RESOURCES

NATURAL

Habitat Conservation Plan for State Trust Lands **2007 Annual Report**

November 2007

WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland - Commissioner of Public Lands

Habitat Conservation Plan for State Trust Lands **2007 Annual Report**

November 2007

Ecosystem Services Section
Land Management Division

WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland - Commissioner of Public Lands

Acknowledgements

Contributors

Marty Acker
Julie Armbruster
Bob Aulds
Richard Bigley
Angela Cahill
Lisa Cunningham
Lowell Dickson
Allen Estep
Jeff Grizzel
Joshua Halofsky
Peter Harrison
Andrew Hayes
Pat Hennessy
Pete Holmberg
Sabra Hull
Jim Hotvedt
Christina Kellum
Eric Lamfers
Sherry Land
Alex Nagygyor
Teodora Minkova
Danielle Munzing
Tami Miketa
Chris Rasor
Jeff Ricklefs
Pat Ryan
Mark Savage
Lislie Sayers
Heidi Stephens
Lee Stilson
Mark Teply
Joanne Wearley
Dave Wilderman
Dave Wolfer
Ned Wright

Editors

Angela Cahill
Jane Chavey
Cassandra Koerner

Cover Photo Credits

Northern spotted owl (*Strix occidentalis caurina*) – Teodora Minkova
Ponderosa pines (*Pinus ponderosa*) – Steve Curry
Oregon spotted frog (*Rana pretiosa*) – W.P. Leonard
Showy stickseed (*Hackelia venusta)* – Jim Barrett

Contributions are by DNR staff unless otherwise indicated.
Copies of this report may be obtained from the Land Management Division, Ecosystem Services Section, 1111 Washington Street, PO Box 47016 Olympia, WA 98504-7016;
http://www.dnr.wa.gov/hcp/

Contents

1. Introduction

The Washington State Department of Natural Resources (DNR) manages roughly 2.1 million acres of forested state trust lands statewide. DNR's Habitat Conservation Plan (HCP) guides management of approximately 1.6 million acres of forested state trust lands within the range of the northern spotted owl (*Strix occidentalis caurina*). Authorized under the Endangered Species Act (ESA), the HCP is a partnership between the National Marine Fisheries Service–now known as NOAA Fisheries Service, United States Fish and Wildlife Service, (collectively, the Services) and DNR. The Habitat Conservation Plan was signed in January 1997.

In general, the HCP guides DNR's management of forested state trust lands west of the crest of the Cascade Mountains and those on the eastern slopes of the Cascades, from the Canadian border to the Columbia River. To manage these areas more efficiently and effectively, HCP lands have been broken into nine planning units based primarily on large watersheds (Figure 1.1). The HCP enables DNR to comply with Endangered Species Act requirements by providing conservation objectives and strategies that provide habitat for listed and unlisted species while providing greater certainty, flexibility, and stability in meeting its trust responsibilities–generating revenue for trust beneficiaries through activities such as harvesting timber and other forest products.

As new scientific data become available and an increased understanding of forest ecosystems is gained, DNR will continue to work with the Services to use adaptive management in adjusting strategies to better accomplish HCP conservation goals.

Planning Units

Figure 1.1. HCP planning units

Westside planning units: Columbia, North Puget, Olympic Experimental State Forest (OESF), South Coast, South Puget, and Straits

Eastside planning units: Chelan, Klickitat and Yakima

The trust lands Habitat Conservation Plan includes habitat conservation strategies for ESA-listed species, unlisted species, and unique habitats.

Elements of the HCP

Conservation Objectives for ESA-listed Species

HCP management objectives focus primarily on habitat conservation and enhancement for species listed under the Endangered Species Act. DNR's habitat management plan identifies specific conservation objectives for the northern spotted owl, marbled murrelet (*Brachyramphus marmoratus*), and riparian dependent species such as bull trout and salmon. These objectives and their specific strategies are designed to conserve and enhance habitats that are ecologically appropriate for the support of both these species and a number of unlisted species.

The pileated woodpecker (*Dryocopus pileatus*) is a state species of concern that gains conservation benefits through the HCP. It is one of many species that use snags, which are identified as a unique habitat in the HCP. Photo courtesy of Alan Dyck.

Multiple Species Conservation Objective

In addition to habitat for ESA-listed species, the conservation objectives developed for the HCP were designed to provide appropriate habitat protection for many other species not currently listed or protected under the ESA. The HCP also provides specific habitat protection appropriate for numerous state-listed species of concern. The department approaches land management planning in this manner to avoid future disruptions due to new ESA listings.

Unique Habitats Objectives

Protection of specific habitats includes identifying and protecting critical habitat types such as caves, cliffs, talus slopes, wetlands, balds, mineral springs, snags, oak woodlands, and large, structurally unique trees. These habitats provide nesting, roosting, hiding, and foraging opportunities for many species.

Adaptive Management

Ongoing research and monitoring may identify needed changes in management practices to address specific species and habitat needs; therefore, the HCP also contains a dynamic, scientifically-based adaptive management strategy.

Highlights from Fiscal Year 2007

Forest Land Planning for the South Puget, Columbia, and Olympic Experimental State Forest Planning Units

Forest land planning is a tool that guides on-the-ground forest management activities. It is responsive to changing conditions that affect forest management (social-cultural,

ecological, and economic) and assists DNR in meeting its HCP and other agency commitments. This planning process allows the department to determine what types and levels of activities—both harvest and non-harvest—are appropriate in a given area. Forest land planning fulfills three major functions. The process:

1) identifies local concerns through a series of meetings with the general public, tribes and DNR foresters, in which maps are used to locate areas of interest or concern;

2) addresses local concerns through the development of forest management strategies; and

3) links department policy with on-the-ground forest management through the development of specific management strategies.

Forest land planning will be completed in each of the HCP planning units. There are currently projects underway in the South Puget, Columbia and OESF Planning Units.

The South Puget forest land planning project began in 2005 with a series of public mapping meetings. In these meetings, participants identified their local issues or concerns on maps and provided information about how they would like to see the area managed (focusing on DNR-managed lands). In July 2006, State Environmental Policy Act (SEPA) scoping meetings were held. At these meetings, participants identified issues and concerns to be addressed in a draft Environmental Impact Statement (EIS), which is expected to be completed in spring 2008. Once the draft EIS is complete, the public, tribes, and stakeholders will have the opportunity to provide DNR with input on the draft. This input will be used to create a final Environmental Impact Statement, which will contain the strategies for the plan itself. The department expects to complete the plan for this planning unit by the end of 2008.

The initial public mapping meetings for the Columbia forest land planning project were held in November 2006, with SEPA scoping meetings following in April 2007. The department plans to publish a draft EIS in early 2009. The Columbia forest land planning project is expected to be completed in late 2009 or early 2010.

Public mapping and SEPA scoping meetings for the OESF forest land planning project took place in summer 2007. In addition, DNR has invited interested parties to participate in a series of focus meetings. These periodic meetings are intended to communicate the project's progress, as well as gain input from attendees. The draft EIS is expected to be completed in 2008, with the final EIS and final forest land plan completed in 2009.

Northern Spotted Owl and Barred Owl Radio Telemetry Study Initiated in Southwest Washington

The goal of this study is to examine responses by northern spotted owls and barred owls to variation in habitat conditions in an intensively managed landscape in southwest Washington. Specific objectives include:

1) Capture, radio-tag, and track both spotted owls and barred owls at two locations on DNR-managed land in southwest Washington. In addition, under a separate agreement, radio-track spotted owls and barred owls at two adjacent locations on

Weyerhaeuser land.

2) Measure detailed habitat conditions in the home ranges of each species based on DNR inventory.

3) Develop a resource selection function for each species. This is a statistical model defined to be proportional to the probability of owl use of a resource unit. For this project, it means that we conclude what resources each species uses based on how many times the species is detected in stands with certain characteristics.

4) Prepare a geographic information system (GIS)-based map of the habitat most likely to be used by each species.

The project started in April 2007. As of August 2007, two spotted owls and six barred owls have been radio-tagged and are being tracked. More birds are expected to be captured and tagged as the project continues.

A culturally modified graffiti tree containing dendroglyphs (carvings) dating to 1925. This is one type of cultural resource DNR screens for and protects.

Cultural Resources Program Enhancements

DNR recognizes the importance of cultural properties, current cultural uses and historic and archaeological sites (cultural resources). Before conducting forest management activities, the department checks with the Department of Archaeology and Historic Preservation (DAHP) to screen for known cultural sites. Additionally, the area of any proposed activity is screened for unknown sites, especially in high probability areas such as stream beds and hilltops. Through consultation with tribes and DAHP, significant cultural sites are protected. The cultural resources program continues to expand to provide better resource identification and protection. More than 11,000 acres of DNR-managed lands were surveyed for cultural resources during fiscal year 2007. In addition, policy and procedure documents for identifying and protecting cultural resources were updated with the adoption of the *Policy for Sustainable Forests* (DNR 2006).

Additional screening tools and resources have been developed to work with current GIS tools. A set of more than 700 GIS-based historic United States Geologic Survey maps dating from 1893 to 1950 were purchased and made available to DNR staff. In addition, DNR is hosting the Federal Bureau of Land Management's historic General Land Office maps inventory. These mapping resources provide additional historic information to use in screening planned activities for the presence of historic sites. They display home, building, and structure sites; springs and wetlands; roads; mines; and other significant and sensitive sites that may require cultural resource surveys or protection. They can be accessed using either the department's State Uplands Viewing Tool or through ArcGIS. Both systems allow field staff to overlay historic maps and proposed boundaries for timber sales or other activities to determine how close the activities may be to cultural resources.

Cultural resources training for technicians and field staff continues to be a priority. Training for DNR staff was conducted in five locations around the state this fiscal year. The intent was to present employees with new and updated information on our commitments and procedures related to cultural resources protection. The training

consisted of reviewing available information sources, updated policies and procedures, and consultation. It also described how to identify potential historic and Native American cultural sites and the procedures for surveying or protecting known sites. A detailed guide for identifying cultural resources was printed and included in the trainings. This guide includes references, procedures, and identification keys/descriptions of historic artifacts and was recognized and deemed a notable practice during the department's 2007 Sustainable Forestry Initiative® (SFI) certification audit.

These Sitka spruces (*Picea sitchensis*) are remnant old growth found in the Queets area using screening tools developed by the Old Growth Definition Committee. One tree was 265 years old. Photo courtesy of Robert Van Pelt.

Westside Old Growth Identification and Management

As part of DNR's commitment to identify and protect older trees and stands with old growth structure, the department held a training session in June 2007 on recognizing old growth forests. The training targeted Westside region wildlife biologists and foresters and included one classroom day and two days in the field. Old growth designees from each Westside district were taught how to recognize and protect old forests and trees. This training supported implementation of DNR old growth, older forest and structurally unique tree policies. The core of this training was instruction from Dr. Robert Van Pelt of the University of Washington. Dr. Van Pelt was one of the three independent panelists on the Old Growth Definition Committee, which developed the department's old growth screening tool, the Weighted Old Growth Habitat Index (see http://www.dnr.wa.gov/htdocs/lm/oldgrowth/index.html).

In addition, a field guide entitled *Identifying Mature and Old Forests in Western Washington* was published in June. The book provides field guidance on old growth and older tree identification. This field guide, written by Dr. Van Pelt, is available in hard copy through DNR's Land Management Division, and can also be found online at: http://dnr.wa.gov/htdocs/lm/oldgrowth/id_guides/index.html. A companion guide for eastern Washington older forests is in production, and is expected to be available early in 2008.

Support for Research, Monitoring, and Other HCP-Related Activities

Funding for research, monitoring, and other projects to support implementation of the Habitat Conservation Plan continues to grow. In the biennium covering fiscal years 2006 and 2007, the agency spent $7.7 million on HCP-related commitments (Figure 1.2). That amount does not include $381,000 spent developing a forest land plan for the OESF, which is another HCP commitment. This $7.7 million compares to $5.4 million spent in the prior biennium (fiscal years 2004 and 2005).

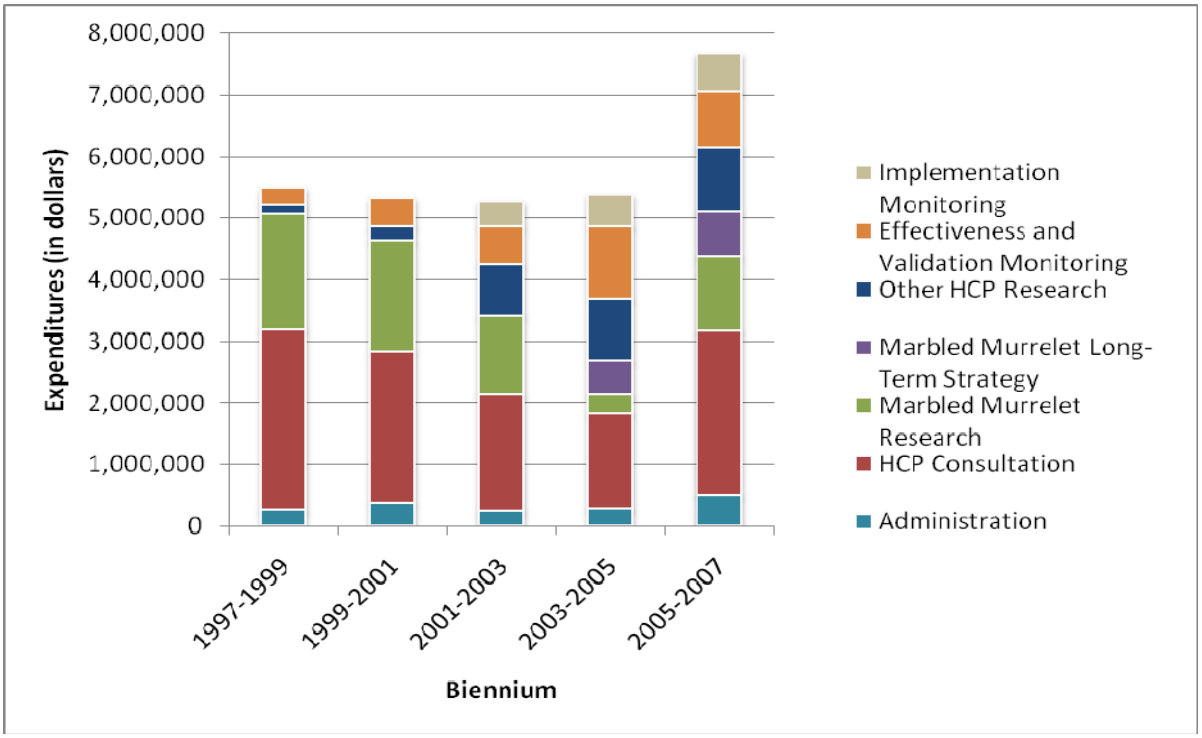


Figure 1.2. Dollars spent on Habitat Conservation Plan-related work, fiscal years 1997 through 2007

In the most recent biennium (2005-2007), 41 percent of the section's dollars were spent on research and effectiveness and validation monitoring. An additional 8 percent was spent on implementation monitoring (Figure 1.2). This includes both projects carried out by DNR staff and those funded by DNR but carried out by other agencies and organizations. Both types of projects help meet HCP commitments. Many of these projects are discussed in Chapter 7. Active external projects that DNR has initiated or endorsed through providing land, labor, and/or other resources include:

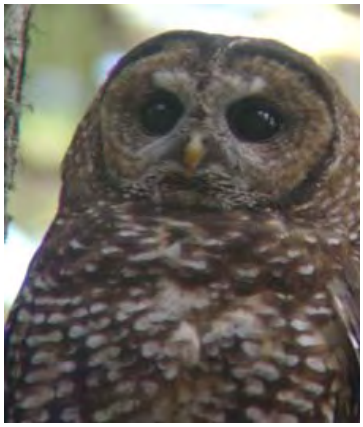
- Northern spotted owl monitoring in the Wenatchee demographic study area in southeast Washington (contracts with National Council for Air and Stream Improvement [NCASI]).
- A radio telemetry study supported by Weyerhaeuser and DNR in southwest Washington to characterize habitat selection by northern spotted owls and associated barred owls (contracts with NCASI).
- A University of Washington study of the physical processes on headwater streams following timber harvest (part of the headwater buffer experimentation project being conducted in cooperation with the USDA Forest Service Pacific Northwest Research Station and University of Washington).
- A multi-agency effort to census marbled murrelet at-sea populations (led by Washington Department of Fish and Wildlife).
- A radio telemetry study sponsored by the USDA Forest Service Pacific Northwest Research Station on marbled murrelet movement patterns, demography, and habitat use.
- A Rayonier Corporation cavity management (creation and maintenance) study in riparian management zones in the OESF.
- A Western Washington University study of groundwater hydrology in the OESF.

- A wind hazard assessment project at the University of British Columbia that includes forested state trust lands in coastal Washington.
- A Washington Department of Ecology water quality effectiveness monitoring study in Mill and Abernathy Creeks.

Additional Projects Undertaken in Fiscal Year 2007

Northern Spotted Owl

- Completed two-years of northern spotted owl surveys in southwest Washington covering 29 known spotted owl sites.
- Installed additional spotted owl effectiveness monitoring sites. The effectiveness of variable density thinning for spotted owl habitat enhancement and maintenance is currently being monitored at five timber sales in four HCP planning units.
- Finalized watershed administrative unit/spotted owl management unit designations inside Nesting, Roosting, Foraging (NRF) and dispersal management areas in the South Puget and Columbia HCP Planning Units.



A northern spotted owl found during demography monitoring in southwest Washington.

Riparian Forest Restoration Strategy

- Completed a Riparian Forest Restoration Strategy (RFRS) pilot project in Olympic Region.
- Conducted two strategy implementation trainings (one for region-designated 'experts' and one for other field staff). In total, 60 people were trained.
- Initiated full implementation of the strategy in western Washington outside of the OESF.
- Established two field trials in stands that are at least 70 years old. A site in the South Puget Planning Unit has been established, and one is being installed in the North Puget Planning Unit.
- Located and began installing additional riparian effectiveness monitoring sites in the North Puget Planning Unit.
- Established a snag development study in the South Puget Planning Unit.

Old Growth

- Continued working on an old growth definition and inventory for eastside forests.
- Conducted two eastside old growth workshops, one for DNR staff and one for external stakeholders.

Marbled Murrelet

- Conducted marbled murrelet radar surveys in North Puget and South Puget Planning Units encompassing approximately 3,500 acres.
- Conducted public scoping for the proposed Marbled Murrelet Long-term Conservation Strategy for the OESF, Straits, South Coast, and Columbia Planning Units.

Earth Sciences

- Conducted site-scale landslide risk assessments for 131 timber sales.
- Completed four landslide hazard zonation projects (which map all potentially unstable slopes in a watershed) and initiated five more projects scheduled for completion in 2008.

Other

- Became a participating member of the Washington Interagency Wolf Committee, sponsored by Washington Department of Fish and Wildlife.
- Initiated a Taylor's Checkerspot Butterfly Management Plan.
- Conducted a Forest Stewardship Council certification audit for the South Puget HCP Planning Unit.
- Continued to address forest health and fire risk in Southeast Washington by treating 5,295 acres through the Forest Improvement Treatment (FIT) Program. In addition to addressing the forest health issues, these treatments will accelerate the development of nesting, roosting, and foraging (NRF) habitat for northern spotted owls. A strategic plan for the FIT program is being developed.
- Modified six procedures and wrote four new procedures to reconcile the Forestry Handbook with the Policy for Sustainable Forests. These procedures help in HCP implementation and include:
  1) Implementing the Riparian Forest Restoration Strategy
  2) Establishing and Managing Eastside Riparian Management Zones (NEW)
  3) Old Growth Timber Harvest Deferral and Protection (NEW)
  4) Identifying and Managing Structurally Complex Forests to meet Older Forest Targets (NEW)
  5) Visual Management
  6) Implementation of the Settlement Agreement (NEW)
  7) Westside Northern Spotted Owl Management
  8) Identifying and Protecting Cultural Resources
  9) Maximum Size for Even-Aged Final Harvest Units
  10) Management of Westside Forest Stand Cohorts (leave trees)

2. Silvicultural Management Activities

The department defines silviculture as the art and science of cultivating forests to deliberately attain objectives. Objectives, in this context, include stand conditions desired to be attained over a rotation (rotational forest management unit [FMU] objectives), percentages of landscapes to be sustained in specified stand conditions (landscape objectives), and transient conditions sought at the conclusion of activities (activity objectives) in order to redirect the development of a forest stand. A rotation is the length of time between when a stand of trees is planted or naturally generates and when it is harvested. A forest management unit is an area of trees and related vegetation that is ecologically similar enough to allow it to be managed to achieve common objectives.

Silvicultural data for this report comes from DNR's Forest Management Planning and Tracking (P&T) database. This database incorporates information related to timber harvests, forest site preparation, forest regeneration, vegetation and pest management, thinning, fertilization, and pruning. The data can be queried by date, forest management unit, HCP planning unit, habitat type, or other criteria. Each year, the HCP Annual Report includes data for all activities reported as complete in P&T during the reporting period.

Trends

DNR uses a number of different types of timber harvests and other silvicultural activities on state trust lands, depending on environmental and economic factors. Many of these activities have been employed on state forested trust lands since HCP annual reporting began (Tables 2.1, 3.2, and 3.3). Some can be used frequently across landscapes, while others are appropriate only in limited locations given a certain set of conditions. These activities are defined in the Glossary of Silviculture Terms at the end of this chapter.

The levels and types of silvicultural management activities practiced on forested state trust lands are governed by landscape and forest management unit rotational objectives, as described above. Emphasis on particular harvest activities may vary from year to year due to market conditions, new policies and procedures, and adaptive management. There are a number of environmental and market conditions that influence where and when certain activities are carried out. However, the first decision filter should always involve the biological capability of each specific site, including suitable tree species and the site's productive capacity. The following paragraphs offer a guide to help the reader understand some of these conditions and factors. In turn, this may help in interpreting the data presented in the tables and figures in chapters 2 and 3.

Proper management regimes vary with site conditions. Ecological constraints, such as unstable slopes and critical habitat, dictate which activities are implemented in a given location. All silvicultural activities are applied within a context of specific objectives to achieve ecological outcomes, a long-term sustainable flow of forest products, and other benefits. DNR employees prioritize activities such as herbicide applications based on available resources and relative benefits.

Economic factors also dictate what can be done at a particular time. Budget allocations and market conditions influence the timing and amount of silvicultural activities that can be carried out.

Purchasers' timber removals, meanwhile, are driven by two main factors: the harvest contract length and market conditions. Timber harvest contract length may be as long as five years, but the average length has been shortened from 36 months in 1991 to 18 months today. The shortening of contract lengths is due to a strengthening market, which reduces the need to allow purchasers a longer contract period to account for market uncertainty.

To further complicate things, timber stands may be sold in one year, but not harvested until as much as five years later. Since this report covers only silvicultural activities completed in one fiscal year, there may be a lag time between changing economic or environmental conditions and changes in levels of reported activities.

There are several noticeable differences in activity levels for fiscal year 2007 compared to those in fiscal year 2006 or the mean from fiscal years 1999 through 2006. For timber harvest activities, the overall acreage was similar to, but slightly lower than, the 8-year mean and fiscal year 2006 acreage. Timber sales and removals remained strong this reporting period. Forest site preparation and forest regeneration in fiscal year 2007 were similar to fiscal year 2006 acreages but significantly higher than the 8-year means. These two activities are directly related to harvest rates and post-harvest site conditions. Site preparation generally follows logging and is designed to enhance the success of the next generation of trees. In addition, DNR has requirements to replant harvested stands. This regeneration is completed as soon as possible following harvest to achieve the highest long-term potential revenue for the trust. Vegetation management acreage was higher than in fiscal year 2006 but lower than the 8-year mean. Vegetation management is done to assure the survival and growth of planted seedlings. With the use of effective site preparation, vegetation management is expected to decrease slightly in future years.

Table 2.1. Silvicultural management activities on HCP-managed lands by planning unit

	Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	FY 2007 Total	8 Year MEAN[1]
Timber Harvest Type	Acres of Activity										
Clearcut		2,277	460	2,491	27	1,992	672	609		8,528	10,570
Seed tree intermediate cut									155	155	152
Shelterwood intermediate cut			365						150	515	306
Phased patch regeneration cut										0	21
Temporary retention first cut										0	66
Salvage cut			276		410	142	79	2		909	506
Smallwood thinning		1,119		428		394			239	2,180	2,368
Late rotation thinning		123	438	368	304	68			333	1,634	1,948
Variable density thinning		857			197		1,107			2,161	341
Selective product logging		26				100	366			492	778
Shelterwood removal										0	37
Two-aged management		14								14	79
Uneven-aged management			256						673	929	1,360
Timber Harvest Totals	0	4,416	1,795	3,287	938	2,696	2,224	611	1,550	17,517	18,532
Forest Site Preparation											
Aerial herbicide		1,914		1,286		652	5			3,857	2,042
Ground herbicide		129	421	497		468	86	70		1,671	536
Ground mechanical			343						811	1,154	702
Hand cutting (slashing)				1						1	30
Pile and burn/broadcast burn		189	252		1	617		21		1,080	271
Site Preparation Totals	*0*	*2,232*	*1,016*	*1,784*	*1*	*1,737*	*91*	*91*	*811*	*7,763*	*3,580*
Forest Regeneration											
Hand planting		3,147	2,653	3,567	651	2,388	1,466	1,506	1,600	16,978	13,665
Natural regeneration						24	7			31	216
Forest Regeneration Totals	0	3,147	2,653	3,567	651	2,412	1,473	1,506	1,600	17,009	13,880

	Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	FY 2007 Total	8 Year MEAN[1]
Vegetation Management											
Aerial herbicide		317		74		742	2			1,135	2,712
Ground herbicide		581	552	737	9	1,140	184	1.072		4,275	3,773
Hand cutting		828		2,945		2,895	1,339	52	150	8,209	8,886
Seeding grass										0	49
Underburn										0	5
Vegetation Management Totals	0	1,726	552	3,756	9	4,777	1,525	1,124	150	13,619	15,424
Pest Management											
Animal repellant		18				273	6			297	49
Animal trapping										0	25
Shielding or fencing										0	81
Aerial pesticide										0	452
Pest Management Totals	0	18	0	0	0	273	6	0	0	297	607
Other											
Pre-commercial thinning		450	651	2,327	3,016	518	712		1,417	9,091	11,441
Forest fertilization										0	1,654
Tree pruning		46								46	32
Other Totals	0	496	651	2,327	3,016	518	712	0	1,417	9,137	13,127
Grand Totals	*0*	*12,035*	*6,667*	*14,721*	*4,615*	*12,413*	*6,031*	*3,332*	*5,528*	*65,342*	*65,037*

[1]These data are mean values for fiscal years 1999 through 2006.

Note: totals may not add due to rounding.

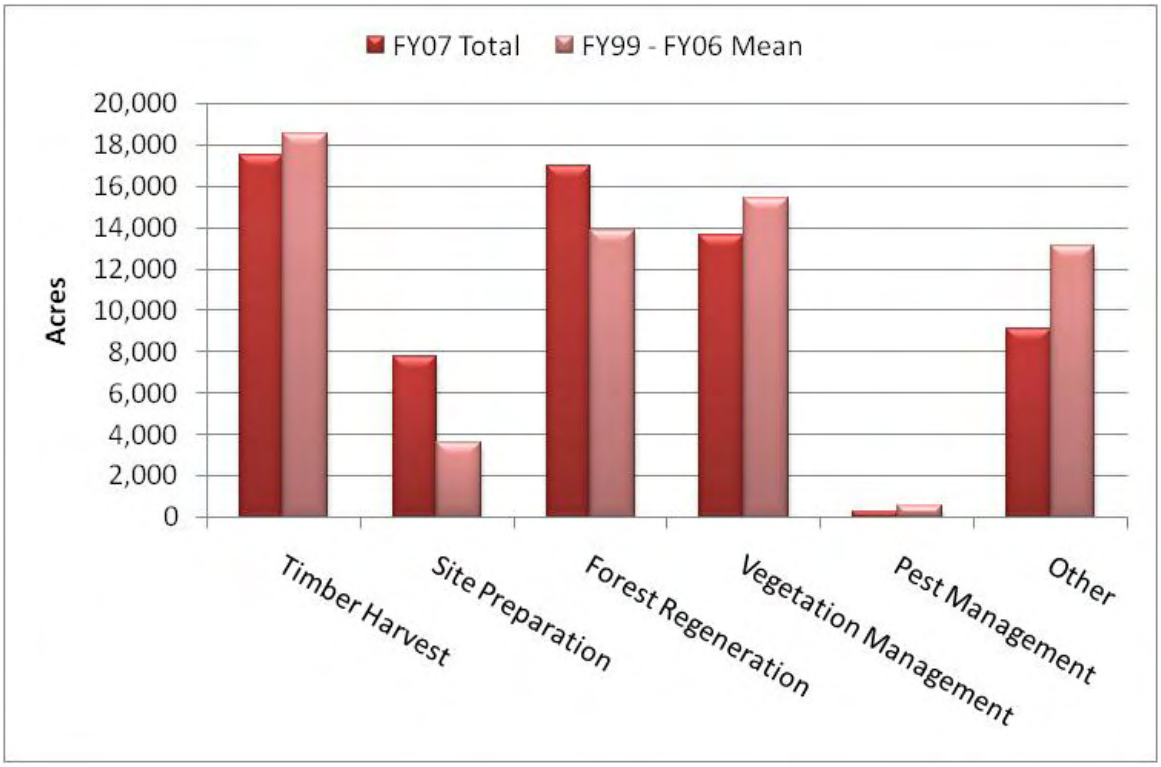


Figure 2.1. Silvicultural activities in HCP planning units: fiscal year 2007 totals vs. means for fiscal years 1999 through 2006

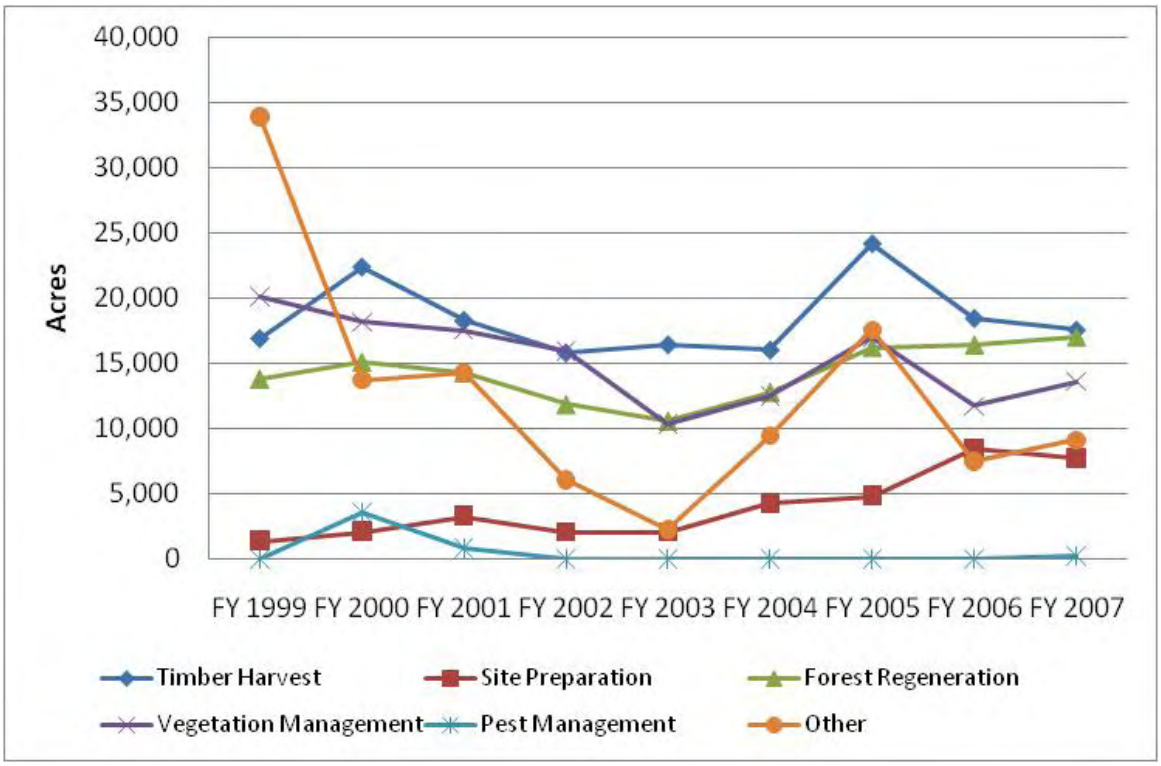


Figure 2.2. Silvicultural activities in HCP planning units: fiscal years 1999 through 2007

Glossary of Silviculture Terms

The following definitions describe, in general terms, harvest types and other silvicultural activities that may occur in both HCP and non-HCP landscapes. These terms are used throughout this report, but especially in Chapters 2 and 3 and Appendix A.

The harvest type definitions are grouped according to two general classifications. One is regeneration harvest types in which the objective is to regenerate a significant even-aged cohort (e.g. clearcuts, seed tree and shelterwood cuts). The other is individual tree selection harvest types that describe a spectrum of harvest activities (e.g. traditional commercial thinnings, variable density thinnings, and perpetual thinning where there is never a regeneration harvest). In addition to trees required for retention as part of the harvest type, State Forest Practices Rules (WAC 222), HCP commitments, and other department policies may require that additional trees be retained. Such trees protect other important landscape features or habitats such as riparian management zones, large structurally unique trees and unstable slopes.

'Cohort' is a term used to describe forest stand components that are statistically distinct. Generally, cohorts are identified when forest management unit objectives require them to be managed separately from other stand cohorts. For example, cohorts such as live wildlife reserve trees, snags, and large woody debris are statistically distinct because statutes, regulations, and DNR's trust land HCP require their management and retention beyond a single rotation.

REGENERATION HARVEST TYPES (WITH PLANTING OR NATURAL REGENERATION)

Clearcut (Variable Retention Harvest)

A clump of legacy trees left following a clearcut harvest to provide habitat and a seed source for future generations.

A timber harvest that removes the stand of trees while retaining or reserving live trees, snags, and down wood for habitat and other values. These reserve trees may be in small scattered clumps or dispersed individually throughout portions or the entire stand.

Seed Tree Intermediate Cut

The first timber harvest in a series conducted as part of the even-aged seed tree silvicultural system. The purpose is to provide a desirable seed source to establish seedlings. Up to 10 trees per acre may be left following this harvest.

Shelterwood Intermediate Cut

The first timber harvest in a series conducted as part of the even-age shelterwood system. The purpose is to provide shelter (typically shade) and possibly a seed source for the seedlings that are regenerating the stand. Up to 20 trees per acre may be left following this harvest, generally disbursed across the stand.

Phased Patch Regeneration Cut
An even-age timber harvest method using small patch cuts (1 to 5 acres) to progressively harvest and regenerate a single stand over a period of up to 15 years. Several separate patches are harvested at a single point in time within a forest management unit (FMU). After an adequate green-up period (5-10 years), additional patches are harvested and the process repeated until the FMU is entirely harvested.

Temporary Retention First Cut
A partial cut timber harvest where selected overstory trees are left for a portion of the next rotation. Shelterwood and seed tree harvests are traditional examples with relatively short retention periods. Habitat objectives increase the length of retention periods up to the time of pre-commercial or smallwood thinnings. The purpose of this harvest method is to retain overstory trees without diminishing establishment of a new stand. Two-aged stands can be an outcome when some level of overstory is left through the entire rotation.

A salvage cut that removed trees injured or killed by insects. Healthy trees were left standing and new, insect-resistant trees were planted.

Salvage Cut (may or may not be a Regeneration Harvest)
Salvage cuts are used to log trees that are dead, dying or deteriorating due to fire, insect damage, wind, disease or injuries.

INDIVIDUAL TREE SELECTION HARVEST TYPES

Smallwood Thinning
A partial cut timber harvest in young stands (typically less than 40 years of age). Smallwood thinning maintains or enhances the stand's growth potential, and improves the quality of the residual stand.

Late Rotation Thinning (Older Stand Thinning)
A partial cut timber harvest that extends the rotation age of a stand to more than 80 years of age, or achieves a visual or habitat objective that requires larger trees. Stands eligible for 'late' thinning are typically ages 45-70 years and contain diverse size classes.

Variable Density Thinning
Thinning to create a mosaic of different stand densities on a scale of approximately 0.25 to one acre that capitalizes on landforms and stand features. DNR uses variable density thinning to encourage development of structural diversity in areas where spotted owl habitat is needed or to meet other objectives defined in individual forest management unit silvicultural prescriptions.

Selective Product Logging
A timber harvest that removes only certain species above a certain size which are of high value. This typically is a pole or cabin log sale or an individual high value tree removal.

Shelterwood Removal Cut
The second or final harvest in a series of harvests conducted as part of the even-aged shelterwood system. The purpose is to remove overstory trees that create shade levels that are too high for the new understory to thrive under.

Two Age Management – Westside
An even-age harvest method that is essentially the same as a temporary retention except that the overstory trees are not planned for removal until the time of the planned rotation for the younger component of the stand.

Uneven-Aged Management – Ponderosa Pine Selection System
Uneven-age management is normally achievable only on dry ponderosa pine sites. It is a timber harvest conducted as one step in a silvicultural system with the objective to create or maintain a forest stand in a condition with three or more age cohorts. Cohorts are typically 20 years or more apart in age.

Site Preparation

Site preparation is defined as preparation of a harvested unit to increase the probability of successful regeneration by reducing slash and/or undesirable trees and shrubs. Site preparation may be performed in conjunction with logging (e.g. removing brush clumps), through piling and burning or broadcast burning logging slash, by manually cutting undesirable vegetation, through applying herbicide to undesirable plants, or by a combination of methods. The following are definitions for the types of site preparation used on DNR-managed lands.

This helicopter is applying herbicide to kill shrubs in a harvested unit so they won't outcompete newly planted trees. The concentrated application minimizes drift or spraying of non-targeted plants.

Aerial Herbicide
Helicopter application of herbicides is used to achieve site preparation objectives. Factors in determining the best practice to use include considerations of weather (wind conditions), and proximity to riparian areas, human population sites, and domestic water sources.

Ground Herbicide
Ground-based application of herbicides is used to achieve site preparation objectives. Using ground herbicides allows for application in smaller work areas, thus avoiding application on areas where herbicides are not desired.

Ground Mechanical
Mechanized equipment is used to achieve site preparation objectives.

Hand-cutting
Use of hand equipment to cut stems of existing vegetation to achieve site preparation objectives.

Pile and Burn
Logging slash is placed in piles, generally using mechanized equipment, then the piles are burned. This is typically done as part of a logging operation.

Broadcast Burn
Prescribed fire is allowed to burn over a designated area to achieve site preparation objectives.

Forest Regeneration

This person is hand planting a harvested area with Douglas-fir (*Pseudotsuga* menziesii) seedlings.

The act of renewing tree cover by establishing young trees naturally (through seeding or suckering) or artificially (through direct seeding or planting) is called regeneration. Regeneration follows timber harvest and usually maintains the same forest type. DNR uses two techniques to regenerate stands.

Hand Planting

Seedlings of various species (or species mixes) are planted by hand.

Natural Regeneration

Allowing naturally produced seedlings to regenerate a site. Successful accomplishment of this objective is generally assessed by a thorough regeneration survey of the stand.

Vegetation Management

Vegetation management consists of intermediate management treatments or entries following regeneration in a stand. This means that undesirable vegetation is weeded out of a stand, generally after the stand has been planted. These treatments are designed to encourage the success of certain species by reducing competition from less desirable species. DNR undertakes several vegetation management treatments on state trust lands.

Aerial Herbicide

Helicopter herbicide applications are used to achieve vegetation management objectives.

Ground Herbicide

Ground-based herbicide applications are used to achieve vegetation management objectives.

Hand-cutting

Use of hand equipment to cut stems of existing vegetation to achieve vegetation management objectives.

Broadcast Burn

Prescribed fire allowed to burn over a designated area to achieve vegetation management objectives.

Seeding Grass

Annual grass species are broadcast seeded so that they will occupy newly prepared sites in place of noxious weeds. This is generally used east of the Cascade crest.

Pest Management

Pest management treatments are aimed at maintaining pest populations within acceptable levels of risk of damage to forest stands. DNR has rarely used pest management techniques.

Animal Repellant

Chemicals or other products are applied to discourage animals from damaging seedlings

in a plantation.

Animal Trapping
Animals are trapped to remove them from the area they are damaging.

Shielding or Fencing
A physical barrier is used to prevent animal damage.

Aerial Pesticide
Aerial application of an insecticide, herbicide or other chemical pesticide, such as using Bt to treat spruce budworm infestations.

Other
DNR also employs several silvicultural management techniques that do not fit in any of the above categories. These techniques are defined below.

Pre-commercial Thinning
Removal of some trees in a stand, not for immediate financial gain, but rather to reduce stocking to concentrate growth on more desirable trees.

Forest Fertilization
Ground or aerial-based fertilization of forest stands using chemical fertilizers or bio-solids to enhance growth.

Tree Pruning
Removal of branches to enhance the wood quality in an existing tree's stem. The branches may also be removed as a separate forest product of value.

3. Nesting, Roosting, Foraging and Dispersal/Desired Future Condition Management

DNR is committed to providing habitat to help maintain nesting areas and facilitate movement of northern spotted owls throughout the landscape. To aid in this goal, nesting, roosting and foraging (NRF) and dispersal management areas have been designated. Through ongoing research, DNR is trying to develop a better understanding of what comprises functional owl habitat and to learn which silvicultural techniques create suitable owl habitat.

When the HCP was written, DNR-managed lands were assessed for their potential role in spotted owl conservation. Those lands identified as likely to provide demographic support and contribute to maintaining species distribution were designated as NRF management areas. Suitable NRF habitat is primarily high quality roosting and foraging habitat with enough nesting structure interspersed that the whole area can be utilized by reproducing owls. Lands identified as important for facilitating owl dispersal (movement by young owls from nest sites to new breeding sites) were designated as dispersal management areas. The conservation strategy calls for maintaining at least 50 percent of both designated NRF and dispersal management areas in suitable habitat at any given time (Westside by Watershed Administrative Unit [WAU]; Eastside by WAU for NRF and quarter-township for dispersal). Acceptable management activities depend on the amount of habitat in a WAU or quarter-township and the habitat type present in the potential harvest area. In general, harvest activities must not increase the amount of time required to achieve habitat goals beyond what would be expected in an unmanaged stand. To ensure that procedures are being followed and goals met, the types and amounts of silvicultural activities in both designated NRF and designated dispersal management areas are tracked.

A stand developing into suitable NRF habitat with snags and multiple canopy layers.

In the Klickitat Planning Unit, forest health issues associated with stands overstocked with species more susceptible to drought, disease, and insect infestations are degrading forests. In addition, some lands originally designated as NRF management areas are not capable of sustaining suitable spotted owl habitat. This makes the original habitat goals difficult to achieve. In April 2004, an amended spotted owl conservation strategy (HCP Amendment No. 1) was established to address the issues in the Klickitat Planning Unit. Field assessments, forest inventory data, and spotted owl demography data were used to create new habitat targets for the area. Four sub-landscapes within the planning unit were

This dense, overstocked stand in the Klickitat Planning Unit is declining in health. Without thinning it likely will not remain spotted owl habitat.

created, with habitat targets based on those sub-landscapes (rather than WAUs or quarter-townships). In addition, dispersal management areas in the Klickitat Planning Unit have been renamed Desired Future Condition (DFC) management areas. DFC lands have the same habitat commitments as dispersal lands, but are managed by vegetative series, with the goal of maintaining 50 percent of each vegetative series, by sub-landscape, in mature (at least 60 years old) DFC. Areas incapable of growing and sustaining habitat, and those better suited for a different habitat classification, have been reclassified. The results of these assessments and reclassifications are reflected in Table 3.1.

The Klickitat Amendment also changed the boundaries of the Klickitat and Yakima planning units to include the portion north of the Yakama Nation's lands in the Yakima Planning Unit. Through this change, approximately 23,000 acres of dispersal management area were transferred to the Yakima Planning Unit (reflected in Table 3.1).

Table 3.1. Comparison of acreage in designated NRF and dispersal/DFC management areas by planning unit

Designated Management Area: Date	Chelan	Columbia	Klickitat	North Puget	South Puget	Yakima	Total Acres
NRF: January 1997	5,647	54,157	20,096	109,409	2,648	13,567	205,524
NRF: June 1999	5,848	53,192	20,943	111,203	2,648	13,567	207,401
NRF: June 2000	5,848	53,192	20,974	111,203	2,648	13,567	207,432
NRF: June 2001	5,851	53,192	20,974	111,363	2,648	13,567	207,595
NRF: June 2002	5,851	53,252	20,974	111,363	2,648	13,567	207,655
NRF: June 2003	5,851	53,252	21,089	111,195	2,453	13,567	207,407
NRF: June 2004	5,851	53,252	21,098	111,359	2,648	13,567	207,775
NRF: June 2005	5,851	53,252	40,427	111,359	2,648	13,567	227,104
NRF: June 2006	5,851	53,252	40,427	111,359	2,648	13,567	227,104
NRF: June 2007	5,851	53,252	40,427	111,359	2,648	13,567	227,104
Dispersal: January 1997	0	38,645	79,095	16,068	71,492	8,332	213,632
Dispersal: June 1999	0	35,324	79,095	15,344	75,302	8,332	213,307
Dispersal: June 2000	0	35,234	79,095	15,344	75,302	8,332	213,307
Dispersal: June 2001	0	35,234	79,095	15,344	75,302	8,332	213,307
Dispersal: June 2002	0	31,890	79,095	15,344	78,179	8,332	212,840
Dispersal: June 2003	0	31,890	79,095	15,344	78,179	8,332	212,840
Dispersal: June 2004	0	31,890	79,327	15,344	78,179	8,332	213,072
Dispersal/DFC: June 2005	0	31,890	19,066	15,344	78,179	30,819	175,298
Dispersal/DFC: June 2006	0	31,890	19,046	15,344	78,179	30,819	175,278
Dispersal/DFC: June 2007	0	31,890	19,046	15,344	78,179	31,047	175,506

Note: totals may not add due to rounding.

The 1997 acreages in Table 3.1 were determined when the HCP was written. To obtain the 1999 figures, DNR calculated the results of land transactions that had occurred between January 1997 and June 1999. In addition, field verification of the designated habitat occurred during this period, and any acres that were non-forested and not designated to provide spotted owl habitat were subtracted from the 1997 figures. Beginning in June 2000, acreage figures were determined by taking the acres from the prior fiscal year and adding or subtracting any land acquired or disposed in a given habitat type and planning unit (see Chapter 6). For instance, in fiscal year 2000, 31 acres of NRF habitat were acquired in the Klickitat Planning Unit.

In 2007, the department received special permission from the United States Fish and Wildlife Service to harvest 483 acres of designated dispersal habitat in a quarter-township containing less than 50 percent habitat. This was a regeneration harvest in the Yakima Planning Unit and harvested an area severely damaged by forest health issues. To compensate for the lost habitat, DNR added 483 acres of suitable dispersal habitat in nearby quarter-townships. The acres could not be added to the quarter-township that was harvested as no suitable habitat could be found there. The newly added acres are stands that were either not initially designated as dispersal or had been recently acquired. The added acres are reflected in Table 3.1. A letter and map explaining the process in further detail are contained in Appendix B.

DNR is in the process of reconciling acreage and classification information in the transactions database with spatial data in DNR's corporate GIS data layer "owlmgmt". The GIS data layer will account for acquisitions, disposals, retained parcels (trust land transfers), and lands not designated to provide habitat for spotted owls. The reconciliation process is ongoing, and it is expected that the reconciled numbers will be reported in a future HCP Annual Report.

The following tables and graphs detail levels of silvicultural activities in designated NRF and DFC/dispersal management areas. For definitions of timber harvest types or other activities, see the Glossary of Silviculture Terms in Chapter 2. The data were derived from reports of activities reported as completed in DNR's Planning & Tracking (P&T) database in fiscal year 2007.

Table 3.2. Silvicultural activities in designated NRF management areas by planning unit

	Chelan	Columbia	Klickitat	North Puget	South Puget	Yakima	FY 2007 Total	8 Year MEAN[1]
Total Designated NRF Acres	5,851	53,252	40,427	111,359	2,648	13,567	227,104	212,434
% of Total Designated NRF Acreage	2.6%	23.4%	17.8%	49.0%	1.2%	6.0%	100%	100%
Timber Harvest Type	Acres of Management Activity							
Clearcut			248		52		300	417
Seed tree intermediate cut							0	19
Phased patch regeneration cut							0	1

	Chelan	Columbia	Klickitat	North Puget	South Puget	Yakima	FY 2007 Total	8 Year MEAN[1]
Temporary retention first cut							0	9
Salvage cut			244				244	83
Smallwood thinning						54	54	108
Late rotation thinning			179				179	147
Variable density thinning		270					270	180
Selective product logging							0	21
Shelterwood removal cut							0	4
Two-aged management							0	1
Uneven-aged management							0	64
Timber Harvest Totals	0	270	671	0	52	54	1,047	1,053
Forest Site Preparation								
Aerial herbicide				99			99	175
Ground herbicide			240	85			325	24
Ground mechanical			311				311	118
Pile and burn			233				233	6
Hand cutting				1			1	0
Forest Site Preparation Totals	0	0	784	185	0	0	969	323
Forest Regeneration								
Hand planting		10	1,215	182	52		1,459	783
Natural regeneration							0	3
Forest Regeneration Totals	0	10	1,215	182	52	0	1,459	786
Vegetation/Pest Management								
Aerial herbicide		88					88	374
Aerial pesticide							0	365
Ground herbicide			299				299	366
Hand cutting (slashing)		85		345			430	566
Vegetation/Pest Management Totals	0	173	299	345	0	0	817	1,671
Other								
Pre-commercial thinning		101	114	284			499	785
Forest fertilization							0	105
Tree pruning							0	4
Other Totals	0	101	114	284	0	0	499	894
Grand Totals	*0*	*554*	*3,083*	*996*	*104*	*54*	*4,791*	*4,727*

[1]These data are mean values for fiscal years 1999 through 2006.

Note: totals may not add due to rounding.

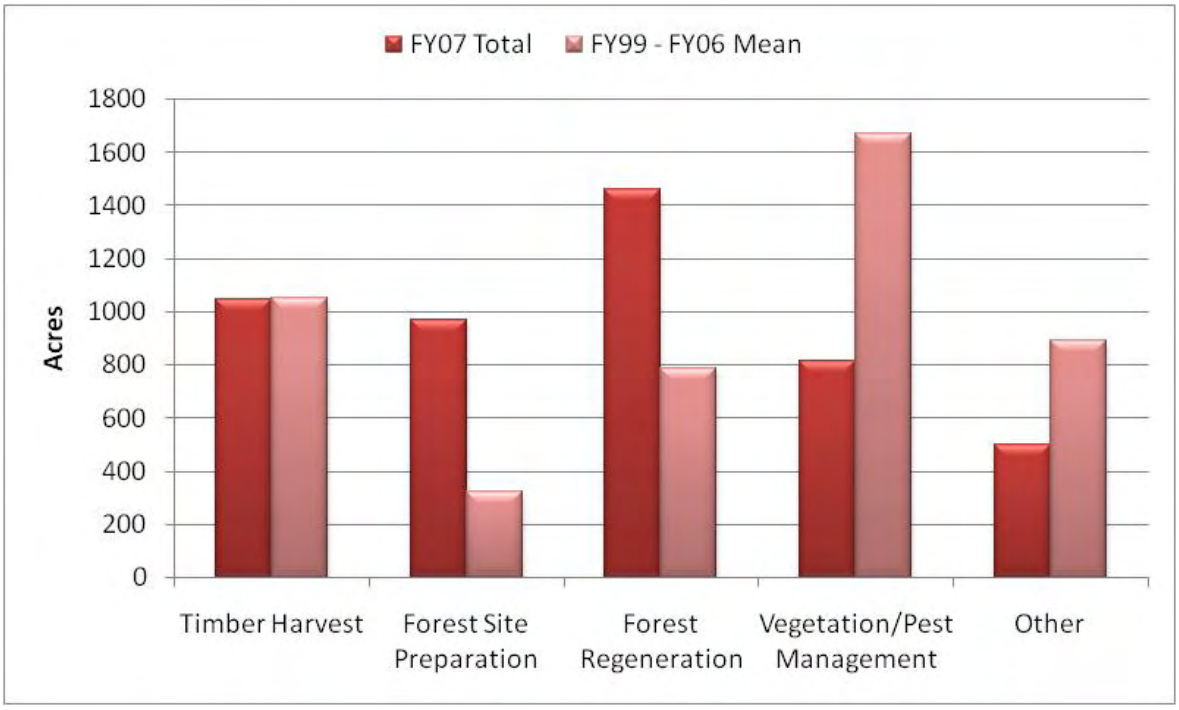


Figure 3.1. Silvicultural activities in designated NRF management areas: fiscal year 2007 totals vs. means for fiscal years 1999 through 2006

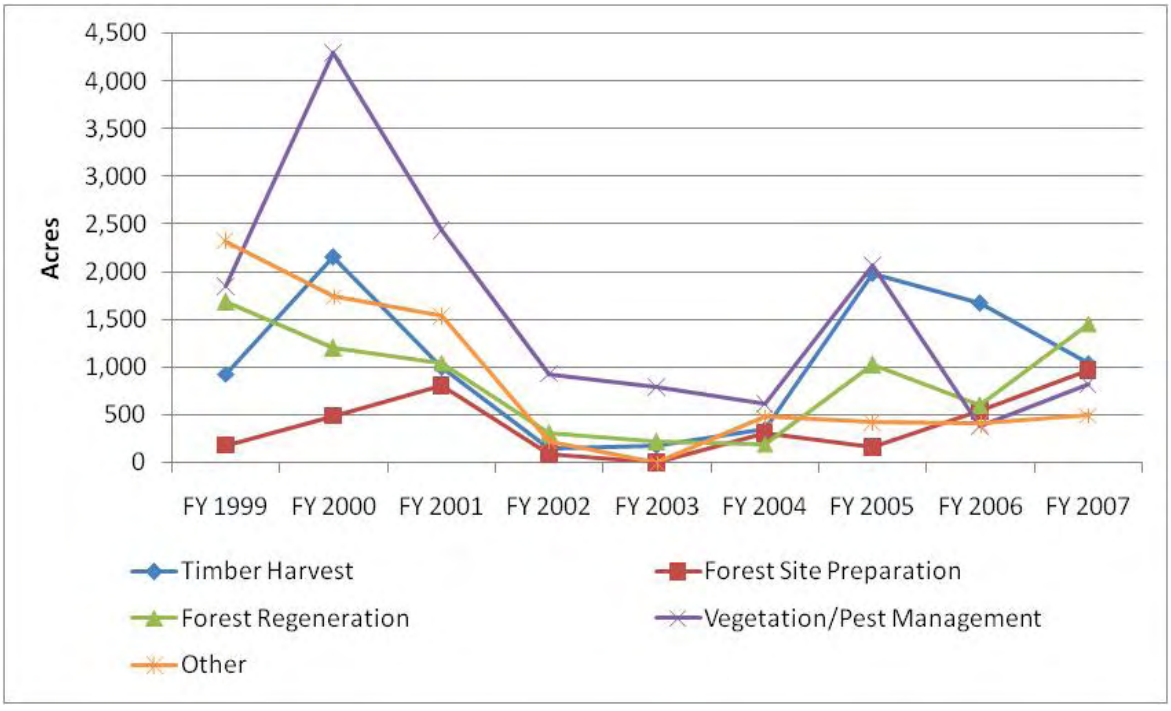


Figure 3.2. Silvicultural activities in designated NRF management areas: fiscal years 1999 through 2007

Table 3.3. Silvicultural activities in designated dispersal/DFC management areas by planning unit

	Columbia	Klickitat	North Puget	South Puget	Yakima	FY 2007 Total	8 Year MEAN[1]
Total Designated Dispersal/DFC Acres	31,890	19,046	15,344	78,179	31,047	175,506	203,656
% of Total Designated Dispersal/DFC Acreage	18.2%	10.9%	8.7%	44.5%	17.7%	100%	100%
Timber Harvest Type	Acres of Management Activity						
Clearcut		64	83	224		371	558
Seed tree intermediate cut					152	152	0
Shelterwood intermediate cut		33				33	48
Temporary retention first cut						0	2
Salvage cut		32				32	168
Smallwood thinning	690					690	242
Late rotation thinning						0	284
Variable density thinning	582			1,101		1,683	141
Selective product logging						0	65
Shelterwood removal cut						0	69
Uneven-aged management						0	425
Timber Harvest Totals	1,272	129	83	1,325	152	2,961	2,001
Forest Site Preparation							
Aerial herbicide						0	108
Ground herbicide		32	50			82	102
Ground mechanical		32			435	467	202
Hand cutting (slashing)						0	30
Pile and burn						0	23
Forest Site Preparation Totals	0	64	50	0	435	549	465
Forest Regeneration							
Hand planting	3	701	49	484	664	1,901	985
Natural regeneration						0	62
Forest Regeneration Totals	*3*	*701*	*49*	*484*	*664*	*1,901*	*1,047*
Vegetation/Pest Management							
Aerial herbicide						0	225
Aerial pesticide						0	58
Ground herbicide		111				111	224
Hand cutting (slashing)			115	770	150	1,035	512

	Columbia	Klickitat	North Puget	South Puget	Yakima	FY 2007 Total	8 Year MEAN[1]
Vegetation/Pest Management Totals	*0*	*111*	*115*	*770*	*150*	*1,146*	*1,019*
Other							
Pre-commercial thinning			100	532	167	799	954
Forest fertilization						0	1
Other Totals	*0*	*0*	*100*	*532*	*167*	*799*	*954*
Grand Totals	*1,275*	*1,005*	*397*	*3,111*	*1,568*	*7,356*	*5,431*

[1]These data are mean values for fiscal years 1999 through 2006.
Note: totals may not add due to rounding.

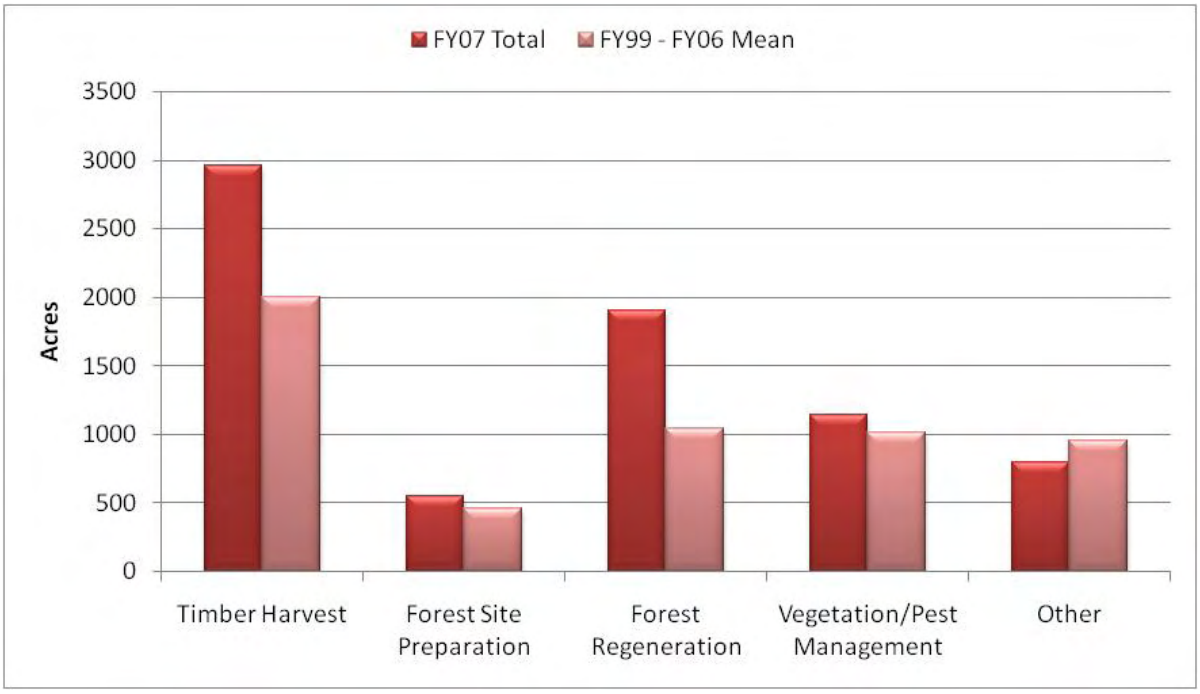


Figure 3.3. Silvicultural activities in designated dispersal/DFC management areas: fiscal year 2007 totals vs. means for fiscal years 1999 through 2006

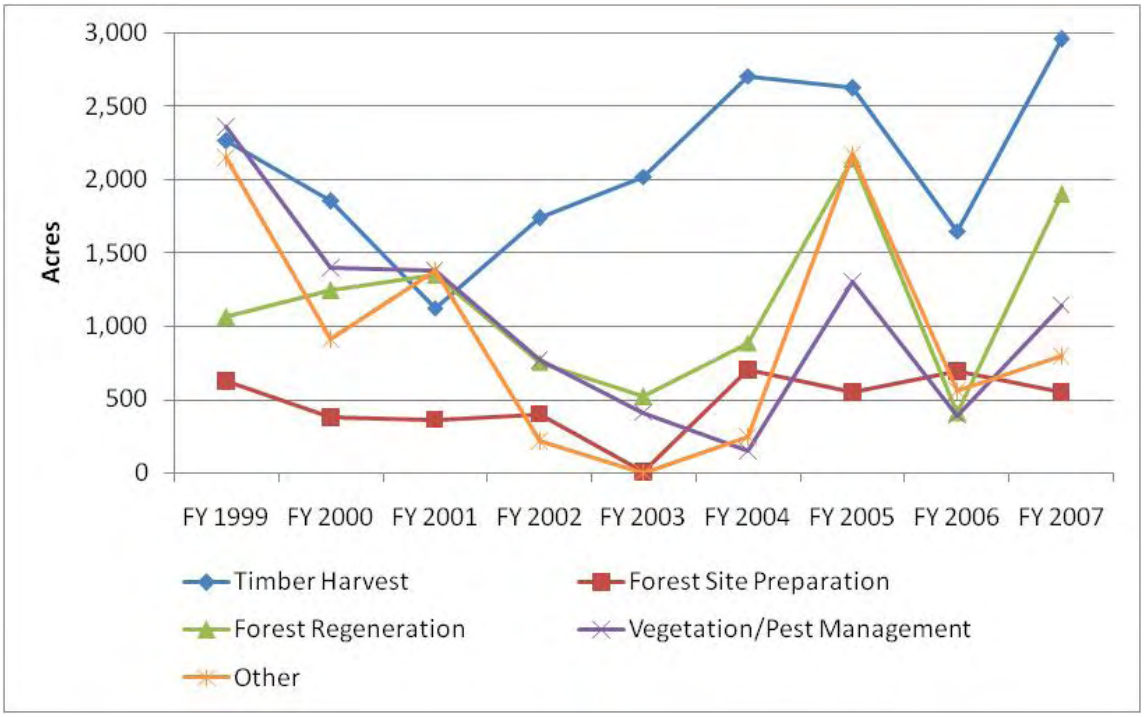


Figure 3.4. Silvicultural activities in designated dispersal/DFC management areas: fiscal years 1999 through 2007

4. Non-Timber Management Activities

Numerous non-timber management activities take place on DNR-managed state trust lands. This section details the levels of the activities (numbers of sites/permits/leases and acres impacted) that DNR agreed to report on when the HCP was approved.

The HCP describes levels or amounts of non-timber activities that existed on HCP lands during the 1996 base year. At these 1996 levels, no or *de minimis* (insignificant) take (impacts to covered species) occurred. Any new or renewed contracts, permits, or leases for such activities cannot increase the level of take beyond this *de minimis* level. DNR must monitor the level of such activities and report them to the Services annually. However, some of the baseline non-timber numbers cited in the HCP are incorrect, as they included activities on all state lands, rather than just areas covered by the HCP. To derive accurate 1996 baseline figures, the numbers reported in the HCP were revised to include only activities that occurred on HCP lands. This revision was made and the corrected numbers were reported in DNR's first HCP Annual Report (DNR 1998).

DNR is continually working to improve its methods of tracking and reporting on non-timber activities. As DNR's systems improve, and we are able to collect more accurate data, there may be changes in reporting methods or corrections to our data. This year, the department implemented a new database system called NaturE to track contract and lease data. Most of the data for this report (e.g. number of permits to gather Christmas greens; acres of oil leases) were determined by running reports in the NaturE system. Additional data (e.g. grazing permits and leases) were provided by region employees who manage non-timber leases, permits, and contracts.

The following are descriptions for the categories of non-timber activities covered in this report, with explanations for trends or noticeable differences in the numbers where possible. In some cases, such differences may be due to improvements in DNR's methods for identifying and tracking the data.

Utility Rights-of-Way

Right-of-way easements are granted to private individuals or entities for roads, powerlines, and pipelines. These easements can be granted when they will enhance trust assets and any detrimental effects can be offset or minimized.

Unlike other categories of non-timber activities, utility rights-of-way are not reported on a cumulative basis. Only new easements for the fiscal year–not the total number active in that period–are reported. DNR has not had a system to tally total utility rights-of-way, primarily because many were granted in the early 1900s and hand-entered on records now in archives. The department is working on a new system that will incorporate all existing data and give an accurate total of active rights of way. Once the system is in place and fully functional, the numbers will be updated.

Right-of-way easements are detailed in two tables. Table 4.1 reports on the total number of new easements, but the acreage and mileage figures are only for easements that create a new "footprint," indicating that timber was cut and/or a new right-of-way was created. Table 4.2 reports on the acreage and mileage of all utility easements granted in the reporting period, whether they created a new footprint or not.

Special Forest Products

Special forest products are items such as Christmas greens, medicinal plants, and western greens (typically used by florists). DNR policy is to promote the sale of special forest products where doing so will benefit the trusts and not cause significant damage to the environment. Permits are selectively granted to prevent habitat degradation.

A lessee harvesting salal (*Gaultheria shallon*)—a special forest product—from DNR-managed state trust lands.

Valuable Materials Sales

Rock, sand and gravel (valuable material) sales are handled under special sale contracts. Most active commercial pits are not in forested areas. Generally, the few commercial contracts on forested trust lands are small sales from pits that are primarily used by DNR for road management.

The number of silvicultural pits and inactive commercial pits was not tracked until fiscal year 2003, when DNR initiated an inventory of all such pits. Since the initial inventory, changes (e.g. abandoning pits or creating new ones) have not been consistently tracked. DNR hopes to find the resources to begin tracking such data more regularly and consistently.

Early on in the implementation of the HCP, the department had a substantial number of rock, sand, and gravel sales, but currently there are very few. This is primarily due to three factors: (1) the lengthy contract development process; (2) requirements for large sales to be approved by the Board of Natural Resources; and (3) periodic charges to keep contracts alive regardless of whether or not there are removals. Most rock, sand, and gravel sales are now going to private pits, which have fewer time and procedural constraints. This year, there was only one rock, sand, and gravel sale, which was handled as a direct sale. Direct sales are one-time agreements that remove only small amounts of the resource (a maximum of $20,000 in value). Other (non-direct) sales are active for longer periods of time and/or have larger maximum removal value limits.

Prospecting Leases and Mining Contracts

Like oil and gas leases, prospecting and mining leases are simply exploration agreements that allow searching for mineral deposits. A lease is converted to a contract if the lessee wants to commence active mining operations that could alter habitat, even if they do not result in extraction. There were no active mining operations (meaning activities that actually extract minerals) on HCP-managed lands in 1996 and there still were none in fiscal year 2007.

Oil and Gas Leases

Oil and gas exploration leases simply allow a leaseholder to reserve the right to explore for underground deposits. The lessee has the sole and exclusive right to explore for, drill, extract, or remove oil and gas. However, any proposed on-the-ground activities must undergo a State Environmental Policy Act (SEPA) review process and have an approved

Plan of Operations. If the lessee wants to actively drill or thump (measuring seismological tremors caused by the dropping of large weights or detonation of explosives), he or she must obtain an active lease. Regulations exist to protect water and air quality during active leases, and any exploration holes must be plugged following use. This year, five drilling permits were issued for oil and gas leases. The permits were subject to environmental review through SEPA. The permit holders have not done any active drilling. There has been only one active oil and gas lease involving drilling on HCP lands (in 1996), and the well has since been abandoned and plugged.

During the reporting period, DNR auctioned new exploration leases. In the same time frame, a number of exploration leases expired and were not renewed or picked up by a new lessee. This resulted in a net loss of exploration leases on lands managed under the Habitat Conservation Plan.

Grazing Permits/Leases

Most DNR-managed grazing takes place on non-forested state trust lands. However, grazing is selectively allowed in forests guided by the HCP. DNR no longer leases non-forested grazing lands within western Washington HCP boundaries. Consequently, all western Washington grazing leases are on forested trust lands. There are two reasons for this: (1) at DNR's request, the Services approved exemptions for some trust lands in agricultural production; and (2) additional HCP lands that previously had been grazed have now been traded or sold.

Cattle grazing in a meadow near forested state trust lands in eastern Washington.

The vast majority of grazing on state trust lands is east of the Cascade crest on both non-forested and forested lands. In eastern Washington, DNR land is grazed under permits and leases. Permits cover large acreages and have Resource Management Plans (RMPs) with ecosystem standards that must be met, including specific direction for turnout and removal dates and the number of animals allowed on the range. Leases are smaller in acreage, have a Resource Management Plan and can allow grazing at any time during the year as long as guidelines in the plan are followed. DNR is not currently able to distinguish forested from non-forested grazing on Eastside lands covered by the HCP. However, as the tracking system is refined, this will become possible.

Communication Site Leases

Communication site leases allow private and public entities to build new towers or attach communication equipment to existing towers (e.g. cell phone towers). These sites are typically on non-forested mountaintops or along second-growth highway corridors and typically are less than an acre in size. The road system used to access them is the same one used to access forest management activities, and subject to the same management practices.

A communications tower on DNR-managed land.

Recreation Sites

These sites allow public recreation on forested state trust lands as long as it is compatible with state laws and the objectives of the Forest Resource Plan and HCP. A variety of sanctioned recreational activity takes place on DNR land—mostly disbursed across the landscape—including hiking, biking, horseback riding, off-road

A bridge built on a foot trail to reduce soil erosion and protect a riparian area.

vehicle use, and camping. The number of sites and acreage reported are only for DNR-sanctioned trails, camping, and picnicking areas. These activities are detailed in Tables 4.3 and 4.4.

Special Use Leases

Special use leases are issued for a wide variety of commercial and other uses primarily on rural trust lands, although they can be on forested, agricultural, or urban lands. "Miscellaneous" is often the best descriptor of these leases. Some examples of uses include: golf courses, small commercial businesses/buildings, commercial recreation facilities, colleges, takeoff or landing sites for paragliding, governmental or public use facilities, and stockpile sites. Special use leases do not cover major urban commercial uses, aquatic land uses, or any of the other categories reported in the following tables and described above. Often, but not always, these leases are for "interim uses," and, as such, contain language that allows for termination should the department wish to take advantage of a "higher and better use" for the land.

Table 4.1. Evaluation of potential non-timber impacts compared to 1996 baseline levels

	1996 Base Year		FY2007 Total		8 Year MEAN[1]	
	Number of Leases/ Permits/ Sites	Acres	Number of Leases/ Permits/ Sites	Acres	Number of Leases/ Permits/ Sites	Acres
Utility Rights-of-Way[2]	9	4 ac. (3.3 miles)	7	22.33 ac. (35.96 miles)	4.38	15.42 ac (5.86 miles)
Special Forest Products						
Western Greens	360	135,000	430	129,000	343	128,875
Christmas Greens	14	5,000	27	8,500	18	6,950
Christmas Trees	8	409	8	347	8	346
Misc. (Medicinal, cone, and transplant)	20		8		13	
Special Forest Products Totals	402	140,409	473	137,847	382	136,171
Valuable Materials						
Silvicultural Pits						
Active Silvicultural Pits	N/A	N/A	165	317	165[3]	317[3]
Inactive Silvicultural Pits	N/A	N/A	230	216	230[3]	216[3]
Abandoned Silvicultural Pits	N/A	N/A	55	56	55[3]	56[3]
Total Silvicultural Rock, Sand, and Gravel Pits (no commercial sales)	332	487	450	589	450[3]	589[3]
Commercial Pits						

	1996 Base Year		FY2007 Total		8 Year MEAN[1]	
	Number of Leases/ Permits/ Sites	Acres	Number of Leases/ Permits/ Sites	Acres	Number of Leases/ Permits/ Sites	Acres
Active Commercial Pits	N/A	N/A	7	101	9	129
Inactive Commercial Pits	N/A	N/A	2	66	2[3]	66[3]
Total Commercial Rock, Sand and Gravel Pits	28	281	9	167	9[3]	167[3]
Sand and Gravel Pits Totals	360	768	459	756	459[3]	756[3]
Rock, Sand, and Gravel Sales	17	222	0	0	4	49
Rock, Sand, and Gravel Direct Sales	25	50	1		6	10
Valuable Materials (Rock, Sand, and Gravel) Sales Totals	42	272	1	0	10	59
Prospecting Leases/Mining Contracts						
Leases	4	360	10	2,600	3	379
Contracts	15	3,650	12	1,824	9	1,623
Prospecting Leases/Mining Contracts Total	19	4,010	22	4,424	12	2,002
Oil and Gas Leases						
Exploration Leases	43	13,196	181	72,136	131	64,169
Active Leases	1		0		0	
Active Oil and Gas Leases Totals	1		5		0	
Grazing Permits/Leases						
Eastside	25	105,980	108	131,983	35	109,230
Westside	15	1,074	3	25	11	602
Grazing Permits/Leases Totals	40	107,054	111	132,008	46	109,833
Communication Site Leases						
Number Sites	56		62		61	
Number Leases	288		335		308	
Recreation Site Totals	119	2,456	109	1,936	126	2,212
Special Use Leases Totals	90	5,792	105	8,927	91	5,858

[1]These values are mean data from fiscal years 1999 through 2006 unless otherwise noted.
[2]Numbers for rights-of-way represent the number and acres of *new* rights-of-way issued during the reporting period. Numbers for all other activity categories represent the *total* numbers and acres of activity in force during the reporting period (not just new activities).
[3]These values are means from fiscal years 2003-2006; data were not available in prior fiscal years.
Note: totals may not add due to rounding.

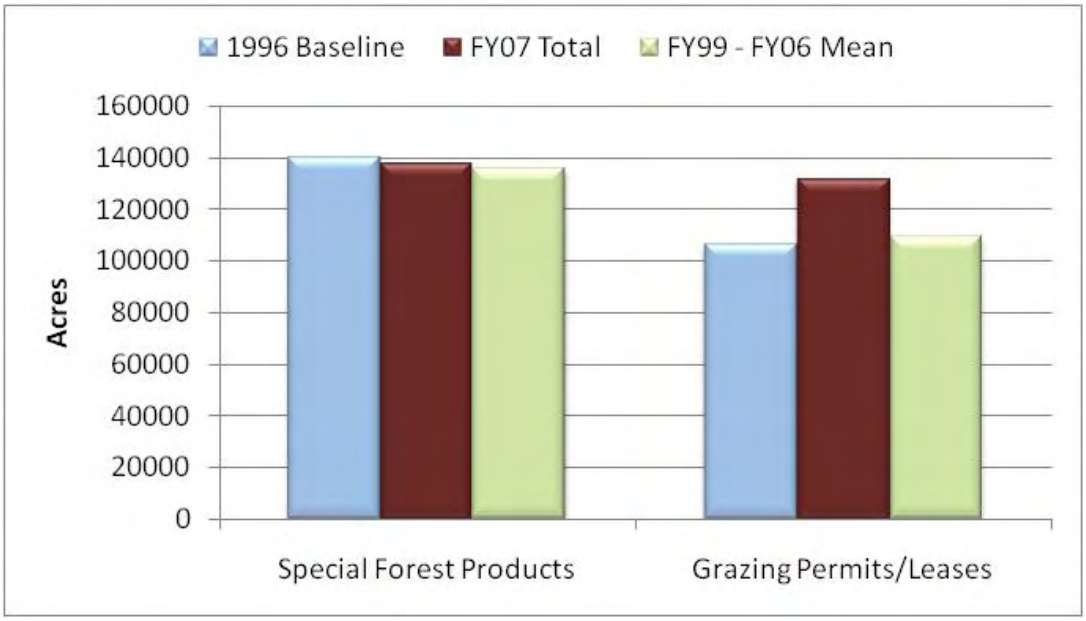


Figure 4.1. Acreage comparison for special forest products and grazing permits/leases: 1996 baseline vs. fiscal year 2007 totals vs. means for fiscal years 1999 through 2006

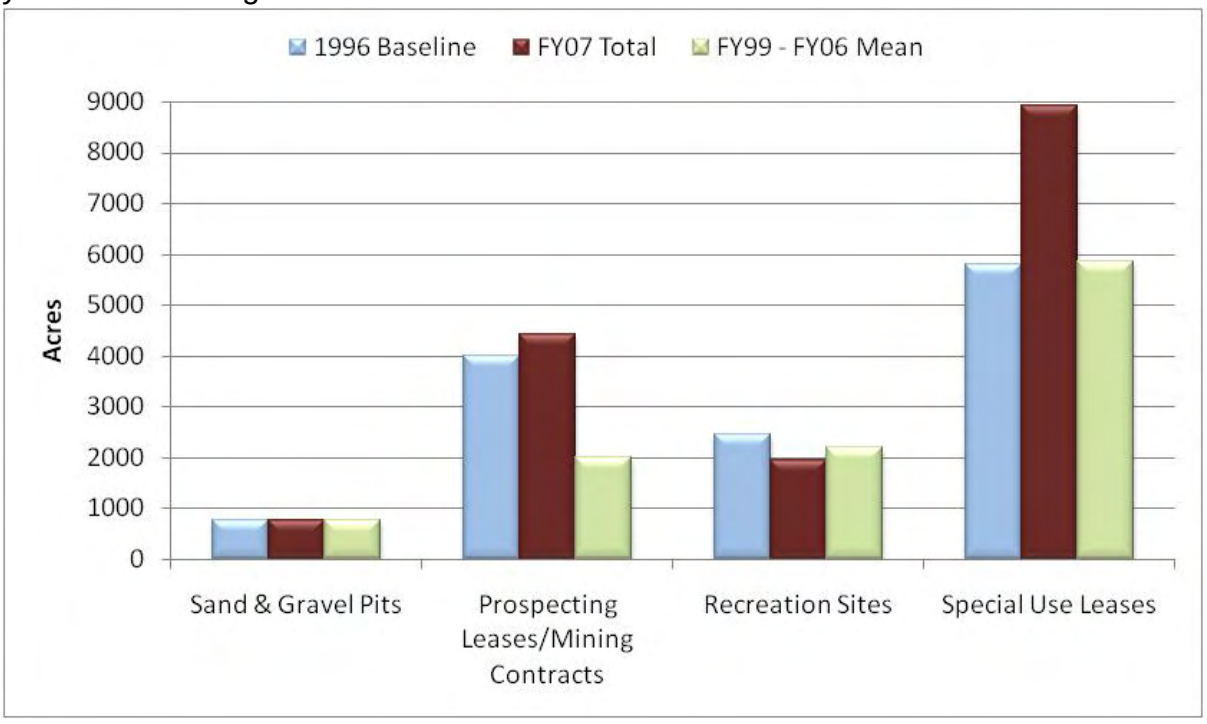


Figure 4.2. Acreage comparison for sand and gravel pits; prospecting leases/mining contracts; recreational sites; and special use leases: 1996 baseline vs. fiscal year 2007 totals vs. means for fiscal years 1999 through 2006

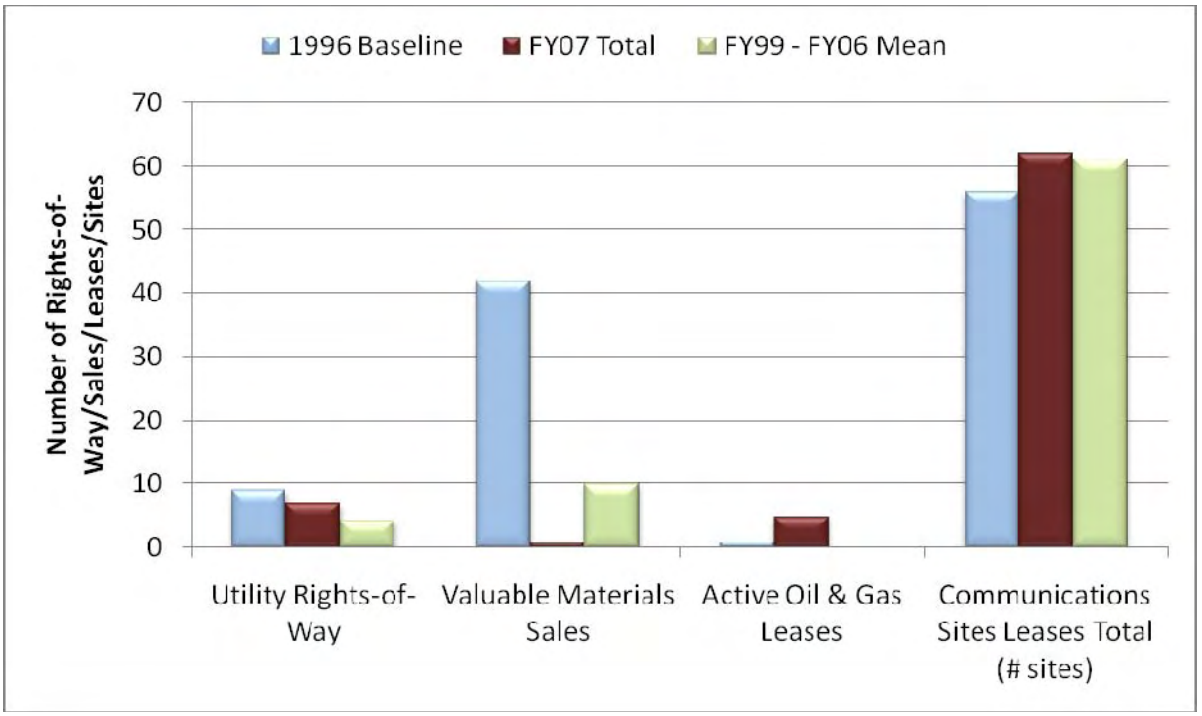


Figure 4.3. Comparison of numbers of utility rights of way; valuable material sales; active oil and gas leases; and communication sites: 1996 baseline vs. fiscal year 2007 totals vs. means for fiscal years 1999 through 2006

Table 4.2. New utility right of way easements granted in fiscal year 2007

Planning Unit	Number of Easements	Length of Easement Area (Miles)	Area of Easement (Acres)
New Footprint Created			
North Puget	2	25.06	9.12
South Coast	1	6.35	7.70
South Puget	2	4.55	5.51
Total with New Footprints	5	35.96	22.33
Used Existing Footprint			
South Coast	1	0.11	0.14
South Puget	1	1.65	2.00
Total in Existing Footprints	2	1.76	2.14
Easement Totals	*7*	*37.72*	*24.47*

Recreation/Public Use Activities

In 2004, DNR's public use section began developing Region Public Use Inventory and Assessments (RIAs), which are used to inventory developed and dispersed recreation and public use—both sanctioned and unsanctioned. The process also identifies planning and management priorities and options for those areas. The goal is to update these plans each biennium as part of the budget process. Unlike most HCP Annual Report topics, these assessments are completed for DNR regions, rather than by HCP planning units. Data for any recreation areas outside of the HCP are not included in this report. Drafts of the initial RIAs for Northwest, Olympic, Pacific Cascade, and South Puget Sound Regions were written in 2004; the Southeast Region draft was created in 2005. No draft exists for Northeast Region.

The inventories provide baseline information and support for recreation program management strategies, planning decisions, and funding requests. They also will help DNR to implement our public use policies and establish consistent planning for recreation on DNR-managed lands statewide. Each assessment provides an opportunity to discuss issues, concerns, and possible changes with a variety of interest groups, increasing public involvement in the process. Finally, they will provide information to assist in the design of management plans that advocate for natural environments and protect state trust lands and natural areas consistent with established mandates.

An ADA-compliant platform and trail built at a DNR campground to increase accessibility.

This report covers two aspects of public use reporting: trails (Table 4.3/Figure 4.4) and picnic/camp sites (Table 4.4/Figure 4.5). Sanctioned trails are reported on according to the type or types of authorized use. Sanctioned campsites are broken out by type (general use, host, or Americans with Disabilities Act (ADA) compliant). As the assessments get updated, this information will also be updated.

Table 4.3. Sanctioned recreation trails on forested state trust lands in fiscal year 2007

	Region Data (Miles)					
Type of Use	Northwest	Olympic	Pacific Cascade	South Puget	Southeast	Statewide Totals
Non-motorized						
Horse/hike/bike	3	0	116.5	16.75	26	162.25
Horse/hike	0	0	1	66	0	67
Hike/bike	0	3	0	0	0	3
Hike	58.75	2	9.25	51	1	122
ADA compliant	0	0	0	4.2	0	4.2
Ski trails (on existing forest management roads)	0	0	0	100	0	100

	Region Data (Miles)					
Type of Use	Northwest	Olympic	Pacific Cascade	South Puget	Southeast	Statewide Totals
Non-motorized Totals	61.75	5	126.75	237.95	27	458.45
Multi-use: motorized/ non-motorized						
Multiple use (no 4x4)	0	26	63	164.75	23	276.75
4x4 and multiple use	36	0	18	34	0	88
Multi-use Totals	36	26	81	198.75	23	364.75
Trail Totals	*97.75*	*31*	*207.75*	*436.7*	*50*	*823.2*

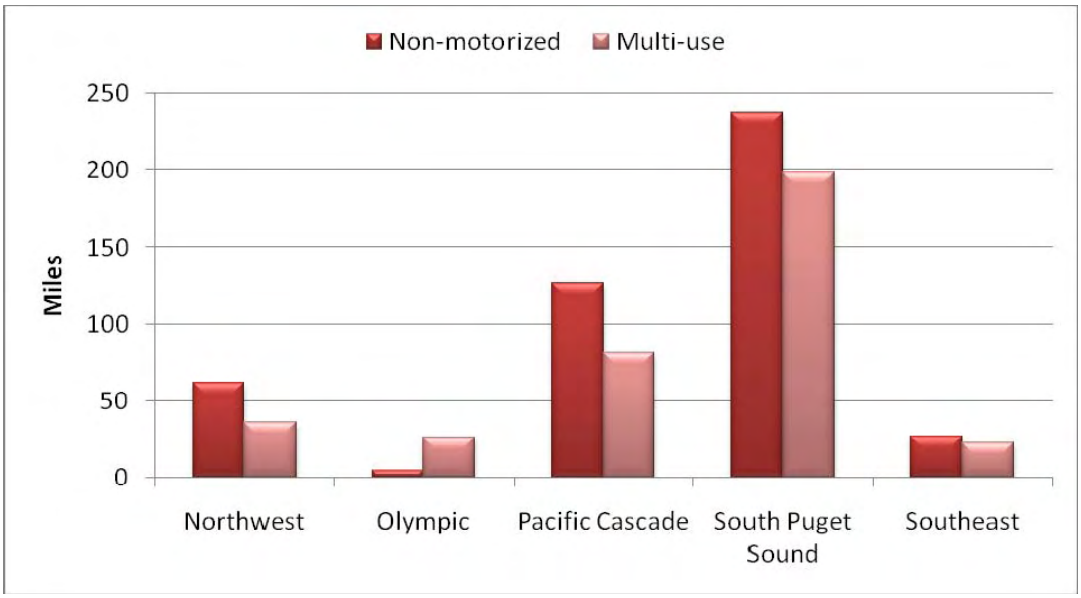


Figure 4.4. Total sanctioned non-motorized and multi-use trail miles by region

Table 4.4. Sanctioned camp and picnic sites on forested state trust lands in fiscal year 2007

	Region Data (Number of Sites)					
Type of Use	Northwest	Olympic	Pacific Cascade	South Puget Sound	Southeast	Statewide Totals
Campsites	99	68	136	96	80	479
Host campsites	0	1	6	0	1	8
ADA campsites	3	4	26	1	1	35
Campsite Totals	*102*	*73*	*168*	*97*	*82*	*522*
Picnic Sites	26	1	54	59	5	145
Camp and Picnic Site Totals	*128*	*74*	*222*	*156*	*87*	*667*

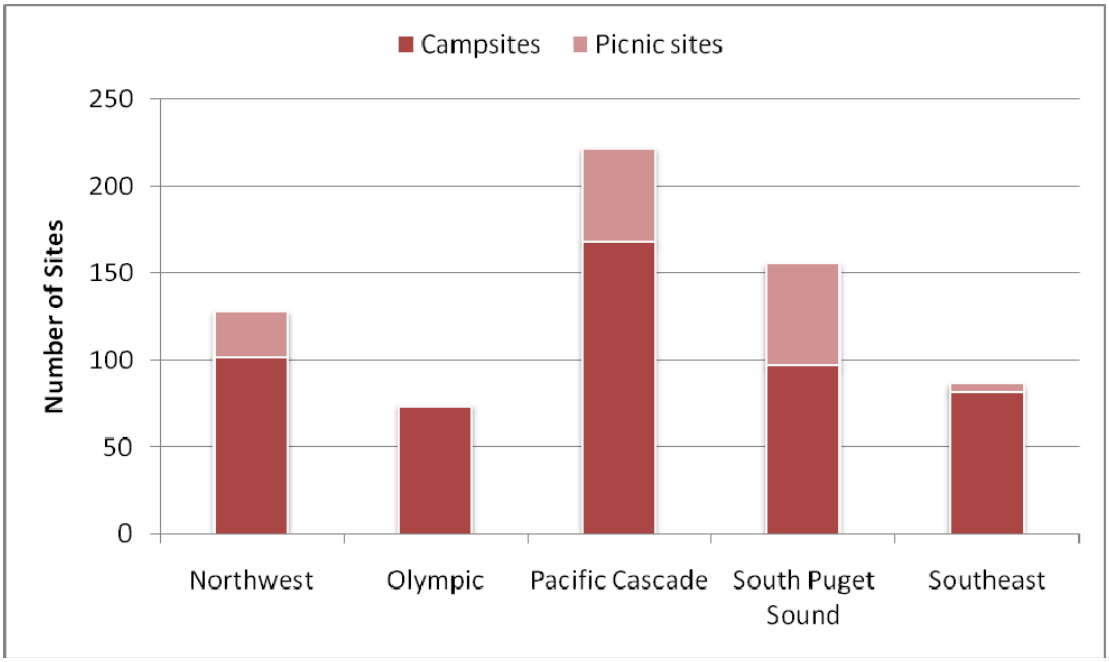


Figure 4.5. Total sanctioned camp and picnic sites by region

Natural Areas Program

Washington State's natural areas protect outstanding examples of the state's extraordinary diversity. These lands represent the finest natural, undisturbed ecosystems in state ownership, often protecting one-of-a-kind features which are unique to this region. The department's Natural Areas Program currently manages 125,457 acres in 52 Natural Area Preserves (NAPs) and 31 Natural Resources Conservation Areas (NRCAs). This statewide system of natural areas was established by the Washington Legislature 35 years ago to protect native ecosystems, rare plant and animal species, and unique natural features. The lands protected in the natural areas system include Puget prairies, estuaries, native forests, bogs, ponderosa pine forests, shrub steppe communities, and significant geological features. These lands provide opportunities for research, education and, where appropriate, low impact public use. In addition, these lands provide important contributions to statewide conservation priorities and to DNR's Habitat Conservation Plan obligations.

Since the HCP was signed in 1997, the Natural Areas Program has protected an additional 24,465 acres of land within the area managed under the HCP and more than 51,600 acres statewide.

Washington's natural areas contain habitat for 11 species listed as threatened or endangered under the Endangered Species Act. Nine of these species are known to occur on natural areas within the area covered by the HCP. Outside of the HCP, the Canada lynx is found in a NRCA in the Loomis area and several natural areas provide suitable habitat for grizzly bears. The federally listed species on natural areas include the largest and healthiest population of the golden paintbrush (*Castilleja levisecta*), the largest and

most viable population of Wenatchee Mountain checker-mallow (*Sidalcea oregana* var. *calva*), more than 15 established territories for the northern spotted owl, and waters that contain listed runs of Chinook, chum, steelhead and bull trout. Ten of our preserves contain occupied marbled murrelet sites. At South Nemah NRCA there have been more than 30 murrelet occupancies recorded, including a known murrelet nest site.

Wenatchee Mountain checker-mallow (*Sidalcea oregano* var. *calva*) is one of many plant species found in DNR's natural areas.

Natural areas provide habitat for three federal candidate species. Trout Lake NAP contains the second largest population and highest quality native habitat for the Oregon spotted frog. Bald Hill NAP contains one of the largest and highest quality habitats for Taylor's checkerspot butterfly. Washougal Oaks NAP/NRCA protects spawning habitat for Coho salmon.

Natural areas also provide habitat for other sensitive species (federal species of concern, state-listed, state candidate, and other sensitive species) identified in the HCP. This includes the bald eagle, which was de-listed from the Endangered Species Act in June 2007. Species whose habitat is protected include insects associated with bogs, like the Beller's ground beetle and Hatch's click beetle, amphibians that depend on forested talus slopes like the Larch Mountain salamander, birds associated with mountain streams and rivers like the harlequin duck, bats that depend on maternal colonies like the colony found at Woodard Bay NRCA, and mammals that depend on high elevation rocky outcrops and alpine communities like the California bighorn sheep.

The Klickitat Canyon NRCA provides habitat for a variety of species, including the state listed sandhill crane and federally listed lower Columbia Chinook salmon.

Late seral forests and trees with potential nesting platforms are important features to two of the primary species included in the HCP, the northern spotted owl and the marbled murrelet. A number of our natural areas were established because of their high quality native forest ecosystems and consequently, they are dominated by mature and/or late seral forests. Some of the native forests on these preserves represent some of the highest quality examples of globally imperiled forest ecosystems.

In the Natural Areas Program there are five high quality estuaries including three on the coast and two in Puget Sound. These sites protect high quality and rare saltmarsh communities. Estuaries also provide important foraging and cover habitat for anadromous fish during the critical transition from a freshwater to marine environment. In addition, estuaries help dissipate potentially damaging wave energy before it reaches the land, they provide a sink for sediments and wastes derived from both land and sea, and they are some of the most biologically productive systems in the world.

DNR's natural areas provide habitat for Harlequin ducks (*Histrionicus histrionicus*) and other birds. Photo courtesy of Joe Kulig.

More than 250 research, inventory, and monitoring projects have been conducted in natural areas by agency biologists and by university professors and their students. These projects are helping to identify critical

habitat features for species of concern. They are also helping the department learn new techniques for protecting and restoring rare ecological communities.

Taken together, this demonstrates the important contribution of natural areas to the protection of biodiversity and to the department's HCP obligations.

5. Road Management Activities

Improperly constructed or maintained roads can negatively impact habitat in a number of ways. Such roads can increase rates of slope failure, contribute sediment to streams, and create fish blockages, potentially harming salmonids and other aquatic and riparian obligate species.

In 2001, state Forest and Fish legislation (implemented through Washington State Forest Practices rules) required that by December 31, 2005 all forest landowners have Road Maintenance and Abandonment Plans (RMAPs) for their land. This includes all roads constructed or used for timber harvest and other forest practices since 1974 (WAC 222-24-051). In addition, all forest roads must be improved and maintained to the standards established in WAC 222-24 by the year 2016. In 2005, DNR completed RMAP assessments for all state trust lands and intends to be fully compliant with RMAP standards by 2016.

To remove a fish blockage, a bridge was built on this road. Before removal, a small culvert (behind the trees on the left; photo above) inhibited stream flow and fish movement. Now the stream can flow freely and support fish passage.

Under the HCP, DNR committed to developing and instituting a process to achieve comprehensive landscape-based road network management. The major components of this process include:

- "the minimization of active road density;
- a site-specific assessment of alternatives to new road construction (e.g., yarding systems) and the use of such alternatives where practicable and consistent with conservation objectives;
- a base-line inventory of all roads and stream crossings;
- prioritization of roads for decommissioning, upgrading, and maintenance; and
- identification of fish blockages caused by stream crossings and a prioritization of their retrofitting or removal." (DNR 1997, p. IV.62)

The department accomplishes these components through several overlapping planning processes. Forest Land Planning (currently underway in the South Puget, Columbia, and Olympic Experimental State Forest HCP Planning Units) evaluates the overall active road density. Through implementation of forest land plans, individual project-level activities will address the site-specific alternatives to new road construction. Implementation of DNR's RMAP requirements will address the last three components. The initial RMAP plans were completed on schedule in 2005, and yearly reassessments will evaluate the work completed during that year and prioritize the work to be completed during the upcoming year.

As part of the HCP Annual Report requirements, DNR tracks and reports on the number of road miles constructed (newly built roads); reconstructed (existing roads brought back to driveable conditions); decommissioned (roads made impassible to vehicular traffic); or abandoned (roads stabilized and abandoned to Forest Practices standards); fish barriers removed; active forest practice road miles; and percent of road miles under RMAP (Table 5.1).

A forested road that was abandoned, with natural drainage restored in the former roadbed.

Unlike other activities, road management activities are reported on a calendar (rather than fiscal) year basis. This reflects the requirements by Forest Practices for road management activities and maintenance schedules to be reported on a calendar year basis.

Table 5.1. Road management activities on forested state trust lands in calendar year 2005

Activity	Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	CY 2006 Total	8-Year MEAN[2]
Total Road Miles[1]	91	1,353	586	1,533	1,720	1,502	761	615	800	8,961	8,867
Miles of Construction	0	28	4	39	3	29	18	6	5	131	134
Miles of Reconstruction	0	11	16	61	0	9	11	2	6	115	220
Miles of Active Forest Roads Abandoned	0	10	0	50	2	7	7	4	3	83	88
Miles Decommissioned	0	2	3	0	8	5	0	13	5	37	85
Number of Fish Barriers Removed	0	17	0	12	13	23	6	11	10	92	58
Percent of RMAP Responsibility Assessed	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	63%[3]

[1]For calendar year 2006, Total Road Miles means ordinary forest maintenance miles on HCP-managed lands and is determined from RMAP assessments. It excludes roads that lead only to recreation sites and those that are contained within Natural Area Preserves (NAPs) or Natural Resource Conservation Areas (NRCAs), as those are not considered forest roads.

[2]Due to a change in reporting methods, 8 year mean data comes from fiscal years 1999 through 2001 and calendar years 2001 through 2005. Calendar year 2001 included data from the last 6 months of fiscal year 2001.

[3]These data are only for calendar years 2001 through 2005. Data were not available in prior years.

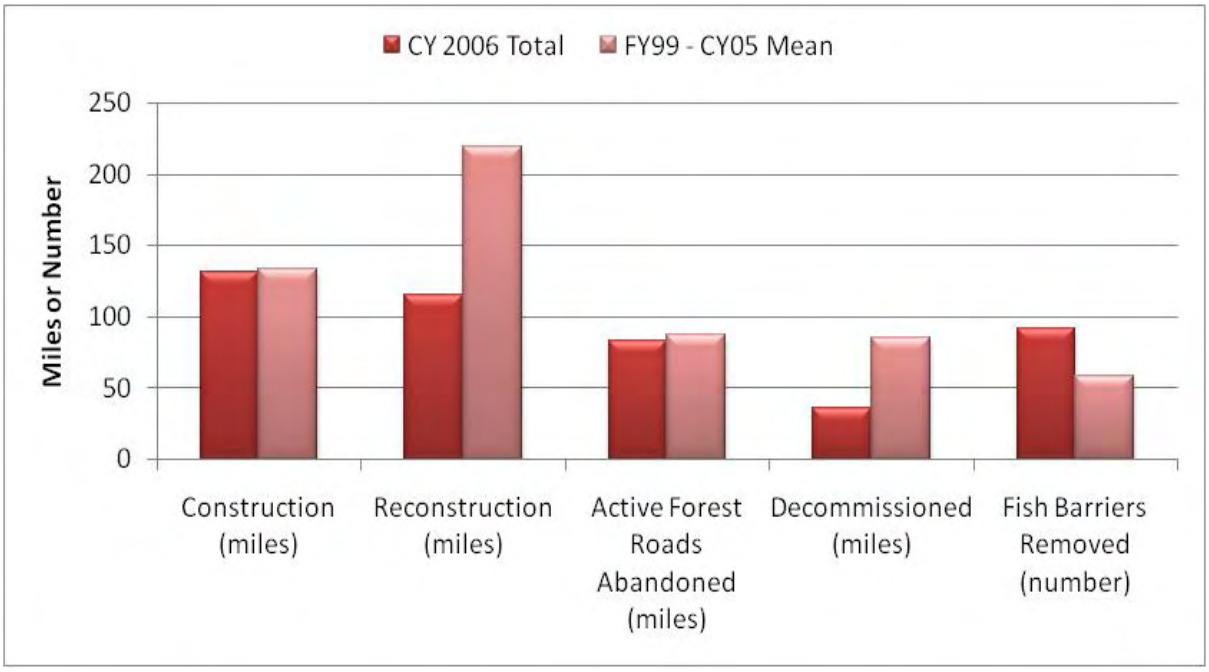


Figure 5.1. Road management activities: calendar year 2006 totals vs. means for fiscal year 1999 through calendar year 2005

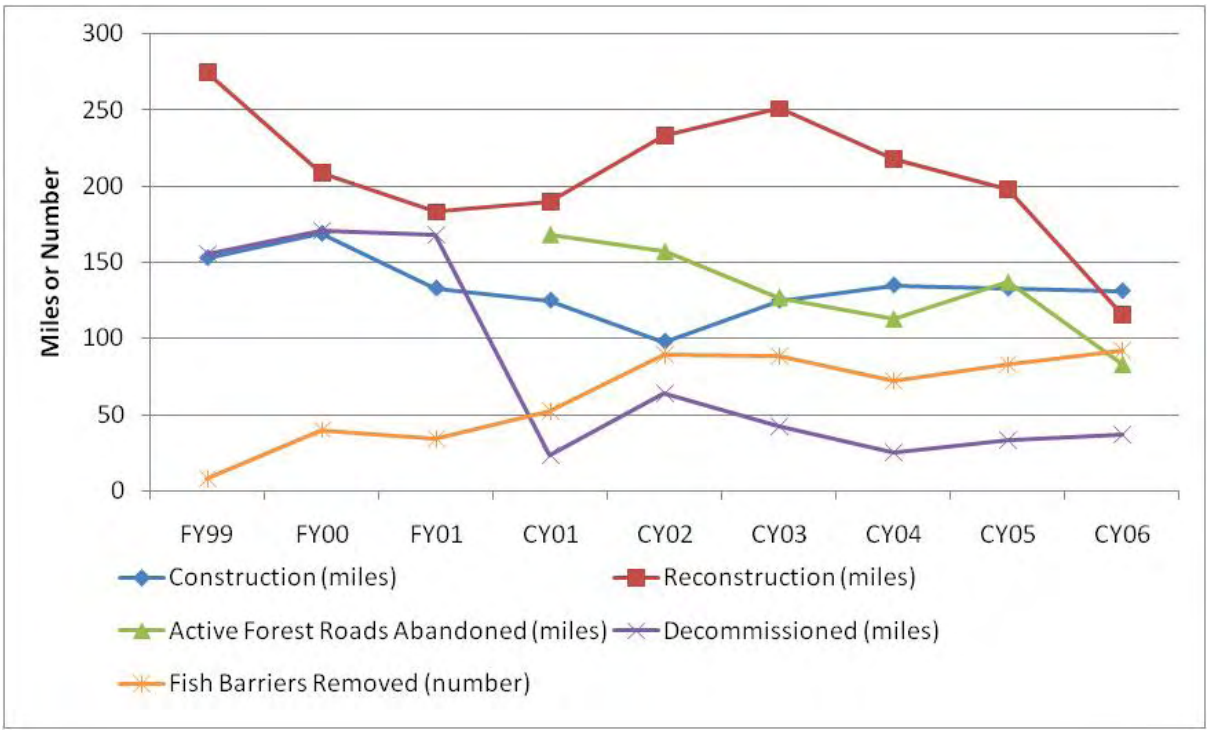


Figure 5.2. Road management activities: fiscal year 1999 through calendar year 2006

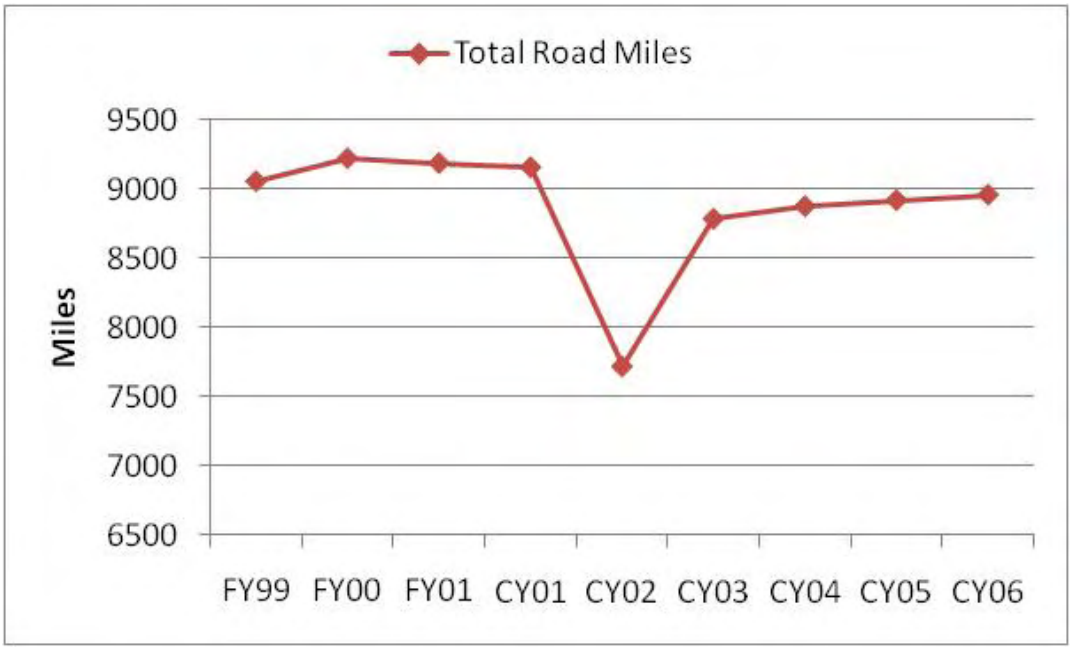


Figure 5.3. Total road miles in HCP planning units: fiscal year 1999 through calendar year 2006

To obtain the base numbers of road miles, DNR used photo interpretation augmented with global positioning system (GPS) data. This became the basis of the department's mapped corporate transportation GIS data layer. Since then, department employees have been verifying the presence or absence of these mapped road arcs as they complete RMAPs. As the percentage of roads covered by RMAP assessments increases, DNR's confidence in actual active forest road miles also increases.

The department is working on a system to better track and distinguish between forest roads and roads not used for forest practices purposes. Specifically, non-forest practice roads are those that lead only to a recreation site and those that are contained entirely within Natural Area Preserves (NAPs) and Natural Resource Conservation Areas (NRCAs). By making this distinction, the department will be able to increase the accuracy and detail of reporting for RMAPs, while still tracking and reporting on all road miles. This data is currently being processed and updated and will be included in future reports as it becomes available.

Road Use Permits and Easements

Since 2005, road-related activities associated with easements and road use permits have been included in the HCP Annual Report. These "footprints", which were granted by DNR to private entities in order to allow the private entities to access their lands through DNR property, are detailed in Table 5.2.

Table 5.2. Road easements and road use permits granted in calendar year 2006

Planning Unit	Length of New Construction (Miles)	Area of Road Construction (Acres)	Length of Reconstruction (Miles)	Area of Reconstruction (Acres)	Length of Abandonments (Miles)	Area of Abandonments (Acres)	Length of Fish Barrier Removal (Miles)	Area of Fish Barrier Removal (Acres)
Columbia	0.73	3.53	0	0	0	0	0	0
North Puget	0.95	6.74	0.76	2.3	0.27	0.64	0	0
South Coast	0.24	0.99	0	0	0	0	0.01	0.11
Totals	1.92	11.26	0.76	2.3	0.27	0.64	0.01	0.11

6. Land Transactions

DNR has a transactions program designed to reposition trust lands for better long-term management and increased revenue for each of the state trusts. Repositioning simply means disposing of properties that don't fit the department's management strategies and acquiring more suitable properties. Through the transaction program, DNR looks for opportunities to dispose of trust lands not appropriate for revenue production. Such lands are often better suited to other public benefits, such as parks or habitat for rare native species. DNR also seeks to consolidate its forest landscapes, which allows for more cost-effective management and offers opportunities to optimize trust revenue while maintaining habitat and allowing public recreation as appropriate.

Land transactions affect the amount of habitat or potential habitat on DNR-managed forested state lands. Transactions may be carried out to consolidate forested state ownership in certain areas, often by trading with owners of adjacent lands for scattered DNR-managed parcels elsewhere. State trust lands also may be transferred out of trust ownership into protected status as Natural Area Preserves (NAPs) or Natural Resource Conservation Areas (NRCAs)—both part of DNR's natural areas program (see Chapter 4). Another option is for trust lands to be transferred to other government agencies to be used as parks or open space or for public facilities. When this happens, the trust is compensated at fair market value, and replacement properties are acquired to maintain trust assets over time. Acquired lands are assessed for inclusion as HCP permit lands (meaning they are managed subject to the commitments in the HCP) and whether they should have a role in the Northern Spotted Owl Conservation Strategy.

Some lands have important social or ecological values and are best managed to protect these special values and uses, rather than for income production. When that is the case, the lands may be candidates for the Trust Land Transfer program. Through this program, land is transferred to Washington Department of Fish and Wildlife; the State Parks and Recreation Commission; county government; city government; Natural Area Preserves; or Natural Resource Conservation Areas. The value of the timber (which is not cut) is given to the Common School Trust, which helps fund K-12 schools statewide. The value of the land is used to purchase replacement property for the trust. The land may be transferred with special conditions stipulating that it must still be managed according to HCP rules and guidelines. In such cases, the land is still counted towards HCP-managed acreages and is not considered disposed.

During this reporting period, transactions affected eight of the nine HCP planning units. A total of 3,528 acres were added to the HCP permit lands and 1,767 acres were disposed in fiscal year 2007. An additional 5,793 acres were transferred to the natural areas program or other agencies subject to HCP rules and guidelines, and thus are not considered disposed. Table 6.1 details the fiscal year 2007 transactions, including their

effects on various types of habitat, streams, and forests. Cumulative changes from 1997 through fiscal year 2007 are detailed in Table 6.2.

Briefly, the transactions for fiscal year 2007 can be described as follows.

Chelan Planning Unit

Acquired: None

Disposed: None

Transferred: Through the Trust Land Transfer program, Washington Department of Fish and Wildlife received 160 acres in the Rendezvous Wildlife Area and 40 acres in the Methow Wildlife Area. The properties were transferred subject to the HCP agreement, so are not reported as disposals in Table 6.1. These properties are designated "no role" for northern spotted owls, meaning they are not designated as nesting, roosting, and foraging (NRF) or as dispersal/DFC.

Columbia Planning Unit

Acquired: One 40-acre parcel was acquired in the Washougal Oaks Natural Area Preserve. This parcel is designated as permit lands with no role for spotted owls.

Disposed: None

Transferred: None

Klickitat Planning Unit

Acquired: None

Disposed: None

Transferred: None

North Puget Planning Unit

Acquired: 2,885 acres of forestland designated as permit lands with no role for spotted owls.

Disposed: 285 acres of properties in Island County were transferred to local jurisdictions for recreation. They were designated no role for spotted owls.

Transferred: An additional 3,732 acres in the Sultan Basin area of Snohomish County were transferred from trust status to a Natural Resources Conservation Area, subject to the HCP agreement. These are not considered disposed since they remain in DNR management. They are designated no role for spotted owls.

Olympic Experimental State Forest Planning Unit

Acquired: One 11-acre inholding (private property entirely surrounded by state land) in trust lands in Clallam County. It is designated as permit lands with no role for spotted owls.

Disposed: None

Transferred: None

South Coast Planning Unit

Acquired: Fifteen acres were added to the Mima Mounds Natural Area Preserve in Thurston County. These acres are designated as permit lands with no role for spotted owls.

Disposed: None

Transferred: None

South Puget Planning Unit

Acquired: Two Natural Resource Conservation Areas–Stavis Creek NRCA in Kitsap County and Woodard Bay NRCA in Thurston County–acquired 569 acres and 8 acres respectively, for a total of 577 acres. These properties are designated as permit lands with no role for spotted owls.

Disposed: Two parcels totaling 177 acres were transferred to local jurisdictions in Pierce County for recreation and open space. Three parcels were transferred to Department of Transportation for road widening, for a total of 11 acres in Kitsap, Thurston and King Counties.

Transferred: Tacoma Public Utilities District acquired 339 acres in King County under the Trust Land Transfer program. The property was conveyed subject to the HCP so did not result in a net loss of baseline acres. All of the properties are designated no role for spotted owls.

DNR also transferred 1,124 acres in King County to Natural Area Preserve status (Charlie Creek) and 438 acres to Natural Resource Conservation Area status in Kitsap County (Stavis). These properties will stay under management by DNR (they are maintained as permit lands) and are designated no role for spotted owls.

Straits Planning Unit

Acquired: None

Disposed: Several parcels in the Lake Cushman area of Mason County totaling 1,040 acres were transferred to the City of Tacoma. The parcels were not sold subject to the HCP but they are restricted to open space, recreation and habitat use for a minimum of 30 years. The properties were designated no role for spotted owls.

Yakima Planning Unit

Acquired: None

Disposed: Two parcels (250 acres) in Kittitas County were transferred to Washington Department of Fish and Wildlife. A third parcel (5 acres) was acquired by Department of Transportation for road widening along I-90. All three parcels are designated dispersal. Of the 255 acres, approximately 73 acres contain suitable habitat for the northern spotted owl, though no owl circles or other sightings are on record for these parcels. These properties are no longer subject to HCP commitments.

Transferred: None

Table 6.1. Effects of transactions on permit lands: July 2006 through June 2007

		Planning Unit									
	Activity	Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
	Total Acres Acquired	-	40.00	-	2,884.87	11.30	14.92	576.96	-	-	3,528.05
	Total Acres Disposed	-	-	-	*(285.00)*	-	-	*(187.92)*	*(1,040.00)*	*(254.57)*	*(1,767.49)*
	Net Change - Acres	-	40.00	-	2,599.87	11.30	14.92	389.04	*(1,040.00)*	*(254.57)*	1,760.56
Owl Habitat Acquired	Designated Dispersal	-	-	-	-	-	-	-	-	-	-
	Existing Dispersal (41+)	-	-	-	-	-	-	-	-	-	-
	Designated DFC	-	-	-	-	-	-	-	-	-	-
	Existing DFC	-	-	-	-	-	-	-	-	-	-
	Designated NRF	-	-	-	-	-	-	-	-	-	-
	Existing NRF (71+)	-	-	-	-	-	-	-	-	-	-
	OESF	-	-	-	-	11.30	-	-	-	-	11.30
	No Role	-	40.00	-	2,884.87	-	14.92	576.96	-	-	3,516.75
											3,528.05
Owl Habitat Disposed	*Designated Dispersal*	-	-	-	-	-	-	-	-	*(254.57)*	*(254.57)*
	Existing Dispersal (41+)	-	-	-	-	-	-	-	-	*(73.00)*	*(73.00)*
	Designated DFC	-	-	-	-	-	-	-	-	-	-
	Existing DFC	-	-	-	-	-	-	-	-	-	-
	Designated NRF	-	-	-	-	-	-	-	-	-	-
	Existing NRF (71+)	-	-	-	-	-	-	-	-	-	-
	OESF	-	-	-	-	-	-	-	-	-	-
	No Role	-	-	-	*(285.00)*	-	-	*(187.92)*	*(1,040.00)*	-	*(1,512.92)*
											(1,767.49)
Other Habitats Acquired	Murrelet	-	-	-	-	-	-	-	-	-	-
	Oregon Silverspot Butterfly	-	-	-	-	-	-	-	-	-	-
	Aleutian Canada Goose	-	-	-	-	-	-	-	-	-	-
	Bald Eagle	-	-	-	-	-	-	-	-	-	-
	Peregrine Falcon	-	-	-	-	-	-	-	-	-	-
	Gray Wolf	-	-	-	-	-	-	-	-	-	-
	Grizzly Bear									-	
	Columbian White-tailed Deer	-	-	-	-	-	-	-	-	-	-
	Talus and Cliffs	-	-	-	-	-	-	-	-	-	-
	Meadows	-	-	-	-	-	-	-	-	-	-
Other Habitats Disposed	*Murrelet*	-	-	-	-	-	-	-	-	-	-
	Oregon Silverspot Butterfly	-	-	-	-	-	-	-	-	-	-
	Aleutian Canada Goose	-	-	-	-	-	-	-	-	-	-
	Bald Eagle	-	-	-	-	-	-	-	-	-	-
	Peregrine Falcon	-	-	-	-	-	-	-	-	-	-
	Gray Wolf	-	-	-	-	-	-	-	-	-	-
	Grizzly Bear	-	-	-	-	-	-	-	-	-	-
	Columbian White-tailed Deer	-	-	-	-	-	-	-	-	-	-

	Activity	Planning Unit									
		Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
Other Hab. Disp. (cont.)	*Talus and Cliffs*	-	-	-	-	-	-	-	-	-	-
	Meadows	-	-	-	-	-	-	-	-	-	-
Riparian: Stream Miles Acquired	Stream Type 1	-	-	-	2.41	-	-	-	-	-	2.41
	Stream Type 2	-	-	-	0.20	-	-	0.45	-	-	0.65
	Stream Type 3	-	0.39	-	1.20	0.03	-	2.29	-	-	3.91
	Stream Type 4	-	-	-	3.98	-	-	0.66	-	-	4.64
	Stream Type 5	-	0.06	-	5.66	-	-	0.10	-	-	5.82
	Stream Type 9	-	-	-	2.76	-	-	0.22	-	-	2.98
	Total Miles	-	0.45	-	16.21	0.03	-	3.72	-	-	20.41
Rain on Snow/Slopes Acquired	Rain on Snow	-	-	-	878.02	-	-	-	-	-	878.02
	Unstable Slopes	-	35.06	-	16.21	-	-	115.05	-	-	166.32
Riparian: Stream Miles Disposed	*Stream Type 1*	-	-	-	-	-	-	-	-	*0.23*	*0.23*
	Stream Type 2	-	-	-	-	-	-	-	-	-	-
	Stream Type 3	-	-	-	*0.25*	-	-	*0.50*	*0.33*	0.42	*1.50*
	Stream Type 4	-	-	-	-	-	-	*0.10*	*1.52*	-	*1.62*
	Stream Type 5	-	-	-	*0.25*	-	-	-	*2.12*	-	*2.37*
	Stream Type 9	-	-	-	-	-	-	-	*2.97*	*0.42*	*3.39*
	Total Miles	-	-	-	*0.50*	-	-	*0.60*	*6.94*	*1.07*	*9.11*
Rain on Snow/Slopes Disposed	*Rain on Snow*	-	-	-	-	-	-	-	*786.00*	*185.58*	*971.58*
	Unstable Slopes	-	-	-	-	-	-	*9.72*	*6.70*	*45.77*	*62.19*
Zones Acquired	Puget Sound Doug-fir	-	-	-	-	-	-	576.96	-	-	576.96
	Silver Fir	-	-	-	500.42	-	-	-	-	-	500.42
	Sitka Spruce	-	-	-	-	11.30	-	-	-	-	11.30
	Western Hemlock	-	40.00	-	2,384.45	-	14.92	-	-	-	2,439.37
	Woodland/Prairie Mosaic	-	-	-	-	-	-	-	-	-	-
	Total Acres	-	40.00	-	2,884.87	11.30	14.92	576.96	-	-	3,528.05
Zones Disposed	Central Arid Steppe	-	-	-	-	-	-	-	-	-	-
	Grand Fir	-	-	-	-	-	-	-	-	*(254.57)*	*(254.57)*
	Interior Doug-fir	-	-	-	-	-	-	-	-	-	-
	Interior Western Hemlock	-	-	-	-	-	-	-	-	-	-
	Oak	-	-	-	-	-	-	-	-	-	-
	Ponderosa Pine	-	-	-	-	-	-	-	-	-	-
	Puget Sound Doug-fir	-	-	-	*(285.00)*	-	-	*(187.92)*	-	-	*(472.92)*
	Western Hemlock	-	-	-	-	-	-	-	*(1,040.00)*	-	*(1,040.00)*
	Woodland/Prairie Mosaic	-	-	-	-	-	-	-	-	-	-
	Total Acres	-	-	-	*(285.00)*	-	-	*(187.92)*	*(1,040.00)*	*(254.57)*	*(1,767.49)*
Age Class Acquired	Open 0-10	-	-	-	2,406.24	*11.30*	-	-	-	-	2,417.54
	Regeneration 11-20	-	-	-	-	-	-	47.00	-	-	47.00
	Pole 21-40	-	-	-	241.00	-	-	-	-	-	241.00
	Closed 41-70	-	-	-	20.60	-	-	244.30	-	-	264.90

	Activity	Planning Unit									
		Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
Age Class Acquired (continued)	Complex 71-100	-	40.00	-	1.03	-	-	151.00	-	-	192.03
	Complex 101-150	-	-	-	-	-	-	10.00	-	-	10.00
	Functional 150+	-	-	-	-	-	-	-	-	-	-
	Non-Forest Land	-	-	-	216.00	-	*14.92*	124.66	-	-	355.58
	Total Acres	-	40.00	-	2,884.87	*11.30*	*14.92*	576.96	-	-	3,528.05
Age Class Disposed	*Open 0-10*	-	-	-	-	-	-	*(4.14)*	-	-	*(4.14)*
	Regeneration 11-20	-	-	-	-	-	-	-	*(36.00)*	*(90.00)*	*(126.00)*
	Pole 21-40	-	-	-	-	-	-	-	*(374.00)*	-	*(374.00)*
	Closed 41-70	-	-	-	*(200.00)*	-	-	*(48.78)*	*(450.00)*	*(32.00)*	*(730.78)*
	Complex 71-100	-	-	-	*(80.00)*	-	-	*(86.00)*	-	-	*(166.00)*
	Complex 101-150	-	-	-	-	-	-	*(18.00)*	-	*(41.00)*	*(59.00)*
	Functional 150+	-	-	-	-	-	-	-	*(102.00)*	-	(102.00)
	Non-Forest Land	-	-	-	*(5.00)*	-	-	*(31.00)*	*(78.00)*	*(91.57)*	*(205.57)*
	Total Acres	-	-	-	*(285.00)*	-	-	*(187.92)*	*(1,040.00)*	*(254.57)*	*(1,767.49)*
Age Class by Zone: Acquired	Open 0-10										
	Puget Sound Doug-fir	-	-	-	-	-	-	-	-	-	-
	Silver Fir	-	-	-	453.17	-	-	-	-	-	453.17
	Sitka Spruce	-	-	-	-	11.30	-	-	-	-	11.30
	Western Hemlock	-	-	-	1,953.07	-	-	-	-	-	1,953.07
	Regeneration 11-20										
	Puget Sound Doug-fir	-	-	-	-	-	-	47.00	-	-	47.00
	Silver Fir	-	-	-	-	-	-	-	-	-	-
	Sitka Spruce	-	-	-	-	-	-	-	-	-	-
	Western Hemlock	-	-	-	-	-	-	-	-	-	-
	Pole 21-40										
	Puget Sound Doug-fir	-	-	-	-	-	-	-	-	-	-
	Sitka Spruce	-	-	-	-	-	-	-	-	-	-
	Western Hemlock	-	-	-	241.00	-	-	-	-	-	241.00
	Closed 41-70										
	Puget Sound Doug-fir	-	-	-	-	-	-	244.30	-	-	244.30
	Sitka Spruce	-	-	-	-	-	-	-	-	-	-
	Western Hemlock	-	-	-	20.60	-	-	-	-	-	20.60
	Woodland/Prairie Mosaic	-	-	-	-	-	-	-	-	-	-
	Complex 71-100										
	Puget Sound Doug-fir	-	-	-	-	-	-	151.00	-	-	151.00
	Sitka Spruce	-	-	-	-	-	-	-	-	-	-
	Western Hemlock	-	-	-	1.03	-	-	-	-	-	1.03
	Willamette Valley	-	40.00	-	-	-	-	-	-	-	40.00
	Complex 101-150										
	Puget Sound Doug-fir	-	-	-	-	-	-	10.00	-	-	10.00
	Sitka Spruce	-	-	-	-	-	-	-	-	-	-
	Western Hemlock	-	-	-	-	-	-	-	-	-	-
	Functional 150										
	Sitka Spruce	-	-	-	-	-	-	-	-	-	-
	Non-Forest Land										
	Puget Sound Doug-fir	-	-	-	-	-	-	124.66	-	-	124.66
	Silver Fir	-	-	-	66.00	-	-	-	-	-	66.00

	Activity	Planning Unit									
		Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
Age Class by Zone: Acquired (continued)	Sitka Spruce	-	-	-	-	-	-	-	-	-	-
	Western Hemlock	-	-	-	150.00	-	14.92	-	-	-	164.92
	Willamette Valley									-	
	Woodland/Prairie Mosaic	-	-	-	-	-	-	-	-	-	-
	Total Acres	-	40.00	-	2,884.87	11.30	14.92	576.96	-	-	3,528.05
Age Class by Zone: Disposed	*Open 0-10*										
	Oak	-	-	-	-	-	-	-	-	-	-
	Puget Sound Doug-fir	-	-	-	-	-	-	*(4.14)*	-	-	*(4.14)*
	Western Hemlock	-	-	-	-	-	-	-	-	-	-
	Regeneration 11-20										
	Grand Fir	-	-	-	-	-	-	-	-	*(90.00)*	*(90.00)*
	Puget Sound Doug-fir	-	-	-	-	-	-	-	-	-	-
	Western Hemlock	-	-	-	-	-	-	-	*(36.00)*	-	*(36.00)*
	Pole 21-40										
	Interior Western Hemlock	-	-	-	-	-	-	-	-	-	-
	Interior Doug-fir	-	-	-	-	-	-	-	-	-	-
	Oak	-	-	-	-	-	-	-	-	-	-
	Puget Sound Doug-fir	-	-	-	-	-	-	-	-	-	-
	Western Hemlock	-	-	-	-	-	-	-	*(374.00)*	-	*(374.00)*
	Closed 41-70										
	Grand Fir	-	-	-	-	-	-	-	-	*(32.00)*	*(32.00)*
	Interior Western Hemlock	-	-	-	-	-	-	-	-	-	-
	Interior Doug-fir	-	-	-	-	-	-	-	-	-	-
	Oak	-	-	-	-	-	-	-	-	-	-
	Puget Sound Doug-fir	-	-	-	*(200.00)*	-	-	*(48.78)*	-	-	*(248.78)*
	Western Hemlock	-	-	-	-	-	-	-	*(450.00)*	-	*(450.00)*
	Complex 71-100										
	Grand Fir	-	-	-	-	-	-	-	-	-	-
	Interior Doug-fir	-	-	-	-	-	-	-	-	-	-
	Oak	-	-	-	-	-	-	-	-	-	-
	Puget Sound Doug-fir	-	-	-	*(80.00)*	-	-	*(86.00)*	-	-	*(166.00)*
	Western Hemlock	-	-	-	-	-	-	-	-	-	-
	Woodland/Prairie Mosaic	-	-	-	-	-	-	-	-	-	-
	Interior Western Hemlock	-	-	-	-	-	-	-	-	-	-
	Complex 101-150										
	Grand Fir	-	-	-	-	-	-	-	-	*(41.00)*	*(41.00)*
	Oak	-	-	-	-	-	-	-	-	-	-
	Puget Sound Doug-fir	-	-	-	-	-	-	*(18.00)*	-	-	*(18.00)*
	Western Hemlock	-	-	-	-	-	-	-	-	-	-
	Woodland/Prairie Mosaic	-	-	-	-	-	-	-	-	-	-
	Functional 150										
	Oak	-	-	-	-	-	-	-	-	-	-
	Western Hemlock									-	

	Activity	Planning Unit									
		Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
Age Class by Zone: Disposed (continued)	*Woodland/Prairie Mosaic*	-	-	-	-	-	-	-	-	-	-
	Non-Forest Land										
	Central Arid Steppe	-	-	-	-	-	-	-	-	-	-
	Grand Fir									*(91.57)*	
	Interior Western Hemlock	-	-	-	-	-	-	-	-	-	-
	Oak									-	
	Ponderosa Pine									-	
	Puget Sound Doug-fir	-	-	-	*(5.00)*	-	-	*(31.00)*	-	-	*(36.00)*
	Western Hemlock	-	-	-	-	-	-	-	*(78.00)*		*(78.00)*
	Woodland/Prairie Mosaic	-	-	-	-	-	-	-	-	-	-
	Total Acres	-	-	-	*(285.00)*	-	-	*(187.92)*	*(1,040.00)*	*(254.57)*	*(1,767.49)*

Note: totals may not add due to rounding.

Table 6.2. Effects of transactions on permit lands: January 1997 through June 2007

	Activity	Planning Unit									
		Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
	Total Acres Acquired	403.57	6,611.48	1,234.65	20,665.28	3,191.89	4,748.50	11,126.23	1,222.72	39.15	49,243.47
	Total Acres Disposed	*(640.00)*	*(10,514.84)*	*(1,396.20)*	*(6,359.73)*	*(838.24)*	*(2,605.91)*	*(6,505.33)*	*(1,246.45)*	*(1,369.41)*	*(31,476.11)*
	Net Change - Acres	*(236.43)*	*(3,903.36)*	*(161.55)*	14,305.55	2,353.65	2,142.59	4,620.90	*(23.73)*	*(1,330.26)*	17,767.36
Owl Habitat Acquired	Designated Dispersal	-	-	232.20	10.00	-	-	7,346.73	-	-	7,588.93
	Existing Dispersal (41+)	-	-	230.00	10.00	-	-	3,279.46	-	-	3,519.46
	Designated NRF	203.57	380.00	1,002.45	2,076.24	-	-	-	-	-	3,662.26
	Existing NRF (71+)	-	17.39	146.00	-	-	-	-	-	-	163.39
	OESF	-	-	-	-	3,191.89	-	-	-	-	3,191.89
	No Role	200.00	6,231.48	-	18,579.04	-	4,748.50	3,779.50	1,222.72	39.15	34,800.39
											49,243.47
Owl Habitat Disposed	*Designated Dispersal*	-	*(6,754.57)*	-	*(734.36)*	-	-	*(660.00)*	-	*(1,084.35)*	*(9,233.28)*
	Existing Dispersal (41+)	-	*(2,325.82)*	-	*(109.00)*	-	-	*(131.90)*	-	*(844.07)*	*(3,410.79)*
	Designated DFC	-	-	*(19.97)*	-	-	-	-	-	-	*(19.97)*
	Existing DFC	-	-	*(19.97)*	-	-	-	-	-	-	*(19.97)*
	Designated NRF	-	*(1,284.53)*	-	*(126.55)*	-	-	-	-	-	*(1,411.08)*
	Existing NRF (71+)	-	*(389.49)*	-	-	-	-	-	-	-	*(389.49)*
	OESF	-	-	-	-	*(838.24)*	-	-	-	-	*(838.24)*
	No Role	*(640.00)*	*(2,475.74)*	*(1,376.23)*	*(5,498.82)*	-	*(2,605.91)*	*(5,845.33)*	*(1,246.45)*	*(285.06)*	*(19,973.54)*
											31,476.11)
Other Habitats Acquired	Murrelet	-	-	-	-	-	-	-	-	-	-
	Oregon Silverspot Butterfly	-	-	-	-	-	-	-	-	-	-

Activity		Planning Unit									
		Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
Other Habitats Acquired (continued)	Aleutian Canada Goose	-	-	-	-	-	-	-	-	-	-
	Bald Eagle	-	-	-	20.00	-	-	-	-	-	20.00
	Peregrine Falcon	-	-	-	-	-	-	-	-	-	-
	Gray Wolf	-	-	-	-	-	-	-	-	-	-
	Grizzly Bear	-	-	-	-	-	-	-	-	-	-
	Columbian White-tailed Deer	-	-	-	-	-	-	-	-	-	-
	Talus and Cliffs	-	-	-	325.00	-	-	-	-	-	325.00
	Meadows	102.50	-	70.45	-	-	-	-	-	-	172.95
Other Habitats Disposed	*Murrelet*	-	*(567.61)*	-	-	-	-	*(279.91)*	-	-	*(847.52)*
	Oregon Silverspot Butterfly	-	-	-	-	-	-	-	-	-	-
	Aleutian Canada Goose	-	-	-	-	-	-	-	-	-	-
	Bald Eagle	-	*(40.00)*	-	*(64.00)*	*(49.42)*	-	-	-	-	*(153.42)*
	Peregrine Falcon	-	-	-	-	-	-	-	-	-	-
	Gray Wolf	-	-	-	-	-	-	-	-	-	-
	Grizzly Bear	-	-	-	-	-	-	-	-	-	-
	Columbian White-tailed Deer	-	-	-	-	-	-	-	-	-	-
	Talus and Cliffs	-	*(87.00)*	-	*(20.00)*	-	-	-	-	-	*(107.00)*
	Meadows	-	*(82.00)*	-	-	-	-	-	-	-	*(82.00)*
Riparian: Stream Miles Acquired	Stream Type 1	-	2.70	3.70	23.04	0.32	9.23	3.05	-	-	42.04
	Stream Type 2	-	-	1.12	2.08	1.02	0.91	0.81	-	-	5.94
	Stream Type 3	-	9.23	1.01	21.66	7.27	7.89	11.64	-	-	58.70
	Stream Type 4	0.96	10.40	-	29.32	2.25	6.72	11.48	0.31	-	61.44
	Stream Type 5	2.47	41.39	0.82	41.64	8.99	13.14	36.24	4.41	-	149.10
	Stream Type 9	4.47	45.60	3.42	42.04	4.85	24.77	12.93	2.83	0.25	141.16
	Total Miles	7.90	109.32	10.07	159.78	24.70	*62.66*	76.15	7.55	0.25	458.38
Rain on Snow/Slopes Acquired	Rain on Snow	-	1,070.74	999.04	3,382.16	4.47	-	3,165.84	925.75	3.43	9,551.43
	Unstable Slopes	23.10	875.46	-	1,559.24	1,137.10	288.67	219.89	923.77	-	5,027.23
Riparian: Stream Miles Disposed	*Stream Type 1*	-	*(1.40)*	-	*(3.38)*	*(0.30)*	*(0.14)*	*(0.69)*	-	*(0.23)*	*(6.14)*
	Stream Type 2	-	-	-	*(0.75)*	-	*(1.97)*	*(0.32)*	-	*(0.35)*	*(3.39)*
	Stream Type 3	-	*(15.78)*	-	*(12.68)*	*(2.18)*	*(2.64)*	*(5.68)*	*(0.92)*	*(0.42)*	*(40.30)*
	Stream Type 4	*(0.08)*	*(10.01)*	*(0.36)*	*(2.52)*	*(1.71)*	*(1.65)*	*(6.06)*	*(1.69)*	*(0.36)*	*(24.44)*
	Stream Type 5	*(5.44)*	*(49.81)*	*(2.31)*	*(4.66)*	*(5.15)*	*(9.43)*	*(7.03)*	*(2.21)*	*(2.43)*	*(88.47)*
	Stream Type 9	*(7.60)*	*(31.18)*	*(4.19)*	*(1.99)*	-	*(11.18)*	*(11.17)*	*(3.21)*	*(5.29)*	*(75.81)*
	Total Miles	*(13.12)*	*(108.18)*	*(6.86)*	*(25.98)*	*(9.34)*	*(27.01)*	*(30.95)*	*(8.03)*	*(9.08)*	*(238.55)*
Rain on Snow/Slopes Disposed	*Rain on Snow*	*(497.03)*	*(3,611.18)*	*(796.06)*	*(536.98)*	*(78.46)*	-	*(182.12)*	*(786.00)*	*(953.39)*	*(7,441.22)*
	Unstable Slopes	-	*(1,135.79)*	-	*(358.49)*	*(14.09)*	*(1.65)*	*(133.59)*	*(6.70)*	*(45.77)*	*(1,696.08)*
Zones: Acquired	Central Arid Steppe	120.00	-	-	-	-	-	-	-	-	120.00
	Interior Doug-fir	203.57	-	360.70	-	-	-	-	-	-	564.27
	Mountain Hemlock	-	-	-	2,597.04	-	-	-	-	-	2,597.04

	Activity	Planning Unit									
		Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
Zones Acquired (continued)	Oak	-	-	873.95	-	-	-	-	-	-	873.95
	Olympic Doug-fir	-	-	-	-	-	-	-	161.45	-	161.45
	Ponderosa Pine	40.00	-	-	-	-	-	-	-	26.15	66.15
	Puget Sound Doug-fir	-	-	-	202.17	-	-	2,438.44	0.75	-	2,641.36
	Silver Fir	-	-	-	1,799.67	-	-	39.32	-	-	1,838.99
	Sitka Spruce	-	-	-	-	400.38	1,988.16	-	-	-	2,388.54
	Three-tip Sage	40.00	-	-	-	-	-	-	-	-	40.00
	Western Hemlock	-	6,609.48	-	15,853.48	2,791.51	2,535.82	8,648.47	1,060.52	-	37,499.28
	Willamette Valley	-	2.00	-	-	-	-	-	-	-	2.00
	Woodland/Prairie Mosaic	-	-	-	212.92	-	224.52	-	-	13.00	450.44
	Total Acres	403.57	6,611.48	1,234.65	20,665.28	3,191.89	4,748.50	11,126.23	1,222.72		49,243.47
Zones: Disposed	*Interior Doug-fir*	-	-	*(332.50)*	-	-	-	-	-	-	*(332.50)*
	Mountain Hemlock	-	-	-	*(402.00)*	-	-	-	-	-	*(402.00)*
	Puget Sound Doug-fir	-	-	-	*(1,947.95)*	-	*(148.71)*	*(3,605.58)*	*(80.00)*	-	*(5,782.24)*
	Olympic Doug-fir	-	-	-	-	-	-	-	*(0.22)*	-	*(0.22)*
	Silver Fir	-	*(1,250.23)*	-	*(550.00)*	-	-	*(488.00)*	-	-	*(2,288.23)*
	Sitka Spruce	-	-	-	-	*(54.21)*	*(1,120.00)*	-	-	-	*(1,174.21)*
	Western Hemlock	-	*(8,982.61)*	-	*(3,346.93)*	*(784.03)*	*(926.77)*	*(1,850.75)*	*(1,125.61)*	-	*(17,016.70)*
	Woodland/Prairie Mosaic	-	-	-	*(112.85)*	-	-	*(561.00)*	*(40.62)*	-	*(714.47)*
	Willamette Valley	-	*(242.00)*	-	-	-	-	-	-	-	*(242.00)*
	Cowlitz River	-	*(40.00)*	-	-	-	*(410.43)*	-	-	-	*(450.43)*
	Central Arid Steppe	*(615.00)*	-	-	-	-	-	-	-	-	*(615.00)*
	Ponderosa Pine	*(25.00)*	-	-	-	-	-	-	-	-	*(25.00)*
	Oak	-	-	*(1,063.70)*	-	-	-	-	-	-	*(1,063.70)*
	Interior W. Hemlock	-	-	-	-	-	-	-	-	*(480.00)*	*(480.00)*
	Grand Fir	-	-	-	-	-	-	-	-	*(889.41)*	*(889.41)*
	Total Acres	*(640.00)*	*(10,514.84)*	*(1,396.20)*	*(6,359.73)*	*(838.24)*	*(2,605.91)*	*(6,505.33)*	*(1,246.45)*	*(1,369.41)*	*(31,476.11)*
Age Class Acquired	Open 0-10	97.50	3,950.00	184.65	5,713.44	227.58	1,762.10	2,725.00	273.45	-	14,933.72
	Regeneration 11-20	-	320.00	14.90	5,252.74	509.64	568.61	1,271.41	-	-	7,937.30
	Pole 21-40	0.50	751.00	-	1,910.50	1,541.00	245.30	1,990.12	-	-	6,438.42
	Closed 41-70	2.57	1,393.78	89.10	4,781.06	633.50	1,072.37	3,576.53	903.72	-	12,452.63
	Complex 71-100	-	83.59	324.00	1,121.60	113.30	265.60	770.14	-	-	2,678.23
	Complex 101-150	-	-	10.00	50.30	-	91.00	107.50	-	12.15	270.95
	Functional 150+	-	-	42.00	7.00	-	2.00	-	-	-	51.00
	Non-Forest Land	303.00	113.07	570.00	1,828.70	166.80	741.47	685.72	45.55	27.00	4,481.31
	Total Acres	403.57	6,611.44	1,234.65	20,665.34	3,191.82	4,748.45	11,126.42	1,222.72	39.15	49,243.56
Age Class Disposed	*Open 0-10*	-	*(2,048.90)*	*(225.00)*	*(740.01)*	*(42.21)*	*(655.25)*	*(612.38)*	*(2.00)*	-	*(4,325.75)*
	Regeneration 11-20	-	*(1,307.22)*	-	*(736.58)*	-	*(679.67)*	*(330.61)*	*(36.00)*	*(267.38)*	*(3,357.46)*
	Pole 21-40	-	*(2,027.69)*	*(143.85)*	*(765.54)*	*(207.35)*	*(304.60)*	*(357.50)*	*(374.00)*	*(63.49)*	*(4,244.02)*
	Closed 41-70	-	*(2,810.62)*	*(479.31)*	*(2,371.90)*	*(414.03)*	*(813.63)*	*(2,195.62)*	*(585.42)*	*(486.61)*	*(10,157.14)*
	Complex 71-100	-	*(565.35)*	*(467.62)*	*(1,063.97)*	*(140.95)*	*(33.57)*	*(1,537.06)*	*(36.40)*	*(237.65)*	*(4,082.57)*
	Complex 101-150	-	*(748.71)*	*(43.05)*	*(71.42)*	-	-	*(375.12)*	*(16.30)*	*(192.81)*	*(1,447.41)*
	Functional 150+	-	*(168.99)*	*(3.95)*	*(89.62)*	-	-	*(588.00)*	*(102.00)*	-	*(952.56)*
	Non-Forest Land	*(640.00)*	*(837.34)*	*(33.42)*	*(520.73)*	*(33.70)*	*(119.19)*	*(509.01)*	*(94.33)*	*(121.47)*	*(2,909.19)*
	Total Acres	*(640.00)*	*(10,514.82)*	*(1,396.20)*	*(6,359.77)*	*(838.24)*	*(2,605.91)*	*(6,505.30)*	*(1,246.45)*	*(1,369.41)*	*(31,476.10)*

	Activity	Planning Unit									
		Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
Age Class	Open 0-10										
by Zone:	Interior Doug-fir	97.50	-	3.90	-	-	-	-	-	-	101.40
Acquired	Mountain Hemlock	-	-	-	450.70	-	-	-	-	-	450.70
	Oak	-	-	180.75	-	-	-	-	-	-	180.75
	Olympic Doug-fir	-	-	-	-	-	-	-	161.45	-	161.45
	Puget Sound Doug-fir	-	-	-	-	-	-	271.30	-	-	271.30
	Silver Fir	-	-	-	1,068.40	-	-	-	-	-	1,068.40
	Sitka Spruce	-	-	-	-	88.99	290.20	-	-	-	379.19
	Western Hemlock	-	3,950.00	-	4,270.25	138.92	1,423.46	2,453.77	128.00	-	12,364.40
	Woodland/Prairie Mosaic	-	-	-	-	-	48.52	-	-	-	48.52
	Regeneration 11-20										
	Interior Doug-fir	-	-	3.40	-	-	-	-	-	-	3.40
	Mountain Hemlock	-	-	-	320.50	-	-	-	-	-	320.50
	Oak	-	-	11.50	-	-	-	-	-	-	11.50
	Puget Sound Doug-fir	-	-	-	-	-	-	343.49	-	-	343.49
	Silver Fir	-	-	-	21.50	-	-	39.32	-	-	60.82
	Sitka Spruce	-	-	-	-	60.96	279.31	-	-	-	340.27
	Western Hemlock	-	320.00	-	4,970.63	448.71	182.30	888.60	-	-	6,810.24
	Woodland/Prairie Mosaic	-	-	-	-	-	107.00	-	-	-	107.00
	Pole 21-40										
	Interior Doug-fir	0.50	-	-	-	-	-	-	-	-	0.50
	Mountain Hemlock	-	-	-	138.00	-	-	-	-	-	138.00
	Puget Sound Doug-fir	-	-	-	-	-	-	606.07	-	-	606.07
	Silver Fir	-	-	-	103.71	-	-	-	-	-	103.71
	Sitka Spruce	-	-	-	-	142.66	161.32	9.00	-	-	312.98
	Western Hemlock	-	751.00	-	1,668.75	1,251.39	20.00	1,375.00	-	-	5,066.14
	Woodland/Prairie Mosaic	-	-	-	-	-	64.00	-	-	-	64.00
	Closed 41-70										
	Interior Doug-fir	2.57	-	4.00	-	-	-	-	-	-	6.57
	Mountain Hemlock	-	15.48	-	1,074.00	-	-	-	-	-	1,089.48
	Oak	-	-	85.10	-	-	-	-	-	-	85.10
	Puget Sound Doug-fir	-	-	-	117.97	-	-	507.55	-	-	625.52
	Silver Fir	-	-	-	428.16	-	-	-	-	-	428.16
	Sitka Spruce	-	-	-	-	52.54	729.37	-	-	-	781.91
	Western Hemlock	-	1,378.34	-	2,893.23	729.40	338.00	3,068.99	907.72	-	9,315.68
	Woodland/Prairie Mosaic	-	-	-	159.77	-	5.00	-	-	-	164.77
	Complex 71-100										
	Interior Doug-fir	-	-	212.20	-	-	-	-	-	-	212.20
	Mountain Hemlock	-	-	-	130.00	-	-	-	-	-	130.00
	Oak	-	-	111.80	-	-	-	-	-	-	111.80
	Puget Sound Doug-fir	-	-	-	58.00	-	-	221.23	-	-	279.23
	Silver Fir	-	-	-	47.97	-	-	-	-	-	47.97
	Sitka Spruce	-	-	-	-	49.97	265.60	-	-	-	315.57
	Western Hemlock	-	41.89	-	857.63	61.47	-	548.69	-	-	1,509.68
	Willamette Valley	-	41.80	-	-	-	-	-	-	-	41.80

	Activity	Planning Unit									
		Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
Age Class by Zone: Acquired (continued)	Complex 101-150										
	Central Arid Steppe	-	-	-	-	-	-	-	-	8.15	8.15
	Oak	-	-	10.00	-	-	-	-	-	-	10.00
	Ponderosa Pine	-	-	-	-	-	-	-	-	4.00	4.00
	Puget Sound Doug-fir	-	-	-	-	-	-	10.00	-	-	10.00
	Sitka Spruce	-	-	-	-	-	91.00	-	-	-	91.00
	Western Hemlock	-	-	-	50.30	-	-	97.50	-	-	147.80
	Functional 150+										
	Interior Doug-fir	-	-	42.00	-	-	-	-	-	-	42.00
	Sitka Spruce	-	-	-	-	-	2.00	-	-	-	2.00
	Western Hemlock	-	-	-	7.00	-	-	-	-	-	7.00
	Non-Forest Land										
	Central Arid Steppe	120.00	-	-	-	-	-	-	-	*18.00*	138.00
	Interior Doug-fir	103.00	-	95.20	-	-	-	-	-	-	198.20
	Mountain Hemlock	-	-	-	505.44	-	-	-	-	-	505.44
	Oak	-	-	474.80	-	-	-	-	-	-	474.80
	Ponderosa Pine	40.00	-	-	-	-	-	-	-	9.00	49.00
	Puget Sound Doug-fir	-	-	-	26.20	-	-	470.02	0.75	-	496.97
	Silver Fir	-	-	-	148.68	-	-	-	-	-	148.68
	Sitka Spruce	-	-	-	-	5.26	169.41	-	-	-	174.67
	Three-tip Sage	40.00	-	-	-	-	-	-	-	-	40.00
	Western Hemlock	-	112.77	-	1,095.34	161.62	572.06	215.70	24.80	-	2,182.29
	Willamette Valley	-	0.20	-	-	-	-	-	-	-	0.20
	Woodland/Prairie Mosaic	-	-	-	53.15	-	-	-	-	-	53.15
	Total Acres	403.57	6,611.48	1,234.65	20,665.28	3,191.89	4,748.55	11,126.23	1,222.72	39.15	49,243.52
Age Class by Zone: Disposed	*Open 0-10*										
	Cowlitz River	-	-	-	-	-	*(178.00)*	-	-	-	*(178.00)*
	Mountain Hemlock	-	-	-	*(56.00)*	-	-	-	-	-	*(56.00)*
	Oak	-	-	*(225.00)*	-	-	-	-	-	-	*(225.00)*
	Puget Sound Doug-fir	-	-	-	*(106.84)*	-	*(39.15)*	*(226.43)*	*(2.70)*	-	*(375.12)*
	Silver Fir	-	*(169.90)*	-	-	*(42.21)*	-	*(191.70)*	-	-	*(403.81)*
	Western Hemlock	-	*(1,878.95)*	-	*(698.07)*	-	*(438.10)*	*(33.55)*	*(38.00)*	-	*(3,086.67)*
	Woodland/Prairie Mosaic	-	-	-	-	-	-	*(160.70)*	-	-	*(160.70)*
	Regeneration 11-20										
	Grand Fir	-	-	-	-	-	-	-	-	*(267.38)*	*(267.38)*
	Mountain Hemlock	-	-	-	*(56.00)*	-	-	-	-	-	*(56.00)*
	Puget Sound Doug-fir	-	-	-	*(256.56)*	-	-	*(189.40)*	*(2.70)*	-	*(448.66)*
	Silver Fir	-	*(239.50)*	-	*(11.88)*	-	-	*(115.70)*	-	-	*(367.08)*
	Sitka Spruce	-	-	-	-	-	*(339.00)*	-	-	-	*(339.00)*
	Western Hemlock	-	*(1,067.72)*	-	*(159.14)*	-	*(340.67)*	*(25.51)*	-	-	*(1,593.04)*
	Pole 21-40										
	Cowlitz River	-	*(8.00)*	-	-	-	*(70.00)*	-	-	-	*(78.00)*
	Interior Western Hemlock	-	-	-	-	-	-	-	-	*(63.49)*	*(63.49)*
	Interior Doug-fir	-	-	*(37.69)*	-	-	-	-	-	-	*(37.69)*
	Mountain Hemlock	-	-	-	*(57.00)*	-	-	-	-	-	*(57.00)*

		Planning Unit									
	Activity	Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
Age Class by Zone: Disposed (continued)	*Oak*	-	-	*(106.15)*	-	-	-	-	-	-	*(106.15)*
	Puget Sound Doug-fir	-	-	-	*(347.90)*	-	-	*(303.20)*	*(2.60)*	-	*(653.70)*
	Silver Fir	-	*(277.62)*	-	*(59.11)*	-	-	*(12.10)*	-	-	*(348.83)*
	Sitka Spruce	-	-	-	-	-	*(169.20)*	-	-	-	*(169.20)*
	Western Hemlock	-	*(1,742.12)*	-	*(423.60)*	*(207.35)*	*(65.41)*	*(33.20)*	*(374.00)*	-	*(2,845.68)*
	Woodland/Prairie Mosaic	-	-	-	-	-	-	*(9.00)*	-	-	*(9.00)*
	Closed 41-70										
	Cowlitz River	-	-	-	-	-	*(114.33)*	-	-	-	*(114.33)*
	Grand Fir	-	-	-	-	-	-	-	-	*(304.55)*	*(304.55)*
	Interior Western Hemlock	-	-	-	-	-	-	-	-	*(182.06)*	*(182.06)*
	Interior Doug-fir	-	-	*(148.57)*	-	-	-	-	-	-	*(148.57)*
	Mountain Hemlock	-	-	-	*(230.00)*	-	-	-	-	-	*(230.00)*
	Oak	-	-	*(330.74)*	-	-	-	-	-	-	*(330.74)*
	Puget Sound Doug-fir	-	-	-	*(283.43)*	-	*(83.00)*	*(1,188.11)*	*(72.00)*	-	*(1,626.54)*
	Silver Fir	-	*(47.82)*	-	*(450.00)*	-	-	*(33.70)*	-	-	*(531.52)*
	Sitka Spruce	-	-	-	-	-	*(596.30)*	-	-	-	*(596.30)*
	Western Hemlock	-	*(2,762.82)*	-	*(1,420.46)*	*(414.03)*	*(20.00)*	*(621.30)*	*(464.80)*	-	*(5,703.41)*
	Woodland/Prairie Mosaic	-	-	-	-	-	-	*(352.80)*	*(40.62)*	-	*(393.42)*
	Complex 71-100										
	Cowlitz River	-	*(25.50)*	-	-	-	-	-	-	-	*(25.50)*
	Grand Fir	-	-	-	-	-	-	-	-	*(9.40)*	*(9.40)*
	Interior Western Hemlock	-	-	-	-	-	-	-	-	*(228.25)*	*(228.25)*
	Interior Doug-fir	-	-	*(146.24)*	-	-	-	-	-	-	*(146.24)*
	Oak	-	-	*(321.38)*	-	-	-	-	-	-	*(321.38)*
	Puget Sound Doug-fir	-	-	-	*(537.16)*	-	-	*(709.28)*	-	-	*(1,246.44)*
	Silver Fir	-	-	-	*(1.70)*	-	-	-	-	-	*(1.70)*
	Western Hemlock	-	*(539.85)*	-	*(287.30)*	*(140.95)*	*(33.00)*	*(826.92)*	*(36.40)*	-	*(1,864.42)*
	Woodland/Prairie Mosaic	-	-	-	*(51.31)*	-	-	-	-	-	*(51.31)*
	Complex 101-150										
	Grand Fir	-	-	-	-	-	-	-	-	*(192.81)*	*(192.81)*
	Oak	-	-	*(43.06)*	-	-	-	-	-	-	*(43.06)*
	Puget Sound Doug-fir	-	-	-	*(255.00)*	-	-	*(64.10)*	-	-	*(319.10)*
	Silver Fir	-	*(345.50)*	-	*(1.70)*	-	-	*(123.70)*	-	-	*(470.90)*
	Western Hemlock	-	*(403.21)*	-	*(3.30)*	-	-	*(187.15)*	*(16.30)*	-	*(609.96)*
	Woodland/Prairie Mosaic	-	-	-	*(11.92)*	-	-	-	-	-	*(11.92)*
	Functional 150+										
	Oak	-	-	*(3.95)*	-	-	-	-	-	-	*(3.95)*
	Puget Sound Doug-fir	-	-	-	-	-	-	*(588.00)*	-	-	*(588.00)*
	Silver Fir	-	*(131.49)*	-	*(1.00)*	-	-	-	-	-	*(132.49)*
	Western Hemlock	-	*(37.50)*	-	*(58.00)*	-	-	-	*(102.00)*	-	*(197.50)*
	Woodland/Prairie Mosaic	-	-	-	*(30.62)*	-	-	-	-	-	*(30.62)*
	Non-Forest Land										

	Activity	Planning Unit									
		Chelan	Columbia	Klickitat	North Puget	OESF	South Coast	South Puget	Straits	Yakima	Totals
Age Class by Zone: Disposed (continued)	*Central Arid Steppe*	*(615.00)*	-	-	-	-	-	-	-	-	*(615.00)*
	Cowlitz River	-	*(6.50)*	-	-	-	*(48.10)*	-	-	-	*(54.60)*
	Grand Fir	-	-	-	-	-	-	-	-	*(115.27)*	*(115.27)*
	Interior Western Hemlock	-	-	-	-	-	-	-	-	*(6.20)*	*(6.20)*
	Mountain Hemlock	-	-	-	*(3.00)*	-	-	-	-	-	*(3.00)*
	Oak	-	-	*(33.42)*	-	-	-	-	-	-	*(33.42)*
	Olympic Doug-fir	-	-	-	-	-	-	-	*(0.22)*	-	*(0.22)*
	Ponderosa Pine	*(25.00)*	-	-	-	-	-	-	-	-	*(25.00)*
	Puget Sound Doug-fir	-	-	-	*(161.06)*	-	*(26.00)*	*(397.06)*	-	-	*(584.12)*
	Silver Fir	-	*(38.40)*	-	*(19.52)*	-	-	*(11.10)*	-	-	*(69.02)*
	Sitka Spruce	-	-	-	-	*(12.00)*	*(15.50)*	-	-	-	*(27.50)*
	Western Hemlock	-	*(550.44)*	-	*(302.15)*	*(21.70)*	*(30.15)*	*(63.12)*	*(94.11)*	-	*(1,061.67)*
	Willamette Valley	-	*(242.00)*	-	-	-	-	-	-	-	*(242.00)*
	Woodland/Prairie Mosaic	-	-	-	*(19.00)*	-	-	*(38.50)*	-	-	*(57.50)*
	Total Acres	*(640.00)*	*(10,514.84)*	*(1,396.20)*	*(6,359.73)*	*(838.24)*	*(2,605.91)*	*(6,505.33)*	*(1,246.45)*	*(1,369.41)*	*(31,476.11)*

Note: totals may not add due to rounding.

7. Monitoring and Research

The department focuses on research and monitoring to identify and eliminate the information barriers to full HCP implementation and improve the ability to meet management goals through adaptive management. Monitoring and research provide information on how well actions or plans are working. The information gained can then be used to adapt management practices as needed.

DNR's Ecosystem Services Section provides both a centralized approach to research and monitoring and a systematic, consistent process for reporting research and monitoring results. Sound application of silvicultural and ecological knowledge, creative ideas, and reliable data are needed to develop innovative forest management practices capable of achieving the financial and ecological objectives of the state trust lands HCP.

Since the HCP was adopted in 1997, there have been advances in terms of understanding the biology of spotted owls, marbled murrelets, and other species addressed by the HCP. However, much remains to be learned, and new systems and techniques continue to be developed and tested. Additional reliable information that is applicable to management decisions can be obtained only through well planned and well executed monitoring and research. Balancing the need to conduct rigorous studies with the need to gather and assess information on 1.6 million acres of HCP landscapes is an enormous challenge.

A system consisting of three types of monitoring—implementation, effectiveness, and validation—has become a common organizational framework for monitoring programs in forest management.

- **Implementation monitoring**, also known as compliance monitoring, determines whether or not a management plan (e.g., an HCP) is properly implemented on the ground.
- **Effectiveness monitoring** determines whether or not a management plan is producing the desired habitat conditions.
- **Validation monitoring** determines whether or not certain species respond to the desired habitat conditions as anticipated.

Research supports the completion of conservation strategies, tests promising alternatives to current practices, and contributes to the ecological foundation of management practices.

Implementation Monitoring

Conservation strategies are selected for implementation monitoring based on two criteria. First, we choose a strategy that has either not been monitored yet or was not monitored in the past several years. Second, we select strategies based on input from the federal Services and DNR managers. In 2007, three strategies were monitored for proper implementation. We monitored the riparian conservation strategy in the Olympic Experimental State Forest (OESF). There, we gathered data regarding the implementation of riparian buffers and stream typing. We continued an ongoing monitoring project for the northern spotted owl conservation strategy in both Westside and eastside planning units. In addition, protection for uncommon habitats was monitored in the North Puget and South Puget Planning Units.

A riparian buffer in the Olympic Experimental State Forest. Note the large, down woody debris on the right, an important habitat component.

Olympic Experimental State Forest Riparian Conservation Strategy

The purpose of conducting implementation monitoring for the riparian conservation strategy in the OESF was to create baseline data that could also be used for effectiveness monitoring. The data collected were useful for comparing anticipated protection measures to what was implemented on the ground. This strategy incorporates experimentation as a means of developing and evaluating new methods of integrating forest commodity production with protection of riparian ecosystem health. Therefore, there are no specific measurable objective criteria from an implementation monitoring perspective. There are, however, special measures in the strategy that call for protection of unstable slopes and areas prone to tree blowdown. The conservation strategy identifies these special measures by calling for established interior-core buffers and exterior wind buffers in order to maintain or restore various functions of riparian ecosystems that directly influence freshwater habitat for salmonids.

Stream bank stability, stream shading, sediment interception, input of detrital nutrients, and delivery of large woody debris to the stream are the main considerations used for determining the riparian buffer width. The width of riparian buffers is determined on a site-specific basis, according to the 12-step Watershed Assessment Procedure (DNR 1997, p. IV.110).

Stream typing was determined based on the Water Typing System for Forested State Trust Lands as described by Bigley and Deisenhofer (2006). Interior-core and exterior wind buffer widths were estimated in the field using a combination of geographic information system (GIS) data, global positioning system (GPS) data, and data collected by DNR staff as they traversed with a compass and laser rangefinder. Information collected in 2007 will be used as baseline data for determining how the riparian conservation strategy has been implemented in the OESF. Detailed methods and results will be provided in a separate report which is in preparation and will be available in 2008.

Northern Spotted Owl Conservation Strategy

The purpose of monitoring implementation of variable density thinned harvest units in northern spotted owl Nesting Roosting and Foraging (NRF) habitat is to assess whether the stands met the appropriate habitat characteristics prior to and after the harvest activity. In 2007, post-harvest measurements were completed on a variable density thinned unit of the Loop timber sale in the Klickitat Planning Unit (pre-harvest data were collected in 2006). In addition, pre-harvest stand measurements were completed on two units of the Big Beaver timber sale, a variable density thinning in a NRF management area of the South Puget Planning Unit. These measurements will be analyzed to determine if the harvest units exhibit suitable sub-mature northern spotted owl habitat pre- and post-harvest. Additional analyses will be completed in conjunction with spotted owl effectiveness monitoring in the same units for both sales.

Oak woodlands such as this are an uncommon habitat type protected by, and monitored under, the HCP.

Uncommon Habitats

Habitat Conservation Plan conservation strategies protect habitat for many unlisted species associated with late successional forests and riparian ecosystems. For species that rely on uncommon habitat types, additional protection measures are described in the HCP (DNR 1997, p. IV.151-158). Implementation monitoring was conducted for uncommon habitats (specifically cliffs, balds, and oak woodlands). Monitoring for these strategies was conducted in all sites where uncommon habitats were documented in the HCP checklist located in each timber sale jacket.

Effectiveness Monitoring, Validation Monitoring, and Research

The following briefly summarizes DNR's current efforts in effectiveness monitoring, validation monitoring, and research. Only those projects that had significant developments in the reporting period are discussed.

Riparian Conservation Strategy

The objectives of riparian monitoring and research are to:

- increase confidence in DNR's ability to integrate biodiversity-type thinning into management of riparian areas;
- help promote acceleration of the development of older stand conditions in riparian areas;
- help develop new guidelines for assessing wind throw risk and determining the need for wind buffers; and

- support the development of a long-term Type 5 (headwaters) stream conservation strategy to replace the interim strategy.

In addition, this work supports the adaptive management goals of the riparian conservation strategy, such as reexamination of watershed condition and changes in aquatic habitat quality. Information from this monitoring will increase DNR's ability to understand the influence of land management on aquatic habitat conditions and effectively implement the conservation strategies to reach the goals of the HCP.

1. Riparian Forest Restoration Strategy

Implementation of the Riparian Forest Restoration Strategy continued with the approval of pilot projects from all the regions covered by the strategy and the training of an additional 50 foresters on the objectives and intricacies of the strategy. This strategy specifies the restoration goals and approaches for DNR-managed riparian management zones on streams with a bankfull width wider than two feet in western Washington. Support for implementation of the Riparian Forest Restoration Strategy is through region-based resource people and staff from the Ecosystem Services Section. Several site-specific wind throw salvage plans were created to facilitate stand regeneration in wind affected riparian areas. Future plans include continued active monitoring and research into the use and value of snag creation as part of the Riparian Forest Restoration Strategy.

Down woody debris can be created to aid in the restoration of a riparian forest.

Project Activities

- Active monitoring was established in the South Puget and North Puget Planning Units. This monitoring is designed to test strategy assumptions and explore options to improve restoration effectiveness.
- Installation of test treatments in stands more than 70 years of age has begun.
- The Riparian Forest Restoration Strategy website continues to be updated.

2. Riparian Ecosystem Management Study (REMS)

Since 1999, DNR, in cooperation with the USDA Forest Service Pacific Northwest Research Station; Washington State Department of Ecology; the University of Washington; the Evergreen State College; and the University of California at Davis, has conducted research to determine the possible influence of different buffer configurations on first order streams in western Washington. This research is yielding results about the heterogeneity of stream conditions, trophic connections with downstream systems and landscape influences.

The study design imposes a range of buffer configurations around headwater streams. (See http://www.dnr.wa.gov/hcp/type5/overview.html.) The results are intended to provide a better understanding of what stream function(s) should be protected and the buffer configurations necessary to protect those functions. Analysis and interpretation of these results will help support the development of a long-term conservation strategy for Type 5 streams on state trust lands in western Washington.

Thirty-four streams at nine sites are being monitored on state trust lands in Capitol Forest and Pacific County. Pre-treatment sampling was conducted for one to two years. Post-treatment sampling began in 2004.

Project Activities

- Post-treatment data collection was conducted at 31 sample streams. Response variables monitored by DNR include off-channel large woody debris, understory vegetation, overstory integrity/canopy closure, and stand metrics.
- The REMS project and data were presented at several scientific meetings. A morning session at the *Riparian Management in Headwater Catchments: Translating Science into Management* conference in Vancouver, B.C. was dedicated to the project. A series of five presentations and two posters was given.

In addition to ongoing post-harvest data collection efforts, the following activities were conducted.

- *Photogrammetric analysis of buffer integrity*. A chronosequence of aerial photography from agency-collected imagery, supplemented by additional contract flights, was used to monitor the structural integrity of riparian buffers over time.
- *Hydrologic basin delineation*. Hydrologic basins for a subset of the REMS study streams were constructed using a flow direction model and an accumulation model based on LiDAR imagery and 10-meter digital elevation models. These modeled basins were compared to delineations constructed using photogrammetric image analysis tools.
- *Water level, water temperature, stream chemistry, and soil sampling*. Data collection continued on a concurrent study conducted by University of Washington graduate students. Fourteen v-notch weirs were installed on a series of headwater streams in Capitol Forest in the summer of 2004. These weirs record water temperature and level readings at 20 minute intervals.
- Water sampling was implemented on a monthly basis starting in March 2004. Samples were analyzed for nitrate (NO_3^-), dissolved organic nitrogen (DON), dissolved organic carbon (DOC), and total organic carbon (TOC). In addition, an Inductively Coupled Plasma (ICP) analysis was conducted for total phosphorous as well as major ions (calcium, sodium, aluminum, potassium, and iron).
- Soil analysis included sampling for total carbon/nitrogen (C/N) ratio of organic and mineral layers, with the goal of better understanding microbial biomass transformations of C and N through laboratory and in situ assays, and testing for pools of potentially mineralizable N and labile (water soluble) C. Soil sampling was conducted in April–representing spring conditions, late summer–representing the driest and most limiting conditions on the soil microbial pool, and early winter–representing the soil after the loss of nutrients following fall rains.

3. Retrospective Analysis of Interim Protection of Type 5 (Headwaters) Streams

As part of the adaptive management process, DNR has been researching headwaters ecology and management impacts. This work will aid in evaluation of the interim Type 5

(also known as headwater) stream conservation strategy and determine what improvements, if any, are needed to meet the intended conservation goals.

In 2004, DNR initiated a study designed to quantify how the interim Type 5 steam protection measures have been interpreted in the field. Using GIS analysis linked with existing department databases, DNR determined the population of forest stands that were clearcut harvested following HCP guidelines. That population was stratified by EPA ecozone and sites were selected with both LiDAR coverage and post-harvest aerial photography. The location of headwater streams was modeled from the LiDAR data. Field crews verified the location of the modeled streams and mapped various hydrologically significant points using a precision GPS unit operating ArcPad, a mobile GIS platform.

Field data were then used to determine the extent of the headwater system and to quantify the extent of any riparian buffering. The precise configuration of the riparian buffers and harvest boundary was mapped using BAE Systems Socet Set photogrammetric analysis software. Field data collection was completed in 2006. This data will provide the context of headwater stream protection under current management practices.

Results from ongoing analyses of the data will be used during the development of conservation alternatives as part of a long-term headwater conservation strategy. The analyses examine the total length of stream channel buffered, stratified by stream type and slope class. A qualitative analysis documents buffers applied due to required higher-order stream riparian management zones and slope stability issues. In addition, all stream confluences, classified by stream type, and the configuration of any buffers were mapped.

This information, along with results from other research, will provide context on how the interim Type 5 strategy is achieving our conservation goals. The new information will be used to support and/or revise the ecological assumptions made in the conservation strategy as we transition from the interim to a long-term headwaters strategy.

Project Activities

- Data analysis related to the treatment of Type 5 streams was conducted on fifty sites, including over 300 headwater streams and encompassing approximately 2,500 harvested acres.

Northern Spotted Owl Conservation Strategy

The objective of this monitoring and research is to increase confidence in DNR's ability to integrate biodiversity-type thinning into the timber sales program and help understand its role in meeting habitat goals. In addition, this work supports the adaptive management goals of the HCP northern spotted owl conservation strategy, such as examination of down wood levels targeted for different types of habitat.

Gathering data on stand characteristics following a variable density thinning activity.

1. Effectiveness Monitoring of Spotted Owl Habitat

The objective of spotted owl effectiveness monitoring, as defined by the Habitat Conservation Plan (DNR 1997, p.V.2), is to determine whether the applied management activities result in anticipated habitat conditions.

DNR is currently assessing the effectiveness of variable density thinning for creating, sustaining and enhancing spotted owl habitat. Variable density thinning is a silvicultural technique based on biodiversity pathway principles (Carey and Curtis 1996). The treatments are designed to accelerate the development of structurally complex stands through thinning to different residual tree densities, retaining large tree legacies, and, in some cases, adding down woody debris and snags. This approach was selected in the Preferred Alternative in the sustainable harvest calculations (DNR 2004) and DNR intends to apply it extensively in spotted owl management areas during the next decade.

Currently, this monitoring is conducted using an observational (passive) approach—the timber sale prescription is designed by DNR foresters and implemented according to agency procedures. The effect of the treatment is assessed through comparing the pre- and post-harvest stand characteristics with an unmanaged control over a period of 10 years. Selected timber sales are sampled pre-harvest, immediately post-harvest, and in the 5^{th} and 10^{th} years post-harvest to evaluate habitat development. Each monitored timber sale is comprised of three treatment replicas and one unmanaged control with eleven stand characteristics sampled in 0.1-acre permanent plots (protocol developed by Wilhere and Bigley 2001). The fieldwork was initiated in 2004 with a pilot project in the Siouxon Nesting, Roosting and Foraging (NRF) Management Area. One additional timber sale was added in 2005, two in 2006, and two in 2007. A total of five timber sales are currently being monitored as part of the northern spotted owl effectiveness monitoring program (Figure 7.1).

Project Activities

Three timber sales were sampled during the 2007 field season. The monitoring objective for all of them is to assess the role of variable density thinning for maintenance and enhancement of spotted owl habitat.

- **Loop timber sale**—variable density thinning in NRF Management Area in the Klickitat Planning Unit (Husum sub-landscape)
  - First year post-harvest data were collected.
  - Pre- and post-harvest stand conditions are being compared.
- **Big Beaver timber sale**—variable density thinning in Dispersal Management Area in the South Puget Planning Unit (Elbe block)
  - The project started in 2007; all pre-harvest measurements were collected.
  - Data are being formatted for future analyses.
- **Whitehorse Flats timber sale**—late rotation thinning in NRF Management Area in the North Puget Planning Unit (Northwest region)
  - The project started in 2007; all pre-harvest measurements were collected.
  - Data are being formatted for future analyses.

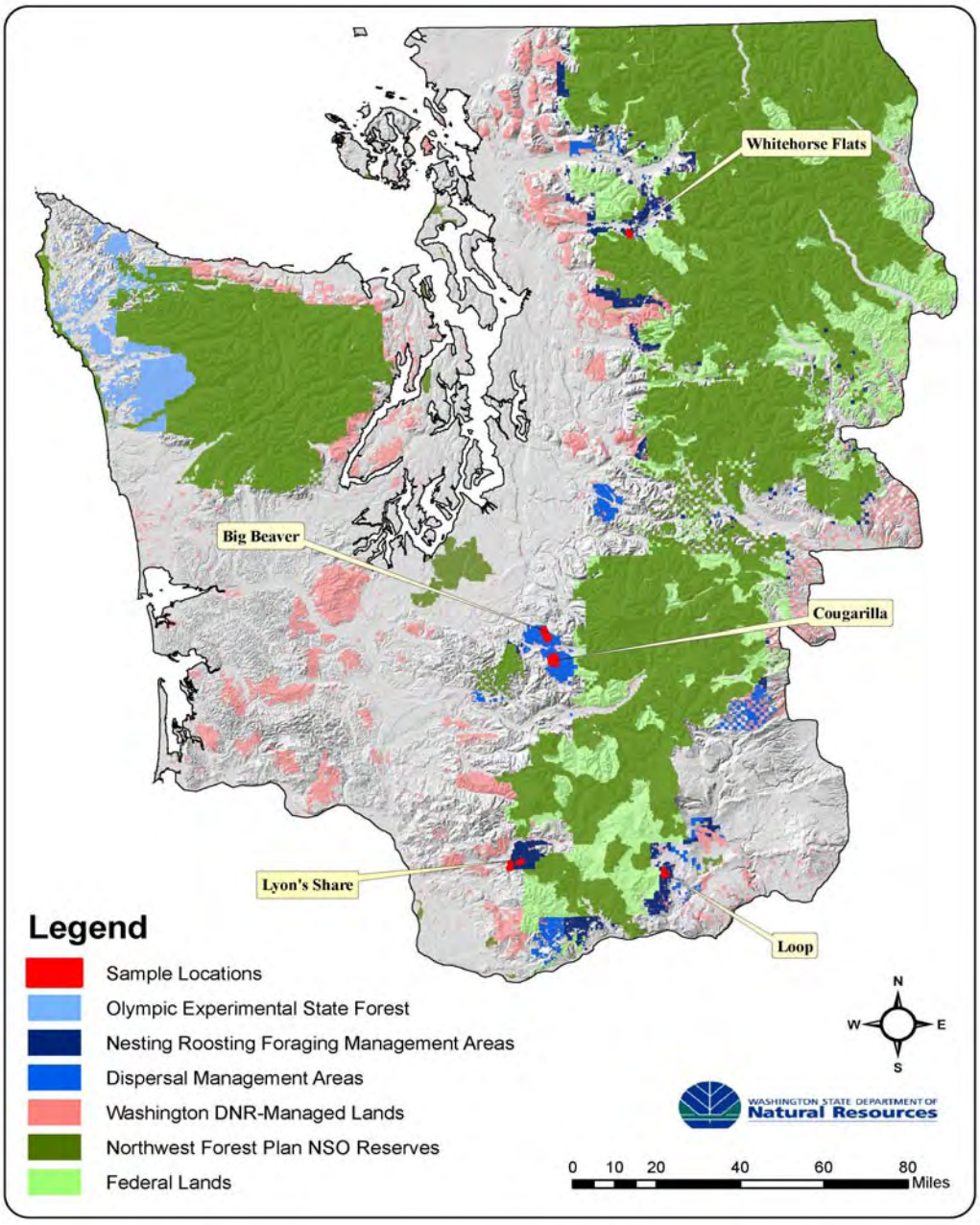


Figure 7.1. Timber sales where the effectiveness of variable density thinning to enhance northern spotted owl habitat is being monitored

2. Northern Spotted Owl and Barred Owl Resource Selection in Southwest Washington

This study addresses several of the research priorities for the northern spotted owl conservation strategy described in the Habitat Conservation Plan (DNR 1997, p.V.7). Specifically, it will quantify a number of habitat attributes necessary for nesting, roosting, and foraging. It will also determine the amount and distribution of habitat needed to support spotted owls in managed forest landscapes. The results will be used in planning future forest practices for maintaining and/or enhancing spotted owl habitat. In addition,

the study will provide information on presumed competitive interactions between spotted owls and barred owls and the potential of forest management to influence these interactions. The study is intended to evaluate how each species responds to variations in existing habitat and environmental conditions in the same area. Such an evaluation would result in a resource selection function using data from detailed forest inventories and from nocturnal locations of radio-tagged birds.

Radio-tracking northern spotted owls and barred owls in southwest Washington.

DNR and Weyerhaeuser have recent information on spotted owl occupancy in several adjacent sites in southwest Washington. This presented an opportunity for effective collaboration in this radio telemetry study. Both parties developed separate agreements using the same contractor (National Council for Air and Stream Improvement) and field protocol. Combining the data from both ownerships and analyzing them as one sample will produce more reliable results.

The study area lies in southwest Washington, west of I-5 and south of Highway 12 on DNR-managed lands and on timberlands owned by Weyerhaeuser. The lands are comprised predominantly of young plantations and recent regeneration harvests, with a scattering of slightly older stands. There are at least four locations with spotted owl occupancy in the study area. Two of those are on DNR-managed land—Blue Mountain and Seven Creek/ Elk Creek—and two on Weyerhaeuser land—Elk Creek and Pioneer Creek (Figure 7.2).

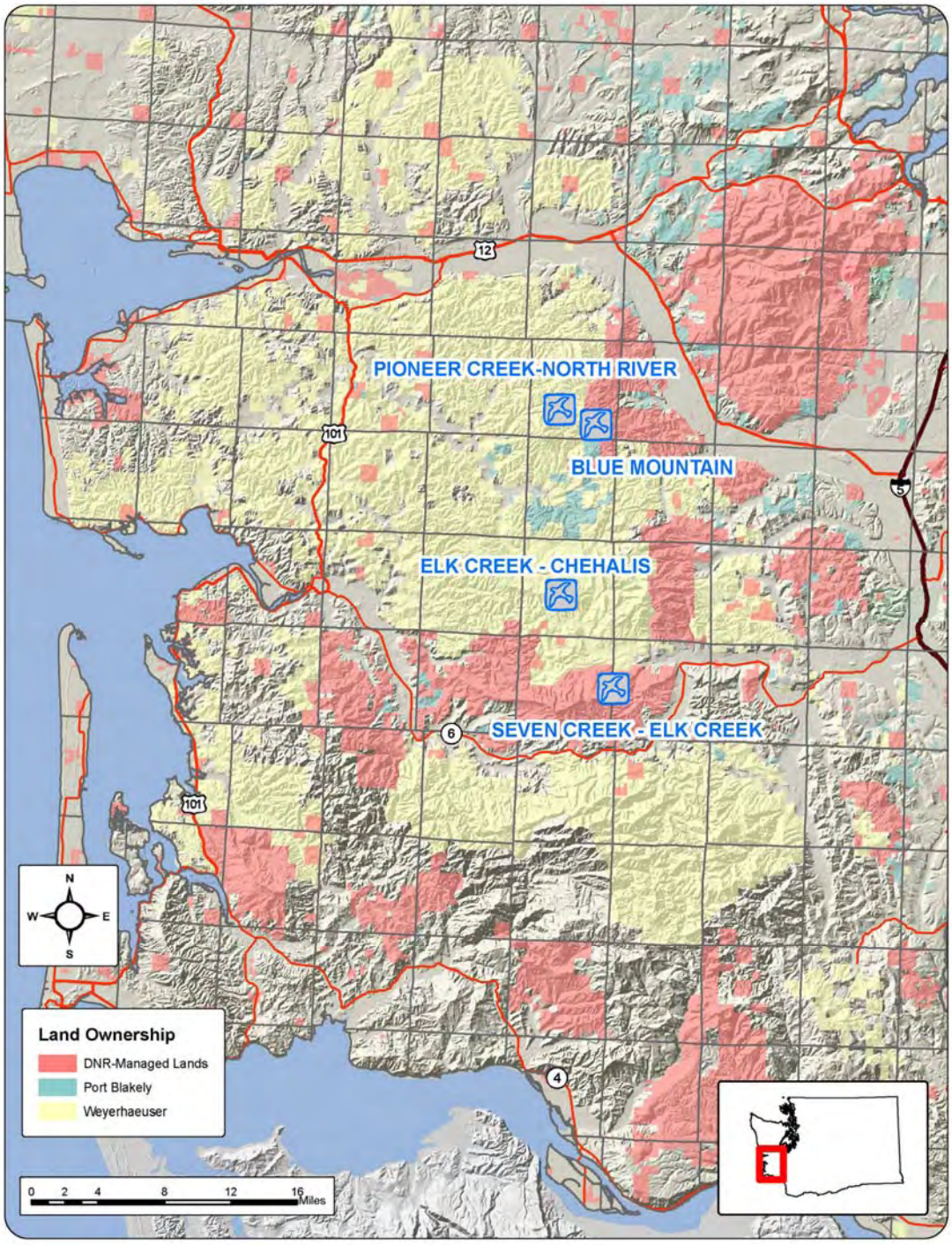


Figure 7.2. Northern spotted owl sites used to conduct the radio telemetry study in southwest Washington

Over a two-year period, all captured spotted owls at the four sites will be radio-tagged. Eight to ten pairs of barred owls associated with these sites will also be equipped with radio transmitters. Detailed habitat conditions in the home ranges of each species will be measured and a resource selection function for each species will be developed. This is a

statistical model defined to be proportional to the probability of owl use of a resource unit. For this project, it means that we conclude what resources each species uses based on how many times the species is detected in stands with certain characteristics.

Project Activities

- The contract was signed in April 2007 and the fieldwork started later that month.
- Six barred owls and two spotted owls had been radio-tagged by the end of September.
- All points from which owls were detected were recorded with a GPS. Using data from multiple points for each detection of an owl, polygons of the owls' locations are being mapped.
- The first set of radio telemetry points was mapped in August; the second is expected in mid-October.

3. Northern Spotted Owl Demography Monitoring in Southeast Washington

Adult and juvenile northern spotted owls found during the demography monitoring in southeast Washington.

This project is intended to provide information on spotted owl occupancy, fecundity and survival rates in actively managed forests on DNR-managed lands. The results will be used (1) to determine the amount and distribution of habitat needed to support spotted owls in managed landscapes; (2) in planning forest practices for maintaining and/or enhancing spotted owl habitat in eastside HCP planning units; and (3) for future adaptive management and validation monitoring projects.

Twenty owl sites are monitored under an agreement with the National Council for Air and Stream Improvement (NCASI). They are part of the 38 owl sites that constitute the Wenatchee study area—one of the 14 demographic study areas throughout the spotted owl's geographic range. These study areas provide information on species survival and fecundity rates used to estimate the annual rate of population change (Anthony et al. 2006). The owl monitoring in this area started in 1990 and has been conducted by NCASI ever since. The other landowners in the study area are US Forest Service, SDS Lumber Company, and Hancock Timber Resource Group. Contributions by the different landowners for conducting the fieldwork have varied over the years. DNR began providing funding in 2001.

The study area is located in the Klickitat Planning Unit (Figure 7.3). The field surveys, owl captures, and banding are conducted following the federal protocol (Forsman 1983). Each owl site is visited six times during the field season. Incidental to the required spotted owl monitoring, NCASI records all sightings and responses of barred owls, other owl species, and northern goshawks.

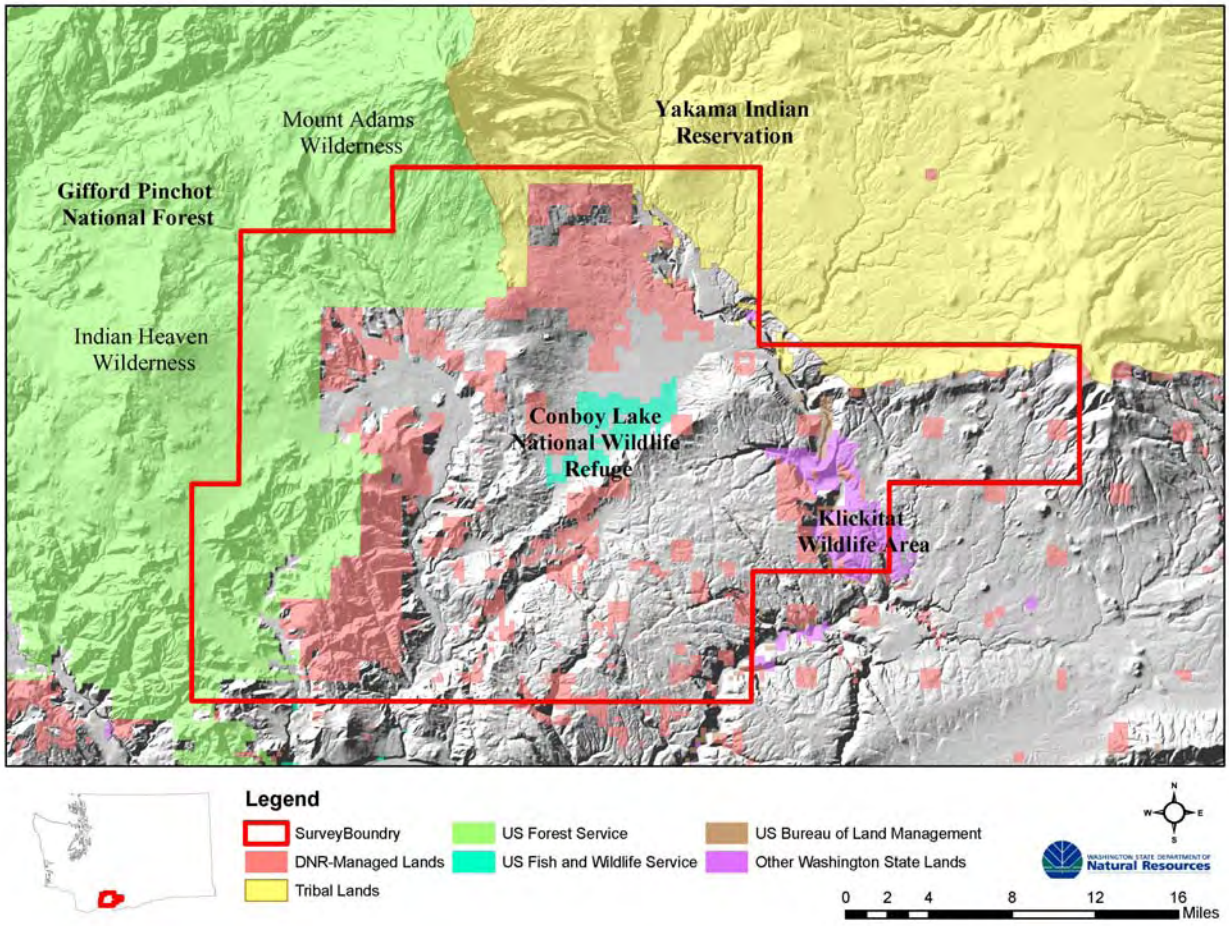


Figure 7.3. Study area for the northern spotted owl demography monitoring in southeast Washington

Project Activities

- A new three-year contract was signed in April 2007.
- Fieldwork (six visits per site) was completed and the data are being transcribed.
- 2007 results showed:
    - Spotted owl detections: one reproductive pair with two juveniles; one non-reproductive pair; and one single male.
    - Barred owl detections: two pairs; 35 males; six females; and three birds of unknown sex.

4. Comparison of Different Methods for Estimating Canopy Closure

Forest canopy closure is an important component of wildlife habitat, and one that needs to be quantified for management and monitoring purposes. The HCP definitions of northern spotted owl habitat require a minimum canopy closure of 70 percent without specifying how to measure canopy closure. There are a number of ground-based methods and modeling techniques for its estimation, with results varying considerably depending

on the instrument used and/or analysis applied.

A study was initiated in 2006 to compare canopy closure estimates obtained through various methods currently used in the department—spherical densiometry, hemispherical photography, Forest Vegetation Simulator (a US Forest Service modeling system), and Curtis' relative density. The results will allow accurate conversion among the estimates, which will contribute substantially to DNR's ability to meet the minimum canopy closure criteria for suitable northern spotted owl habitat described in the HCP. It will give DNR staff freedom and confidence to translate between estimates obtained with their preferred method and those obtained with other methods.

Project Activities

- The research needs have been identified, a literature search has been conducted, and several software packages for photo analyses have been tested and compared.
- Initial data collection and analyses have been conducted in two stands to compare hemispherical photography with spherical densiometry.
    - Densiometer estimates were consistently and significantly higher than estimates from photo images with matching angles of view (mean paired difference = 19.3%, $t = 60.9$, $df = 38$, $p < 0.001$).
- The project was expanded to include LiDAR estimations of canopy cover.
- Part of the project is planned to be conducted as part of a Master's thesis at the University of Washington.

5. Assessing Northern Spotted Owl Dispersal Habitat

This project will examine if northern spotted owl dispersal habitat can be improved to meet all the life history requirements of the species, while also meeting other agency goals. A team consisting of DNR employees and modeling specialists from the US Forest Service is developing a model that will assess the ability of current and future dispersal habitat quality, quantity, and configuration to meet the foraging, roosting, and movement needs of the owls.

Using input from spotted owl experts, habitat quality values for each stand are being modeled with a fuzzy logic system through the Ecosystem Management Decision Support (EMDS) software developed at the US Forest Service Pacific Northwest Research Station. A landscape analysis, utilizing spatial graph theory, will examine how the different management scenarios address the ability of dispersing owls to move through DNR ownership while also meeting foraging and roosting needs.

The assessment tool is initially being applied to three potential management scenarios for the South Puget Planning Unit as part of the department's forest land planning process. Each scenario will be modeled 100 years into the future to examine if higher quality dispersal habitat can be provided while also meeting other agency goals through time.

Project Activities

- In January 2007, a two day workshop with the owl experts was convened to create the initial variables and model structure used for the EMDS model.
- In September 2007, a two day workshop was held with the owl experts to validate the EMDS results in the field, update the model structure based on the field visit, and examine the proposed landscape analysis.
- Using both stand alone software and modified ArcGIS tools, work on the landscape analysis has begun.

HCP Data Management

Proper management of HCP data resources is critical for the successful operation of the Ecosystem Services Section and affects land management activities throughout the agency. Maintaining accurate and up-to-date spatial coverages and databases ensures successful implementation of the HCP conservation strategies. The HCP data is used in planning and conducting management activities on DNR-managed lands, in development and implementation of research and monitoring projects, and in responding to information requests from the public.

Two GIS analysts/data stewards currently support the HCP scientists and managers. They are responsible for development of new and maintenance of existing spatial data coverages, GIS analyses, database management, and cartographic support. Ten corporate and several shared data layers are maintained by the Ecosystem Services Section.

Project Activities

- A spatial coverage of DNR-managed lands covered by the HCP was created. It incorporates all land transactions conducted since the HCP was signed in 1997. A process was also developed to update the layer with future land transactions.
- The spatial coverage of spotted owl nest patches was upgraded to a feature class. This allows for better integration with new technology and makes the data easier to update.
- A process to update the GIS layer identifying spotted owl habitat in the Westside HCP planning units has begun. The layer is based on combined criteria from the HCP and the Settlement Agreement for the Sustainable Harvest Level.

Earth Sciences Program

This program was established to provide centralized technical and scientific support for state trust land management activities in the fields of geology, geomorphology, and hydrology. Program staff work with foresters and engineers to assess the potential effects of management activities on soil erosion and hydrology and to develop measures to mitigate adverse impacts. Their work includes conducting landslide risk assessments for individual timber sales, developing landscape-scale landslide hazard zonation maps, locating suitable rock sources for constructing and maintaining forest roads, and carrying

out earth sciences-related research and monitoring.

1. Landslide Risk Assessments for Timber Sales

Earth Sciences Program staff provide technical and scientific support for the timber sales program by conducting landslide risk assessments for individual timber sales. While most assessments are performed remotely using aerial photographs, geologic maps, and Digital Elevation Model- or LiDAR-derived topographic information, many are field-based evaluations where geologists and hydrologists work directly with foresters and engineers to assess landslide potential and design mitigation measures to reduce risk. Where timber harvesting or road construction is proposed on slopes or landforms considered "potentially unstable" under the state's Forest Practices Rules, a Licensed Engineering Geologist must conduct a more detailed landslide risk assessment. The Engineering Geologist must prepare a written report that describes the potential for the proposed activities to trigger landslides and the likelihood that water quality and aquatic habitat will be adversely affected. Currently, the Earth Sciences Program has four Licensed Engineering Geologists on staff and three additional geologists working towards licensure.

Project Activities

- Staff conducted landslide risk assessments for 131 timber sales. This included:
  - 115 remote assessments;
  - 96 field-based assessments; and
  - 11 detailed assessments involving written reports.

2. Landslide Hazard Zonation

Earth Sciences Program staff continue to develop landscape-scale slope stability screening maps that foresters, engineers, and other natural resource professionals can use to plan and implement forestry activities on lands covered by the HCP. The work is being conducted in accordance with the Landslide Hazard Zonation (LHZ) Project Protocol, an approach developed cooperatively between the department and the Cooperative Monitoring, Evaluation, and Research (CMER) Committee. The maps and accompanying reports illustrate and describe landslide potential across the landscape and the sensitivity of different areas to forestry effects.

Project Activities

- Staff completed four Landslide Hazard Zonation projects, three of which are located within the OESF Planning Unit (Christmas Creek, Ozette Lake, and Clallam River) and one in the South Puget Planning Unit (Black Hills East).
- Work is continuing on five additional Landslide Hazard Zonation projects:
  - Upper and Lower Clearwater River (OESF Planning Unit);
  - Rock Creek (Columbia Planning Unit);
  - Toandos Peninsula (Straits Planning Unit); and
  - Reese Creek (South Puget Planning Unit).

OESF HCP Research and Monitoring Plan

In 2007, DNR initiated development of a Research and Monitoring Plan that will provide a framework guiding future HCP-related information gathering activities on the Olympic Experimental State Forest (OESF). The OESF is "unique among planning units…because of its experimental nature, integrated approach to management, and planning history. The long-term vision for the Experimental Forest is of a commercial forest in which ecological health is maintained through innovative integration of forest production activities and conservation" (DNR 1997, p.I.14). Research and monitoring are part of an integrated approach to achieve agency goals for the OESF. Key accomplishments in 2007 included several initiatives supportive of this vision:

- Staffing of a permanent full-time position devoted to coordinating research and monitoring activities on the OESF;
- Initiating consultation with the US Fish and Wildlife Service, National Marine Fisheries Service, and Washington Department of Fish and Wildlife (WDFW), soliciting guidance and review throughout the planning processes;
- Initiating an internal coordination process for reviewing OESF research and monitoring objectives and information gathering to date;
- Initiating an external scoping process, consisting of one-on-one consultations with stakeholders, governments, and research partners;
- Development of a catalog of research and monitoring activities on the OESF, capturing past and on-going efforts; and,
- On-going consultation and coordination with the forest land planning process, specifically related to strategy development and plan review.

As part of the internal coordination process, an OESF HCP Research and Monitoring Program Coordinating Group was convened. By early 2008, this group is expected to recommend both a research and monitoring framework and key near-term information gathering activities. Recommendations will reflect the guidance and input identified through the initiatives outlined above. A preliminary draft of the research and monitoring plan, presenting these recommendations, is expected by mid-2008. As appropriate, program coordination activities will be initiated, and detailed research and monitoring study plans developed, following these recommendations.

A marbled murrelet captured and tracked as part of the breeding ecology study.

Marbled Murrelet Conservation Strategy

The objective of this research is to support the development of the marbled murrelet (*Brachyramphus marmoratus*) long-term conservation strategy and related monitoring. The primary focus of funding in fiscal year 2007 was to document murrelet flight activity over inland forests (stand surveys). A portion of the available funding was used to research site selection and confirmed murrelet nesting sites.

1. Breeding Ecology of Marbled Murrelets

To support current and future conservation strategy development and monitoring, DNR and the US Forest Service Pacific Northwest Research Station have conducted a cooperative research study since 1994. This study gathers information on marbled murrelet movement patterns (both at sea and inland), demography, and habitat use. Information of this type is limited, especially in Washington State. Information on specific nest sites and the way murrelets utilize the forested landscape will be invaluable in implementing and monitoring the department's long-term murrelet conservation strategy. This project also will reduce the reliance on demographic data from the central British Columbia coast, where habitats are considerably different.

Project Activities

- In 2007, 35 adult marbled murrelets were captured and had radio transmitters secured to their backs.
- Regular radio tracking flights were used to locate the murrelets. These flights took place over Washington marine waters and southern Vancouver Island.
- A combination of aerial and ground telemetry were used to identify nest trees for further monitoring.
- When it is ready, 2007 study data will be posted on DNR's website..

Marbled Murrelet Long-Term Conservation Strategy Update

Long-term conservation strategy for the Olympic Experimental State Forest, Straits, South Coast and Columbia Planning Units

The marbled murrelet Science Team was charged with developing a recommendation for how DNR might construct a marbled murrelet long-term conservation strategy. In response, the team has completed a draft report, "*Recommendations and Supporting Analysis of Conservation Opportunities for the Marbled Murrelet Long-term Conservation Strategy.*" The draft report is currently undergoing external peer review by scientists in the fields of marbled murrelet ecology and conservation biology. The final report is due to be completed by the end of 2007.

Once the Science Team finalizes the report of their recommendations, DNR will review the report and make it available to the public. This report will serve as the scientific basis for the process of selecting alternatives to be examined in an Environmental Impact Statement (EIS). Ultimately, the report will serve as the basis for the long-term conservation strategy that DNR will submit to the U.S. Fish and Wildlife Service (USFWS) for approval.

DNR and USFWS have initiated environmental review of the proposal to amend the HCP by adopting a long-term marbled murrelet conservation strategy for forested state trust lands on the Olympic Peninsula and in southwest Washington. The environmental review will be conducted according to both the State Environmental Policy Act (SEPA) and

National Environmental Policy Act (NEPA), and will be undertaken jointly by DNR and USFWS.

Public scoping under both SEPA and NEPA was initiated in fall 2007. "Scoping" is the first phase of a multi-phased process under both of these environmental reviews. During scoping, the public is asked to provide input on what should be included in the project, and to offer their concerns about possible environmental impacts. Scoping was announced for SEPA in a scoping notice (DNR SEPA File No. 06-091501), and for NEPA in a Notice of Intent in the Federal Register (September 15, 2006 [Volume 71, Number 179]). Four public meetings hosted by USFWS and DNR were conducted in Forks, Mt. Vernon, South Bend and Lacey. Thirty seven members of the public participated at these meetings. Written comments were also received. A complete record of the process is due to be released to the public in late fall 2007.

Following the completion of the Science Team's recommendations, and the release of the scoping report, DNR and USFWS will develop alternatives to be examined in the review process, and begin working on the draft Environmental Impact Statement.

Interim Marbled Murrelet Strategy – South Puget and North Puget Planning Units

The original HCP interim marbled murrelet agreement (DNR 1997) called for a habitat relationship study to be conducted within each planning unit in western Washington. The purpose of these studies is to research the habitat types that exist within each planning unit. The outcome of the habitat relationship study is a predictive model that identifies where 95 percent of the expected occupied sites would be found. DNR would then survey those areas and use that information to develop a long-term conservation strategy specific to the South Puget Planning Unit.

South Puget Planning Unit

In early 2007, DNR and USFWS (in consultation from Washington Department of Fish and Wildlife [WDFW]) began exploring alternative options within the South Puget Planning Unit concerning the identification of marbled murrelet habitat. Alternative options were pursued due to difficulties developing the predictive models in other Westside planning units. At this time, no formal amendment has been adopted, but DNR and USFWS have identified alternative methodologies to identify habitat within this planning unit. In early 2008, a formalized deviation from the interim marbled murrelet strategy is expected to be approved for the South Puget Planning Unit.

Additionally, the department has hired a marbled murrelet biologist for this planning unit. The primary purpose of this position is to assist the department in the implementation of the interim marbled murrelet strategy.

North Puget Planning Unit

DNR and USFWS (in consultation with WDFW) have been working closely to develop improved habitat identification methods in the North Puget Planning Unit. DNR determined this step is necessary because of shortcomings in the predictive models used to identify habitat within this planning unit. A plan to more accurately identify habitat and related methodologies has been completed. The department believes these improved methodologies will improve the quality of data that will be collected in support of the long-term conservation strategy for this planning unit.

One issue that is currently being discussed with the USFWS is how to deal with the remaining, high-elevation survey areas in the North Puget Planning Unit. These habitat areas are unique in that they are located from 3,500 to 5,200 feet in elevation. Murrelet habitat is usually found below 3,000 feet. Unexpected challenges developed regarding the survey efforts in these areas. First, the physical access is extremely limited in these areas. Many areas have no road access, so helicopters are the only method to access these areas. Second, most of these areas have six feet or more of snow at the beginning of May when the murrelet survey season begins. Third, many of these areas are too steep and dangerous to access safely. Finally, the bid proposals DNR received from contracts to initiate surveys were four times the going rate for surveys, all due to access issues.

Most of these high-elevation areas are identified as potential old growth stands and many of the areas are currently under protection for other conservation purposes, such as northern spotted owl nest cores, old-growth reserve areas, and Natural Area Preserves. The department is working with USFWS to determine the appropriate actions for these high elevation habitat areas. Agreement on the approach for these areas is expected in early 2008.

References

Anthony, R.G., Forsman, E.D., Franklin, A.B., Anderson, D.R., Burnham, K.P., White, G.C., Schwarz, C.J., Nichols, J.D., Hines, J.E., Olson, G.S., Ackers, S.H., Andrews, L.S., Biswell, B.L., Carlson, P.C., Diller, L.V., Dugger, K.M., Fehring, K.E., Fleming, T.L., Gerhardt, R.P.,Gremel, S.A., Gutierrez, R.J., Happe, P.J., Herter, D.R., Higley, J.M., Horn, R.B., Irwin, L.L., Loschl, P.J., Reid, J.A., and Sovern, S.G. (2006). Status and trends in demography of northern spotted owls. *Wildlife Monographs*, 163(1):1-48.

Bigley, R. and F. Deisenhofer. (2006). *Implementation procedures for the habitat conservation plan riparian forest restoration strategy for Westside planning units excluding the Olympic Experimental State Forest.* Olympia, WA: Washington State Department of Natural Resources.

Carey, A., R. O. Curtis. (1996). Conservation of biodiversity: a useful paradigm for forest ecosystem management. *Wildlife Society Bulletin,* 24 (4): 610-620

Forsman, E. D. (1983). *Methods and materials for locating and studying spotted owls*. U.S. Forest Service General Technical Report PNW-162. Portland, OR: USDA Forest Service, Pacific Northwest Forest and Range Experiment Station.

Washington State Department of Natural Resources. (1997). *Final habitat conservation plan*. Olympia, WA: Author.

Washington State Department of Natural Resources. (1998). *Habitat conservation plan annual report with data & documentation: January 30, 1997 – June 30, 1998.* Olympia, WA: Author.

Washington State Department of Natural Resources. (2004). *Final environmental impact statement on alternatives for sustainable forest management on state trust lands in Western Washington*. Olympia, WA: Author.

Wilhere G. and R. Bigley. (2001). *Effectiveness monitoring HCP spotted owl conservation strategies - draft*. Olympia, WA: Author.

Appendix A. Silvicultural Activities

Table A.1 details silvicultural activities that took place in each HCP planning unit in fiscal year 2007. It is derived from DNR's Forest Management Planning and Tracking (P&T) database, and includes all activities reported as completed during the reporting period. The type of activity, number of acres impacted, legal location (township, range, and section), and Forest Practices Application (FPA) number are included. Not all activities require an FPA, so these numbers are only listed where applicable.

The data in this appendix are summarized in the tables in the Silvicultural Management Activities chapter of this report.

Table A.1. Silvicultural management activity detail by planning unit

Columbia Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	98	T03N R04E S27	2911097
Timber Harvest - Clear cut	89	T03N R04E S27	2911097
Timber Harvest - Clear cut	53	T03N R04E S29	2912675
Timber Harvest - Clear cut	85	T03N R04E S31	2912675
Timber Harvest - Clear cut	57	T05N R03E S03	2913052
Timber Harvest - Clear cut	16	T05N R03E S03	2913052
Timber Harvest - Clear cut	41	T05N R03E S03	2913052
Timber Harvest - Clear cut	60	T06N R01E S26	2912450
Timber Harvest - Clear cut	22	T06N R01E S34	2912450
Timber Harvest - Clear cut	16	T06N R01E S34	2912450
Timber Harvest - Clear cut	36	T06N R01W S36	2912428
Timber Harvest - Clear cut	96	T06N R03E S02	2912613
Timber Harvest - Clear cut	64	T06N R03E S05	2912471
Timber Harvest - Clear cut	71	T06N R03E S05	2910900
Timber Harvest - Clear cut	5	T06N R03E S06	2913051
Timber Harvest - Clear cut	56	T06N R03E S06	2913051
Timber Harvest - Clear cut	19	T06N R03E S11	2913051
Timber Harvest - Clear cut	17	T06N R03E S11	2913051
Timber Harvest - Clear cut	50	T06N R03E S14	2912471
Timber Harvest - Clear cut	61	T06N R03E S32	2913052
Timber Harvest - Clear cut	51	T06N R04E S06	2905108
Timber Harvest - Clear cut	8	T07N R04E S31	2905108
Timber Harvest - Clear cut	24	T08N R05W S09	2912965
Timber Harvest - Clear cut	59	T08N R05W S16	2912965
Timber Harvest - Clear cut	18	T09N R04W S28	2904563
Timber Harvest - Clear cut	32	T09N R04W S28	2904563
Timber Harvest - Clear cut	42	T09N R04W S29	2904563

Columbia Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	68	T09N R05W S24	2912449
Timber Harvest - Clear cut	59	T09N R05W S24	2912855
Timber Harvest - Clear cut	98	T09N R05W S35	2913038
Timber Harvest - Clear cut	49	T10N R05W S24	2910888
Timber Harvest - Clear cut	42	T10N R05W S24	2910888
Timber Harvest - Clear cut	13	T10N R05W S25	2910888
Timber Harvest - Clear cut	84	T10N R05W S25	2910888
Timber Harvest - Clear cut	38	T10N R06W S25	2912979
Timber Harvest - Clear cut	22	T10N R06W S25	2912979
Timber Harvest - Clear cut	23	T10N R06W S26	2912979
Timber Harvest - Clear cut	122	T10N R06W S26	2912979
Timber Harvest - Clear cut	4	T10N R06W S36	2912979
Timber Harvest - Clear cut	76	T11N R02E S16	2914594
Timber Harvest - Clear cut	87	T11N R03E S13	2912552
Timber Harvest - Clear cut	92	T11N R03E S14	2912552
Timber Harvest - Clear cut	17	T11N R03E S17	2913532
Timber Harvest - Clear cut	40	T11N R03E S20	2913708
Timber Harvest - Clear cut	8	T11N R03E S20	2913708
Timber Harvest - Clear cut	15	T11N R03E S20	2913708
Timber Harvest - Clear cut	74	T12N R01E S24	2910354
Timber Harvest - Late rotation thinning	13	T06N R03E S02	2905142
Timber Harvest - Late rotation thinning	41	T06N R03E S02	2905142
Timber Harvest - Late rotation thinning	9	T06N R03E S02	2905142
Timber Harvest - Late rotation thinning	60	T06N R03E S11	2905142
Timber Harvest - Selective product logging	26	T12N R03W S25	2912886
Timber Harvest - Smallwood thinning	45	T07N R04E S16	2910765
Timber Harvest - Smallwood thinning	30	T07N R04E S16	2910765
Timber Harvest - Smallwood thinning	35	T09N R02E S12	2911560
Timber Harvest - Smallwood thinning	5	T09N R03E S17	2911560
Timber Harvest - Smallwood thinning	7	T09N R03E S17	2911560
Timber Harvest - Smallwood thinning	15	T09N R03E S17	2911560
Timber Harvest - Smallwood thinning	124	T12N R02E S35	2911801
Timber Harvest - Smallwood thinning	138	T12N R02E S36	2911801
Timber Harvest - Smallwood thinning	2	T12N R02E S36	2911801
Timber Harvest - Smallwood thinning	15	T12N R02E S36	2911801
Timber Harvest - Smallwood thinning	13	T12N R02E S36	2911801
Timber Harvest - Smallwood thinning	137	T13N R03E S29	2911541
Timber Harvest - Smallwood thinning	136	T13N R03E S32	2911541
Timber Harvest - Smallwood thinning	17	T13N R03E S32	2911541
Timber Harvest - Smallwood thinning	92	T13N R03E S32	2911541
Timber Harvest - Smallwood thinning	308	T13N R03E S33	2911541
Timber Harvest - Two aged management	8	T12N R01E S24	2910354
Timber Harvest - Two aged management	6	T12N R01E S24	2910354
Timber Harvest - Variable density thinning	60	T02N R05E S12	2905142
Timber Harvest - Variable density thinning	35	T02N R05E S12	2905142
Timber Harvest - Variable density thinning	6	T02N R05E S16	2905142
Timber Harvest - Variable density thinning	5	T02N R05E S16	2905142
Timber Harvest - Variable density thinning	9	T02N R05E S16	2905142

Columbia Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Variable density thinning	4	T02N R05E S16	2905142
Timber Harvest - Variable density thinning	69	T02N R05E S16	2905142
Timber Harvest - Variable density thinning	22	T02N R05E S16	2905142
Timber Harvest - Variable density thinning	3	T02N R05E S16	2905142
Timber Harvest - Variable density thinning	56	T02N R05E S21	2905142
Timber Harvest - Variable density thinning	35	T02N R05E S22	2905142
Timber Harvest - Variable density thinning	60	T02N R06E S08	2904505
Timber Harvest - Variable density thinning	39	T03N R06E S15	2904505
Timber Harvest - Variable density thinning	56	T03N R06E S15	2904505
Timber Harvest - Variable density thinning	35	T03N R06E S23	2904429
Timber Harvest - Variable density thinning	20	T03N R06E S23	2904429
Timber Harvest - Variable density thinning	99	T03N R06E S26	2904429
Timber Harvest - Variable density thinning	24	T03N R06E S27	2904505
Timber Harvest - Variable density thinning	22	T03N R06E S33	2904505
Timber Harvest - Variable density thinning	48	T03N R06E S33	2904505
Timber Harvest - Variable density thinning	12	T03N R06E S33	2904505
Timber Harvest - Variable density thinning	4	T03N R06E S33	2904505
Timber Harvest - Variable density thinning	2	T03N R06E S33	2904505
Timber Harvest - Variable density thinning	6	T03N R06E S33	2904505
Timber Harvest - Variable density thinning	27	T03N R06E S33	2904505
Timber Harvest - Variable density thinning	10	T03N R06E S34	2904505
Timber Harvest - Variable density thinning	31	T03N R06E S35	2904429
Timber Harvest - Variable density thinning	2	T03N R06E S35	2904429
Timber Harvest - Variable density thinning	51	T03N R06E S36	2904429
Timber Harvest - Variable density thinning	5	T03N R06E S36	2904429
Forest site preparation - Aerial herbicide	71	T03N R04E S09	Missing
Forest site preparation - Aerial herbicide	70	T03N R04E S09	Missing
Forest site preparation - Aerial herbicide	97	T03N R04E S26	Missing
Forest site preparation - Aerial herbicide	63	T03N R04E S36	Missing
Forest site preparation - Aerial herbicide	43	T04N R03E S24	Missing
Forest site preparation - Aerial herbicide	18	T04N R03E S24	Missing
Forest site preparation - Aerial herbicide	77	T04N R04E S28	Missing
Forest site preparation - Aerial herbicide	8	T04N R04E S28	Missing
Forest site preparation - Aerial herbicide	98	T04N R04E S29	Missing
Forest site preparation - Aerial herbicide	88	T04N R04E S34	Missing
Forest site preparation - Aerial herbicide	6	T04N R04E S35	Missing
Forest site preparation - Aerial herbicide	81	T04N R04E S35	Missing
Forest site preparation - Aerial herbicide	51	T04N R04E S36	Missing
Forest site preparation - Aerial herbicide	36	T04N R04E S36	Missing
Forest site preparation - Aerial herbicide	20	T06N R02E S28	2913879
Forest site preparation - Aerial herbicide	5	T06N R02E S28	2913879
Forest site preparation - Aerial herbicide	9	T06N R02E S28	2913879
Forest site preparation - Aerial herbicide	30	T06N R02E S28	2913879
Forest site preparation - Aerial herbicide	63	T06N R03E S08	2913880
Forest site preparation - Aerial herbicide	45	T06N R04E S05	2913880
Forest site preparation - Aerial herbicide	45	T06N R04E S07	2913880
Forest site preparation - Aerial herbicide	35	T06N R04E S08	2913880
Forest site preparation - Aerial herbicide	35	T06N R04E S08	2913880

Columbia Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest site preparation - Aerial herbicide	23	T06N R04E S18	2913880
Forest site preparation - Aerial herbicide	72	T07N R04E S29	2913880
Forest site preparation - Aerial herbicide	10	T07N R04E S29	2913880
Forest site preparation - Aerial herbicide	55	T07N R04E S32	2913880
Forest site preparation - Aerial herbicide	40	T08N R05W S02	2913879
Forest site preparation - Aerial herbicide	56	T09N R01W S36	2913879
Forest site preparation - Aerial herbicide	18	T09N R04W S28	2913879
Forest site preparation - Aerial herbicide	29	T09N R04W S28	2913879
Forest site preparation - Aerial herbicide	85	T09N R04W S28	2913879
Forest site preparation - Aerial herbicide	40	T09N R04W S29	2913879
Forest site preparation - Aerial herbicide	17	T09N R04W S33	2913879
Forest site preparation - Aerial herbicide	25	T09N R04W S33	2913879
Forest site preparation - Aerial herbicide	19	T10N R01E S36	2913879
Forest site preparation - Aerial herbicide	21	T10N R01E S36	2913879
Forest site preparation - Aerial herbicide	33	T10N R04W S19	2913879
Forest site preparation - Aerial herbicide	80	T10N R06W S06	2913879
Forest site preparation - Aerial herbicide	13	T10N R06W S06	2913879
Forest site preparation - Aerial herbicide	58	T10N R06W S07	2913879
Forest site preparation - Aerial herbicide	48	T10N R06W S23	2913879
Forest site preparation - Aerial herbicide	66	T12N R02E S33	2913882
Forest site preparation - Aerial herbicide	12	T12N R02E S33	2913882
Forest site preparation - Ground herbicide	53	T04N R04E S20	
Forest site preparation - Ground herbicide	5	T06N R03E S08	
Forest site preparation - Ground herbicide	3	T06N R04E S07	
Forest site preparation - Ground herbicide	8	T07N R04E S31	
Forest site preparation - Ground herbicide	20	T09N R05W S24	
Forest site preparation - Ground herbicide	40	T12N R01E S24	
Forest site preparation - Pile and burn	92	T03N R04E S27	
Forest site preparation - Pile and burn	80	T09N R04W S28	
Forest site preparation - Pile and burn	17	T09N R04W S33	
Forest regeneration - Hand planting	49	T02N R03E S11	
Forest regeneration - Hand planting	49	T02N R03E S11	
Forest regeneration - Hand planting	26	T03N R04E S09	
Forest regeneration - Hand planting	71	T03N R04E S09	
Forest regeneration - Hand planting	71	T03N R04E S09	
Forest regeneration - Hand planting	70	T03N R04E S09	
Forest regeneration - Hand planting	70	T03N R04E S09	
Forest regeneration - Hand planting	14	T03N R04E S10	
Forest regeneration - Hand planting	44	T03N R04E S16	
Forest regeneration - Hand planting	5	T03N R04E S21	
Forest regeneration - Hand planting	97	T03N R04E S26	
Forest regeneration - Hand planting	63	T03N R04E S36	
Forest regeneration - Hand planting	3	T03N R06E S33	
Forest regeneration - Hand planting	43	T04N R03E S24	
Forest regeneration - Hand planting	18	T04N R03E S24	
Forest regeneration - Hand planting	53	T04N R04E S20	
Forest regeneration - Hand planting	77	T04N R04E S28	
Forest regeneration - Hand planting	8	T04N R04E S28	

Columbia Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest regeneration - Hand planting	98	T04N R04E S29	
Forest regeneration - Hand planting	88	T04N R04E S34	
Forest regeneration - Hand planting	6	T04N R04E S35	
Forest regeneration - Hand planting	81	T04N R04E S35	
Forest regeneration - Hand planting	51	T04N R04E S36	
Forest regeneration - Hand planting	36	T04N R04E S36	
Forest regeneration - Hand planting	34	T06N R01W S36	
Forest regeneration - Hand planting	20	T06N R02E S28	
Forest regeneration - Hand planting	5	T06N R02E S28	
Forest regeneration - Hand planting	9	T06N R02E S28	
Forest regeneration - Hand planting	30	T06N R02E S28	
Forest regeneration - Hand planting	63	T06N R03E S08	
Forest regeneration - Hand planting	5	T06N R03E S08	
Forest regeneration - Hand planting	30	T06N R03E S28	
Forest regeneration - Hand planting	45	T06N R04E S05	
Forest regeneration - Hand planting	9	T06N R04E S06	
Forest regeneration - Hand planting	51	T06N R04E S07	
Forest regeneration - Hand planting	3	T06N R04E S07	
Forest regeneration - Hand planting	35	T06N R04E S08	
Forest regeneration - Hand planting	35	T06N R04E S08	
Forest regeneration - Hand planting	23	T06N R04E S18	
Forest regeneration - Hand planting	10	T06N R04E S33	
Forest regeneration - Hand planting	72	T07N R04E S29	
Forest regeneration - Hand planting	10	T07N R04E S29	
Forest regeneration - Hand planting	8	T07N R04E S31	
Forest regeneration - Hand planting	60	T07N R04E S32	
Forest regeneration - Hand planting	1	T08N R04W S04	
Forest regeneration - Hand planting	40	T08N R05W S02	
Forest regeneration - Hand planting	10	T08N R05W S04	
Forest regeneration - Hand planting	1	T08N R05W S04	
Forest regeneration - Hand planting	24	T08N R05W S09	
Forest regeneration - Hand planting	56	T08N R05W S16	
Forest regeneration - Hand planting	7	T09N R01W S36	
Forest regeneration - Hand planting	56	T09N R01W S36	
Forest regeneration - Hand planting	27	T09N R01W S36	
Forest regeneration - Hand planting	67	T09N R03E S06	
Forest regeneration - Hand planting	40	T09N R04W S03	
Forest regeneration - Hand planting	13	T09N R04W S03	
Forest regeneration - Hand planting	50	T09N R04W S16	
Forest regeneration - Hand planting	18	T09N R04W S28	
Forest regeneration - Hand planting	18	T09N R04W S28	
Forest regeneration - Hand planting	29	T09N R04W S28	
Forest regeneration - Hand planting	35	T09N R04W S28	
Forest regeneration - Hand planting	50	T09N R04W S28	
Forest regeneration - Hand planting	6	T09N R04W S29	
Forest regeneration - Hand planting	40	T09N R04W S29	
Forest regeneration - Hand planting	17	T09N R04W S33	
Forest regeneration - Hand planting	25	T09N R04W S33	

Columbia Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest regeneration - Hand planting	68	T09N R05W S24	
Forest regeneration - Hand planting	15	T09N R05W S25	
Forest regeneration - Hand planting	95	T09N R05W S35	
Forest regeneration - Hand planting	19	T10N R01E S36	
Forest regeneration - Hand planting	21	T10N R01E S36	
Forest regeneration - Hand planting	20	T10N R02W S07	
Forest regeneration - Hand planting	36	T10N R03E S31	
Forest regeneration - Hand planting	16	T10N R03E S31	
Forest regeneration - Hand planting	7	T10N R03E S31	
Forest regeneration - Hand planting	25	T10N R03W S01	
Forest regeneration - Hand planting	4	T10N R04W S19	
Forest regeneration - Hand planting	33	T10N R04W S19	
Forest regeneration - Hand planting	10	T10N R04W S34	
Forest regeneration - Hand planting	41	T10N R04W S34	
Forest regeneration - Hand planting	80	T10N R06W S06	
Forest regeneration - Hand planting	13	T10N R06W S06	
Forest regeneration - Hand planting	58	T10N R06W S07	
Forest regeneration - Hand planting	48	T10N R06W S23	
Forest regeneration - Hand planting	74	T12N R01E S24	
Forest regeneration - Hand planting	8	T12N R01E S24	
Forest regeneration - Hand planting	66	T12N R02E S33	
Forest regeneration - Hand planting	12	T12N R02E S33	
Vegetation management - Aerial herbicide	81	T03N R03E S01	Missing
Vegetation management - Aerial herbicide	23	T03N R07.5E S24	Missing
Vegetation management - Aerial herbicide	65	T03N R07.5E S24	Missing
Vegetation management - Aerial herbicide	42	T04N R04E S28	Missing
Vegetation management - Aerial herbicide	18	T06N R02E S20	2913879
Vegetation management - Aerial herbicide	37	T06N R02E S20	2913879
Vegetation management - Aerial herbicide	10	T06N R02E S20	2913879
Vegetation management - Aerial herbicide	41	T10N R03W S01	2913879
Vegetation management - Ground herbicide	49	T03N R03E S16	
Vegetation management - Ground herbicide	10	T04N R04E S33	
Vegetation management - Ground herbicide	1	T04N R04E S33	
Vegetation management - Ground herbicide	45	T06N R02E S30	
Vegetation management - Ground herbicide	36	T06N R02E S31	
Vegetation management - Ground herbicide	10	T06N R03E S31	
Vegetation management - Ground herbicide	35	T06N R03E S32	
Vegetation management - Ground herbicide	35	T06N R03E S32	
Vegetation management - Ground herbicide	7	T08N R04W S40	
Vegetation management - Ground herbicide	9	T10N R06W S36	
Vegetation management - Ground herbicide	32	T11N R02E S13	
Vegetation management - Ground herbicide	68	T11N R02E S14	
Vegetation management - Ground herbicide	47	T11N R02E S26	
Vegetation management - Ground herbicide	26	T12N R02E S16	
Vegetation management - Ground herbicide	44	T12N R02E S28	
Vegetation management - Ground herbicide	17	T12N R02E S28	
Vegetation management - Ground herbicide	17	T12N R02E S28	
Vegetation management - Ground herbicide	31	T12N R02E S28	

Columbia Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Vegetation management - Ground herbicide	30	T12N R02E S32	
Vegetation management - Ground herbicide	32	T12N R08E S20	
Vegetation management - Hand cutting	15	T02N R04E S13	
Vegetation management - Hand cutting	63	T03N R04E S03	
Vegetation management - Hand cutting	44	T03N R04E S29	
Vegetation management - Hand cutting	20	T04N R03E S15	
Vegetation management - Hand cutting	71	T04N R03E S22	
Vegetation management - Hand cutting	34	T04N R03E S22	
Vegetation management - Hand cutting	12	T04N R03E S23	
Vegetation management - Hand cutting	64	T05N R02E S36	
Vegetation management - Hand cutting	60	T06N R02E S29	
Vegetation management - Hand cutting	60	T06N R02E S32	
Vegetation management - Hand cutting	29	T06N R02E S35	
Vegetation management - Hand cutting	3	T06N R02E S35	
Vegetation management - Hand cutting	3	T06N R03E S10	
Vegetation management - Hand cutting	62	T06N R04E S25	
Vegetation management - Hand cutting	11	T06N R04E S34	
Vegetation management - Hand cutting	14	T06N R04E S34	
Vegetation management - Hand cutting	40	T08N R05W S10	
Vegetation management - Hand cutting	96	T09N R05W S28	
Vegetation management - Hand cutting	20	T10N R02W S09	
Vegetation management - Hand cutting	30	T10N R06W S08	
Vegetation management - Hand cutting	60	T10N R06W S35	
Vegetation management - Hand cutting	9	T10N R06W S36	
Vegetation management - Hand cutting	8	T11N R08W S24	
Pre-commercial thinning -	45	T06N R04E S35	
Pre-commercial thinning -	56	T07N R04E S35	
Pre-commercial thinning -	177	T09N R04W S10	
Pre-commercial thinning -	92	T09N R04W S29	
Pre-commercial thinning -	77	T11N R07W S19	
Pre-commercial thinning -	3	T11N R07W S19	
Tree pruning - Hand pruning	46	T09N R04W S19	
Pest management - Animal repellant	18	T09N R04W S28	
Klickitat Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	7	T04N R09E S24	2703270
Timber Harvest - Clear cut	28	T04N R10E S19	2703270
Timber Harvest - Clear cut	68	T04N R10E S30	2703270
Timber Harvest - Clear cut	16	T05N R10E S02	2703140
Timber Harvest - Clear cut	33	T05N R10E S02	2703140
Timber Harvest - Clear cut	42	T05N R10E S02	2703140
Timber Harvest - Clear cut	46	T05N R10E S03	2703140
Timber Harvest - Clear cut	11	T05N R10E S03	2703428
Timber Harvest - Clear cut	31	T05N R11E S05	2703100
Timber Harvest - Clear cut	43	T05N R11E S20	2703100
Timber Harvest - Clear cut	36	T05N R13E S36	2703052
Timber Harvest - Clear cut	20	T05N R13E S36	2703052

Klickitat Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	66	T05N R13E S36	2703052
Timber Harvest - Clear cut	13	T05N R13E S36	2703052
Timber Harvest - Late rotation thinning	107	T05N R10E S10	2703428
Timber Harvest - Late rotation thinning	56	T05N R10E S10	2703428
Timber Harvest - Late rotation thinning	16	T05N R10E S15	2703428
Timber Harvest - Late rotation thinning	259	T05N R13E S36	2703052
Timber Harvest - Salvage cut	276	T07N R11E S35	2703362
Timber Harvest - Shelterwood intermediate cut	58	T04N R12E S36	2703467
Timber Harvest - Shelterwood intermediate cut	35	T04N R12E S36	2703467
Timber Harvest - Shelterwood intermediate cut	27	T04N R12E S36	2703467
Timber Harvest - Shelterwood intermediate cut	212	T05N R12E S36	2703448
Timber Harvest - Shelterwood intermediate cut	33	T07N R11E S11	2703151
Timber Harvest - Uneven-aged management	166	T06N R15E S36	2703475
Timber Harvest - Uneven-aged management	90	T06N R15E S36	2703475
Forest site preparation - Ground herbicide	14	T05N R13E S36	
Forest site preparation - Ground herbicide	36	T05N R13E S36	
Forest site preparation - Ground herbicide	20	T05N R13E S36	
Forest site preparation - Ground herbicide	66	T05N R13E S36	
Forest site preparation - Ground herbicide	13	T05N R13E S36	
Forest site preparation - Ground herbicide	272	T07N R11E S35	
Forest site preparation - Ground mechanical	35	T07N R11E S33	
Forest site preparation - Ground mechanical	15	T07N R11E S33	
Forest site preparation - Ground mechanical	13	T07N R11E S33	
Forest site preparation - Ground mechanical	5	T07N R11E S33	
Forest site preparation - Ground mechanical	272	T07N R11E S35	
Forest site preparation - Ground mechanical	3	T07N R12E S04	
Forest site preparation - Pile and burn	4	T04N R12E S07	
Forest site preparation - Pile and burn	2	T05N R10E S02	
Forest site preparation - Pile and burn	2	T05N R10E S02	
Forest site preparation - Pile and burn	1	T05N R10E S03	
Forest site preparation - Pile and burn	1	T05N R10E S03	
Forest site preparation - Pile and burn	15	T05N R13E S36	
Forest site preparation - Pile and burn	95	T06N R10E S18	
Forest site preparation - Pile and burn	35	T07N R11E S33	
Forest site preparation - Pile and burn	15	T07N R11E S33	
Forest site preparation - Pile and burn	13	T07N R11E S33	
Forest site preparation - Pile and burn	5	T07N R11E S33	
Forest site preparation - Pile and burn	37	T07N R11E S34	
Forest site preparation - Pile and burn	26	T07N R12E S04	
Forest site preparation - Pile and burn	1	T07N R12E S04	
Forest regeneration - Hand planting	75	T03N R12E S05	
Forest regeneration - Hand planting	47	T03N R12E S08	
Forest regeneration - Hand planting	6	T04N R09E S24	
Forest regeneration - Hand planting	15	T04N R10E S06	
Forest regeneration - Hand planting	10	T04N R10E S06	
Forest regeneration - Hand planting	60	T04N R10E S18	
Forest regeneration - Hand planting	28	T04N R10E S19	
Forest regeneration - Hand planting	68	T04N R10E S30	

Klickitat Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest regeneration - Hand planting	28	T04N R11E S12	
Forest regeneration - Hand planting	21	T04N R12E S07	
Forest regeneration - Hand planting	58	T04N R12E S36	
Forest regeneration - Hand planting	35	T04N R12E S36	
Forest regeneration - Hand planting	27	T04N R12E S36	
Forest regeneration - Hand planting	16	T05N R10E S02	
Forest regeneration - Hand planting	32	T05N R10E S02	
Forest regeneration - Hand planting	41	T05N R10E S02	
Forest regeneration - Hand planting	44	T05N R10E S03	
Forest regeneration - Hand planting	11	T05N R10E S03	
Forest regeneration - Hand planting	31	T05N R11E S05	
Forest regeneration - Hand planting	43	T05N R11E S20	
Forest regeneration - Hand planting	46	T05N R12E S19	
Forest regeneration - Hand planting	44	T05N R12E S30	
Forest regeneration - Hand planting	36	T05N R13E S36	
Forest regeneration - Hand planting	20	T05N R13E S36	
Forest regeneration - Hand planting	66	T05N R13E S36	
Forest regeneration - Hand planting	13	T05N R13E S36	
Forest regeneration - Hand planting	68	T06N R10E S18	
Forest regeneration - Hand planting	30	T07N R11E S01	
Forest regeneration - Hand planting	73	T07N R11E S02	
Forest regeneration - Hand planting	33	T07N R11E S11	
Forest regeneration - Hand planting	147	T07N R11E S25	
Forest regeneration - Hand planting	101	T07N R11E S26	
Forest regeneration - Hand planting	230	T07N R11E S26	
Forest regeneration - Hand planting	176	T07N R11E S26	
Forest regeneration - Hand planting	43	T07N R11E S33	
Forest regeneration - Hand planting	35	T07N R11E S33	
Forest regeneration - Hand planting	16	T07N R11E S33	
Forest regeneration - Hand planting	13	T07N R11E S33	
Forest regeneration - Hand planting	5	T07N R11E S33	
Forest regeneration - Hand planting	35	T07N R11E S34	
Forest regeneration - Hand planting	272	T07N R11E S35	
Forest regeneration - Hand planting	49	T07N R12E S04	
Forest regeneration - Hand planting	26	T07N R12E S04	
Forest regeneration - Hand planting	3	T07N R12E S04	
Forest regeneration - Hand planting	1	T07N R12E S04	
Forest regeneration - Hand planting	85	T07N R12E S05	
Forest regeneration - Hand planting	153	T07N R12E S06	
Forest regeneration - Hand planting	34	T07N R12E S09	
Forest regeneration - Hand planting	9	T07N R12E S17	
Forest regeneration - Hand planting	95	T07N R12E S18	
Vegetation management - Ground herbicide	7	T04N R09E S24	
Vegetation management - Ground herbicide	60	T04N R10E S18	
Vegetation management - Ground herbicide	28	T04N R10E S19	
Vegetation management - Ground herbicide	68	T04N R10E S30	
Vegetation management - Ground herbicide	73	T07N R11E S02	
Vegetation management - Ground herbicide	33	T07N R11E S11	

Klickitat Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Vegetation management - Ground herbicide	147	T07N R11E S25	
Vegetation management - Ground herbicide	35	T07N R11E S33	
Vegetation management - Ground herbicide	16	T07N R11E S33	
Vegetation management - Ground herbicide	13	T07N R11E S33	
Vegetation management - Ground herbicide	5	T07N R11E S33	
Vegetation management - Ground herbicide	37	T07N R11E S34	
Vegetation management - Ground herbicide	26	T07N R12E S04	
Vegetation management - Ground herbicide	3	T07N R12E S04	
Vegetation management - Ground herbicide	1	T07N R12E S04	
Pre-commercial thinning -	651	T07N R12E S21	
North Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	46	T27N R07E S35	2410397
Timber Harvest - Clear cut	55	T27N R07E S35	2410397
Timber Harvest - Clear cut	69	T27N R07E S35	2411009
Timber Harvest - Clear cut	11	T27N R07E S35	2411009
Timber Harvest - Clear cut	40	T28N R07E S09	2808511
Timber Harvest - Clear cut	55	T28N R07E S16	2808511
Timber Harvest - Clear cut	109	T28N R08E S18	2808589
Timber Harvest - Clear cut	47	T29N R08E S07	2806353
Timber Harvest - Clear cut	48	T29N R08E S29	2807581
Timber Harvest - Clear cut	86	T29N R08E S34	2807939
Timber Harvest - Clear cut	100	T31N R06E S01	2808058
Timber Harvest - Clear cut	56	T32N R05E S01	2808048
Timber Harvest - Clear cut	33	T32N R05E S01	2808048
Timber Harvest - Clear cut	27	T32N R05E S02	2808048
Timber Harvest - Clear cut	90	T32N R06E S06	2807488
Timber Harvest - Clear cut	81	T32N R06E S08	2807962
Timber Harvest - Clear cut	51	T32N R06E S27	2807864
Timber Harvest - Clear cut	50	T32N R06E S27	2807864
Timber Harvest - Clear cut	44	T33N R04E S02	2806753
Timber Harvest - Clear cut	97	T33N R04E S11	2806753
Timber Harvest - Clear cut	37	T33N R05E S01	2808085
Timber Harvest - Clear cut	23	T33N R05E S03	2808085
Timber Harvest - Clear cut	47	T33N R05E S10	2808301
Timber Harvest - Clear cut	46	T33N R05E S11	2808085
Timber Harvest - Clear cut	16	T33N R05E S15	2808301
Timber Harvest - Clear cut	47	T33N R05E S15	2808301
Timber Harvest - Clear cut	64	T33N R06E S02	2807319
Timber Harvest - Clear cut	88	T33N R06E S03	2807319
Timber Harvest - Clear cut	14	T33N R06E S06	2808363
Timber Harvest - Clear cut	72	T33N R06E S16	2807851
Timber Harvest - Clear cut	83	T33N R06E S29	2807556
Timber Harvest - Clear cut	18	T33N R06E S30	2808083
Timber Harvest - Clear cut	73	T33N R06E S30	2807556
Timber Harvest - Clear cut	35	T33N R06E S31	2808083
Timber Harvest - Clear cut	81	T33N R07E S19	2807567

North Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	37	T34N R05E S03	2808084
Timber Harvest - Clear cut	67	T34N R05E S03	2808084
Timber Harvest - Clear cut	4	T34N R05E S27	2808085
Timber Harvest - Clear cut	13	T34N R05E S35	2808085
Timber Harvest - Clear cut	8	T34N R06E S03	2808345
Timber Harvest - Clear cut	58	T34N R06E S06	2807486
Timber Harvest - Clear cut	95	T34N R06E S09	2808345
Timber Harvest - Clear cut	29	T34N R09E S01	2808396
Timber Harvest - Clear cut	54	T34N R09E S12	2808396
Timber Harvest - Clear cut	41	T38N R05E S15	2807591
Timber Harvest - Clear cut	79	T38N R05E S15	2807591
Timber Harvest - Clear cut	67	T39N R05E S12	2807542
Timber Harvest - Late rotation thinning	89	T33N R05E S12	2806523
Timber Harvest - Late rotation thinning	99	T33N R06E S16	2806523
Timber Harvest - Late rotation thinning	180	T39N R05E S07	2808002
Timber Harvest - Smallwood thinning	76	T35N R06E S02	2808040
Timber Harvest - Smallwood thinning	102	T36N R06E S35	2808040
Timber Harvest - Smallwood thinning	10	T38N R05E S15	2806524
Timber Harvest - Smallwood thinning	62	T38N R05E S22	2806524
Timber Harvest - Smallwood thinning	12	T38N R05E S28	2806524
Timber Harvest - Smallwood thinning	141	T38N R05E S33	2806524
Timber Harvest - Smallwood thinning	25	T38N R05E S33	2806524
Forest site preparation - Aerial herbicide	91	T28N R07E S02	2808429
Forest site preparation - Aerial herbicide	34	T28N R09E S31	2808429
Forest site preparation - Aerial herbicide	93	T29N R07E S02	2808429
Forest site preparation - Aerial herbicide	54	T29N R07E S11	2808429
Forest site preparation - Aerial herbicide	32	T32N R06E S03	2808429
Forest site preparation - Aerial herbicide	34	T32N R07E S20	2808429
Forest site preparation - Aerial herbicide	19	T32N R07E S20	2808429
Forest site preparation - Aerial herbicide	45	T32N R07E S21	2808429
Forest site preparation - Aerial herbicide	47	T32N R08E S04	2808429
Forest site preparation - Aerial herbicide	54	T32N R08E S05	2808429
Forest site preparation - Aerial herbicide	41	T33N R05E S13	2808429
Forest site preparation - Aerial herbicide	30	T33N R05E S13	2808429
Forest site preparation - Aerial herbicide	63	T33N R05E S14	2808429
Forest site preparation - Aerial herbicide	50	T33N R05E S20	2808429
Forest site preparation - Aerial herbicide	74	T33N R05E S29	2808429
Forest site preparation - Aerial herbicide	18	T33N R06E S16	2808429
Forest site preparation - Aerial herbicide	11	T33N R06E S16	2808429
Forest site preparation - Aerial herbicide	34	T33N R06E S29	2808429
Forest site preparation - Aerial herbicide	18	T33N R06E S29	2808429
Forest site preparation - Aerial herbicide	43	T33N R06E S29	2808429
Forest site preparation - Aerial herbicide	61	T33N R06E S33	2808429
Forest site preparation - Aerial herbicide	10	T33N R06E S33	2808429
Forest site preparation - Aerial herbicide	56	T33N R06E S33	2808429
Forest site preparation - Aerial herbicide	43	T35N R05E S03	2808430
Forest site preparation - Aerial herbicide	32	T37N R05E S02	2808430
Forest site preparation - Aerial herbicide	51	T38N R05E S24	2808430

North Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest site preparation - Aerial herbicide	82	T38N R06E S30	2808430
Forest site preparation - Aerial herbicide	66	T40N R06E S29	2808430
Forest site preparation - Ground herbicide	11	T28N R09E S31	
Forest site preparation - Ground herbicide	10	T32N R09E S05	
Forest site preparation - Ground herbicide	48	T32N R09E S06	
Forest site preparation - Ground herbicide	27	T33N R10E S13	
Forest site preparation - Ground herbicide	28	T34N R05E S05	
Forest site preparation - Ground herbicide	31	T34N R05E S08	
Forest site preparation - Ground herbicide	28	T36N R07E S35	
Forest site preparation - Ground herbicide	5	T36N R07E S35	
Forest site preparation - Ground herbicide	7	T36N R07E S35	
Forest site preparation - Ground herbicide	10	T36N R07E S36	
Forest site preparation - Ground herbicide	13	T37N R05E S02	
Forest site preparation - Ground herbicide	64	T39N R05E S12	
Forest site preparation - Ground herbicide	11	T39N R05E S34	
Forest site preparation - Ground herbicide	45	T39N R05E S34	
Forest site preparation - Ground herbicide	7	T40N R05E S13	
Forest site preparation - Ground herbicide	55	T40N R05E S24	
Forest site preparation - Ground herbicide	37	T40N R05E S25	
Forest site preparation - Ground herbicide	60	T40N R06E S18	
Forest site preparation - Hand cutting	1	T32N R09E S06	
Forest regeneration - Hand planting	89	T26N R08E S19	
Forest regeneration - Hand planting	23	T26N R08E S20	
Forest regeneration - Hand planting	4	T27N R07E S29	
Forest regeneration - Hand planting	46	T27N R07E S35	
Forest regeneration - Hand planting	68	T27N R07E S35	
Forest regeneration - Hand planting	11	T27N R07E S35	
Forest regeneration - Hand planting	69	T28N R07E S02	
Forest regeneration - Hand planting	20	T28N R07E S02	
Forest regeneration - Hand planting	29	T28N R08E S01	
Forest regeneration - Hand planting	44	T28N R08E S02	
Forest regeneration - Hand planting	35	T28N R08E S02	
Forest regeneration - Hand planting	67	T28N R08E S16	
Forest regeneration - Hand planting	11	T28N R09E S31	
Forest regeneration - Hand planting	32	T28N R09E S31	
Forest regeneration - Hand planting	88	T29N R07E S02	
Forest regeneration - Hand planting	87	T29N R07E S11	
Forest regeneration - Hand planting	54	T29N R07E S11	
Forest regeneration - Hand planting	2	T29N R07E S12	
Forest regeneration - Hand planting	44	T29N R08E S07	
Forest regeneration - Hand planting	46	T29N R08E S29	
Forest regeneration - Hand planting	2	T31N R06E S24	
Forest regeneration - Hand planting	5	T31N R06E S24	
Forest regeneration - Hand planting	7	T31N R06E S25	
Forest regeneration - Hand planting	4	T31N R06E S25	
Forest regeneration - Hand planting	30	T32N R06E S03	
Forest regeneration - Hand planting	2	T32N R06E S35	
Forest regeneration - Hand planting	32	T32N R07E S20	

North Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest regeneration - Hand planting	18	T32N R07E S20	
Forest regeneration - Hand planting	43	T32N R07E S21	
Forest regeneration - Hand planting	47	T32N R08E S04	
Forest regeneration - Hand planting	54	T32N R08E S05	
Forest regeneration - Hand planting	9	T32N R09E S05	
Forest regeneration - Hand planting	48	T32N R09E S06	
Forest regeneration - Hand planting	35	T33N R04E S02	
Forest regeneration - Hand planting	78	T33N R04E S11	
Forest regeneration - Hand planting	56	T33N R05E S13	
Forest regeneration - Hand planting	28	T33N R05E S13	
Forest regeneration - Hand planting	60	T33N R05E S14	
Forest regeneration - Hand planting	14	T33N R05E S15	
Forest regeneration - Hand planting	48	T33N R05E S20	
Forest regeneration - Hand planting	67	T33N R05E S29	
Forest regeneration - Hand planting	60	T33N R06E S02	
Forest regeneration - Hand planting	78	T33N R06E S03	
Forest regeneration - Hand planting	18	T33N R06E S16	
Forest regeneration - Hand planting	11	T33N R06E S16	
Forest regeneration - Hand planting	4	T33N R06E S25	
Forest regeneration - Hand planting	73	T33N R06E S29	
Forest regeneration - Hand planting	32	T33N R06E S29	
Forest regeneration - Hand planting	17	T33N R06E S29	
Forest regeneration - Hand planting	42	T33N R06E S29	
Forest regeneration - Hand planting	17	T33N R06E S30	
Forest regeneration - Hand planting	69	T33N R06E S32	
Forest regeneration - Hand planting	64	T33N R06E S33	
Forest regeneration - Hand planting	11	T33N R06E S33	
Forest regeneration - Hand planting	57	T33N R06E S33	
Forest regeneration - Hand planting	26	T33N R10E S13	
Forest regeneration - Hand planting	28	T34N R05E S05	
Forest regeneration - Hand planting	53	T34N R05E S08	
Forest regeneration - Hand planting	55	T34N R06E S04	
Forest regeneration - Hand planting	50	T34N R06E S05	
Forest regeneration - Hand planting	58	T34N R06E S06	
Forest regeneration - Hand planting	6	T35N R04E S10	
Forest regeneration - Hand planting	28	T35N R04E S10	
Forest regeneration - Hand planting	10	T35N R04E S10	
Forest regeneration - Hand planting	15	T35N R04E S10	
Forest regeneration - Hand planting	33	T35N R05E S01	
Forest regeneration - Hand planting	44	T35N R05E S03	
Forest regeneration - Hand planting	1	T36N R04E S15	
Forest regeneration - Hand planting	18	T36N R05E S35	
Forest regeneration - Hand planting	27	T36N R07E S35	
Forest regeneration - Hand planting	5	T36N R07E S35	
Forest regeneration - Hand planting	7	T36N R07E S35	
Forest regeneration - Hand planting	10	T36N R07E S36	
Forest regeneration - Hand planting	14	T37N R04E S11	
Forest regeneration - Hand planting	44	T37N R05E S02	

North Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest regeneration - Hand planting	21	T37N R05E S36	
Forest regeneration - Hand planting	6	T37N R05E S36	
Forest regeneration - Hand planting	19	T37N R05E S36	
Forest regeneration - Hand planting	12	T37N R05E S36	
Forest regeneration - Hand planting	46	T38N R04E S20	
Forest regeneration - Hand planting	34	T38N R04E S20	
Forest regeneration - Hand planting	39	T38N R04E S21	
Forest regeneration - Hand planting	19	T38N R05E S15	
Forest regeneration - Hand planting	54	T38N R05E S15	
Forest regeneration - Hand planting	51	T38N R05E S24	
Forest regeneration - Hand planting	90	T38N R06E S18	
Forest regeneration - Hand planting	81	T38N R06E S30	
Forest regeneration - Hand planting	62	T39N R05E S12	
Forest regeneration - Hand planting	46	T39N R05E S17	
Forest regeneration - Hand planting	13	T39N R05E S17	
Forest regeneration - Hand planting	54	T39N R05E S18	
Forest regeneration - Hand planting	11	T39N R05E S34	
Forest regeneration - Hand planting	43	T39N R05E S34	
Forest regeneration - Hand planting	7	T40N R05E S13	
Forest regeneration - Hand planting	55	T40N R05E S24	
Forest regeneration - Hand planting	37	T40N R05E S25	
Forest regeneration - Hand planting	60	T40N R06E S18	
Forest regeneration - Hand planting	66	T40N R06E S29	
Vegetation management - Aerial herbicide	74	T37N R05E S07	2808430
Vegetation management - Ground herbicide	6	T28N R08E S07	
Vegetation management - Ground herbicide	34	T28N R08E S17	
Vegetation management - Ground herbicide	10	T31N R07E S32	
Vegetation management - Ground herbicide	29	T32N R07E S30	
Vegetation management - Ground herbicide	25	T33N R05E S10	
Vegetation management - Ground herbicide	23	T35N R07E S02	
Vegetation management - Ground herbicide	14	T35N R07E S02	
Vegetation management - Ground herbicide	16	T35N R07E S03	
Vegetation management - Ground herbicide	22	T36N R04E S09	
Vegetation management - Ground herbicide	13	T36N R04E S09	
Vegetation management - Ground herbicide	20	T36N R05E S07	
Vegetation management - Ground herbicide	12	T36N R05E S07	
Vegetation management - Ground herbicide	29	T36N R06E S07	
Vegetation management - Ground herbicide	29	T36N R06E S21	
Vegetation management - Ground herbicide	74	T37N R05E S05	
Vegetation management - Ground herbicide	29	T37N R05E S10	
Vegetation management - Ground herbicide	34	T37N R05E S32	
Vegetation management - Ground herbicide	11	T37N R05E S32	
Vegetation management - Ground herbicide	78	T38N R05E S04	
Vegetation management - Ground herbicide	39	T38N R05E S14	
Vegetation management - Ground herbicide	29	T38N R05E S33	
Vegetation management - Ground herbicide	16	T39N R05E S01	
Vegetation management - Ground herbicide	61	T39N R05E S11	
Vegetation management - Ground herbicide	12	T39N R05E S14	

North Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Vegetation management - Ground herbicide	15	T39N R06E S06	
Vegetation management - Ground herbicide	57	T40N R06E S07	
Vegetation management - Hand cutting	7	T23N R07E S05	
Vegetation management - Hand cutting	42	T23N R08E S06	
Vegetation management - Hand cutting	34	T23N R09E S15	
Vegetation management - Hand cutting	50	T24N R07E S34	
Vegetation management - Hand cutting	24	T26N R07E S02	
Vegetation management - Hand cutting	15	T26N R07E S02	
Vegetation management - Hand cutting	10	T26N R07E S11	
Vegetation management - Hand cutting	89	T26N R07E S14	
Vegetation management - Hand cutting	57	T26N R08E S07	
Vegetation management - Hand cutting	8	T26N R08E S07	
Vegetation management - Hand cutting	68	T26N R08E S18	
Vegetation management - Hand cutting	22	T26N R08E S18	
Vegetation management - Hand cutting	74	T26N R08E S19	
Vegetation management - Hand cutting	33	T27N R07E S36	
Vegetation management - Hand cutting	36	T27N R08E S30	
Vegetation management - Hand cutting	27	T27N R08E S30	
Vegetation management - Hand cutting	45	T27N R08E S32	
Vegetation management - Hand cutting	5	T27N R09E S11	
Vegetation management - Hand cutting	38	T28N R07E S09	
Vegetation management - Hand cutting	41	T28N R08E S04	
Vegetation management - Hand cutting	78	T28N R09E S29	
Vegetation management - Hand cutting	18	T32N R06E S06	
Vegetation management - Hand cutting	17	T32N R06E S07	
Vegetation management - Hand cutting	30	T32N R07E S04	
Vegetation management - Hand cutting	52	T32N R07E S14	
Vegetation management - Hand cutting	6	T32N R07E S16	
Vegetation management - Hand cutting	2	T32N R07E S24	
Vegetation management - Hand cutting	56	T32N R08E S08	
Vegetation management - Hand cutting	98	T32N R08E S17	
Vegetation management - Hand cutting	10	T32N R09E S04	
Vegetation management - Hand cutting	79	T33N R04E S02	
Vegetation management - Hand cutting	94	T33N R05E S11	
Vegetation management - Hand cutting	22	T33N R05E S24	
Vegetation management - Hand cutting	64	T33N R05E S30	
Vegetation management - Hand cutting	3	T33N R06E S19	
Vegetation management - Hand cutting	58	T33N R10E S31	
Vegetation management - Hand cutting	65	T33N R10E S31	
Vegetation management - Hand cutting	35	T34N R05E S09	
Vegetation management - Hand cutting	46	T35N R05E S03	
Vegetation management - Hand cutting	47	T35N R08E S01	
Vegetation management - Hand cutting	24	T36N R03E S03	
Vegetation management - Hand cutting	33	T36N R04E S01	
Vegetation management - Hand cutting	2	T36N R04E S02	
Vegetation management - Hand cutting	75	T36N R05E S02	
Vegetation management - Hand cutting	20	T36N R05E S20	
Vegetation management - Hand cutting	45	T36N R05E S20	

North Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Vegetation management - Hand cutting	11	T36N R06E S28	
Vegetation management - Hand cutting	51	T36N R06E S34	
Vegetation management - Hand cutting	85	T36N R07E S36	
Vegetation management - Hand cutting	35	T37N R03E S12	
Vegetation management - Hand cutting	29	T37N R05E S03	
Vegetation management - Hand cutting	44	T37N R05E S04	
Vegetation management - Hand cutting	10	T37N R05E S09	
Vegetation management - Hand cutting	55	T37N R05E S19	
Vegetation management - Hand cutting	26	T37N R05E S25	
Vegetation management - Hand cutting	20	T37N R05E S25	
Vegetation management - Hand cutting	67	T37N R05E S27	
Vegetation management - Hand cutting	7	T37N R05E S29	
Vegetation management - Hand cutting	12	T37N R05E S33	
Vegetation management - Hand cutting	38	T38N R04E S36	
Vegetation management - Hand cutting	45	T38N R04E S36	
Vegetation management - Hand cutting	48	T38N R05E S13	
Vegetation management - Hand cutting	100	T38N R05E S27	
Vegetation management - Hand cutting	27	T38N R05E S34	
Vegetation management - Hand cutting	20	T38N R06E S31	
Vegetation management - Hand cutting	10	T39N R05E S08	
Vegetation management - Hand cutting	76	T39N R05E S12	
Vegetation management - Hand cutting	86	T39N R05E S17	
Vegetation management - Hand cutting	90	T40N R05E S15	
Vegetation management - Hand cutting	48	T40N R05E S31	
Vegetation management - Hand cutting	54	T40N R06E S20	
Vegetation management - Hand cutting	2	T40N R06E S20	
Vegetation management - Hand cutting	2	T40N R06E S20	
Vegetation management - Hand cutting	15	T40N R06E S28	
Vegetation management - Hand cutting	28	T40N R06E S29	
Pre-commercial thinning -	66	T23N R07E S09	
Pre-commercial thinning -	43	T26N R08E S05	
Pre-commercial thinning -	83	T28N R07E S02	
Pre-commercial thinning -	83	T28N R07E S16	
Pre-commercial thinning -	42	T29N R06E S13	
Pre-commercial thinning -	24	T29N R06E S14	
Pre-commercial thinning -	70	T29N R07E S15	
Pre-commercial thinning -	128	T29N R07E S23	
Pre-commercial thinning -	171	T29N R07E S34	
Pre-commercial thinning -	33	T29N R09E S18	
Pre-commercial thinning -	63	T29N R09E S18	
Pre-commercial thinning -	47	T29N R09E S18	
Pre-commercial thinning -	38	T29N R09E S20	
Pre-commercial thinning -	83	T30N R07E S34	
Pre-commercial thinning -	82	T30N R07E S36	
Pre-commercial thinning -	5	T31N R06E S13	
Pre-commercial thinning -	15	T31N R06E S13	
Pre-commercial thinning -	38	T31N R06E S23	
Pre-commercial thinning -	51	T31N R06E S23	

North Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Pre-commercial thinning -	9	T31N R06E S23	
Pre-commercial thinning -	118	T31N R06E S24	
Pre-commercial thinning -	112	T31N R06E S24	
Pre-commercial thinning -	41	T31N R06E S24	
Pre-commercial thinning -	26	T31N R06E S24	
Pre-commercial thinning -	73	T31N R06E S25	
Pre-commercial thinning -	122	T31N R06E S26	
Pre-commercial thinning -	5	T32N R05E S03	
Pre-commercial thinning -	38	T32N R05E S03	
Pre-commercial thinning -	27	T33N R05E S15	
Pre-commercial thinning -	131	T33N R05E S24	
Pre-commercial thinning -	51	T33N R07E S31	
Pre-commercial thinning -	7	T33N R10E S07	
Pre-commercial thinning -	16	T34N R09E S36	
Pre-commercial thinning -	100	T35N R07E S05	
Pre-commercial thinning -	112	T35N R07E S10	
Pre-commercial thinning -	65	T36N R04E S02	
Pre-commercial thinning -	109	T36N R04E S02	
Olympic Experimental State Forest Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	27	T30N R12W S34	2607865
Timber Harvest - Late rotation thinning	218	T31N R13W S01	2605232
Timber Harvest - Late rotation thinning	86	T31N R13W S01	2605232
Timber Harvest - Salvage cut	4	T27N R13W S05	2606381
Timber Harvest - Salvage cut	4	T27N R13W S05	2606381
Timber Harvest - Salvage cut	5	T27N R13W S05	2606381
Timber Harvest - Salvage cut	1	T27N R13W S05	2606381
Timber Harvest - Salvage cut	83	T27N R13W S06	2606381
Timber Harvest - Salvage cut	3	T27N R13W S06	2606381
Timber Harvest - Salvage cut	5	T27N R13W S07	2606381
Timber Harvest - Salvage cut	0	T27N R13W S07	2606381
Timber Harvest - Salvage cut	1	T27N R13W S07	2606381
Timber Harvest - Salvage cut	115	T27N R13W S08	2606381
Timber Harvest - Salvage cut	93	T27N R13W S08	2606381
Timber Harvest - Salvage cut	94	T27N R13W S08	2606381
Timber Harvest - Salvage cut	2	T27N R13W S09	2606381
Timber Harvest - Variable density thinning	156	T25N R12W S34	2606514
Timber Harvest - Variable density thinning	32	T30N R12W S26	2607395
Timber Harvest - Variable density thinning	1	T31N R13W S01	2605232
Timber Harvest - Variable density thinning	8	T31N R13W S01	2605232
Forest site preparation - Pile and burn	1	T32N R13W S35	
Forest regeneration - Hand planting	9	T25N R12W S34	
Forest regeneration - Hand planting	16	T28N R13W S01	
Forest regeneration - Hand planting	26	T28N R13W S01	
Forest regeneration - Hand planting	20	T28N R13W S02	
Forest regeneration - Hand planting	18	T28N R13W S02	
Forest regeneration - Hand planting	13	T28N R13W S02	

Olympic Experimental State Forest Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest regeneration - Hand planting	65	T29N R12W S04	
Forest regeneration - Hand planting	6	T29N R13W S01	
Forest regeneration - Hand planting	6	T29N R13W S01	
Forest regeneration - Hand planting	70	T29N R13W S12	
Forest regeneration - Hand planting	21	T29N R14W S16	
Forest regeneration - Hand planting	74	T29N R14W S16	
Forest regeneration - Hand planting	46	T30N R11W S26	
Forest regeneration - Hand planting	7	T30N R11W S26	
Forest regeneration - Hand planting	5	T30N R11W S27	
Forest regeneration - Hand planting	1	T30N R11W S36	
Forest regeneration - Hand planting	3	T30N R11W S36	
Forest regeneration - Hand planting	27	T30N R11W S36	
Forest regeneration - Hand planting	26	T30N R12W S34	
Forest regeneration - Hand planting	31	T30N R13W S04	
Forest regeneration - Hand planting	57	T30N R13W S05	
Forest regeneration - Hand planting	30	T31N R12W S08	
Forest regeneration - Hand planting	31	T31N R12W S17	
Forest regeneration - Hand planting	2	T31N R13W S12	
Forest regeneration - Hand planting	27	T31N R13W S21	
Forest regeneration - Hand planting	14	T32N R13W S35	
Vegetation management - Ground herbicide	5	T30N R11W S27	
Vegetation management - Ground herbicide	1	T30N R11W S36	
Vegetation management - Ground herbicide	3	T30N R11W S36	
Pre-commercial thinning -	14	T25N R10W S16	
Pre-commercial thinning -	15	T25N R11W S05	
Pre-commercial thinning -	14	T25N R11W S05	
Pre-commercial thinning -	5	T25N R11W S05	
Pre-commercial thinning -	5	T25N R11W S07	
Pre-commercial thinning -	40	T25N R11W S08	
Pre-commercial thinning -	73	T25N R11W S22	
Pre-commercial thinning -	31	T25N R11W S22	
Pre-commercial thinning -	32	T25N R11W S22	
Pre-commercial thinning -	39	T25N R11W S22	
Pre-commercial thinning -	9	T25N R11W S32	
Pre-commercial thinning -	30	T25N R12W S03	
Pre-commercial thinning -	5	T25N R12W S09	
Pre-commercial thinning -	3	T25N R12W S20	
Pre-commercial thinning -	31	T25N R13W S01	
Pre-commercial thinning -	27	T26N R09W S31	
Pre-commercial thinning -	78	T26N R10W S15	
Pre-commercial thinning -	11	T26N R10W S15	
Pre-commercial thinning -	2	T26N R10W S15	
Pre-commercial thinning -	147	T26N R10W S16	
Pre-commercial thinning -	60	T26N R10W S19	
Pre-commercial thinning -	9	T26N R10W S19	
Pre-commercial thinning -	11	T26N R10W S19	
Pre-commercial thinning -	13	T26N R10W S19	
Pre-commercial thinning -	10	T26N R10W S22	

Olympic Experimental State Forest Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Pre-commercial thinning -	35	T26N R10W S23	
Pre-commercial thinning -	128	T26N R10W S23	
Pre-commercial thinning -	111	T26N R10W S23	
Pre-commercial thinning -	60	T26N R11W S04	
Pre-commercial thinning -	38	T26N R11W S08	
Pre-commercial thinning -	41	T26N R11W S08	
Pre-commercial thinning -	9	T26N R11W S08	
Pre-commercial thinning -	49	T26N R11W S11	
Pre-commercial thinning -	41	T26N R11W S22	
Pre-commercial thinning -	7	T26N R11W S22	
Pre-commercial thinning -	6	T26N R11W S24	
Pre-commercial thinning -	40	T26N R11W S32	
Pre-commercial thinning -	36	T26N R11W S32	
Pre-commercial thinning -	15	T26N R11W S33	
Pre-commercial thinning -	34	T26N R11W S35	
Pre-commercial thinning -	79	T26N R12W S15	
Pre-commercial thinning -	71	T26N R12W S21	
Pre-commercial thinning -	2	T26N R12W S21	
Pre-commercial thinning -	33	T26N R12W S21	
Pre-commercial thinning -	3	T26N R12W S21	
Pre-commercial thinning -	5	T26N R12W S21	
Pre-commercial thinning -	1	T26N R12W S22	
Pre-commercial thinning -	52	T26N R12W S22	
Pre-commercial thinning -	6	T26N R12W S22	
Pre-commercial thinning -	29	T26N R12W S22	
Pre-commercial thinning -	71	T26N R12W S23	
Pre-commercial thinning -	39	T26N R12W S31	
Pre-commercial thinning -	57	T27N R11W S22	
Pre-commercial thinning -	6	T27N R12W S16	
Pre-commercial thinning -	8	T27N R12W S16	
Pre-commercial thinning -	20	T27N R13W S03	
Pre-commercial thinning -	73	T27N R13W S04	
Pre-commercial thinning -	106	T27N R13W S06	
Pre-commercial thinning -	78	T27N R13W S07	
Pre-commercial thinning -	4	T27N R13W S09	
Pre-commercial thinning -	8	T27N R13W S09	
Pre-commercial thinning -	98	T27N R13W S18	
Pre-commercial thinning -	3	T27N R13W S21	
Pre-commercial thinning -	3	T27N R13W S21	
Pre-commercial thinning -	2	T27N R13W S26	
Pre-commercial thinning -	108	T27N R13W S27	
Pre-commercial thinning -	43	T27N R13W S27	
Pre-commercial thinning -	10	T27N R13W S27	
Pre-commercial thinning -	4	T27N R13W S27	
Pre-commercial thinning -	6	T27N R13W S27	
Pre-commercial thinning -	19	T27N R13W S27	
Pre-commercial thinning -	2	T27N R13W S36	
Pre-commercial thinning -	89	T27N R13W S36	

Olympic Experimental State Forest Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Pre-commercial thinning -	11	T28N R13W S10	
Pre-commercial thinning -	13	T28N R13W S10	
Pre-commercial thinning -	24	T28N R13W S35	
Pre-commercial thinning -	3	T28N R13W S36	
Pre-commercial thinning -	61	T28N R13W S36	
Pre-commercial thinning -	9	T28N R13W S36	
Pre-commercial thinning -	102	T28N R13W S36	
Pre-commercial thinning -	58	T28N R13W S36	
Pre-commercial thinning -	48	T28N R13W S36	
Pre-commercial thinning -	185	T29N R15W S03	
South Coast Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	14	T11N R08W S21	2912382
Timber Harvest - Clear cut	44	T11N R09W S10	2910827
Timber Harvest - Clear cut	72	T11N R09W S14	2910827
Timber Harvest - Clear cut	59	T11N R09W S33	2912638
Timber Harvest - Clear cut	22	T11N R09W S33	2912638
Timber Harvest - Clear cut	80	T12N R03W S16	2912441
Timber Harvest - Clear cut	23	T12N R08W S03	2911802
Timber Harvest - Clear cut	12	T12N R08W S14	2914070
Timber Harvest - Clear cut	44	T12N R08W S15	2914070
Timber Harvest - Clear cut	3	T12N R08W S15	2914070
Timber Harvest - Clear cut	0	T12N R08W S15	2914070
Timber Harvest - Clear cut	16	T13N R03W S21	2912930
Timber Harvest - Clear cut	8	T13N R03W S21	2912930
Timber Harvest - Clear cut	33	T13N R08W S21	2913050
Timber Harvest - Clear cut	30	T13N R08W S21	2913050
Timber Harvest - Clear cut	13	T13N R08W S28	2913050
Timber Harvest - Clear cut	80	T14N R04W S25	2913457
Timber Harvest - Clear cut	97	T14N R05W S14	2912614
Timber Harvest - Clear cut	8	T14N R05W S15	2912614
Timber Harvest - Clear cut	48	T14N R05W S15	2912614
Timber Harvest - Clear cut	12	T14N R05W S15	2912614
Timber Harvest - Clear cut	77	T14N R05W S23	2910352
Timber Harvest - Clear cut	79	T14N R05W S27	2910352
Timber Harvest - Clear cut	82	T15N R03W S16	2912442
Timber Harvest - Clear cut	39	T15N R04W S17	2912709
Timber Harvest - Clear cut	62	T15N R04W S17	2912887
Timber Harvest - Clear cut	31	T15N R04W S18	2912887
Timber Harvest - Clear cut	56	T16N R01W S35	2912442
Timber Harvest - Clear cut	48	T16N R03W S04	2912199
Timber Harvest - Clear cut	29	T16N R03W S04	2912199
Timber Harvest - Clear cut	45	T16N R03W S06	2912199
Timber Harvest - Clear cut	57	T16N R03W S06	2912199
Timber Harvest - Clear cut	32	T16N R05W S27	2911913
Timber Harvest - Clear cut	39	T16N R05W S27	2911913
Timber Harvest - Clear cut	21	T16N R05W S28	2911913

South Coast Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	39	T16N R05W S35	2911913
Timber Harvest - Clear cut	44	T17N R03W S16	2912198
Timber Harvest - Clear cut	55	T17N R04W S03	2911251
Timber Harvest - Clear cut	49	T17N R04W S06	2912710
Timber Harvest - Clear cut	50	T17N R05W S01	2913380
Timber Harvest - Clear cut	45	T17N R05W S01	2913380
Timber Harvest - Clear cut	56	T17N R05W S13	2912710
Timber Harvest - Clear cut	83	T18N R04W S20	2910542
Timber Harvest - Clear cut	82	T18N R04W S21	2910542
Timber Harvest - Clear cut	51	T18N R04W S33	2911453
Timber Harvest - Clear cut	12	T18N R04W S35	2911251
Timber Harvest - Clear cut	11	T18N R04W S35	2911251
Timber Harvest - Late rotation thinning	33	T17N R03W S29	2911098
Timber Harvest - Late rotation thinning	35	T17N R04W S14	2911098
Timber Harvest - Salvage cut	101	T17N R04W S05	2912914
Timber Harvest - Salvage cut	0	T18N R03W S27	2912914
Timber Harvest - Salvage cut	12	T18N R04W S24	2912914
Timber Harvest - Salvage cut	29	T18N R04W S33	2912914
Timber Harvest - Selective product logging	9	T12N R03W S25	2912886
Timber Harvest - Selective product logging	91	T17N R03W S03	2511600
Timber Harvest - Smallwood thinning	154	T13N R06W S29	2910652
Timber Harvest - Smallwood thinning	95	T13N R06W S29	2910652
Timber Harvest - Smallwood thinning	145	T13N R06W S29	2910652
Forest site preparation - Aerial herbicide	67	T13N R05W S29	2913882
Forest site preparation - Aerial herbicide	77	T13N R07W S27	2913882
Forest site preparation - Aerial herbicide	65	T15N R05W S03	2913881
Forest site preparation - Aerial herbicide	53	T15N R05W S03	2913881
Forest site preparation - Aerial herbicide	59	T16N R04W S07	2913881
Forest site preparation - Aerial herbicide	33	T16N R04W S08	2913881
Forest site preparation - Aerial herbicide	12	T16N R04W S13	2913881
Forest site preparation - Aerial herbicide	10	T16N R05W S28	2913881
Forest site preparation - Aerial herbicide	30	T16N R05W S32	2913881
Forest site preparation - Aerial herbicide	37	T16N R05W S33	2913881
Forest site preparation - Aerial herbicide	31	T17N R04W S03	2913881
Forest site preparation - Aerial herbicide	65	T17N R04W S05	2913881
Forest site preparation - Aerial herbicide	41	T17N R05W S25	2913881
Forest site preparation - Aerial herbicide	7	T17N R05W S25	2913881
Forest site preparation - Aerial herbicide	57	T18N R03W S33	2913881
Forest site preparation - Aerial herbicide	8	T18N R04W S35	2913881
Forest site preparation - Ground herbicide	14	T13N R07W S16	
Forest site preparation - Ground herbicide	77	T14N R05W S27	
Forest site preparation - Ground herbicide	76	T14N R05W S33	
Forest site preparation - Ground herbicide	9	T15N R02W S01	
Forest site preparation - Ground herbicide	43	T15N R02W S02	
Forest site preparation - Ground herbicide	4	T15N R02W S02	
Forest site preparation - Ground herbicide	24	T15N R02W S16	
Forest site preparation - Ground herbicide	24	T15N R02W S16	
Forest site preparation - Ground herbicide	59	T15N R05W S02	

South Coast Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest site preparation - Ground herbicide	10	T15N R05W S03	
Forest site preparation - Ground herbicide	54	T16N R04W S13	
Forest site preparation - Ground herbicide	13	T16N R04W S13	
Forest site preparation - Ground herbicide	35	T18N R04W S26	
Forest site preparation - Ground herbicide	26	T18N R04W S27	
Forest site preparation - Pile and burn	2	T11N R08W S21	
Forest site preparation - Pile and burn	44	T11N R09W S10	
Forest site preparation - Pile and burn	2	T11N R09W S14	
Forest site preparation - Pile and burn	19	T13N R02W S24	
Forest site preparation - Pile and burn	5	T13N R07W S10	
Forest site preparation - Pile and burn	25	T13N R07W S10	
Forest site preparation - Pile and burn	20	T13N R07W S14	
Forest site preparation - Pile and burn	35	T13N R07W S27	
Forest site preparation - Pile and burn	30	T13N R08W S23	
Forest site preparation - Pile and burn	40	T13N R08W S23	
Forest site preparation - Pile and burn	5	T13N R08W S32	
Forest site preparation - Pile and burn	1	T13N R08W S32	
Forest site preparation - Pile and burn	25	T14N R05W S14	
Forest site preparation - Pile and burn	40	T14N R05W S23	
Forest site preparation - Pile and burn	40	T14N R05W S27	
Forest site preparation - Pile and burn	50	T14N R05W S33	
Forest site preparation - Pile and burn	9	T15N R02W S01	
Forest site preparation - Pile and burn	43	T15N R02W S02	
Forest site preparation - Pile and burn	24	T15N R02W S16	
Forest site preparation - Pile and burn	24	T15N R02W S16	
Forest site preparation - Pile and burn	3	T16N R04W S17	
Forest site preparation - Pile and burn	32	T16N R05W S27	
Forest site preparation - Pile and burn	39	T16N R05W S27	
Forest site preparation - Pile and burn	21	T16N R05W S28	
Forest site preparation - Pile and burn	39	T16N R05W S35	
Forest regeneration - Hand planting	14	T11N R08W S21	
Forest regeneration - Hand planting	2	T11N R09W S04	
Forest regeneration - Hand planting	44	T11N R09W S10	
Forest regeneration - Hand planting	72	T11N R09W S14	
Forest regeneration - Hand planting	24	T12N R03W S22	
Forest regeneration - Hand planting	18	T13N R02W S24	
Forest regeneration - Hand planting	67	T13N R05W S29	
Forest regeneration - Hand planting	84	T13N R06W S29	
Forest regeneration - Hand planting	87	T13N R06W S30	
Forest regeneration - Hand planting	25	T13N R07W S10	
Forest regeneration - Hand planting	39	T13N R07W S10	
Forest regeneration - Hand planting	74	T13N R07W S27	
Forest regeneration - Hand planting	33	T13N R08W S21	
Forest regeneration - Hand planting	30	T13N R08W S21	
Forest regeneration - Hand planting	32	T13N R08W S23	
Forest regeneration - Hand planting	39	T13N R08W S23	
Forest regeneration - Hand planting	13	T13N R08W S28	
Forest regeneration - Hand planting	41	T13N R08W S29	

South Coast Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest regeneration - Hand planting	29	T13N R08W S32	
Forest regeneration - Hand planting	4	T13N R08W S32	
Forest regeneration - Hand planting	77	T14N R05W S27	
Forest regeneration - Hand planting	77	T14N R05W S33	
Forest regeneration - Hand planting	9	T15N R02W S01	
Forest regeneration - Hand planting	43	T15N R02W S02	
Forest regeneration - Hand planting	24	T15N R02W S16	
Forest regeneration - Hand planting	24	T15N R02W S16	
Forest regeneration - Hand planting	61	T15N R05W S02	
Forest regeneration - Hand planting	75	T15N R05W S03	
Forest regeneration - Hand planting	53	T15N R05W S03	
Forest regeneration - Hand planting	29	T16N R04W S05	
Forest regeneration - Hand planting	59	T16N R04W S07	
Forest regeneration - Hand planting	33	T16N R04W S08	
Forest regeneration - Hand planting	46	T16N R04W S09	
Forest regeneration - Hand planting	54	T16N R04W S13	
Forest regeneration - Hand planting	13	T16N R04W S13	
Forest regeneration - Hand planting	13	T16N R04W S13	
Forest regeneration - Hand planting	69	T16N R04W S17	
Forest regeneration - Hand planting	34	T16N R04W S18	
Forest regeneration - Hand planting	11	T16N R05W S28	
Forest regeneration - Hand planting	30	T16N R05W S32	
Forest regeneration - Hand planting	37	T16N R05W S33	
Forest regeneration - Hand planting	54	T17N R03W S07	
Forest regeneration - Hand planting	15	T17N R04W S03	
Forest regeneration - Hand planting	31	T17N R04W S03	
Forest regeneration - Hand planting	2	T17N R04W S03	
Forest regeneration - Hand planting	65	T17N R04W S05	
Forest regeneration - Hand planting	41	T17N R05W S25	
Forest regeneration - Hand planting	7	T17N R05W S25	
Forest regeneration - Hand planting	57	T18N R03W S33	
Forest regeneration - Hand planting	35	T18N R04W S26	
Forest regeneration - Hand planting	26	T18N R04W S27	
Forest regeneration - Hand planting	35	T18N R04W S28	
Forest regeneration - Hand planting	8	T18N R04W S35	
Forest regeneration - Hand planting	12	T18N R04W S35	
Forest regeneration - Hand planting	11	T18N R04W S35	
Forest regeneration - Hand planting	9	T19N R09W S16	
Forest regeneration - Hand planting	16	T19N R09W S16	
Forest regeneration - Hand planting	21	T19N R09W S16	
Forest regeneration - Hand planting	12	T19N R09W S16	
Forest regeneration - Hand planting	35	T19N R09W S16	
Forest regeneration - Hand planting	27	T20N R11W S36	
Forest regeneration - Hand planting	40	T20N R12W S16	
Forest regeneration - Hand planting	14	T20N R12W S22	
Forest regeneration - Hand planting	6	T20N R12W S22	
Forest regeneration - Hand planting	3	T20N R12W S22	
Forest regeneration - Hand planting	1	T20N R12W S27	

South Coast Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest regeneration - Hand planting	10	T20N R12W S27	
Forest regeneration - Hand planting	7	T20N R12W S27	
Forest regeneration - Hand planting	54	T21N R09W S16	
Forest regeneration - Hand planting	40	T21N R09W S16	
Forest regeneration - Hand planting	52	T21N R10W S36	
Forest regeneration - Natural regeneration	24	T13N R07W S22	
Vegetation management - Aerial herbicide	21	T16N R04W S01	2913881
Vegetation management - Aerial herbicide	29	T16N R04W S14	2913881
Vegetation management - Aerial herbicide	35	T16N R04W S15	2913881
Vegetation management - Aerial herbicide	29	T16N R04W S15	2913881
Vegetation management - Aerial herbicide	68	T16N R04W S20	2913881
Vegetation management - Aerial herbicide	78	T16N R05W S01	2913881
Vegetation management - Aerial herbicide	32	T17N R03W S05	2913881
Vegetation management - Aerial herbicide	38	T17N R03W S06	2913881
Vegetation management - Aerial herbicide	12	T17N R03W S19	2913881
Vegetation management - Aerial herbicide	36	T17N R03W S31	2913881
Vegetation management - Aerial herbicide	57	T17N R04W S04	2913881
Vegetation management - Aerial herbicide	32	T17N R04W S07	2913881
Vegetation management - Aerial herbicide	37	T17N R04W S07	2913881
Vegetation management - Aerial herbicide	2	T17N R04W S07	2913881
Vegetation management - Aerial herbicide	3	T17N R04W S19	2913881
Vegetation management - Aerial herbicide	3	T17N R04W S19	2913881
Vegetation management - Aerial herbicide	86	T17N R04W S24	2913881
Vegetation management - Aerial herbicide	86	T17N R04W S25	2913881
Vegetation management - Aerial herbicide	27	T17N R04W S26	2913881
Vegetation management - Aerial herbicide	2	T17N R04W S30	2913881
Vegetation management - Aerial herbicide	5	T17N R04W S30	2913881
Vegetation management - Aerial herbicide	24	T18N R03W S28	2913881
Vegetation management - Ground herbicide	19	T10N R09W S05	
Vegetation management - Ground herbicide	18	T10N R09W S05	
Vegetation management - Ground herbicide	48	T12N R03W S15	
Vegetation management - Ground herbicide	94	T12N R03W S26	
Vegetation management - Ground herbicide	65	T14N R03W S04	
Vegetation management - Ground herbicide	48	T14N R03W S19	
Vegetation management - Ground herbicide	28	T14N R04W S25	
Vegetation management - Ground herbicide	17	T14N R04W S25	
Vegetation management - Ground herbicide	55	T14N R05W S23	
Vegetation management - Ground herbicide	26	T14N R05W S26	
Vegetation management - Ground herbicide	26	T14N R05W S26	
Vegetation management - Ground herbicide	78	T15N R01E S05	
Vegetation management - Ground herbicide	54	T15N R01W S04	
Vegetation management - Ground herbicide	3	T15N R02W S05	
Vegetation management - Ground herbicide	9	T15N R02W S06	
Vegetation management - Ground herbicide	38	T15N R04W S20	
Vegetation management - Ground herbicide	80	T15N R05W S35	
Vegetation management - Ground herbicide	4	T16N R01W S29	
Vegetation management - Ground herbicide	17	T16N R03W S06	
Vegetation management - Ground herbicide	5	T16N R03W S07	

South Coast Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Vegetation management - Ground herbicide	50	T16N R04W S01	
Vegetation management - Ground herbicide	5	T16N R05W S12	
Vegetation management - Ground herbicide	60	T16N R05W S32	
Vegetation management - Ground herbicide	16	T17N R03W S05	
Vegetation management - Ground herbicide	24	T17N R03W S09	
Vegetation management - Ground herbicide	15	T17N R03W S19	
Vegetation management - Ground herbicide	18	T17N R03W S20	
Vegetation management - Ground herbicide	39	T17N R03W S21	
Vegetation management - Ground herbicide	59	T17N R03W S28	
Vegetation management - Ground herbicide	57	T17N R03W S33	
Vegetation management - Ground herbicide	11	T18N R04W S18	
Vegetation management - Ground herbicide	17	T18N R05W S35	
Vegetation management - Ground herbicide	2	T18N R05W S35	
Vegetation management - Ground herbicide	35	T19N R10W S36	
Vegetation management - Hand cutting	32	T11N R08W S24	
Vegetation management - Hand cutting	57	T11N R08W S33	
Vegetation management - Hand cutting	28	T13N R05W S16	
Vegetation management - Hand cutting	24	T13N R05W S16	
Vegetation management - Hand cutting	23	T13N R05W S16	
Vegetation management - Hand cutting	36	T13N R05W S16	
Vegetation management - Hand cutting	31	T13N R05W S19	
Vegetation management - Hand cutting	31	T13N R05W S19	
Vegetation management - Hand cutting	3	T13N R05W S19	
Vegetation management - Hand cutting	7	T13N R05W S19	
Vegetation management - Hand cutting	2	T13N R05W S19	
Vegetation management - Hand cutting	21	T13N R05W S29	
Vegetation management - Hand cutting	35	T13N R06W S06	
Vegetation management - Hand cutting	98	T13N R06W S19	
Vegetation management - Hand cutting	65	T13N R06W S19	
Vegetation management - Hand cutting	23	T13N R06W S25	
Vegetation management - Hand cutting	33	T13N R06W S31	
Vegetation management - Hand cutting	78	T13N R06W S31	
Vegetation management - Hand cutting	73	T13N R07W S01	
Vegetation management - Hand cutting	59	T13N R07W S02	
Vegetation management - Hand cutting	78	T13N R07W S11	
Vegetation management - Hand cutting	36	T13N R07W S29	
Vegetation management - Hand cutting	17	T13N R07W S31	
Vegetation management - Hand cutting	18	T13N R07W S31	
Vegetation management - Hand cutting	13	T13N R08W S21	
Vegetation management - Hand cutting	39	T13N R08W S22	
Vegetation management - Hand cutting	8	T13N R08W S22	
Vegetation management - Hand cutting	126	T13N R08W S34	
Vegetation management - Hand cutting	14	T13N R08W S34	
Vegetation management - Hand cutting	25	T14N R05W S11	
Vegetation management - Hand cutting	10	T15N R01W S03	
Vegetation management - Hand cutting	28	T15N R05W S34	
Vegetation management - Hand cutting	55	T16N R01W S27	
Vegetation management - Hand cutting	45	T16N R01W S32	

South Coast Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Vegetation management - Hand cutting	51	T16N R01W S33	
Vegetation management - Hand cutting	10	T16N R01W S33	
Vegetation management - Hand cutting	10	T16N R01W S33	
Vegetation management - Hand cutting	39	T16N R01W S33	
Vegetation management - Hand cutting	92	T16N R01W S36	
Vegetation management - Hand cutting	60	T16N R03W S06	
Vegetation management - Hand cutting	87	T16N R03W S14	
Vegetation management - Hand cutting	69	T16N R04W S02	
Vegetation management - Hand cutting	52	T16N R04W S05	
Vegetation management - Hand cutting	41	T16N R04W S06	
Vegetation management - Hand cutting	59	T16N R04W S08	
Vegetation management - Hand cutting	70	T16N R04W S09	
Vegetation management - Hand cutting	21	T16N R04W S15	
Vegetation management - Hand cutting	58	T16N R05W S31	
Vegetation management - Hand cutting	86	T16N R05W S32	
Vegetation management - Hand cutting	74	T16N R05W S34	
Vegetation management - Hand cutting	120	T17N R03W S04	
Vegetation management - Hand cutting	70	T17N R03W S05	
Vegetation management - Hand cutting	39	T17N R03W S07	
Vegetation management - Hand cutting	59	T17N R03W S19	
Vegetation management - Hand cutting	31	T17N R03W S31	
Vegetation management - Hand cutting	19	T17N R03W S33	
Vegetation management - Hand cutting	38	T17N R04W S23	
Vegetation management - Hand cutting	52	T17N R04W S27	
Vegetation management - Hand cutting	42	T17N R04W S36	
Vegetation management - Hand cutting	69	T17N R05W S01	
Vegetation management - Hand cutting	39	T17N R05W S26	
Vegetation management - Hand cutting	74	T17N R05W S36	
Vegetation management - Hand cutting	39	T18N R04W S18	
Vegetation management - Hand cutting	3	T18N R04W S25	
Vegetation management - Hand cutting	51	T18N R04W S35	
Pre-commercial thinning -	112	T12N R07W S02	
Pre-commercial thinning -	97	T13N R06W S18	
Pre-commercial thinning -	74	T13N R07W S01	
Pre-commercial thinning -	67	T13N R08W S05	
Pre-commercial thinning -	48	T17N R05W S02	
Pre-commercial thinning -	120	T17N R05W S36	
Pest management - Animal repellant	12	T13N R05W S08	
Pest management - Animal repellant	10	T13N R05W S08	
Pest management - Animal repellant	10	T13N R05W S29	
Pest management - Animal repellant	77	T14N R05W S27	
Pest management - Animal repellant	77	T14N R05W S33	
Pest management - Animal repellant	40	T16N R04W S11	
Pest management - Animal repellant	35	T17N R03W S28	
Pest management - Animal repellant	12	T17N R03W S28	

South Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	52	T15N R04E S24	2410961
Timber Harvest - Clear cut	59	T15N R05E S08	2410443
Timber Harvest - Clear cut	61	T15N R05E S16	2410499
Timber Harvest - Clear cut	49	T15N R05E S17	2410499
Timber Harvest - Clear cut	40	T15N R05E S17	2410499
Timber Harvest - Clear cut	15	T15N R05E S20	2410499
Timber Harvest - Clear cut	44	T18N R03W S26	2913350
Timber Harvest - Clear cut	9	T18N R03W S26	2913350
Timber Harvest - Clear cut	24	T18N R03W S26	2913350
Timber Harvest - Clear cut	2	T18N R03W S26	2913350
Timber Harvest - Clear cut	3	T18N R03W S26	2913350
Timber Harvest - Clear cut	1	T18N R03W S26	2913350
Timber Harvest - Clear cut	99	T21N R02W S01	2411106
Timber Harvest - Clear cut	57	T22N R07E S35	2410551
Timber Harvest - Clear cut	32	T23N R01W S19	2410989
Timber Harvest - Clear cut	6	T23N R01W S19	2410989
Timber Harvest - Clear cut	37	T23N R01W S19	2410989
Timber Harvest - Clear cut	82	T23N R02W S26	2411804
Timber Harvest - Salvage cut	54	T18N R03W S27	2912914
Timber Harvest - Salvage cut	25	T18N R04W S24	2912914
Timber Harvest - Selective product logging	120	T22N R02W S04	2411462
Timber Harvest - Selective product logging	36	T22N R02W S04	2411462
Timber Harvest - Selective product logging	30	T22N R02W S06	2411065
Timber Harvest - Selective product logging	30	T23N R01W S18	2411006
Timber Harvest - Selective product logging	48	T23N R02W S13	2411006
Timber Harvest - Selective product logging	38	T23N R02W S13	2411006
Timber Harvest - Selective product logging	64	T23N R02W S32	2411065
Timber Harvest - Variable density thinning	338	T14N R06E S07	2410330
Timber Harvest - Variable density thinning	63	T14N R06E S08	2410330
Timber Harvest - Variable density thinning	165	T14N R06E S08	2410330
Timber Harvest - Variable density thinning	160	T14N R06E S17	2410330
Timber Harvest - Variable density thinning	243	T14N R06E S17	2410330
Timber Harvest - Variable density thinning	138	T14N R06E S18	2410330
Forest site preparation - Aerial herbicide	5	T18N R03W S33	2913881
Forest site preparation - Ground herbicide	26	T18N R03W S18	
Forest site preparation - Ground herbicide	10	T18N R03W S18	
Forest site preparation - Ground herbicide	14	T18N R03W S22	
Forest site preparation - Ground herbicide	36	T18N R04W S24	
Forest regeneration - Hand planting	52	T15N R04E S24	
Forest regeneration - Hand planting	5	T15N R05E S01	
Forest regeneration - Hand planting	1	T15N R05E S02	
Forest regeneration - Hand planting	15	T15N R05E S02	
Forest regeneration - Hand planting	10	T15N R05E S03	
Forest regeneration - Hand planting	59	T15N R05E S08	
Forest regeneration - Hand planting	82	T15N R05E S13	
Forest regeneration - Hand planting	1	T15N R05E S13	
Forest regeneration - Hand planting	61	T15N R05E S16	
Forest regeneration - Hand planting	49	T15N R05E S17	

South Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest regeneration - Hand planting	40	T15N R05E S17	
Forest regeneration - Hand planting	15	T15N R05E S20	
Forest regeneration - Hand planting	1	T15N R05E S22	
Forest regeneration - Hand planting	68	T15N R06E S06	
Forest regeneration - Hand planting	29	T15N R06E S17	
Forest regeneration - Hand planting	49	T15N R06E S32	
Forest regeneration - Hand planting	26	T18N R03W S18	
Forest regeneration - Hand planting	10	T18N R03W S18	
Forest regeneration - Hand planting	24	T18N R03W S22	
Forest regeneration - Hand planting	14	T18N R03W S22	
Forest regeneration - Hand planting	5	T18N R03W S33	
Forest regeneration - Hand planting	36	T18N R04W S24	
Forest regeneration - Hand planting	96	T21N R02W S01	
Forest regeneration - Hand planting	84	T22N R02W S04	
Forest regeneration - Hand planting	46	T22N R02W S07	
Forest regeneration - Hand planting	90	T22N R03W S13	
Forest regeneration - Hand planting	39	T22N R03W S17	
Forest regeneration - Hand planting	29	T22N R03W S17	
Forest regeneration - Hand planting	52	T22N R07E S35	
Forest regeneration - Hand planting	32	T23N R01W S19	
Forest regeneration - Hand planting	5	T23N R01W S19	
Forest regeneration - Hand planting	38	T23N R01W S19	
Forest regeneration - Hand planting	16	T23N R02W S22	
Forest regeneration - Hand planting	78	T23N R02W S27	
Forest regeneration - Hand planting	31	T23N R02W S29	
Forest regeneration - Hand planting	41	T23N R02W S29	
Forest regeneration - Hand planting	38	T23N R02W S32	
Forest regeneration - Hand planting	14	T23N R03W S36	
Forest regeneration - Hand planting	46	T23N R03W S36	
Forest regeneration - Hand planting	4	T23N R03W S36	
Forest regeneration - Hand planting	35	T24N R01W S21	
Forest regeneration - Natural regeneration	7	T22N R07E S36	
Vegetation management - Aerial herbicide	2	T18N R03W S28	2913881
Vegetation management - Ground herbicide	25	T16N R01E S16	
Vegetation management - Ground herbicide	33	T16N R01E S16	
Vegetation management - Ground herbicide	10	T18N R03W S05	
Vegetation management - Ground herbicide	13	T18N R03W S08	
Vegetation management - Ground herbicide	10	T18N R03W S15	
Vegetation management - Ground herbicide	68	T18N R03W S22	
Vegetation management - Ground herbicide	25	T18N R04W S23	
Vegetation management - Hand cutting	4	T15N R05E S01	
Vegetation management - Hand cutting	21	T15N R05E S03	
Vegetation management - Hand cutting	17	T15N R05E S03	
Vegetation management - Hand cutting	24	T15N R05E S10	
Vegetation management - Hand cutting	12	T15N R05E S10	
Vegetation management - Hand cutting	54	T15N R05E S18	
Vegetation management - Hand cutting	31	T15N R05E S21	
Vegetation management - Hand cutting	87	T15N R05E S30	

South Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Vegetation management - Hand cutting	18	T15N R06E S19	
Vegetation management - Hand cutting	27	T15N R06E S19	
Vegetation management - Hand cutting	38	T15N R06E S19	
Vegetation management - Hand cutting	16	T15N R06E S19	
Vegetation management - Hand cutting	9	T15N R06E S19	
Vegetation management - Hand cutting	23	T15N R06E S20	
Vegetation management - Hand cutting	67	T15N R06E S21	
Vegetation management - Hand cutting	27	T15N R06E S21	
Vegetation management - Hand cutting	7	T15N R06E S21	
Vegetation management - Hand cutting	42	T15N R06E S21	
Vegetation management - Hand cutting	24	T15N R06E S21	
Vegetation management - Hand cutting	53	T15N R06E S21	
Vegetation management - Hand cutting	19	T15N R06E S21	
Vegetation management - Hand cutting	10	T15N R06E S21	
Vegetation management - Hand cutting	39	T16N R05E S32	
Vegetation management - Hand cutting	12	T16N R05E S33	
Vegetation management - Hand cutting	3	T16N R05E S33	
Vegetation management - Hand cutting	86	T16N R05E S35	
Vegetation management - Hand cutting	89	T17N R01E S36	
Vegetation management - Hand cutting	3	T18N R03W S04	
Vegetation management - Hand cutting	2	T18N R03W S04	
Vegetation management - Hand cutting	35	T18N R03W S22	
Vegetation management - Hand cutting	37	T18N R03W S26	
Vegetation management - Hand cutting	39	T18N R04W S15	
Vegetation management - Hand cutting	10	T18N R04W S15	
Vegetation management - Hand cutting	8	T18N R04W S15	
Vegetation management - Hand cutting	29	T18N R04W S24	
Vegetation management - Hand cutting	52	T18N R04W S25	
Vegetation management - Hand cutting	12	T23N R01W S30	
Vegetation management - Hand cutting	26	T23N R02W S20	
Vegetation management - Hand cutting	31	T23N R02W S28	
Vegetation management - Hand cutting	20	T23N R02W S34	
Vegetation management - Hand cutting	57	T23N R07E S05	
Vegetation management - Hand cutting	20	T23N R07E S07	
Vegetation management - Hand cutting	8	T23N R07E S07	
Vegetation management - Hand cutting	23	T23N R07E S30	
Vegetation management - Hand cutting	13	T23N R07E S30	
Vegetation management - Hand cutting	28	T23N R07E S30	
Vegetation management - Hand cutting	8	T24N R01W S15	
Vegetation management - Hand cutting	4	T27N R02E S14	
Vegetation management - Hand cutting	15	T27N R02E S14	
Pre-commercial thinning -	16	T20N R07E S01	
Pre-commercial thinning -	70	T20N R07E S01	
Pre-commercial thinning -	3	T20N R07E S01	
Pre-commercial thinning -	55	T20N R07E S01	
Pre-commercial thinning -	13	T20N R07E S01	
Pre-commercial thinning -	10	T20N R07E S01	
Pre-commercial thinning -	4	T20N R07E S01	

South Puget Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Pre-commercial thinning -	39	T20N R07E S13	
Pre-commercial thinning -	15	T20N R08E S05	
Pre-commercial thinning -	64	T20N R08E S06	
Pre-commercial thinning -	67	T20N R08E S07	
Pre-commercial thinning -	22	T20N R08E S07	
Pre-commercial thinning -	33	T20N R08E S10	
Pre-commercial thinning -	6	T20N R08E S18	
Pre-commercial thinning -	75	T21N R07E S36	
Pre-commercial thinning -	12	T21N R08E S19	
Pre-commercial thinning -	9	T21N R08E S30	
Pre-commercial thinning -	9	T21N R08E S30	
Pre-commercial thinning -	20	T21N R08E S33	
Pre-commercial thinning -	30	T22N R02W S03	
Pre-commercial thinning -	40	T22N R02W S04	
Pre-commercial thinning -	10	T22N R02W S09	
Pre-commercial thinning -	26	T23N R02W S20	
Pre-commercial thinning -	11	T24N R02W S14	
Pre-commercial thinning -	3	T24N R02W S14	
Pre-commercial thinning -	50	T24N R02W S15	
Pest management - Animal repellant	6	T18N R03W S22	
Straits Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Clear cut	76	T23N R04W S12	2410659
Timber Harvest - Clear cut	44	T23N R04W S35	2411068
Timber Harvest - Clear cut	6	T23N R04W S35	2411068
Timber Harvest - Clear cut	10	T23N R04W S35	2411068
Timber Harvest - Clear cut	1	T23N R04W S35	2411068
Timber Harvest - Clear cut	57	T23N R04W S36	2411068
Timber Harvest - Clear cut	7	T27N R01W S05	2606556
Timber Harvest - Clear cut	6	T28N R01W S16	2606556
Timber Harvest - Clear cut	4	T28N R01W S16	2606556
Timber Harvest - Clear cut	3	T28N R01W S16	2606556
Timber Harvest - Clear cut	4	T28N R01W S16	2606556
Timber Harvest - Clear cut	29	T29N R02W S08	2606740
Timber Harvest - Clear cut	11	T29N R02W S09	2606740
Timber Harvest - Clear cut	68	T30N R02W S30	2606740
Timber Harvest - Clear cut	44	T30N R02W S31	2606740
Timber Harvest - Clear cut	40	T30N R04W S28	2607420
Timber Harvest - Clear cut	11	T30N R04W S28	2607420
Timber Harvest - Clear cut	91	T30N R04W S32	2607420
Timber Harvest - Clear cut	76	T30N R07W S18	2607513
Timber Harvest - Clear cut	19	T30N R07W S18	2607513
Timber Harvest - Clear cut	2	T30N R07W S18	2607513
Timber Harvest - Salvage cut	0	T30N R06W S32	2607906
Timber Harvest - Salvage cut	2	T30N R06W S33	2607906
Forest site preparation - Ground herbicide	70	T28N R02W S01	
Forest site preparation - Pile and burn	1	T26N R01W S33	

Straits Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest site preparation - Pile and burn	1	T28N R01E S07	
Forest site preparation - Pile and burn	1	T28N R01E S07	
Forest site preparation - Pile and burn	1	T28N R01E S07	
Forest site preparation - Pile and burn	1	T28N R01E S28	
Forest site preparation - Pile and burn	1	T28N R01E S28	
Forest site preparation - Pile and burn	1	T28N R01W S16	
Forest site preparation - Pile and burn	1	T28N R01W S16	
Forest site preparation - Pile and burn	2	T28N R01W S33	
Forest site preparation - Pile and burn	1	T28N R02W S01	
Forest site preparation - Pile and burn	2	T28N R02W S01	
Forest site preparation - Pile and burn	1	T28N R02W S12	
Forest site preparation - Pile and burn	1	T28N R02W S12	
Forest site preparation - Pile and burn	2	T28N R02W S16	
Forest site preparation - Pile and burn	1	T28N R02W S16	
Forest site preparation - Pile and burn	1	T29N R02W S16	
Forest site preparation - Pile and burn	2	T30N R02W S30	
Forest regeneration - Hand planting	81	T23N R04W S01	
Forest regeneration - Hand planting	75	T23N R04W S12	
Forest regeneration - Hand planting	76	T23N R04W S14	
Forest regeneration - Hand planting	18	T23N R04W S14	
Forest regeneration - Hand planting	84	T23N R04W S15	
Forest regeneration - Hand planting	22	T23N R04W S24	
Forest regeneration - Hand planting	52	T23N R04W S26	
Forest regeneration - Hand planting	42	T23N R04W S35	
Forest regeneration - Hand planting	6	T23N R04W S35	
Forest regeneration - Hand planting	10	T23N R04W S35	
Forest regeneration - Hand planting	1	T23N R04W S35	
Forest regeneration - Hand planting	57	T23N R04W S36	
Forest regeneration - Hand planting	7	T27N R01W S05	
Forest regeneration - Hand planting	6	T28N R01W S16	
Forest regeneration - Hand planting	80	T28N R01W S16	
Forest regeneration - Hand planting	4	T28N R01W S16	
Forest regeneration - Hand planting	2	T28N R01W S16	
Forest regeneration - Hand planting	4	T28N R01W S16	
Forest regeneration - Hand planting	9	T28N R01W S16	
Forest regeneration - Hand planting	7	T28N R01W S16	
Forest regeneration - Hand planting	7	T28N R01W S16	
Forest regeneration - Hand planting	81	T28N R02W S01	
Forest regeneration - Hand planting	49	T28N R02W S12	
Forest regeneration - Hand planting	36	T29N R01W S16	
Forest regeneration - Hand planting	52	T29N R01W S16	
Forest regeneration - Hand planting	12	T29N R01W S16	
Forest regeneration - Hand planting	28	T29N R01W S27	
Forest regeneration - Hand planting	23	T29N R01W S27	
Forest regeneration - Hand planting	68	T30N R02W S30	
Forest regeneration - Hand planting	44	T30N R02W S31	
Forest regeneration - Hand planting	57	T30N R04W S32	
Forest regeneration - Hand planting	14	T30N R06W S25	

Straits Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Forest regeneration - Hand planting	31	T30N R06W S25	
Forest regeneration - Hand planting	63	T30N R06W S30	
Forest regeneration - Hand planting	1	T30N R06W S31	
Forest regeneration - Hand planting	23	T30N R06W S31	
Forest regeneration - Hand planting	118	T30N R06W S32	
Forest regeneration - Hand planting	5	T30N R06W S32	
Forest regeneration - Hand planting	4	T30N R06W S32	
Forest regeneration - Hand planting	35	T30N R06W S35	
Forest regeneration - Hand planting	56	T30N R09W S06	
Forest regeneration - Hand planting	27	T31N R09W S29	
Forest regeneration - Hand planting	26	T31N R09W S31	
Forest regeneration - Hand planting	3	T31N R09W S31	
Vegetation management - Ground herbicide	85	T23N R04W S14	
Vegetation management - Ground herbicide	58	T23N R04W S21	
Vegetation management - Ground herbicide	8	T23N R04W S26	
Vegetation management - Ground herbicide	7	T23N R04W S28	
Vegetation management - Ground herbicide	6	T23N R04W S36	
Vegetation management - Ground herbicide	17	T23N R04W S36	
Vegetation management - Ground herbicide	67	T24N R03W S15	
Vegetation management - Ground herbicide	64	T24N R03W S29	
Vegetation management - Ground herbicide	31	T24N R03W S32	
Vegetation management - Ground herbicide	34	T27N R02W S15	
Vegetation management - Ground herbicide	66	T27N R02W S15	
Vegetation management - Ground herbicide	48	T28N R01E S07	
Vegetation management - Ground herbicide	25	T28N R01E S07	
Vegetation management - Ground herbicide	8	T28N R01E S07	
Vegetation management - Ground herbicide	24	T28N R01E S28	
Vegetation management - Ground herbicide	21	T28N R01W S31	
Vegetation management - Ground herbicide	7	T28N R01W S31	
Vegetation management - Ground herbicide	46	T28N R01W S31	
Vegetation management - Ground herbicide	17	T29N R04W S07	
Vegetation management - Ground herbicide	39	T29N R04W S08	
Vegetation management - Ground herbicide	57	T30N R04W S32	
Vegetation management - Ground herbicide	81	T30N R04W S36	
Vegetation management - Ground herbicide	27	T30N R05W S35	
Vegetation management - Ground herbicide	91	T30N R06W S21	
Vegetation management - Ground herbicide	10	T30N R08W S22	
Vegetation management - Ground herbicide	42	T30N R09W S03	
Vegetation management - Ground herbicide	86	T31N R08W S27	
Vegetation management - Hand cutting	1	T23N R04W S16	
Vegetation management - Hand cutting	12	T23N R04W S36	
Vegetation management - Hand cutting	39	T23N R04W S36	
Yakima Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Late rotation thinning	56	T20N R20E S08	2703050
Timber Harvest - Late rotation thinning	118	T20N R20E S08	2703050
Timber Harvest - Late rotation thinning	99	T21N R20E S32	2703050

Yakima Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Timber Harvest - Late rotation thinning	60	T21N R20E S32	2703050
Timber Harvest - Seed tree intermediate cut	113	T21N R16E S18	2703472
Timber Harvest - Seed tree intermediate cut	42	T21N R16E S18	2703472
Timber Harvest - Shelterwood intermediate cut	150	T20N R19E S26	2703145
Timber Harvest - Smallwood thinning	35	T15N R15E S16	2703484
Timber Harvest - Smallwood thinning	54	T15N R15E S18	2703484
Timber Harvest - Smallwood thinning	7	T15N R15E S18	2703484
Timber Harvest - Smallwood thinning	62	T15N R15E S18	2703484
Timber Harvest - Smallwood thinning	11	T15N R15E S18	2703484
Timber Harvest - Smallwood thinning	12	T15N R15E S18	2703484
Timber Harvest - Smallwood thinning	4	T15N R15E S18	2703484
Timber Harvest - Smallwood thinning	36	T15N R15E S30	2703484
Timber Harvest - Smallwood thinning	18	T15N R15E S30	2703484
Timber Harvest - Uneven-aged management	166	T18N R17E S18	2703389
Timber Harvest - Uneven-aged management	131	T20N R19E S10	2703473
Timber Harvest - Uneven-aged management	38	T20N R19E S14	2703473
Timber Harvest - Uneven-aged management	109	T20N R19E S14	2703473
Timber Harvest - Uneven-aged management	62	T20N R19E S14	2703473
Timber Harvest - Uneven-aged management	14	T20N R19E S14	2703473
Timber Harvest - Uneven-aged management	3	T20N R19E S14	2703473
Timber Harvest - Uneven-aged management	56	T20N R19E S22	2703473
Timber Harvest - Uneven-aged management	21	T20N R19E S24	2703473
Timber Harvest - Uneven-aged management	73	T20N R19E S36	2703712
Forest site preparation - Ground mechanical	150	T12N R14E S32	
Forest site preparation - Ground mechanical	285	T12N R14E S33	
Forest site preparation - Ground mechanical	38	T20N R19E S14	
Forest site preparation - Ground mechanical	109	T20N R19E S14	
Forest site preparation - Ground mechanical	62	T20N R19E S14	
Forest site preparation - Ground mechanical	14	T20N R19E S14	
Forest site preparation - Ground mechanical	3	T20N R19E S14	
Forest site preparation - Ground mechanical	56	T20N R19E S22	
Forest site preparation - Ground mechanical	21	T20N R19E S24	
Forest site preparation - Ground mechanical	73	T20N R19E S36	
Forest regeneration - Hand planting	144	T12N R14E S29	
Forest regeneration - Hand planting	150	T12N R14E S32	
Forest regeneration - Hand planting	258	T12N R14E S33	
Forest regeneration - Hand planting	135	T15N R16E S06	
Forest regeneration - Hand planting	164	T15N R16E S08	
Forest regeneration - Hand planting	50	T15N R16E S08	
Forest regeneration - Hand planting	37	T15N R16E S16	
Forest regeneration - Hand planting	54	T15N R16E S16	
Forest regeneration - Hand planting	30	T15N R16E S16	
Forest regeneration - Hand planting	66	T16N R16E S16	
Forest regeneration - Hand planting	99	T16N R16E S16	
Forest regeneration - Hand planting	200	T17N R16E S28	
Forest regeneration - Hand planting	100	T20N R19E S26	
Forest regeneration - Hand planting	113	T21N R16E S18	
Vegetation management - Hand cutting	150	T12N R14E S32	

Yakima Planning Unit			
Silvicultural Activity	Acres	Location	FPA #
Pre-commercial thinning -	167	T11N R14E S04	
Pre-commercial thinning -	159	T12N R14E S23	
Pre-commercial thinning -	66	T16N R16E S16	
Pre-commercial thinning -	90	T16N R16E S20	
Pre-commercial thinning -	135	T16N R16E S20	
Pre-commercial thinning -	250	T17N R16E S28	
Pre-commercial thinning -	94	T21N R20E S16	
Pre-commercial thinning -	100	T21N R20E S16	
Pre-commercial thinning -	136	T21N R20E S20	
Pre-commercial thinning -	120	T21N R20E S20	
Pre-commercial thinning -	100	T21N R20E S20	

Appendix B. Addition of Dispersal Habitat to the Yakima Planning Unit

As discussed in Chapter 3, DNR received special permission to harvest dispersal habitat in a quarter-township below the 50 percent habitat threshold and add suitable dispersal habitat in nearby quarter-townships. By adding the suitable habitat, the department compensated for the habitat lost through the timber harvest. At the same time, 483 acres of dispersal management area were added to the Yakima Planning Unit. The letter and maps on the following pages explain this process in greater detail. After the letter was signed, the Upper Foundation and Lower Foundation timber sales were combined into one sale called Foundations. One of the proposed harvest units was dropped, so only 334 acres were harvested. However, the number of acres and location of dispersal management area added remained the same.

WASHINGTON STATE DEPARTMENT OF
Natural Resources

DOUG SUTHERLAND
Commissioner of Public Lands

March 22, 2007

Mr. Ken S. Berg, Manager
U.S. Fish and Wildlife Service
510 Desmond Drive SE, Suite 102
Lacey, WA 98503-1273

Dear Mr. Berg,

I am writing in reference to the implementation of our 1997 Habitat Conservation Plan (HCP) for state trust lands and issues associated with forest health in the Ahtanum State Forest in Yakima county. Mark Ostwald, Noelle Nordstrom, Washington Department of Fish and Wildlife biologist, and I have been working with Washington Department of Natural Resources (DNR) field managers in the Ahtanum State Forest for finding solutions to current forest health issues.

The HCP designated the Ahtanum State Forest for spotted owl dispersal management, and site visits to the area with DNR field managers have documented forest health issues associated with this area. Because of insect infestation, overstocking, inappropriate species composition, exclusion of fire, historic timber harvest practices, and other forest diseases, much of the dry Douglas fir and grand fir series in this area do not support long-term, healthy dispersal habitat for spotted owls. While dispersal habitat may currently exist by the HCP's definition (HCP IV 22), in many locations the habitat is unlikely to be sustainable in the long-term. In light of this situation, a short and long-term solution is necessary to allow DNR to better manage the Ahtanum State Forest for sustainable spotted owl dispersal habitat, now and into the future.

In the short-term, DNR must address the immediate forest health needs of the Ahtanum State Forest. An especially problematic area has been identified at the headwaters of Foundation Creek in sections 10 and 12 of Township 12 North, Range 14 East, where we propose to regenerate harvest 483 acres associated with the Foundation timber sale. The HCP specifies managing ¼ townships to achieve 50 percent dispersal habitat, however, this ¼ township is estimated to be at 45 percent dispersal habitat. The harvest of the Foundation sale will further reduce this percentage.

DNR aerially applied B.t. to the Foundation Creek drainage in June 2006 as a stopgap measure to buy time to address the root causes of the forest health issues, overstocking and improper species composition. In this general area, DNR is conducting several harvest treatments that are addressing the immediate forest health issues through a thinning program, while retaining stands in the dispersal habitat condition post-harvest. However, over the 483 acres described above we believe our only viable option is to regeneration harvest.

Because of our need to regeneration harvest 483 acres in a ¼ township below the 50 percent threshold, we are proposing to add an additional 483 acres of suitable dispersal habitat to the HCP for spotted owl dispersal management purposes. The newly added 483 acres are in different ¼ townships, but in the general area. These newly designated acres (see map) will become part of the HCP for spotted owl dispersal management purposes and potentially minimize the effects of the harvest of the Foundation sale.

Initially, it was our intention to add acres for spotted owl dispersal management within the same quarter township as within the Foundation sale. However, any additional acres in this quarter township are not suitable dispersal habitat and we intend to add functional habitat (absent forest health issues) to the HCP. The habitat acres that are proposed as an addition to the HCP in the Ahtanum Dispersal Management Area are located directly adjacent to other HCP designated NRF and Dispersal Management Areas (please see attached maps).

Acres added to the HCP are located in sections 5, 6, and 9 T12N, R14E. This quarter township currently contains 63% suitable spotted owl dispersal habitat. Other acres added to the HCP are located in Section 28 T13N, R14E. This quarter township contains 50% suitable dispersal habitat. The final acres are located in Section 23 T13N, R14E. This quarter township contains 51% suitable dispersal habitat. The acres located in sections 6, 23, and 28 were managed by DNR when the HCP was written, but were not initially designated for dispersal management in the HCP. The acres proposed in sections 5 and 9 were recently acquired lands to DNR.

These newly added acres will be managed according to the HCP for designated dispersal management areas. Consequently, the NW1/4 of T12N, R14E quarter township habitat threshold increases from 63% to 68% with the addition of these mitigation acres. The SW1/4 of T13N, R14E quarter township habitat threshold increases from 50% to 58% with the addition of these additional acres. The SE1/4 of T13N, R14E quarter township habitat threshold increases from 51% to 53% with the addition of these acres.

SUMMARY			
	SE1/4T13N,R14E	SW1/4 T13N,R14E	NW1/4T12N,R14E
Pre-habitat threshold	51%	50%	63%
Mitigation habitat acres	115	87	281
Post-habitat threshold	53%	58%	68%

In summary, we propose adding acreage to the HCP to mitigate the regeneration harvest of 483 acres of suitable dispersal habitat (identified as the Upper and Lower Foundation timber sales) in the below-threshold quarter township, with an additional 483 acres of current suitable dispersal habitat be added to the HCP within adjacent quarter townships that currently are at or above the threshold habitat targets. These acres will be added into the Ahtanum Dispersal Management Area and will be managed in accordance with the HCP.

We believe this proposal will satisfy both our Trust obligations and our HCP commitments in this area. Please signify your concurrence with the acceptance of our proposal in this landscape and the related Upper and Lower Foundation forest health harvest activities by signing below. Please sign both copies and return one copy to DNR for our HCP official record. If you have any further questions, please do not hesitate to contact me at (360) 902-1481. It is always a pleasure working with you and your staff.

Sincerely,

Tami Miketa

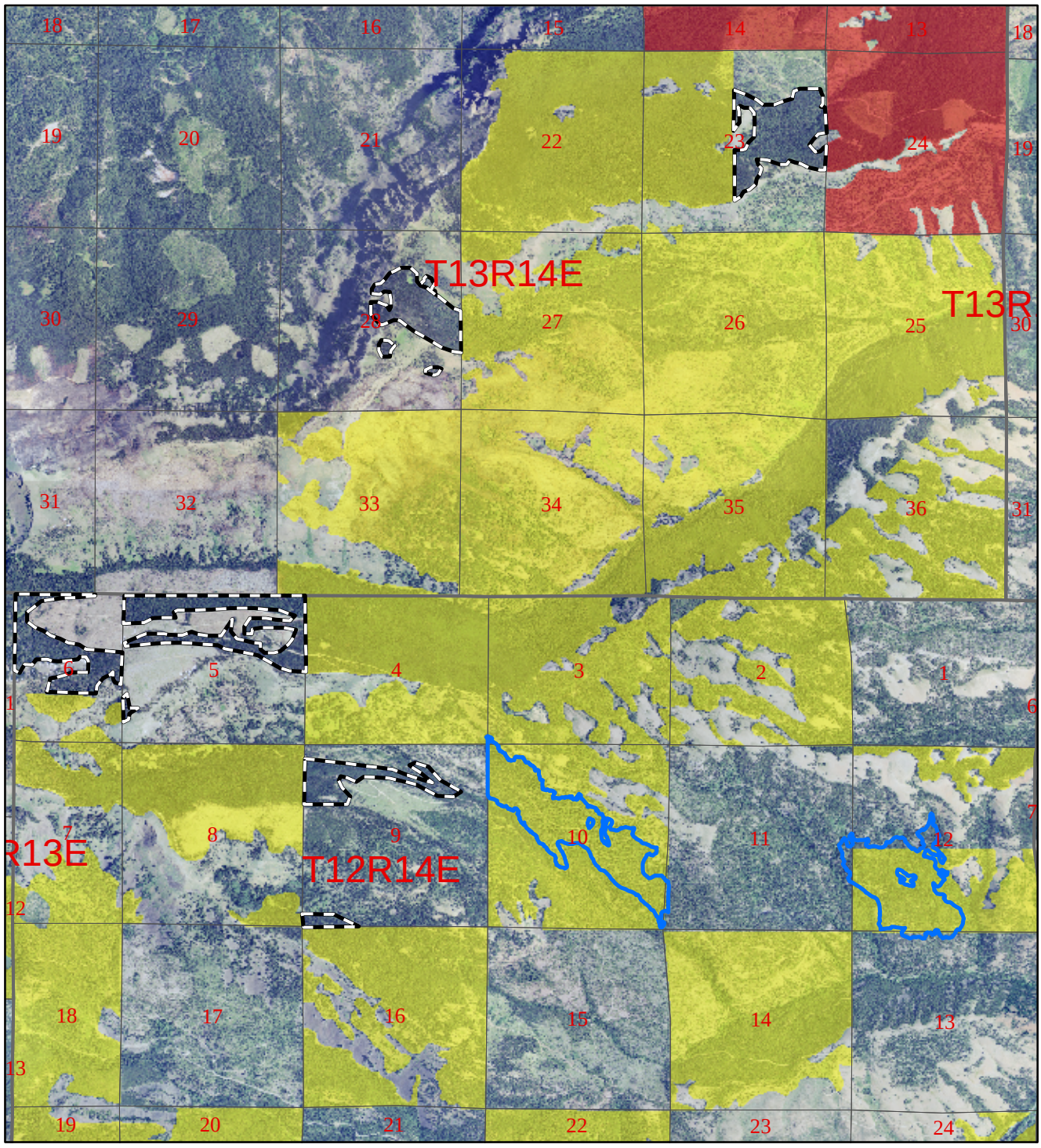
Tami Miketa
Assistant Division Manager
HCP/Science Section
Land Management Division
WA Dept. of Natural Resources

James L Michaels Date: 4/3/07

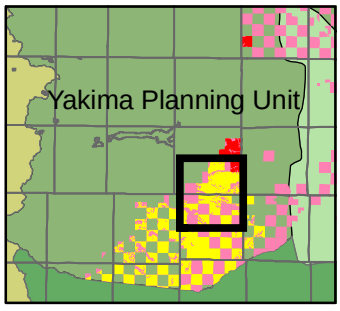
Ken S. Berg, Manager
Western Washington Fish and Wildlife Office
U.S. Fish and Wildlife Service

cc: Gretchen Nicholas, Land Management Division Manager
Jed Herman, Product Sales and Leasing Division Manager

Foundations Timbersale and Mitigated Dispersal Habitat



CMK Heimburg 10/2007



Foundations Timbersale

Mitigated Dispersal Habitat

NRF/Dispersal Mgmt. Areas

NRF

Dispersal

0 0.25 0.5 1 Miles