

May 6, 2008
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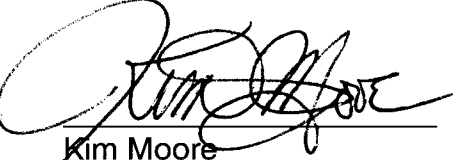
Dear Colleagues:

RE: Jackson Hydroelectric Project – FERC #2157
Wildlife Habitat Management Plan
2007 Annual Report

The final copy of the 2007 Annual Report on the Jackson Project Wildlife Habitat Management Plan activities is enclosed for your files. No comments were received from agency or tribal representatives, and no meeting was requested. However, we are always available to answer questions or show you any items of interest in the field.

If you have questions or comments regarding the report, or on-going WHMP implementation activities, please feel free to contact Mike Schutt at 425-783-1712 or via e-mail at msschutt@snopud.com.

Sincerely,



Kim Moore
Assistant General Manager
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Tom Thetford
Utilities Director
City of Everett

Enclosure

Henry M. Jackson Hydroelectric Project FERC No. 2157



2007 ANNUAL PROGRESS REPORT WILDLIFE HABITAT MANAGEMENT PLAN

May 6, 2008



PO Box 1107
Everett, WA 98206

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1.0

SUMMARY

Accomplishments during 2007 on the Wildlife Habitat Management Plan (WHMP) lands for the Henry M. Jackson Hydroelectric Project are presented in this report. A cumulative summary of tasks accomplished since the initiation of the WHMP in 1988 is also presented in this report. Problems or changes needed during implementation of the WHMP are discussed, and updated schedules are presented. A draft of this report was submitted for comments to the U.S. Fish and Wildlife Service (USFWS), the Washington Department of Fish and Wildlife (WDFW), and the Tulalip Tribes (Tribes). The Washington Department of Natural Resources (DNR) was also consulted. A meeting was offered by the District to discuss the results of 2007 work. The agencies and Tribes did not think that a meeting was necessary.

The basic habitat enhancements, monitoring programs, and reports required by the WHMP to date have been implemented consistent with the WHMP's objectives (Section 3, WHMP, by management tract) and implementation schedule (Section 5.0, WHMP). In some cases, procedures described in the WHMP have been modified or refined to improve the usefulness and reliability of results. Similarly, the details of timber stand boundaries and harvest schedules have been modified to improve operations and reduce impacts, but all such modifications have been within the allowances provided by the WHMP. All significant modifications in procedures have been evaluated relative to the WHMP's management objectives, in consultation with agency reviewers, and have been implemented only if the modifications remain consistent with the WHMP's objectives. Significant modifications are documented in the WHMP annual reports.

As described in Sections 3 and 4 of this report and in previous years' reports, implementation of the WHMP over the past 19 years has already provided many of the intended wildlife habitat benefits. For example, snag and coarse woody debris creation have provided critical shelter and foraging substrates that were scarce in second growth forest stands, while small-scale timber harvest has created new foraging opportunities for several species. Revegetation of areas disturbed during project construction has provided cover and forage.

1.1 MAJOR TASKS ACCOMPLISHED DURING 2007

- Continued wetland descriptions/ratings on WHMP lands
- Management of noxious and invasive weeds (all WHMP tracts)
- Created snags and gaps (Spada Lake)
- Monitored nest structures (Lake Chaplain, Lost Lake and Spada Lake Tracts)
- Monitored water quality in Chaplain Creek
- Monitored deer forage (Lake Chaplain Tract)
- Implemented study plans for Jackson Project Relicensing, and conducted stakeholder meetings.
- Continued implementation of Lake Chaplain Tract RMAP (Lake Chaplain Tract)
- Sold Crazy Bear Timber Sale and harvest completed (Lake Chaplain Tract)
- Monitored plantations (Lake Chaplain Tract)
- Initiated layout of future harvest units (Lake Chaplain Tract)
- Set up photo-documentation stations at Spada Lake Tract thinned stands
- Continued implementation of Spada Lake Tract RMAP and associated road repairs
- Submitted Spada Lake Supplemental Plan for the period 2007-2016 to FERC

1.2 TASKS SCHEDULED FOR 2008

- Monitor snags (all tracts)
- Create snags and/or gaps (Spada & Lake Chaplain Tracts)
- Monitor nest structures (all tracts)
- Monitor water quality of Chaplain Creek
- Monitor deer forage (Lake Chaplain Tract)
- Continue implementation of RMAPs (Lake Chaplain, Spada Lake Tracts)
- Reforest the Crazy Bear Timber Sale (Lake Chaplain Tract)
- Continue layout of future harvest units (Lake Chaplain Tract)
- Update timber inventory (Lake Chaplain Tract)
- Monitor plantation (Lake Chaplain Tract)
- Monitor thinned stands on Spada Lake Tract
- Monitor revegetation sites
- Monitor Williamson Creek Tract
- Manage noxious and invasive weeds (all WHMP tracts)
- Continue wetland descriptions/rating on WHMP lands and land adjacent to the lower Sultan River that could be affected by changes to the instream flow regime.
- Conclude second study season for Jackson Project Relicensing studies, and conduct stakeholder meetings.
- File Preliminary License Proposal for Jackson Project.

2.0

INTRODUCTION

The 2007 Annual Progress Report on the Wildlife Habitat Management Plan (WHMP) for the Henry M. Jackson Hydroelectric Project was prepared by Public Utility District No. 1 of Snohomish County (District) and the City of Everett (City), who are currently co-licensees in the Project. The WHMP project area and management tracts are shown in Figure 1.

The WHMP guides management of the five tracts of land totaling approximately 7,070 acres of land and water. Refer to the WHMP, Wildlife Habitat Management Plan Supplement for the Spada Lake Tract (January 1997 & January 2007), and the Pre-Application Document (PAD) for the Jackson Hydroelectric Project, Section 5.4 (December 2005) for details on management goals and objectives, schedules and updated information. These documents are available on the District's web site at <http://www.snopud.com/water/relicensing.ashx?p=2334>.

This annual report describes activities conducted during calendar year 2007 (Section 3.0) and summarizes activities completed since the management program was initiated in 1988 (Section 4.0). Activities anticipated for the calendar year 2008 are also described (Section 5.0). Activities, procedures and schedules described in this report are based on the WHMP approved by the Federal Energy Regulatory Commission on May 19, 1989, in compliance with Project License Article 53 and subsequent related orders from the Commission.

Activities completed prior to 2007 (from 1990 – 2006) are documented in a series of Annual Progress Reports prepared by the District and City, and may be found at the District's web site.

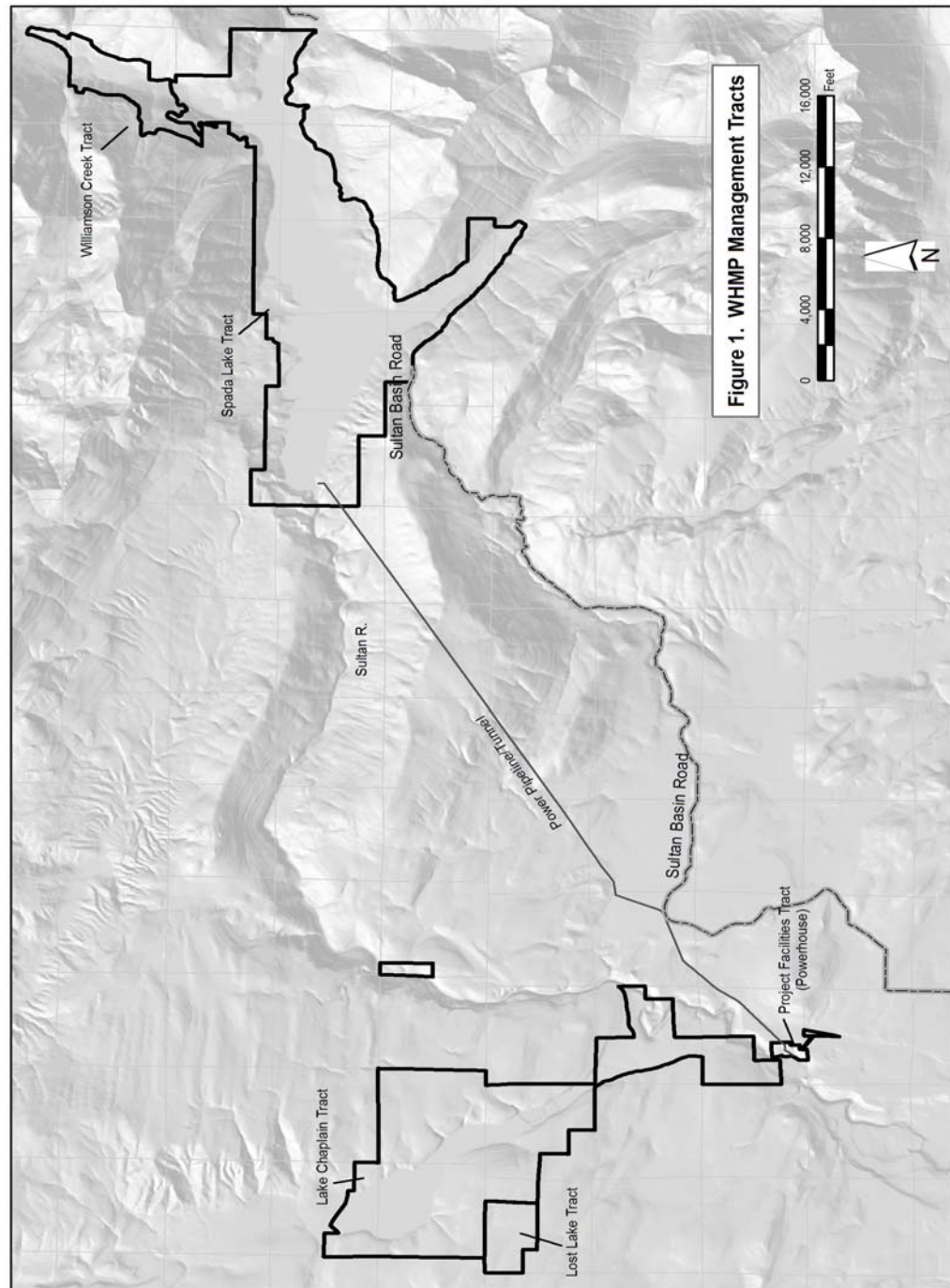


FIGURE 1. WHMP MANAGEMENT TRACTS

3.0 WORK COMPLETED DURING 2007

3.1 SNAG MANAGEMENT

3.1.1 Lake Chaplain Tract

Snag creation did not occur on the Lake Chaplain Tract in 2007. Instead, efforts were focused on the Spada Lake Tract, given the uncertain future of the South Shore Road, which currently provides vehicular access to lands south of Spada Reservoir. The DNR has stated an interest in abandoning this road, beginning in 2012.

3.1.2 Spada Lake Tract

In 2007, a total of 526 snags were created (Table 1) in groups of typically 10-15 trees, on 194 acres (8 stand complexes), along both the South Shore Road and Culmback Dam Road, including two stands where snag and gap creation began in 2006 (Figure 2). Of these, approximately 250 trees had cat-faces or cavities carved in the tree with a chain saw to expedite decay and nest cavity creation. Typical diameters for created snags range from 11-17 inches, with an average of about 14 inches. Approximately 900 additional small trees (< 11" dbh) were either topped or base girdled within these gaps to increase light input to the forest floor.

Photo-documentation stations were established at the center of each gap to allow changes over time to be noted. Qualitative assessments of each species of understory plant were also made within each gap. A subset of these gaps will be monitored over time to determine the effects of canopy removal on the forage plants and will allow for refinement in gap creation procedures.

An additional 21 stands (176 acres) were evaluated along the South Shore Road for potential snag/gap creation. It was determined that typical stand diameters were too small to allow snag creation; these units will be re-evaluated in 10 years.

Table 1. Summary of Snag Management Activities in 2007

UNIT	ACRES	NUMBER CREATED	AVG DBH (in.)	AVG HT. (ft.)	# PER ACRE	NOTES ¹
9-97	2.3	10	13.2	54.0	4.3	√ Includes created snags only
9-114	53.0	178	13.5	53.7	3.3	√ Includes created snags only
9-125	32.9	19	14.8	37.2	0.5	Includes created snags only (work will continue in 2008)
9-126	23.7	126	14.2	56.7	5.2	√ Includes created snags only
9-135 complex	41.0	4	13.7	52.4	3.8	√ Created snags only, from 2006 & 2007
9-144	20.4	129	12.8	59.2	6.2	√ Includes created snags only
9-165	9.2	58	14.2	49.7	3.6	√ Includes created snags only

Table 1. Summary of Snag Management Activities in 2007

9-184	11.0	2	13.1	45.0	3.2	√ Created snags only, from 2006 & 2007
TOTAL	193.5	526	13.7	51.0	3.8	
The following units along the South Shore Road were investigated for snag creation potential, to ensure that all units accessed by this road are completed prior to potential abandonment in 2011. Snag creation potential is minimal at this time.						
UNIT	ACRES	CREATED	NOTES			
9-86	6.3	0	5-18" dense conifers; trees too small, wait 10 years			
9-87	3.2	0	non-vegetated			
9-93	3.1	0	slide area			
9-96	5.2	0	riparian forest			
9-102	0.4	0	deciduous forest; too narrow/ close to road.			
9-137	9.1	0	early successional, 3-9" alders; revisit in 10 years			
9-153	7.6	0	early successional			
9-158	6.2	0	recreation site 2			
9-160	31	0	trees too small; wait 10 years.			
9-161	31.8	0	non-vegetated/draw down zone			
9-162	22.6	0	mostly mixed forest; some remnant OG on SW side of South Fork arm. revisit in 10 years			
9-164	17.5	0	avg +/- 6" dbh; revisit in 10 years			
9-166	0.35	0	grass meadow, < 1 ac			
9-168	5.3	0	3-8" alders, very dense salmonberry understory.			
9-169	2.3	0	mixed forest; 6-10" conifers & alders, very few > 11"; revisit in 10 years			
9-170	8.6	0	deciduous forest; 6-10" alders, revisit in 10 years			
9-171	2.4	0	too small to treat individually; wait 10 years and look at combining with 9-162			
9-172	2.1	0	shrub-brush			
9-178	3.8	0	early successional			
9-181	3.2	0	mixed forest; too close to lake and wetland.			
9-182	3.8	0	wetland			
TOTAL	175.9	0.0				
√ Meets WHMP requirements for size class distribution and number per acre.						
√ Units where no data is shown for natural snags had no inventory conducted due to time constraints and likelihood that few natural snags exist in the unit, given the young stand ages.						

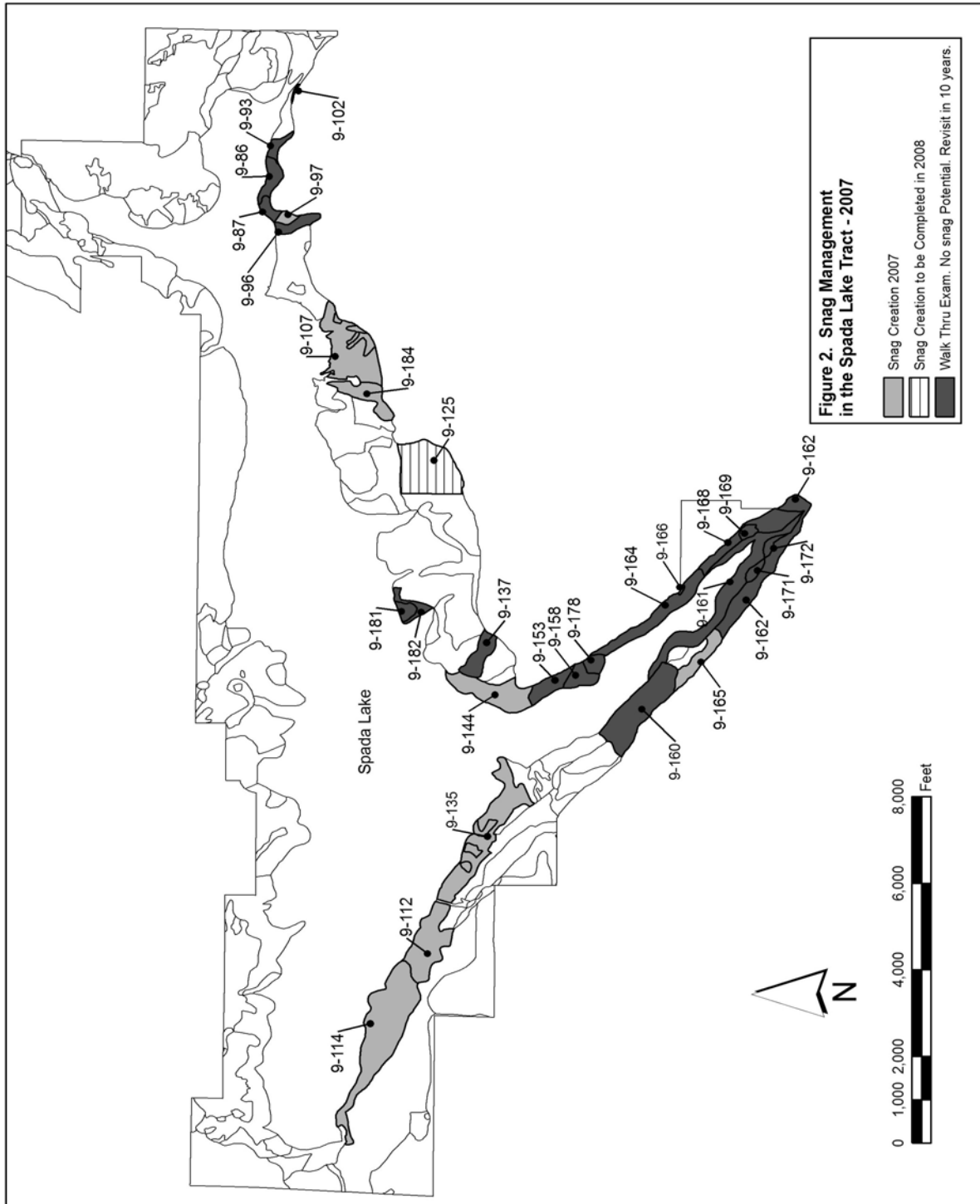


FIGURE 2. SNAG MANAGEMENT IN THE SPADA LAKE TRACT – 2007

3.2 REVEGETATION AND WEED MANAGEMENT

A noxious weed inventory (Study Plan 8: Noxious Weed Inventory) was conducted as part of the relicensing studies for the Jackson Project to document the occurrence of target species of noxious weeds and invasive non-native plants. The study area included WHMP lands where Project operations or Project-related maintenance, land use practices, or human activities could promote noxious weeds. National Forest System lands within the riparian corridor between Culmback Dam and the Diversion Dam were also inventoried. Approximately 1,089 acres of land were inventoried. Nineteen species of weeds were recorded; including Washington State Class B designates spotted Knapweed (*Centaurea biebersteinii*), yellow hawkweed (*Hieracium caespitosum*) and an unknown species of invasive hawkweed (*Hieracium* sp.). The Snohomish County Selected species Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), invasive knotweed (*Polygonum* sp.), and tansy ragwort (*Senecio jacobaea*), also were documented. (See the District's relicensing web site for the entire report: http://www.snopud.com/Content/External/Documents/relicensing/Study%20Reports/Jackson2157_SP8_FTR_Jan2008.pdf)

GPS coordinates were recorded for each infestation or the location was noted on a 1:24,000 USGS map or orthophoto. The District has this information in their GIS database and can use it for management purposes. Surveyors pulled individual weeds or small infestations and this information is contained within the GIS database as well.

3.2.1 Lake Chaplain Tract

Several thousand individual noxious and/or invasive non-native weeds (thistles, butterfly bush, hawkweeds, and scotch broom) were removed from roadsides on the Lake Chaplain Tract during 2007. Approximately half of those were removed from roadsides within the hydrographic boundary of Lake Chaplain, where herbicide application is not permitted. Flower or seed-head cutting and hand pulling are the typical means used to remove these plants.

Two patches of Japanese knotweed were identified outside of the hydrographic boundary of Lake Chaplain in 2006. The patches were slashed in early summer of 2007 and subsequent sprouts were treated with herbicide in early fall of 2007. Additional treatment may be necessary in 2008.

3.2.2 Pipeline ROW

The pipeline Right-of-Way (ROW) was searched for noxious weeds with a licensed contract sprayer applying herbicide to any found outside of riparian buffer areas and the City of Sultan's watershed area. Typical weeds found were Canadian thistle, scotch broom, Himalayan blackberry, and tansy ragwort. Off-road vehicle damage to a small portion of the ROW has been persistent this year, likely due to the gate at the end of 116th Street being left open around the clock for recreational access. The current plan to reduce this disturbance but still allow recreational access is to re-establish a fence or gate at the point where the ROW enters the City of Sultan's watershed, which would effectively eliminate access to the area currently being vandalized.

3.2.3 Transmission Line ROW

A gravel access road was built through the one acre transmission line ROW running from the top of the Powerhouse back slope to the south transmission line. The stated need was for access to a power pole within the one acre parcel. Lack of coordination with staff biologists prior to construction led to a road running nearly the entire length of the parcel, versus a less substantial road running partway through that could have preserved a significant portion of the grass/shrub area in a state of low-growing vegetation, thereby providing foraging and hiding opportunities for the deer and bear commonly seen utilizing this area. Mitigation measures have not yet been determined.

3.2.4 Spada Lake Tract

A wetland adjacent to the South Shore Road near Recreation Site 3 was weeded on several occasions during the spring/summer of 2006. Weeds including thistles and tansy ragwort were pulled and removed from the site early in the season, and later in the season flower heads were clipped and bagged and removed from the site.

3.3 NEST STRUCTURES

3.3.1 Floating Nest Platforms

None of the 4 floating nest platforms was observed to have use in 2007 (Figures 3 and 4). The platform anchored in the North Fork was again dislodged from its anchorage and apparently either buried in sediment or washed down the lake, and has not yet been found. Given the low rate of use of these platforms, there is no plan to replace it. However, if it is recovered, an attempt will be made to find a new, more sheltered location.

No use was observed on either of the platforms at Lost Lake, but occasional use by feeding otters and possibly loafing by water birds is typical, evidence of which is commonly noted during end of breeding season visits.

3.3.2 Nest Boxes

On the Spada Lake Tract none of the eight boxes installed had been used by cavity nesting waterfowl, although some were being used by squirrels when checked in the fall (Figures 3 and 4, Table 2).

Bear damage to nest boxes on the Lake Chaplain (Figure 5) and Lost Lake Tracts (Figure 6) has resulted in a decrease in the number of boxes available; until a satisfactory method can be devised to protect the boxes, they may not be replaced. Predator guards (bands of metal flashing) are installed on nest box trees as time allows on existing nest trees, and at the time of new installation. Adding a doubled band of flashing (total of 30" high) seems to be effective. The only box available on the Lake Chaplain Tract in 2007 was not used, and of the 6 boxes on the Lost Lake Tract, two were knocked down by bears, and two were successfully used (one each by a Hooded Merganser and a Wood Duck). Eight boxes were available on the Spada Lake Tract. None of the boxes on the Spada Lake Tract were used by cavity nesting waterfowl. Results of use are shown in Table 2.

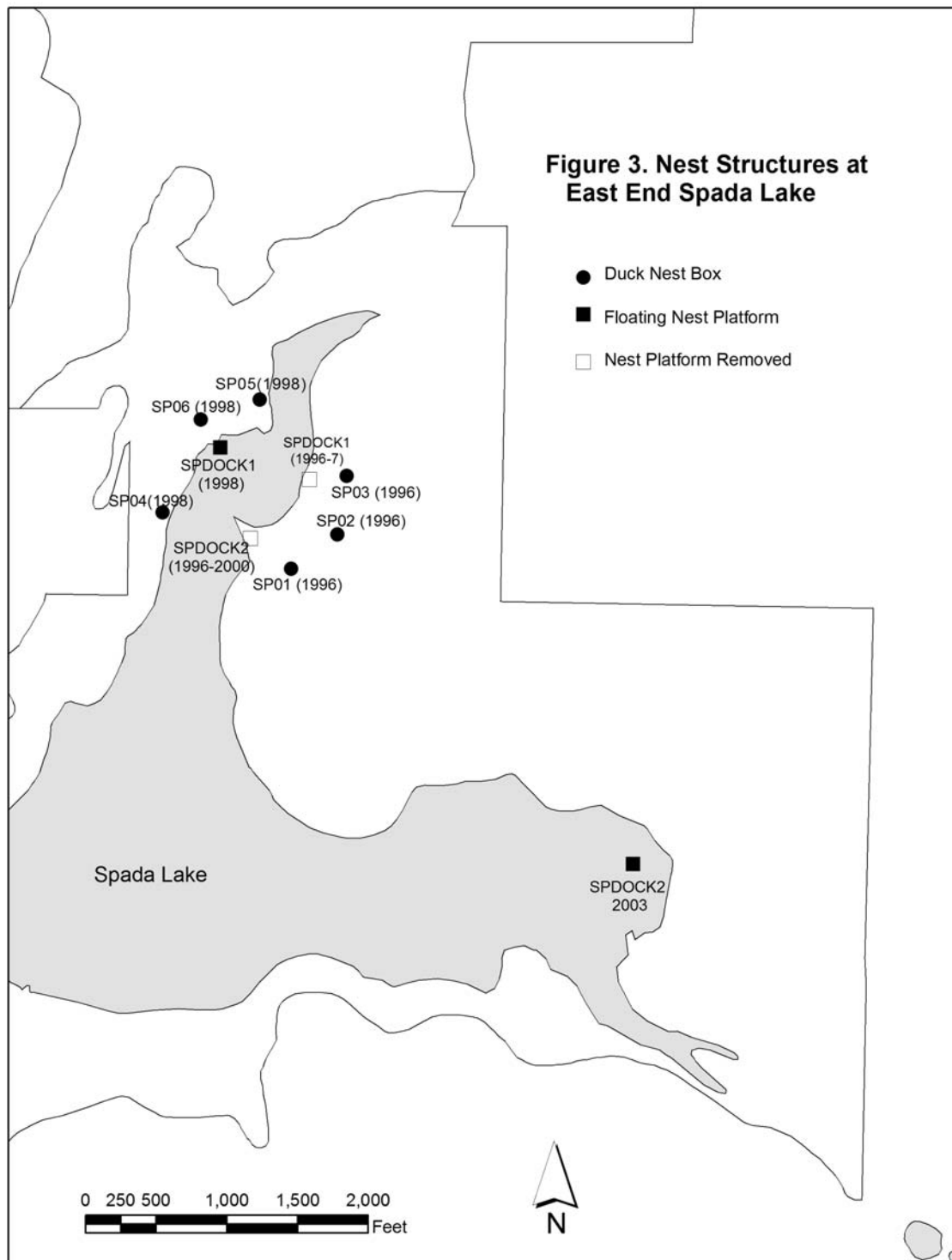


FIGURE 3. NEST STRUCTURES AT EAST END SPADA LAKE

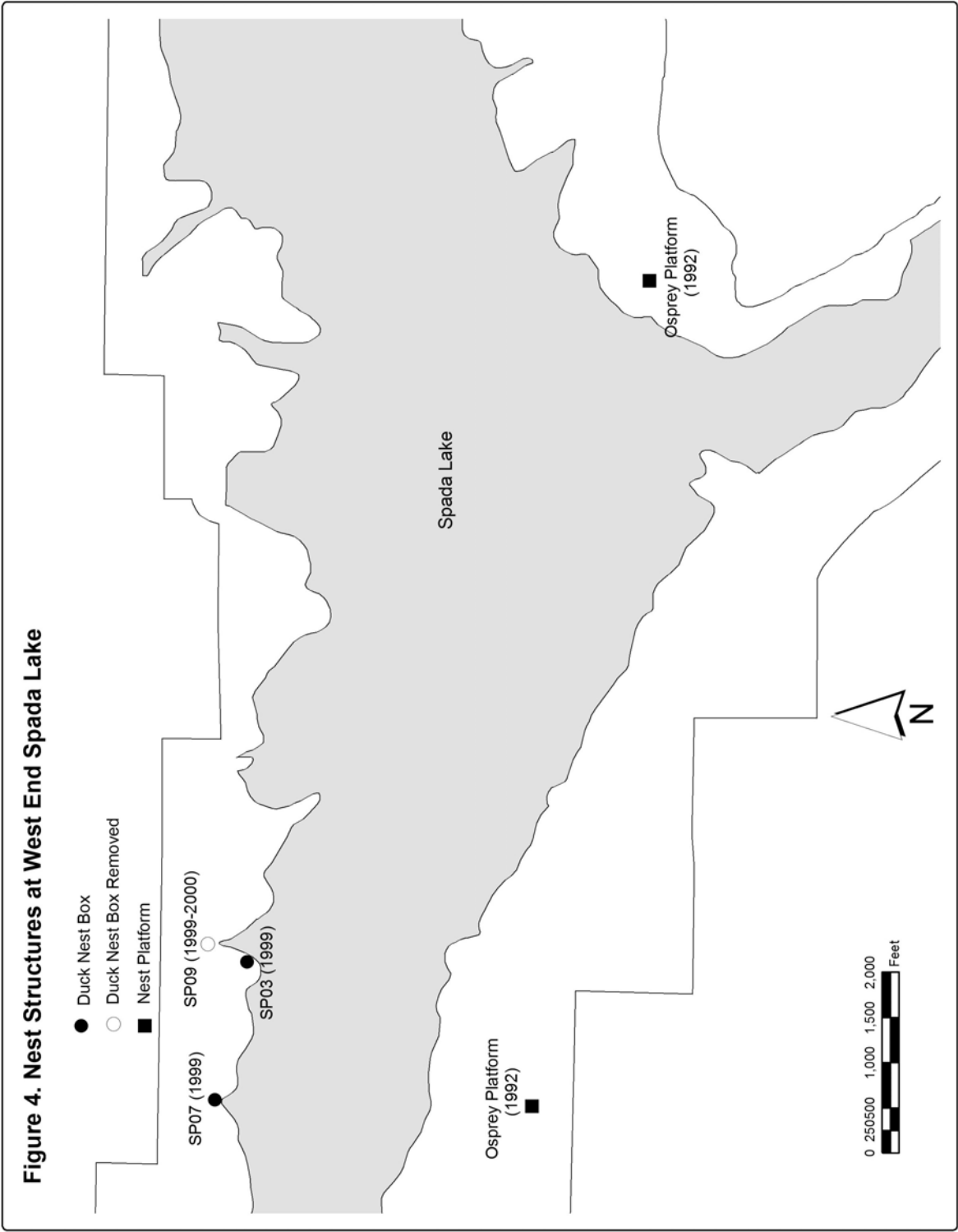


FIGURE 4. NEST STRUCTURES AT WEST END SPADA LAKE

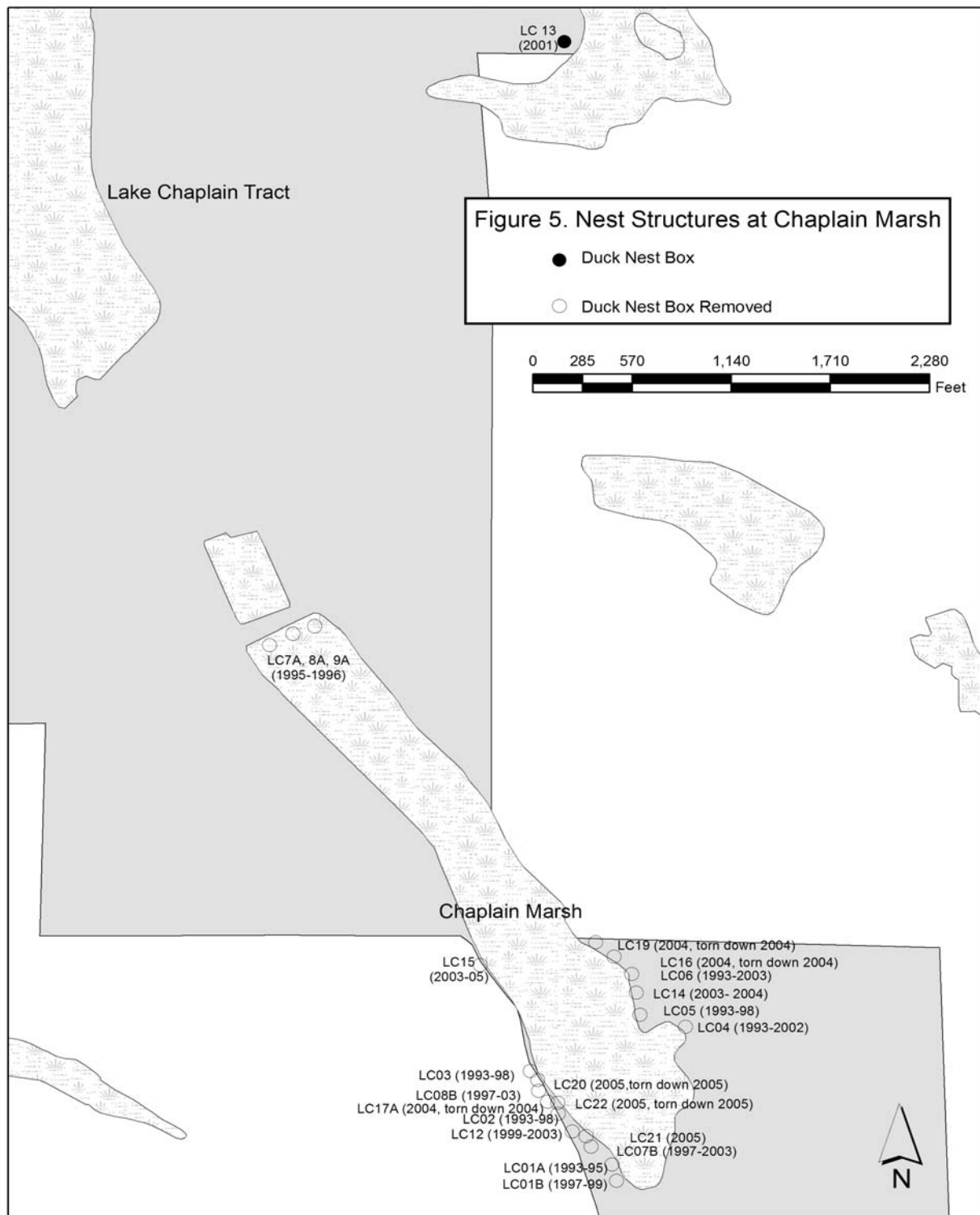


FIGURE 5. NEST STRUCTURES AT CHAPLAIN MARSH

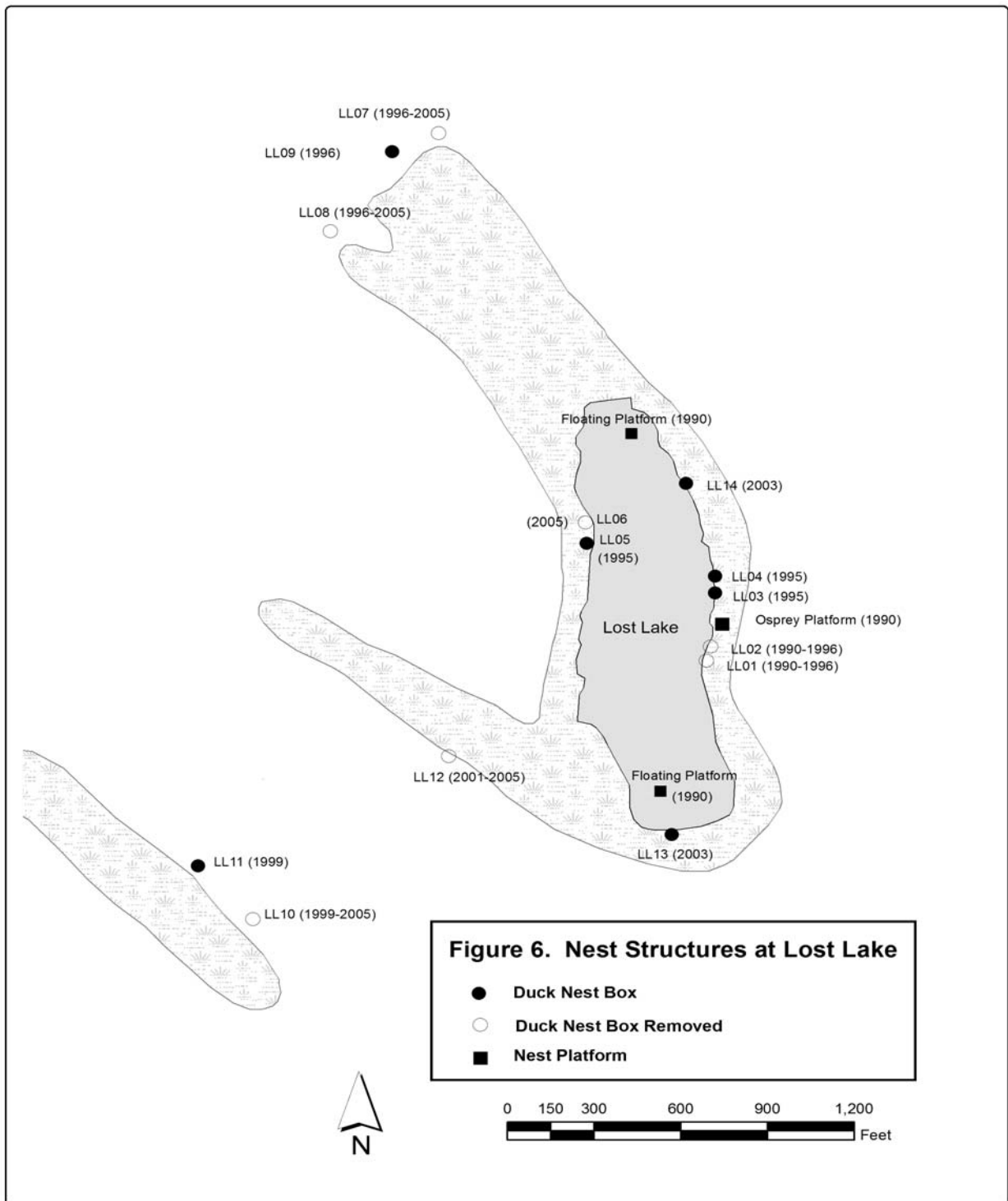


FIGURE 6. NEST STRUCTURES AT LOST LAKE

Table 2. Nest Box Use on JHP Lands in 2007

Location	Boxes Available	Boxes Used	Box Success (# boxes that fledged >= 1 egg)	Number fledged by species
Lost Lake Tract	6	2 (33%)	2 (33%)	7 hooded mergansers & 8 wood ducks fledged
Lake Chaplain Tract	1	0 (0%)	n/a	0
Spada Lake Tract	8	0 (0%)	n/a	0
TOTAL	15	2 (13%)	2 (13%)	15 total

3.3.3 Osprey Nest Platforms

District staff monitored the osprey nest platform at Lost Lake (Figure 6) and the two platforms at Spada Lake (Figure 4) at least once a month from April through July 2007. No use was noted during that time, so additional monitoring visits were not necessary.

An additional osprey nest platform was installed north of the Powerhouse between the Sultan river and the District's microwave tower, to provide additional nesting habitat and help keep the osprey from attempting to nest on the new microwave tower. Four osprey were frequently seen on or near the platform, sometimes diving at each other, but no nesting attempts were made.

3.3.4 Bald Eagle Nest

The bald eagle nest established in 1997 on the Lake Chaplain Tract was occupied by nesting bald eagles for approximately two weeks in the spring of 2007. Eagles were occasionally seen on the Tract after that time.

3.4 FOREST VEGETATION MANAGEMENT ON THE LAKE CHAPLAIN TRACT

3.4.1 Crazy Bear Timber Sale Harvest

The Crazy Bear Timber Sale was sold and harvest completed in 2007 (Figure 7). Both units will be planted in 2008 with 250 Douglas fir seedlings per acre. A total of 41 acres were harvested in the two units, with 126 trees marked for retention as either natural snags or trees to be made into snags prior to harvest. Trees designated as coarse woody debris were left standing on-site where possible, and those near roads were felled after harvest was complete.

3.4.2 Layout of Future Harvest Units

Field reconnaissance of three final harvest units (2000-1, 2005-1, and 2005-2) and two thinning units (2025-5 and 2035-1) was initiated. The eastern boundary of two units (2005-2 and 2035-1) was traversed. Unmapped stream locations predicted from LiDAR data were evaluated.

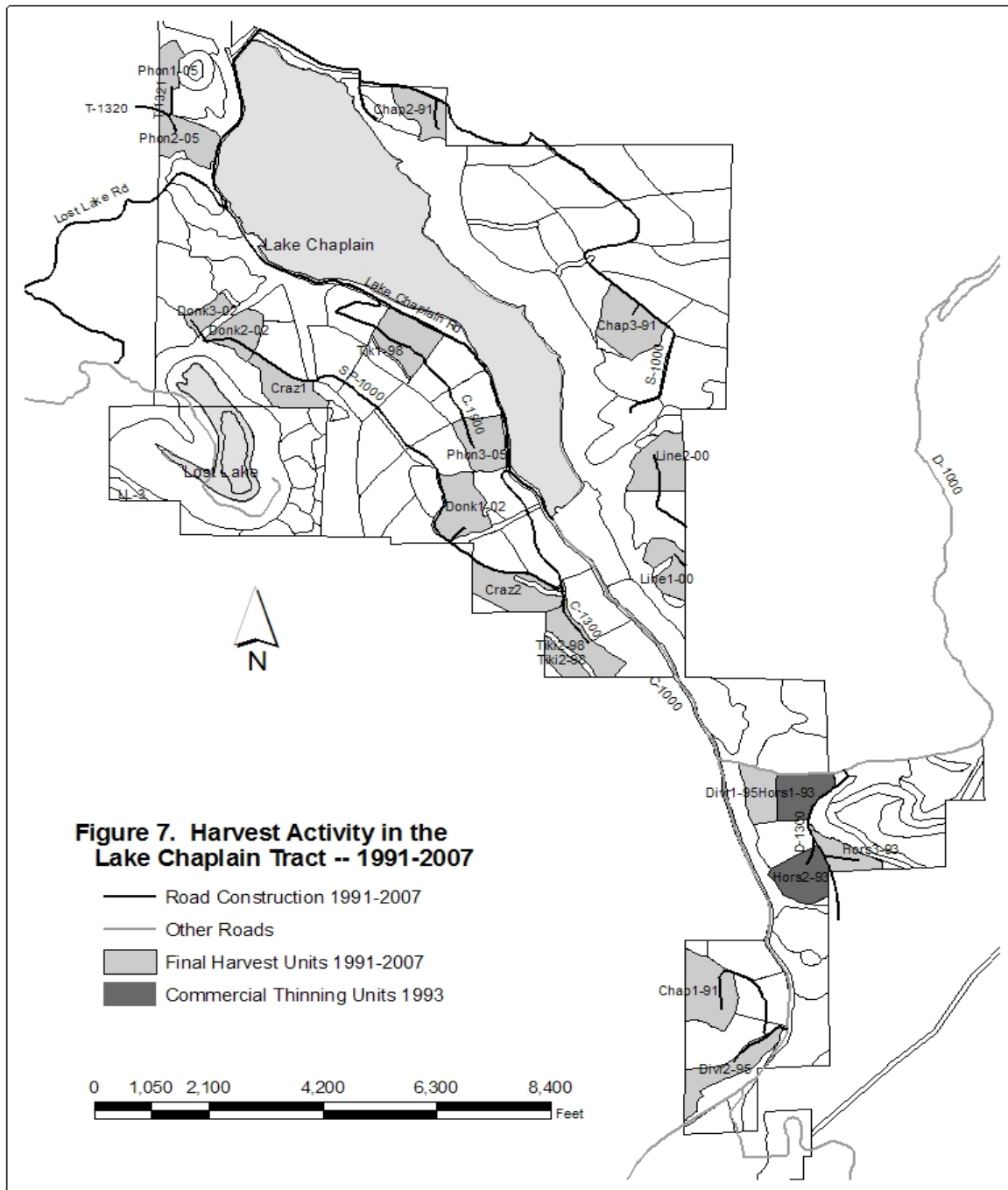


FIGURE 7. HARVEST ACTIVITY IN THE LAKE CHAPLAIN TRACT – 1991-2007

3.4.3 Monitoring of Plantations

Older plantations were monitored for bear damage and hardwood competition was evaluated. Bear damage is now evident in all of the plantations that were thinned (Chap1-91, Chap2-91, and Chap3-91). Bears strip bark from conifer trees during spring sap flow to feed on the cambium and prefer the vigorously growing trees retained in thinned plantations.

The WHMP standard calling for hardwoods to comprise 5 to 10 percent of total stem count has been exceeded in Divr2-95. The plantation will be monitored for conifer growth suppression; the decision to slash excessive hardwood trees will also consider the potential for subsequent bear damage on conifer trees.

3.5 FOREST VEGETATION MANAGEMENT ON THE SPADA LAKE TRACT

Photo-documentation stations were set up to monitor the following stands that were commercially thinned in 2003-4: 9-184, 9-111, 9-121, 9-135. The objective is to determine whether the understory will respond to increased light levels.

3.6 OTHER WILDLIFE OBSERVATIONS

Some incidental observations of wildlife species on WHMP lands are listed below in Table 3. These observations are not the result of systematic surveys for wildlife, but are included in the report to document the presence of these species on management lands. Additionally, a list of incidental wildlife observations was made by consultant field crews conducting relicensing surveys on Project Lands. That information will be included in the final Study Plan 11 report, currently in preparation (Jackson Hydroelectric Project; Revised Study Plan 11: Marbled Murrelet Surveys).

Table 3. Incidental Wildlife Observations

DESCRIPTION	LOCATION	DATE
Pileated woodpecker drumming	Lake Chaplain	1/29/07
Ring-neck duck pair	Lake Chaplain	1/29/07
Buffleheads (6)	Lake Chaplain	1/29/07
Bobcat – several sightings	Lake Chaplain	2007
Red-breasted sap sucker, 2 varied thrushes	Trout Farm Road	3/28/07
9 ring-necked ducks, 3 bufflehead, belted kingfisher	Chaplain Marsh	3/28/07
2 loons, 1 pr ring-necked ducks, bald eagle	Lake Chaplain	3/28/07
Townsend's Solitaire	Spada Lake	4/11/07
Mountain Bluebirds – 3 pairs nesting	Lake Chaplain	6/7/07
Pacific Slope Flycatcher	Lake Chaplain	6/7/07
Barred Owl along South Shore Rd	Spada Lake	9/11/07
Trumpeter Swans (5) on Lake Chaplain	Lake Chaplain	11/19/07

3.7 BIOSOLIDS APPLICATION AND MONITORING

Biosolids were not applied in the Lake Chaplain Tract during 2007. Biosolids may be applied to Line Tree Unit #2 in 2008.

Water quality in Chaplain Creek, both upstream and downstream from previous biosolids application sites, was monitored quarterly. Results obtained in 2007 indicate the same patterns of seasonal variations for several contaminants, all within the acceptable range, that have been found in previous years.

3.8 DEER FORAGE MONITORING

Deer forage availability was sampled in early July on Hors3-93 and Donk2-02, on the Lake Chaplain Tract (Figure 7). Fourteen years after harvest, the Hors3-93 tree layer was dominated by Douglas fir >6 ft, but other hardwood trees including seedlings and saplings were present in almost 50 percent of sample quadrants (Figure 8). The early successional understory species that were dominant in earlier surveys in 2001 and 2004, such as bracken fern and fireweed, declined in frequency of occurrence by 2007 (Figure 9), possibly due to shading by the tree layer. Other understory species like salal, trailing blackberry and moss have been present throughout the surveys. Huckleberry was present throughout the understory of this stand prior to harvest and persists in the post-harvest unit.

Donk2/3-02 was clearcut in 2002, and the tree layer in 2007 consisted primarily of planted Douglas fir and volunteer western hemlock saplings (Figure 10). Dominant post-harvest herbaceous layer species include fireweed, sword fern, *Rubus* species, especially trailing blackberry and various other forbs (Figure 11). Hardwood trees are not a significant component of the tree layer of this unit. Mountain beaver burrows and deer sign were frequently encountered.

3.9 LAND MANAGEMENT AT LAKE CHAPLAIN

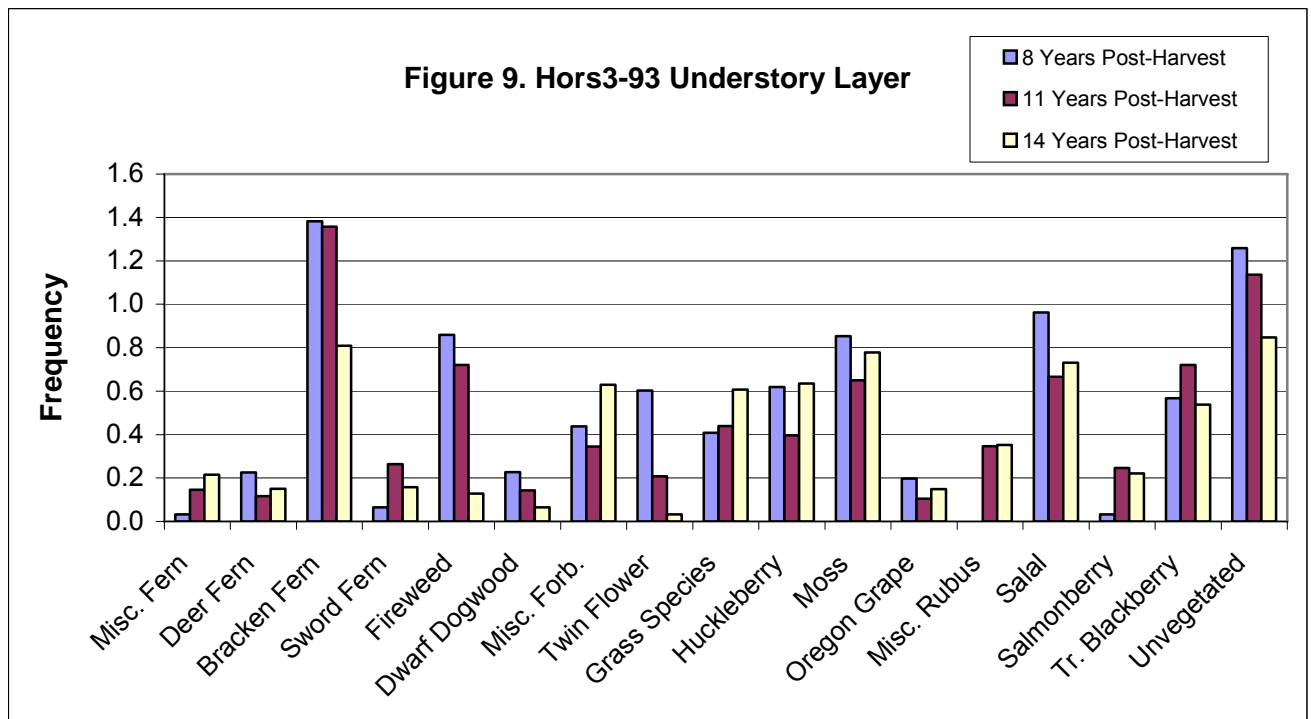
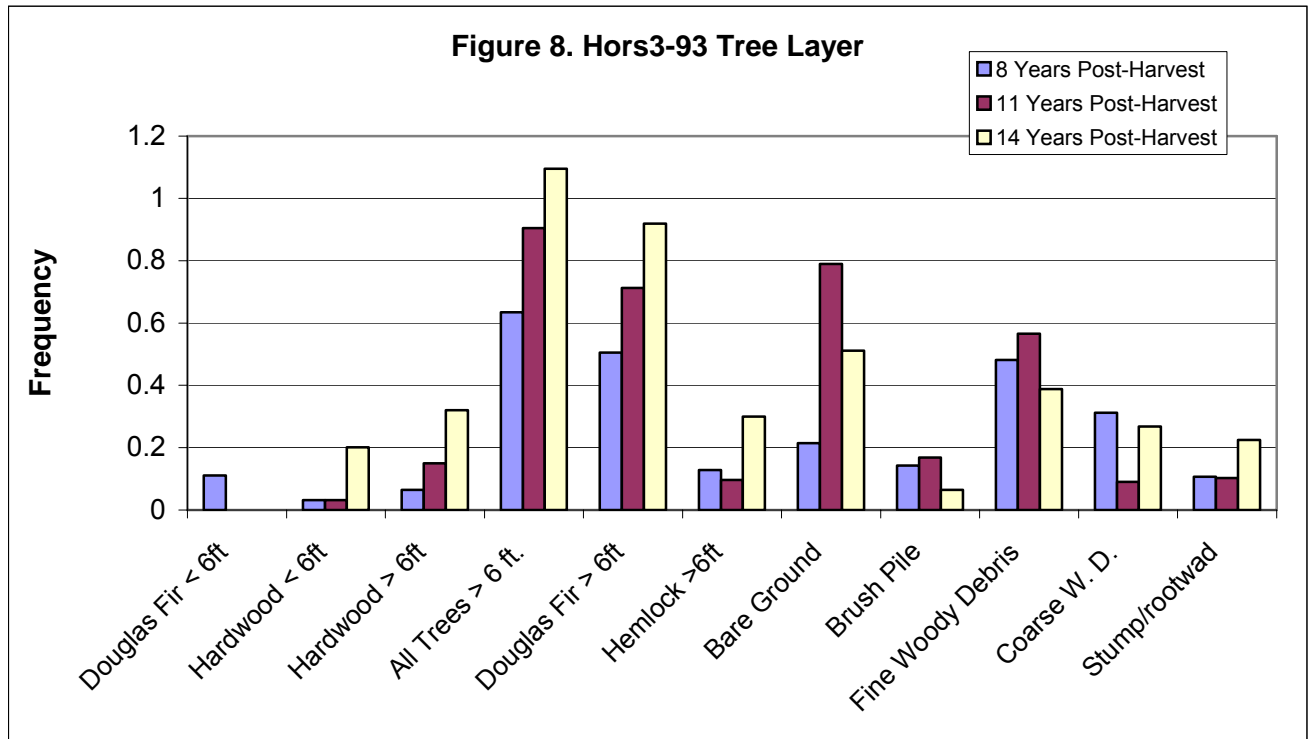
The City of Everett continued implementation of its Road Maintenance and Abandonment Plan (RMAP) in the Lake Chaplain Tract. RMAP activities included brush cutting along roadsides and cleaning of culverts and ditches, as needed.

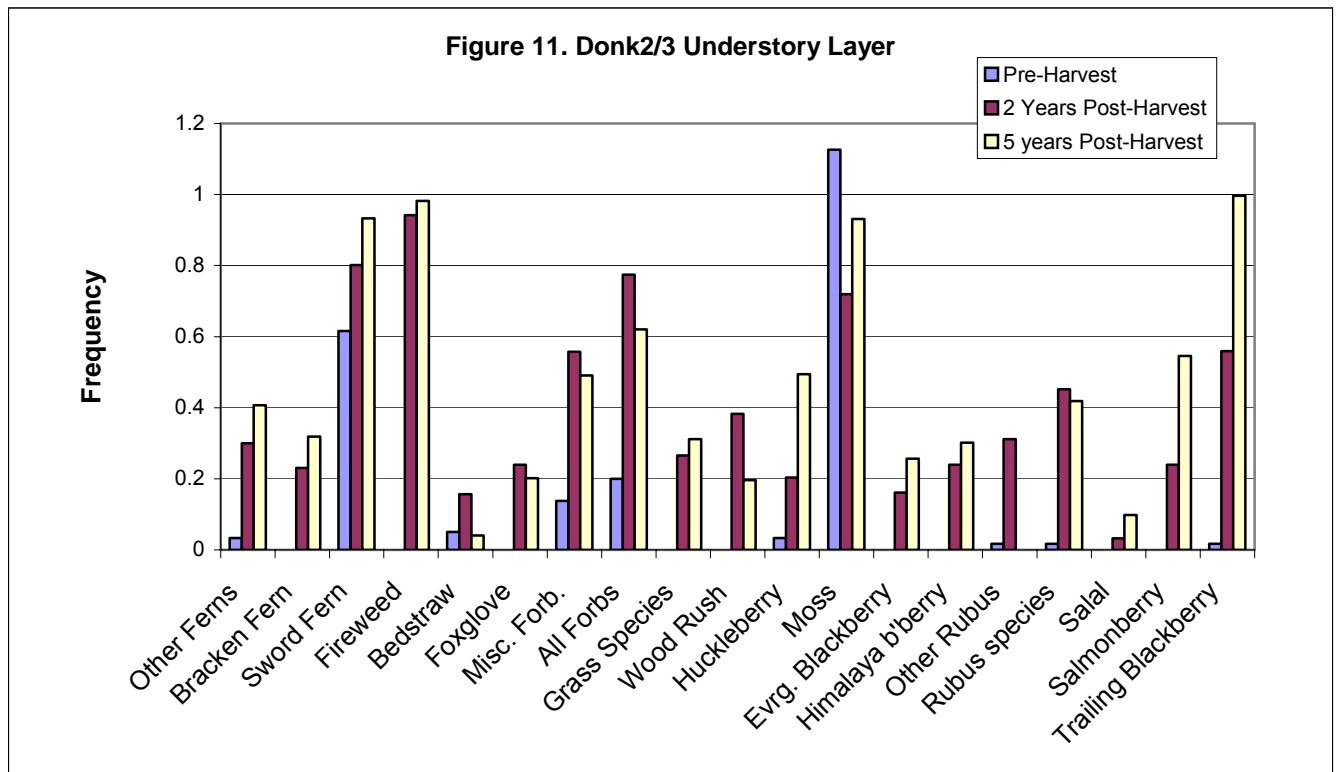
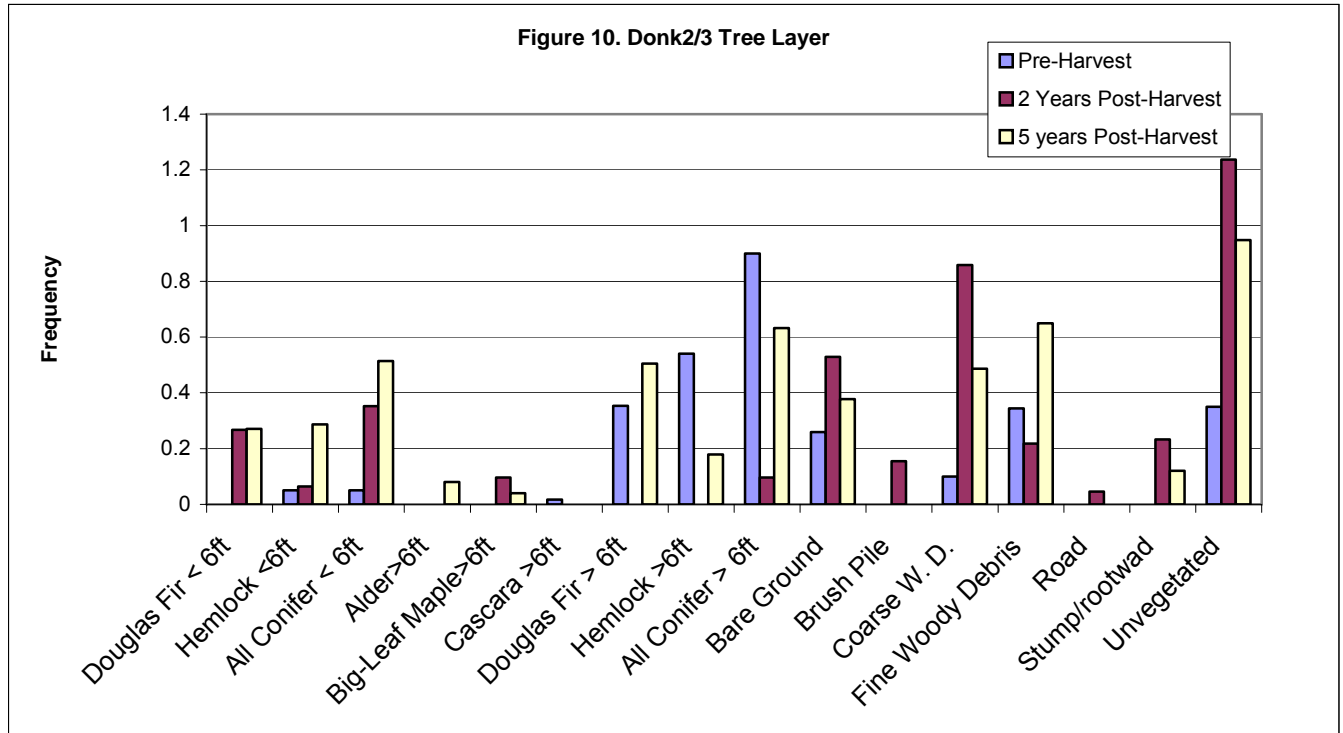
3.10 LAND MANAGEMENT ON DISTRICT PROPERTY

The District continued implementation of its RMAP. Routine road maintenance was conducted as needed on all District roads in 2007. Culverts and ditches were inspected and cleaned or brushed as needed. In September/October 2007, two slide areas on the Culmback Dam Road were repaired.

Consultations with Jackson Project stakeholders during a trails workshop on 19 September 2007, and as part of the Project relicensing effort, included discussion of potential road abandonment of DNR (SL-ML South Shore Road), and Forest Service 6122 Road (District CD14 Road) in the Sultan Basin adjacent to Spada Lake. Options for use of those roads were considered. As part of relicensing there will be a decision regarding whether the 6122 Road (CD14 Road) will become a trail or remain as a road. The District submitted the annual Road

Maintenance and Abandonment Plan (RMAP) report to DNR as required, for roads on WHMP mitigation lands.





The District continued to stay in contact with DNR and USFS representatives regarding DNR's proposal to abandon the South Shore Road, which leads to four of the District's Jackson Project Recreation Sites and wildlife mitigation lands. Issues that continue to be discussed include maintenance of the road through the current license period (through May 2011) and long term solutions and plans through the next licensing period. Relicensing studies including the Recreation Needs Analysis (in preparation) and consultations with stakeholders during the relicensing process will result in a decision on the future of the South Shore Road.

3.11 SECURITY MEASURES AT LAKE CHAPLAIN/JACKSON PROJECT FACILITIES

Restrictions on access to and across Culmback Dam continued as approved by FERC "Order Modifying and Amending Recreation Plan (Issued June 28, 2006)."

The District continues to use the installed security systems on the Culmback Dam Road in the vicinity of Culmback Dam. These systems include motion-activated alarms, lights and cameras. Security staff continued to work with District wildlife biologists to minimize the potential impact of these systems on wildlife, such as aiming the lights and alarms and reducing the volume of alarms.

3.12 JACKSON PROJECT RELICENSING

Activities important to the formal relicensing process in 2007 included:

- Selection of consultants to conduct revised study plans,
- First year studies,
- Initial Study Reports and stakeholder meeting,
- Completion of Study Plan 6: Habitat Management Methods Literature Review and Evaluation,
- Completion of Draft First Year Technical Reports for:
 - Study Plan 7: Special Status Plant Surveys,
 - Study Plan 8: Noxious Weed Inventory,
 - Study Plan 10: Amphibian Survey,
 - Study Plan 11: Marbled Murrelet Surveys, and
 - Study Plan 12: Northern Spotted Owl Surveys.

Wetland rating forms were completed in 2004, 2005 and 2006 for 13 wetlands on Project lands using the Washington State Wetland Rating System. Evaluation was problematic for several wetlands that have formed due to beaver dams on streams, and District staff consulted with Dr. Hruby and attended his workshop in April 2007 on "Using the Revised Washington State Wetland Rating System for Western Washington". It was determined that ratings of these wetlands needed to be revised. Those revisions were completed in the summer of 2007 (Table 4) as part of Study Plan 9: Wetland Surveys.

Table 4 Wetland Rating Summary

Wetland #	Mgt. Unit	Name/Location	Wetland Size (acres)	Wetland Type/Class	Total Score for Functions	Final category
1	9-105	South Shore Recreation Site Wetland	11.4	Lake fringe	43	III
2	7-5A	Lost Lake Wetland (edge of lake)	25.6	Bog/ Depressional	52	I
3	7-1	Lost Lake Tract SW corner	7.5	Depressional	65	II
4	9-119	Sub-Unit A. South Shore Road Wetland Complex (between South Shore and Nighthawk Rec. Sites)	2.5*	Depressional	40	III
4	9-119	Sub-unit B. South Shore Road Wetland Complex (between South Shore and Nighthawk Rec. Sites)	*	Depressional	55	II
5	5-14	Sub-unit A. Chaplain Marsh Wetland Complex	41.6*	Depressional	46	III
5	5-14	Sub-unit B. Chaplain Marsh Wetland Complex	*	Depressional	47	III
5	5-14	Sub-unit C. Chaplain Marsh Wetland Complex	*	Depressional	53	II
6	10-10/ 10-11	Williamson Creek Wetland (east of road)	3.0	Depressional	64	II
7**	9-14	Williamson Creek Arm Wetland	3.0	Lake fringe	44	III
8	9-73	North Fork Arm Wetland	8.5	Lake fringe	48	III
9	9-184	Sub-unit A. Upper South Shore Recreation Site Wetland Complex	1.9*	Depressional	41	III
9	9-184	Sub-unit B. Upper South Shore Recreation Site Wetland Complex	*	Depressional	47	III
9	9-184	Sub-unit C. Upper South Shore Recreation Site Wetland Complex	*	Depressional	36	III

Table 4 Wetland Rating Summary

Wetland #	Mgt. Unit	Name/Location	Wetland Size (acres)	Wetland Type/Class	Total Score for Functions	Final category
9	9-184	Sub-unit D. Upper South Shore Recreation Site Wetland Complex	*	Depressional	41	III
10	9-85	North Shore Wetland	3.3	Depressional	38	III
11	9-95	North Fork, South Shore Wetland	3.3	Lake fringe	37	III
12	7-5B	Sub-unit A. Lost Lake (west of ford)	3.6*	Depressional	44	III
12	7-5B	Sub-unit B. Lost Lake (west of ford)	*	Riverine	67	II
14	9-160	South Fork Wetland 1	0.6	Depressional	33	III
15	9-188	South Shore Wetland 1	1.5	Lake fringe	37	III
16	9-182	South Shore Wetland 2	3.4	Lake fringe	45	III

*Acreage of all wetland units in each complex is listed for Sub-unit A of the complex

**Wetland 7 was first rated in August 2005 when water levels were at 1437ft MSL. When biologists rated Wetland 13 in September 2006 the water level was at 1408 ft MSL and the wetlands were connected. They have been combined as one wetland. The plan is to move away from the numbering system used prior to rating wetlands as part of relicensing, and move toward identifying the wetlands by the management unit in which they occur. For this report, the old numbering system is used as well to avoid confusion when referencing past documents.

Wetland ratings were completed for wetlands influenced by water level fluctuations in the Spada Lake reservoir and those wetlands were added to the data base. Mapping of several wetlands was improved by field work with GPS equipment in 2007.

District biologists worked with the consultants conducting RSP 18, mapping the wetlands and riparian habitat downstream of Culmback Dam.

Stakeholders in the Terrestrial Resources Group (TRG) were provided with an update on RSP 9, a task summary and schedule in April 2007. Contact was made between the District and USFS, Washington Department of Fish and Wildlife (WDFW), U.S. Fish and Wildlife Service (USFWS), Washington Department of Natural Resources (DNR), Tulalip Tribes, Snoqualmie Tribe, and Washington Department of Ecology representatives by phone or email to make sure communication needs were being met. No problems or concerns were noted.

The District's relicensing web site is continually updated and provides the agencies and public with information about relicensing of the Jackson Project and displays many of the documents compiled over the past 20+ years of Project history. The web site is:

<http://www.snopud.com/water/relicensing.ashx?p=2334>.

3.13 SPADA LAKE TRACT SUPPLEMENTAL PLAN

The WHMP provided management prescriptions for the Spada Lake Tract, along a thin fringe of land adjacent to the lake below the 1460 foot elevation. In 1991, 1,745 acres of additional lands above the 1460 foot elevation were obtained from the USFS. The first Supplemental Plan, covering those lands through the period 1996-2005, was prepared in 1996 and approved by the FERC in 1997. In 2005-6 the co-licensees prepared a second Supplemental Plan, incorporating revised management techniques that reflect advances in wildlife habitat management and revised management prescriptions that are consistent with changes in road access to different areas of the Tract. The second Supplemental Plan summarizes the tasks that were accomplished under the first Supplemental Plan and explains revisions in management techniques and activities. Management prescriptions that deal with forest practices, such as forest stand thinning and canopy management were prepared with the participation of a professional forestry consultant, who later reviewed the draft plan.

The management techniques and prescriptions of the second Supplemental Plan were presented to the agencies at the consultation meeting on March 17, 2006 (see Section 3.14 below), and the completed plan was submitted to the agencies for review. The revised version was submitted to the FERC for approval in 2007, and the Order Approving Wildlife Habitat Management Program Spada Lake Tract Supplemental Plans was issued August 21, 2007.

3.13.1 AGENCY AND TULALIP TRIBES CONSULTATION

The wildlife agencies and Tulalip Tribes did not feel that it was necessary to hold a meeting regarding implementation of the WHMP in 2007. The agencies, Tribes and stakeholders have been notified of relicensing progress and activities throughout 2007. Consult the relicensing web site for additional information.

4.0 CUMULATIVE SUMMARY

Section 4.0 provides a cumulative summary of WHMP related activities conducted since the beginning of implementation through 2006.

4.1 SNAG MANAGEMENT

Since implementation of the Wildlife Mitigation Plan began in 1989, a total of 2,768 snags have been created on 74 units (1,558 acres) across the Lost Lake and Lake Chaplain Tracts (Figure 12 & Table 5). Of these, 72 units (1,534 acres) currently meet the WHMP guidelines for snag size distribution and density.

On the Spada Lake and Williamson Creek Tracts, 2,650 snags have been created on 55 stands or stand complexes (1,264 acres), as shown in Figures 13 and 14, and Tables 6 and 7, respectively. Twenty-nine of these stands/complexes (970 acres) have at least 3 snags/acre, but of a smaller average diameter than called for in the WHMP, due to the younger age of the stands. Snag creation now occurs almost exclusively in clumps to create gaps in the forest canopy, thereby increasing light input to the forest floor with the goal of improving shrub growth. As a result, groups of typically 12-15 trees greater than 11" dbh are topped, with most trees less than 11" dbh either topped or base girdled as well. Approximately half of the trees greater than 11" dbh were live topped, with the intention of allowing them to continue growing, but also creating favorable conditions for wildlife use in the future, such as a cathedral top or hollow top. Small cavities were also created in approximately half of the trees, but only in live-topped trees.

Across all Project lands, a total of 5,418 snags have been created, with 101 units or stands (2,503 acres) now meeting WHMP requirements for snag size distribution and number per acre.

Table 5. Summary of Snag Management Through 2007 - Lake Chaplain and Lost Lake Tracts

UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACRE	NOTES
CRAZ 1	17.8	57	17.5	66.3	3.2	√ Natural and created snags
CRAZ 2	23.2	69	17.4	75.7	3.0	√ Natural and created snags
2025-2	17.3	42	18.2	75.5	4.5	√ Natural and created snags
2025-5	22.3	52	17.4	64.0	3.4	√ Natural and created snags
2025-6	15.9	30	18.5	68.3	3.6	√ Natural and created snags
2035-1	23.4	64	17.6	64.7	3.1	√ Natural and created snags
2035-2	5.0	11	18.0	77.3	4.1	√ Natural and created snags
2035-4	12.7	9	17.8	78.9	4.7	√ Natural and created snags
2035-5	20.0	42	17.9	75.9	4.7	√ Natural and created snags
2045-1	22.3	41	17.1	65.1	3.2	√ Natural and created snags
2045-2	27.3	0	30.9	62.2	7.7	√ Includes natural snags only

Table 5. Summary of Snag Management Through 2007 - Lake Chaplain and Lost Lake Tracts

UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACRE	NOTES
2045-3	11.0	6	17.7	83.3	3.6	√ Natural and created snags
2045-4	20.0	7	17.4	69.3	4.9	√ Natural and created snags
2045-5	17.8	68	18.3	68.1	3.8	√ Natural and created snags
2045-6	27.6	19	18.0	71.2	4.0	√ Natural and created snags
2015-1	12.2	15	16.1	66.5	4.5	√ Natural and created snags
2015-3	18.0	13	16.9	48.4	7.4	√ Natural and created snags
2015-4	18.8	0	20.6	46.1	4.7	√ Includes natural snags only
2015-5	17.7	26	16.0	44.1	5.4	√ Natural and created snags
2015-6	19.0	45	17.5	55.4	4.0	√ Natural and created snags
2020-1	24.0	50	16.9	61.9	4.9	√ Natural and created snags
2020-4	15.3	36	17.0	49.3	4.4	√ Includes created snags only
2020-5	19.1	15	19.1	61.4	9.8	√ Natural and created snags
2020-6	12.0	26	17.7	50.5	6.3	√ Includes created snags only
2025-1	28.0	24	16.5	65.4	4.1	√ Natural and created snags
2025-3	31.7	86	17.4	65.0	3.9	√ Natural and created snags
2025-4	26.0	49	17.0	66.9	4.2	√ Natural and created snags
2030-2	22.1	60	17.0	50.3	3.1	√ Natural and created snags
2030-3	21.0	0	17.2	70.8	6.8	√ Includes natural snags only
2030-5	24.0	48	18.0	50.0	3.2	√ Natural and created snags
2035-3	18.5	30	18.0	55.0	4.9	√ Natural and created snags
2040-3	16.3	14	21.4	50.0	6.9	√ Natural and created snags
Buffer Zone 1	2.3	15	16.4	63.8	9.8	√ Natural and created snags
Buffer Zone 2	1.4	7	15.9	46.6	5.0	√ Natural and created snags
Buffer Zone 3	8.7	23	16.6	46.6	4.5	√ Natural and created snags
OMA1a	74.8	14	17.9	68.3	4.3	√ Natural and created snags
OMA1b	50.5	62	18.4	65.2	3.2	√ Natural and created snags
OMA1c	30.7	68	18.1	64.4	4.0	√ Natural and created snags

Table 5. Summary of Snag Management Through 2007 - Lake Chaplain and Lost Lake Tracts

UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACRE	NOTES
OMA 3	11.8	27	16.2	63.6	6.3	√ Natural and created snags
OMA 4	26.5	22	16.1	54.5	6.7	√ Natural and created snags
OMA 8	5.3	7	18.1	54.3	18.4	√ Natural and created snags
OMA 10	8.6	4	20.0	56.3	18.4	√ Natural and created snags
PMF 4	31.8	54	16.5	46.2	4.9	√ Includes created snags only
PMF 5	27.4	0	23.5	47.3	5.3	√ Includes natural snags only
PMF 6	13.3	0	23.9	64.3	6.0	√ Includes natural snags only
PMF 7a ¹	15.5	20	17.8	58.5	2.5	Includes natural and created snags
PMF 7b	15.8	38	18.1	66.0	4.6	√ Natural and created snags
PMF 8	8.5	24	17.5	65.2	3.2	√ Natural and created snags
PMF 9	52.2	71	17.3	54.9	3.1	√ Natural and created snags
PMF 10	34.1	56	18.3	45.1	4.5	√ Natural and created snags
PMF 11	12.0	25	16.8	43.7	4.3	√ Natural and created snags
PMF 15	6.8	14	14.4	35.0	10.6	√ Natural and created snags, from danger tree removal along transmission lines
PMF 17	14.7	35	17.0	58.1	4.4	√ Natural and created snags
Stand 1-3 ¹²	4.4	0	n/a	n/a	3.1+	√ Natural snags only
TIKI 1-98	21.0	54	17.5	55.6	3.1	√ Natural and created snags
TIKI 2-98	23.8	73	18.0	56.1	3.1	√ Natural and created snags
Wetland Buffer 1	8.7	12	19.0	47.9	1.4	Includes created snags only
Wetland Buffer 2	35.5	65	17.2	56.4	3.1	√ Natural and created snags
CHAP1-91	26.0	75	16.6	33.5	3.1	√ Natural and created snags
CHAP2-91	15.0	46	16.1	27.4	3.1	√ Includes created snags only

Table 5. Summary of Snag Management Through 2007 - Lake Chaplain and Lost Lake Tracts

UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACRE	NOTES
CHAP3-91	24.0	55	18.0	31.0	3.6	√ Natural and created snags
DIVR1-95	15.6	42	16.8	50.3	3.1	√ Natural and created snags
DIVR2-95	19.7	59	18.3	47.9	3.1	√ Natural and created snags
DONK 1-01	23.5	67	17.1	65.3	3.1	√ Natural and created snags
DONK 2-01	21.4	58	18.0	67.6	3.0	√ Natural and created snags
HORS1-93	20.0	0	14.5	89.0	11.5	√ Includes natural snags only
HORS2-93	18.0	23	16.9	55.2	4.6	√ Natural and created snags
HORS3-93	13.7	37	16.0	33.8	3.1	√ Natural and created snags
LINE 1-00	14.8	42	18.0	65.4	3.0	√ Natural and created snags
LINE 2-00	22.0	62	17.4	66.4	3.1	√ Natural and created snags
Phone Line - 3	19.0	58	16.5	66.6	3.1	√ Natural and created snags
TOTAL	1,402	2,422	Totals for the 69 Lake Chaplain units which meet WHMP requirements.			
TOTAL	1,426	2,454	Totals for all 71 Lake Chaplain units having snag mgmt activity to date.			
LOST LAKE TRACT						
Lost Lake 7-1	93.7	234	18.1	62.2	3.3	√ Natural and created snags
Lost Lake 7-2	34.0	80	17.3	61.7	3.2	√ Natural and created snags
Lost Lake 7-3	4.0	0	n/a	n/a	3.1	√ Natural snags only
TOTAL	132	314	Totals for all 3 Lost Lake units having snag mgmt activity to date, all of which meet WHMP requirements for snags.			

Table 5. Summary of Snag Management Through 2007 - Lake Chaplain and Lost Lake Tracts

UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACRE	NOTES
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√ Meets WHMP requirements for size class distribution and number per acre.

√1 Fewer than 3.07 snags/acre exist due to lack of overstory trees in this forested wetland area. Unit will be revisited in 10 years for further snag opportunities.

√2 Remainder of stand, exclusive of already delineated units.

Table 6. Summary of Snag Management Through 2007 - Spada Lake Tract

UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACRE	NOTES
9-97	2.3	10	13.2	54.0	4.3	√ Includes created snags only
9-114	53.0	178	13.5	53.7	3.3	√ Includes created snags only
9-125	32.9	19	14.8	37.2	0.5	Includes created snags only (work will continue in 2008)
9-126	23.7	126	14.2	56.7	5.2	√ Includes created snags only
9-135 complex ^{√1}	41.0	161	13.7	52.4	3.8	√ Includes created snags only, from 2006 & 2007
9-144	20.4	129	12.8	59.2	6.2	√ Includes created snags only
9-165	9.2	58	14.2	49.7	3.6	√ includes created snags only
9-184	11.0	2	13.1	45.0	3.2	√ Includes created snags only, from 2006 & 2007
The following units were examined for snag creation potential, but due to high tree density and small average diameter, no creation potential exists at this time. Units will be revisited in 10 years.						
9-86	6.3	0	past site 5; walk thru: 5-18" dense conifers; trees too small, wait 10 years			
9-87	3.2	0	non-vegetated			
9-93	3.1	0	slide area			
9-96	5.2	0	riparian forest			
9-102	0.4	0	deciduous forest; too narrow/ close to road.			
9-137	9.1	0	early successional, 3-9" alders; revisit in 10 years			
9-153	7.6	0	early successional			
9-158	6.2	0	recreation site 2			

Table 6. Summary of Snag Management Through 2007 - Spada Lake Tract

UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACRE	NOTES
9-160	31	0	trees too small; wait 10 years.			
9-161	31.8	0	non-vegetated/draw down zone			
9-162	22.6	0	mostly mixed forest; some remnant OG on SW side of South Fork arm. revisit in 10 years			
9-164	17.5	0	avg +/- 6" dbh; very few >11", mostly hardwoods; revisit in 10 years			
9-166	0.35	0	grass meadow, < 1 ac			
9-168	5.3	0	deciduous forest; 3-8" alders, very dense salmonberry understory.			
9-169	2.3	0	mixed forest; 6-10" conifers & alders, very few > 11"; revisit in 10 years			
9-170	8.6	0	deciduous forest; 6-10" alders, revisit 10 years			
9-171	2.4	0	too small to treat individually; wait 10 years and look at combining with 9-162			
9-172	2.1	0	shrub-brush			
9-178	3.8	0	early successional			
9-181	3.2	0	mixed forest; too close to lake and wetland.			
9-182	3.8	0	wetland			
9-8	106.0	326	15.2	60.5	3.3	√ Includes natural and created snags
9-24 ¹²	12.1	19	15.7	62.0	2.1	Includes natural and created snags
9-35	4.5	13	15.9	54.9	3.9	√ Includes natural and created snags
9-47	4.3	10	15.7	64.0	3.0	√ Includes natural and created snags
9-90	32.0	143	13.0	45.8	4.5	√ Includes created snags only
9-107 complex ¹¹	33.4	121	14.5	48.7	6.4	√ Includes natural and created snags
9-108 complex ¹¹	73.0	280	13.7	47.5	3.8	√ Includes created snags only
9-110	8.4	34	13.0	51.6	4.0	√ Includes natural and created snags
9-120	41.0	234	14.1	55.9	5.7	√ Created snags only, from 2004 & 2006
9-121 complex ¹¹	116.0	566	13.6	51.8	4.9	√ Natural and created snags from 2004 & 2006
9-133	46.0	0	n/a	n/a	n/a	no trees of adequate size; re-visit in 10 years
9-151 complex ¹¹	28.7	86	13.9	47.3	3.9	√ Includes natural and created snags

Table 6. Summary of Snag Management Through 2007 - Spada Lake Tract

UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACRE	NOTES
9-126 ¹²	23.7	0	16.3	44.5	0.4	Natural snags only, re-visit in 10 years
9-173	20.5	0	34.9	58.8	5.8	√ Natural snags only
9-180	7.4	14	21.4	65.0	4.2	√ Includes natural and created snags

TOTALS 636 2,491
926 2,529

Totals for those 19 stands/complexes which meet WHMP requirements for number/acre.
Totals for all 44 stands/complexes having snag mgmt activity to date.

BOLD denotes those units where snag management activity occurred in 2007

√ Meets WHMP requirements for number per acre, but due to lack of large trees, size class distribution cannot be met at this point on any stand except for old growth.

¹¹ A stand complex is a collection of stands, typically one larger stand with several small stands (less than 2 acres) scattered within its boundaries, which for the purpose of management, are combined and treated largely as a single unit.

¹² Trees not of adequate size for snag creation, re-evaluate in 10 years.

Table 7. Summary of Snag Management Through 2007 - Williamson Creek Tract

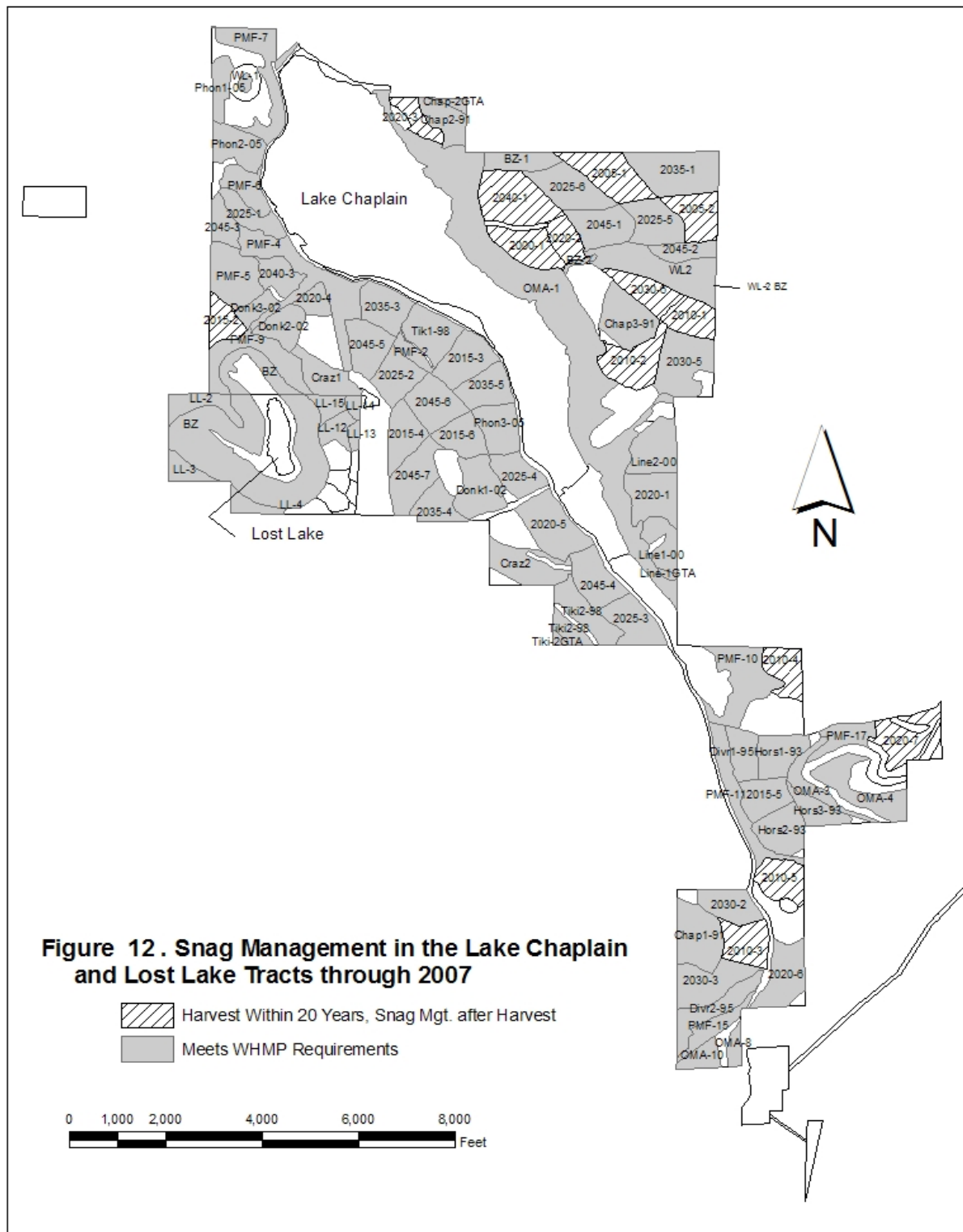
UNIT	ACRES	NUMBER CREATED	AVG. DBH (in.)	AVG. HT. (ft.)	# PER ACRE	NOTES
Stand 10-1 ¹¹	21.2	68	16.4	57.1	3.2	√ Created snags only
Stand 10-2 ¹²	4.2	0	15.1	12.0	1.3	Natural snags only
Stand 10-3	18.7	28	19.3	32.9	3.0	√ Includes natural and created snags
Stand 10-4	7.5	13	16.8	40.1	3.5	√ Includes natural and created snags
Stand 10-5	15.1	12	22.7	37.0	3.5	√ Includes natural and created snags
Stand 10-6	133.4	0	31.3	34.6	12.3	√ Natural snags only
Stand 10-7	68.8	0	29.3	38.5	11.1	√ Natural snags only
Stand 10-8	8.5	0	31.0	43.8	9.0	√ Natural snags only
Stand 10-9	3.7	0	24.2	45.0	9.5	√ Natural snags only
Stand 10-11	50.5	0	32.3	46.0	6.0	√ Natural snags only
Stand 10-12	6.3	0	30.7	38.3	6.0	√ Natural snags only

TOTALS 334 121
338 121

Totals for those 10 units which meets WHMP requirements.
Totals for all 11 units having snag management activity to date.

¹¹ No natural snags found during inventory.

¹² Trees not of adequate size for snag creation, re-evaluate in 10 years.



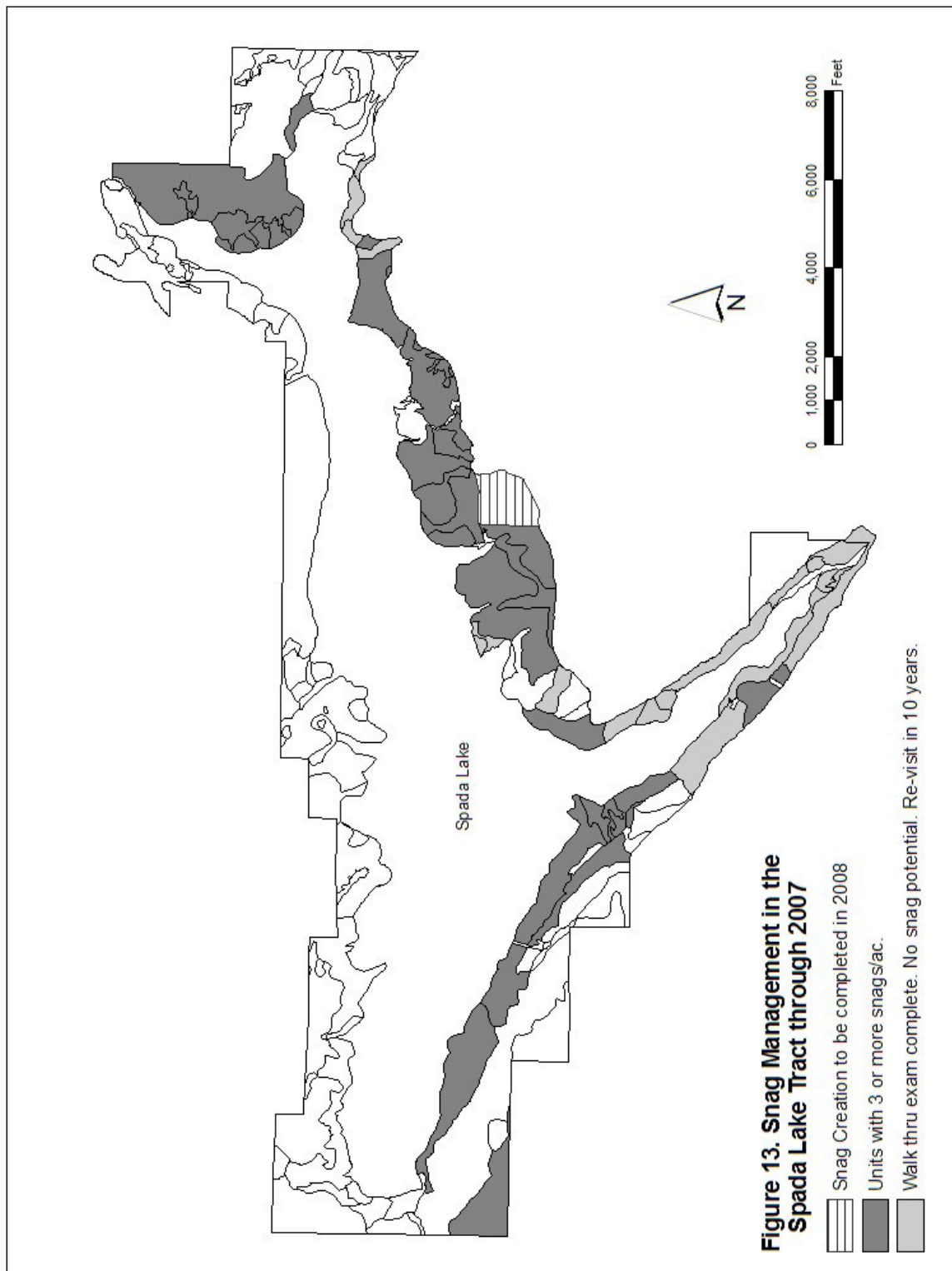


FIGURE 13. SNAG MANAGEMENT IN THE SPADA LAKE TRACT THROUGH 2007

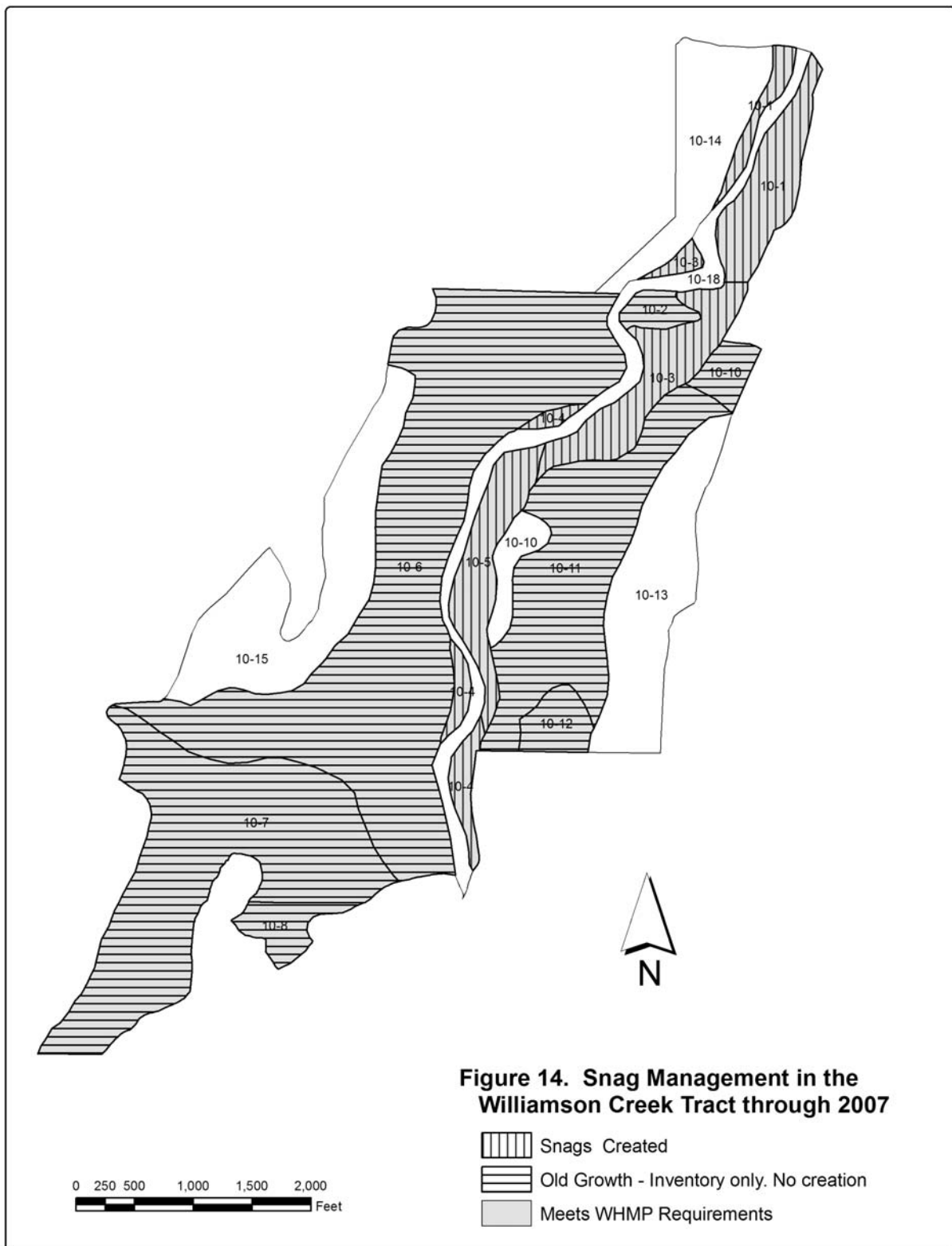


FIGURE 14. SNAG MANAGEMENT IN THE WILLIAMSON CREEK TRACT THROUGH 2007

4.2 COARSE WOODY DEBRIS MANAGEMENT

The 1995 Annual Report described the first inventories of CWD on the Lake Chaplain Tract, and the subsequent development of the CWD management procedure to ensure compliance with WHMP targets. The procedure was implemented on the 1995 Diversion Sale and the 1998 Tiki Sale. The 1995 and 1996 Annual Reports describe more fully the earlier inventories and consultations with the agencies regarding standards for compliance. In 1996, the inventory/monitoring methods were revised following a consultant's review of the procedures, as described in the 1996 Annual Report. The methods were finalized in 1997; field tested, and implemented on the units of the 1998 Tiki Sale, the Linetree Sale, and all subsequent harvest units. CWD management procedures specific to the Williamson Creek Tract were developed in 1999. Created CWD on two units of the 1995 Diversion Sale was monitored in 1999 per the CWD management methods. Table 8 lists CWD logs created on harvest units from 1995 to date.

4.3 REVEGETATION AND NOXIOUS WEED CONTROL

A noxious weed inventory was conducted in 2007, as part of the relicensing studies for the Jackson Project, to document the occurrence of species of noxious weeds and invasive non-native plants. The study area included WHMP lands where Project operations or Project-related maintenance, land use practices, or human activities could promote noxious weeds. National Forest System lands within the riparian corridor between Culmback Dam and the Diversion Dam were also inventoried. Approximately 1,089 acres of land were inventoried. Nineteen species of weeds were recorded. See the District's relicensing web site for the entire report (Jackson Hydroelectric Project Study Plan 8: Noxious Weed Inventory; 2007 Technical Report): http://www.snopud.com/Content/External/Documents/relicensing/Study%20Reports/Jackson2157_SP8_FTR_Jan2008.pdf

4.3.1 Spada Lake Drawdown Zone

Test plots of five wetland emergent species were planted at two sites in October/November 1994 and monitored annually through 2000. One sedge species became somewhat established and spread vegetatively at Williamson Creek. Most plantings at the North Fork Sultan river site were damaged by wave action and floating debris.

Slough sedge (*Carex obnupta*) recruitment on the sites may be the result of the 1994 plantings since most of these plants are in or among the planted rows (1998 Annual Report, Section 3.4.1). However, natural in-seeding of wetland plants on both sites, especially small fruited bulrush and other herbaceous species, has been far more successful in covering the ground than the test plantings so far. The 1997 Annual Report (Section 4.6.1) describes the response of wetland plantings and natural recruitment on these sites with respect to the management of lake elevation. Subsequent monitoring visits (1999 and 2002) document the condition of the planting sites.

Table 8. Summary of Created CWD on Lake Chaplain Harvest Units

UNIT	ACRES	NUMBER LOGS CREATED	# LIVE TREES	# SNAGS AND EXISTING LOGS	AVG. DIAMETER OF TREE	# LOGS/ACRE
Divr1-95	15.6	120	34 Douglas fir	0	25.4	7.7
Divr2-95	19.7	160	30 Douglas fir	18 Douglas fir	23.7	8
Tiki1-98	21	166	32 Douglas fir	5 Douglas fir, 2 Hemlock	29.9	7.9
Tiki2-98	23.8	189	42 Douglas fir	5 Douglas fir, 9 Hemlock	27.9	7.9
Line1-00	14.8	124	29 Douglas fir	5 Douglas fir, 1 Hemlock	26	8.4
Line2-00	22	176	44 Douglas fir	3 Hemlock	25.3	8
Donk1-02	23.5	190	42 Douglas fir	9 Douglas fir, 11 Hemlock	24.2	8.1
Donk2-02	14.3	115	22 Douglas fir, 3 Cedar, 4 Hemlock	2 Hemlock	26.4	8
Donk3-02	7.1	61	13 Douglas fir	1 Douglas fir, 1 Hemlock	25.4	8.6
Phon1-04	10.5	21	*	19 Hemlock, 2 Cedar	17	tbd**
Phon2-04	18.1	30	*	30 Hemlock	18	tbd**
Phon3-05	18.3	153	33 Douglas fir	9 Douglas fir, 6 Hemlock	24.2	8.4
Craz1-07	17.8	153	22 Douglas fir	2 Douglas fir, 1 Hemlock	26.9	8.6
Craz2-07	23.2	196	23 Douglas fir	2 Douglas fir, 4 Hemlock	26.8	8.4
Sum	193.1	1505	327			

* Snags and CWD were not created in Phon1-04 and Phon2-04, as described in the 2002 Annual Report, Sec. 3.1.3, p.4

** See previous footnote and discussion in 2002 Annual Report. Edge of unit and adjacent GTA provide sufficient logs/acre.

4.3.2 Power Pipeline ROW

Annual maintenance on the Pipeline ROW includes mowing to reduce tree growth and to keep the tall grasses from impeding visual inspection of the pipeline corridor. Off-road vehicle intrusion has been reduced greatly compared to the early 1990's, and now occurs primarily when gates are left open during logging operations or to allow recreational access. Noxious weed control is conducted several times each year, as different species are more noticeable at different times of the growing season. Mowing helps to reduce some of the noxious weed

infestations, but herbicide applications outside of riparian buffers and the City of Sultan's watershed are the most effective means of control. Mapping with GPS has helped to promote repeated visits to sites that in previous years were infested, enabling closer monitoring and control of weeds.

4.3.3 Lake Chaplain Tract

The required plantings at the north end of Lake Chaplain were monitored twice annually from the time of planting in 1992 through 1995, and once in the following years. Survival of western red cedar at the north end of the lake from the time of planting to 1998 was 80 percent. Douglas fir saplings have had excellent growth, with overall survival over 90 percent. Excess alders were removed in 1998 and 2001 to release planted conifers and delay conversion of grass/shrub habitat to hardwood thickets. The area was reseeded in 2001 following alder removal.

Species planted in 1993 adjacent to Chaplain Marsh included western red cedar, English holly, huckleberry, serviceberry, red-osier dogwood, nootka rose and red-flowering current. Many volunteer shrubs have grown on the margin of the marsh as well, including Pacific willow, western hemlock, Douglas fir, big-leaf maple, twinberry, spirea, salmonberry, thimbleberry, vine maple and trailing blackberry. The required plantings were monitored twice annually from the time of planting in 1993 through 1995, and once in the following years. Alders growing among the plantings were cut down in 1998 to release the planted shrubs from competition. As a result, the density of the vegetative screen between the Lake Chaplain Road and the marsh decreased temporarily, but the desired species composition was retained. At the time of this annual report, the planted and volunteers shrub layer is sufficiently dense to screen the marsh from view from the road.

4.3.4 Powerhouse Site

Shrub and tree plantings were monitored at least twice each and native thimbleberry, red alder and salmonberry. Volunteer *Buddleia* have been removed annually since 2004. They have proven to be very resilient, and we will continue to remove them wherever they appear. Alder trees that encroach on the shrub/tree clusters have been removed, and will continue to be removed as well.

4.4 NEST STRUCTURES

All of the nest structures that were required by the WHMP have been installed and monitored annually thereafter. In 1990, two floating nest platforms and two duck nest boxes were installed at Lost Lake. One osprey platform was installed at Lost Lake in 1990 and two at Spada Lake in 1992. The additional nest boxes, floating platforms and osprey platform at Lost Lake, Chaplain Marsh, Powerhouse and Spada Lake were installed by the District and provide nesting opportunities beyond what is required in the WHMP.

4.4.1 Floating Nest Platforms

The floating nest platforms provided by the co-licensees have primarily been used for resting and loafing by otters, and occasionally by waterfowl. On only a few occasions have nesting or nesting attempts been noted, and as a result, monitoring is conducted infrequently, while performing other duties at each location.

4.4.2 Nest Boxes

From a high of 53% use to a low of 4.5%, nest box success over the past 18 years has varied greatly. For the past 5 or six years, black bear predation has been the greatest cause of nest box damage and associated reduction in availability to nesting waterfowl. Typically, little evidence exists to determine with any certainty whether nesting had occurred prior to the box being damaged, but studies show that empty boxes are typically not targeted.

4.4.3 Osprey Nest Platforms

Since the osprey platform was installed at Lost Lake in 1990, there have been 5 or 6 years with nesting attempts, with 2 fledglings produced in at least 2 of those years. The osprey returned to the platform only one year since abandoning it, but that attempt was unsuccessful.

The two platforms at Spada Lake have never been successfully used to fledge young. The platform near the South Fork Sultan River was partially built up in 1994, and adult were observed setting on the nest early in the 1995 nesting season, but apparently the nesting attempt failed. In 1996, a natural nest was constructed in the Sultan River gorge about a quarter mile downstream of Culmback Dam. That nest was used for 3 years, when the top of the snag broke, resulting in the osprey constructing another nest on the same hillside in 1999. This nest site has been only casually observed, since it is not on Project lands and is not easily viewed, therefore, results are uncertain.

Four osprey were frequently seen on or near the additional osprey nest platform installed in 2007 north of the Powerhouse between the Sultan river and the District's microwave tower.

4.4.4 Bald Eagle Nest

The natural bald eagle nest constructed along the east shore of Lake Chaplain in 1996 has fledged at least 9 eaglets since initiation, plus an additional chick that left the nest prematurely in 2006. In conjunction with the Washington Department of Fish and Wildlife, the City of Everett created a nest site management plan that restricts timber harvest within 800' of the nest site from February 1 through August 15.

4.5 FOREST VEGETATION MANAGEMENT - LAKE CHAPLAIN TRACT

4.5.1 Road System Layout and Construction

The main road systems for the northeast side of the Tract, the area south of the Diversion Dam Road, and portions of the west side of the tract have been constructed, as shown in Figure 7. Spur roads were constructed to provide access to individual units as needed for harvest. The RMAP for the Lake Chaplain Tract was completed in 2002, and implementation is underway.

4.5.2 Timber Harvest

Harvest activity and sale layout to date are depicted in Figure 7.

There have been some substitutions of final harvest units, as summarized below in Table 9. However, the final harvest program complies with the WHMP's schedule to date, as well as

requirements such as the restriction on harvest unit size. To date, a total of 18 units (approximately 336 acres) have been clearcut. The WHMP's 15-year green-up period between adjacent harvest units has been followed within the Tract, but some units adjacent to clear cuts on State land did not allow the full 15-years. The WHMP allows some flexibility in scheduling harvests (i.e. harvest may occur 5 years before or after the target year) on the Lake Chaplain Tract, and the co-licensees attempt to provide as much green-up time as possible within the WHMP's schedule.

Commercial thinning schedule in the WHMP from 1990 to 2005 was modified for several reasons, including potential problems related to access, soil type and timber type. These issues were discussed more fully in the 1996 Annual Report (Section 4.1.3). After on-site evaluation, it was determined that several units would be eliminated from the commercial thinning schedule. The units, and the reasons for not thinning them, are listed in Table 10. Two units (38 acres) that were not scheduled in the WHMP were thinned in 1993 (Table 10).

4.5.3 Management of Roads and Post-Harvest Units

All final harvest units at Lake Chaplain were seeded with a grass/forb mix on bare areas, and planted with Douglas fir and red cedar seedlings. Road ROW's were also seeded, and access roads outside the closed watershed have been gated to prevent vehicular access by the public.

Seedling survival plots have been established in all harvested units after planting, and the results are monitored for at least two years. One unit, Tiki1-98, was replanted one year after initial replanting due to excessive mountain beaver damage.

Small timber salvage sales were held associated with final harvest of some units:

- 1) adjacent to a 1991 harvest unit following a major storm in January 1993 and,
- 2) adjacent to two 1998 harvest units and access roads in 1998 and 1999.

Other timber salvage work took place in 2004 following severe winter storms blowdown.

Monitoring of stocking levels in post-harvest units was started in 1997. Results that year in unit Chap2-91 showed excessive conifers, adequate overall density of hardwoods, but distribution of hardwood species was clumped. In 1998 some hardwood removal and replanting was done in this harvest unit. In 2001 some hardwood removal was done in Divr2-95, and Chap1-91 was precommercially thinned. Chap3-91 was precommercially thinned in 2002 and Chap2-91 was precommercially thinned in 2004.

Table 9. Modifications of the Final Harvest (FH) Schedule on Lake Chaplain Tract

Unit Name	Scheduled FH	Reasons for Modification
2005-5 ("Gold Camp")	1990	Existing wildlife habitat value is high. Unit Divr2-95 (portions of units originally scheduled for FH in 2005 and 2030) was harvested instead of 1990-5 in 1995
2020-7 ("Gold Camp")	2005	Recent clearcut on adjoining ownership. Harvest will be delayed until 2020 to allow 15 years of green-up. Unit 2000-1 will be harvested instead of 2005-5
2030-3	2005 (part) and 2030 (part)	Units originally scheduled for FH in 2005 and 2030 reconfigured into Divr2-95 and 2030-3

Table 9. Modifications of the Final Harvest (FH) Schedule on Lake Chaplain Tract

Unit Name	Scheduled FH	Reasons for Modification
Phon1	2000-3 (part) and 2035-2 (part)	Portions of units originally scheduled for FH in 2000 and 2035 reconfigured into Phon1
Phon2	2005-3 (part) and 2035-2 (part)	Portions of units originally scheduled for FH in 2005 and 2035 reconfigured into Phon2 (see Section 3.1.3 of this annual report for details)
2015-4	2045-6	Rescheduled to avoid future green-up conflicts
2015-6	2000-5	
2025-2	2045-5	
2045-5	2025-2	
2045-6	2015-6	
2045-7	2015-4	

Table 10. Modifications of the Commercial Thinning (CT) Schedule on Lake Chaplain Tract

Unit	Scheduled CT	Reasons for Modification
2010-1	1990	Wet soil; timber type (hemlock) not suited to CT
2010-2	1990	Wet soil; timber type (hemlock) not suited to CT
2015-2	1995	Wet soil
2020-1	1990	Wet soil
2030-2	2005	Steep slope
2030-3	1990	High potential for blowdown; no benefit expected from CT
Hors1-93*	Not scheduled	Opportunity to improve understory vegetation; CT operationally feasible; FH scheduled in 2040
Hors2-93*	Not scheduled	Opportunity to improve understory vegetation; CT operationally feasible; FH scheduled in 2035

4.6 FOREST MANAGEMENT - SPADA LAKE TRACT

4.6.1 Spada Lake Tract Supplemental Plan

The first Supplemental Plan for the Spada Lake Tract for approximately 1,745 acres of land surrounding Spada Lake that were acquired in 1991, was approved by the FERC in 1997. The Spada Supplement called for commercial and precommercial thinning of some forest stands on the Tract. The first Supplement originally called for thinning treatments on as much as 600 acres, depending on feasibility, during the period 1996-2005. After the Supplement was approved, however, the DNR completed abandonment of the North Shore Road and its tributary

roads from a point east of Recreation Site 8 during the summer 1999 (Figure 15). The road had become inaccessible east of Recreation Site 8 due to a massive landslide in 1997, and the DNR chose to perform the work needed to properly abandon the road, and not to maintain it for vehicular use. Therefore, some of the planned forest management activities, including commercial thinning and precommercial thinning, in units formerly served by this road were affected. With the loss of road access, the only option for future commercial harvest north of the lake would be helicopter logging. The second Supplemental Plan, approved by the FERC in 2007, reflects new management techniques and limitations on road access to the Tract.

4.6.2 Silvicultural Treatments

Three young second growth stands (totaling about 30 acres) on the south shore of Spada Lake were precommercially thinned in September 1996. Two second growth stands totaling about 38 acres on the south fork were precommercially thinned in 2000 and two stands totaling about 38 acres in the northeast corner of the property were precommercially thinned in 2002 (Figure 15).

4.6.3 Timber Harvest

A forestry consultant performed a feasibility study of timber harvest on second growth stands at the Spada Lake Tract that can be accessed by road (see Section 3.1.5 of the 2000 Annual Report). Eight stands were set up for commercial thinning, and Forest Practices applications were approved by the DNR in 2002. Harvest unit boundaries were modified in 2003, following a detailed timber cruise and cost/benefit analysis, and areas requiring road reconstruction and new construction were eliminated from the plan. The modified units (approximately 104 acres) were sold in 2003. Logging began adjacent to unit 9-135 in October 2003 and was completed on the remaining units in May 2004 (Figure 15).

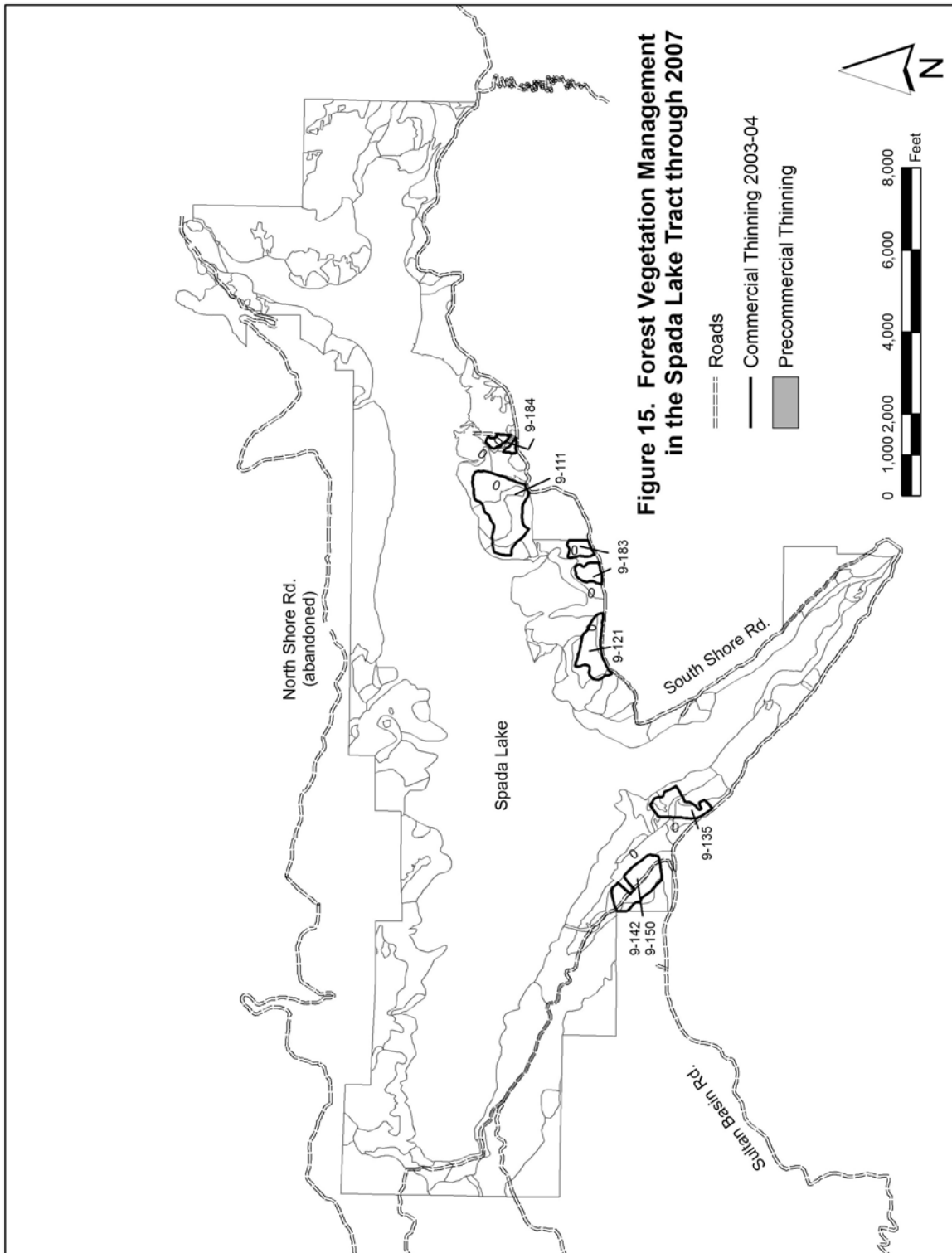


FIGURE 15. FOREST VEGETATION MANAGEMENT IN THE SPADA LAKE TRACT THROUGH 2007

4.7 BIOSOLIDS APPLICATION

The City of Everett applied biosolids on various occasions to harvested units on the Lake Chaplain Tract, as summarized in Table 11.

Table 11. Summary of Biosolids Applications to WHMP Lands

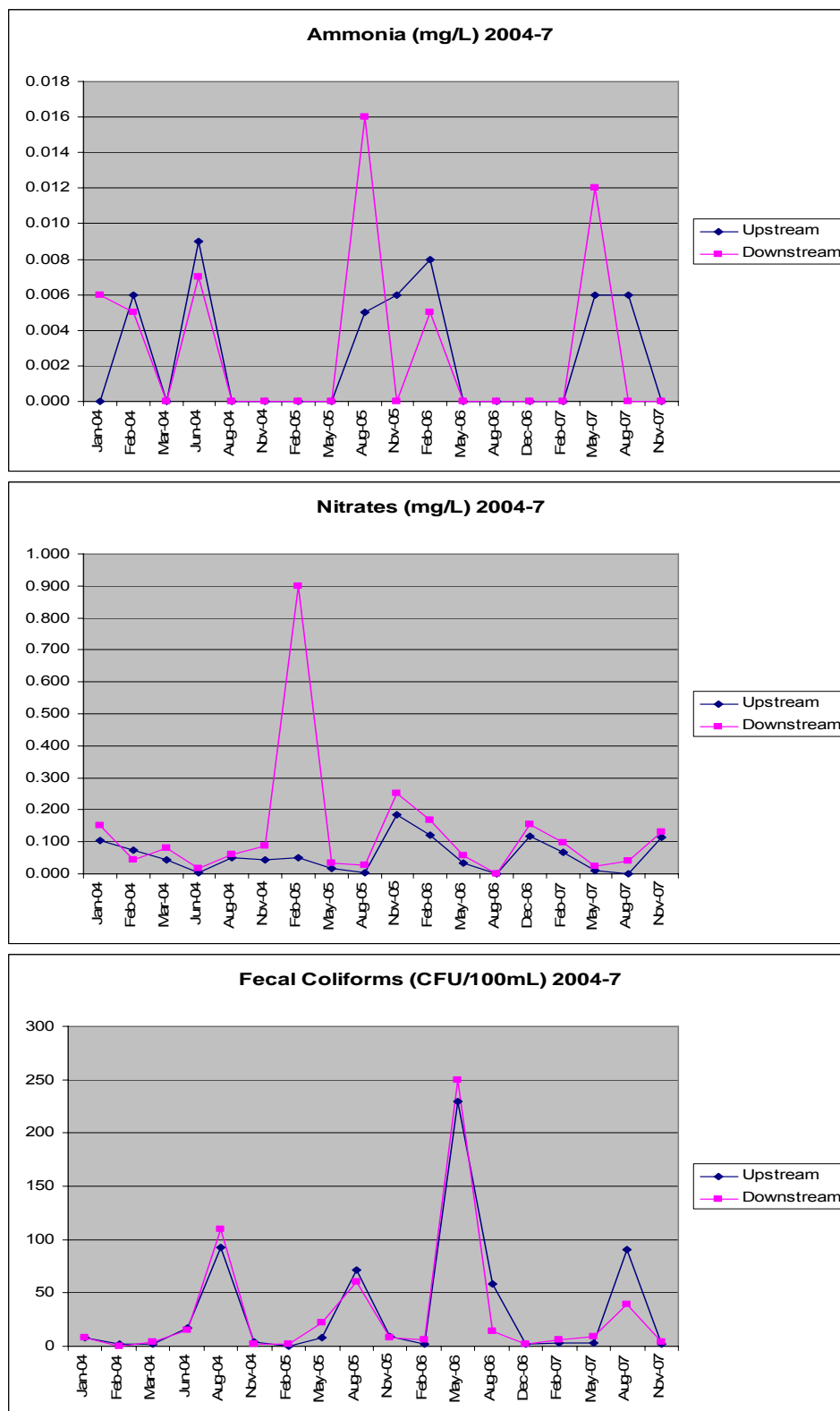
Unit	Year	Product	Application Rate
Hors1-93	1996	biosolids	12.5 dry tons/ac.
Hors2-93	1996	biosolids	12.5 dry tons/ac
Hors1-93,	2000	2:1::biosolids:wood ash	37.5 dry tons/ac.
Hors2-93	2000	2:1::biosolids:wood ash	37.5 dry tons/ac.
Hors3-98	2000	2:1::biosolids:wood ash	45 dry tons/ac.
Divr1-95	2000	2:1::biosolids:wood ash	45 dry tons/ac.
Hors3-93	2005	Biosolids	24 dry tons/ac.
Divr1-93	2005	Biosolids	26 dry tons/ac.
Line2-00	2005	Biosolids	39 dry tons/ac.
Line2-00	2006	Biosolids	8.6 dry tons/ac.

Vegetation monitoring was conducted from 1996 to 1999 and again in 2001 in accordance with the vegetation monitoring plan described in the 1996 Annual Report. No vegetation monitoring was conducted in 2000 because biosolids application at the sample sites disturbed the vegetation.

Two water quality monitoring sites were established on Chaplain Creek to identify possible contamination of the stream from biosolids applied to adjacent harvest units (Hors 1, and 2, and Divr1). Creek waters were sampled monthly beginning in August 1996 through the end of 2001, and at least quarterly afterward. Parameters examined were nitrates, phosphorus, fecal coliforms, ammonia, and chloride. Water quality monitoring has indicated no deleterious biosolids effect on the water quality parameters measured.

Figure 16 compares results from 2004, prior to the most recent biosolids application in the Chaplain Creek drainage, with results from 2005 through 2007. Earlier patterns were reported for fecal coliforms, nitrates and ammonia in the 2002 Annual Report, Section 3.10, and Figures 12-14). Chaplain Creek normally exhibits increases in fecal coliforms during the summer, and nitrates during the winter. The August 2005 spike in ammonia downstream from the biosolids application sites is within the normal range of variation for this contaminant in Chaplain Creek.

FIGURE 16. WATER QUALITY MONITORING 2004-2007



4.8 DEER FORAGE MONITORING

A revised sampling procedure was finalized in 1997, after several other procedures proved unsatisfactory in previous years. The 1997 procedure has been used in monitoring Lake Chaplain Tract harvest units, as listed in the 2004 Annual Report, Table 9.

4.9 LAND ACQUISITION

In 1988 the District purchased the Lost Lake Tract (230 acres) as part of the WHMP requirement. This tract contains a high quality lake and wetlands complex and other high quality wetlands.

The District/USFS/DNR land exchange was completed in 1991. The District acquired over 4000 acres at Spada Lake and Williamson Creek. This included the entire Williamson Creek Tract identified for acquisition in the WHMP. The 376-acre tract includes 268 acres of old growth, 28 acres of mixed forest, 34 acres of riparian forest and at least 6 acres of wetland, all of which will be preserved and protected.

With the exception of existing recreation sites and areas used for hydroelectric operations, the land in the Spada Lake Tract has been incorporated into the wildlife habitat management program as prescribed by the WHMP and the Spada Lake Tract Supplemental Plan. The WHMP called for at least 700 acres from the land exchange be added to the original Spada Tract of 1938 acres. An additional 1,059 acres was obtained in the exchange and incorporated into the WHMP for a current tract of 3,697 acres. The Supplemental Plan was approved by the FERC on April 18, 1997 and will guide future forest vegetation management for that tract. The Spada Tract includes 214 acres of old growth forest, 26 acres of wetlands and over 11 acres of riparian forest.

The City/DNR land exchange was completed in late 1991. All of the land specified in the WHMP in the Lake Chaplain Tract was acquired by the City and dedicated to management under the WHMP.

4.10 WILLIAMSON CREEK TRACT

Monitoring of the Williamson Creek tract has focused on baseline inventories of the stands for snags, CWD, understory vegetation, wetlands and photo-documentation. The status of inventorying on each stand is summarized in Table 12. Note that old growth inventory includes snags, CWD, understory vegetation inventory and photo-documentation. Wetland monitoring will be conducted at least every five years. Baseline inventory was completed in 2003. Monitoring activities will continue in the future.

Field procedures beyond those described in the WHMP have been developed specifically for the Williamson Creek Tract, as described more fully in the Williamson Creek Standard Operating Procedures (PUD 1999). Baseline surveys were conducted in old growth stands to descriptively characterize snags, CWD and understory vegetation. Baseline surveys began in 1998 and were completed in 2003. Snags and CWD were inventoried following the standards for sampling these elements on the Lake Chaplain and Lost Lake Tracts. The minimum size for snags was 10' tall and 11" DBH, for CWD it was 10' long and 11" diameter at the large end. On

the Williamson Creek Tract, transects were located along reasonably accessible walking routes determined in the field. The goal was to sample enough transects within each stand to provide at least 5 percent coverage. Each transect was 330' x 66' (0.5 acres). Understory vegetation on old growth stands was inventoried by sampling 1/100th-acre circular plots at each end of the snag and CWD transects. Species occurrence was noted and notes were taken describing the biologist's overall characterization of the stand. During the surveys, photos were taken to illustrate stand characteristics that the biologists consider representative of these stands and descriptive notes were taken.

Table 12. Williamson Creek Baseline Inventory Summary, Completed 2003

Stand #	% Complete	Type of Inventory	Year of Inventory
10-1	100	Snags, CWD, photo-doc.	2000
10-2	100	Old growth	2000
10-3	100	Snags, CWD, photo-doc	2000
10-4	100	Snags, CWD, photo-doc	2000
10-5	100	Snags, CWD, photo-doc	2000
10-6	100	Old growth	2000,2002,2003
10-7	100	Old growth	1999,2000,2003
10-8	100	Old growth	2003
10-9	100	Old growth	1999
10-10	100	Wetlands	1998
10-11	100	Old growth	2001,2002
10-12	100	Old growth	2001
10-13	100	Photo-doc	1998
10-14	100	Photo-doc	1998,1999
10-15	100	Photo-doc	1999

Tables 13 and 14 summarize baseline inventory data for natural snags and CWD collected to date. Additional snags have been created in stands 10-1, 10-3, 10-4 and 10-5 (Table 7). The number of snags on the old growth stands ranges from 1.3 to 12.3 per acre. The amount of CWD on old growth stands ranges from 12.0 to 52.4 per acre.

The second growth and riparian forested stands (10-1, 10-3, 10-4, and 10-5) adjacent to Williamson Creek (Figure 14) were inventoried in 2000. The WHMP calls for retaining stands 10-1 and 10-4 as riparian forest without harvesting through the life of the plan. These stands were cover-typed as riparian, mixed, and small saw timber coniferous forest in the WHMP, which requires snag management, maintenance and monitoring in these stands. No snags were found within the transects in stand 10-1 and an average of 1.8 natural snags/acre were found within the transects in stand 10-4 (Table 13). Snags were created in 2001 in stand 10-1 and were completed in 2002 (Table 7). This stand is primarily composed of small (10-15") conifers and alders. As a result, snag creation potential is limited at this time. Snag creation in stand 10-4 was completed in winter 2001, with 13 snags created (Table 7).

Table 13. Williamson Creek Tract Natural Snag Cumulative Inventory Summary, Completed 2003

Stand #	Cover Type	Snags/ac (all decay classes)	Avg. Diameter (in.)	Avg. Height (ft.)
10-1	Small Saw/Riparian	0.0	0.0	0.0
10-2	Old Growth	1.3	15.1	12.0
10-3	Riparian/Mixed	0.4	21.8	14.0
10-4	Riparian/Mixed	1.8	17.0	32.6
10-5	Large Saw/Riparian	2.8	24.3	31.3
10-6	Old Growth	12.3	31.3	34.6
10-7	Old Growth	11.1	29.3	38.5
10-8	Old Growth	9.0	31.0	43.8
10-9	Old Growth	9.5	24.2	45.0
10-11	Old Growth	5.6	29.9	43.6
10-12	Old Growth	6.0	30.7	38.3

Table 14. Williamson Creek Natural CWD Cumulative Inventory Summary, Completed 2003

Stand #	Cover Type	CWD/ac. (all decay classes)	Avg. Diameter (in.)	Avg. Length (ft.)
10-1	Small Saw/Riparian	3.0	24.3	25.7
10-2	Old Growth	12.9	19.8	63.6
10-3	Riparian/Mixed	4.0	18.8	24.7
10-4	Riparian/Mixed	1.5	27.3	50.8
10-5	Large Saw/Riparian	2.1	19.7	56.5
10-6	Old Growth	38.0	22.8	40.6
10-7	Old Growth	21.1	29.0	49.2
10-8	Old Growth	12.0	29.5	54.7
10-9	Old Growth	52.4	24.0	43.9
10-11	Old Growth	37.6	25.7	41.8
10-12	Old Growth	36.0	24.9	54.7

The WHMP calls for retaining stands 10-3 and 10-5 for late successional stage species. These stands were cover-typed as mixed, deciduous, riparian, and large saw timber coniferous forests

in the WHMP, which requires ensuring adequate snags and CWD on these two stands. Snag management and monitoring is required for the life of the plan. The baseline snag and CWD inventories were completed in these two stands in 2000. The average number of snags/acre was 0.4 and 2.8 on stands 10-3 and 10-5 respectively (Table 13). The average number of CWD/acre was 3.9 and 2.1 on stands 10-3 and 10-5 respectively (Table 14). Snag creation was completed for both stands during the fall/winter of 2001. Twenty-eight snags were created in stand 10-3 and 12 snags were created in stand 10-5 (Table 7). Stand 10-3 had several irregularly distributed pockets of natural snags which were found, and thereby reduced the number of created snags required.

4.11 LAND MANAGEMENT

The co-licensees have worked with landowners in the Sultan Basin since the WHMP was initiated in an effort to coordinate land use activities so that they are consistent with, or at least do not interfere with management of the WHMP. Activities on adjacent property have included recreational pursuits, timber harvest, surveying, and road maintenance and abandonment.

The DNR is in the process of preparing a Natural Resource Conservation Area (NRCA) plan for the Upper Sultan Basin and the co-licensees have been following that process and providing input since 1999. The co-licensees have provided comments to DNR during the planning process and on working drafts of the plan.

In compliance with Washington Forest Practice Rules (WAC 222-24-050 through 052), the District prepared and submitted in 2001, a Road Maintenance and Abandonment Plan (RMAP) Inventory Scheduling Proposal and an RMAP covering all of the District owned wildlife mitigation lands. Implementation of the RMAP began in 2002. Spur roads SL-22, SL-61, SL-48 and SL-67 were officially abandoned in the Sultan Basin under WAC 222-24-052(3). The District hired a geotechnical engineer in 2003 to prepare plans for maintaining the road from Olney Pass to the dam. Plans were completed, appropriate permits were obtained and the work was completed in spring 2005. District biologists observed Culmback Dam Road repairs and stayed apprised of activities to assure that Forest Practices were followed. The City completed its RMAP for the Lake Chaplain Tract in 2002 and obtained DNR approval.

The District and the DNR negotiated a Routine Road Maintenance Agreement in 2001 for roads associated with project mitigation lands in the Sultan Basin. Annual meetings are held between the co-licensees and DNR to discuss road and land management activities. Also in 2001, a supplemental easement was obtained on a portion of road CD-147 (see District RMAP) owned by DNR.

4.12 JACKSON PROJECT RELICENSING

The District and City filed the Notice of Intent and Pre-Application Document with FERC in December 2005. Scoping meetings were held by FERC in February 2006. A Proposed Study Plan was submitted in May 2006 and a Revised Study Plan was filed in September 2006. The first study season was conducted in 2007 and the Initial Study Report was filed in October of 2007. Technical Reports for the studies are in various stages. Final Technical Reports have been completed for Study Plan 6: Habitat Management Methods Literature Review and Evaluation, Study Plan 7: Special Status Plant Survey, and Study Plan 8: Noxious Weed Inventory.

5.0 WORK PLANNED FOR 2008

5.1 FOREST VEGETATION MANAGEMENT

Tree seedlings will be planted on both units of the Crazy Bear Timber Sale on the Lake Chaplain Tract and will be monitored for survival and vigor. All bare areas of both Crazy Bear Timber Sale harvest units will be seeded with a grass/forb mixture.

The density and distribution of hardwoods will be evaluated on selected older units. The older plantations will be monitored for bear damage. In some units, including Divr2-95, it is possible that hardwood density in certain patches may be reduced; however, the target hardwood overstory composition will remain 5 to 10 percent.

5.2 SNAG MANAGEMENT

In 2008, snag management will focus on units at the Lake Chaplain Tract where 10 years has elapsed since initial snag creation began. These units will be re-inventoried and each created snag will be revisited to verify its status. Any deficiencies in snag quotas will be remedied at that time. Also, stands along the South Shore Road at Spada Lake will be inventoried, with creation to follow.

5.3 REVEGETATION

5.3.1 Spada Lake Drawdown Zone

Annual monitoring of wetland plantings and natural recruitment of vegetation was completed in 2002, but the sites may be informally monitored when District staff is in the vicinity.

5.3.2 Power Pipeline Right-of-Way

Weed survey data from Study Plan 8: Noxious Weed Inventory 2007 Technical Report will be used to target control efforts, with new locations and control efforts added to the GIS database.

5.3.3 Lake Chaplain Tract and Powerhouse Site

Monitoring and routine maintenance will be conducted as in previous years. Some tree seedlings and small shrubs may be added to plantings in the Sultan Bridge area to compensate for ground cover plantings that did not survive in 2004.

5.4 NEST STRUCTURES

Floating nest platforms will be monitored when other activities are conducted at Lost Lake and Spada Lake, and will be checked at the end of the nesting season to record any signs of use.

Nest boxes will be cleaned and repaired as necessary by the end of February in preparation for the upcoming nesting season. Due to the increasing problem of predation, when reinstalled, boxes will be placed further apart and each tree will be wrapped with three to four vertical feet of flashing, in an attempt to deter bears from climbing the trees. Until the success of these measures can be determined, boxes that have been damaged may not be replaced. Boxes will be checked in early summer to record species use and nesting success rates.

The osprey platforms at Spada and Lost Lakes, and the bald eagle nest at Lake Chaplain will be monitored in conjunction with other activities, but typically at least once per month, to record nesting use.

5.5 DEER FORAGE MONITORING

The following harvest units will be monitored in 2008: Line1-00.

5.6 WILLIAMSON CREEK TRACT

Baseline inventories have been completed on the Williamson Creek Tract. Monitoring will occur on the wetlands, old growth and mixed forest stands on a continuing, but less intense basis.

5.7 LAND MANAGEMENT

The District will continue implementation of the RMAP and will prepare and submit an annual report to DNR. The City will implement its RMAP on the Lake Chaplain Tract.

The co-licensees will continue to work with DNR on their NRCA plan for the Upper Sultan Basin, providing comments and suggestions on plans (habitat objectives, fire management, etc.) as needed and coordinating land management in the basin.

5.8 JACKSON PROJECT RELICENSING

District biologists will participate in implementing relicensing second study season and other associated relicensing activities.

5.9 SPADA LAKE TRACT SUPPLEMENTAL PLAN

The Spada Supplemental Plan for the period 2006-2015 will continue to be implemented.

5.10 SECURITY MEASURES AT LAKE CHAPLAIN/JACKSON PROJECT FACILITIES

The District will continue existing security measures at Lake Chaplain and at Jackson Project Facilities.

6.0 PLANNED ACTIVITIES FOR 2008

Major Activities	Location	Quantity
Monitor Thinning Units	Spada Lake Tract	All commercial thinning units
Final harvest unit monitoring	Lake Chaplain Tract, Crazy Bear, older plantations	3 units, others TBD
Reforestation	Lake Chaplain Tract, Crazy Bear	250 Douglas-fir seedlings per acre plus grass/forb seeding per SOP
Snag Inventory	Spada Lake Tract & Lake Chaplain	8+ units at Spada Lake; 10+ units due for 10-year re-inventory at Lake Chaplain
Snag Creation	Spada Lake Tract & Lake Chaplain	8+ units at Spada Lake; as required by 10-year re-inventory at Lake Chaplain
Nest Structures	Lost Lake, Spada Lake, Project Facility Lands Tract and Chaplain Tract	Clean and repair existing structures as needed
CWD Creation	n/a	No units slated for harvest in 2008.
Revegetation:		
Grass seeding/fertilizer Shrub plantings	Pipeline ROW	As needed to improve bare spots
Monitoring:		
Revegetation Site Monitoring/Maintenance	West side, Chaplain Marsh North end, Lake Chaplain Powerhouse site Pipeline ROW	Monitoring of all planted/seeded areas. Maintenance as needed: Weeding, brush thinning, etc.
Deer Forage	Lake Chaplain Tract	1 unit
Snags	Lake Chaplain, Lost Lake Tracts	Subset of created snag trees to document use and longevity
Nesting Structures	Lost Lake, Spada Lake, Project Facility Lands, and Chaplain Tract	Monitor all structures
Wetland Monitoring	Spada Lake Tract and downstream of Culmback Dam	Wetlands identified in relicensing Study Plan 18
Williamson Creek monitoring	Williamson Creek Tract	Wetlands
Noxious weeds	All WHMP lands	Develop monitoring plan SOP and control

Major Activities	Location	Quantity
		weeds as needed
Biosolids Application	Lake Chaplain Tract	TBD
Understory monitoring		None planned
Water quality monitoring	Chaplain Creek	2 stations
GTA and BZ Management	All established units	Boundary tag, monitor and develop long-term management plans
Land Management	Spada Lake Tract	RMAP implementation.
	Lake Chaplain Tract	RMAP implementation
Relicensing	All WHMP lands	Implement study plans; related relicensing activities.
Spada Lake Tract Supplemental Plan	Spada Lake Tract	Focus actions on South Shore Road area

APPENDIX 1 – WHMP IMPLEMENTATION MILESTONES & PAST REPORT CROSS-REFERENCE TABLE

General Activity Category	Management Tract	Milestone	Annual Report Reference – (Section/page #)
Timber Harvest	Lake Chaplain	Chaplain Sale	1991 (3.3.1, p.6), 1992 (3.2.1, p.4)
	Lake Chaplain	Horseshoe Sale	1992 (3.2.2, p.6), 1993 (3.1.1, p.6)
	Lake Chaplain	Diversion Sale	1995 (3.1.1, p.6)
	Lake Chaplain	Tiki Sale	1997 (3.1.1, p.2), 1998 (3.1.1, p.2)
	Lake Chaplain	Line Tree Sale	1997 (3.1.1, p.2), 1998 (3.1.2, p.5), 1999 (3.1.2, p.2), 2000 (3.1.1, p.4)
	Lake Chaplain	Donkey Damper Sale	1999 (3.1.4, p.5), 2000 (3.1.1, p.4), 2002 (3.1.3, p.4)
	Lake Chaplain	Phone Line Sale	2002 (3.1.3, p.4), 2004(3.1.1 p.9), 2005 (3.1.1, p.7), 2006(3.1.1 p.4)
	Lake Chaplain	Crazy Bear Sale	2004 (3.1.5, p.11), 2005 (3.1.2, p.7), 2006 (3.1.2, p.4)
	Lake Chaplain	Salvage Sales	1993 (3.1.2, p.6), 1998 (3.1.1, p.2), 1999 (3.1.1, p.2), 2004 (3.1.4, p.9)
Reforestation	Lake Chaplain	Chaplain Sale	1992 (3.2.1, p.4)
	Lake Chaplain	Horseshoe Sale	1993 (3.1.1, p.6), 1994 (3.1.3, p.5)
	Lake Chaplain	Diversion Sale	1996 (3.1.1, p.4)
	Lake Chaplain	Tiki Sale	1999 (3.1.1, p.2), 2000 (3.1.2, p.4)
	Lake Chaplain	Donkey Damper Sale	2002 (3.1.2, p.4)
	Lake Chaplain	Line Tree Sale	2000 (3.1.2, p.4)
Roads	Lake Chaplain	S1000 (Chaplain Sale)	1991 (3.3.1, p.6)
	Lake Chaplain	C1300 (Chaplain Sale)	1991 (3.3.1, p.6)
	Lake Chaplain	C1900 (Tiki Sale)	1997 (3.1.2, p.5)
	Lake Chaplain	SP1500 (Tiki Sale)	1997 (3.1.2, p.5)
	Lake Chaplain	SP1000 (Tiki Sale)	1997 (3.1.2, p.5)
	Lake Chaplain	SP1300 (Tiki Sale)	1997 (3.1.2, p.5)
	Lake Chaplain	(Linetree Sale)	1999 (3.1.3, p.5)
	Spada Lake	North Shore Road	1997 (4.3, p.28), 1999 (3.8, p.26)
Forest Vegetation Management	Lake Chaplain	Precommercial Thinning, Hardwood Reduction	1999 (3.1.5, p.5), 2001 (3.1.4, p.4), 2002 (3.1.4, p. 7), 2004 (3.1.2, p.9), 2006 (3.1.3, p.4)
	Lost Lake	Precommercial Thinning	1991 (3.3.2, p.9)
	Spada Lake	Precommercial Thinning	1996 (3.1.5, p.6), 2000 (3.2.1, p.6), 2002 (3.2.2, p.7)

	Lost Lake	Harvest Planning	2000 (3.2.2, p.6), 2002 (3.3, p.7)
	Spada Lake	Harvest Planning	2000 (3.2.3, p.7), 2002 (3.2.2, p.7), 2003 (3.2, p.2)
	Spada Lake	Commercial Thinning	2004 (3.2, p.11), 2006 (3.2, p.4)
GTA Management	Lake Chaplain	Chaplain Sale Unit 1	1994 (3.1.3, p.5)
Snag Management	Lake Chaplain	Implementation Decisions	1990 (3.3, p.6), 1993 (3.2, p.8), 1996 (3.2, p.6)
	Lake Chaplain and Lost Lake	Snag Inventory Results	1991 (3.4, p.9), 1992 (3.3, p.6), 1995 (3.2, p.7), 1997 (3.2.2, p.7), 1998 (3.2.1, p.5), 1999 (3.2.1, p.5), 2000 (3.3.1, p.9), 2005 (3.3, p.11)
	Lake Chaplain	Snag Creation	1990 (3.3, p.6), 1991 (3.4, p.12), 1992 (3.3, p.6), 1993 (3.2, p.8), 1994 (3.2, p.6), 1995 (3.2, p.7), 1996 (3.2, p.6), 1997 (3.2.2, p.7), 1998 (3.2.1, p.7), 1999 (3.2.1, p.5), 2000 (3.3.1, p.9), 2006 (3.3.1, p.4)
	Lake Chaplain and Lost Lake	Snag Monitoring and Mapping	1998 (3.2.2, p.7), 1999 (3.2.2, p.9), 2002 (3.4.3, p.15), 2003 (3.3.1, p.9), 2003 (3.3.2, p.10)
	Williamson Creek	Snag Creation	2002 (3.4.1, p.10))
	Spada Lake	Snag Creation	2002 (3.4.1, p.10), 2003 (3.3.1, p.4), 2004 (3.3.1, p.11), 2006 (3.3.2, p.6)
	Williamson Creek	Snag Inventory	2002 (3.10, p.33)
CWD Management	Lake Chaplain	Implementation Decisions	1991 (3.10.2, p.27), 1992 (3.9.2, p.12), 1993 (4.5, p.22), 1994 (3.6.6, p.10), 1995 (3.3.2, p.11), 1995 (Appendix A-Exhibits 1-3), 1996 (3.3, p.10)
	Lake Chaplain	CWD Inventory Results	1991 (3.10.2, p.27), 1993 (3.7.2, p.14), 1995 (Appendix A-Exhibit 4)
	Lake Chaplain	CWD Creation	1994 (4.7.6, p.18), 1995 (3.3.1, p.7), 1995 (Appendix A-Exhibit 4), 1998 (3.3, p.9)
	Lake Chaplain	CWD Monitoring	1998 (3.3, p.9), 1999 (3.3, p.5), 2000 (3.3.2, p.9)
	Williamson Creek	CWD Inventory Results	2002 (3.10, p.33)

General Activity Category	Management Tract	Milestone	Annual Report Reference – (Section/page #)
Revegetation	Spada Lake	Drawdown Zone Test Plantings and Monitoring	1994 (3.3.1, p.6), 1995 (3.4.1, p.12), 1996 (3.4.1, p.10), 1997 (3.4.1, p.10, Fig.4), 1998 (3.4.1, p. 10), 1999 (3.4.1, p.11), 2002 (3.5.1, p.15)
	Pipeline ROW	Revegetation Design	1991 (3.5, p.19)
	Pipeline ROW	Seeding and Monitoring	1992 (3.4, p.10), 1993 (3.3, p.11), 1994 (3.3.2, p.7), 1996 (3.4.2, p.11), 1997 (3.4.2, p.11), 1998 (3.4.2, p. 10), 1999 (3.4.2, p.11), 2000 (3.4.1, p.13), 2001 (3.5.1, p.14), 2002 (3.5.2, p.16), 2003 (3.4.2, p.11)
	Pipeline ROW	Plant shrubs and trees	1997 (3.4.2, p.11), 1998 (3.4.2, p.10), 1999 (3.4.2, p.12), 2002 (3.5.2, p.15)
	Pipeline ROW	Place tree root wads	1989 (3.3, p.3), 1995 (3.4.2, p.13)
	Lake Chaplain	Revegetation Design	1991 (3.5, p.19)
	Lake Chaplain	Plantings at north end of lake and monitoring	1992 (3.4, p.10), 1998 (3.4.5, p.12), 1999 (3.4.5, p.12), 2000 (3.4.2, p.13), 2001 (3.5.2, p.15)
	Lake Chaplain	Plantings along Chaplain Marsh and monitoring	1993 (3.3, p.11), 1998 (3.4.3, p.12), 1999 (3.4.3, p.12)
	Powerhouse	Revegetation Design	1991 (3.5, p.19)
	Powerhouse	Plant shrubs and trees and monitoring	1993 (3.3, p.11), 1997(3.4.4, p.13), 1999 (3.4.3, p.12), 2003 (3.4.1, p.10)
Noxious Weed Control	Pipeline ROW	Mapping and control	2004 (3.4, p. 15), 2005 (3.4.2, p.11), 2006 (3.4.2, p. 10)
	Lake Chaplain	Mapping and control	2004 (3.4, p. 15), 2005 (3.4.1, p.11), 2006 (3.4.1, p. 10)
	Spada Lake	Mapping and control	2004 (3.4, p. 15), 2006 (3.4.3, p. 10)
	Lost Lake	Mapping and control	2004 (3.4, p. 15), 2005 (3.4.3, p.11)
Nest Structures	Lost Lake	Floating platforms	1991 (3.6, p.20), 1992 (3.5, p.10), 1993 (3.4, p.11), 1998 (3.5.1, p.13), 1999 (3.5.1, p.14), 2000 (3.5.1, p.13), 2002 (3.62, p.18), 2003 (3.5.1, p.11), 2004 (3.5.1, p.16), 2005 (3.5.1, p.13), 2006 (3.5.1, p. 10)

General Activity Category	Management Tract	Milestone	Annual Report Reference – (Section/page #)
Nest Structures (cont.)	Lost Lake	Duck nest boxes	1990 (3.7, p.8), 1995 (3.5.2, p.16), 1996 (3.5.2, p.13), 1999 (3.5.2, p.14), 2000 (3.5.2, p.13), 2002 (3.6.2, P.18), 2003 (3.5.2, p.11), 2004 (3.5.2, p.16), 2005 (3.5.2, p. 13), 2006 (3.5.2, p. 11)
	Lost Lake	Osprey Platform	1990 (3.8, p.8), 1999 (3.5.3, p.19), 2000 (3.5.3, p.19), 2002 (3.6.3, P.22), 2003 (3.5.3, p.16), 2004 (3.5.3, p.22), 2005 (3.5.3, p. 18), 2006 (3.5.3, p. 11)
	Lake Chaplain	Floating platforms	1991 (3.6, p.20), 1992 (3.5, p.10), 1993 (3.4, p.11), 1994 (3.4, p.7), 1999 (3.5.1, p.14).
	Lake Chaplain	Duck Nest Boxes	1993 (3.5, p.11), 1995 (3.5.2, p.16), 1996 (3.5.2, p.13), 1997 (3.5.1, p.16), 1999 (3.5.2, p.14), 2000 (3.5.2, p.13), 2002 (3.6.2, p.18), 2003 (3.5.2, p.11), 2004 (3.5.2, p.16), 2005 (3.5.2, p. 13), 2006 (3.5.2, p. 11)
	Spada Lake	Floating Platforms	1996 (3.5.1, p.13), 1997 (3.5.1, p.16), 1999 (3.5.1, p.14), 2000 (3.5.1, p.13), 2002 (3.6.1, p. 18), 2003 (3.5.1, p. 11), 2004 (3.5.1, p.16), 2005 (3.5.1, p. 13), 2006 (3.5.1, p. 10)
	Spada Lake	Duck Nest Boxes	1996 (3.5.2, p.13), 1998 (3.7, p.18), 1999 (3.5.2, p.14), 2000 (3.5.2, p.13), 2002 (3.6.2, p.18), 2003 (3.5.2, p.11), 2004 (3.5.2, p.16), 2005 (3.5.2, p. 13), 2006 (3.5.2, p.11)
	Spada Lake	Osprey Platforms	1992 (3.7, p.11), 1999 (3.5.3, p.19), 2000 (3.5.3, p.19), 2002 (3.6.3, p.22), 2003 (3.5.3, p.16), 2004 (3.5.3, p.22), 2005 (3.5.3, p. 18), 2006 (3.5.3, p. 11)
Bald Eagle Nest	Lake Chaplain	Monitoring	1997 (3.5.4, p.19), 1998 (3.5.4, p.18), 1999 (3.5.4, p.20), 2000 (3.5.4, p.20), 2002 (3.6.4, p.22), 2003 (3.5.4, p.16), 2004 (3.5.4, p.22), 2005 (3.5.4, p.18), 2006 (3.5.4, p.11)

General Activity Category	Management Tract	Milestone	Annual Report Reference – (Section/page #)
Biosolids Application	Lake Chaplain	Biosolids Application	1996 (3.8, p.18), 1998 (3.7, p.18), 2000 (3.7, p.20), 2005 (3.7, p.20), 2006 (3.7, p. 17)
	Lake Chaplain	Monitoring	1996 (3.8, p.18), 1997 (3.7, p.19), 2000 (3.7, p.20), 2002 (3.8, p.23), 2004 (3.7, p.24), 2005 (3.7, p. 23), 2006 (3.7, p. 19)
Deer Forage Monitoring	Lake Chaplain	Implementation Decisions & Methods	1991 (3.10.1, p.21), 1996 (3.9, p.18) 1997 (3.8.1, p.19)
		Forage Availability Results	1991 (3.10.1, p.22), 1996 (3.9, p.18) 1997 (3.8.2, p.22), 1998 (3.8, p.18), 1999 (3.7, p.20), 2000 (3.8, p.24), 2002 (3.9, p.23), 2003 (3.8, p.18), 2004 (3.8, p.24), 2005 (3.8, p. 23), 2006 (3.8, p.19)
		Utilization Results	1991 (3.10.1, p.22)
Land Acquisition	Lost Lake		1989 (3.1, p.2)
	Lake Chaplain		1991 (3.1, p.3)
	Spada Lake		1990 (3.1, p.2)
	Williamson Creek		1991 (3.1, p.3)
Management Plans & Land Use Decisions	Lake Chaplain	Chaplain Property Comprehensive Plan	1995 (3.7, p.17)
	Lake Chaplain	Shoreline Zone development permit	1995 (3.7, p.17)
	Lake Chaplain	Zoning Code change	1996 (3.7, p.15)
	Lake Chaplain	Bald Eagle Nest Site Management Plan	1997 (Attachment 1)
	Lost Lake	Concrete Ford Installation	1991 (3.2, p.3)
	Spada Lake	Supplemental Plan	1997 (Attachment 2), 2004 (3.14, p.29)
	PUD Properties	Road Maintenance and Abandonment Plan	2002 (3.12, p.36), 2003 (3.11, p.24), 2004 (3.10, p.24), 2005 (3.10 p.23), 2006 (3.10, p.19)
	Lake Chaplain	Road Maintenance and Abandonment Plan	2002 (3.11, p.36), 2005 (3.9, p. 23), 2006 (3.9, p.19)

General Activity Category	Management Tract	Milestone	Annual Report Reference – (Section/page #)
Special Agency Consultation	All management tracts	Agency tour of WHMP Sites FERC Environmental Inspection	1997 (3.9, p.22), 2004 (Appendix 1) 1999 (3.9, p.31), 2003 (3.13, p.27)
Security Measures	Lake Chaplain and JHP Facilities	Heightened security measures	1994 (3.3.2, p.7), 2002 (3.13, p.36), 2003 (3.12, p.27, 2004 (3.11, p.27), 2005 (3.11, p. 26), 2006 (3.10, p. 26)
Other Monitoring	Williamson Creek	Monitoring	1999 (3.8, p.26), 2000 (3.9, p.24), 2002 (3.10, p.24), 2003 (3.0, p.18)
Relicensing	All	Follow ILP	2004 (3.12, p.27)
	All	Conduct Studies	2005 (3.12, p. 26), 2006 (3.12, p. 26)