



Safe Harbor Agreement, Landowner Option Plan, and Cooperative Habitat Enhancement Agreement

Port Blakely Tree Farms
Morton Block

February 2009



PORT BLAKELY
TREE FARMS LP

Integrity and Innovation since 1864

Safe Harbor Agreement, Landowner Option Plan, and
Cooperative Habitat Enhancement Agreement:
Port Blakely Tree Farms, Morton Block

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Acronyms and Abbreviations

CHEA	Cooperative Habitat Enhancement Agreement
circles	northern spotted owl management circles
dbh	diameter at breast height
EIS	Environmental Impact Statement
ESA	Endangered Species Act
Forest Practice Rules	Washington Forest Practices Rules and Regulations
FR	Federal Register
FWS	U.S. Fish and Wildlife Service
GIS	geographic information system
HCP	habitat conservation plans
LOP	Landowner Option Plan
NMFS	National Marine Fisheries Service
Parties	Port Blakely and FWS
Permit	Enhancement of Survival Permit
Port Blakely	Port Blakely Tree Farms, L.P.
RD	Relative Density
Recovery Plan	Marbled Murrelet Recovery Plan
SEPA	Washington State Environmental Policy Act
SHA	Safe Harbor Agreement
SMA	Special Management Area
SOSEA	Spotted Owl Special Emphasis Area
SSA	Special Set-Aside
State	State of Washington
U.S 12	U.S. Route 12
U.S.C.	United States Code
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources

Chapter 1. Introduction

Port Blakely Tree Farms L.P. (Port Blakely) is submitting a forest management plan for their James G. Eddy Tree Farm, also known as the Morton Block, in Lewis and Skamania counties, Washington (Figure 1-1). This plan is formally an application for permits and assurances to the U.S. Fish and Wildlife Service (FWS) and Washington Department of Natural Resources (WDNR). Specifically, Port Blakely seeks approval of three permits or agreements with these agencies. First, Port Blakely seeks an Enhancement of Survival Permit (Permit) for this Safe Harbor Agreement (SHA or Agreement) from the FWS under section 10(a)(1)(A) of the Endangered Species Act (ESA) of 1973, as amended (16 United States Code [U.S.C.] 1531 *et seq.*). Second, and concurrent with the first action, Port Blakely seeks approval by WDNR of both a Landowner Option Plan (LOP) and a Cooperative Habitat Enhancement Agreement (CHEA), as allowed under Washington Administrative Code (WAC) 222-16-100 and WAC 222-16-105 of the Washington Forest Practices Rules and Regulations (Washington Forest Practices Board 2002) (Forest Practices Rules).

Under the SHA, Port Blakely will implement voluntary conservation measures that are expected to provide net conservation benefits to the species addressed in the Agreement (covered species). This Agreement will allow Port Blakely to conduct future forest management activities in a predictable manner with the knowledge that future federal actions under the ESA will not result in additional restrictions to these activities. The covered species are the northern spotted owl (*Strix occidentalis caurina*) (owl), federally listed as threatened on July 23, 1990 (U.S. Fish and Wildlife Service 1990a); and the marbled murrelet (*Brachyramphus marmoratus marmoratus*) (murrelet), federally listed as threatened in California, Oregon, and Washington on September 28, 1992 (U.S. Fish and Wildlife Service 1992a).

This Agreement also contains the provisions of a Washington Forest Practices Rules and Regulations (Washington Forest Practices Board 2002) (Forest Practices Rules) LOP that addresses Port Blakely's forest management activities in the Mineral Block/Link Spotted Owl Special Emphasis Area (Mineral SOSEA). By developing a LOP that addresses owls in the Mineral SOSEA, Port Blakely will manage their tree farm in a manner that contributes to the goals of the SOSEA. Moreover, subsequent management of the Morton Block will not be subjected to future land use restrictions under the Forest Practices Rules pertaining to the protection of owl habitat.

Finally, this Agreement will fulfill the requirements of a CHEA for murrelets, as defined in the Forest Practices Rules. Under the SHA/CHEA, Port Blakely will enhance and maintain potential murrelet habitat dispersed throughout the Morton Block. With the approval of this Agreement, Port Blakely will be assured that they will be able to conduct future forest management activities under the Forest Practices Rules without restrictions relative to murrelets because of the habitat enhancement efforts they will implement.

1.1. Goals and Objectives

The goal for FWS is to provide greater conservation and protection for listed species under the ESA than would occur under section 9 (ESA take prohibition). By providing landowners with incentives to proactively create and enhance habitat for listed species, such as Safe Harbor Agreements and Enhancement of Survival Permits, FWS improves its ability to conserve and protect listed species. At the same time, this SHA and Permit will provide assurances to Port Blakely that they can continue to conduct long-term forest management activities without concern that future ESA take prohibitions may restrict their activities should a listed species addressed in the SHA occupy land in the Morton Block. In return for voluntary conservation measures, this SHA will allow future alteration or modification of Port Blakely's enrolled properties back to agreed-upon baseline conditions. Without this cooperative government-private effort, a landowner may be less likely to manage habitats in a manner considered beneficial for the covered species in the foreseeable future. The SHA offers a way to secure the willingness of a landowner to undertake such activities.

The goals for the State of Washington (State) are to contribute to owl and murrelet conservation through state plans and agreements, such as the LOP and CHEA. Port Blakely anticipates that by agreeing to follow the provisions of these respective plans, they will contribute to the conservation of these species and will be able to conduct forest management activities within the Mineral SOSEA (with respect to owls), and in specific areas on their ownership (with respect to murrelets), without concern that current and future Forest Practices Rules will restrict their ability to manage their lands as they intend. Port Blakely's goals and objectives with respect to

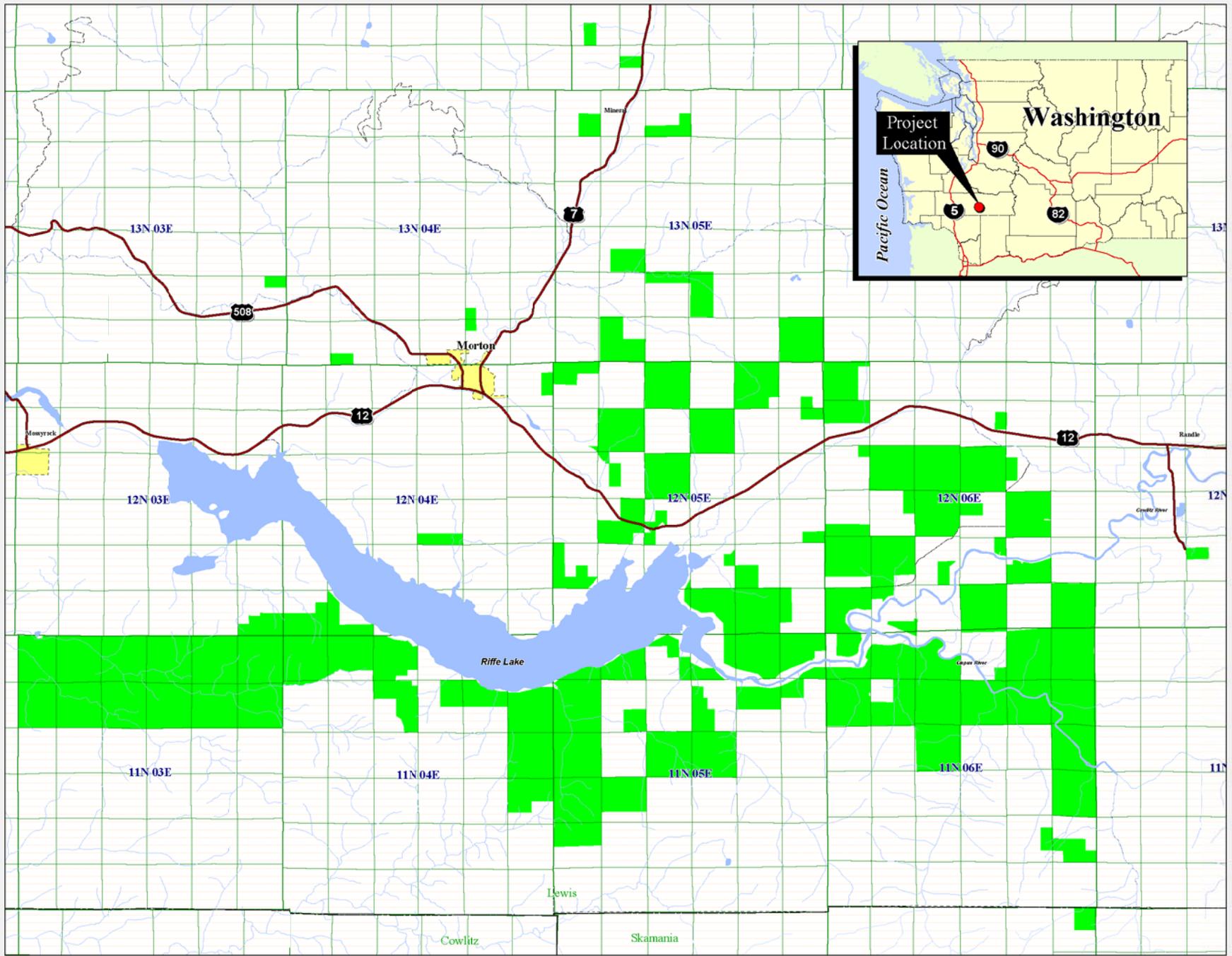


Figure 1-1
 Project Vicinity
 Revision Date: 05/05/2008

the LOP are to provide habitat for demographic interchange or owl dispersal, an established goal for the Port Blakely lands in the Mineral SOSEA. The LOP is intended to contribute to the protection of owls by considering the needs of overall population maintenance or dispersal habitat across a defined geographic area, the Mineral SOSEA. The LOP establishes an appropriate contribution from Port Blakely toward meeting SOSEA goals and is intended to be an efficient and effective alternative to site-by-site management planning.

Port Blakely's Morton Block encompasses approximately 45,306 acres in Lewis and Skamania counties and has been primarily used for timber production over the years. Aerial photographs of the property dating back to the 1940s confirm past land use in the area as forestry. Port Blakely purchased the property in 2004 from the Rainier Timber Company, LLC. Prior to that, the land was owned and managed for several decades by Champion International Company.

Portions of the Morton Block (26,878 acres; 59%) fall within the Mineral SOSEA (WAC 222-16-086). Management emphasis for owls within the Mineral SOSEA includes providing both demographic support and dispersal habitat. However, the conservation goal for the LOP is demographic interchange (dispersal) because over 99% of Port Blakely's ownership within the Mineral SOSEA lies within that portion of the SOSEA area designated for a dispersal role. The Final Recovery Plan for the Northern Spotted Owl identified this area as a Conservation Support Area (CSA), number WCSA-04 (U.S. Fish and Wildlife Service 2008). The CSA is between two federally Managed Owl Conservation Areas (MOCA) designated in the Recovery Plan. CSAs may function to provide demographic support to core spotted owl populations in the MOCA network, facilitate dispersal of juvenile spotted owls among MOCAs, or serve both of these functions. The SHA is consistent with this concept and would facilitate dispersal of spotted owls by managing forested lands in the plan area on an average rotation length of 60 years, protecting Special Management Areas and Special Set-Aside Areas, implementing a snag conservation and development program, implementing new nest site provisions, and monitoring. Within the Mineral SOSEA, all forest management activities (e.g. timber harvest, road construction, aerial herbicide applications) within qualifying owl habitat within owl activity circles trigger a Class IV Special Forest Practices Application, and impacts on the owl are evaluated through Washington State Environmental Policy Act (SEPA) review. More specifically, the following amounts of suitable habitat are generally assumed to be necessary to maintain the viability of the owls associated with each owl site center, in the absence of a mitigation plan, and generally perceived by forest landowners as restrictions to forest management activities (WAC 222-10-041):

- all suitable owl habitat within 0.7 mile of each owl site center; and,
- a total of 2,605 acres (40%) of suitable owl habitat within the median annual home range circle (1.8-mile radius).

Several conditions have prompted Port Blakely to seek a SHA and Permit from FWS, and an approved LOP from Washington State Department of Natural Resources (WDNR). Although there are no recent records of owls on the Port Blakely Morton Block, they are known to have occurred (and may continue to occur) in activity centers on adjacent ownerships in close proximity to Port Blakely forest lands. In addition, a large proportion of the Morton Block is located in the Mineral SOSEA potentially requiring site-by-site management planning of individual harvest units that meet definitions of owl habitat within owl circles. These circumstances, coupled with Port Blakely's desire to manage their tree farm for operational, administrative, and economic flexibility, including implementing longer rotations than the industry standard and potentially creating or enhancing habitat used by owl prey, have prompted Port Blakely to seek alternatives to concurrently meet their regulatory requirements and economic goals. Port Blakely's concern is that by extending the forest rotation age, applying mid-rotation management (e.g., commercial thinning), and managing special areas in the absence of an Agreement and corresponding Permit, they would create or enhance habitat for owls and murrelets, and these species may eventually occupy their ownership causing additional land-use restrictions. With the assurances associated with the Agreement, these concerns are alleviated.

Port Blakely is also incorporating the essential elements of a CHEA for the murrelet. As Port Blakely grows older trees and more complex habitat, stands of large trees that are sufficiently protected by surrounding trees of similar age and size may create new murrelet nesting habitat. Port Blakely's forest management activities will enhance and retain murrelet habitat, which is the goal of a CHEA. By ensuring that they include all the necessary elements of a State CHEA, Port Blakely can get credit for developing murrelet habitat and thus obtain assurances that their future forest management operations can continue without additional restriction under the Forest Practices Rules.

Therefore, Port Blakely seeks to obtain authorizations and approvals for a 60-year conservation plan that addresses the conservation needs of the proposed covered species likely to occur on their ownership in the future, and that will support management goals to foster economic flexibility.

1.2. Contents of this Safe Harbor Agreement

This document integrates Port Blakely's SHA, as part of the application package for the Permit under section 10 of the ESA, and the State's LOP and CHEA for owls and murrelets, respectively. The SHA submitted in support of an enhancement of survival permit will include information about the following:

- conservation goals and objectives;
- species and/or habitats covered, including the habitat conditions and the enrolled property;
- agreed-upon baseline conditions for each of the covered species addressed in the SHA;
- voluntary management actions that would be undertaken to accomplish the expected net conservation benefits to the species, how the benefits would lead directly or indirectly to recovery, where and when the benefits would be achieved, and the agreed-upon time frames in which these management actions will remain in effect to achieve the anticipated net conservation benefits;
- any incidental take associated with the management actions during the term of the SHA;
- a notification requirement to provide FWS or appropriate state agencies with a reasonable opportunity to rescue individuals of a covered species before any authorized incidental taking occurs, if appropriate;
- activities that would be expected to return the enrolled property to baseline conditions and the extent of incidental take that would likely result from such activities;
- landowner assurances;
- reporting requirements;
- the process for land additions, amendments, dispute resolution, and permit termination, transfer, and renewal;
- consistency of the SHA with applicable federal, state, and county laws and regulations;
- monitoring schedule and the responsible parties who will monitor maintenance of baseline conditions, implementation of terms and conditions of the SHA, and any incidental take as authorized in the Permit; and
- other requirements of section 10 of the ESA.

This Agreement also represents a State LOP and CHEA, and will contain elements of a LOP and CHEA, if different from the SHA, as described below.

For elements required by the LOP, the Agreement will contain:

- description of a planning area, including the physical features in the planning area;
- current owl habitat status including suitable habitat categorized and mapped as old forest, sub-mature, young forest marginal, or dispersal;
- current owl status, including all status 1, 2, and 3 site centers and the associated median home range circles that overlap any of Port Blakely's property within the LOP boundary;
- projected suitable habitat development;
- description of the management proposals and relevant operational plans;
- description of a training program, if included;
- description of a monitoring program and reporting requirements;
- term length of the plan necessary to meet the goals and objectives of the SOSEA; and
- conditions for termination of the plan.

Similarly, for elements required for the CHEA, the Agreement will contain:

- an estimate of the baseline amount of habitat;
- a determination of the ability of Port Blakely to maintain habitat conditions across the project landscape over time;
- a determination of the overall benefits of the proposed measures to create, enhance, or maintain habitat and the proposed baseline; and
- the duration of the agreement.

Chapter 2. Authority and Purpose

2.1. Federal

Sections 2, 7, and 10 of the ESA allow FWS to enter into this SHA. Section 2 of the ESA states that encouraging interested parties to develop and maintain conservation programs, through federal financial assistance and a system of incentives, is a key to safeguarding the nation's heritage in fish, wildlife, and plants. Section 7 of the ESA requires FWS to review programs that it administers and to use such programs to further the purposes of the ESA. By entering into this SHA, FWS will use its programs to promote such conservation. Section 10(a)(1)(A) of the ESA authorizes the FWS to issue enhancement of survival permits for listed species. This SHA is entered into pursuant to the Final Safe Harbor Policy (U.S. Department of the Interior and U.S. Department of Commerce 1999), Final Rule (U.S. Department of the Interior 1999), and Revisions to the Regulations for Safe Harbor Agreements and Candidate Conservation Agreements With Assurances (U.S. Department of the Interior 2004), and implements the intent of Port Blakely and the FWS to follow the procedural and substantive requirements of section 10(a)(1)(A) of the ESA.

The purpose of this SHA is for Port Blakely and FWS (Parties) to collaborate to implement conservation measures for the owl and the murrelet, the covered listed species that have the potential to occur on Port Blakely's Morton Block. By implementing enhanced forest management measures such as longer harvest rotations, additional thinning to accelerate forest growth, a snag creation program, retaining more down wood than is required by Forest Practices Rules, establishing Special Management Areas (SMAs) and Special Set-aside Areas (SSAs), and monitoring certain aspects of the Agreement, Port Blakely will create potential habitat for the covered species. It is anticipated that management of Port Blakely's

Morton Block, as described in this Agreement, will produce conditions that will facilitate dispersal of owls across their ownership in the Mineral SOSEA, and create opportunities for murrelets to nest. Port Blakely will receive a Permit that authorizes incidental take of any owls or murrelets due to the implementation of proactive habitat enhancement measures that increase habitat above baseline responsibilities, as defined in this SHA.

2.2. State

In 1974, the State legislature passed the Forest Practices Act to provide protection to forest soils, fisheries, wildlife, water quality and quantity, air quality, recreation, and scenic beauty, while at the same time maintaining a viable forest products industry. The Forest Practices Act regulates forest practices such as timber removal, road construction and maintenance, reforestation, and the use of forest chemicals. The Forest Practices Rules, embodied in WAC (Title 222 WAC) were first adopted in 1976 and apply to non-federal and non-tribal forest lands in the state. All forest landowners must conduct their forest management activities according to the Forest Practices Rules but only landowners that cut more than 5,000 board feet per year have to file a Forest Practices Application/Notification. However, the current Forest Practices Rules provide for exceptions to operating under standard rules (Washington Forest Practices Board 2002). These exceptions include conducting forest management operations under a LOP or CHEA, and/or a federal conservation plan authorized under section 10 of the ESA.

Port Blakely's LOP for owls and CHEA for murrelets are authorized under Forest Practices Rules (WAC 222-16-100, WAC 222-16-105). These plans/agreements are approved by WDNR, and developed in consultation with the Washington Department of Fish and Wildlife (WDFW). The purpose of Port Blakely's LOP is to provide habitat for demographic interchange, i.e., owl dispersal, an established goal for the Port Blakely lands in the Mineral SOSEA. The LOP, entered into voluntarily, is intended to contribute to the protection of owls by considering the needs of overall population maintenance or dispersal habitat across a defined geographic area, i.e., the Mineral SOSEA. The LOP establishes an appropriate contribution from Port Blakely toward meeting SOSEA goals and is intended to be an efficient and effective alternative to site-by-site management planning. WDNR, after consultation with WDFW, will respond to Port Blakely's application. If approved, Port Blakely will be permitted to conduct forest management activities in the Mineral SOSEA that differ from those required under current or future Forest Practices Rules.

Under State forest practices rules, the LOP may take two forms, although this distinction is not stated explicitly. The first form involves a management strategy based on an intended manipulation of existing habitat in owl circles or elsewhere in a

SOSEA. As such, this type of LOP involves mitigation and would generally require a federal HCP to provide federal assurances. The second form involves situations where any management – even if not involving owl habitat – is proposed to occur in an owl circle within a SOSEA. Because this form of LOP does not involve near-term impacts to habitat, it is analogous to the federal SHA. This distinction is important because the latter, although essentially equivalent to a Safe Harbor or CHEA, is considered a LOP only because management will occur inside an owl circle.

The purpose of the CHEA is to protect landowners who create, enhance, or maintain habitat for murrelet against future Forest Practices Rules restrictions related to murrelets invoked as a result of these enhancement activities. A CHEA is an agreement between WDNR and a landowner, developed in cooperation with WDFW, for the purpose of creating, enhancing, or maintaining murrelet habitat. The CHEA part of this SHA will apply only to forest land identified by Port Blakely as potential future habitat for murrelets. The SHA includes enhanced forest management activities which will result in greater habitat value to murrelets than would occur under standard Forest Practices Rules. WDNR, after consultation with WDFW, will determine if the measures Port Blakely agreed to will meet the goals of an acceptable CHEA.

Chapter 3. Background

This chapter describes the lands and species covered under the Agreement, and the species and habitat baseline conditions of Port Blakely's Morton Block ownership.

3.1. Description of Covered Area

3.1.1. General

Port Blakely's Morton Block encompasses approximately 45,306 acres in Lewis and Skamania Counties, in the vicinity of Morton, Washington (Figure 3-1). The Morton Block is composed of discontinuous parcels, with larger blocks occurring south of U.S. Route 12 (U.S. 12), and smaller parcels scattered to the north of U.S. 12. The Morton Block is surrounded and/or intermixed with state, federal, and private ownerships composed primarily of forest lands. Except for the federal lands, the surrounding forest lands are managed for commercial timber production.

The Morton Block is located at the western edge of the Cascade Mountain Range. In general, the terrain is mountainous with numerous valleys incised by rivers and streams. The Morton Block is characterized by shallow, well-drained soils that are subject to slides in steep terrain. It is drained by many streams and by the Tilton, Cowlitz, and Cispus Rivers. The Morton Block receives 30 to 40 inches of precipitation annually (National Climate Data Center 2004). The elevation of the Morton Block ranges from 671 feet near Winston Creek to 4,331 feet at Johnson Mountain.

Riffe Lake is in the center of the Morton Block. This lake encompasses 11,830 acres and 52 miles of shorelines, and is managed to produce power, reduce down-river winter flood hazards, and to offer recreational opportunities.

The Morton Block is characterized by forest stands composed primarily of Douglas-fir (64%) and a mix of western hemlock, red alder, and other conifers and hardwoods. The age structure is diverse; timber is 20 to 60 years old on most stand management units (see Section 3.3, Baseline Conditions). The current number of acres in each stand age class is presented in Table 3-1 (416 acres of nonforest not included). Port Blakely conducts forestry operations and management according to standard Forest Practices Rules.

Table 3-1. Current Acreage in Each Stand Age Class

	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81 +
Acres	8,462	2,405	10,918	6,661	8,084	5,425	1,913	390	632

3.1.2. Adjacent Landowners

Port Blakely’s Morton Block is bordered on the south and southeast by federal lands associated with the Mount Saint Helens National Monument and to the east by the Gifford Pinchot National Forest. The central portions of the Morton Block are bordered to the north by Riffe Lake and to the south by lands owned and managed by the Weyerhaeuser Company. The southwestern portions of the Morton Block, along Winston Creek, are bordered to the south by state lands managed by WDNR. The northern sections of the Morton Block are bordered by, and interspersed with, several commercial and non-commercial private timberlands, including West Fork Timber Company (Figure 3-1).

3.1.3. Spotted Owl Special Emphasis Area

Portions of the Morton Block (26,878 acres; 59%) fall within the Mineral SOSEA (WAC 222-16-086) (Figure 3-2). Specific portions of the Mineral SOSEA have a different management emphasis for owls. One portion has a designated management emphasis on combined demographic and dispersal support, while another portion has a designated management emphasis of only dispersal support. The Morton Block consists of only 480 acres (1% of the total) located within the portion of the Mineral SOSEA with a management emphasis on both demographic and dispersal support. This portion of the covered area is composed of small, discontinuous parcels, four of which are 80 acres in size and one of which is 160 acres in size.

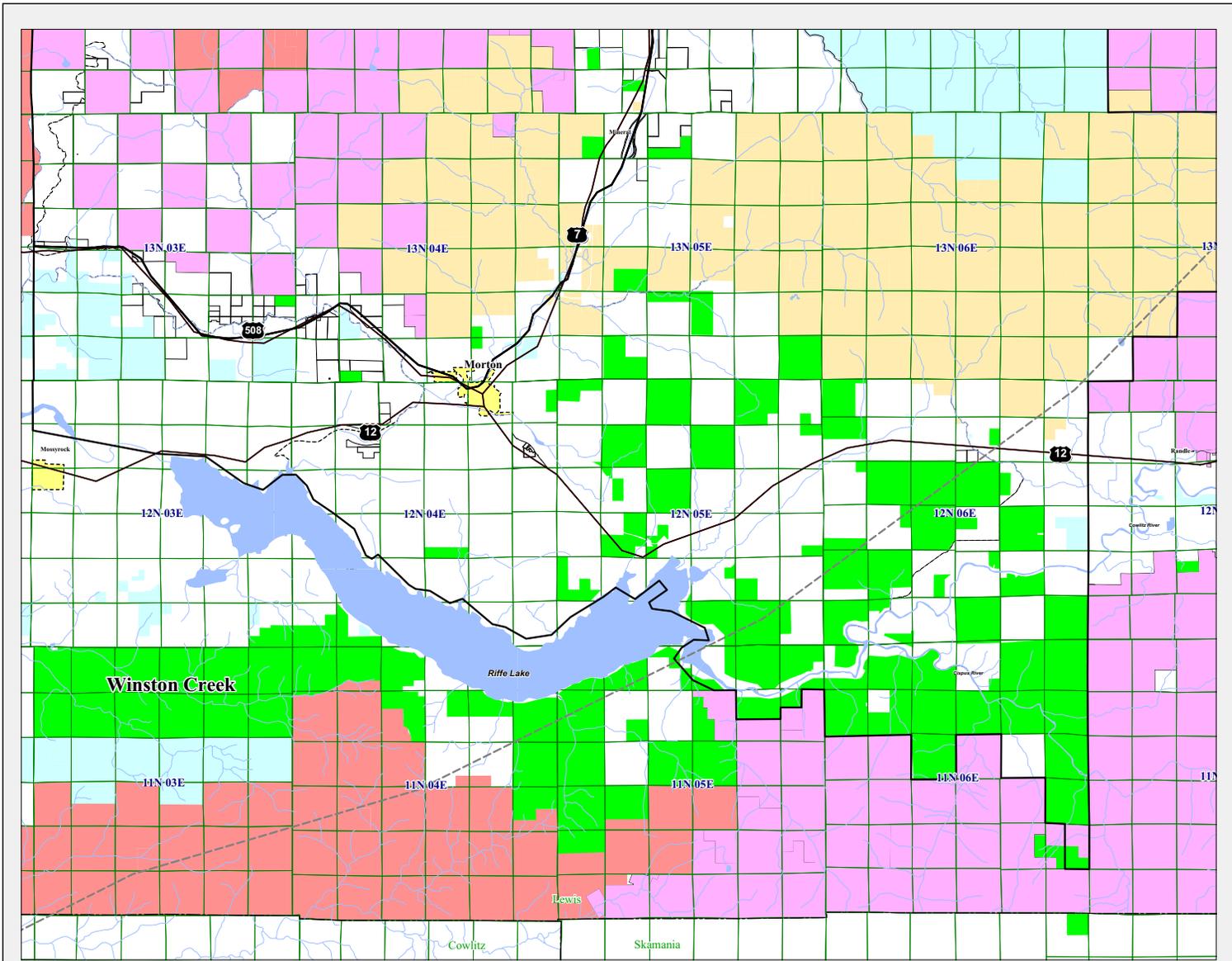
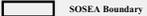
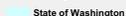
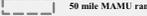
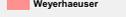
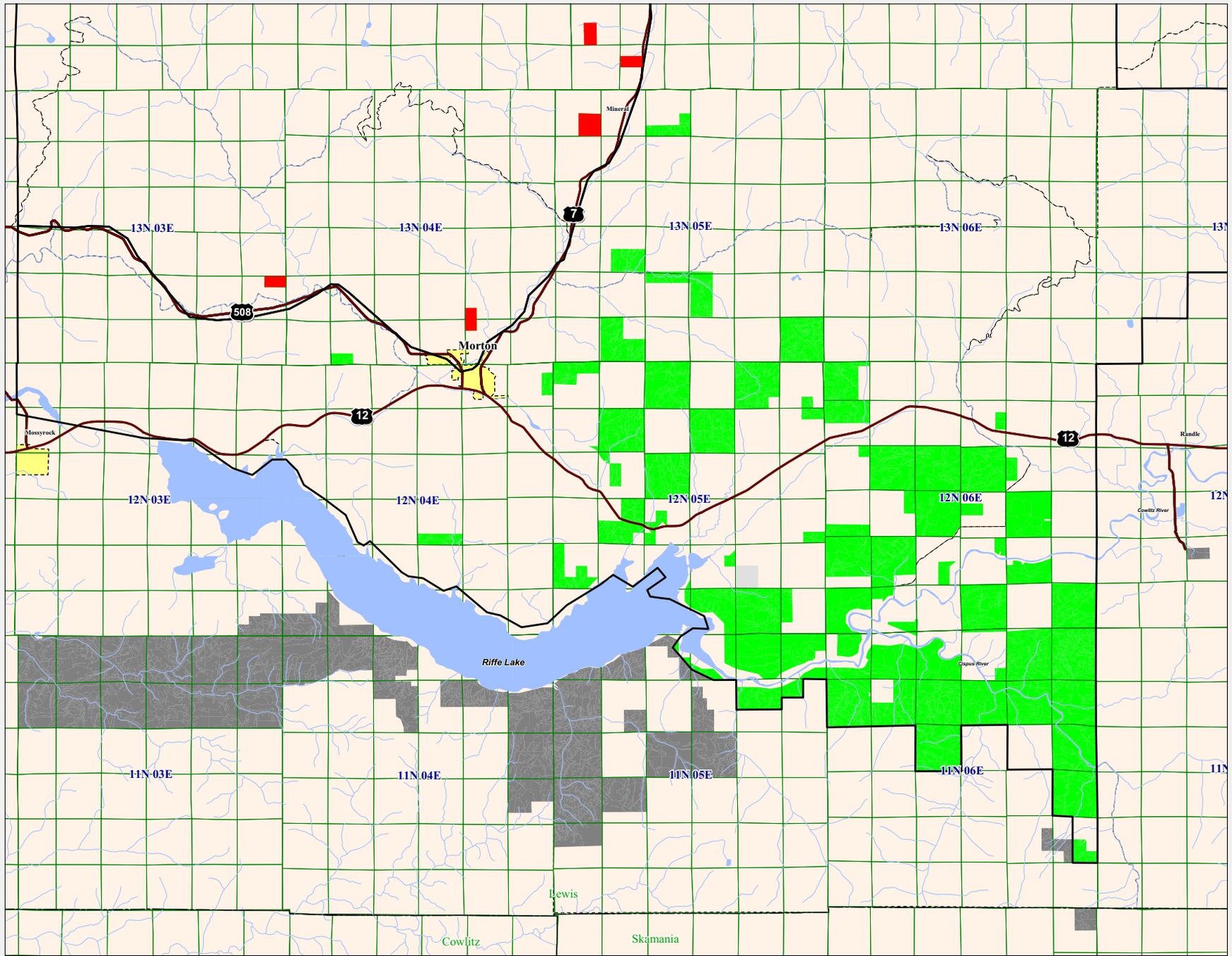


Figure 3-1
Land Ownership

Revision date: 05/02/2008
Source: Port Blakely GIS

 Port Blakely Ownership	 SOSEA Boundary	 State of Washington
 PLSS delineation	 50 mile MAMU range	 West Fork (Murray)
 Hydrological features	 Federal Government	 Weyerhaeuser



Because about 99% of the Port Blakely Morton Block that lies within the Mineral SOSEA is in the portion with a designated conservation function of dispersal support, the conservation function in this Agreement will be dispersal support.

3.2. Covered Species

The listed species that have the greatest potential to occur in the covered lands are the owl and the murrelet, both federally-listed as threatened. Both species are also included on the WDFW State species of concern list, with the owl listed as endangered and the murrelet listed as threatened.

These two species are considered the “covered species” in the SHA as defined in the FWS Safe Harbor Policy (U.S. Department of the Interior 1999). Under the State LOP, the owl will be the only covered species because the purpose of the LOP is to address SOSEA goals for owls on nonfederal lands within the SOSEA (WAC 222-16-080, WAC 222-16-100). Under the State CHEA, the murrelet will be addressed to meet CHEA goals (WAC 222-16-105). Thus, the conservation measures proposed to meet the ESA SHA requirements are also designed to meet the requirements of a LOP for owls and a CHEA for murrelets. The content of this one Agreement will fulfill the criteria for all three types of conservation plans or agreements.

3.2.1. Northern Spotted Owl

The owl was federally listed as threatened on June 26, 1990, under the ESA. Detailed accounts of the taxonomy, ecology, and reproductive characteristics of the owl are found in numerous federal documents but most recently in the Scientific Evaluation of the Status of the Northern Spotted Owl (Courtney et al. 2004). On January 15, 1992, FWS designated critical habitat for the owl within 190 Critical Habitat Units, which in Washington encompass 2.2 million acres (U.S. Fish and Wildlife Service 1992b). Only federal lands were designated as critical habitat in the final rule; thus, no critical habitat was designated on the covered lands. On May 16, 2008, the U.S. Fish and Wildlife Service announced the release of the Final Recovery Plan for the Northern Spotted Owl (U.S. Fish and Wildlife 2008). Of note are five main elements of the recovery plan, one of which was to create incentives to non-federal landowners to contribute to owl recovery through land management.

The current range of the owl is similar to its historical range where forested habitat still exists, including western Washington (Gutierrez et al. 1995). The distribution of habitat is influenced by the natural and human-caused fragmentation of vegetation and natural topography (Thomas and Raphael 1993).

Owls generally rely on older forested habitats because they contain the structures and characteristics required for nesting, roosting, foraging, and dispersal. These characteristics include the following: (1) a multi-layered, multi-species canopy dominated by large overstory trees; (2) moderate to high canopy closure; (3) a high incidence of trees with large cavities and other types of deformities; (4) numerous large snags; (5) an abundance of large, dead wood on the ground; and (6) open space within and below the upper canopy for flight (Thomas et al. 1990; U.S. Fish and Wildlife Service 1990b).

Owl home range size is variable, generally increasing from south to north, which is likely in response to decreasing habitat quality (U.S. Fish and Wildlife Service 1990b). Home range size has been linked to habitat type, availability, and abundance of prey (Zabel et al. 1995). Because the actual configuration of the home range is rarely known, the estimated median annual home range of an owl pair, based on radio telemetry data from Washington, is represented by a circle centered upon an owl activity center. Home range size for owl activity centers in the Washington Cascade Mountains is based on a 1.8-mile radius circle. FWS uses a 0.7-mile radius circle (984 acres) to delineate the core area most heavily used by owls during the nesting season.

In Washington, owl foraging occurs in nesting and roosting habitat, as well as in coniferous forest with smaller trees and less structural diversity, if prey such as the northern flying squirrel are present (Hanson et al. 1993). In the western Washington Cascade Mountains, owls used mature/old forests dominated by trees greater than 20 inches diameter at breast height (dbh) with greater than 60% canopy closure for roosting during the non-breeding season more often than expected, and used young forests with trees 8 to 20 inches dbh with greater than 60% canopy closure less often than expected based on availability (Herter et al. 2002).

Owls exhibit high adult annual survival rates and are relatively long-lived (Anthony et al. 2006). Nest sites are usually located within stands of old-growth and late-successional forest dominated by Douglas-fir, and they contain structures such as cavities, broken tree tops, or mistletoe brooms (Forsman and Geise 1997, Gutierrez et al. 1995, Courtney et al. 2004). Owls do not build their own nests. Most nesting occurs within naturally formed cavities in live trees or snags. In general, courtship and nesting behavior begin in February to March with nesting occurring from March to June. After young fledge from the nest, they depend on their parents until they are able to fly and hunt on their own.

Natal dispersal of owls from Oregon and Washington typically begins from mid- to late September, and it is remarkably synchronous across broad areas (Forsman et al. 2002). Dispersal direction from individual territories may be non-random in response to the local distribution of habitat and topography (Forsman et al. 2002). Natal dispersal occurs in stages, with juveniles settling in temporary home ranges

between bouts of movement (Forsman et al. 2002). Successful dispersal of juvenile owls depends on their ability to locate unoccupied suitable habitat (LaHaye et al. 2001). Breeding dispersal occurs among a small proportion of adult owls; these movements are more frequent among females and unmated individuals (Forsman et al. 2002). Breeding dispersal distances are shorter than natal dispersal distances and also apparently random in direction (Forsman et al. 2002). Large non-forested valleys are apparent barriers to natal and breeding dispersal. Forested foothills between valleys may provide the only opportunities for dispersal (Forsman et al. 2002). Dispersing juvenile owls experience high mortality rates, exceeding 70% in some studies (U.S. Fish and Wildlife Service 1990a; Miller 1989). Leading known causes of mortality are starvation, predation, and accidents (Miller 1989; U.S. Fish and Wildlife Service 1990a; Forsman et al. 2002).

Composition of prey in the owl's diet varies regionally, seasonally, annually, and locally, likely in response to prey availability (Carey 1993; Forsman et al. 2001; Forsman et al. 2004). Owls are mostly nocturnal (Forsman et al. 1984) but they may forage opportunistically during the day (Laymon 1991; Sovern et al. 1994). Northern flying squirrels are usually the predominant prey (Forsman et al. 2004) with a clear geographic pattern of prey availability paralleling differences in habitat (Thomas et al. 1990).

Non-federal lands were determined to be an important contribution to achieving the range-wide goal of the conservation and recovery of the owl (Thomas and Raphael 1993). FWS's main expectations for private lands are for their contributions to demographic support (pair or cluster protection) and/or habitat connectivity. Much of the current conservation for owls on private lands is provided by habitat conservation plans (HCPs) developed under section 10 of the ESA or through Forest Practices Rules. There are eight current or completed HCPs with incidental take permits issued for owls in Washington. While each HCP is unique, there are several general approaches to mitigation of incidental take of owls, including 1) reserves of various sizes, some associated with adjacent federal reserves; 2) forest harvest that maintains or develops suitable habitat; 3) forest management that maintains or develops dispersal habitat; and 4) deferral of harvest near specific sites.

In 1996, the Washington Forest Practices Board adopted rules (Washington Forest Practices Board 1996) that would "contribute to conserving the owl and its habitat on non-federal lands" based on recommendations from a Science Advisory Group, which identified important non-federal lands and recommended roles for those lands in owl conservation (Hanson et al. 1993; Buchanan et al. 1994). The 1996 rules designated 10 SOSEAs in Washington that comprise over 1.5 million acres of state and private lands, where owl habitat protection on non-federal lands would be emphasized. At all sites within SOSEAs, any proposed harvest of suitable owl habitat within a territorial owl circle is considered a Class-IV Special and would

trigger SEPA review. In SOSEAs, all suitable habitat within 0.7 mile of owl activity centers, and 40% of suitable habitat within the provincial median annual home range circle surrounding an occupied activity center, is generally protected from timber harvest. Proposed harvest that would reduce habitat amounts below these levels are considered to have a probable significant adverse affect on the environment with respect to SEPA. If a determination of significance is made, preparation of a SEPA Environmental Impact Statement (EIS) is required prior to proceeding. If a determination of non-significance or mitigated determination of non-significance is reached, the action can proceed without further environmental assessment. Under the 1996 Washington Forest Practices Rules, suitable owl habitat located on non-federal lands outside of owl management circles or SOSEA boundaries was not protected from timber harvest, except for the 70-acre core around the activity center, protected only during the nesting season.

Surveys for owls have been conducted in potentially suitable habitat in the covered area and in adjacent ownerships. Surveys began in 1997 and continued through 2007 and were conducted in association with planned forest management activities. Although the surveys included nearly all requisite elements of the survey protocol (U.S. Fish and Wildlife Service 1992c), they did not include survey visits to areas beyond the immediate vicinity of the proposed management units (i.e., they did not cover the entire area of the owl management circle). At present, there are no known nesting sites for owls in the covered area. However, portions of the covered area are within owl management circles associated with site centers on adjacent ownerships to the south and southeast. Because the surveys conducted in the last decade were spatially constrained to the area of proposed management units, we lack information with which to make conclusive statements regarding occupancy of sites on adjacent federal lands.

Records from previous landowners show that there has been only one owl detection in the covered area since surveys were initiated in 1997. This detection occurred in 1997 and was a single male located during a night-time survey and the subsequent day-time follow-up survey. No further responses were obtained in the area during surveys conducted later in that same year or in subsequent years. Surveys conducted in the covered area in 2001, 2002, and 2003 resulted in owl responses but they were determined to be on the adjacent Gifford Pinchot National Forest lands. No owls were detected during surveys conducted in other years through 2007. More specific information related to survey results is provided in Section 3.3.1.

3.2.2. Marbled Murrelet

The murrelet was federally listed as a threatened species in Washington, Oregon, and northern California effective September 28, 1992 (U.S. Fish and Wildlife Service 1992a). The final rule designating critical habitat for the murrelet became effective

on June 24, 1996 (U.S. Fish and Wildlife Service 1996a). Thirty-two units totaling 3,887,800 acres on federal, state, county, city, and private lands in Washington, Oregon, and California were designated as critical habitat. Of these, approximately 1,631,100 acres were designated in Washington (U.S. Fish and Wildlife Service 1996a). Most of these acres (78%) are federal lands, 21% are state lands, and the remaining areas are on private, county and city lands. The only private lands designated as critical habitat were those that included occupied sites. No murrelet critical habitat occurs on the covered area for this SHA.

The species' decline has largely been caused by extensive removal of late-successional and old-growth coastal forests, which serve as its nesting habitat. Additional listing factors included high nest-site predation rates and human-induced mortality in the marine environment from gillnets and oil spills. The Marbled Murrelet Recovery Plan (U.S. Fish and Wildlife Service 1997a) (Recovery Plan) identified six Conservation Zones throughout the listed range of the species, including two in western Washington: Puget Sound (Conservation Zone 1) and Western Washington Coast Range (Conservation Zone 2). Approximately half of the Morton Block is included in Conservation Zone 1. The remainder of the Morton Block lies outside Conservation Zone 1. None of the Morton Block is within Conservation Zone 2.

Conservation Zone 1 includes all the waters of Puget Sound and most waters of the Strait of Juan de Fuca south of the U.S.-Canadian border and extends inland 50 miles from Puget Sound, including the north Cascade Mountains and the northern and eastern sections of the Olympic Peninsula. Forest lands in the Puget Trough have been predominately replaced by urban development. The remaining suitable habitat in Conservation Zone 1 is typically a considerable distance from the marine environment, lending special importance to nesting habitat close to Puget Sound (U.S. Fish and Wildlife Service 1997a).

Murrelets are long-lived seabirds that spend most of their life in the marine environment, but use old-growth forests for nesting. Detailed discussions of the biology and status of the murrelet are presented in the final rule listing the murrelet as threatened (U.S. Fish and Wildlife Service 1992c), the final rule designating murrelet critical habitat (U.S. Fish and Wildlife Service 1996a), the Recovery Plan (U.S. Fish and Wildlife Service 1997a), and the Evaluation Report for the 5-Year Status Review of the Marbled Murrelet in Washington, Oregon, and California (McShane et al. 2004).

Murrelets are dependent upon old-growth forests, or forests with an older tree component, for nesting habitat (Hamer and Nelson 1995; Ralph et al. 1995; McShane et al. 2004). Sites occupied by murrelets tend to have a higher proportion of mature forest age classes than do unoccupied sites (Raphael et al. 1995). In Washington, murrelet nests have been found in conifers; specifically, western hemlock, Sitka

spruce, Douglas-fir, and western red cedar (Hamer and Meekins 1999; Hamer and Nelson 1995). Nests have been found in trees as small as 2.6 feet dbh on limbs at least 65 feet from the ground, and 0.36 foot in diameter (Hamer and Meekins 1999).

Murrelet populations may be limited by the availability of suitable nesting habitat, and it is believed that murrelets may currently be occupying nesting habitat at or near carrying capacity in highly fragmented areas and/or in areas where a significant portion of the historic nesting habitat has been removed (Ralph et al. 1995). Therefore, unoccupied stands containing nesting structures could be important to displaced breeders and first-time breeding adults.

Murrelets generally select nests within 37 miles (60 kilometers) of marine waters (Miller and Ralph 1995). However, in Washington, occupied habitat has been documented up to 70 miles (113 kilometers) from marine waters in the southern Cascade Mountains (Evans Mack et al. 2003). When tending active nests during the breeding season, breeding pairs forage within commuting distance of the nest site.

In Washington, the murrelet breeding season occurs between April 1 and September 15. Egg laying and incubation occur from late April to early August and chick rearing occurs from late May to late August, with all chicks fledging by early September (Hamer et al. 2003). Adults typically incubate for a 24-hour period, then exchange duties with their mate at dawn.

Conservation Zone 1 contains one of the larger murrelet populations in the species' listed range, and supports an estimated 41% of the murrelets in the coterminous United States (Huff et al. 2003). In Conservation Zone 1, higher densities of murrelets occur in the Straits of Juan de Fuca, the San Juan Islands, and Hood Canal (Huff et al. 2003), which are in proximity to nesting habitat on the Olympic Peninsula and the North Cascade Mountains. Although population numbers in Conservation Zones 1 and 2 are likely declining, the precise rate of decline is unknown.

Estimates on the amount of available nesting habitat vary substantially. McShane et al. (2004) estimates murrelet habitat in Washington State at 1,022,695 acres, representing approximately 48% of the estimated 2,223,048 acres of remaining suitable habitat in the listed range. McShane et al. (2004) caution about making direct comparisons between current and past estimates due to the evolving definition of habitat and methods used to quantify habitat. As part of the ongoing pursuit to improve habitat estimates, information was collected and analyzed by FWS in 2005, resulting in an estimated 751,831 acres of nesting habitat in Conservation Zone 1 and 585,821 acres in Conservation Zone 2.

The majority of murrelet habitat in Conservation Zone 1 occurs in northwestern Washington and is found on U.S. Forest Service and National Park Service lands, and

to a lesser extent on state lands. The majority of the historic habitat along the eastern and southern shores of Puget Sound has been replaced by urban development resulting in the distribution of remaining habitat being farther inland from the marine environment than what occurred historically (U.S. Fish and Wildlife Service 1997a).

Murrelets remain subject to a variety of anthropogenic threats in the upland and marine environment. They also face threats from low population numbers, low immigration rates, high predation rates, and disease. Threats to murrelets in the terrestrial environment include extensive harvest of late-successional and old-growth forest, the primary reason for listing the murrelet as threatened. Due primarily to extensive timber cutting over the past 150 years, at least 82% of the old-growth forests existing in western Washington and Oregon prior to the 1840s have been harvested (Booth 1991; Teensma et al. 1991; Ripple 1994; Perry 1995).

Habitat loss and fragmentation are expected to continue in the near future but at an uncertain rate (McShane et al. 2004). In addition to direct habitat removal, forest management practices can fragment murrelet habitat. Fragmentation reduces the amount and heterogeneous nature of the habitat, forest patch sizes, and the amount of interior or core habitat, increases the amount of forest edge, isolates remaining habitat patches, and creates “sink” habitats (McShane et al. 2004). The ecological consequences of these habitat changes to murrelets can include effects on population viability and size, local or regional extinctions, displacement, fewer nesting attempts, failure to breed, reduced fecundity, reduced nest abundance, lower nest success, increased predation and parasitism rates, crowding in remaining patches, and reductions in adult survival (Raphael et al. 2002).

The Recovery Plan outlines the conservation strategy for the species. In the short-term, specific actions necessary to stabilize the population include maintaining occupied habitat, maintaining large blocks of suitable habitat, maintaining and enhancing buffer habitat, decreasing risks of nesting habitat loss due to fire and windthrow, reducing predation, and minimizing disturbance. Long-term conservation needs include increasing productivity and population size; increasing the amount (stand size and number of stands), quality, and distribution of suitable nesting habitat; protecting and improving the quality of the marine environment; and reducing or eliminating threats to survivorship by reducing predation in the terrestrial environment and anthropogenic sources of mortality at sea. FWS estimates recovery of the murrelet will require at least 50 years (U.S. Fish and Wildlife Service 1997a).

The loss of nesting habitat (old-growth/mature forest) has generally been identified as the primary cause of the murrelet population decline and disappearance across portions of its range (Ralph et al. 1995). Logging, urbanization, and agricultural development have all contributed to the loss of habitat, especially at lower elevations. The recovery strategy for the murrelet relies heavily on the Northwest Forest Plan to achieve recovery on federal lands in Washington, Oregon, and California (U.S. Fish

and Wildlife Service 1997a). However, the Recovery Plan also addresses the role of non-federal lands in recovery, including HCPs, State Forest Practices Rules, and tribal lands. The importance of non-federal lands in the survival and recovery of murrelets is particularly high in Conservation Zones, where federal lands and privately held conservation lands within 50 miles of marine waters are sparse, such as the southern half of Conservation Zone 2. Lands considered essential for the recovery of the murrelet within Conservation Zones 1 and 2 include (1) any suitable habitat in a Late-Successional Reserve identified in the Northwest Forest Plan; (2) all suitable habitat located in the Olympic Adaptive Management Area identified in the Northwest Forest Plan; (3) large areas of suitable nesting habitat outside of Late Successional Reserves on federal lands, such as habitat located in the Olympic National Park; (4) suitable habitat on state lands within 40 miles of marine waters; and (5) habitat within occupied murrelet sites on private lands (U.S. Fish and Wildlife Service 1997a).

In addition to the short- and long-term benefits provided by the Northwest Forest Plan (U.S. Forest Service and U.S. Department of Interior Bureau of Land Management 1994), four HCPs addressing murrelets in Washington have been completed for private/corporate forestland managers within the range of the murrelet, including Port Blakely (Port Blakely Tree Farms 1996, U.S. Fish and Wildlife Service 1996b). HCPs have also been completed for WDNR (Washington Department of Natural Resources 1997; U.S. Fish and Wildlife Service 1997b) and two municipal watersheds: City of Tacoma (Tacoma Public Utilities 2001, U.S. Fish and Wildlife Service 2001) and City of Seattle (City of Seattle 2001; U.S. Fish and Wildlife Service 2000). Most of the murrelet HCPs in Washington employ a consistent approach for murrelets by requiring the majority of habitat to be surveyed prior to timber management. Only poor-quality marginal habitat (with a low likelihood of occupancy) is released for harvest without survey. All known occupied habitat is protected to varying degrees, but a “safe-harbor-like” approach is used to address stands that may be retained as, or develop into, suitable habitat and become occupied in the future. This approach will allow the future harvest of habitat that is not currently identified as nesting habitat.

Under the Washington Forest Practices Rules, which apply to all non-federal lands not covered by an HCP (Washington Forest Practices Board 1996), surveys for murrelets are required prior to the harvest of stands that meets certain platform numbers and stand size criteria. These criteria vary depending on the location of the stand. For occupied forest stands, the WDNR makes a decision to approve individual Forest Practices Applications based on a significance determination. If a determination of significance is made, preparation of a SEPA EIS is required prior to proceeding. If a determination of non-significance or mitigated determination of non-significance is reached, the action can proceed without further environmental assessment.

Approximately 50% of the covered lands are located between 35 and 50 miles of marine waters; 50 miles is the distance limit at which the Forest Practices Rules define suitable murrelet habitat (WAC 222-16-010). A small amount of the covered lands, approximately 276 acres, is located less than 35 miles from marine waters. Areas of forest that may have been suitable for murrelets that are within the 50-mile boundary were surveyed to protocol (Pacific Seabird Group (PSG) Survey Guidelines as updated annually) by the previous landowners as management units were prepared for harvest. Surveys were conducted from 1998 through 2003. None of the areas surveyed were found to contain murrelets. More specific information related to survey results is provided in Section 3.3.2. Given the available survey data and the current conditions of the second-growth forest, it is unlikely that murrelets occur in the covered area of this SHA.

3.3. Baseline Conditions

The tree farm currently is a mosaic of primarily coniferous forest stands. An estimated 88% of the covered lands are considered operable, i.e., available for forest management operations. This amount excludes non-forested areas, special set-aside areas, unstable slopes greater than 100%, and riparian management zones along fish-bearing streams. The property is well-stocked and is highly productive timberland (King's site index of 126) (King 1966). At the time the lands were purchased in 2004, the composition of the operable forest was estimated as 64% Douglas-fir, 20% western hemlock, and about 16% as red alder and other hardwoods. There are a few very small patches of native forest scattered across the landscape but, for the most part, nearly all the forest stands have been clearcut harvested at least once. The current age structure is diverse with the majority of the stand management units composed of 20- to 60-year-old timber, as shown in Figures 3-3 and 3-4. This age class distribution is based on forest inventory data collected by Port Blakely in 2006. Baseline conditions for the covered area were evaluated based on a compilation of existing status and survey data for the covered species, and on an analysis of current forest habitat conditions based on Port Blakely's 2006 forest inventory.

3.3.1. Northern Spotted Owl

Owl Presence

At present, there are no known nesting sites for owls in the covered area. However, portions of the covered area are overlapped by owl management circles (circles) associated with site centers on adjacent ownerships (primarily Forest Service lands).

A total of nine circles overlap the covered area. Of these, six are Status 1 (pair location) and three are status 3 (resident single).

An additional two circles affect Port Blakely forest management operations; although these circles are located entirely on adjacent ownerships, they overlap circles that extend into Port Blakely ownership such that they influence acreage assessments of owl habitat in the circles on Port Blakely land. Under Forest Practices Rules, suitable habitat needs for each inner (0.7-mile radius) owl circle within a SOSEA are assessed independently and cannot be double-counted, i.e. habitat identified as suitable in one inner circle cannot be identified as suitable habitat for another inner circle. Thus, the requirement under Forest Practices Rules to protect a specific amount of owl habitat in the circles is affected by the amount of existing habitat that may occur within two different but overlapping inner circles on and adjacent to Port Blakely's ownership.

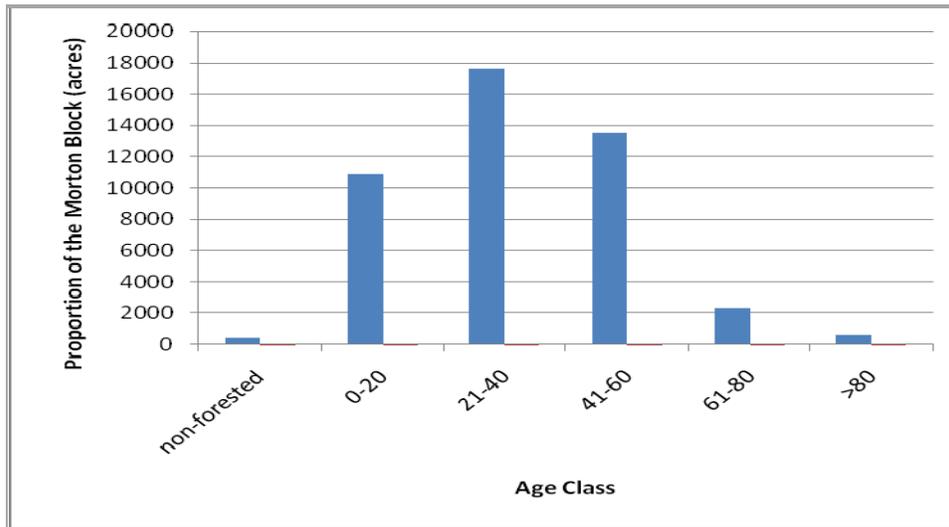
Records of previous landowners of the covered area show that there has been only one owl detection in the covered area since surveys were initiated in 1997. This detection occurred in 1997, when a single male was located during a night-time survey and the subsequent day-time follow-up; no further responses were obtained in the area during surveys conducted later in that same year or in subsequent years. Surveys conducted in the covered area in 2001, 2002, and 2003 resulted in owl responses but they were determined to be on the adjacent Gifford Pinchot National Forest lands. No owls were detected during surveys conducted in other years through 2007.

Owl Habitat Availability

In 2004-2005, Port Blakely hired a third party contractor (Raedeke Associates, Inc) to classify owl habitat suitability in the nine circles within the covered area according to Forest Practices Rules definitions (WAC 222-16-085). A GIS analysis using aerial photographs and focusing on stand level attributes, such as age and tree diameter, suggested that sub-mature or young forest marginal habitat potentially occurred on approximately 2,575 acres within the analyzed circles (Herter 2005). However, no old forest habitat, suitable for owl nesting, roosting, or foraging was identified in the analyzed circles.

In addition, Port Blakely conducted field surveys of harvest units within or near circles to identify the presence of young forest marginal habitat (Port Blakely 2006). Total acreage of the harvest units surveyed was 1,473 acres. Port Blakely confirmed that 115 acres of young forest marginal habitat was present in two of the harvest units. Although the number of snags was determined to be very low, there were adequate amounts of coarse woody debris and shrub cover to qualify the habitat as young forest marginal. Of the 115 acres classified as young forest marginal, approximately 49 acres are within an owl circle. The remaining harvest units located

Figure 3-4. Estimated Forest Age Composition in 2006



within circles did not qualify as young forest marginal because the forest lacked an adequate number of qualifying snags, or adequate amounts of understory shrubs and downed logs (Port Blakely 2006).

Thus, the GIS analysis and on-the-ground survey data, as well as Port Blakely's forest inventory data, suggest that there are no stands that would provide nesting opportunities for owls in the covered area, and that very little young forest marginal habitat is present in the areas of the Morton Block with the potential for utilization by owls that may occur on adjacent ownerships. The young forest marginal habitat known to exist on Port Blakely's ownership is within circles that have greater than 40% suitable habitat and, thus, may be harvested. So, of the four suitable owl habitat types (old forest, sub-mature, young forest marginal, and dispersal), only young forest marginal and dispersal habitat are known to occur in the Morton Block (Figure 3-5).

Although the process of dispersal is recognized as a vital life stage of owls, very little research has been conducted to identify key features necessary to consistently facilitate successful dispersal (Buchanan 2004). Conceptually, dispersal habitat should consist of stand- and landscape-level conditions that promote safe movement of owls across landscapes and provide adequate opportunities for foraging (Miller et al. 1997). Because of the dearth of supporting information, the Forest Practices Rules (WAC 222-16-085(2)(a)) define dispersal habitat in terms of the minimal conditions that are believed to allow for owls to move through a landscape.

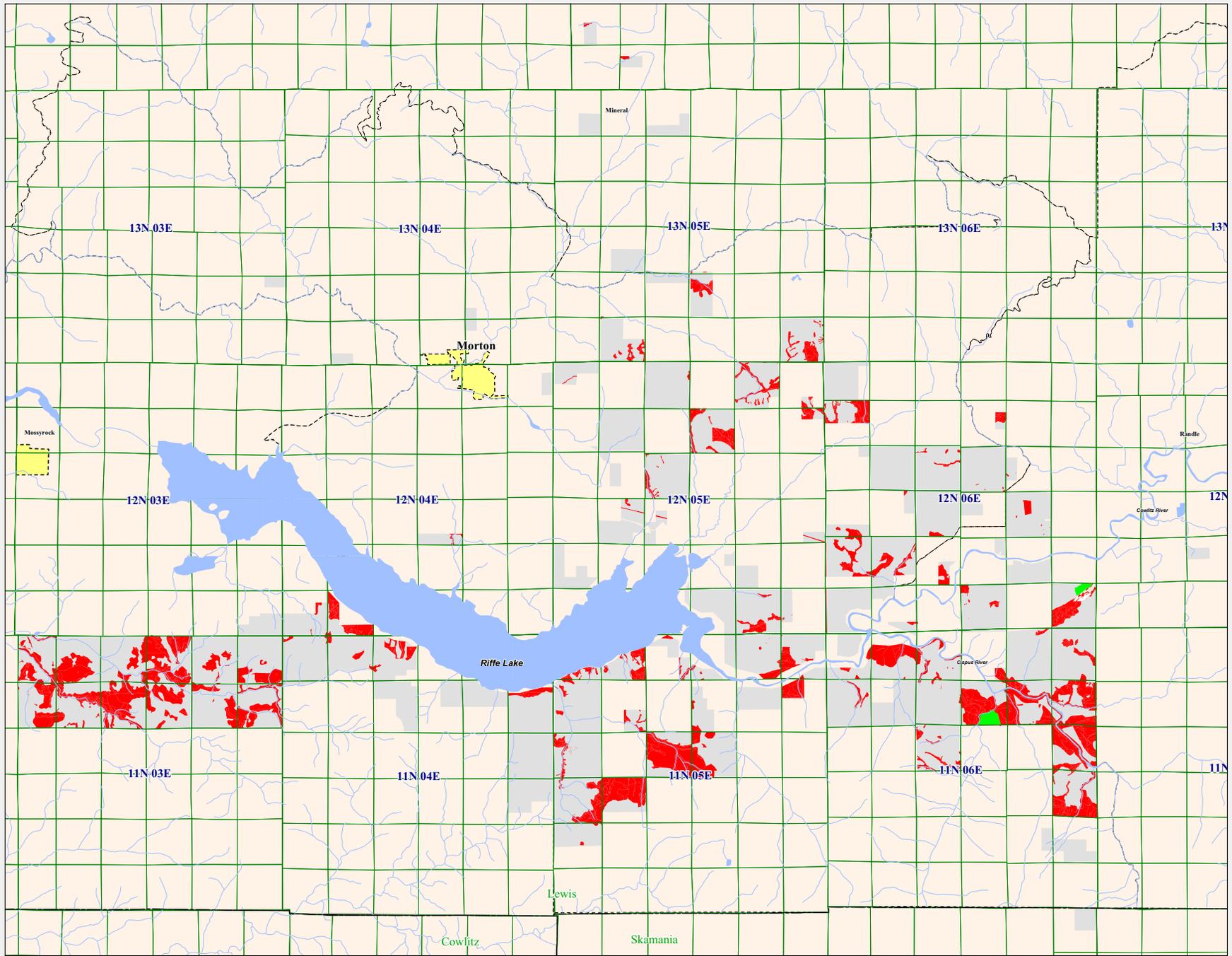
These conditions include patches at least 5 acres in size that have the following characteristics:

- at least 70% canopy cover;
- at least 70% of the stand in conifer species greater than 6 inches dbh;
- 130 – 300 trees per acre with a dbh of at least 10 inches, or a basal area of 100 square feet of 10 inch dbh or larger trees; and
- a minimum of 20 feet between the top of the understory vegetation and the bottom of the live canopy, with the lower boles relatively clear of dead limbs.

In addition to these conditions, the Forest Practices Rules acknowledge the importance of other forest structures or age classes in the landscape (WAC 222-16-010), but these attributes are not included in the definition.

Using the definition of dispersal habitat provided in the Forest Practices Rules, approximately 51% (23,105 acres) of the covered area would qualify as dispersal habitat. In contrast to the Forest Practices Rules definition, however, we believe conifer stands on Port Blakely's Morton Block that likely contain the components sufficient to facilitate dispersal by owls are generally limited to those that are older than 50 years of age. This is because second growth stands younger than 50 years of age have not been actively managed (pre-commercially or commercially thinned) to create adequate spacing, retain adequate amounts of downed wood and snags, and develop an adequate understory shrub component. It is believed that by the time conifer stands in the landscape reach 50 years of age they will have – especially assuming implementation of an effective snag management program – the tree density and structural features that will allow for owl movement and support of their primary prey species. For the purposes of this analysis, it is therefore assumed that conifer forest stands in the covered area that are currently older than 50 years of age are likely to meet a functional definition of dispersal habitat. Thus, suitable owl dispersal habitat is currently estimated to be approximately 18% (8,360 acres) in the Port Blakely Morton Block, 4,083 acres of which is in the Mineral SOSEA (see Section 4.2.2) (Figure 3-5). Given uncertainty about the combination of stand- and landscape-level conditions necessary to consistently support dispersing owls, we acknowledge the uncertainty in our estimate of the amount of functional dispersal habitat. In addition, we realize that stands younger than our basic definition, depending on site conditions and management history, will provide conditions consistent with the Forest Practices Rules definition of dispersal habitat.

A portion of the covered area (26,878 acres) is within the Mineral SOSEA (WAC 222-16-086) (Figure 3-2). The management emphasis of this SOSEA is a combination of both dispersal support and demographic support in the northwestern



Source: Port Blakely GIS



Figure 3-5
Current Suitable Young Forest Marginal and Dispersal Habitat

Revision date: 05/14/2008

Map Legend

 Port Blakely Ownership	 Dispersal Habitat
 Hydrological features	 Young Forest Marginal Habitat
 PLSS delineation	

portion, and dispersal support in the remainder. However, only 480 acres (1% of the total) of the covered area are within the portion of the SOSEA with a management emphasis on both demographic and dispersal support. This portion of the covered area is composed of small, discontinuous parcels, four of which are 80 acres in size and one of which is 160 acres in size. The remainder of the covered area within the SOSEA (26,398 acres) is within the area with a management emphasis on dispersal support. Because dispersal support is the primary management emphasis for more than 99% of the portion of the covered area within the SOSEA, the assessment of baseline conditions for this analysis will focus on the amount of potential suitable owl dispersal habitat in the covered area and in the SOSEA.

In summary, the baseline condition for owls will be defined in terms of available suitable dispersal habitat, which is 8,360 acres, or approximately 18% of the 45,306-acre covered area. The baseline condition for dispersal habitat within the Mineral SOSEA is 4,083 acres.

3.3.2. Marbled Murrelet

Murrelets typically nest within 50 miles of the marine shoreline in Washington State. Nesting habitat is typically low-elevation conifer forest with a multi-layered canopy and characterized by large diameter (greater than 32 inches dbh) conifer trees (Washington Forest Practices Board 2004).

For the purposes of determining forest stands that would require murrelet surveys prior to forest management activities, the Washington Forest Practices Board (2004) (WAC 222-16-010) identified stands within 50 miles of marine waters that contain all of the following characteristics as having the potential to provide nesting platforms:

- contiguous forested area containing trees capable of providing nesting opportunities;
- at least 40% of the dominant and co-dominant trees are Douglas-fir, western hemlock, western red cedar, or Sitka spruce;
- at least 7 acres in size;
- large (32-inch or greater dbh) conifer trees present;
- generally multi-storied (2-3 layers); and
- moderate canopy closure.

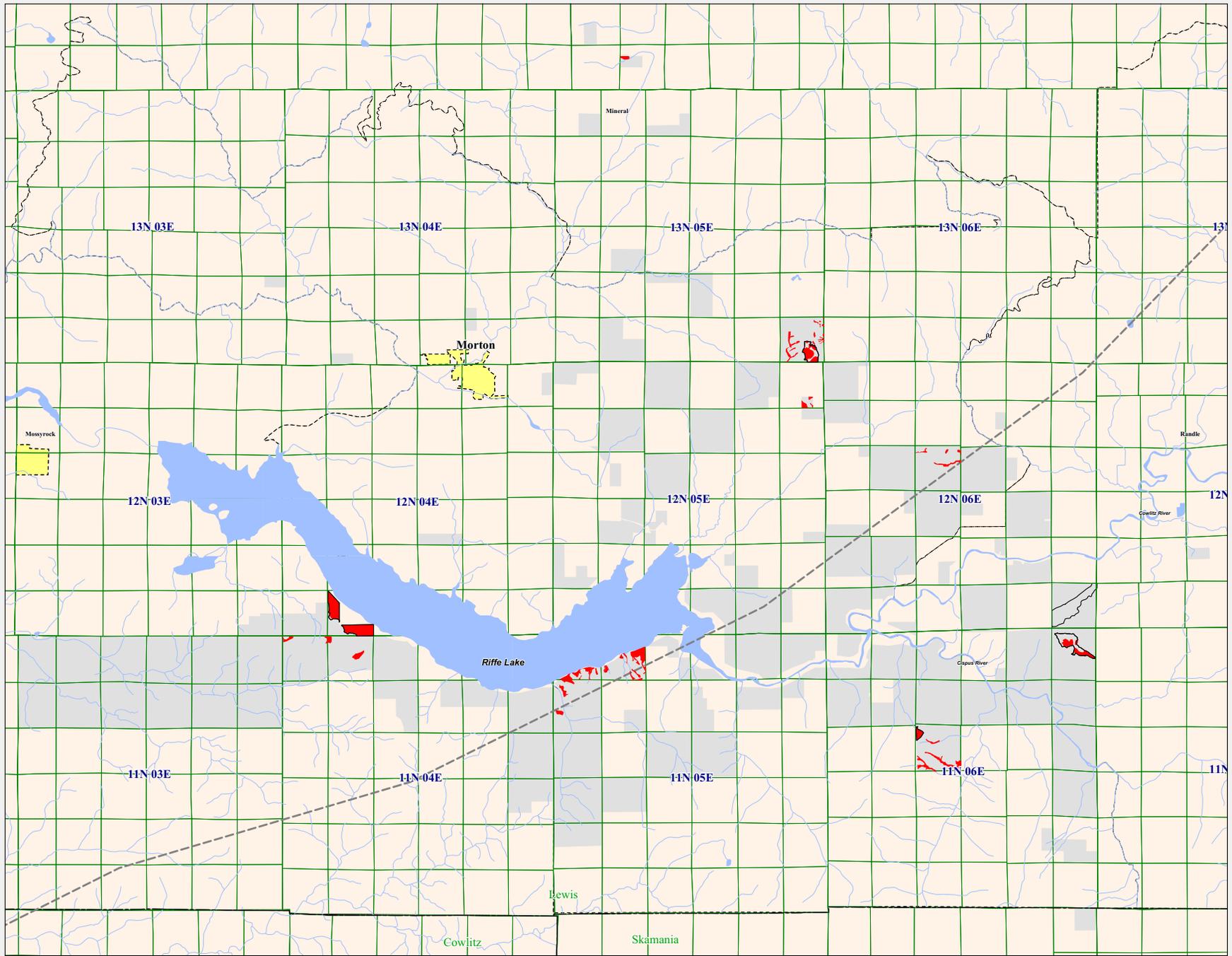
Approximately 50% of the covered lands are located between 35 and 50 miles of marine waters (Figure 3-6). A small amount, approximately 276 acres, is located less than 35 miles from marine waters.

Areas of potentially suitable habitat within the covered area that are within the 50-miles were surveyed to PSG protocol by the previous landowners as management units were prepared for harvest. Surveys of these areas were conducted from 1998 through 2003. None of the areas surveyed were found to contain murrelets (Raedeke Associates 1998-2000; ABR 2001-2003). However, one murrelet detection was recorded on lands adjacent to the covered area (T13N, R06E, Section 31). This was a Status 4 detection, meaning that a murrelet was either seen or heard but behavior indicating nesting occupancy was not observed. Given the available survey data and the current habitat conditions of the second-growth forest, it is unlikely that murrelets occur in the covered area.

There are several potential murrelet habitat patches on the covered lands, i.e., conifer stands that are greater than seven acres in size with trees that are at least 32 inches dbh. These potential murrelet habitat patches are identified in Port Blakely's stand inventory as stands in the 81 years and older age class. Port Blakely recognizes that potential murrelet habitat is not defined by stand age but by the availability of large trees with limb size capable of supporting a murrelet nest or platform. However, conifer stands that are 81 years of age and older in the Morton Block are typically greater than 32 inches dbh with large limbs that likely contain platforms sufficient for murrelet nesting. Thus, to estimate potential murrelet habitat in the Morton Block, Port Blakely uses the 81-plus age class in patches equal to or greater than 7 acres as a surrogate for murrelet habitat.

According to the present stand inventory data, the amount of stands that are in the 81 years and older age class is 632 acres (Table 3-1). Of these stands, Port Blakely has identified 498 acres that are conifer-dominated and greater than seven acres in size; 372 acres within 50 miles of marine waters and 126 acres beyond 50 miles from marine waters (S. B. Murden, pers. comm., 2008) (Figure 3-6). Approximately 275 acres of potential murrelet habitat is in the SSAs (Section 4.1.5 and Figure 3-6), which will be protected for the term of the Agreement. The remaining 223 acres of potential murrelet habitat is scattered throughout the Morton Block in stands and small patches in riparian areas, i.e. SMAs, and near Riffe Lake and will also be protected for the term of the Agreement (Figure 3-6.) Although some of these habitat patches are small, they could function as nesting habitat if, by themselves or in association with adjacent stands, they contain interior forest conditions suitable for nesting.

In summary, the baseline condition for murrelets will be defined in terms of the current amount of potentially suitable nesting habitat, which is approximately 498 acres.



Source: Port Blakely GIS



Figure 3-6
Potential Marbled Murrelet Habitat and Special Set-Aside Areas

Revision date: 11/17/2008

Map Legend

- Port Blakely Ownership
- Hydrological features
- PLSS delineation
- Age Class 81 plus
- Designated Special Set-Aside Areas
- 50 Mile MAMU range

Chapter 4. Agreement Implementation

4.1. Conservation Measures

Port Blakely will conduct their forest management activities in accordance with the provisions of the SHA/LOP/CHEA, which include Forest Practices Rules in place at the signing of this Agreement, as well as additional provisions to grow, enhance, and maintain suitable habitat that will result in a net benefit to the covered species.

4.1.1. Forest Management

The State prepared an HCP covering forest practices activities on non-federal and non-tribal land in Washington to address the conservation needs of anadromous and native fish and seven stream-associated amphibians (WDNR 2005). FWS and the National Marine Fisheries Service (NMFS) approved the Washington Forest Practices HCP and provided take authorizations to the State under section 10 of the ESA. The take authorizations for aquatic species apply to qualifying landowners receiving an approved forest practices permit, who conduct forest management activities that affect aquatic resources, according to the Forest Practices Rules. The forest management activities that are covered by the take authorizations are, for the most part, conducted in the riparian areas adjacent to fish- and non-fish-bearing streams, and road construction and maintenance activities in proximity to streams. Port Blakely's forest management activities as they relate to effects on aquatic species are covered under the Washington Forest Practices HCP and incidental take permit, and were analyzed under the associated EIS. Thus, these activities are not described except where the resulting habitat may benefit the species covered by this Agreement.

The conservation elements of the SHA, LOP, and CHEA that constitute a net conservation benefit to the covered species will be realized by Port Blakely's enhanced forest management activities conducted under the current Forest Practices Rules (incorporated by reference), and voluntary measures that exceed the timber industry standard, as well as additional conservation measures. The measures that Port Blakely will implement extend beyond standard Forest Practices Rules and industry standards, and will result in development, maintenance, and retention of potentially suitable habitat for the covered species. These measures are described below.

4.1.2. Forest Management Plan

An important component of Port Blakely's forest management strategy that is expected to result in conservation benefits to the covered species is the implementation of a longer harvest rotation of conifer-dominated stands on the Morton Block. This commitment precipitates a number of management options that will improve habitat conditions for the covered species. Under this SHA, timbered stands generally will reach harvest age at an average of 60 years, with a range of about 50 to 70 years of age. This is notably different than the industry standard for timber harvest in this region at an age of 45 years or younger (Washington Department of Natural Resources 2007). Port Blakely will determine stand age using two methods: 1) based on known planting records; and 2) for stands that originated under previous ownerships where stand age is unknown, Port Blakely will core five dominant/co-dominant conifer trees per stand to determine an average stand age.

Port Blakely will use several different silvicultural regimes to ensure the proper growth and health of conifer-dominated forest stands during this period. The primary regime will include several options for mid-rotation management, determined by a number of factors including steepness of slopes, and the feasibility of using ground-based logging equipment. The specific options for this management regime are:

- plant and monitor until "free to grow"; controlling competing vegetation as needed;
- consider the most suitable mid-rotation management:
 - no mid-rotation management,
 - pre-commercial thin at 10 to 12 years old,
 - commercial thin at 25 to 40 years old, or
 - apply both pre-commercial and commercial thinning to some stands;
- monitor stand health and damage, and salvage opportunistically to recover value;

- conduct regeneration harvest of conifer-dominated stands at approximately an average age of 60 years;
- establish special management areas:
 - leave tree areas,
 - potentially unstable slopes,
 - forested wetlands,
 - cliffs, talus slopes, rock outcrops, and caves,
 - shrub and meadows;
- establish special set aside areas;
- enhance green and wildlife tree retention areas; and
- implement a snag development program.

Under this management regime, conifer stands develop through various stages until they reach the quality and structure desired for final harvest. Timber quality is improved by creating stand conditions that promote radial growth while limiting the retention of green limbs. The target conifer-dominated stand structure at age 60 has an average stocking of 130 trees per acre, although actual stocking would vary within stands as well as from site to site and may range between 116 and 148 trees per acre for individual stands. Stand conditions vary across the covered area due to changes in aspect, elevation, exposure to disease, species composition, and natural events beyond Port Blakely's control such as windstorms and wildfires. Some of these elements (e.g., disease) help create small-scale openings in the forest canopy and enhance structural diversity within stands, which is believed to promote biodiversity. Other openings are created during thinning operations as storm-damaged or weak and suppressed trees are removed. The desired stocking levels are generally achieved on slopes less than 35% through commercial thinning. Conifer trees in commercially thinned stands would generally average about 18 inches dbh by the age of 60. Stem diameter also varies within and between stands with stand averages ranging from 16 to 21 inches dbh. Port Blakely makes thinning decisions based on stand and market conditions, targeting an average post-thinning Relative Density (RD) of 40, ranging from 35 to 45 for residual stand conditions (see Commercial Thinning below).

Within the covered areas, forest lands would be managed using even-aged and uneven-aged harvest strategies. Even-aged management would be the primary option for regeneration harvest. Port Blakely would manage conifer-dominated stands for long rotations, normally between 50 and 70 years of age. Uneven-aged management would be used during thinning and salvage operations using conventional logging equipment.

During all management activities, the Forest Practice Rules would be met or exceeded. Where applicable, alternate plans allowed under Forest Practices Rules (WAC 222-12-040) may be developed and utilized provided they meet or exceed the levels of resource protection provided by the forest management activities described in this Agreement. The alternate plans would be developed in consultation with FWS. The selection of stands for regeneration harvest or even-aged management is the result of an evaluation of several conditions including: health, species composition, market conditions, and age. Decisions regarding harvest timing usually are made based on the same set of factors, although soil condition also may be a limiting factor.

Uneven-aged management is the preferred strategy of Port Blakely for stand enhancement. It is Port Blakely's experience that through proper application, stand structure and wood quality can be improved over a shorter period of time. Decisions to enhance stands begin when stand ages reach 10 years old and continue through age 50. The timber stands are continually monitored for stocking, relative density, health, and mortality.

Pre-Commercial Thinning

Candidate stands for enhancement on slopes less than 35% within the 10-12 year age class would have stocking levels between 550 and 650 or more trees per acre. For slopes greater than 35%, the stocking goal is 450 to 550 or more trees per acre. Conifer trees of this age would generally be 3 to 5 inches dbh. After a pre-commercial thinning application, stands would have 300 to 325 residual trees per acre. This stocking allows for increased radial growth and short-term woody debris, because the cut trees are not removed from the stand. Pre-commercial thinning is generally accomplished by hand-cutting and does not involve the use of heavy equipment.

Commercial Thinning

Investigations in western Washington suggest that mid-rotation thinning, in combination with cavity-tree retention and/or creation can accelerate development of late successional habitat features in young forests (Garman et al. 2003, Beggs 2004, Lindh and Muir 2004)). Thinning and cavity-tree retention have been suggested as a primary management technique for enhancing forest understory's for northern flying squirrels (*Glaucomys sabrinus*) (Carey and Johnson 1995, Carey 2000), the primary prey species of owls in western Washington (Forsman et al. 2004). Thinning of second-growth coniferous forests in western Washington has been proposed by Oliver (1992) as a critical element of an overall landscape strategy for creating and maintaining terrestrial wildlife habitats in young managed forests. Thinning of Douglas-fir/western hemlock forests allows for competitive release of canopy

dominants and shade-tolerant understory trees, resulting in multiple canopy layers, increases in canopy depth, and enlargement of tree crowns (Oliver et al. 1991); these enhancements are associated with owl habitat, and tend to increase niche availability for breeding birds.

Typically, with a harvest rotation age of 45 years or younger, Port Blakely would not conduct commercial thinning operations on their timber lands. However, by incorporating an average 60-year harvest rotation into their forest management plan, they could commercially thin qualifying conifer-dominated stands. This activity generally results in healthier conifer stands, with larger tree diameters, and wider spacing. The latter characteristic provides the potential for owls to move through these stands as they disperse, and to forage more effectively. With the inevitable defect that develops, due to weather factors, in older stands that are left free to grow, these stands also have the potential to develop into owl prey habitat. This is one of the potential benefits to owls from implementing a 60-year average rotation age for conifer-dominated stands. Specific management considerations and actions related to the decision to conduct commercial thinning are described below.

When conifer stands reach ages between 30 and 40 years, they are reviewed for RD, stocking, wood quality characteristics, and health. Stands of this age class would typically be 10 to 14 inches dbh. On slopes less than 35%, conifer stands with RDs greater than 55 and stocking between 285 and 350 or more trees per acre would be selected for commercial thinning, given the proper market conditions. During commercial thinning activities, spacing and vigor of trees determine which trees will be retained or cut. Large, healthy, dominant conifer trees are generally selected for retention as future crop trees. However, if they are too closely spaced, some larger trees would be removed. Suppressed, smaller co-dominant and dead or dying trees are generally removed from the stand. Spacing may result in retention of some smaller co-dominant trees, and some defective trees would be retained for future wildlife trees. Some smaller sub-merchantable trees, especially shade-tolerant species, would be retained to accelerate habitat conditions by contributing to the development of a second story. The target stocking of overstory trees for these stands is 185 to 225 trees per acre after the commercial thinning operation, but may vary within and between stands. Generally, commercial thinning would increase the average diameter of the remaining stand (i.e., by removing predominantly smaller trees).

During commercial thinning, yarding corridors (e.g., skid trails and cable-yarding corridors) create openings in the canopy allowing for improved solar penetration. Yarding corridors average 60 feet apart, although this spacing is dependent on topography, and corridor spacing would vary from 50 to 80 feet apart. Corridors are generally 15 to 20 feet wide. Landings are also required to facilitate thinning activities. Landing placement varies from 400 to 800 feet apart, although this is

dependent on topography and soil conditions. Landings generally range from 40 to 60 feet in diameter. Extraction corridors and landings have the effect of creating variable-density stocking throughout the thinned stand when combined with the skips and gaps from normal operations. Together, landings and corridors may occupy 8 to 15% of a thinned stand. The soil disturbance combined with the increased solar penetration encourages understory and groundcover germination.

For purposes of determining the amount of functional dispersal habitat, Port Blakely has identified unmanaged (not thinned) conifer-dominated stands greater than 50 years of age as having the conditions necessary to provide dispersal opportunities for owls. These stands also have the potential to provide foraging opportunities as unmanaged stands of this age frequently contain dead and defective trees that may provide habitat for owl prey species. Under Port Blakely's thinning regime, stands older than 40 years of age that have been commercially thinned will likely provide functional dispersal habitat (see Section 4.2.2 for acreage amounts) because thinning creates tree spacing and canopy lift, allowing owls to fly into and through the stand. The snag retention and creation prescriptions described below are expected to provide prey habitat structures.

Habitat characteristics and stand structure are also enhanced by retaining some defective trees during commercial thinning. Port Blakely will follow Forest Practices Rules while conducting commercial thinning operations; however, to assure a high chance that wildlife trees will be present during regeneration harvest, the following wildlife tree and snag prescriptions will be applied when conducting commercial thinning management activities:

- Prescription 1: Two defective trees per acre will be retained. Defective trees are defined, but not limited to, damaged or deformed live trees in the management unit with characteristics such as broken or multiple tops, bayonet or candelabra tops, or having sinuosity characteristics, i.e. Type 1 wildlife reserve trees described in the Forest Practices Rules (WAC 222-16-010).
- Prescription 2: One defective tree per acre will be retained and one snag per acre will be created using mechanical topping at or above 12 feet or girdling or chainsaw boring. When selecting trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest.
- Prescription 3: Two snags per acre will be created using mechanical topping at 12 to 18 feet, girdling or chainsaw boring. When selecting trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest.

Topped stems will decay over time but will help to increase the availability of snags during the short term. The stem top will be retained on the forest floor to increase the availability of fine and coarse woody debris.

Most, if not all, thinning operations use modern processing machinery capable of felling, delimiting, and bucking trees into various lengths for shipment to markets. Significant amounts of coarse woody debris are created during commercial thinning activities. The actual amount of woody debris created will vary and depends on pulp prices and market conditions at the time. However, as a general rule of thumb (based on the criteria set forth above), the difference between initial stocking of 285 to 350 trees per acre and residual stocking of 185 to 225 trees per acre is 113 stems per acre. Thus, it is estimated that the removal of approximately 113 stems per acre during commercial thinning would create at least 113 tops measuring from 2 to 4 inches in diameter and 8 to 16 feet in length per acre. This debris is in addition to any existing residual downed logs already present in the stand that Port Blakely will leave on the forest floor while conducting commercial thinning management activities.

During the thinning activity, all efforts are made to allow shade-tolerant saplings (e.g., western red cedar and western hemlock) to remain undisturbed. Yarding corridors and landings provide openings for understory development and adjacent trees tend to retain lower branches longer or develop epicormic branching. Areas between yarding corridors that are beyond the reach of equipment (greater than 30 feet) would have additional trees and would further add to canopy diversity. Areas surrounding trees and snags left for future wildlife trees may have additional trees strategically retained without thinning. Within many stands, rocky or wet locations would result in natural openings within stands that would also contribute to canopy and within-stand diversity. Larger areas that may fall within harvest units, such as unstable slopes, riparian areas, and logistically unreachable lands, may develop into larger pockets of habitat that serve as foraging and roosting locations.

Regeneration Harvest

Between the ages of 50 and 70 years (average conifer stand age of 60 years), stands are selected for regeneration harvest. Stands are examined for health, species composition, and wood quality to match the existing market conditions. When the final selection is made, regardless of slope, the stand is placed on the annual harvest plan. Several harvest systems might be used during regeneration harvests depending on topography and soil conditions. Ground-based equipment may include logging shovels, skidders, crawlers, or forwarders. Normally on slopes less than 35%, felling is conducted with processing equipment. Due to potential soil compaction, skidders and crawlers are restricted to long reaches (i.e., greater than 800 feet), where other equipment would not be economical.

On slopes greater than 35%, hand felling is the only means of felling and bucking, and cable systems are employed with landings positioned either at the top or bottom of the unit, or both. Cable yarding provides additional challenges in distribution of

legacy trees for the future stand. Whereas ground-based equipment provides some limited opportunities for distribution of legacy trees within the unit, cable yarding is far more constrained. Legacy trees would generally be retained along edges, in fewer but larger patches, or triangular wedges at ends of cable runs (see Section 4.1.4, Special Management Areas, below).

During regeneration harvest on slopes less than 35%, legacy trees may be clumped, distributed, or distributed in smaller clumps depending on logistics and economics. Where snags are retained (Types 3 and 4 wildlife reserve trees) (WAC 222-16-010), there would generally be a small clump of live trees surrounding these snags for safety considerations. For snags without a lean, this patch would generally be circular with a radius equal to one and a half times the height of the snag or from the point of potential breakage to the top. Such retention would add within stand diversity to the subsequent developing stand (for additional discussion of snags, see Section 4.1.6, Snag Program, below).

Port Blakely will follow Forest Practices Rules for green recruitment trees, and for providing wildlife reserve trees when they are available (WAC 222-30-020). Often wildlife trees are not available as a result of past forest management activities or because they required removal to comply with safety requirements. While conducting regeneration harvest, Port Blakely will ensure that wildlife reserve trees are present by implementing one of the following prescriptions to enhance the vertical and horizontal diversity in forest stands over the covered area:

- Prescription 1: Regardless of the number of residual snags (Type 3 and Type 4 Wildlife Reserve Trees as defined in WAC 222-16-010) present within an even-aged harvest unit, Port Blakely will create additional snags at a rate of 20 per 100 acres and retain six green recruitment trees per acre (diameter classes representative of the stand).
- Prescription 2: Port Blakely will retain two snags per acre (either residual or created) and supplement Forest Practices Rules requirements with one additional green recruitment tree (three trees per acre).

Snags will be defined as standing dead conifer trees ≥ 15 inches dbh and ≥ 12 tall. Snag creation methods to be employed within the SHA/LOP landscape include girdling or coring with a chain saw, mechanical topping at or above 12 feet, and/or natural recruitment.

The Forest Practices Rules state that no point in the harvest unit will be more than 800 feet from a wildlife reserve tree or green recruitment tree retention area (WAC 222-30-020). This could result in harvest units having gaps up to 1600 feet wide between reserve trees areas. In order to provide a better level of future snag dispersal throughout the harvest unit, Port Blakely will set an average distance between groupings of snags or green recruitment trees to be no further than 1000 feet, and no

point within the unit to be further than 800 feet from snags or green recruitment trees. This spacing prescription is what harvesting operators can attain without substantially reducing operational efficiency, and is expected to improve wildlife tree dispersal on the landscape over current Forest Practices Rules.

Areas on the covered lands where local terrain features create significant operational constraints or that add significantly to harvest costs will be designated as SMAs (see Section 4.1.4) and will be deferred from harvest during the covered period. Such areas will contribute significantly to the overall availability of mature forest available over the covered area. In addition to forested areas having operational constraints, SMAs may also include stands with cliffs and rock outcrops, unstable slopes, natural forest openings and forested wetlands.

Salvage

Salvage refers to the removal of single diseased or damaged stems from a timbered stand without damaging or removing the residual trees, similar to a commercial thinning activity. However, when larger areas, greater than two acres, become severely diseased or damaged, it is generally more efficient to harvest the entire area containing the infected or damaged trees. Stands are continually monitored for health and storm damage following commercial thinning. The decision to enter a stand for salvage is based on overall stand health, the percent of stems affected, stand age, and market conditions. For economic reasons, stands are not entered to remove less than two truck-loads of logs. This economic constraint requires that more than 20% of the stems per acre in a stand be affected with disease or damage. This percentage would differ depending on age and stand structure ranging from 10 to 35%, lower for an older stand and higher for a younger one. Salvage operations are generally limited to slopes less than 35% for logistic, economic, and efficiency reasons unless the “greater than 2 acre” condition is met.

As with thinning, salvage requires the use of extraction corridors. However, because of the random nature of damage and disease, corridor patterns would vary, creating both large and small openings in the canopy. All efforts are made to recover all the merchantable timber throughout the operation, although not all the merchantable timber can be reached due to topography and soil conditions. Non-merchantable sections of the damaged or diseased stems are left in the residual stand for economic reasons, but they provide important biological benefits as coarse woody debris. The amounts of non-merchantable tree sections would vary with stand age, reason for salvage, and topography. These non-merchantable sections normally fulfill Forest Practice requirement, however, Port Blakely will leave an additional two downed logs per acre to promote the conservation of biological diversity within managed stands. The downed logs would measure 12 inches dbh or greater on the small end and have a length greater than or equal to 20 feet, or contain the equivalent volume.

During salvage, special efforts are made to avoid disturbing shade-tolerant saplings such as western red cedar and western hemlock. This practice would retain forest understory and promote the development of a more structurally diverse forest canopy. As with thinning entries, existing downed wood is retained and left undisturbed whenever possible.

Disturbance events, acting individually or in concert, would increase within-stand forest structural diversity. Wind effects are often unpredictable, affecting both individual trees and patches of trees. Much of the windthrow and breakage created by wind events goes unnoticed at a stand level and is not salvaged.

The covered area contains a number of pathogens, such as laminated root rot (*Phellinus wierii*), armillaria root disease (*Armillaria spp*), and dwarf mistletoe (*Arceuthobium spp.*), that are common factors in forest ecology. Pockets of *Phellinus* kill Douglas-fir and hemlock trees and result in understory development and/or enhanced growth of red alder and western red cedar. During management activities, depending on stand age, Port Blakely considers planting such *Phellinus* pockets with more resistant commercial tree species. *Armillaria* species, which are fungi, have a huge host range, including many conifers and hardwoods and some herbaceous plants. These species cause root disease in all hosts and are difficult to manage. Dwarf mistletoes are host-specific, parasitic flowering plants. Tree damage from dwarf mistletoe includes growth reduction, loss of wood quality, poor tree form, predisposition to insect infestation and diseases, premature death, and reduction in seed crops. Port Blakely management may include planting of resistant trees under infected trees as a replacement for when infected trees are removed, or regeneration harvest of infected stands.

In spring, black bears (*Ursus americanus*) commonly feed on the cambium of young Douglas-fir trees in plantations that are between 15 to 25 years of age. Many of these damaged trees die while others survive with potential defects becoming evident in the future. Because bears seek trees with higher sugar concentrations, their damage patterns often form pockets as the adjacent trees receive more sunlight. Adjacent to such pockets, trees tend to retain their lower branches longer or may develop epicormic branching, both of which may create potential roost trees in the future.

Road Construction and Maintenance

Under the Agreement road construction and maintenance activities will be conducted to comply with WAC 222-24, and in compliance with best management practices identified by Port Blakely (Port Blakely 2008). The current Forest Practices Rules includes a requirement to develop Road Maintenance and Abandonment Plans (RMAPs), which were incorporated into the Forest Practices HCP (Washington Department of Natural Resources 2005). The RMAPs are designed to improve the

forest road systems on private ownerships to avoid and minimize effects to aquatic resources. Road construction and maintenance covered by the Forest Practices Rules are expected to minimize sediment to streams and minimize removal of shade trees near streams. Construction of new forest roads will result in removal of trees from the uplands but this activity will be conducted on a small scale, similar to regeneration harvest activities.

4.1.3. Port Blakely Wildlife Program

All activities associated with Port Blakely timber harvest operations and silviculture programs are subjected to a formal review by wildlife staff prior to their implementation. The review procedure meets two goals. It ensures the accurate identification of aquatic and terrestrial wildlife resources within the area affected by the proposed forest management activities, including threatened and endangered species, other sensitive wildlife species of special concern, and ecologically sensitive sites. The procedure also ensures that the appropriate conservation measures are incorporated into the harvest unit layout and activities plan. Unit reviews are conducted by one or more of the wildlife staff and may be carried out over several years prior to the actual harvest or silvicultural activity.

Review Process

The majority of unit reviews are initiated by the forester well in advance of the actual harvest. This advance notification provides wildlife staff with adequate time to schedule any required field surveys or habitat assessments and to address any issues pertaining to the occurrence of threatened or endangered species in the vicinity. Normally, the district forester responsible for the layout of the unit will create operation scale maps delineating the proposed harvest unit boundaries and indicating the locations of any anticipated snags and wildlife reserve trees. These maps are made available to wildlife staff through Port Blakely's internal computer network and geographic information system (GIS).

During the first phase, the wildlife staff reviews the company's internal terrestrial and aquatic inventories to ensure that the proposed harvest unit accurately depicts all known resource issues occurring at that location. Water typing for streams and wetlands are confirmed to ensure accuracy. Terrestrial databases are reviewed to confirm locations of any ecologically-sensitive sites within the unit.

On slopes greater than 35% (cable ground), units are evaluated to determine slope stability and the likelihood of management-related mass wasting events. Ground reconnaissance of potentially unstable areas is used to detect indicators of unstable slopes and to assess their potential. When appropriate, wildlife staff may recommend

that the district forester seek technical input from a qualified geologist prior to harvest unit layout.

The second phase of the unit review procedure involves the development of any site-specific recommendations by wildlife staff to the district forester. These recommendations generally pertain to unit layout and may include suggestions for the management of any special sites within the unit, delineation of channel migration zones, placement and selection of green recruitment trees, or identification of points of stream initiation. Potential alternatives to current forest practices may be discussed.

Recommendations for the retention of snags and green recruitment trees within even-aged units vary depending on the local terrain features and/or the occurrence of streams and the availability of other sensitive areas within the proposed unit. Priorities for snag and green recruitment tree placement, regardless of percent slope, are as follows:

- Priority 1: First-order stream sensitive sites
 - Stream headwalls
 - Side channel seeps and springs
 - Inner gorges
 - Tributary junctions of non-fish bearing perennial streams
 - Points of perennial flow initiation
 - Areas adjacent to fish-bearing streams
- Priority 2: Snags and wildlife reserve trees
Leave trees will be clumped around sensitive large snags and wildlife trees within the harvest unit when it is operationally feasible to leave large snags or wildlife trees.
- Priority 3: Forested wetlands
Where forested wetlands occur within the harvest unit, snags and green recruitment trees will be clumped in and around the forested wetland.
- Priority 4: Discontinuous patches of snags and/or green recruitment trees
Where no watercourses or other ecological sensitive sites occur within the harvest unit, discontinuous patches will be maintained to meet spacing and leave tree requirements.

4.1.4. Special Management Areas

SMA's are inventory types on the Morton Block identified by Port Blakely as potentially containing unique habitat features or requiring additional permitting under current Forest Practices Rules. These SMA's often contain landforms or habitat features that have high conservation value compared to other inventory types. The locations of these areas are maintained in Port Blakely's GIS database.

In Port Blakely's land inventory, SMAs are divided into five categories:

- Leave tree areas
- Potentially unstable slopes
- Forested wetlands
- Cliffs, talus slopes, rock outcrops, and caves
- Shrub and meadow

Leave Tree Areas

Leave tree areas are important areas that greatly enhance landscape structural diversity in managed forests. They provide structural cover and enhance conditions necessary to increase biological diversity. Many of the trees in these patches become snags or downed wood that enhance habitat diversity on the forest floor. Leave tree areas typically are patches of conifer trees retained after a regeneration harvest to satisfy regulatory requirements, or to protect local habitat features that may have unique conservation value. Leave tree areas may also be patches of green recruitment trees retained in either uplands or along riparian management zones to provide increased protection to streams and stream associated wetlands.

Although some leave tree areas are retained to fulfill mandatory Forest Practices Rules requirements (e.g., wildlife reserve and green recruitment trees, WAC 22-30-020), Port Blakely will on occasion employ this retention strategy to protect unique features on the Morton Block. Voluntary and mandatory leave tree areas will be managed primarily to maximize their short- and long-term habitat value for wildlife and biodiversity. Under current Forest Practice Rules, when plantations adjacent to these leave areas achieve the green tree recruitment size of 10 inches dbh and 30 feet tall (WAC 22-30-020), the leave tree areas can be harvested. Likewise, these leave tree areas can be harvested at the time of next entry (i.e. commercial thinning or regeneration harvest). However, for this SHA, LOP, and CHEA, Port Blakely will defer harvesting of leave tree areas that are established during the term of the Agreement. By deferring harvest of these areas, wildlife reserve and green recruitment trees will remain on the landscape for the duration of this Agreement (60 years) with trees ranging in age from 110 to 130 years. The intent is to provide areas containing residual trees (green trees and snags) distributed across the Morton Block providing potential dispersal habitat for owl, denning habitat for flying squirrels, and patches of larger diameter conifers available for potential murrelet nest sites.

Potentially Unstable Slopes

Potentially unstable slopes are typically areas that have landform and geologic features that make them prone to mass wasting events. On the Morton Block, these areas have been identified through either field reconnaissance or through terrain modeling using a GIS. Trees in these areas function similarly to those described for leave tree areas.

Management in areas having potentially unstable slopes requires special considerations; management of these areas under certain circumstances may be regulated under current Forest Practices Rules (Board Manual Section 16). Although partial or complete harvesting can occur in these areas if public resource damage is avoided, Port Blakely will defer from harvesting in any of these areas designated as SMAs for the duration of this Agreement. Port Blakely has estimated there are 528 acres of potentially unstable slopes in the covered area.

Forested Wetlands

Forested wetlands are defined by Forest Practices Rules as “any wetland or portion thereof that has, or if the trees were mature would have, a crown closure of 30% or more” (WAC 222-16-035). These areas are considered to contain potentially unique habitat features. Most forested wetlands within the Morton Block require partial protection under Forest Practices Rules; normal management activities are allowed in forested wetlands with minor modifications (WAC 222-30-020-6). However, Port Blakely will ensure special efforts are made to avoid soil disturbance when operating in forested wetlands. Seasonal constraints will be applied when operating on tractor-capable ground to reduce the likelihood of disturbance. Furthermore, Port Blakely will give forested wetlands priority when selecting areas to retain wildlife reserve trees and green recruitment trees, and any leave trees associated with forested wetlands designated as SMAs will be deferred from harvest for the duration of the Agreement. Currently, there are 102 acres of forested wetlands that have been identified in the covered area.

Cliffs, Talus Slopes, Rock Outcrops, and Caves

Cliffs, talus slopes, rock outcrops, and caves are recognized by Port Blakely as potentially having unique wildlife values and may contain rare or sensitive plants and animals. These are identified through aerial photos and/or through field reconnaissance. Cliffs, talus slopes, rock outcrops, and caves have no management designation because of their non-timber classification. However, cables are occasionally installed near or across these features to facilitate operations. During operations in adjacent areas, special efforts will be made to prevent disturbance to soils or sensitive vegetation. Port Blakely has identified approximately 4 acres of

habitat designated as cliffs, talus slopes, rock outcrops, or caves considered to be this type of SMA. It is expected that additional acreage of this type of SMA will be identified as Port Blakely conducts timber harvest activities throughout the Morton Block. When these types of SMAs are discovered, they will be retained intact for the duration of the Agreement. These acres are not the same as the cliffs, talus slopes, and rock outcrops identified as part of the SSAs discussed below (Section 4.1.5).

Shrubs and Meadows

Areas designated as shrubs or meadows have been identified by Port Blakely as areas lacking commercial tree species. Often, these areas are dominated by either thickets of woody shrub species such as vine maple or mountain alder, or by open grassy meadows. Areas classified as shrub or meadows are typically restored to productive forest land when economic conditions warrant such activities. Restoration typically requires scarification with debris being piled and burned (shrub) or simply removing the vegetation by applying herbicides (in accordance with current Forest Practices Rules). These areas would be replanted with conifer or hardwood similar to management following a regeneration harvest.

These shrub and meadow areas can provide unique wildlife habitat (herbivore foraging, insects, etc). Although these areas typically do not require protection under Forest Practices Rules, Port Blakely will retain shrub and meadow areas that have habitat value for owl prey species. Furthermore, Port Blakely will only reforest (as described above) shrub and meadow areas that can support timbered habitat for the covered species, and have supported such habitats in the past. Currently, there are 196 acres on Port Blakely's Morton Block designated as shrub and meadow habitat.

4.1.5. Special Set-Aside Areas

Port Blakely has identified five areas within the Morton Block that are unique sites believed to have high conservation value (Figure 3-6). These areas are well distributed across the covered lands and total 550 acres; 359 acres forested and 191 acres non-forested (rock bluffs, talus slopes, etc). The forest cover is primarily Douglas-fir ranging in age from 76 to 113 years old. Under current Forest Practices Rules, Port Blakely could conduct management activities (timber harvest) on 216 of the 359 forested acres in these SSAs. However, Port Blakely will defer harvest activities on these five SSAs in an effort to provide enhanced long-term habitat for owls and murrelets. By not operating within these SSAs for the term of the Agreement, stands will mature to an age of 136 to 173 years and will have the potential to provide foraging and nesting areas for owls and nesting areas for murrelets as adjacent stands mature to 60 years of age.

4.1.6. Snag Program

A more functional type of dispersal habitat for owls incorporates conifer stands that contain a foraging component, such as adequate amounts of quality snags and downed wood to support owl prey species. Because of past management practices, snags are relatively rare on the covered lands. Thus, Port Blakely has developed a snag retention and development program that includes specific prescriptions to provide snags, and defective trees that have a high potential to become snags, while conducting commercial thinning and regeneration harvest activities. The effectiveness of this program will be evaluated through collaborative research efforts (Section 4.4). These prescriptions, expected to contribute to development of flying squirrel habitat and, ultimately to owls, are summarized below.

While conducting commercial thinning, Port Blakely will implement one of the following specific conservation measures to retain, recruit, or create snags:

- Prescription 1: Two defective trees per acre will be retained. Defective trees are defined, but not limited to, damaged or deformed live trees in the management unit with characteristics such as broken or multiple tops, bayonet or candelabra tops, or having sinuosity characteristics, i.e. Type 1 wildlife reserve trees described in the Forest Practices Rules (WAC 222-16-010).
- Prescription 2: One defective tree per acre will be retained and one snag per acre will be created using mechanical topping at or above 12 feet, girdling or chainsaw boring. When selecting trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest.
- Prescription 3: Two snags per acre will be created using mechanical topping at 12 to 18 feet, girdling, or chainsaw boring. When selecting trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest.

Port Blakely's goal during commercial thinning operations is to create and retain snags, and to retain defective trees that have a potential to become snags, thus, facilitating and accelerating development of owl prey habitat. These prescriptions will enable Port Blakely to achieve their goal while incorporating some operational flexibility, i.e. having the ability to choose the best approach to provide potential owl prey habitat while adhering to safety regulations and principles of economic efficiency. Through these efforts, Port Blakely will provide snags, and the opportunity for snags to develop, between the time of thinning and regeneration harvest. One of the benefits of retaining defective trees is that they often already have cavities created by limb breakage or from cavity excavation by primary cavity nesters. In addition, defective trees have the potential to grow for a time before they develop into larger snags. This is especially important because at the time of commercial thinning, the trees range from approximately 8 inches to 14 inches in diameter. Snags created from these trees would be expected to provide less

opportunity for prey species to inhabit than snags of larger diameters that could develop from the defective trees that will be retained.

While conducting regeneration harvest, Port Blakely will implement one of the following specific conservation measures to retain, recruit, or create snags:

- Prescription 1: Regardless of the number of residual snags present within a regeneration harvest unit, Port Blakely will create additional snags at a rate of 20 per 100 acres and retain six green recruitment trees per acre (diameter class representative of the stand).
- Prescription 2: Port Blakely will retain two snags per acre (either residual or created) and supplement current Forest Practices Rules requirements with one additional green recruitment tree for a total of three trees per acre.

Port Blakely's goal during regeneration harvest is to supplement the number of existing snags on the landscape, i.e. snags retained or developed since the time of commercial thinning operations, with additional snags of larger diameter to enhance owl prey habitat. Typically, at regeneration harvest, trees that are on average 60 years old will be approximately 18-24 inches in diameter. The additional green recruitment trees are expected to provide opportunities for snags of varying diameter to develop over the long-term. Port Blakely will monitor the snag and leave tree prescriptions employed during commercial thinning and regeneration harvest (Section 4.5).

4.1.7. Occupied Nest Site Provisions

Port Blakely recognizes that the probability of occupancy by owls or murrelets will likely be low due to the generally young age of forest stands that will occur in the covered lands. Owls and murrelets require mature to old-growth forest conditions for nesting. During the term of the SHA, some mature and late seral forest conditions will develop in RMZs, SMAs, and SSAs, however, we don't anticipate the recruitment of nesting habitat for either species within areas managed on a 60-year average rotation. If, during the course of normal operations, Port Blakely discovers or is informed of the presence of owl or murrelet nest sites, Port Blakely will implement actions to help minimize any impacts of the taking for which they are authorized. These actions would help further the effectiveness of the landscape for providing dispersal habitat and connectivity for owls, and would further the conservation of the owl and murrelet. These actions are described for each species below.

Northern Spotted Owl

Port Blakely, in cooperation with the State and FWS, will verify the status and location of the newly occupied owl site, which will help determine Port Blakely's voluntary conservation measures for the site. Conservation measures will include minimizing noise disturbance and habitat alteration of a nest site for a minimum of three years. Under this SHA provision, an owl nest site is defined as the nest tree (of a breeding pair) and the 70 acres of highest quality suitable owl habitat surrounding the nest tree. Port Blakely will provide this conservation and protection for up to three owl nest sites in any given year during the term of the SHA.

Retention of the owl nest site for a minimum of three years and protection of the reproductive effort will, at a minimum, include avoiding harvest within the 70 acres of highest quality suitable owl habitat surrounding the nest tree, and following the applicable thresholds for noise for owls. While actual disturbance distance restrictions for various activities may change over time, Port Blakely will follow those accepted by FWS: 105 feet for heavy equipment; 195 feet for chainsaws; 180 feet for impact pile drivers, jackhammers, and rock drills; 360 feet for small helicopters or single-engine airplanes; and 1 mile for blasting, large helicopters, and large airplanes (U.S. Fish and Wildlife Service 2003). However, site-, equipment-, and method-specific information can be used to modify the 1-mile distances. As more information becomes available regarding the effects of noise on owls, these threshold distances may be modified after discussion with FWS and state representatives.

Depending on the importance of the new nest site, determined in cooperation with the State and FWS, Port Blakely will defer a harvest unit or portion of a harvest unit to allow for at least three years of potential reproduction prior to harvest, which will contribute to dispersal and connectivity goals for owls. Port Blakely may also choose to delay harvest of the nest site and surrounding area to allow for the collection of information regarding surrounding habitat and/or owl use of the immediate vicinity to help inform development of longer-term strategies. For instance, collaborative telemetry work and habitat identification and characterization may indicate that an owl pair use a particular stand type, but do not use similar potential habitat on the other side of a ridge. Such information will allow Port Blakely to realign harvest unit boundaries and modify harvest plans that could help retain the site for several years into the future.

Marbled Murrelet

Port Blakely, in cooperation with the State and FWS, will verify the status and location of any new murrelet nest site. The status and location of the site will determine Port Blakely's voluntary conservation measures, which will include

minimizing noise disturbance and habitat alteration of a nest site for a minimum of three years. Under this SHA provision, a murrelet nest site is defined as the nest tree and a minimum of seven acres of the surrounding highest quality murrelet habitat. Location of the nest site relative to federal lands, other ownerships (including the anticipated management of such ownerships), SMAs, SSAs, and other areas factoring into potential conservation of the murrelet will assist Port Blakely in deciding on the appropriate measures. Port Blakely will provide this conservation and protection for up to three murrelet nest sites in any given year during the term of the SHA.

Retention of the murrelet nest for a minimum of three years and protection of the reproductive effort will, at a minimum, include avoiding harvest within the habitat stand, and following the applicable thresholds for noise for murrelets. While actual disturbance distance restrictions for various activities may change over time, Port Blakely will follow those currently being required by Forest Practices Rules (Washington Forest Practices Board 1996) and supported by FWS (U.S. Fish and Wildlife Service 2003). The Washington Forest Practices Board recognized that noise disturbance might disrupt murrelet breeding behavior; therefore, the Board adopted rules to protect murrelets from disturbance by imposing an operating restriction during the daily peak activity periods within the murrelet critical nesting season (April 1 through August 31) (Washington Forest Practices Board 1996). The daily peak activity period for murrelets (WAC 222-16-010) is 1 hour before official sunrise to 2 hours after official sunrise, and 1 hour before official sunset to 1 hour after official sunset. Restricted activities include road construction, operation of heavy equipment, blasting, timber felling, yarding, helicopter operations, and slash disposal or prescribed burning. These activities are prohibited within 0.25 mile of occupied murrelet sites during the daily peak activity periods within the critical nesting season (WACs 222-24-030 and 222-30-050, -060, -065, -070, -100). Thus, FWS expects that the existing Washington Forest Practice Rules will protect most nesting murrelets associated with known occupied sites except for blasting; FWS continues to use the conventional 1-mile potential injury threshold distances due to lack of decibel information to more accurately address these distances (U.S. Fish and Wildlife Service 2003). However, site-, equipment-, and method-specific information can be used to modify the one-mile distances. As more information becomes available regarding the effects of noise on murrelets, these threshold distances may be modified after discussion with FWS.

Depending on the importance of the new nest site, determined through discussions with the State and FWS, Port Blakely will defer a harvest unit or portion of a harvest unit for at least three years of potential reproduction prior to harvest, which will contribute to murrelet habitat enhancement and recovery of the species. The highest likelihood for murrelet nesting is probably on the 498 acres that have been identified as potential habitat, and will be protected for the term of the Agreement. Other areas, such as leave tree areas and other SMAs, may also be likely areas for murrelets to

occupy, and these also will be retained for the term of the Agreement, as noted above. If outside of these areas, Port Blakely may also choose to delay harvest of the nest tree and stand to collect information regarding surrounding habitat and murrelet use of the stand to help inform development of longer-term conservation strategies. Such information will allow Port Blakely to realign harvest unit boundaries and modify harvest plans that could help retain the murrelet nest tree and stand for several years into the future.

Port Blakely will also consider partial harvest and thinning options in habitat being used by nesting murrelets, cooperative manipulative research efforts, and pursuing conservation buyers or conservation easements. At its discretion, Port Blakely will also consider regeneration harvest and other land uses of the occupied nest site as authorized by this Permit and SHA, i.e. return to baseline by the end of the Permit term.

4.2. Net Conservation Benefit

The following provides a discussion of the net conservation benefit to both of the covered species as a result of Port Blakely's enhanced forest management activities. This discussion will fulfill a requirement of an approved SHA, and will demonstrate that the conditions of the LOP and CHEA are also met. Management actions with and without the terms and provisions of the Agreement are summarized in Table 4-1.

4.2.1. Conservation Management Plan

Port Blakely's objective is to manage the covered area to contribute to the habitat objectives of the Mineral SOSEA and to the recovery of the owl, as defined under the ESA; and to enhance and maintain habitat for murrelets, while continuing to receive an economic benefit from forest management operations. More specifically, Port Blakely's SHA and LOP are designed to facilitate the dispersal of owls between areas of suitable habitat within the SOSEA and adjacent lands being managed to produce nesting and foraging habitat, i.e., West Fork Timber HCP-lands, WDNR lands, Mount St. Helen's National Monument, Gifford Pinchot National Forest, and Snoqualmie-Mt. Baker National Forest. This goal is consistent with the stated goals for the Mineral SOSEA for the portions of the SOSEA owned by Port Blakely, and with the 2008 Final Recovery Plan for the Northern Spotted Owl. In addition, Port Blakely's longer rotations, retention of leave tree areas, and measures establishing SMAs and SSAs, in combination, are expected to result in potential habitat available for use by murrelets.

Table 4-1. Comparison of Conditions by Management Strategy – Net Benefit

Port Blakely Activity/Element	Option	Without SHA, LOP, and CHEA	With SHA, LOP, and CHEA	Difference (net conservation benefit)
Plant and monitor	n/a	Plant and monitor until free grow	Plant and monitor until free grow	No difference
Mid-rotation Management	None	Trees grow until harvested	Trees grow until harvested	No differences; see regeneration harvest.
	Pre-commercial thin only	<p>Thinned when trees are approximately 10 to 12 years old and 3 to 5 inches dbh.</p> <p>Triggered at densities of 550-650+ trees per acre on slopes less than 35% and densities of 450-550+ TPA on slopes greater than 35%.</p> <p>Post-thinning stocking of 300-325 trees per acre.</p>	<p>Thinned when trees are approximately 10 to 12 years old and 3 to 5 inches dbh.</p> <p>Triggered at densities of 550-650+ trees per acre on slopes less than 35% and densities of 450-550+ TPA on slopes greater than 35%.</p> <p>Post-thinning stocking of 300-325 trees per acre</p>	No differences; see regeneration harvest.
	Both pre-commercial and commercial thinning.	Pre-commercial thinning would be as described above; no commercial thinning would occur.	<p>Pre-commercial thinning would be as described above; commercial thinning would be as described below:</p> <p>Thinned when trees are approximately 30 to 40 years old and 10-14 inches dbh.</p> <p>Triggered when stand is located on slope of <35%, RD>55, and density is 285-350 tpa.</p> <p>Post thinning stocking of 185-225 tpa.</p> <p>The following wildlife green tree and snag prescriptions will be applied when conducting commercial thinning management activities:</p> <ul style="list-style-type: none"> ▪ Prescription 1: Two defective trees per acre will be retained. Defective trees are defined, but not limited to, damaged or deformed live trees in the management unit with characteristics such as broken, multiple, bayonet or candelabra tops, or having sinuosity characteristics, i.e. Type 1 wildlife reserve trees described in the Forest Practices Rules (WAC 222-16-010). ▪ Prescription 2: One defective tree per acre will be retained and one snag per acre will be created using mechanical topping at 12-18 feet, girdling or chainsaw boring. When selecting trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest. 	<p>PCT and CT allow development of suitable owl dispersal habitat at an earlier age under the SHA than if unmanaged.</p> <p>On slopes <35%, owl dispersal habitat develops in the 41-50 age class.</p> <p>Owl dispersal habitat available to owls for 10-20 years (average) on slopes <35% compared to no dispersal developing without SHA.</p> <p>In covered area: owl dispersal habitat will be approx. 4,000 acres more than baseline (8,360 ac) for each decade; for some decades, owl dispersal habitat will be > twice as much as baseline.</p> <p>In SOSEA: owl dispersal habitat will be maintained above 7,500 acres for entire SHA/LOP period, i.e. approx. 3,400 acres more than the baseline amount of 4,100 acres.</p> <p>Contributes to dispersal habitat with variable vegetation patterns and creating spaces for owl flight.</p>

Port Blakely Activity/Element	Option	Without SHA, LOP, and CHEA	With SHA, LOP, and CHEA	Difference (net conservation benefit)
Regeneration Harvest	n/a	Occurs when conifer-dominated stand is approximately 45 years old.	<ul style="list-style-type: none"> ▪ Prescription 3: Two snags per acre will be created using mechanical topping at 12-18 feet, girdling or chainsaw boring. When selecting trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest. <p>Yarding corridors and landings will create some variation in stocking throughout the thinned stand; when combined with the skips and gaps from normal operations they may comprise 8 to 15% of a thinned stand.</p>	<p>Trees retained for 5 to 25 (average 15 years) longer than without SHA, providing suitable owl dispersal habitat.</p> <p>PCT and CT stands available as dispersal habitat for 10-20 years (average) on slopes <35%.</p> <p>PCT stands on slopes >35% (receiving no mid-rotation management) will reach dispersal condition at 51-60 and will be available for dispersal for up to 10 years; a condition that would not occur without the SHA.</p>
		Forested wetlands would be managed per WAC 222-30-020(5)	<p>Forested wetlands would be managed per WAC 222-30-020(5) with additional protection as follows:</p> <ul style="list-style-type: none"> ▪ Port Blakely will ensure special efforts are made to avoid soil disturbance when operating within forested wetlands ▪ Seasonal constraints will be applied when operating on tractor-capable ground to further reduce the likelihood of disturbance. ▪ Port Blakely will give forested wetlands priority when selecting areas to retain wildlife reserve trees and green recruitment trees. 	Additional protection for forested wetlands with priority placement of wildlife and green retention trees.
		<p>Wetland Management Zones (WMZ) for type A and B wetlands would be as described in WAC 222-30-020(7), with management zone widths varying by wetland type and size.</p> <p>Within the WMZ, a total of 75 trees per acre of WMZ that are >6 inches dbh will be left. 25 of these trees shall be greater than 12</p>	Wetland Management Zones would be managed per WAC 222-30-020-6.	No difference.

Port Blakely Activity/Element	Option	Without SHA, LOP, and CHEA	With SHA, LOP, and CHEA	Difference (net conservation benefit)
		<p>inches dbh, and this will include 5 trees greater than 20 inches dbh where they exist.</p> <p>Within the WMZ, wildlife reserve trees will be maintained where feasible. Type 1 and 3 wildlife reserve trees may be counted toward the total reserved above.</p>		
		<p>Wildlife reserve trees (snags) will be managed per WAC 222-30-020(11). Where safe to do so, wildlife reserve trees will be left to protect habitat for cavity nesting wildlife, with the following left per acre harvested:</p> <ul style="list-style-type: none"> ▪ 3 wildlife reserve trees, 2 green recruitment trees, and 2 down logs shall be left. If adequate wildlife reserve trees are not available, no additional green recruitment trees will be required as substitutes. ▪ Only wildlife reserve trees greater than or equal to 10 feet in height and greater than or equal to 12 inches dbh shall be counted toward wildlife reserve tree retention requirements. ▪ Green recruitment trees must be greater than or equal to 10 inches dbh and 30 or more feet tall with at least 1/3 of their live crown. ▪ Large, live defective trees with broken tops, cavities, and other severe defects are preferred as green recruitment trees. ▪ Down logs must have a small end diameter of 12 inches or more and at least 20 feet long or an equivalent volume. ▪ In areas where wildlife reserve trees are left, the largest diameter wildlife reserve trees shall be retained to meet the needs of cavity nesters. Where possible, larger trees with numerous cavities should be retained and count as recruitment trees. 	<p>Port Blakely will follow Forest Practices Rules while conducting commercial thinning operations; however, to ensure a high chance that wildlife trees will be present during regeneration harvest, Port Blakely will implement one of the following specific conservation measures to retain, recruit, or create snags:</p> <ul style="list-style-type: none"> ▪ Prescription 1: Two defective trees per acre will be retained. Defective trees are defined, but not limited, damaged or deformed live trees in the management unit with characteristics such as broken, multiple, bayonet or candelabra tops, or having sinuosity characteristics, i.e. Type 1 wildlife reserve trees described in the Forest Practices Rules (WAC 222-16-010). ▪ Prescription 2: One defective tree per acre will be retained and one snag per acre will be created using mechanical topping at 12 to 18 feet, girdling or chainsaw boring. When selecting trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest. ▪ Prescription 3: Two snags per acre will be created using mechanical topping at 12 to 18 feet, girdling, or chainsaw boring. When selecting trees for snag creation, priority will be given to residual leave trees from the previous regeneration harvest. <p>Port Blakely will follow Forest Practices Rules for green recruitment trees, and for providing wildlife reserve trees when they are available (WAC 222-30-020). Often wildlife trees are not available as a result of past forest management activities or because they were removed to comply with safety requirements. While conducting regeneration harvest, Port Blakely will ensure that wildlife reserve trees are present by implementing one of the following specific conservation measures to retain, recruit, or create snags:</p> <ul style="list-style-type: none"> ▪ Prescription 1: Regardless of the number of residual snags present within a regeneration harvest unit, Port Blakely will create additional snags at a rate of 20 per 100 acres and retain six green recruitment trees per acre (diameter class representative of the stand). 	<p>A greater number of snags and defective trees distributed across the landscape would be available for wildlife than would occur under standard rules.</p> <p>During commercial thinning operations, Port Blakely will manage the covered area to ensure two snags or defective trees, or a combination, remain as snags or develop into snags between the period of commercial thinning and regeneration harvest with the intent of providing prey habitat and improving the quality of dispersal habitat. These snags will be managed according to the prescriptions under regeneration harvest, if still available.</p> <p>Manage for a minimum of two snags and three green recruitment trees per acre; an increase of two snags and one green recruitment tree over standard Forest Practices Rules.</p> <p>Retention of green retention trees for the life of the SHA / LOP / CHEA Agreement.</p>

Port Blakely Activity/Element	Option	Without SHA, LOP, and CHEA	With SHA, LOP, and CHEA	Difference (net conservation benefit)
		<ul style="list-style-type: none"> For safety reasons, wildlife reserve trees and recruitment trees may be left in clumps. No point within the harvest unit shall be more than 800 feet from a wildlife reserve tree or green tree recruitment area. For safety reasons, Type 3 and 4 wildlife reserve trees may be removed. 	<ul style="list-style-type: none"> Prescription 2: Port Blakely will retain two snags per acre (either residual or created) and supplement current Forest Practices Rules requirements with one additional green recruitment tree for a total of three trees per acre. All wildlife reserve trees designated during the term of the Agreement will be retained for the term of the Agreement and will not be considered available for regeneration harvest as adjacent stands become eligible. 	
		Riparian management zones will be managed per WAC 222-30-021.	Riparian management zones will be managed per WAC 222-30-021.	No difference.
Salvage	n/a	Salvage would be conducted per WAC 222-30.	Salvage would be conducted per WAC 222-30, however, during salvage operations, an additional two downed logs per acre will be retained to promote the conservation of biological diversity within managed stands. The downed logs will measure 12 inches or greater on the small end and have a length greater than or equal to 20 feet or equivalent volume. During salvage, special efforts will be made to avoid disturbing shade-tolerant saplings, such as western red cedar and western hemlock. This practice will retain forest understory and promote the development of a more structurally diverse forest canopy. As with thinning entries, existing downed wood is retained and left undisturbed whenever possible.	<p>A greater amount of down wood will be left in the salvage area than is required under standard forest practices rules.</p> <p>Areas in which salvage operations occur would have a more developed understory, than would occur under standard forest practices rules.</p>
Special Management Areas	n/a	Sensitive sites as defined in WAC 222-16 would be protected as required under WAC 222-30-021. These sites not required to be protected during subsequent harvest operations.	<p>In addition to sensitive sites defined by WAC 222-16, Port Blakely recognizes inventory types on the Morton Block as potentially containing unique habitat features or requiring additional permitting under Forest Practices Rules. These are defined as Special Management Areas (SMAs). Trees left in association with designated SMAs will be retained for the Agreement term. These SMAs often contain landforms or habitat features that have high conservation value compared to other inventory types. In Port Blakely's land inventory, SMAs are divided into five categories:</p> <ul style="list-style-type: none"> Leave tree areas; Potentially unstable slopes; Forested wetlands; Cliffs, talus slopes, rock outcrops, and caves; and Shrub and meadow. 	<p>Special management areas provide additional protection to potentially sensitive resources compared to what is required under current forest practices rules.</p> <p>In addition, under forest practices, leave tree areas may be harvested in the future, however, trees in the designated SMAs will be retained for the term of the Agreement providing potential owl and murrelet nesting habitat.</p>

Port Blakely Activity/Element	Option	Without SHA, LOP, and CHEA	With SHA, LOP, and CHEA	Difference (net conservation benefit)
Special set-aside areas.	n/a	n/a	Port Blakely has identified five areas within the Morton Block that are unique sites and believed to have high conservation value. These areas are well distributed across the covered lands and total 550 acres; 359 acres forested and 191 acres non-forested (rock bluffs, talus slopes, etc). The forest cover is primarily Douglas-fir ranging in age from 76 to 113 years old. Under current Forest Practice Rules, Port Blakely could conduct management activities, i.e. timber harvest, on 216 of the 359 forested acres in these Special Set-Aside (SSA) areas. However, Port Blakely will defer harvest activities on these five SSAs in an effort to provide enhanced long-term habitat for owls and murrelets. By not operating within these SSAs for the term of the Agreement, stands will mature to an age of 136 to 173 years and will have the potential to provide foraging and nesting areas for owls and nesting areas for murrelets as adjacent stands mature to 60 years of age.	Special set-aside areas will provide a greater amount of older forest habitat within the covered area than would occur under current forest practices rules. These areas (359 acres) will be conserved (retained) for the life of the SHA / LOP / CHEA Agreement; providing older trees (approximately 136-173 years) by the end of the Agreement. These are trees that could provide nesting opportunities to both owls and murrelets; opportunities that would not occur under standard forest practices.
Potential murrelet nesting habitat protection	n/a	n/a	Port Blakely has identified 498 acres of potential marbled murrelet nesting habitat, defined as stands that are >7 acres in size and >81 years old, that would be protected for the term of the Agreement. 275 of these acres are located within SSAs (see above) and 223 acres are outside of SSAs.	Potential murrelet nesting habitat protection would provide a greater amount of older forest habitat within the covered area than would occur under current forest practices rules. These areas (498 acres total, 233 acres not included in SSAs) will be conserved (retained) for the life of the SHA / LOP / CHEA Agreement; providing older trees (approximately 136-173 years) by the end of the Agreement.
Nest site protection	n/a	Currently no nesting habitat; no nesting habitat would develop outside of riparian zones.	Nesting habitat would develop in SMAs and SSAs, and could develop in other areas of the covered lands.	Should a nest site be discovered, up to three nest sites would be protected in any given year for each species for a minimum of three years.
Alternate Plans	n/a	Only as necessary to meet Forest Practices Rules with comparable results, i.e. equal in its effectiveness.	Port Blakely may, at its discretion, use the Alternate Plan provisions to pursue activities that may enhance owl and murrelet habitat within riparian zones, and other forested leave areas, e.g. SMAs.	With an SHA, Port Blakely has the ability to develop owl and murrelet habitat in areas they otherwise would not consider for special management other than what is required by Forest Practices Rules.

Dbh = diameter at breast height; RD = Relative Density; TPA = Trees per acre; YFM = Young Forest Marginal

By applying a series of site-specific silvicultural prescriptions and the protective measures described in the current Forest Practices Rules, stands in the covered area would develop greater within-stand structural diversity, including additional downed wood and snags. This would be accomplished by managing forested lands to produce an average rotation length of 60 years for conifer-dominated stands and by applying silvicultural prescriptions to produce the within-stand structural conditions needed to facilitate owl dispersal between areas of mature conifer-dominated forest habitat. Where practical, Port Blakely would use pre-commercial thinning and/or commercial thinning prescriptions to reduce tree density within young developing stands in areas where ground-based logging is possible.

Port Blakely's experience is that these prescriptions will increase the variability in tree spacing within stands and encourage the development of understory shrubs. Treated stands should have a high likelihood of achieving the conditions needed to achieve dispersal habitat by age 40, as defined by WDNR (WAC 222-16-085). Table 4-2 shows the projected acreage of each stand age class by decade expected to occur by Port Blakely's forest management activities conducted under the Agreement.

Table 4-2. Acreage in Each Stand Age Class by Decade*

Age Class (years)	2007 (acres)	2017 (acres)	2027 (acres)	2037 (acres)	2047 (acres)	2057 (acres)	2067 (acres)
0-10	8,462	7,126	7,286	5,909	10,139	2,260	7,054
11-20	2,405	7,242	7,126	7,286	5,909	10,139	2,260
21-30	10,918	2,405	7,242	7,126	7,286	5,909	10,139
31-40	6,661	10,918	2,405	7,242	7,126	7,286	5,909
41-50	8,084	6,661	10,918	2,405	7,242	7,126	7,286
51-60	5,425	8,084	6,661	10,918	2,405	7,242	7,126
61-70	1,913	871	798	751	779	145	188
71-80	390	708	871	798	751	779	145
81 plus	632	876	1,584	2,457	3,255	4,006	4,784
Non-forest	416	416	416	416	416	416	416

* Total acreage by decade varies by up to 2 acres due to rounding.

Conifer stands receiving these prescriptions, in combination with the snag program, are expected to provide owls with dispersal opportunities for an additional 20 years prior to stand harvest. This habitat condition would not occur if Port Blakely were to manage the Morton Block on an average 45-year rotation.

By ensuring an adequate distribution of dispersal habitat throughout the covered area, establishing permanent set-asides to address fish and riparian habitat conservation, and implementing additional conservation measures, Port Blakely covered lands can contribute to dispersal of owls within this area and, thus, contribute significantly to

the recovery of the owl within the Mineral SOSEA, and provide potential habitat for murrelets. These efforts are expected to fulfill the requirements necessary to obtain approval from FWS and the State for their respective conservation plan/agreements.

In addition to implementing this thinning regime on the covered lands suitable for ground-based logging, Port Blakely also agrees to implement specific conservation measures to enhance the vertical and horizontal diversity in stand conditions on the covered lands.

- Where they exist, three legacy trees and two safe snags would be retained within stands, according to Forest Practices Rules, to enhance structural diversity and contribute to owl foraging habitat.
- Where they are scarce, snags would be created artificially during thinning and regeneration harvest operations, in areas permitting ground-based logging methods, to increase their overall availability in the landscape, according to the snag program (see Section 4.1.6).
- For thinning activities, one or two snags will be created depending on availability of existing defective trees.
- For regeneration harvest activities, either an additional 20 snags per 100 acres will be created or two snags per acre will be created depending on the number of green recruitment trees per acre being retained.
- Up to six green reserve trees per acre would be retained at final harvest to ensure there are adequate legacy trees to enhance stand diversity during the next rotation; these trees would continue to grow and gain in size and may be recruited as snags (naturally or created) or down wood.
- Areas on the covered lands where local terrain features create significant operational constraints or add significantly to harvest costs would be delineated as SSAs (and mapped in a GIS) and would be deferred during the SHA period; such areas would contribute to the overall availability of mature forest available over the covered area.

In addition to these conservation measures, Port Blakely also agrees to collaborate with state and federal biologists in research efforts on their lands to enhance understanding of how owls and their prey use managed forest landscapes, and to conduct periodic forest inventories to monitor changes in the amount and distribution of forest stand conditions in the covered area. Port Blakely will also monitor a subset of created snags to determine their persistence and evidence of cavity development.

In summary, more diversity, more forest stand structure, more mature forest with snags and down wood that is owl prey habitat, larger trees with potential to function as nest structures, and more dispersal habitat distributed throughout the ownership, would occur as a result of these management activities. These habitat growth and enhancements would not occur if Port Blakely were to continue conducting their forest management activities under standard Forest Practices Rules.

Port Blakely agrees to undertake management activities under the SHA/LOP/CHEA that will enhance habitat for owl and murrelets. The net benefits for each species are described below.

4.2.2. Northern Spotted Owl

Owls require open understory forests to facilitate dispersal, with snags, downed wood and some understory shrubs for prey species. Over half of the covered area (59%) occurs within the Mineral SOSEA. The principal objective of this designated area where it overlaps with Port Blakely ownership is to facilitate the dispersal of owls between blocks of federal lands (Gifford Pinchot National Forest, Mount Saint Helens National Monument). Port Blakely's ownership is strategically positioned at a location that can significantly contribute to the connectivity goals of this SOSEA. In addition, Port Blakely will conduct their forest management activities with respect to developing owl dispersal habitat across the entire Morton Block.

Port Blakely will manage certain conifer-dominated forest stands in a manner that has the potential to achieve desirable mature forest conditions that is expected to function as owl dispersal habitat both inside and outside the Mineral SOSEA. For purposes of determining the amount of functional dispersal habitat, Port Blakely has identified unmanaged (not thinned) conifer stands greater than 50 years of age and managed (commercially thinned) stands greater than 40 years of age as having the conditions necessary to provide dispersal opportunities for owls. Under Port Blakely's thinning regime, the prescriptions to retain, recruit, or create snags will likely provide functional dispersal habitat and foraging opportunities if prey habitat, in the form of snags and defective trees, is present.

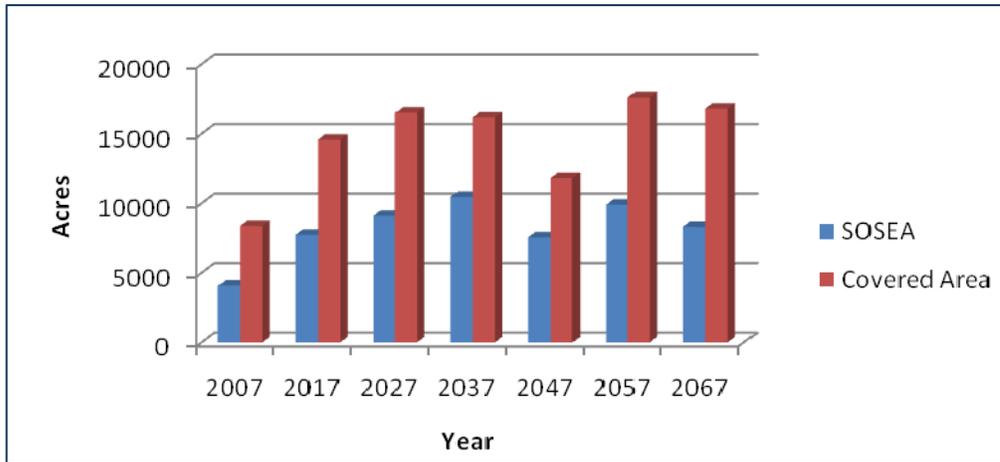
Dispersal habitat will change over time from an initial amount of 8,360 acres in the covered area at the beginning of the SHA/LOP term, increasing to over 16,000 acres mid-term, decreasing in the 4th decade to approximately 12,000 acres, and peaking in the 5th decade to 17,600 acres. During the entire SHA/LOP term, the amount of dispersal habitat in the Mineral SOSEA will be maintained above 7,500 acres from an initial amount of approximately 4,100 acres (Table 4-3 and Figure 4-1).

Table 4-3. Dispersal Habitat* in the SOSEA and the Covered Area by Decade

	2007 (acres)	2017 (acres)	2027 (acres)	2037 (acres)	2047 (acres)	2057 (acres)	2067 (acres)
SOSEA	4083	7720	9109	10450	7546	9894	8291
Covered Area	8360	14577	16517	16170	11807	17609	16794

*Dispersal habitat is defined as stands older than 40 years of age, if commercially thinned; and older than 50 years of age if not commercially thinned.

Figure 4-1. Dispersal Habitat* in SOSEA and in the Covered Area under SHA and LOP



*Dispersal habitat is defined as stands older than 40 years of age, if commercially thinned; and older than 50 years of age if not commercially thinned.

A comparison of dispersal habitat that Port Blakely would provide by managing their forest stands under standard Forest Practices Rules (without commercial thinning) and under this SHA/LOP (with commercial thinning) is provided in Tables 4-4 and 4-5, and Figures 4-2 and 4-3.

Table 4-4. Dispersal Habitat* in the Covered Area by Decade

	2007 (acres)	2017 (acres)	2027 (acres)	2037 acres)	2047 (acres)	2057 (acres)	2067 (acres)
Forest Practices Rules	8361	3603	4383	4838	5026	5124	5131
SHA and LOP	8361	14577	16517	16170	11807	17609	16794

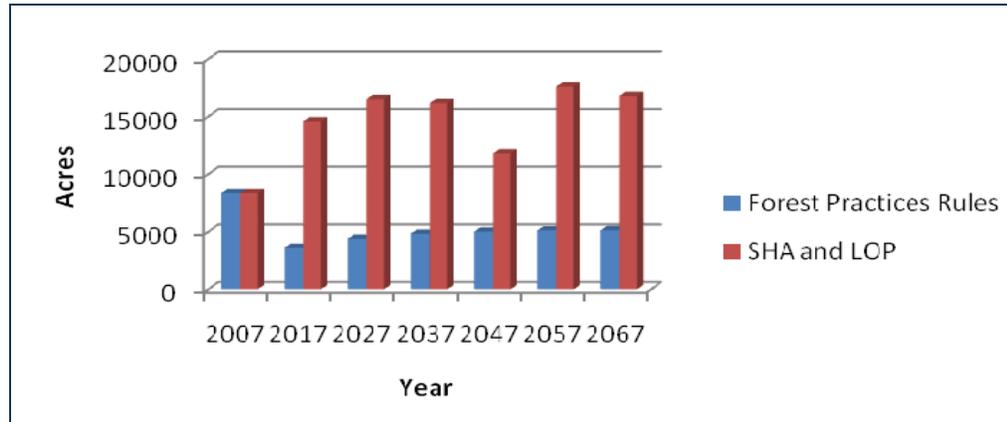
*Dispersal habitat is defined as stands older than 40 years of age, if commercially thinned; and older than 50 years of age if not commercially thinned.

Table 4-5. Dispersal Habitat* in the SOSEA by Decade

	2007 (acres)	2017 (acres)	2027 (acres)	2037 acres)	2047 (acres)	2057 (acres)	2067 (acres)
Forest Practices Rules	4083	1907	2253	2482	2630	2708	2714
SHA and LOP	4,083	7720	9109	10450	7546	9894	8291

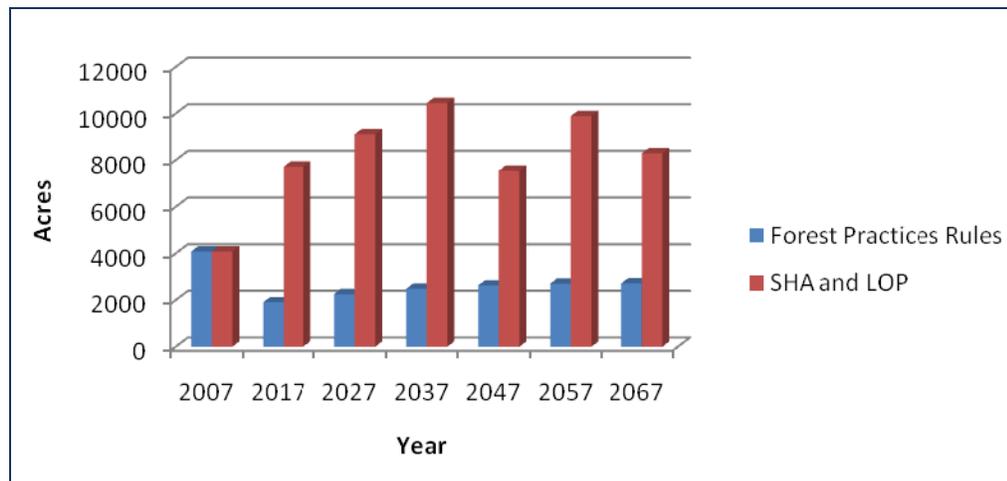
*Dispersal habitat is defined as stands older than 40 years of age, if commercially thinned; and older than 50 years of age if not commercially thinned.

Figure 4-2. Dispersal Habitat* in the Covered Area



*Dispersal habitat is defined as stands older than 40 years of age, if commercially thinned; and older than 50 years of age if not commercially thinned.

Figure 4-3. Dispersal Habitat* in the SOSEA



*Dispersal habitat is defined as stands older than 40 years of age, if commercially thinned; and older than 50 years of age if not commercially thinned.

Port Blakely will manage the forest to provide an increased amount of mature forest by following the current Forest Practices Rules that address aquatic species and riparian habitat. The majority of these areas would be associated with fish-bearing streams, perennial non-fish-bearing streams, wetlands, and areas having unstable slopes. In addition to these areas, Port Blakely has agreed to defer from harvest, for the term of the Agreement, specific SMAs, including leave tree areas, forested wetlands, and unstable slopes not in association with streams. These SMAs will grow into mature forests and complement riparian habitat creating the potential to develop into owl nesting habitat. Port Blakely estimates that approximately 5 to 10% of the covered lands would become SMAs, including both the required riparian habitat SMAs and the voluntary SMAs that will be deferred from harvest for the term of the Agreement.

During the term of the SHA/LOP, some of the leave tree areas would become 120 years in age and would provide large diameter trees. The leave tree areas and the guaranteed snag provisions would improve overall landscape conditions and provide potentially suitable foraging and nesting conditions that could benefit owls.

Finally, if owls should nest on the covered lands, Port Blakely will protect nest sites according to measures described above. These protection measures will ensure that should owls nest on the covered lands, they will have the opportunity to reproduce successfully, at least for the short term.

Conservation measures that develop owl dispersal habitat with foraging potential, and potential owl nesting habitat, along with nest site protection measures, are actions Port Blakely would not otherwise implement were it not for this SHA/LOP; thus, implementation of the SHA/LOP constitutes a net benefit for owls in this forest landscape.

4.2.3. Marbled Murrelet

Similar to the conditions described for owls above, the Forest Practices Rules that result in mature forest conditions developing in riparian areas and the voluntary SMA harvest deferrals will result in larger patches of mature forest conditions across the Morton Block landscape. The leave tree areas, ranging in age from 60 to 120 years over the SHA/CHEA term, will have the potential to provide nesting habitat as adjacent stands mature. It is expected that some of these trees will meet the rule-defined criteria for murrelet nest trees, (trees that are larger than 32 inches dbh in stands at least seven acres in size) when associated with mature stands. During the term of the SHA/CHEA, some of these leave tree areas would reach 120 years in age and would provide large diameter conifer trees with large limbs sufficient to provide nesting platforms and potentially suitable nesting conditions that could benefit murrelets.

Though the SSAs are small in size, they also could provide an opportunity for murrelets to nest, as adjacent stands mature and provide interior forest conditions suitable for murrelet nesting habitat. All 359 forested acres of the SSAs will be retained for the 60-year term of the SHA/CHEA.

The amount of conifer-dominated forest stands in the 81-plus age-class is currently 632 acres (see Table 4-2). While some of these stands do not qualify as a potential murrelet nest stand, i.e. less than seven acres in size, these trees may still function as nesting habitat, especially when surrounding stands approach 60-70 years of age and have the potential to create interior forest. Currently, approximately 498 acres of stands in the 81 years and older age-class are considered to be potential murrelet habitat (conifer-dominated stands at least 7 acres in size). This age class is expected to steadily increase over the term of the SHA/CHEA to 4,784 acres, providing additional potential nesting habitat for murrelets.

Conservation measures to develop potential murrelet nesting habitat, along with occupied nest site protective measures, are actions Port Blakely would not otherwise implement were it not for this SHA/CHEA; thus, implementation of the SHA/CHEA constitutes a net benefit for murrelets in this forest landscape.

4.3. Incidental Take

No owls and murrelets are currently known to occupy the Port Blakely Morton Block. However, because Port Blakely commits to manage the Morton Block for a substantially longer rotation than the typical 45-year rotation, and to implement additional conservation measures, it is possible that these two listed species may occupy the covered area in the future. At such time it is possible that incidental take of the species may occur.

Incidental take would likely be in the form of harm from covered forest management activities that result in habitat degradation, and/or harassment from forest management activities that cause disturbance to covered species. Incidental take in the form of harassment by disturbance could occur anywhere in the covered area. Pre-commercial and commercial thinning will occur in every decade of the Permit term. Harm and harassment could occur during regeneration harvests that will also occur during each decade of the Permit term. Port Blakely will perform routine road maintenance and construction activities, including rock pit development that may disturb covered species. The conditions of incidental take are further described for each species below.

4.3.1. Northern Spotted Owl

Although owls are not known to occur on the covered lands, they do occur on adjacent ownerships. At least 11 owl circles are located on adjacent U.S. Forest Service lands to the south and east of the covered area. Nine of these circle territories overlap Port Blakely's Morton Block.

Through Port Blakely's enhanced forest management efforts, functional owl dispersal habitat in the Mineral SOSEA will range from 4,083 acres in the first decade to 10,450 in the third decade, and decrease to 8,291 acres in the last decade of the 60-year Permit term. Dispersal habitat across the covered lands will range from 8,360 acres in the first decade to a high of 17,609 acres in the fifth decade. The lowest amount of this habitat occurs in the fourth decade at 11,807 acres. At no time during the Permit term will functional dispersal habitat be lower than the current baseline condition. In the future, owls will likely find suitable habitat for dispersal and foraging purposes on the Port Blakely Morton Block as the stands grow older with snags and defective trees developing within. Older forest patches will occur in

riparian areas and be dispersed in patches throughout the tree farm as a result of the SMAs and SSAs. Thus, the probability of an owl pair nesting on the property is possible, although the likelihood is low, because nearby federal lands will contain larger patches of higher quality nesting, roosting, and foraging habitat.

Dispersing juveniles are likely to use the habitat provided on the Morton Block because of its location in the Mineral SOSEA between areas that could contain nesting owls, and because of the mature stands Port Blakely intends to grow. Incidental take of owls, should it occur on the Morton Block, would likely be in the form of disturbance to dispersing owls associated with the covered forest management activities on an annual basis, including but not limited to commercial thinning, regeneration harvest, and road construction and maintenance activities, once larger blocks of contiguous mature stands have developed. Subsequent harm may occur as roosting, foraging, and dispersal habitat is degraded across the covered lands when commercially mature forest stands are harvested. However, there will always be dispersal habitat available for owls to move to when disturbed and this habitat will always be greater than the baseline level available currently. Take in the form of harassment associated with removal of dispersal habitat is difficult to quantify because dispersal habitat will develop and be harvested at different rates throughout the Permit term. However, because Port Blakely can harvest dispersal habitat down to the baseline, under this Agreement and an approved Permit, it is assumed that all but 4,083 acres in the Mineral SOSEA and 8,360 acres across the covered lands will be taken.

If owls are discovered to be nesting on the Morton Block, Port Blakely will implement measures, in coordination with FWS and WDFW, to protect the nest site. Protection measures will be implemented with consideration of the level of importance of the nest. It is expected that only a few owls may nest on the ownership, likely in Port Blakely SMAs near existing owl circles on adjacent U.S. Forest Service lands. Eventually, these nest sites could be taken but it is uncertain how many that would be. Since the baseline for actual occupancy by owls is zero, it is assumed that all nest sites that get established on the covered lands will be taken during the SHA/LOP term.

4.3.2. Marbled Murrelet

Potential murrelet habitat will develop in riparian areas and be dispersed in patches throughout the covered area in the form of SMAs (specific areas identified during harvest operations to leave unmanaged for the Agreement term) and SSAs (areas already identified as important conservation areas that will be protected) (see Sections 4.1.4 and 4.1.5). As stands age, especially in SMAs, they are expected to develop into large trees with branches large enough to support nesting platforms. Older trees with large branches that may form platforms would be available

throughout the Permit term in leave tree areas and SSAs. Existing murrelet habitat amounts to 498 acres across the covered lands, 275 acres in SSAs and 223 acres outside of those areas, i.e. in SMAs, and will be protected for the 60-year permit term. There is a total of 632 acres of forest stands in the 81-plus age class. This habitat is expected to increase to 4,784 acres. If nest trees do develop and become occupied, take of murrelets nest sites is not expected to occur because the SSAs and leave tree areas will be retained throughout the Permit term.

Take that could occur would be in the form of harassment associated with covered forest management activities near an occupied nest site. Although, Port Blakely has agreed to protect nest sites from habitat removal and implement disturbance restrictions for known occupied nest sites for an agreed-upon period of time, take could occur from harassment by forest management activities adjacent to a stand occupied by murrelets. Thus, it's possible, though not probable, that murrelets could occupy these stands and take could occur in association with management of these acres.

4.4. Research

Port Blakely agrees to collaborate with state and federal biologists in research efforts to better understand how their management will influence dispersal habitat conditions in the plan area. Port Blakely will work cooperatively with FWS, WDFW, WDNR, and other entities that have expertise, in designing a statistically robust snag monitoring study within two years of the start date of the Agreement. Port Blakely will also map all leave tree areas, and mark a sample of snag and defective trees for use in snag monitoring studies (see Section 4.5).

Port Blakely acknowledges uncertainty in aspects of the proposed plan. Areas of uncertainty include the likelihood that green retention trees will become snags during the period between commercial thinning and regeneration harvest entries (this period is referred to as the snag window). Both the recruitment success and persistence of snags in the snag window as these relate to snag creation methods described earlier in this document (Section 4.1.6) are also uncertain. In recognition of these uncertainties, Port Blakely will commit to a collaborative partnership with the agencies for the purpose of seeking funds for research that will address these issues. Based on the availability of funds, and in cooperation with the agencies, Port Blakely will commit to a scientific evaluation of various additional snag creation methods for the purpose of generating a better understanding of the effectiveness of snag creation methodologies. Additional collaborative research may investigate aspects of owl dispersal habitat throughout the plan area.

4.5. Monitoring and Reporting

Port Blakely will conduct monitoring activities as follows:

- conduct periodic forest inventories to monitor changes in the amount and distribution of forest stand characteristics on the covered area;
- map all SMAs following regeneration harvest including leave tree areas containing snags and defective trees;
- the snag and leave tree prescriptions employed during commercial thinning and regeneration harvest;
- mark a sample of snags and defective trees in the leave tree areas for purposes of contributing to effectiveness studies; and
- monitor any known nest sites of owls and murrelets while located on the covered lands.

Port Blakely reporting will include, but not be limited to, the following:

- forest management activities, including thinning operations and regeneration harvests that occurred;
- the amount of functional dispersal habitat on the covered lands;
- the amount of potential suitable owl and murrelet nesting habitat;
- maps showing the location of SSAs, and current and newly established SMAs;
- the snag and leave tree prescriptions employed during commercial thinning and regeneration harvest;
- information on marked snags and defective trees retained to improve the quality of owl dispersal habitat;
- any new data on covered species occurrences and/or habitat use; and
- the nest protection strategy being implemented for new owl and murrelet nest sites.

Reports will be provided on a biennial basis for the first 10 years of the Agreement, and every five years for the remainder of the Agreement term.

4.6. Training

To meet the requirements of an LOP to provide a description of a training program, and to ensure that Port Blakely staff and contractors understand the prescriptions of the SHA/LOP/CHEA and associated responsibilities, Port Blakely will conduct the following training activities:

- provide internal SHA/LOP/CHEA implementation training to all Port Blakely employees (foresters, engineers, silviculturalists) that will be working on the Morton block;
- provide these Port Blakely employees, and all contractors, with an illustrated guide describing the management prescriptions and goals of the SHA/LOP/CHEA;
- conduct pre-harvest meetings between Port Blakely foresters and all contractors to review prescriptions and obligations of the SHA/LOP/CHEA prior to the start of contractor work on the Morton block;
- have Port Blakely foresters attend and complete the WDNR unstable slope training; and
- have Port Blakely employees involved in the layout of management units and activities attend an annual pre-management activity planning meeting to ensure that the SHA/LOP/CHEA obligations and prescriptions are understood.

4.7. Funding

Port Blakely has been in the forest products business for nearly 150 years. The company is solvent and will continue to conduct their forest products business to remain operational through the term of this Agreement. As such, they are committed to providing the funding necessary to implement the SHA, LOP, and CHEA.

Chapter 5. Responsibilities of Parties

5.1. Port Blakely Responsibilities

Port Blakely agrees to implement the management actions and other provisions of this SHA, LOP, and CHEA, to adhere to the Terms and Conditions of the Permit, and to provide sufficient funding and other resources necessary to implement the Agreement.

With reasonable advance notice, Port Blakely will allow FWS, WDNR, and WDFW personnel, or other properly permitted and qualified persons designated by FWS, to enter the enrolled property at reasonable hours and times for the general purposes specified in Title 50 Code of Federal Regulations § 13.21(e)(2).

5.2. U.S. Fish and Wildlife Service Responsibilities

Upon execution of the SHA and satisfaction of all other applicable legal requirements, FWS will issue an enhancement of survival permit to Port Blakely in accordance with ESA section 10(a)(1)(A), authorizing take of the covered species as a result of lawful activities on the enrolled property in accordance with the terms of such permit. The term of the permit will be 60 years.

FWS will provide Port Blakely with technical assistance on implementation of the Agreement, to the maximum extent practicable, when requested.

FWS will ensure that the terms of the SHA will not be in conflict with any ongoing conservation or recovery programs for the covered species.

5.3. Shared Responsibilities

Port Blakely and FWS will ensure that the SHA and the actions covered in the SHA are consistent with applicable federal, state, tribal, and local laws and regulations. Port Blakely and WDNR will ensure that Forest Practices Applications are consistent with the LOP, CHEA, and Forest Practices Rules.

Nothing in this SHA will be construed to limit or constrain Port Blakely or FWS, WDNR, and WDFW, or any other entity from taking additional actions at its own expense to protect or conserve the covered species.

Nothing in this SHA will limit the ability of federal and state conservation authorities to perform their lawful duties, and to conduct investigations as authorized by statute and by court guidance and direction.

Port Blakely and FWS will have all remedies otherwise available to enforce the terms of the SHA and the Permit, except that neither will be liable in damages for (1) any breach of this SHA, (2) any performance or failure to perform and obligation under this SHA, (3) termination of the Permit or SHA, or (4) any other cause of action arising from this SHA.

Port Blakely, FWS, WDNR, and WDFW agree to work together in good faith to resolve any disputes, using dispute resolution procedures agreed upon by the parties.

Chapter 6. Landowner Assurances

Through this SHA, FWS provides Port Blakely assurances that if additional conservation measures are deemed necessary, FWS may request such measures, but only if they are limited to modifications within the enrolled property, if any, for the covered species and these measures maintain the original terms of the SHA to the maximum extent possible. Additional conservation measures are voluntary on the part of Port Blakely and will not involve the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of the SHA without the consent of Port Blakely from whom such a commitment is sought or to whom such restrictions would be applicable. Failure of Port Blakely to perform additional conservation measures requested by FWS will not constitute a breach of this SHA or result in any liability under the ESA.

These assurances allow Port Blakely to alter or modify their enrolled property, even if such alteration or modification results in the incidental take of the covered species to such an extent that the take returns the covered species or its habitat to the originally agreed upon or amended baseline conditions. These assurances depend on compliance with the obligations in this SHA and in the Permit by Port Blakely. Further, the assurances apply only to this SHA, only if the SHA is being properly implemented by Port Blakely, and only with respect to the covered species.

Chapter 7. Safe Harbor Agreement Management

An Implementation Agreement (IA) is attached to this SHA as Appendix A. The IA is an integral part of the SHA and enhancement of survival permit, and the terms of the IA guide implementation of both the SHA and enhancement of survival permit. By executing this SHA, both Port Blakely and FWS agree to be bound by the terms of the IA during the term of the SHA and enhancement of survival permit.

The sections below describe provisions contained in the IA and are intended for explanatory purposes only. In the event of conflicts between the SHA, enhancement of survival permit, and IA, the terms of the IA will override the others.

7.1. Safe Harbor Agreement Termination

In accordance with Section 13 of the IA, Port Blakely can relinquish this SHA by providing FWS with 30 days written notice. Port Blakely acknowledges that terminating the SHA will result in a corresponding termination of the Permit and Port Blakely's loss of the regulatory assurances provided by the Permit for the covered species. Port Blakely may return the enrolled property to baseline conditions as provided in the IA, even if the expected net conservation benefits have not been realized, if done prior to the termination date.

7.2. Safe Harbor Agreement Renewal

As provided in Section 6 of the IA, the SHA can be extended with the written approval of both Port Blakely and FWS.

7.3. Safe Harbor Agreement Amendments

As provided in Section 16 of the IA, modifications and amendments to this SHA can be proposed by Port Blakely or the FWS and must be provided to the other Parties in writing. Port Blakely and FWS will have at least 30 days to evaluate proposed modifications or amendments, and all modifications or amendments must be approved in writing by each.

7.4. Transfer of Safe Harbor Agreement Benefits

As provided by Section 11 of the IA, Port Blakely agrees to notify FWS in writing if ownership of all or a portion of the enrolled property is to be transferred to another owner. If Port Blakely transfers full or partial ownership of the enrolled property, FWS will regard the new landowner as having the same rights and obligations as Port Blakely under this SHA, if the new landowner agrees, in writing, to become a Party to the original SHA and any subsequent amendments.

7.5. Land Acquisitions & Dispositions

As provided in Section 11 of the IA, Port Blakely may add, at their discretion, new forest lands acquired within a 5-mile radius of the lands covered by the original SHA, or at a greater distance if within the Mineral SOSEA, if the intent is to manage the newly acquired lands according to the SHA. This action will only require a notification letter to FWS, and the State if pertinent to the LOP and/or CHEA, stating the location and amount of acres, legal description, and tax parcel numbers of acres acquired.

7.6. Catastrophic Events

It is likely that over the Agreement term, catastrophic events such as fires, ice storms, and wind storms will occur. If the outcome of such events is that forest lands are destroyed or degraded so that potential habitat for covered species is reduced, Port Blakely will make a good faith effort to incorporate the results of such an event into meeting the goals and objectives of the SHA, LOP, and CHEA.

Chapter 8. Signatures

By our signatures below, each Party agrees to abide by and uphold the provisions of this Safe Harbor Agreement, the Implementation Agreement attached in Appendix A, and any conditions of the Enhancement of Survival Permit associated with this Safe Harbor Agreement.

Field Office Manager, U.S. Fish and Wildlife Service

Date

President, Port Blakely Tree Farms, L.P.

Date

Chapter 9. References

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Appendix A

Implementation Agreement

IMPLEMENTING AGREEMENT

by and between

PORT BLAKELY TREE FARMS, L.P.

and the

U.S. FISH AND WILDLIFE SERVICE

This IMPLEMENTING AGREEMENT (“IA”) is entered into as of the date of issuance of an Enhancement of Survival Permit by the UNITED STATES FISH AND WILDLIFE SERVICE, an agency of the Department of the Interior of the United States of America (“USFWS”), to PORT BLAKELY TREE FARMS, L.P. (“Port Blakely”), hereinafter collectively called the “Parties” and individually, a “Party.”

1.0 RECITALS

The Parties have entered into this IA in consideration of the following facts:

1.1 Port Blakely owns approximately 45,306 acres of commercial forest land in Lewis and Skamania Counties, in the vicinity of Morton, Washington, as more fully described in Appendix B. Such property, as modified from time to time in accordance with Section 11 hereof, is referred to herein as the “Morton Block;”

1.2 Port Blakely, with technical assistance from the USFWS, has prepared a Safe Harbor Agreement (“SHA”) and related conservation plan covering certain listed species under the jurisdiction of USFWS;

1.3 Port Blakely has developed a series of enhancement and management measures to conserve listed species and to meet other applicable requirements of the Endangered Species Act (“ESA”) to support issuance of an enhancement of survival permit (“ESP”) by USFWS pursuant to Section 10(a)(1)(A) of the ESA;

1.4 Port Blakely has developed a conservation plan that provides immediate and long-term benefits to local and regional populations of covered species, causing Port Blakely to, among other things, (a) engage in certain silvicultural activities designed to develop stands of timber which will serve as suitable habitat for certain covered species; (b) adjust timber harvest rates to provide dispersal habitat as well as potential nesting, roosting, and foraging habitat for northern spotted owls, and potential nesting habitat for marbled murrelets; and (c) provide information on the use of managed timber stands by the covered species if they are discovered; and,

1.5 The purpose of this IA is to implement the conservation plan upon which the ESP is based.

THEREFORE, the Parties hereto hereby agree as follows:

2.0 DEFINITIONS

The following terms shall have the following meanings for all purposes of this IA:

2.1 “Agency” means the USFWS.

2.2 “IA” means this Implementing Agreement as the same may be amended from time to time.

2.3 “Baseline Conditions” means those conditions established in Section 3 of the SHA and approved by USFWS upon issuance of ESP.

2.4 “Covered Lands” means the “Morton Block” as that term is defined herein.

2.4 “Covered Species” means northern spotted owl (*Strix occidentalis caurina*) and marbled murrelet (*Brachyramphus marmoratus marmoratus*), as the list of covered species may be modified from time to time in accordance with the terms hereof.

2.5 “ESA” means the Endangered Species Act, 16 U.S.C. § 1531, et seq., as the same may be amended or reauthorized from time to time and any successor statute or statutes.

2.6 “ESP” means the enhancement of survival permit to be issued by the USFWS to Port Blakely as provided in this IA as the same may be amended from time to time in accordance with the terms hereof.

2.7 “Plan” means the certain SHA prepared by Port Blakely, described in Section 1.2.

2.8 “Morton Block” means the property owned by Port Blakely in Southwest Washington as described in Appendix B, as it may be modified from time to time in accordance with the terms hereof.

3.0 INCORPORATION OF THE PLAN

The provisions of Sections 3 and 4 of the Plan are intended to be, and by this reference are, incorporated into this IA. In the event of any direct contradiction between the terms of this IA and the Plan, the terms of this IA shall control. In all other cases, the terms of this IA and the terms of the Plan shall be interpreted to be supplementary to each other.

4.0 TERMS USED

Terms defined and used in the Plan and the ESA shall have the same meaning when used in this IA, except as specifically noted.

5.0 PURPOSES

The purposes of this IA are:

5.1 To ensure implementation of the terms of the Plan;

5.2 To describe remedies and recourse should any Party fail to perform its obligations, responsibilities, and tasks as set forth in this IA; and

5.3 Provide assurances to Port Blakely that, as long as the terms of the Plan and the ESP issued pursuant to the Plan and this IA are fully and faithfully performed, no additional mitigation will be required with respect to covered species except as provided for in this IA, 50 C.F.R. § 17.22(b)(5), or as required by law.

6.0 TERM

6.1 Duration. The ESP, Plan, and this IA will remain in effect for sixty (60) years from the effective date of the ESP unless earlier relinquished or terminated as herein provided.

6.2 Extension. Upon the mutual written agreement of both Parties, the Parties may extend the ESP, Plan and this IA. In furtherance of this provision, the Parties shall meet on or about September 1 of the thirtieth (30th), fortieth (40th), and fiftieth (50th) anniversaries of the effective date of the ESP to discuss potential extension of the ESP, Plan, and IA.

7.0 FUNDING

Port Blakely warrants that it has, and shall expend, such funds as may be necessary to fulfill its obligations under the ESP, the Plan, and this IA. Port Blakely shall promptly notify USFWS of any material change in Port Blakely's financial ability to fulfill its obligations.

8.0 RESPONSIBILITIES OF THE PARTIES

8.1 Port Blakely's Responsibilities. In consideration of the issuance of an ESP authorizing any incidental take which may result from activities conducted in accordance with the Plan, and in consideration of the assurances provided by this IA, Port Blakely agrees to:

- a. Perform all obligations in the Plan, the ESP and this IA; and
- b. Fully fund all costs needed to perform its affirmative obligations under the ESP and the Plan.

8.2 USFWS' Responsibilities. USFWS agrees pursuant to its authorities to:

- a. Issue an ESP to Port Blakely upon execution of this IA authorizing any incidental take of Covered Species which may result from activities conducted in accordance with the Plan. The ESP will include the assurances set forth in 50 C.F.R. § 17.22(c)(5).
- b. Cooperate with and provide technical assistance to Port Blakely as well as to attend meetings requested by Port Blakely to consider matters relevant to the Morton Block, the Plan, and the ESP, or any of the operations or other activities contemplated there-under.

9.0 OCCUPATION BY NON-COVERED OR NEWLY LISTED SPECIES.

After the ESP is issued, a listed species not addressed in the Plan may occupy Covered Lands. Should this occur, Port Blakely may request that USFWS add the species to the ESP. If USFWS concludes that a listed species is present on Covered Lands as a direct result of Port Blakely's conservation actions taken under the Plan, and that addition of the species to the ESP would be consistent with ESA § 7(a)(2), the USFWS will promptly amend the ESP to reflect the changed circumstances and revise the Baseline Condition description to include the newly-listed species as a Covered Species under this IA, setting forth the Baseline Condition for that species as it exists on the date of the permit amendment. Assurances in the ESP will not be extended to non-covered or newly-listed species if their presence is the result of activities not directly attributable to Port Blakely's implementation of the Plan.

10.0 INSPECTIONS AND MONITORING

10.1 Reporting. Port Blakely will provide USFWS with the reports described in Section 4.5 of the Plan at the notice address then in effect for USFWS and will provide any available information reasonably requested by USFWS to verify the information contained in such reports.

10.2 Inspections. The USFWS may inspect the Morton Block in accordance with its applicable regulations. Except where USFWS has reason to believe that Port Blakely may be acting in violation of applicable laws or regulations or in breach of the ESP or this IA, USFWS will notify Port Blakely at least twenty-four (24) hours in advance of its inspection and will allow Port Blakely's representatives to accompany the Agency's representatives making such inspection. The USFWS shall ensure that any individual conducting an inspection of the Morton Block on its behalf performs such inspection in compliance with all regulations and statutes applicable to the Agency and in compliance with all of the terms and conditions of this IA, including without limitation, the requirement of advance notice where applicable. Any entity inspecting the Morton Block will promptly brief Port Blakely on the information learned during any such inspection.

11.0 LAND TRANSACTIONS

11.1 In General. Nothing in this IA, the ESP, or the Plan shall limit Port Blakely's rights to acquire additional lands in and around the Morton Block or elsewhere. Unless such lands are added to the Morton Block in the manner provided below, however, any such lands as may be acquired by purchase, exchange or otherwise will not be covered by the ESP. Nothing in this IA, the ESP or the Plan shall require Port Blakely to include in the Morton Block or to add to the ESP any additional lands it may acquire. Any lands which Port Blakely elects to include in the ESP and the Plan in accordance with this IA shall thereafter constitute a portion of the Morton Block and all references to the "Morton Block" shall be deemed to include a reference to such acquired lands.

11.2 Inclusion of Additional Property as Covered Lands. If Port Blakely acquires any additional lands which are within five (5) miles of the Morton Block or within the Mineral Block Spotted Owl Special Emphasis Area ("SOSEA"), and such lands are not inhabited or regularly

visited by any Covered Species, Port Blakely may, in its sole discretion, elect to include such lands in the ESP in accordance with the terms of this IA. Upon such election, Port Blakely shall provide notice to the USFWS of the inclusion of additional lands, along with a specific description of the location, legal description, and baseline conditions of such additional property. Thereafter, USFWS shall treat the proposed inclusion of additional property as a Minor Modification of the ESP, Plan, and IA pursuant to Section 16.2 of this IA.

11.3 Removal of Property from Covered Lands. Except as provided in this Section, Port Blakely may not sell any lands included in the Morton Block to, or exchange any portion thereof with, any other party during the term of this IA unless (a) the ESP and Plan are modified to delete such lands; or (b) the lands are transferred to a third party who has agreed to be bound by the terms of the Plan and otherwise meets the requirements set forth in Section 11.4 below. In responding to any request to remove lands from Covered Lands, the USFWS shall consent to such proposed removal unless it finds that the proposed removal of land would materially compromise the effectiveness of the Plan. In such a case, the USFWS shall notify Port Blakely in writing of this determination, and the Parties shall promptly meet to discuss potential modifications to the ESP or Plan to address USFWS' concerns. If Port Blakely sells or exchanges any of the lands comprising a portion of the Morton Block and such transfer is permitted by the terms hereof, from and after such transfer, such lands shall not be deemed a portion of the Morton Block and all references to "Morton Block" shall be deemed not to include a reference to such transferred lands.

11.4 Transfers to New Landowner Bound by the Plan. Port Blakely may sell or exchange lands comprising a portion of the Morton Block to a Permitted Transferee. As used herein, a "Permitted Transferee" shall mean a transferee who has elected to be bound by the ESP and Plan as it applies to the transferred lands; and who has, in the reasonable opinion of the USFWS, sufficient financial resources to adequately fund its affirmative obligations under the Plan; and who has entered into an agreement in form and substance reasonably satisfactory to USFWS to implement the terms of the ESP and the Plan. Upon request of the Permitted Transferee, the USFWS will issue an ESP to the Permitted Transferee covering the transferred lands. Port Blakely will not be responsible for the performance of the ESP or Plan on lands transferred to a Permitted Transferee.

12.0 SUSPENSION OF THE ESP

In accordance with the process contained in applicable regulations, USFWS may suspend the ESP for any material violation by Port Blakely of the ESP, the Plan, or this IA, or any other basis for suspension expressly provided for in an Agency regulation.

12.1 Notice Prior to Suspension. Except where USFWS determines that emergency action is necessary to protect any endangered or threatened species, USFWS shall not suspend the ESP without first providing Port Blakely notice in writing of the facts or conduct which may warrant the suspension and the actions necessary to redress the violation(s) and achieve compliance with the ESP and this IA. Such notice will be provided in accordance with applicable regulations. USFWS shall also consult with Port Blakely concerning actions to be taken to effectively redress the violation(s) that would otherwise necessitate a suspension. In addition, USFWS agrees to make good faith efforts to resolve any disputes with Port Blakely in

accordance with the informal dispute resolution mechanism described in Section 14.5 hereof prior to suspending the ESP, unless an immediate suspension is necessary to protect any Covered Species.

12.2 Opportunity to Cure Prior to Suspension. In connection with any notice of suspension given to Port Blakely hereunder, USFWS shall at the same time provide Port Blakely with a written statement of the actions reasonably required to redress the alleged violation(s). Any suspension shall be lifted immediately upon the reasonable determination by USFWS, that the alleged violation(s) has been effectively redressed. Upon full performance of the necessary actions specified by USFWS in its written notice, USFWS shall immediately lift the suspension.

13.0 RIGHTS TO TERMINATE, RELINQUISH, AND REVOKE THE ESP

13.1 Rights of Port Blakely. Port Blakely reserves the right to relinquish the ESP prior to its expiration, and to return Covered Lands back to Baseline Conditions upon either expiration or relinquishment of the ESP.

13.2 Rights of USFWS. The ESP may be revoked by USFWS only in accordance with 50 C.F.R. § 17.22(c)(7).

13.3 Effect of Termination, Relinquishment and Revocation. Any termination, relinquishment, or revocation of the ESP automatically terminates the Plan and this IA. Activities thereafter conducted on the Morton Block will be subject to all applicable provisions of the ESA and related regulations as if the ESP had never been issued. A termination or revocation by USFWS limited to one or more species but less than all of the species then provided for in the ESP shall apply only to the affected species and the ESP and this IA shall continue in full force and effect as to all other Covered Species.

13.4 No Post-Termination Mitigation. The Parties acknowledge that Port Blakely's compliance with the ESP, the Plan and this IA will result in Port Blakely having fully mitigated for any incidental take of any Covered Species prior to the occurrence of such take. Therefore, if Port Blakely is in compliance with the terms of this IA, upon termination, relinquishment, or revocation of the ESP, Port Blakely shall have no further obligations hereunder or under the ESA with regard to Covered Species.

14.0 REMEDIES AND ENFORCEMENT

14.1 In General. Except as set forth below, each Party shall have all remedies otherwise available to enforce the terms of this IA, the ESP, and the Plan.

14.2 No Monetary Damages. No Party shall be liable in damages to any other Party for any breach of this IA, any performance or failure to perform a mandatory or discretionary obligation imposed by this IA or any other cause of action arising from this IA.

14.3 Injunctive and Temporary Relief. The Parties acknowledge that the Covered Species are unique and that their loss as species would result in irreparable damage to the environment, and that therefore injunctive and temporary relief may be appropriate to ensure compliance with the terms of this IA.

14.4 Enforcement Authority of the United States. Nothing contained in this IA is intended to limit the authority of the United States government to seek civil or criminal penalties or otherwise fulfill its enforcement responsibilities under the ESA or other applicable law.

14.5 Dispute Resolution. The Parties recognize that good faith disputes concerning implementation of, or compliance with, or suspension, revocation or termination of this IA, the Plan or the ESP may arise from time to time. The Parties agree to work together in good faith to resolve such disputes, using the dispute resolution procedures set forth in this Paragraph or such other procedures upon which the Parties may later agree. However, if at any time any Party determines that circumstances so warrant, it may seek any available remedy without waiting to complete dispute resolution. If USFWS has reason to believe that Port Blakely may have violated the ESP, the Plan or this IA with respect to any Covered Species, it will notify Port Blakely in writing of the specific provisions which may have been violated, the reasons the Agency believes Port Blakely may have violated them, and the mitigation the Agency proposes to impose to correct or compensate for the alleged violation. Port Blakely will then have sixty (60) days, or such longer time as may be mutually acceptable, to respond. If any issues cannot be resolved within thirty (30) days, or such longer time as may be mutually acceptable, after Port Blakely's response is due, the Parties will consider non-binding mediation and other alternative dispute resolution processes. The Parties reserve the right, at any time without completing informal dispute resolution, to use whatever enforcement powers and remedies are available by law or regulation, including but not limited to, in the case of the USFWS, suspension or revocation of the ESP.

15.0 LIMITATIONS AND EXTENT OF ENFORCEABILITY

15.1 Safe Harbor Assurances. Until revocation, relinquishment, termination, or expiration of the ESP, Port Blakely may use Covered Lands in any otherwise lawful manner that does not move such Covered Lands below Baseline Conditions as those terms are defined in this IA and the Plan. These assurances remain valid for as long as Port Blakely complies with the Plan and the ESP. In return for Port Blakely's efforts, the USFWS will authorize incidental take of Covered Species under Section 10 (a)(1)(A) of the ESA, and comply with all other No Surprises policies and regulations then in force. The resulting ESP shall permit Port Blakely to lawfully take Covered Species or to modify habitat on Covered Lands to return population levels and habitat conditions to those agreed upon as Baseline Conditions.

15.2 Property Rights and Legal Authorities Unaffected. Except as otherwise specifically provided herein, nothing in this IA shall be deemed to restrict the rights of Port Blakely to use or develop Covered Lands; *provided*, that nothing in this IA shall absolve Port Blakely from such other limitations as may apply to such lands, or interests in land, under other laws of the United States and the State of Washington.

15.3 Property Rights Retained. The Parties recognize that Covered Lands may provide multiple benefits beyond conservation of Covered Species, including, but not limited to, carbon sequestration benefits, clean water benefits, and open space benefits ("Additional Benefits"). Nothing in this IA is intended to limit Port Blakely's rights to participate in any program or enter into any agreement to recognize the full financial value of these Additional Benefits, provided

that Port Blakely complies with the ESP. To give maximum effect to this provision, the Parties agree as follows:

a. Nature of Agreements. The Parties agree that Port Blakely has entered into the ESP, Plan and this IA on a voluntary basis. Upon Port Blakely's request, USFWS shall inform third parties of the voluntary nature of the ESP, Plan and this IA.

b. Cooperation Among the Parties. USFWS and Port Blakely will cooperate to identify and implement actions, including, but not limited to, temporary suspension of the ESP, that will permit Port Blakely to recognize the full financial value of all Additional Benefits.

16.0 MODIFICATIONS AND AMENDMENTS

16.1 Modifications to this IA. This IA may be amended only with the written consent of each of the parties hereto.

16.2 Minor Modifications.

a. Procedures. Either Party may propose minor modifications to the Plan, the Permits or this IA ("Minor Modifications") by providing written notice to the other Party. Such notice shall include a statement of the reason for the proposed modification and an analysis of its environmental effects, including its effects on operations under the Plan and on Covered Species. The Parties shall use reasonable efforts to respond to proposed modifications within thirty (30) days of receipt of such notice. Proposed Minor Modifications shall become effective, and the Plan shall be deemed modified accordingly, immediately upon both Parties' written approval. Among other reasons, a Party may object to a proposed minor modification based on a reasonable belief that such modification would result in adverse effects on the environment that are new or significantly different from those analyzed in connection with the original Plan, or additional take not analyzed in connection with the original Plan. If a Party objects to a proposed Minor Modification, the proposal is not approved as a Minor Modification but may be processed as an amendment of the ESP in accordance with Section 16.3.

b. Examples. Minor modifications to the Plan, ESP, and this IA include, but are not limited to, the (1) corrections of typographic, grammatical, and similar editing errors that do not change the intended meaning; (2) correction of any maps or exhibits to correct errors in mapping or to reflect previously approved changes in the Permits or the Plan; (3) minor changes to survey, monitoring or reporting protocols; and (4) clarifications to vague or undefined language or phrases; (5) the addition or removal of Covered Lands in accordance with Section 11 of this IA; and (6) the addition of non-covered or newly-listed species in accordance with Section 9.1 of this IA.

16.3 Amendments. Any modifications to the Plan or this IA other than those made pursuant to Section 16.2 of this IA shall be processed as an amendment of the Plan, Permits and IA in accordance with all applicable legal requirements, including but not limited to the ESA, National Environmental Policy Act, and applicable USFWS regulations.

17.0 MISCELLANEOUS PROVISIONS

17.1 No Partnership. Neither this IA nor the Plan shall make or deemed to make any Party to this IA the agent or partner of the other Party.

17.2 Severability. If any provision of this IA or the Plan is found invalid or unenforceable, such provision shall be enforced to the maximum extent possible and the other provisions shall remain in effect to the extent they can be reasonably applied in the absence of such invalid or unenforceable provisions.

17.3 Successors and Assigns. This IA and each of its covenants and conditions shall be binding on and shall inure to the benefit of the Parties and their respective successors and assigns. Assignment or other transfer of the ESP shall be governed by the USFWS' regulations under the regulations in force at the time.

17.4 Notice. Any notice permitted or required by this IA shall be in writing, delivered personally to the persons listed below, or shall be deemed to be given five (5) days after deposit in the United States mail, certified and postage prepaid, return receipt requested and addressed as follows, or at such other address as any Party may from time to time specify to the other Parties in writing. Notices may be delivered by facsimile or other electronic means, provided that they are also delivered personally or by certified mail. Notices shall be transmitted so that they are received within the specified deadlines.

Port Blakely:	President Port Blakely Tree Farms, LP 8133 River Drive, SE Tumwater, WA 98501 Phone: (360) 570-1992 Fax: (206) 624-9745
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USFWS:	Field Office Supervisor U.S. Fish & Wildlife Service Lacey, WA 98503 Telephone: 360-753-9440 Fax: 360-753-9460
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17.5 Elected Officials not to Benefit. No member of or delegate to Congress shall be entitled to any share or part of this IA, or to any benefit that may arise from it.

17.6 Availability of Funds. Implementation of this IA and the Plan by the Services is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this IA shall be construed by the Parties to require the obligation, appropriation or expenditure of any money from the U.S. Treasury. The Parties acknowledge that the Services shall not be required under this IA to expend any federal agency's appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

17.7 No Third Party Beneficiaries. Without limiting the applicability of rights granted to the public pursuant to the ESA or other federal law, this IA shall not create any right or interest in the public, or any member thereof, as a third-party beneficiary hereof, nor shall it authorize anyone not a Party to this IA to maintain a suit for personal injuries or damages pursuant to the provisions of this IA. The duties, obligations, and responsibilities of the Parties to this IA with respect to third parties shall remain as imposed under existing law.

17.8 Relationship to the ESA and Other Authorities. The terms of this IA shall be governed by and construed in accordance with the ESA and applicable federal law. In particular, nothing in this IA is intended to limit the authority of the Services to seek civil or criminal penalties or otherwise fulfill their responsibilities under the ESA. Moreover, nothing in this IA is intended to limit or diminish the legal obligations and responsibilities of the Services as agencies of the federal government. Nothing in this IA shall limit the right or obligation of any federal agency to engage in consultation required under Section 7 of the ESA or other federal law; however, it is intended that the rights and obligations of Port Blakely under the Plan and this IA shall be considered in any consultation concerning Port Blakely's use of the Plan Area.

17.9 References to Regulations. Any reference in this IA, the Plan or the ESP to any regulation or rule of the USFWS shall be deemed to be a reference to such regulation or rule in existence at the time an action is taken, except that Port Blakely may rely on state and federal regulations in effect at the time this IA became effective to protect its rights under this IA.

17.10 Applicable Laws. All activities undertaken pursuant to this IA, the Plan or the ESP must be in compliance with all applicable state and federal laws and regulations.

17.11 Terms Do Not Run With the Land. The terms hereof are not intended to run with the land and will not bind subsequent purchasers of timberlands in the Morton Block.

17.12 Entire Agreement. This IA, together with the Plan and the ESP, constitute the entire agreement among the Parties. The terms contained in this IA supersede any and all other agreements, either oral or in writing, among the Parties with respect to the subject matter hereof and contains all of the covenants and agreements among them with respect to said matters, and each Party acknowledges that no representation, inducement, promise or agreement, oral or otherwise, has been made by any other Party or anyone acting on behalf of any other Party that is not embodied herein. The Parties agree that this IA forms an integral part of the ESP and the Plan, and that execution of the ESP and Plan by the Parties shall constitute full acceptance of the terms of this IA.

Appendix B

Legal Description of the Morton Block

Appendix B

Morton Block ownership locations

Township	Section
Range	
10N06E	1
11N03E	1,2,3,4,5,6,7,8,9,10,11,12
11N04E	4,5,6,7,9,10,11,12,13,24
11N05E	1,2,3,4,5,6,7,8,10,11,12,15,16,18,19,20,30
11N06E	1,2,3,4,5,6,7,8,9,10,11,12,13,16,24,25,26
12N03E	36
12N04E	1,22,31,32
12N05E	1,2,4,6,7,8,10,12,16,17,18,20,21,24,26,27,28,30,33,34,35,36
12N06E	6,7,10,14,15,16,17,18,19,20,21,22,23,26,27,28,29,30,31,32,34,36
12N07E	28
13N03E	25
13N04E	26,32,35
13N05E	4,6,20,27,28,32,36
14N04E	1
14N05E	6,30,32

Appendix C

List of Preparers, Contributors, and Advisors

List of Preparers, Contributors, and Advisors

This document was developed and prepared by Port Blakely Tree Farms LP staff, with assistance from their consultants Kirkpatrick & Lockhart Preston Gates Ellis LLP and ICF Jones & Stokes, and under the direction and guidance of the U.S. Fish and Wildlife Service, the Washington Department of Natural Resources, and the Washington Department of Fish and Wildlife. The following individuals contributed to the preparation of this SHA/LOP/CHEA.

Name	Affiliation	SHA/LOP/CHEA Responsibility
Court Stanley	Port Blakely Tree Farms, President	Oversight and approval
Duane Evans	Port Blakely Tree Farms, Vice President, U.S. Forestry Operations	Co-Project Manager and technical content
S. Blake Murden	Port Blakely Tree Farms, Wildlife and Fisheries Manager	Co-Project Manager and technical content
Chris Lacy	Port Blakely Tree Farms, GIS Forester	Data and map figures
Jim Michaels	U.S. Fish and Wildlife Service, Conservation Planning Supervisor	ESA process and technical oversight
Mark Ostwald	U.S. Fish and Wildlife Service, Project Lead	SHA technical input and review
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