP guidelines to control noxious weeds. Inventory the analysis area to determine the extent of noxious weed infestations (BFWA p. 6 and p. 29)

Follow RMP guidelines for noxious weeds (USWA p. 6 and 45).

Component 4 – Watershed Restoration: The project would improve habitat conditions for coho salmon, steelhead and cutthroat trout and assist in restoring and improving ecological health of watersheds and aquatic systems by removing noxious plant species and their adverse effects on the long-term restoration of the aquatic system.

Table 11: Consistency with the Nine Aquatic Conservation Strategy Objectives

Aquatic Conservation Strategy Objectives (ACSOs)	Noxious Weed Control Utilizing Herbicides EA
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..	Does not prevent the attainment of ***ACSO 1***. Addressed in Text (*EA sections 3.1.1*). In summary: **No Action Alternative:** The No Action alternative would treat some noxious weed infestations but noxious weed infestations would continue to increase in numbers and size throughout the MPRA. Faster restoration of native vegetation diversity, and complexity of watershed and landscape features would not occur when compared to the action alternative. **Action Alternative:** The proposed action would allow a greater acreage of noxious weed treatments across the MPRA and would begin to reduce the total acres currently occupied by noxious weeds in the MPRA. This would result in a faster rate of native vegetation restoration both in the RR areas and in upland areas of the MPRA. Since Riparian Reserve provides travel corridors and resources for aquatic, riparian dependant and other late-successional associated plants and animals, the increased structural and plant diversity restored through the implementation of this project would ensure protection of aquatic systems by maintaining and restoring the distribution, diversity and complexity of watershed and landscape features.
2. Maintain and restore spatial and temporal connectivity within and between watersheds.	Does not prevent the attainment of ***ACSO 2***. Addressed in Text (*EA sections 3.1.1*). In summary: **No Action Alternative:** The No Action alternative would have a minor effect on connectivity except in the long term within the affected watersheds across the MPRA. **Action Alternative:** By removing invasive plants, long term connectivity of terrestrial watershed features would be improved by enhancing conditions for stand structure development. In time, the Riparian Reserve LUA would improve in functioning as refugia for late successional, aquatic and riparian associated and dependent species. Both terrestrial and aquatic connectivity would be maintained, and over the long-term, as the Riparian Reserve LUA develops late successional characteristics, lateral, longitudinal and drainage connectivity would be restored.
3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.	Does not prevent the attainment of ***ACSO 3***. Addressed in Text (*EA section 3.1.3*). In summary: **No Action Alternative:** It is assumed that the current condition of physical integrity would be maintained by following current design features on existing NEPA which allows us to treat up to 50 acres per year using Herbicides. **Action Alternative:** By following the herbicide label direction and the design features, the proposed action would maintain the integrity of shorelines, stream banks and stream bottom configurations in the project area.
4. *Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.*	Does not prevent the attainment of ***ACSO 4***. Addressed in Text (*EA section 3.1.3 and Section 3.1.4*). In summary: **No Action Alternative:** It is assumed that the current condition of physical integrity would be maintained by following current design features on existing NEPA which allows us to treat up to 50 acres per year using Herbicides. **Action Alternative:** It is assumed that the current condition of the water quality would be maintained. By following the label direction for herbicide application and incorporating the design features as listed above.

Aquatic Conservation Strategy Objectives (ACSOs)	Noxious Weed Control Utilizing Herbicides EA
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.	Does not prevent the attainment of ***ACSO 5***. Addressed in Text (*EA section 3.1.3*). In summary: **No Action Alternative:** It is assumed that the current levels of sediment into streams would be maintained by following current design features on existing NEPA which allows us to treat up to 50 acres per year using Herbicides. . **Action Alternative:** The proposed action does not include any ground disturbing activities and there would be no change to the current level of sediment introduction into streams in the MPRA. Existing sediment levels would be maintained.
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.	Does not prevent the attainment of ***ACSO 6***. Addressed in Text (*EA section 3.1.3*). In summary: **No Action Alternative:** No change in in-streams flows would be anticipated. **Action Alternative:** No change in in-streams flows would be anticipated.
7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.	Does not prevent the attainment of ***ACSO 7***. Addressed in Text (*EA section 3.1.3*). In summary: **No Action Alternative:** No change in in-streams flows would be anticipated. **Action Alternative:** No change in in-streams flows would be anticipated
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands.	Does not prevent the attainment of ***ACSO 8***. Addressed in Text (*EA section 3.1.1*). In summary: **No Action Alternative:** The current species composition and structural diversity of native plant communities would continue towards restoration along the current trajectory. Diversification would occur over a longer period of time. **Action Alternative:** The current species composition and structural diversity of native plant communities would continue towards restoration at a much faster rate. Diversification would occur over a shorter period of time.
9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.	Does not prevent the attainment of ***ACSO 9***. Addressed in Text (*EA section 3.1.5*). In summary: **No Action Alternative:** Habitats would be maintained over the short-term and continue to develop over the long-term with no known impacts on species currently present. **Action Alternative** Habitat to support well distributed riparian-dependent and riparian associated species would be restored by reducing invasive plant species in RR's at a faster rate in the MPRA

6.0 LIST OF PREPARERS

Table 12 List of Preparers

Resource	Name	Initial	Date
Botany TES and SS Plant Species	Ron Exeter		
Wildlife TES	Gary Licata		
Fisheries	Scott Snedaker		
Soils and Water Quality	Steve Wegner		
Recreation/Visuals/Rural Interface	Traci Meredith		
Vegetation	Hugh Snook		
NEPA	Gary Humbard		

7.0 CONTACTS AND CONSULTATION

7.1 Agencies, Organizations, and Persons Consulted (ESA Section 7 Consultation)

United States Fish and Wildlife Service (USFWS)
To address concerns for potential effects to northern spotted owls, the proposed action was consulted upon with the USFWS, as required under Section 7 of the ESA. Consultation for this proposed action was facilitated by its inclusion within a batched Biological Assessment (BA) that analyzed all projects that may modify the habitat of listed wildlife species on federal lands within the Northern Oregon Coast Range during fiscal years 2009 and 2010. The resulting Biological Opinion (issued 4/2/2009; Reference #13420-2009-F-0012; USDI-FWS 2009), concluded that this action would not result in jeopardy to listed species and would not adversely modify critical habitat for any species. This proposed action has been designed to incorporate all appropriate design standards set forth in the Biological Assessment and is in compliance with the Terms and Conditions included in the Biological Opinion.

National Marine Fisheries Service
Consultation with NMFS is required for projects that 'May Affect' listed species. The proposed actions associated with the Integrated MPRA Noxious Weed Control Utilizing Glyphosate Plan Project may affect listed fish or listed critical habitat in the MPRA. A determination has been made that the proposed project, specifically those actions within the riparian area associated with salmon habitat, would 'Adversely Affect' EFH within the affected watersheds.

Given the programmatic nature of the proposed activities, and extensive geographic coverage, it is likely that circumstances would arise where treatment of invasive plant infestations would occur within perennial, intermittent, or ephemeral channels tributary to streams with ESA-listed fish and their designated critical habitat. Since instream herbicide concentrations are difficult to quantify in absence of site specific analysis potentially high runoff may occur in some situations, but cannot currently be calculated (due to unknown site conditions). For this reason a may affect 'Likely to Adversely Affect' determination is warranted for ESA listed fish species and for the listed critical habitat.

Protection of EFH (Essential Fish Habitat) as described by the MSA (Magnuson/Stevens Fisheries Conservation and Management Act) and consultation with NMFS is required for all projects which may adversely affect EFH. For purposes of this assessment habitat harboring salmon species (Chinook, coho, and chum salmon) are considered EFH. The proposed MPRA Noxious Weed Control Utilizing Glyphosate project may affect EFH due to activities associated with the Integrated MPRA Noxious Weed Control Utilizing Glyphosate Management Plan project from occupied habitat.

The proposed actions would meet the Project Design Criteria established in the *Biological Assessment for USDA Forest Service (Pacific Northwest Region), USDI Bureau of Land Management (Oregon State Office), and the Coquille Indian Tribe Fish Habitat Restoration Activities Affecting ESA and MSA-Listed Animal and Plants Species Found in Oregon and Washington* (December 12, 2006). On April 28, 2007 National Marine Fisheries Service (NMFS) completed their Biological Opinion (BO) *Endangered Species Act Section 7 Formal Programmatic Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Fish Habitat Restoration Activities in Oregon and Washington, CH2007-CY2012* which included MPRA Noxious Weed Control Utilizing Glyphosate treatments. Adverse affects to ESA listed species and EFH and application of design features to minimize affects are covered by the Programmatic BO. Conformance with the design criteria established in the NMFS BO would result in no additional consultation needs to implement the proposed activities. Any activities not covered by the Programmatic BO which "may

affect" listed species would be consulted on separately. The USDA/USDI/Coquille programmatic BA included design criteria not included in the NMFS BO. Application of herbicide using spot spray to emergent knotweed within perennial waters or other spot spraying closer than 15 feet from the water edge as described in this assessment would need consultation coverage not currently covered in the NMFS BO.

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

The project area occurs in the Oregon Coast Range. Survey techniques are based on those described in Appendix D of the *Protocol for Managing Cultural Resource on Lands Administered by the Bureau of Land Management in Oregon*. Post-project survey would be conducted according to standards based on slope defined in the Protocol appendix. Ground disturbing work would be suspended if cultural material is discovered during project work until an archaeologist can assess the significance of the discovery.

7.3 Public Scoping and Notification-Tribal Governments, Adjacent Landowners, General Public, and State County and local government offices

For information on project scoping see *EA section 1.5*.

The EA and FONSI will be made available for public review from March 15, 2010 to April 14, 2010 and posted at the Salem District website at http://www.blm.gov/or/districts/salem/plans/index.php. The notice for public comment will be published in a legal notice by the following newspapers: *Gazette Times*, located in Benton County; *Itemizer Observer* located in Polk County; and the *Newport News Times* located in Lincoln County. Written comments should be addressed to Trish Wilson, Field Manager, Marys Peak Resource Area, 1717 Fabry Road S., Salem, Oregon 97306. Emailed comments may be sent to OR_Salem_Mail@blm.gov

8.0 MAJOR SOURCES AND COMMON ACRONYMS

8.1 Major Sources

8.1.1 Interdisciplinary Team Reports

Exeter, R. 2010. Botanical Report Marys Peak Resource Area Noxious Weed Control Utilizing Herbicides, Salem District, Bureau of Land Management. Salem, OR.

Licata G. 2010. Wildlife Report. Marys Peak Resource Area Noxious Weed Control Utilizing Herbicides, Salem District, Bureau of Land Management. Salem, OR.

Wegner, S. 2010. Soil/Water Marys Peak Resource Area Noxious Weed Control Utilizing Herbicides Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Meredith, T. 2010. Recreation/Rural Interface/VRM Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Snedaker, S. 2010. Fisheries Report. Marys Peak Resource Area Noxious Weed Control Utilizing Herbicides. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

8.1.2 Additional References

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, OR.

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, OR. Note: The ROD and Standard and Guidelines are collectively referred to herein as the Northwest Forest Plan (NFP)

Record of Decision To Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl (July 2007).

Final Supplement to the 2004 Final Supplemental Environmental Impact Statement to Remove or Modify The Survey and Manage Mitigation Measure Standards and Guidelines (June 2007).

Oregon Flora Newsletter. December 2009. Volume 15. Numbers 2 & 3. Oregon State University.

USDA Forest Service and USDI Bureau of Land Management. 2007. Biological Assessment, Fiscal year 2009/2010 habitat modification activities in the North Coast Province which might affect bald eagles, northern spotted owls or marbled murrelets.

USDA Forest Service and USDI Bureau of Land Management. 2009. Biological Opinion, Fiscal year 2009/2010 habitat modification activities in the North Coast Province which might affect bald eagles, northern spotted owls or marbled murrelets.

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

USDI Bureau of Land Management. 1995. Salem District Record of Decision and Resource Management Plan (RMP). Salem District BLM, Salem, OR. 81 pp. + Appendices.

USDI Bureau of Land Management. 1997. Benton Foothills Watershed Analysis. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. 107pp.

USDI Bureau of Land Management. 2008. Final Environmental Impact Statement for the Revision of the Resource Management Plans of the Western Oregon Bureau of Land Management. Salem, OR.

USDI Bureau of Land Management 2010. GIS database queries. Salem District, Marys Peak Resource Area, Oregon.

USDA. Bureau of Land Managment. 1996. Upper Siletz Watershed Analysis. Salem District, Marys Peak Resource Area.

USDA. Bureau of Land Managment. 1997. Benton Foothills Watershed Analysis. Salem District, Marys Peak Resource Area.

USDA. Bureau of Land Managment. 1995. South Fork Alsea River Watershed Analysis. Salem District, Marys Peak Resource Area. P. 36-37 and 64.

National Marine Fisheries Service. 2008. endangered Species Act - Section 7 Programmatic Consultation Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation. NMFS: BLM 2008/03506.

9.0 Appendices

9.1 Appendix A – Oregon Department of Agriculture Noxious Weed List

Oregon Department of Agriculture Noxious Weed Control Program. 2006 Noxious Weed Policy and Classification System.

Noxious Weed Control Classification System
Noxious weeds, for the purpose of this system, shall be designated "A" or "B" and may be given the additional designation of "T" according to the ODA

Noxious Weed Classification System.
• "A" Classified Weed – a weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent (Table A.6.1).

Recommended action: Infestations are subject to eradication or intensive control when and where found.

• "B" Classified Weed – a weed of economic importance which is regionally abundant, but which may have limited distribution in some counties (Table A.6.2).

Recommended action: Limited to intensive control at the state, county or regional level as determined on a case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the main control approach. ("B" weeds targeted for biological control are identified with an asterisk).

• "T" Classified Weed – a priority noxious weed designated by the Oregon State Weed Board as a target on which the ODA will develop and implement a statewide management plan. "T" designated noxious weeds are species selected from either the "A" or "B" list (Table A.6.3).

Table A.1: "A" Designated weeds as determined by the Oregon Department of Agriculture

Common Name	Scientific Name
African rue	*Peganum harmala*
Camelthorn	*Alhagi pseudalhagi*
Coltsfoot	*Tussilago farfara*

Common Name	Scientific Name
Cordgrass	
Common	*Spartina anglica*
Dense-flowered	*Spartina densiflora*
Saltmeadow	*Spartina patens*
Smooth	*Spartina alterniflora*
European water chestnut	*Trapa natans*
Giant hogweed	*Heracleum mantegazzianum*
Goatgrass	
Barbed	*Aegilops triuncialis*
Ovate	*Aegilops ovata*
Hawkweed	
King-devil	*Hieracium piloselloides*
Meadow	*Hieracium pratense*
Mouse-ear	*Hieracium pilosella*
Orange	*Hieracium aurantiacum*
Yellow	*Hieracium floribundum*
Hydrilla	*Hydrilla verticillata*
Kudzu	*Pueraria lobata*
Matgrass	*Nardus stricta*
Patersons curse	*Echium plantagineum*
Purple nutsedge	*Cyperus rotundus*
Silverleaf nightshade	*Solanum elaeagnifolium*
Skeletonleaf bursage	*Ambrosia tomentosa*
Squarrose knapweed	*Centaurea virgata*
Starthistle	
Iberian	*Centaurea iberica*
Purple	*Centaurea calcitrapa*
Syrian bean-caper	*Zygophyllum fabago*
Texas blueweed	*Helianthus ciliaris*
Thistle	
Plumeless	*Carduus acanthoides*
Smooth distaff	*Carthamus baeticus*
Woolly distaff	*Carthamus lanatus*
Yellow floating heart	*Nymphoides peltata*

Table A.2: "B" designated weeds as determined by the ODA
(*indicates targeted for biological control)

Common Name	Scientific Name
Austrian peaweed (Swainsonpea)	*Sphaerophysa salsula*
Bearded creeper (common crupina)	*Crupina vulgaris*
Biddy-biddy	*Acaena novae-zelandiae*
Broom	
French*	*Genista monspessulana*
Portuguese	*Cytisus striatus*
Scotch*	*Cytisus scoparius*
Spanish	*Spartium junceum*
Buffalobur	*Solanum rostratum*
Butterfly bush	*Buddleja davidii*
Common bugloss	*Anchusa officinalis*
Creeping yellow cress	*Rorippa sylvestris*
Cutleaf teasel	*Dipsacus laciniatus*
Dodder	*Cuscuta spp.*
Dyers woad	*Isatis tinctoria*
English ivy	*Hedera helix*
Eurasian watermilfoil	*Myriophyllum spicatum*
False brome	*Brachypodium sylvaticum*
Field bindweed*	*Convolvulus arvensis*
Garlic mustard	*Alliaria petiolata*
Giant horsetail	*Equisetum telmateia*
Gorse*	*Ulex europaeus*
Halogeton	*Halogeton glomeratus*
Himalayan blackberry	*Rubus discolor* (*R. procerus, R. aremeniacus*)
Houndstongue	*Cynoglossum officinale*
Johnsongrass	*Sorghum halepense*
Jointed goatgrass	*Aegilops cylindrical*
Jubata grass	*Cortaderia jubata*
Knapweeds	
Diffuse*	*Centaurea diffusa*
Meadow*	*Centaurea pratensis* (*C. jacea x C. nigra*)
Russian*	*Acroptilon repens*
Spotted*	*Centaurea maculosa* (*C. stoebe*)
Knotweeds	
Giant	*Polygonum sachalinense*
Himalayan	*Polygonum polystachyum*
Japanese (fleece flower)	*Polygonum cuspidatum* (*Fallopia japonica*)
Kochia	*Kochia scoparia*
Mediterranean sage*	*Salvia aethiopis*
Medusahead rye	*Taeniatherum caput-medusae*
Old mans beard	*Clematis vitalba*
Perennial pepperweed	*Lepidium latifolium*
Poison hemlock	*Conium maculatum*
Policemans helmet	*Impatiens glandulifera*
Puncturevine*	*Tribulus terrestris*
Purple loosestrife*	*Lythrum salicaria*

Common Name	Scientific Name
Quackgrass	*Agropyron repens*
Ragweed	*Ambrosia artemisiifolia*
Rush skeletonweed*	*Chondrilla juncea*
Saltcedar*	*Tamarix ramosissima*
Small broomrape	*Orobanche minor*
South American waterweed	*Egeria densa* (*Elodea*)
Spikeweed	*Memizonia pungens*
Spiny cocklebur	*Xanthium spinosum*
Spurge	
Leafy*	*Euphorbia esula*
Myrtle	*Euphorbia myrsinites*
St. Johnswort (Klamath weed)*	*Hypericum perforatum*
Sulfur cinquefoil	*Potentilla recta*
Tansy ragwort*	*Senecio jacobaea*
Thistles	
Bull*	*Cirsium vulgare*
Canada*	*Cirsium arvense*
Italian*	*Carduus pycnocephalus*
Milk*	*Silybum marianum*
Musk*	*Carduus nutans*
Scotch	*Onopordum acanthium*
Slender-flowered*	*Carduus tenuiflorus*
Toadflax	
Dalmatian*	*Linaria dalmatica* (*L.genista*)
Yellow*	*Linaria vulgaris*
Velvetleaf	*Abutilon theophrasti*
Whitetop	
Hairy	*Lepidium pubescens*
Lens-podded	*Lepidium chalepensis*
Whitetop (hoary cress)	*Lepidium draba*
Yellow flag iris	*Iris pseudacorus*
Yellow nutsedge	*Cyperus esculentus*
Yellow starthistle*	*Centaurea solstitialis*

Table A.3: "T" or target weeds designated by the ODA

The ODA annually develops a target list of weed species that will be the focus for prevention and control by the Noxious Weed Control Program, sanctioned by the Oregon State Weed Board. Because of the economic threat to the state of Oregon, action against these weeds would receive priority.

Common Name	Scientific Name
Barbed goatgrass	*Aegilops triuncialis*
Common bugloss	*Anchusa officinalis*
Cordgrass	
Common	*Spartina anglica*
Dense-flowered	*Spartina densiflora*
Saltmeadow	*Spartina patens*
Smooth	*Spartina alterniflora*
Giant hogweed	*Heracleum mantegazzianum*
Gorse	*Ulex europaeus*
Hawkweed	
Meadow	*Hieracium pretense*
Orange	*Hieracium aurantiacum*
Yellow	*Hieracium floribundum*
Knapweed	
Spotted	*Centaurea maculosa* (*C. stoebe*)
Squarrose	*Centaurea virgata*
Knotweed	
Giant	*Polygonum sachalinense*
Himalayan	*Polygonum polystachyum*
Japanese	*Polygonum cuspidatum* (*Fallopia japonica*)
Kudzu	*Pueraria lobata*
Leafy Spurge	*Euphorbia esula*
Portuguese broom	*Cytisus striatus*
Purple loosestrife	*Lythrum salicaria*
Rush skeletonweed	*Chondrilla juncea*
Starthistle	
Iberian	*Centaurea iberica*
Purple	*Centaurea calcitrapa*
Yellow	*Centaurea solstitialis*
Tansy ragwort	*Senecio jacobaea*
Woolly distaff thistle	*Carthamus lanatus*

9.2 Appendix B – Aquatic labeled Glyphosate (Aquamaster) product information.

A copy of the Aquamaster label can be found at:
http://www.monsanto.com/monsanto/ag_products/pdf/labels_msds/aqua_master_label.pdf

A copy of the Aquamaster MSDS sheet can be found at:
http://www.monsanto.com/monsanto/ag_products/pdf/labels_msds/aqua_master_msds.pdf

9.2.1 Summary of Basic Information for Glyphosate

Common name: Glyphosate **Chemical name:** N-(phosphonomethyl)glycine
Common Product names: Roundup®, Rodeo®, Accord®
Herbicide classification: herbicide
Registered Use Status: "General Use"

I. Herbicide Uses
Registered forestry, rangeland, right-of-way uses: planting site preparation, conifer release, forest nurseries, rights-of-way and facilities maintenance, and invasive NNP control.

Target Plants: Glyphosate is used to control grasses, herbaceous plants including deep rooted perennial weeds, brush, some broadleaf trees and shrubs, and some conifers. Glyphosate does not control all broadleaf woody plants. Timing is critical for effectiveness on some broadleaf woody plants and conifers.

Glyphosate applied to foliage is absorbed by leaves and rapidly moves through the plant. It acts by preventing the plant from producing an essential amino acid. This reduces the production of protein in the plant, and inhibits plant growth. Glyphosate is metabolized or broken down by some plants, while other plants do not break it down. Aminomethylphosphonic acid is the main break-down product of Glyphosate in plants.

Method of application: aerial spraying; spraying from a truck, backpack or hand-held sprayer.

II. Environmental Effects/Fate
Soil: Glyphosate is not generally active in the soil. It is not usually absorbed from the soil by plants. Glyphosate and the surfactant used in Roundup are both strongly adsorbed by the soil. Glyphosate remains unchanged in the soil for varying lengths of time, depending on soil texture and organic matter content. The half-life of Glyphosate can range from 3 to 130 days. Soil microorganisms break down Glyphosate. In tests, the surfactant in Roundup has a soil half-life of less than 1 week. Soil microorganisms break down the surfactant. The main break-down product of Glyphosate in the soil is aminomethylphosphonic acid, which is broken down further by soil microorganisms. The main break-down product of the surfactant used in Roundup is carbon dioxide.

Water: Glyphosate dissolves easily in water. The potential for leaching is low. Glyphosate and the surfactant in Roundup are strongly adsorbed to soil particles. Tests show that the half-life for Glyphosate in water ranges from 35 to 63 days. The surfactant half-life ranges from 3 to 4 weeks. Studies examined Glyphosate and aminomethylphosphonic acid (AMPA) residues in surface water after forest application in British Columbia with and without no-spray streamside zones.

With a no-spray streamside zone, very low concentrations were sometimes found in water and sediment after the first heavy rain. Where Glyphosate was sprayed over the stream, higher peak concentrations in water always occurred following heavy rain, up to 3 weeks after application. Glyphosate and AMPA residues peaked later in stream sediments, where they persisted for over 1 year. These residues were not easily released back into the water.

Air: Glyphosate does not evaporate easily. Major products from burning treated vegetation include phosphorus pentoxide, acetonitrile, carbon dioxide and water. Phosphorus pentoxide forms phosphoric acid in the presence of water. None of these compounds is known to be a health threat at the levels which would be found in a vegetation fire.

III. Ecological Effects

Non-Target Toxicity: Glyphosate and the surfactant have no known effect on soil microorganisms. Contact with non-target plants may injure or kill plants. Glyphosate is no more than slightly toxic to fish, and practically non-toxic to aquatic invertebrate animals. It does not build up (bioaccumulate) in fish. The Accord and Rodeo formulations are practically non-toxic to freshwater fish and aquatic invertebrate animals. The Roundup formulation is moderately to slightly toxic to freshwater fish and aquatic invertebrate animals. Glyphosate and its formulations have not been tested for chronic effects in aquatic animals.

Terrestrial Animals: Glyphosate is practically non-toxic to birds and mammals. It is practically non-toxic to bees. Glyphosate and its formulations have not been tested for chronic effects in terrestrial animals.

Threatened and Endangered Species: Glyphosate may be a hazard to endangered species if it is applied to areas where they live.

IV. Human Health Effects

Most incidents reported in humans have involved skin or eye irritation in workers after exposure during mixing, loading or application of Glyphosate formulations. Nausea and dizziness have also been reported after exposure. Swallowing the Roundup formulation caused mouth and throat irritation, pain in the abdomen, vomiting, low blood pressure, reduced urine output, and in some cases, death. These effects have only occurred when the concentrate was accidentally or intentionally swallowed, not as a result of the proper use of Roundup. The amount swallowed averaged about 100 milliliters (about half a cup). There are no reported cases of long term health effects in humans due to Glyphosate or its formulations.

9.2.2 EXTOXNET: Data Sheet for Glyphosate

Extension Toxicology Network

Herbicide Information Profiles

A Herbicide Information Project of Cooperative Extension Offices of Cornell University, Oregon State University, the University of Idaho, and the University of California at Davis and the Institute for Environmental Toxicology, Michigan State University. Major support and funding was provided by the USDA/Extension Service/National Agricultural Herbicide Impact Assessment Program.

EXTOXNET primary files maintained and archived at Oregon State University

Revised June 1996

Glyphosate

Trade and Other Names: Trade names for products containing Glyphosate include Gallup, Landmaster, Pondmaster, Ranger, Roundup, Rodeo, and Touchdown. It may be used in formulations with other herbicides.

Regulatory Status: Glyphosate acid and its salts are moderately toxic compounds in EPA toxicity class II. Labels for products containing these compounds must bear the Signal Word WARNING. Glyphosate is a General Use Herbicide (GUP).

Chemical Class: Not Available

Introduction: Glyphosate is a broad-spectrum, nonselective systemic herbicide used for control of annual and perennial plants including grasses, sedges, broad-leaved weeds, and woody plants. It can be used on non-cropland as well as on a great variety of crops. Glyphosate itself is an acid, but it is commonly used in salt form, most commonly the isopropylamine salt. It may also be available in acidic or trimethylsulfonium salt forms. It is generally distributed as water-soluble concentrates and powders. The information presented here refers to the technical grade of the acid form of Glyphosate, unless otherwise noted.

Formulation: Glyphosate itself is an acid, but it is commonly used in salt form, most commonly the isopropylamine salt. It may also be available in acidic or trimethylsulfonium salt forms. It is generally distributed as water-soluble concentrates and powders.

Toxicological Effects:

- **Acute toxicity:** Glyphosate is practically nontoxic by ingestion, with a reported acute oral LD50 of 5600 mg/kg in the rat. The toxicities of the technical acid (Glyphosate) and the formulated product (Roundup) are nearly the same [58,96]. The oral LD50 for the trimethylsulfonium salt is reported to be approximately 750 mg/kg in rats, which indicates moderate toxicity [58]. Formulations may show moderate toxicity as well (LD50 values between 1000 mg/kg and 5000 mg/kg) [58]. Oral LD50 values for Glyphosate are greater than 10,000 mg/kg in mice, rabbits, and goats [8,96]. It is practically nontoxic by skin exposure,

with reported dermal LD50 values of greater than 5000 mg/kg for the acid and isopropylamine salt. The trimethylsulfonium salt has a reported dermal LD50 of greater than 2000 mg/kg. It is reportedly not irritating to the skin of rabbits, and does not induce skin sensitization in guinea pigs [58]. It does cause eye irritation in rabbits [58]. Some formulations may cause much more extreme irritation of the skin or eyes [58]. In a number of human volunteers, patch tests produced no visible skin changes or sensitization [58]. The reported 4-hour rat inhalation LC50 values for the technical acid and salts were 5 to 12 mg/L [58], indicating moderate toxicity via this route. Some formulations may show high acute inhalation toxicity [58]. While it does contain a phosphatyl functional group, it is not structually similar to organophosphate Herbicides which contain organophosphate esters, and it does not significantly inhibit cholinesterase activity [1,58].

- **Chronic toxicity:** Studies of Glyphosate lasting up to 2 years, have been conducted with rats, dogs, mice, and rabbits, and with few exceptions no effects were observed [96]. For example, in a chronic feeding study with rats, no toxic effects were observed in rats given doses as high as 400 mg/kg/day [58]. Also, no toxic effects were observed in a chronic feeding study with dogs fed up to 500 mg/kg/day, the highest dose tested [58,97].
- **Reproductive effects:** Laboratory studies show that Glyphosate produces reproductive changes in test animals very rarely and then only at very high doses (over 150 mg/kg/day) [58,96]. It is unlikely that the compound would produce reproductive effects in humans.
- **Teratogenic effects:** In a teratology study with rabbits, no developmental toxicity was observed in the fetuses at the highest dose tested (350 mg/kg/day) [97]. Rats given doses up to 175 mg/kg/day on days 6 to 19 of pregnancy had offspring with no teratogenic effects, but other toxic effects were observed in both the mothers and the fetuses. No toxic effects to the fetuses occurred at 50 mg/kg/day [97]. Glyphosate does not appear to be teratogenic.
- **Mutagenic effects:** Glyphosate mutagenicity and genotoxicity assays have been negative [58]. These included the Ames test, other bacterial assays, and the Chinese Hamster Ovary (CHO) cell culture, rat bone marrow cell culture, and mouse dominant lethal assays [58]. It appears that Glyphosate is not mutagenic.
- **Carcinogenic effects:** Rats given oral doses of up to 400 mg/kg/day did not show any signs of cancer, nor did dogs given oral doses of up to 500 mg/kg/day or mice fed Glyphosate at doses of up to 4500 mg/kg/day [58]. It appears that Glyphosate is not carcinogenic [97].
- **Organ toxicity:** Some microscopic liver and kidney changes, but no observable differences in function or toxic effects, have been seen after lifetime administration of Glyphosate to test animals [97].
- **Fate in humans and animals:** Glyphosate is poorly absorbed from the digestive tract and is largely excreted unchanged by mammals. At 10 days after treatment, there were only minute amounts in the tissues of rats fed Glyphosate for 3 weeks [98]. Cows, chickens, and pigs fed small amounts of Glyphosate had undetectable levels (less than 0.05 ppm) in muscle tissue and fat. Levels in milk and eggs were also undetectable (less than 0.025 ppm). Glyphosate has no significant potential to accumulate in animal tissue [99].

Ecological Effects:

- **Effects on birds:** Glyphosate is slightly toxic to wild birds. The dietary LC50 in both mallards and bobwhite quail is greater than 4500 ppm [1].
- **Effects on aquatic organisms:** Technical Glyphosate acid is practically nontoxic to fish and may be slightly toxic to aquatic invertebrates. The 96-hour LC50 is 120 mg/L in bluegill sunfish, 168 mg/L in harlequin, and 86 mg/L in rainbow trout [58]. The reported 96-hour LC50 values for other aquatic species include greater than 10 mg/L in Atlantic oysters, 934 mg/L in fiddler crab, and 281 mg/L in shrimp [58]. The 48-hour LC50 for Glyphosate in Daphnia (water flea), an important food source for freshwater fish, is 780 mg/L [58]. Some

formulations may be more toxic to fish and aquatic species due to differences in toxicity between the salts and the parent acid or to surfactants used in the formulation [58,96]. There is a very low potential for the compound to build up in the tissues of aquatic invertebrates or other aquatic organisms [96].

- **Effects on other organisms:** Glyphosate is nontoxic to honeybees [1,58]. Its oral and dermal LD50 is greater than 0.1 mg/ bee [98]. The reported contact LC50 values for earthworms in soil are greater than 5000 ppm for both the Glyphosate trimethylsulfonium salt and Roundup [58].

Environmental Fate:

- **Breakdown in soil and groundwater:** Glyphosate is moderately persistent in soil, with an estimated average half-life of 47 days [58,11]. Reported field half-lives range from 1 to 174 days [11]. It is strongly adsorbed to most soils, even those with lower organic and clay content [11,58]. Thus, even though it is highly soluble in water, field and laboratory studies show it does not leach appreciably, and has low potential for runoff (except as adsorbed to colloidal matter) [3,11]. One estimate indicated that less than 2 percent of the applied chemical is lost to runoff [99]. Microbes are primarily responsible for the breakdown of the product, and volatilization or photodegradation losses would be negligible [58].
- **Breakdown in water:** In water, Glyphosate is strongly adsorbed to suspended organic and mineral matter and is broken down primarily by microorganisms [6]. Its half-life in pond water ranges from 12 days to 10 weeks [97].
- **Breakdown in vegetation:** Glyphosate may be translocated throughout the plant, including to the roots. It is extensively metabolized by some plants, while remaining intact in others [1].

Physical Properties:

- **Appearance:** Glyphosate is a colorless crystal at room temperature [1].
- **Chemical Name:** N-(phosphonomethyl) glycine [1]
- **CAS Number:** 1071-83-6
- **Molecular Weight:** 169.08
- **Water Solubility:** 12,000 mg/L @ 25 C [1]
- **Solubility in Other Solvents:** i.s. in common organics (e.g., acetone, ethanol, and xylene) [1]
- **Melting Point:** 200 C [1]
- **Vapor Pressure:** negligible [1]
- **Partition Coefficient:** -3.2218 - -2.7696 [58]
- **Adsorption Coefficient:** 24,000 (estimated) [11]

Exposure Guidelines:

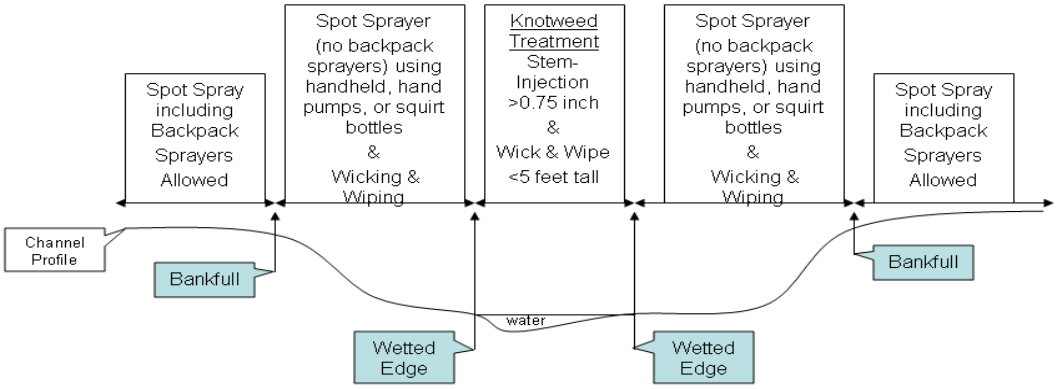
- **ADI:** 0.3 mg/kg/day [12]
- **MCL**: Not Available
- **RfD:** 0.1 mg/kg/day [13]
- **PEL:** Not Available
- **HA**: 0.7 mg/L (lifetime) [98]
- **TLV**: Not Available

Basic Manufacturer:

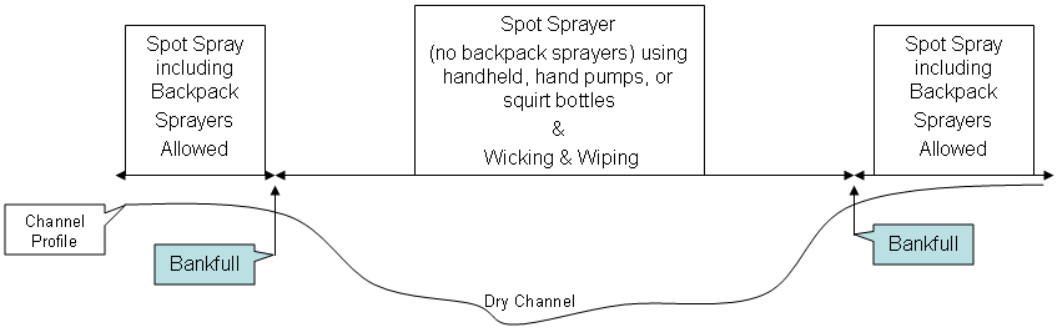
Monsanto Company
800 N. Lindbergh Blvd.
St. Louis, MO 63167

- **Phone:** 314-694-6640
- **Emergency:** 314-694-4000

9.3 Appendix C – Fisheries Design Features for a 'May Affect'.



Perennial Stream Channel Treatments



Intermittent and Ephemeral Stream Channel Treatments