

Henry M. Jackson Hydroelectric Project

(FERC No. 2157)



Terrestrial Resources Management Plan: 2024 Annual Report (*T-LA 1*)

Submitted by:



Everett, WA

April 2025

Final – This document has been prepared for the District. It has been peer-reviewed by the District for accuracy and formatting based on information known at the time of its preparation and with that understanding is considered complete by the District. The document may be cited as:

District. 2024 Annual Terrestrial Resource Monitoring Report, License T LA-1, for the Henry M. Jackson Hydroelectric Project, FERC No. P-2157. April 2025.

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LIST OF ACRONYMS AND ABBREVIATIONS

City	City of Everett, Washington
CWD	coarse woody debris
DBH	diameter at breast height (4.5')
DLTs	decaying live trees
DNR	Washington Department of Natural Resources
FERC	Federal Energy Regulatory Commission
GPS	Global Positioning System
MMHPP	Marbled Murrelet Habitat Protection Plan
NWMP	Noxious Weed Management Plan
Project	Henry M. Jackson Hydroelectric Project, FERC No. 2157
RRMP	Recreation Resource Management Plan
ROW	right-of-way
SCNWCB	Snohomish County Noxious Weed Control Board
Snohomish PUD	Public Utility District No. 1 of Snohomish County
Tribes	Tulalip Tribes of Washington
TRMP	Terrestrial Resources Management Plan
WDFW	Washington Department of Fish and Wildlife
WHS	woody habitat structures
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service Mt. Baker-Snoqualmie National Forest

EXECUTIVE SUMMARY

Activities accomplished in 2024 pursuant to the Terrestrial Resources Management Plan (TRMP), Noxious Weed Management Plan (NWMP), and Marbled Murrelet Habitat Protection Plan (MMHPP) for the Henry M. Jackson Hydroelectric Project (Project) are summarized in this report. Implementation of these three plans was initiated following the Federal Energy Regulatory Commission (FERC) Order Issuing New License effective on 2 September 2011. Requirements of each plan were met during the 2024 action year. No problems were encountered during implementation. Tasks scheduled for 2025 are presented. No significant changes are proposed for the management plans; however, a temporary modification is proposed to allow short segment road construction, followed by deconstruction, to support thinning activities in 2025.

TASKS ACCOMPLISHED DURING 2024:

- Created 701 snags, decaying live trees, coarse woody debris logs and canopy gaps on the 149.2 acres of the Spada Lake tract to promote mature forest characteristics in younger aged stands and provide decaying woody structures absent in much of the forest.
- Continued an intensive effort to manage invasive weeds on all TRMP tracts of land, with a concentrated effort to control weed infestations within the Spada Lake Reservoir watershed.
- Maintained and monitored waterfowl nest boxes at Lost Lake.
- Preserved and protected old growth forest, wetlands, and riparian forest on Project lands.
- Followed the restrictions of the MMHPP in all Project related activities, including implementation of the Recreation Resource Management Plan, woody habitat structure creation, snow surveys, and planning for commercial thinning on Spada Lake lands.
- Snohomish PUD biologists coordinated with Project staff regarding operations and maintenance activities to ensure that all Project activities were conducted in accordance with the TRMP, NWMP, and MMHPP.

TASKS SCHEDULED FOR 2025:

- Complete annual evaluation of approximately 225 acres of land on the Spada Lake, Williamson Creek and Lost Lake tracts for creation of decaying live trees, snags, coarse woody debris logs, and canopy gaps, a subset of which will have woody habitat structure creation occurring for the second time under the existing FERC license.
- Plan and implement commercial thinning on select stands to improve mature forest characteristics.
- Continue implementation of woody habitat structure monitoring program to evaluate effectiveness and utilization of canopy gaps and created woody structures.
- Continue to manage noxious and invasive weeds on all TRMP tracts of land.
- Continue preservation and protection of old growth forest, wetlands, and riparian forest on Project lands.
- Continue to maintain and monitor waterfowl nest boxes at Lost Lake.
- Continue coordination with engineering, operations, and maintenance staff on Project activities to ensure that the TRMP, NWMP and MMHP are considered when activities are being planned and adhered to when activities are conducted.

1.0 INTRODUCTION

The Terrestrial Resources Management Plan (TRMP), Noxious Weed Management Plan (NWMP), and Marbled Murrelet Habitat Protection Plan (MMHPP) for the Henry M. Jackson Hydroelectric Project (Project) are requirements under the Federal Energy Regulatory Commission (FERC) Order Issuing New License, issued on 2 September 2011 (136 FERC 62, 188), Ordering Paragraph E, License Appendix B, Condition 2; and Article 411 MMHPP. This 2024 Annual Report for the TRMP, NWMP, and MMHPP was prepared by Public Utility District No. 1 of Snohomish County (Snohomish PUD) as required by each of these plans.

The TRMP describes the actions Snohomish PUD will take to protect, mitigate, and enhance terrestrial resources associated with the Project on four management tracts (Figure 1.). The TRMP was prepared in consultation with the U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service Mt. Baker-Snoqualmie National Forest (USFS), Washington Department of Fish and Wildlife (WDFW), and the Tulalip Tribes (Tribes). The plan guides the management of approximately 4,456 acres of land and water within the Project boundary. The TRMP is available on Snohomish PUD's web site via the following link:

<https://www.snopud.com/wp-content/uploads/2021/08/TRMP.pdf>

Habitat enhancement methods are incorporated in the TRMP for forest vegetation management, including old growth, young forest, and understory management; lake, wetland, and stream buffers; snags, decaying live trees (DLTs) and coarse woody debris (CWD); right-of-way (ROW) management; and waterfowl nest boxes on the four tracts. The TRMP describes the existing habitat conditions and values, management constraints and habitat management objectives, methods, and prescriptions for each tract. It also describes monitoring and reporting requirements and provides a schedule for implementation.

A report must be prepared and submitted to the USFWS, WDFW, and the Tribes annually and submitted to FERC every five years. The last 5-year report covered 2016-2020 and was filed with FERC in April 2021. Reports document and summarize implementation of the TRMP during the intervening period and identify activities planned for the next period.

Monitoring data are presented in summary form and analyzed. Problems and proposed changes in the TRMP, if any, are discussed. Review meetings are offered to the USFWS, WDFW and Tribes by Snohomish PUD, to discuss information included in the reports. This report represents the annual report to the reviewing agencies and details activities that occurred in 2024 and those that are planned for the 2025. A draft of this Annual Report was provided to USFWS, WDFW, USFS, the Tribes and SCNWCB for a 45-day review and comment period on March 3, 2024.

The NWMP describes Snohomish PUD's strategy for controlling and containing the spread of Class A, Class B Designate, and Snohomish County Selected Noxious Weeds, as well as other weeds Snohomish PUD manages within the Project boundary. The NWMP was developed in consultation with the Snohomish County Noxious Weed Control Board (SCNWCB), the City of Everett (City), Washington Department of Natural Resources (DNR), USFWS, WDFW and USFS. The NWMP is available on Snohomish PUD's web site via the following link: <https://www.snopud.com/wp-content/uploads/2021/08/NWMP.pdf>

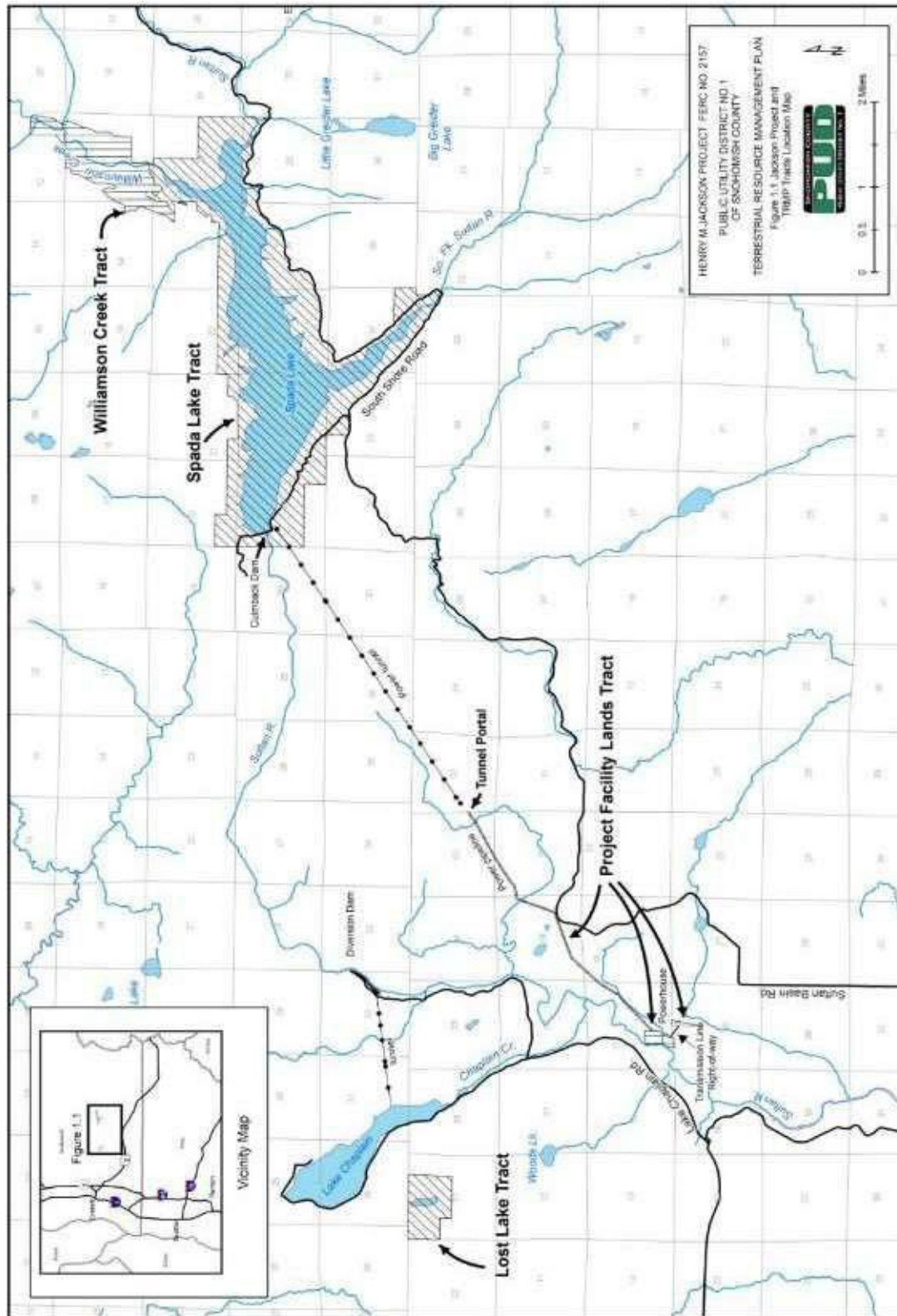


Figure 1. Location of Project and Terrestrial Resources Management Plan Tracts.

The NWMP includes:

- A list of Washington State Class A, Washington State Class B Designate and Snohomish County Selected Noxious Weeds, updated annually to reflect changes in State and County lists.
- A summary of Washington State Class A, Washington State Class B Designate, Snohomish County Selected, and other target species of noxious weeds occurring within the Project boundary based on ongoing weed management work and the 2007 Noxious Weed Inventory.
- A summary of ongoing weed management activities on Project lands.
- Treatment options and recommendations for established and new infestations of target weed species, including management goals, measurable objectives, and priorities for treatment.
- Prevention strategies (e.g., weed prevention practices for ground disturbing work, revegetation methods, and education information for Project employees).
- Monitoring and implementation schedules.

The NWMP also includes annual consultation with SCNWCB and the other stakeholders. The annual consultation includes updates to the noxious weed list, a summary of weed management actions taken since the previous report, and periodic (five-year) review of plan accomplishments and updates of lists and appendices, prepared in consultation with the stakeholders. This information is provided to FERC as part of each five-year TRMP report.

The MMHPP was developed after surveys by Snohomish PUD and others documented the presence of marbled murrelets (a federal Endangered Species Act listed threatened species) in the Sultan Basin, which resulted in the designation of portions of the forest in and near the Project boundary as “occupied” by nesting marbled murrelets. The MMHPP describes specific measures that Snohomish PUD will implement to avoid or minimize Project-related impacts to marbled murrelets and their habitat. Three general types of Project-related activities are addressed in the plan: 1) pruning, topping, and felling of road-side danger trees; 2) over story thinning and creation of snags, DLTs, CWD, and forest canopy gaps during implementation of the TRMP; and 3) the creation of new recreation trails and associated facilities as required in the Recreation Resource Management Plan (RRMP) under License Article 413.

In February 2011, Snohomish PUD updated the MMHPP to incorporate requirements of the USFWS Biological Opinion, Incidental Take Statement, Reasonable and Prudent Measures and Terms and Conditions for the proposed issuance of the license for the Project. These measures were reviewed by the Settlement Parties and USFWS concurred with the update. The updated MMHPP was included in the new license for the Project under Article 411. The MMHPP is available on Snohomish PUD’s website via the following link:

https://www.snopud.com/wp-content/uploads/2021/08/P2157MMHPP_0311_1212.pdf

License Article 411 approved the MMHPP and specified that survey results and field notes of monitoring efforts for marbled murrelets will be documented and sent to the USFWS in conjunction with the TRMP annual reports for any year that surveys are conducted, or maps are updated. The MMHPP states that at least every 10 years, Snohomish PUD will update the Project marbled murrelet habitat maps to reflect current habitat conditions. Snohomish PUD may conduct surveys for nesting marbled murrelets in all suitable habitat that is not known to be

occupied and has not been surveyed for 10 years or more. If Snohomish PUD chooses not to survey suitable habitat, such habitat will be considered occupied for purposes of the MMHPP and will be described in the applicable report and update of the MMHPP.

Article 411 requires that at least every 10 years, Snohomish PUD will file for FERC approval, an updated MMHPP developed in consultation with USFWS and WDFW. Second-growth habitat was re-examined in 2022 with boundaries modified to incorporate newly identified suitable habitat. Activities related to the MMHPP during 2024 are noted in this report.

2.0 TERRESTRIAL RESOURCES MANAGEMENT PLAN

2.1 Background

TRMP management measures include the creation of snags, DLTs and CWD from live trees, across the four tracts of land, exclusive of old-growth forest; these components are collectively referred to as “woody habitat structures” (WHS) in this report. Trees are selected from the largest size class and are typically clustered in groups of about 30 trees, called “canopy gaps”, to simulate a small windthrow or root-rot patch. Canopy gaps are usually triangular in shape, with the base of the triangle being on the south or southwest side in an effort to maximize light penetration to the forest floor during the growing season, to encourage understory growth. The apex of the triangle is typically on the north or northeast end. The target gap size is 0.10 to 0.25 acre, depending on local limitations.

Forest stands on the Spada Lake Tract were harvested in the 1960s and most have stem densities greater than 450 trees per acre. Gap size on the Spada Lake Tract is often limited by the presence of numerous drainages and their required buffers. The base of a typical gap within the tract measures about 120 feet, with the height of the triangle also being about 120 feet (7,200 square feet; 0.16 acres).

Stand age on the Lost Lake Tract is typically around 85 years, with a selective harvest having been performed on some stands in the 1980s. The result, compared to the Spada Lake Tract, is stands of lower density that are much more heterogeneous including individuals and pockets of deciduous trees. Due to age and lower stand density, average tree diameter and canopy coverage per tree is much greater than at Spada Lake. Consequently, fewer trees are required to be topped or felled in one area on the Lost Lake Tract to achieve a canopy gap similar in size to those at Spada Lake. A typical gap at Lost Lake contains 5-10 trees, and averages about 0.15 acres. WHS may also be created individually or in smaller groups, as needed to maintain appropriate distribution and based on habitat limitations.

2.2 Work Completed in 2024

2.2.1 Snag, Decaying Live Tree and Coarse Woody Debris Creation

In 2024, a total of 149 acres, comprised of two stand complexes were treated resulting in 701 WHS being created. Stand 9-114 at Spada Lake will be completed in 2025. Figure 2, and Table 1 show WHS management on TRMP lands during this period.

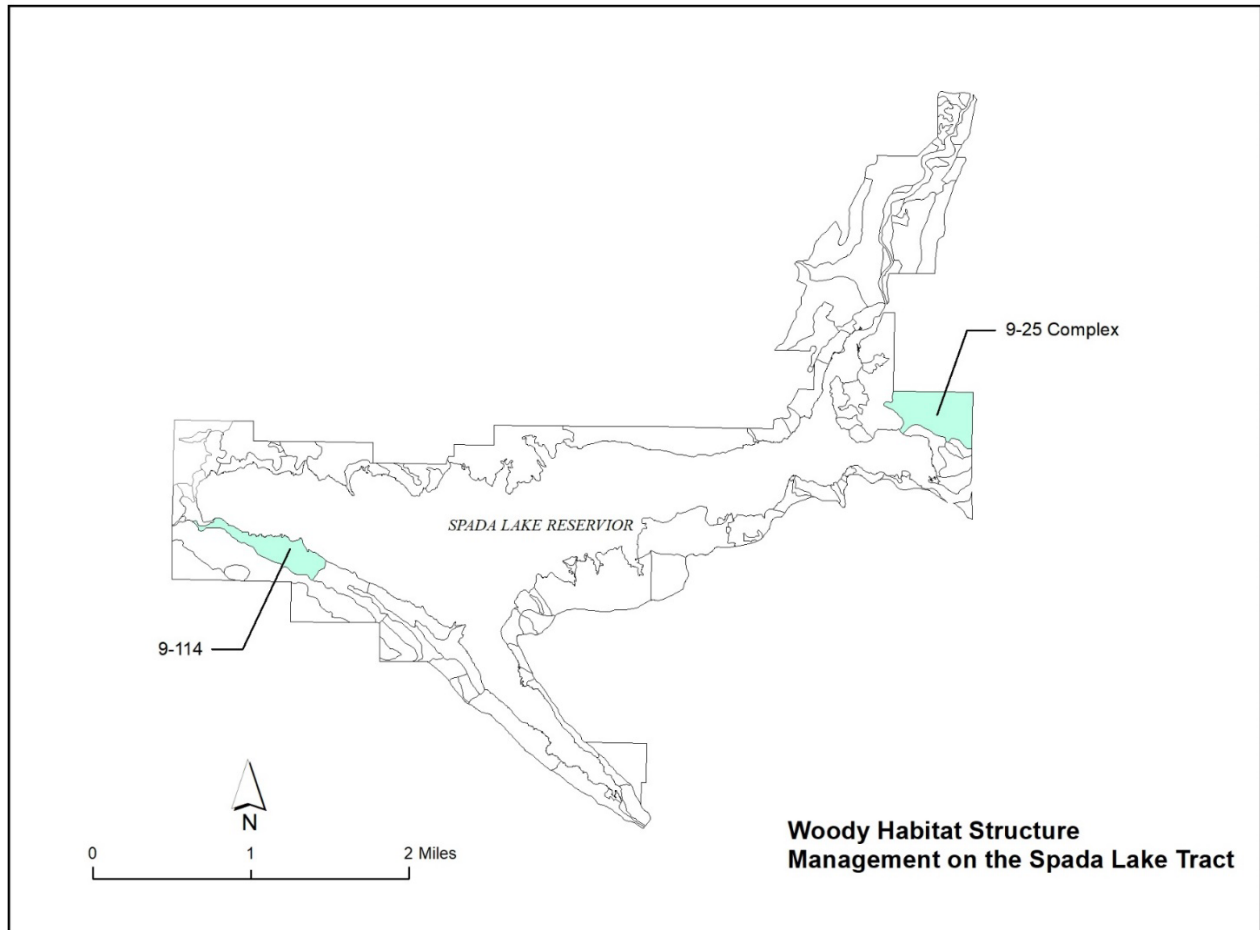


Figure 2. Woody habitat structure creation at Spada Lake Tract, 2024.

Table 1. Woody habitat structure management, 2024.

	2024; 149 acres; 701 created	
Unit or Stand Complex	Spada Stand 9-25 Complex	Spada Stand 9-114
ACRES TREATED 149		
DECAYING LIVE TREES	Total 701	
# CREATED	448	186
AVG DBH (in)	14.6	13.7
AVG HT (ft.)	85.3	74.3
#/acre	5.0	3.1
SNAGS	Total 66	
# CREATED	16	50
AVG DBH (in)	13.5	12.6
AVG HT (ft.)	na	na
#/acre	0.2	0.8
CWD	Total 0	
# CREATED	0	0
AVG DBH (in)	0	0
#/acre	0	0
TOTAL #/ACRE	5.2	3.9
NOTES	Creation began in 2024 and will be completed in 2025. Snags were base girdled, so tree remains full height.	Creation began in 2023 and will be completed in 2025. Snags were base girdled, so tree remains full height.



Figure 3. Created decaying live tree with “cat-faced scar” created near top (red arrow) and up-turned branches forming dense, bushy top.

2.2.2 Long-Term Woody Habitat Structure and Gap Monitoring

Long-term monitoring of created WHS and gaps began in 2021, as required by the TRMP. Units within the Lost Lake, Williamson Creek and Spada Lake Tracts were selected for monitoring to record observations of wildlife use, decay rates of snags and CWD, and longevity and growth of DLTs. Units were selected across the ownership to provide the broadest variety of stand types, treatment ages, species composition, slope, and aspect. Ten percent (41) of all gaps created as of 2021 will be monitored over the course of the plan. Gaps will be monitored either annually or every 5 years with detailed observational data and photo documentation taken at both types of gaps. Annual monitoring of WHS and gaps will allow a detailed accounting of changes that occur over time in woody structures (decay rate, breakage/fall rate, fungal growth, etc.) and wildlife use as well as vegetative changes and wildlife use of gaps. Monitoring WHS and gaps on a 5-year schedule will allow more gaps to be monitored over the duration of the plan to provide a broader based knowledge of activities occurring within those gaps. Within selected gaps (both annual and 5-year gaps), 3 WHS are selected from each cardinal direction plus 3 from the interior of the gaps, for a total of 15 WHS within each gap. Parameters measured are:

- Snags – height, decay stage, % bark remaining, signs of wildlife use, fungal bodies.

- CWD – length of main section (as they often break when felled), decay stage, signs of wildlife use, fungal bodies.
- DLTs – evidence of formation of a new top (branches turning upward to create a multi-topped tree, height (of newly grown top, if applicable), signs of wildlife use, fungal bodies, overall health of the tree.
- Understory vegetation – overall % cover, height and % cover of all species noted within the gap, signs of wildlife use, regeneration of conifers, evidence of invasive species.
- Evidence of influence outside of gap perimeter, i.e., is sunlight entering the gap increasing the vegetative growth beyond the edge of the gap?
- Photo documentation – photos are taken 360 degrees around the gap to document vegetative growth both within the gap and in the adjacent forest.

Preliminary results of the gap and WHS monitoring are encouraging. Many of the DLTs still survive and have upper branches turning upwards to form dense new tops (Figure 3). The age range of gaps sampled was from 3-11 years (from time of initial WHS creation). Within gaps, the average percent vegetative cover increased from primarily devoid of vegetation to a range of 40-68% (Figures 4 & 5). In terms of deer forage, nearly every gap had vaccinium and salmonberry, with typical heights ranging from 2-8 feet, with numerous gaps having evidence of deer browsing.

Conifer seedlings and/or saplings were often present, ranging in height from 6 inches to 12 feet but in only one case did they appear to be crowding out the other native flora. Several gaps also included species not commonly found throughout the remainder of the forest, including red elderberry, false azalea, and vine maple, likely due to the increase in light input and attraction of seed dispersing birds utilizing those gaps. Very few gaps had invasive species (evergreen and Himalayan blackberry), which are very rarely mature with fruit, and were pulled by hand when found. These are also no doubt brought in by seed dispersing birds visiting the gaps.

This WHS and gap monitoring plan was designed as a forward-looking program to inform changes to be made to the way WHS and gaps are created, including specific techniques of topping trees and sizes, shapes, and orientation of the gaps, etc. Initial observations of note include the impact of light influence into the adjacent forest. The impact of ambient light from the gaps typically extended from 30-100 feet into the adjacent forest, depending on aspect, slope, and size of gap. While the adjacent forest did not exhibit as large a response to the increased light as the gap itself, the impact of the gap creation outside the immediate gap perimeter is notable in terms of producing a more diverse and productive understory for herbivores as well as hiding cover for predators and prey alike. As expected, gaps with a broad opening to the south and west showed the greatest increase in understory vegetation and were most likely to have the furthest influence into the woods beyond the gap perimeter.

Another observation of note is that many of the trees which had been girdled from the ground (with the intention of becoming CWD) were still standing and functioning as snags, some for as long as 10 years. Many had broken off and lost some of their height since girdling, but this appears to be a safer way to create snags while also quickly producing some CWD (the upper portion which breaks off).



Figure 4. Typical understory in stands where no commercial thinning or gap creation has occurred.



Figure 5. Post-gap creation, showing strong evidence of the impact of increased light input to gap.

2.2.3 Forest Vegetation Management - Commercial Thinning

The forest stands on the Spada Lake Tract initiated from natural in-seeding following clear cut harvest by the DNR and USFS prior to the PUD purchasing the lands. Much of the acreage was never thinned and therefore resulted in overstocked stands where suppression mortality was the primary cause of tree death. In the 50-60 years since harvest, this hyper-density led to tree canopies that closed entirely, shading out the forest floor and leading to the death of much of the understory shrub population.

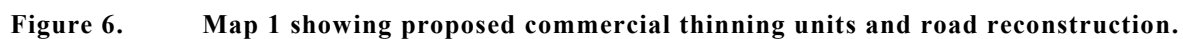
Approximately 100 acres were commercially thinned in the early 2000's by removing the sub-dominant trees and leaving the largest trees to occupy a more open site. Twenty years later, some of these stands are now closing their canopies again and other stands that were not thinned have reached a stage appropriate for thinning. Utilizing canopy gap creation as part of the woody habitat structure program has allowed relatively small openings to be created in the forest but is insufficient to treat over-stocking in entire units.

Working with a professional forestry consultant to identify units meeting the criteria for commercial thinning (road access, suitable average diameter to produce marketable timber, adequate stocking density to allow sufficient residual trees, etc.) approximately 220 acres have been proposed for commercial thinning (Figures 6-8). Proposed thinning units have buffers applied to all water bodies as delineated in the TRMP, and additional 100-foot buffers applied to all Marbled murrelet habitat. Daily and seasonal timing restrictions will be enforced to ensure no disturbance of murrelet nesting habitat.

Similar to the commercial thinning which occurred approximately 20 years ago, trees to be removed will be from the sub-dominant class and from the common species on each site. This will result in a more open canopy, with light reaching the forest floor to encourage understory shrub growth and increased diameter growth of the residual trees.

Units to be harvested will have photo documentation stations installed prior to harvest to document effects of the harvest in terms of tree density, shrub species diversity and overall shrub density. Based on experience from the prior thinning, it is expected that understory shrubs will greatly increase in average size, diversity and density within a few years.

Existing maintained roads will be used to access the units, but in two instances abandoned road grades will need to be re-opened, and for one of those units, a 250-foot extension of road would be built to allow access to the interior of the unit with logging equipment. These roads will allow access to an additional 60 acres of overstocked forest. Importantly, no new stream crossings are proposed, and all re-opened roads will be abandoned after use and properly fortified to ensure that no vehicular access is possible once harvest is complete.



Prepared for:
Snohomish Co. PUD

Forest Practices Activity Map

T29N R9E Sec. 20,
26, 27, 29, 33, 34
Snohomish County

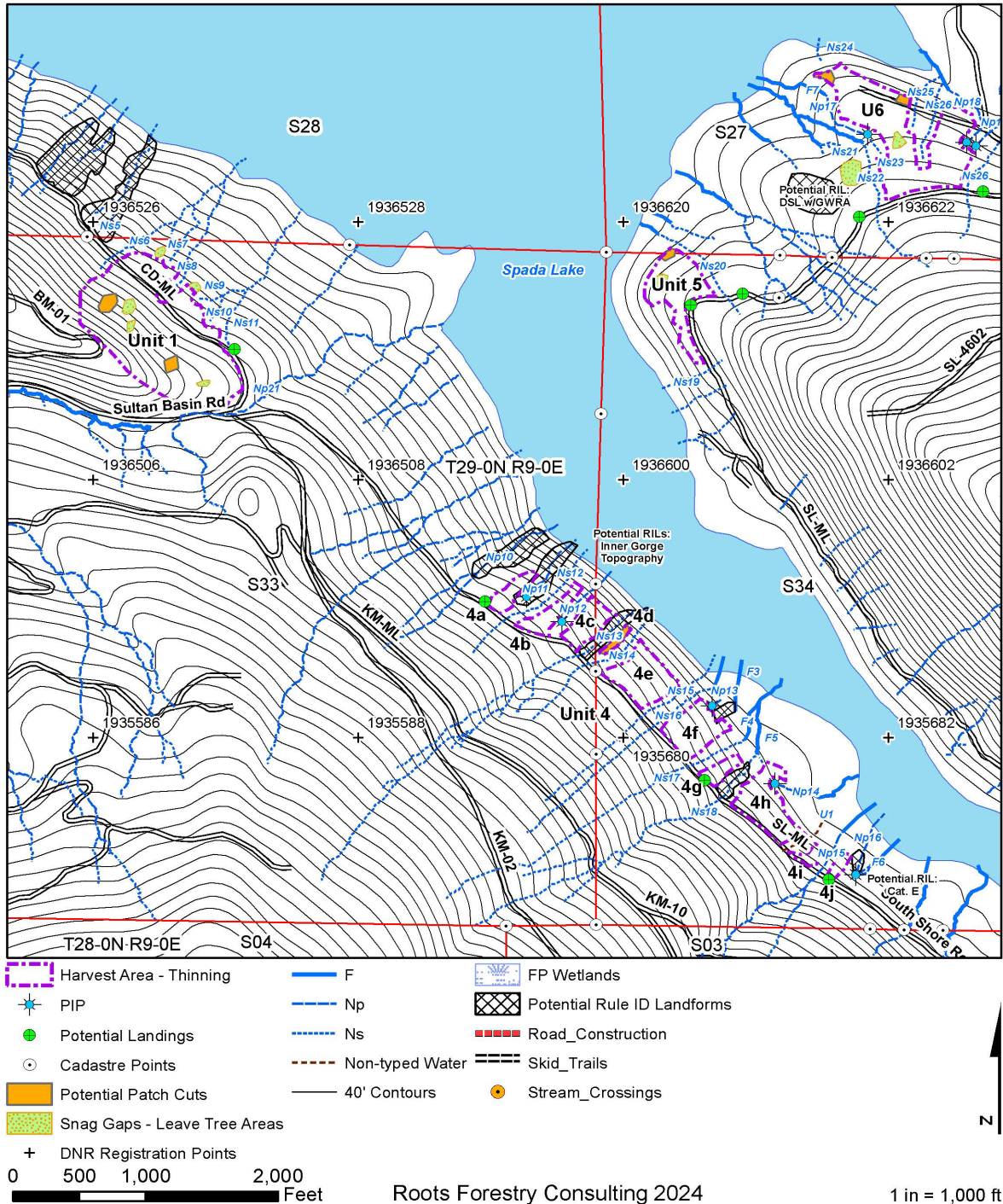


Figure 7. Map 2 showing proposed commercial thinning units.

Prepared for:
Snohomish Co. PUD

Forest Practices Activity Map

T29N R9E Sec. 20,
26, 27, 29, 33, 34
Snohomish County

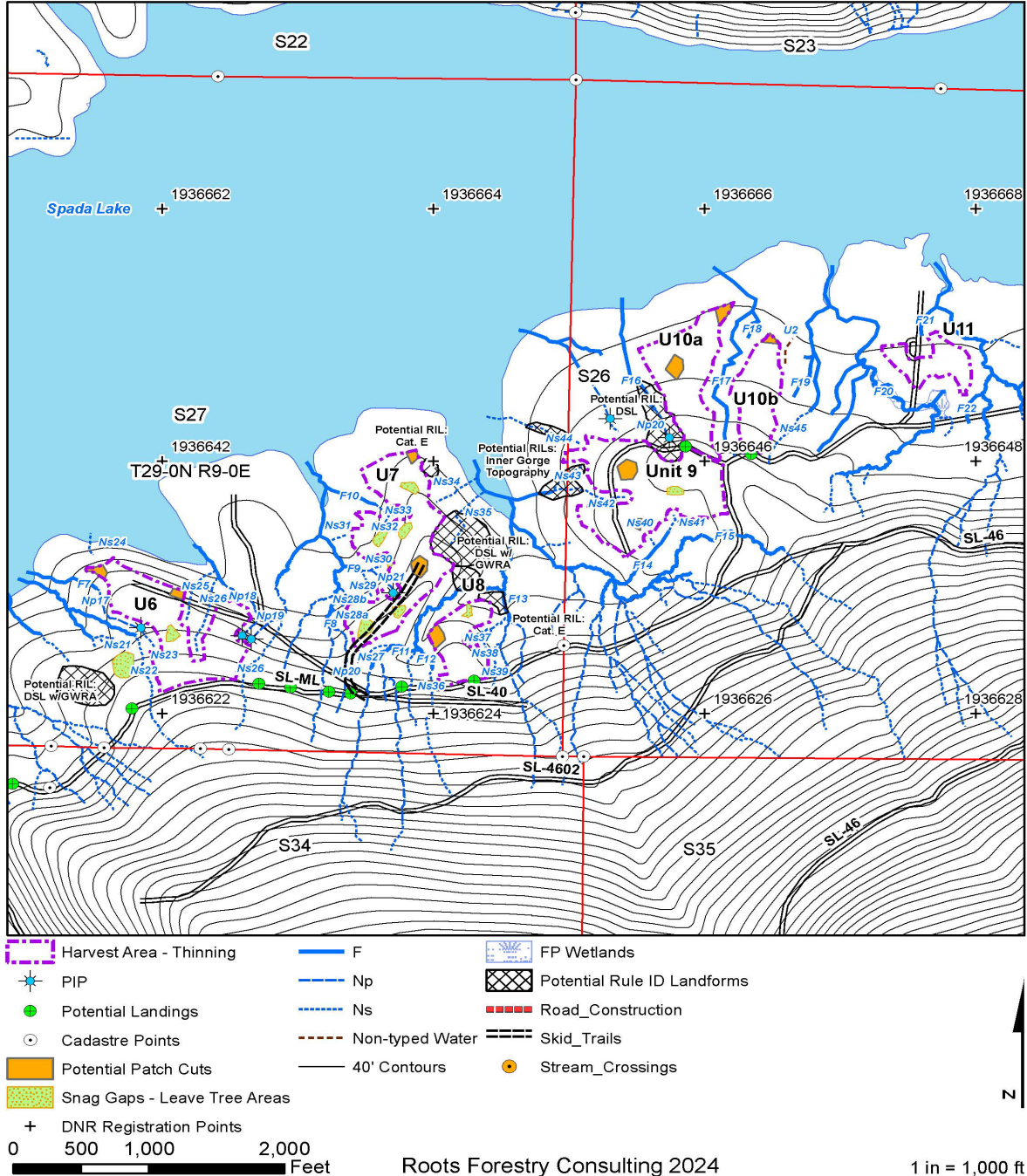


Figure 8. Map 3 showing proposed commercial thinning units.

2.2.4 Right-Of-Way Management

Since TRMP implementation began in late 2011, work on the pipeline ROW has consisted largely of weed control, as detailed in Section 3.0, but has also included placement of bottomless culverts to span three creeks between manholes P1 and P4. This project allows continuous access to the ROW without the use of adjacent roads that are not under Snohomish PUD's control, and also provides a more expeditious means of monitoring the pipeline in the event of seismic activity.

All disturbed or amended soils will be promptly seeded with a mixture of non-invasive, weed-free grasses and forbs as listed in the TRMP. For erosion control, only certified weed-free straw is used on all Snohomish PUD lands.

Occasionally, wood from Culmback Dam that is not suitable for deposit into the riverine system is deposited on the lower pipeline ROW to provide hiding cover for small mammals and to break up the line of sight (Figure 9.).



Figure 9. Woody debris piles deposited near P4 on lower pipeline ROW.

2.2.5 Waterfowl Nest Boxes

On the Lost Lake Tract, a total of six nest boxes were available for use, with two being used by cavity nesting waterfowl (Table 2.). Boxes were checked, cleaned, repaired as needed, and provided with fresh nesting material on February 5. All boxes were visited again on May 6 and 21 to determine use, check for damage, and remove unwanted species, including native squirrels, starlings, and their nests, per WDFW's request. A late June visit was also conducted to estimate final production numbers. Nests of native birds are not removed if found. Setting females or their eggs are not moved or handled for counting during nest checks, therefore quantities should be considered low estimates. A minimum of 10 Hooded mergansers were fledged from the 2 of the 6 boxes. The locations of the nest structures on the Lost Lake Tract are depicted in Figure 10. Historical use has ranged from 16 to 50 percent with no clear preference for a particular box or location around the lake/wetland complex exhibited by any species. Typical usage is 33% in most years.

Table 2. Waterfowl nest box use on the Lost Lake Tract.

BOX #	RESULTS
BOX 3	No use.
BOX 5	6+ Hooded Mergansers fledged
BOX 13	No use. Box fell from tree during nesting season.
BOX 15	4+ Hooded Mergansers fledged
BOX 17	No use.
BOX 18	No use.

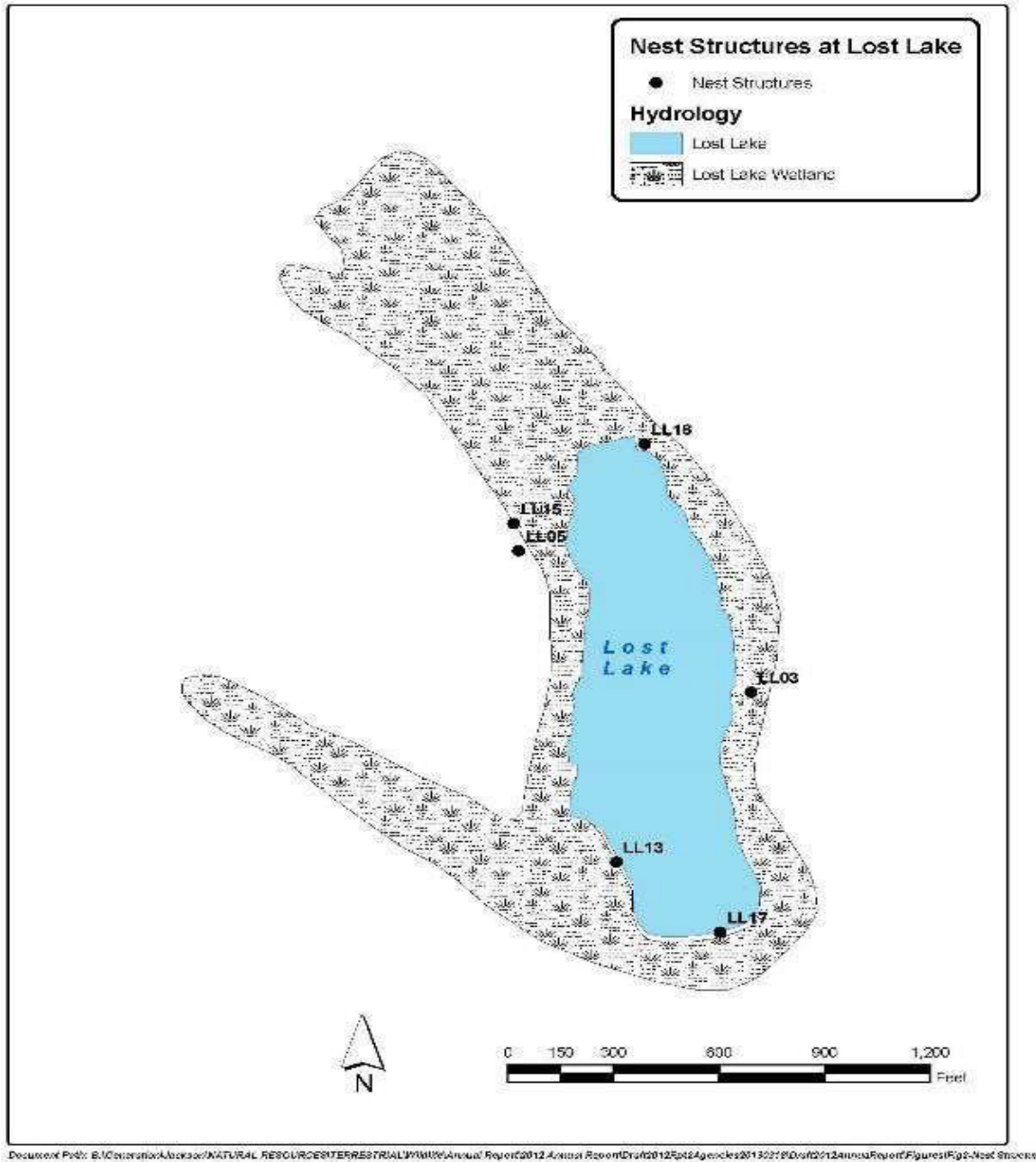


Figure 10. Nest boxes at Lost Lake.

2.2.6 Stewardship Activities or Observations of Note

Snohomish PUD biologists met with Project staff to inform and educate them regarding the TRMP and worked with them to ensure that the TRMP was being followed during implementation of maintenance activities.

Table 3. provides a summary of notable wildlife observations on Project mitigation land during the 2024 action year. These are incidental only and are not part of a systematic monitoring program.

Table 3. Incidental wildlife observations in 2024.

DATE	LOCATION	SPECIES	DESCRIPTION
3/7/24	Lost Lake	Great blue heron	Foraging in outlet of Lost Lake
6/6/24	Lost Lake	Great blue heron	Foraging north of fishing dock
9/9/24	Spada Lake	Canada geese	21 geese swimming near mouth of N Fork Sultan River
9/9/24	Spada Lk	Osprey	2 osprey calling repeatedly from tree tops beyond South Fork recreation site

2.2.7 Lake, Wetland and Stream Buffers

Activities occurring within buffers included nest box maintenance and WHS creation, as described in the previous sections of this document. The buffer restrictions for snag, DLT and CWD creation described in the TRMP were followed, which allow only individual or small groupings of WHS to be made within 100 feet of a lake, wetland, or stream. Within the remainder of the buffers, which may be up to 500 feet wide, gap sizes are restricted to 0.25 acres.

2.3 Issues or Proposed Changes

No issues have come up and no changes are proposed at this time.

3.0 NOXIOUS WEED MANAGEMENT PLAN

3.1 Background

Due to water quality concerns, noxious weeds and invasive species found within the Spada Lake Reservoir and City of Sultan watersheds (along the pipeline ROW) were treated with naturally derived herbicides; initially high strength vinegar in 2016, then Caprylic acid, trade name Suppress EC, by state-licensed contract herbicide applicators, overseen by Snohomish PUD biologists who are also state-licensed herbicide applicators. This product is OMRI listed and labeled for organic production but is a non-selective herbicide (it will damage or kill any portion of a plant that it contacts) and is non-systemic (it only affects the portion of the plant that it touches and is not translocated through the plant's vascular system to kill the roots). Using this type of herbicide requires repeat applications, as it is not as effective as systemic herbicides, but is considered safer for water quality by the City of Everett (primary purveyor of drinking water in Snohomish County, serving 75 percent of county residents) and the City of Sultan.

Areas outside of the above-mentioned watersheds have been treated with synthetic herbicides that are systemic and selective and require fewer treatments. Again, all applications were performed by state-licensed contract herbicide applicators.

As part of re-licensing studies, botanical consultants were contracted to survey all project lands that had project structures, roads, prior forestry activities or other human disturbances for invasive or noxious weeds. A detailed map and Global Positioning System (GPS) record was created to document presence and level of infestation for each invasive species. These

sites are visited multiple times each year by Snohomish PUD staff familiar with weed identification and treatment. Areas of the Project that were disturbed and weed-prone, where noxious weeds have been previously observed (particularly during the 2007 noxious weed surveys), and sites that have been previously treated, were evaluated for the presence of noxious weeds.

Treatment locations were captured and recorded using a GPS device, with that data then incorporated into Snohomish PUD's GPS database, to allow tracking of weed occurrences and treatment efforts, to guide the following year's management. Figures A1 through A17 in Appendix A provide an overview of the project lands, and specific weed locations identified around Spada Lake and the pipeline ROW.

Overall, Snohomish PUD's approach to invasive weed control has been successful in preventing most seed production and spread of known infestations. No new species of noxious weed have been documented on Project lands since the original 2007 surveys, and most occurrences of weeds are becoming smaller and more intermittent in space. Availability of suitable spraying weather is the primary factor dictating the number of times weeds are sprayed over the course of the growing season, and therefore plays a large role in determining the overall effectiveness of control efforts.

Snohomish PUD biologists met with Project staff to inform and educate regarding the NWMP and worked with them to ensure that the NWMP was being followed.

3.2 Work Completed in 2024

Areas of the Project that were disturbed and weed-prone, as well as areas where noxious weeds had been observed and treated in the past, were visited to control noxious weeds. As the weather allowed, multiple treatments were made at all sites during the growing season. Appendix A contains Figures A-1 through A-17 showing mapped locations of invasive species.

3.2.1 Lost Lake Tract Treatment and Monitoring

The access road and the boat launch area at Lost Lake were visually inspected for noxious and invasive species several times during the growing season. Particular attention was paid to areas identified in the 2007 Noxious Weed Survey. Species of weeds treated include herb Robert, creeping thistle, and Himalayan and evergreen blackberry. Weeds found were pulled by hand twice in 2024.

In 2021, fragrant water lily was found along the eastern shore of the lake in several small clusters. Multiple trips were subsequently made each year to clip the flowers to prevent seed production. The plants were flagged and visited multiple times during the spring-summer growing season to track growth and reduce spread over time.

3.2.2 Spada Lake Tract Treatment and Monitoring

Weed species most commonly found along roads on the Spada Lake Tract were hawkweed, oxeye daisy, and creeping thistle. Culmbach Dam had significant infestations of hawkweed and smaller patches of Scotch broom. Within the Spada Lake Reservoir Watershed, which

supplies most of Snohomish County with drinking water, the City of Everett has requested that herbicides derived from inorganic compounds not be used. Naturally derived, high-strength acids have proven to be successful in treating weeds and have been approved by the City for use within the watershed. Many of the treated plants display top-kill or reduced vigor quickly and for a considerable length of time after treatment, but multiple applications are typically required. Plants were treated as early in the growing season as practicable and were re-treated as needed and as allowed by weather conditions. Seed production was prevented in nearly all cases, as required by State and County regulations.

3.2.3 Williamson Creek Tract Treatment and Monitoring

Hawkweed, reed canary grass, and creeping thistle have been found on the Williamson Creek Tract during previous field visits. The abandoned road has become largely overgrown with alder saplings, and as a result, these infestations do not appear to be extending their range, and in fact should begin shrinking as a result of limited sunlight and nutrients. Based on this and the difficulty of accessing this now roadless area, other sites have received higher priority for treatment. The area is visually assessed while performing snag/gap creation activities.

3.2.4 Project Facility Lands Treatment and Monitoring

The pipeline ROW was visited multiple times during the growing season to locate and treat invasive species. Typical weeds found here include hawkweed, butterfly bush, oxeye daisy, and tansy ragwort.

Noxious weeds on the transmission line ROW were also sprayed several times during the growing season, with the primary species found here being common holly, Bull and creeping thistle, and blackberry species.

3.2.5 Annual Review of Noxious Weed List

Snohomish PUD reviewed the State and County's annual updated weed list for 2025. No changes were made that impacted which species receive weed control on Project lands. However, several changes in nomenclature and designations have been made since NWMP creation which are reflected in the updated target species table below. All target species listed in the NWMP continue to be treated, regardless of their current designation status.

Table 4. Target Species for Weed Control for 2025.

Scientific Name	Common Name	NWMP 2008 Snohomish County Status	2025 Snohomish County Status
<i>Centaurea biebersteinii</i>	spotted knapweed	Class B Designate	Class B Designated
<i>Hieracium</i> subgenus <i>Pilosella</i> (formerly listed separately in NWMP as <i>Hieracium</i> <i>caespitosum</i> and <i>Hieracium</i> <i>spp.</i>)	nonnative hawkweed species and hybrids of meadow subgenus (formerly listed in NWMP as Yellow	Class B Designate; Class C County Selected	Class B Designated

	hawkweed and invasive hawkweed)		
<i>Polygonum x bohemicum</i> , and <i>Polygonum cuspidatum</i> and <i>sachalinense</i> , sp. (invasive)	hybrid, itadori, and giant knotweed (invasive knotweed)	Class B Undesignated, County Selected	Class B Designated
<i>Senecio jacobaea</i>	tansy ragwort	Class B Undesignated, County Selected	Class B Undesignated, County Selected
<i>Cirsium arvense</i>	creeping thistle (formerly Canada thistle)	Class C, County Selected	Class C Undesignated
<i>Cirsium vulgare</i>	bull thistle	Class C, County Selected	Class C Undesignated
<i>Cytisus scoparius</i>	Scotch broom	Class B Undesignated	Class B Undesignated
<i>Daucus carota</i>	wild carrot	Class B Undesignated	Class C Undesignated
<i>Geranium robertianum</i>	herb Robert	Class B Undesignated	Class B Undesignated
<i>Buddleja davidii</i>	butterfly bush	Class C	Class B Undesignated
<i>Lamium galeobdolon</i>	yellow archangel	Class C	Class B Undesignated
<i>Ilex aquifolium</i>	common holly (formerly English holly)	Not listed	Not listed

3.2.6 Update of Species-Specific Management Methods

No updates to specific management methods have been proposed; emphasis will continue to be on controlling seed production, preventing new infestations, and reducing the size and number of existing infestations.

Cultural methods to prevent new infestations or reduce existing infestations continued to be employed including:

- 1) keeping ground disturbance to a minimum while mowing vegetation, and
- 2) seeding/placing weed-free straw on open or disturbed soils as soon as possible. Where infestations exist, herbicides remained the most effective treatment due to the size and variety of locations.

Snohomish PUD is also committed to ensuring that weeds that survive treatment with inorganic herbicides (those outside of the Spada and City of Sultan watersheds) do not develop resistance to a particular mode of action (the specific means by which the herbicide damages or kills the plant cells). As a result, Snohomish PUD biologists routinely evaluate new products to determine their efficacy for use in controlling the species of weeds present on Project lands.

3.3 *Work Planned for 2025*

Areas of the Project that are disturbed and weed-prone, where noxious weeds have been observed, and sites that have been previously treated will be visited several times during the growing season to document and treat noxious weeds. Licensed contract herbicide applicators will be used to apply herbicides. Prior to initiation of any ground disturbing activities, staff will meet to discuss pre- and post-project means to reduce the likelihood of increasing infestation size or spreading weed propagules to new areas, including, to the extent possible, treating existing weeds prior to those ground-disturbing activities. We plan to review the NWMP and propose changes to reflect current listed weed species and control practices.

3.3.1 Issues or Proposed Changes

No issues have come up related to implementation of the NWMP and no changes to the plan are proposed at this time. Any changes to the list of weeds requiring control, based on changes to the State and County weed lists, may necessitate changes to the NWMP.

4.0 MARBLED MURRELET HABITAT PROTECTION PLAN

4.1 *Background*

Project-related activities conducted in the Spada Lake Reservoir Basin and on other Project lands were conducted according to the MMHPP. Plans and activities were prepared or modified as needed to comply with the MMHPP.

4.2 *Work Completed in 2024*

Project-related activities conducted in the Spada Lake Reservoir Basin and on other Project lands were done in accordance with the MMHPP; plans and activities were modified as needed to comply with all restrictions. These activities included:

- Planning for commercial thinning in multiple stands around Spada Lake
- Conducting snow surveys to support Project operations and water supply planning
- Implementing the Whitewater Recreation Plan under License Article 412
- Air-lifting toilets out of the Bear Creek and Nighthawk Recreation Sites to support the RRMP
- Conducting hazard tree maintenance activities to support operation and maintenance
- Conducting recreation site vegetation maintenance and trail improvements
- Implementing all aspects of the TRMP
- Implementing all aspects of the NWMP
- Maintaining recreation facilities in support of the RRMP

Snohomish PUD biologists met and had numerous conversations with Project staff to coordinate Project-related work and ensure compliance with the MMHPP.

4.3 Work Planned for 2025

Snohomish PUD biologists will continue to stay informed of Project-related activities that might affect marbled murrelets and their habitat and advise and educate those working on the Project of the MMHPP requirements. Language related to seasonal and daily timing restrictions to protect nesting murrelets is included in all construction contracts.

As detailed in Section 2.2.3, commercial thinning of up to 220 acres is planned for various second growth stands on the Spada Lake tract to improve the health of the residual trees. Mature forest characteristics will result earlier post-thinning than without, including additional layers of forest canopy, larger diameter trees at younger ages, retention of lower branches on residual trees and increased understory shrub production, all of which are preferred murrelet habitat characteristics.

Planning will continue during the spring and summer of 2025, with the intention of beginning harvest in the fall of this year. Buffers around all old-growth and occupied stands have been applied to the forestry units, ensuring that removal of trees does not negatively impact murrelets or adjacent habitat. Buffers have also been delineated for all streams and wetlands.

4.4 Issues or Proposed Changes

No issues related to the implementation of MMHPP have arisen and no changes to the plan are proposed.

Appendix A

Noxious Weed Control Figures

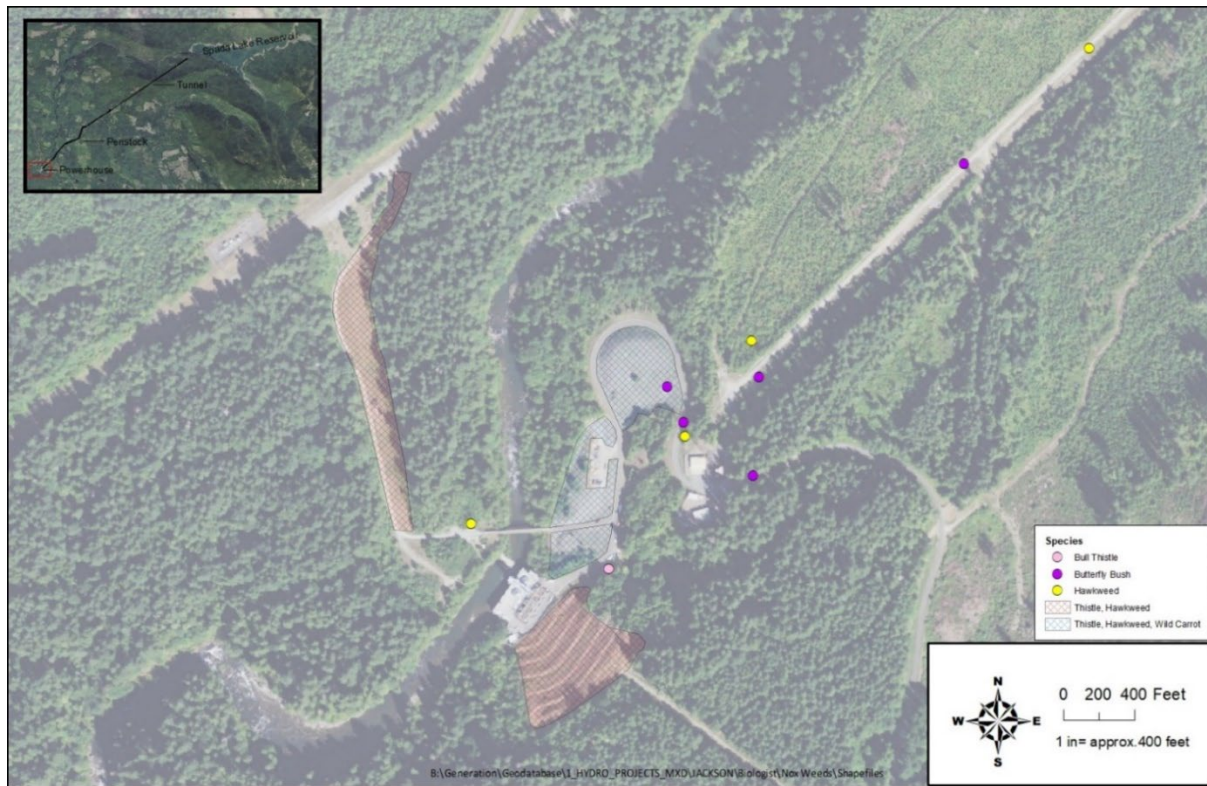


Figure A-1



Figure A-2



Figure A-3



Figure A-4

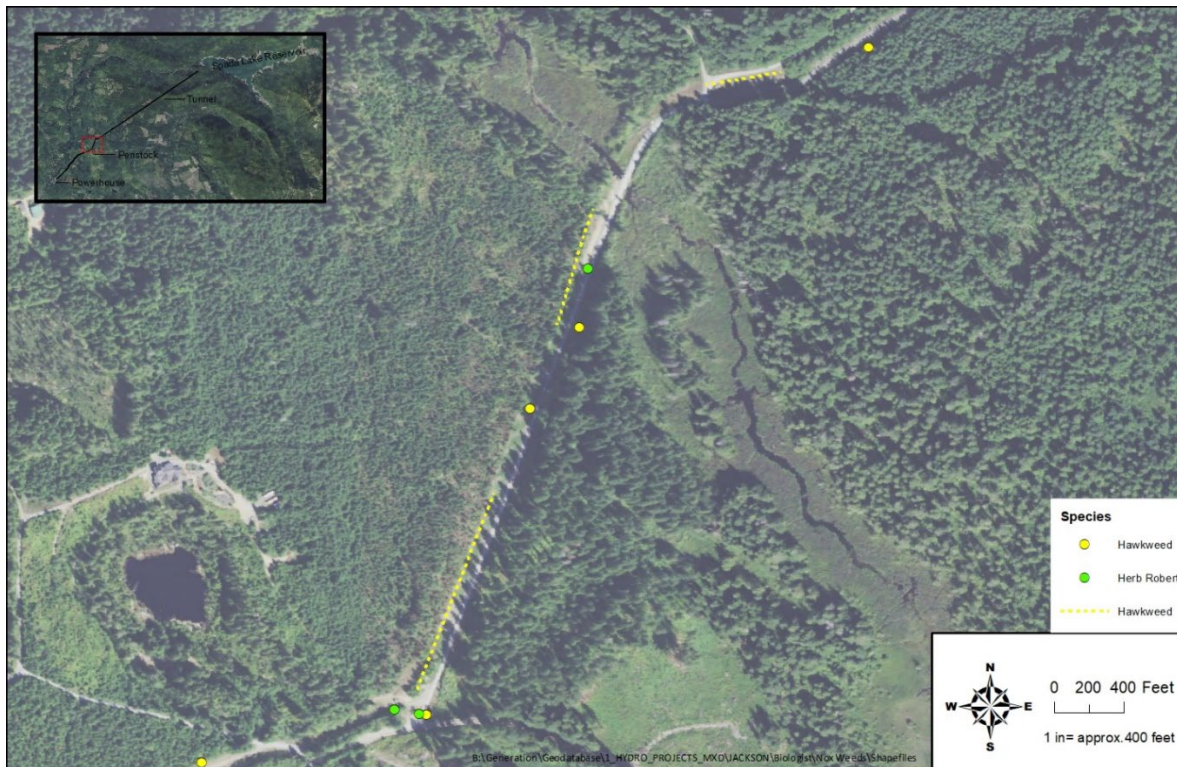


Figure A-5

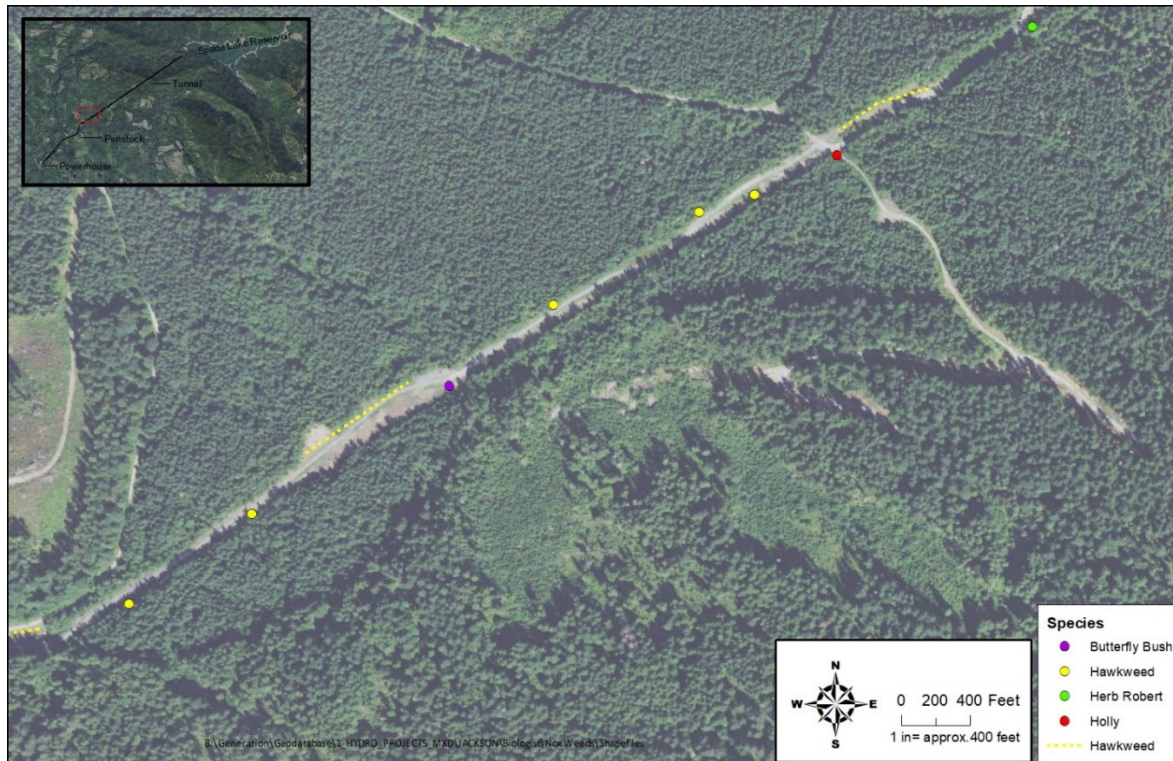


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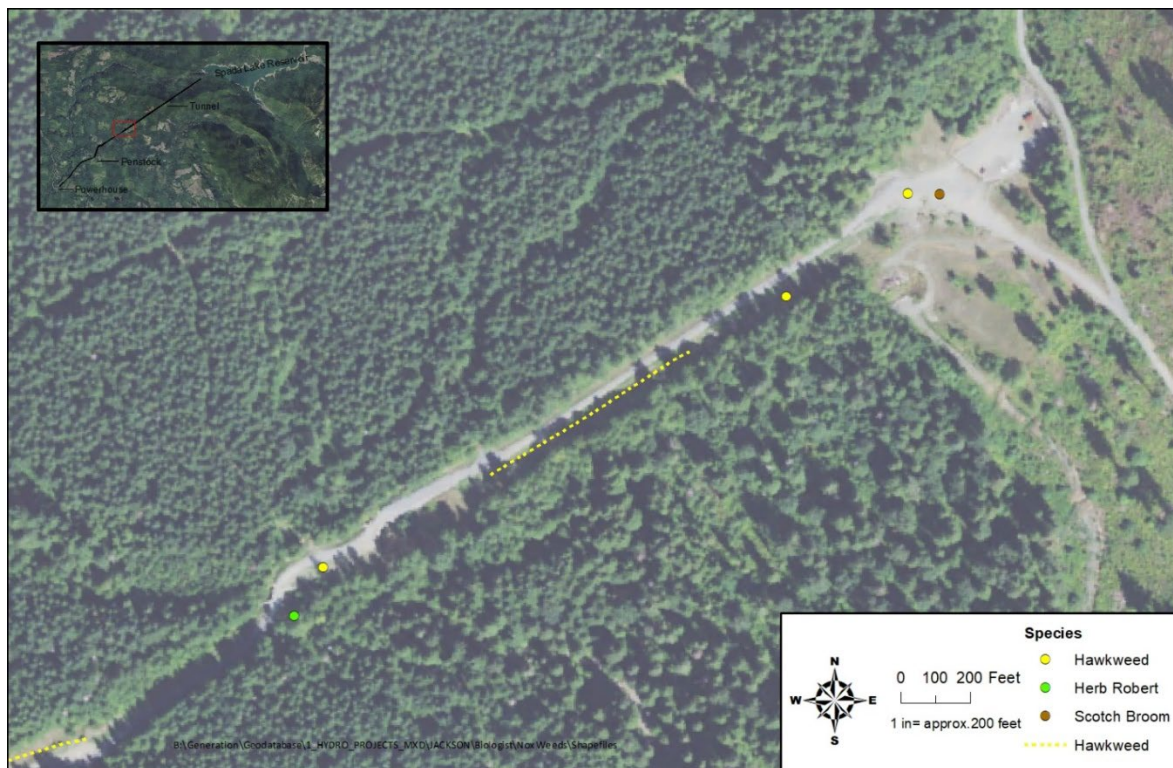
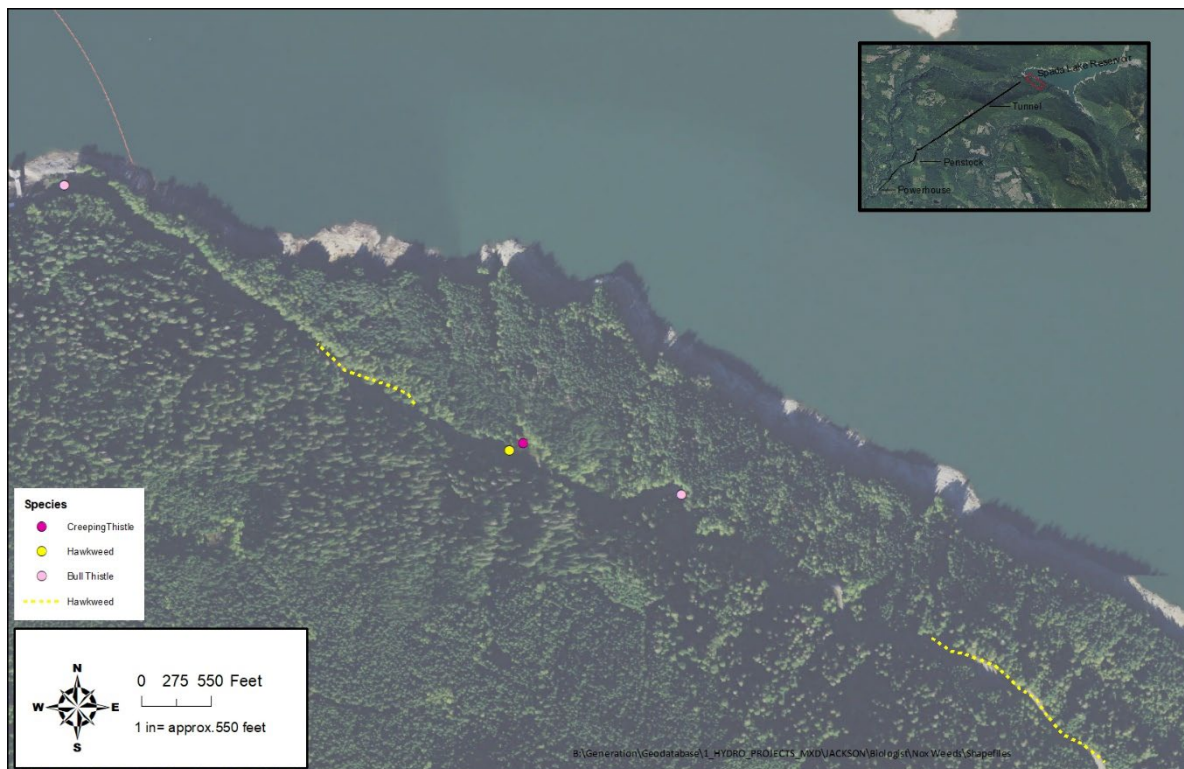


Figure A-7



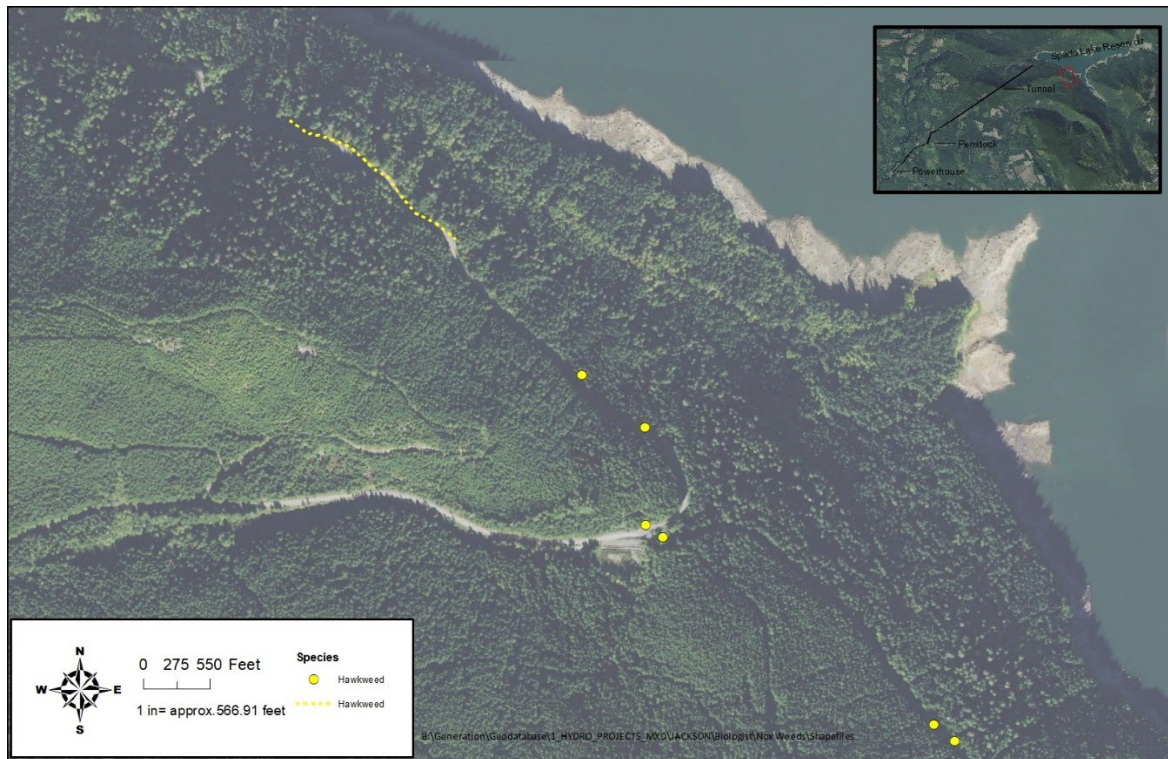


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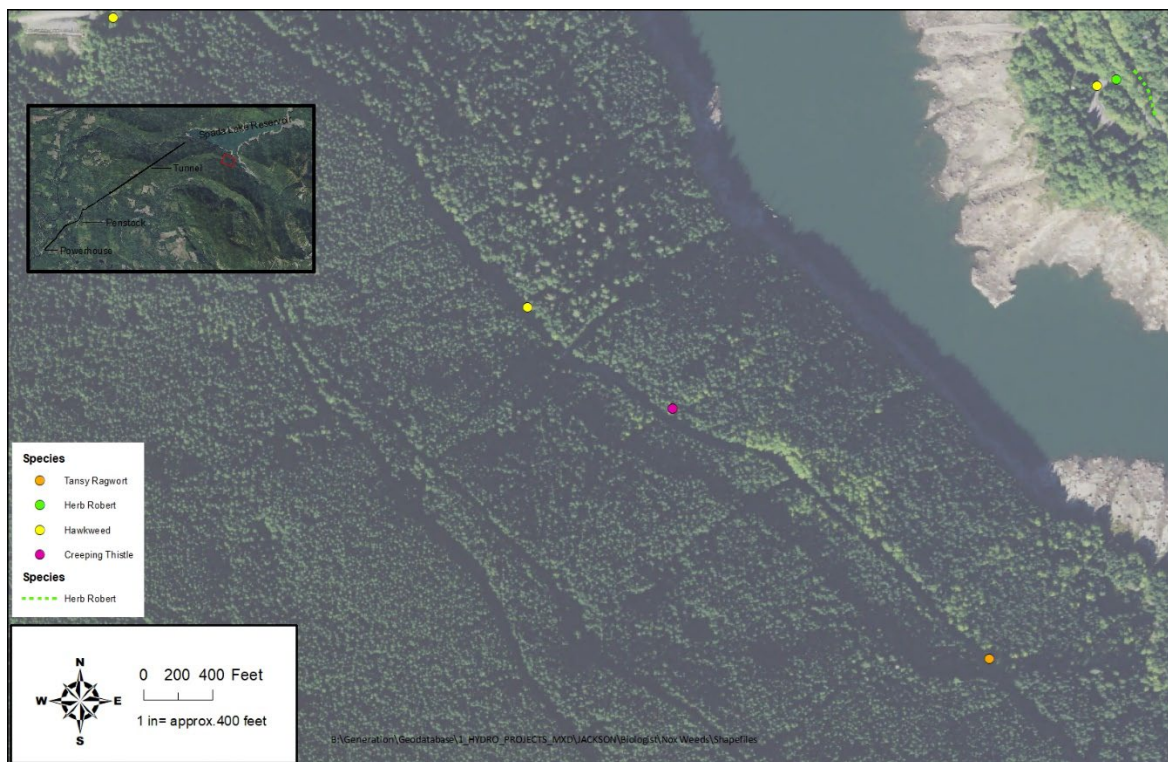


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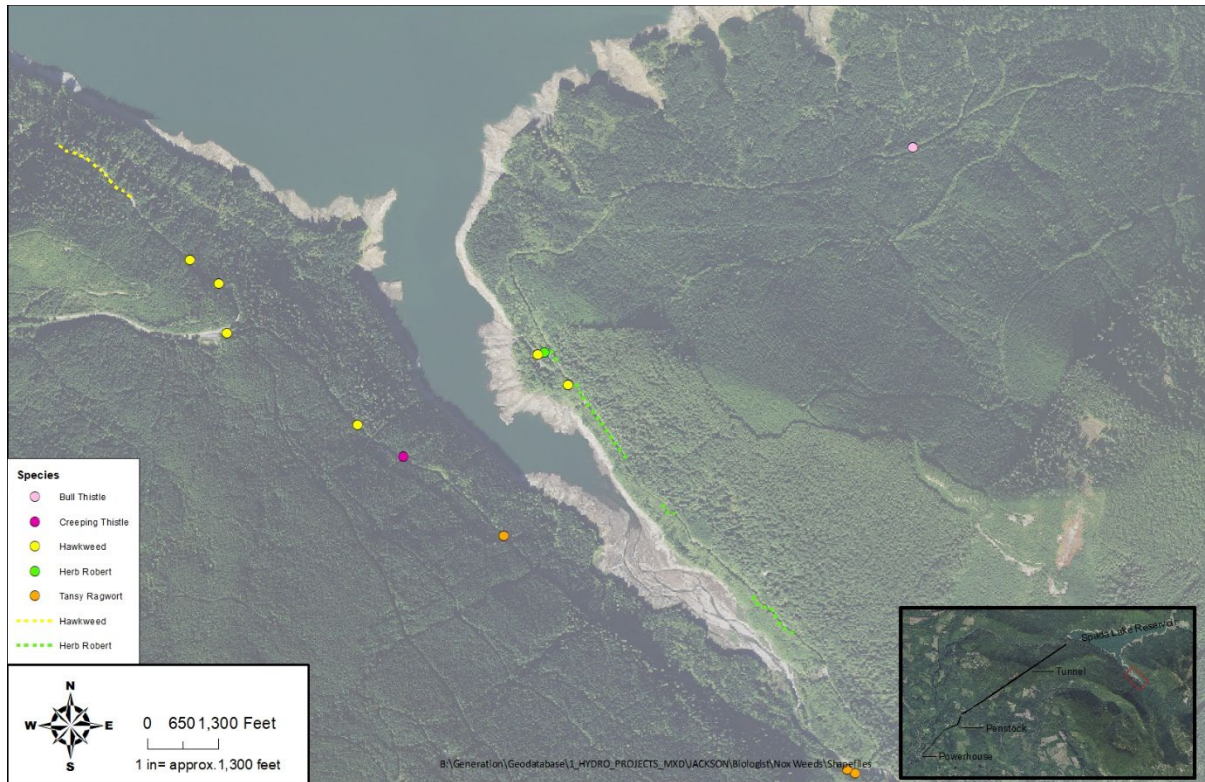


Figure A-12

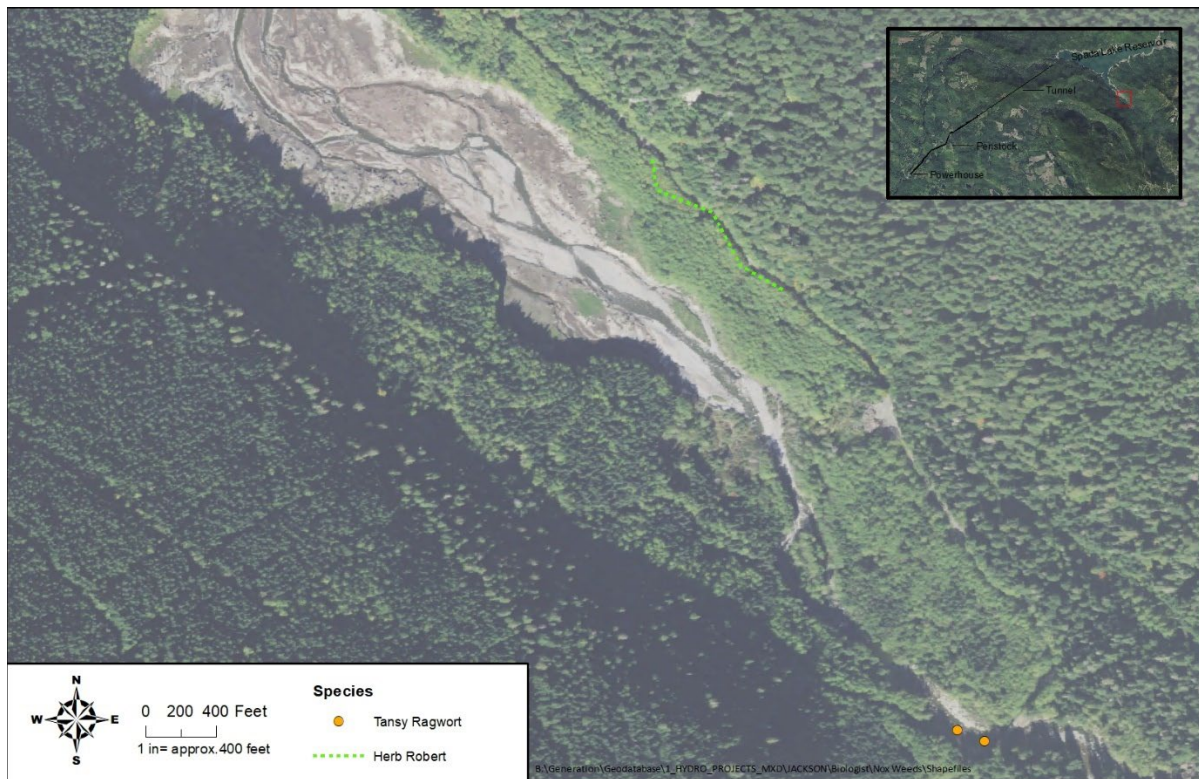


Figure A-13



Figure A-14

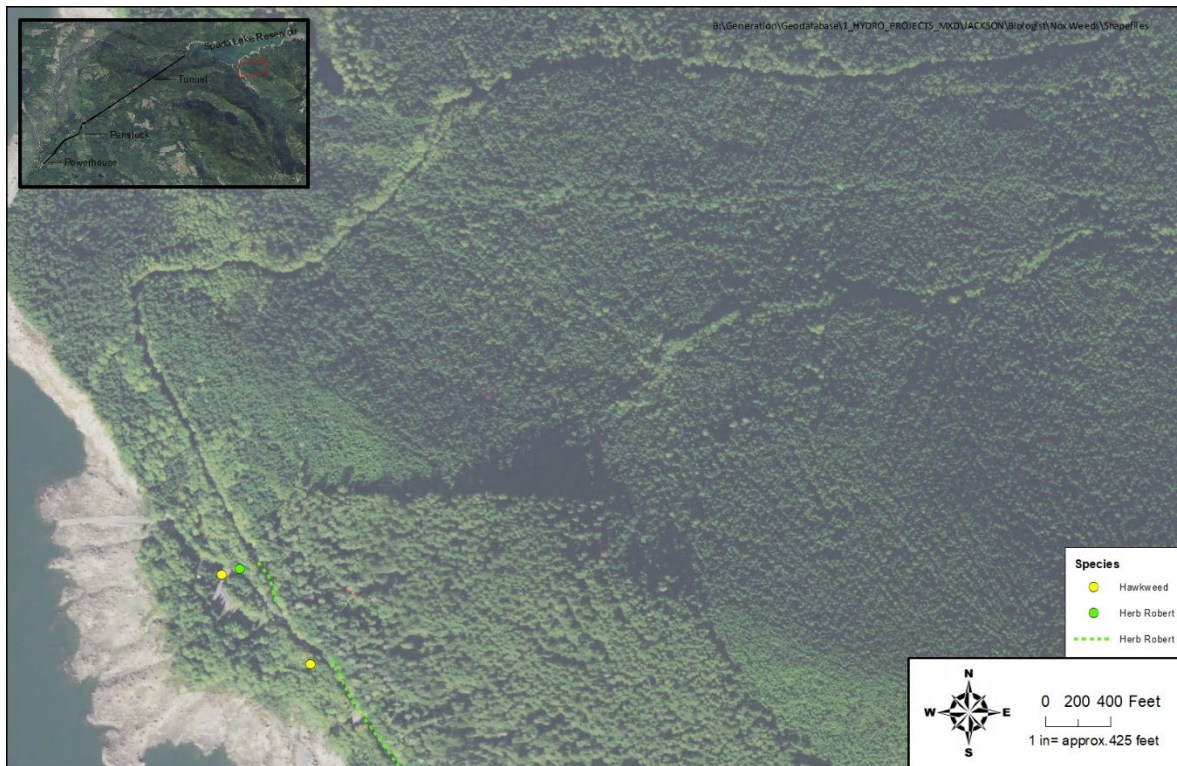


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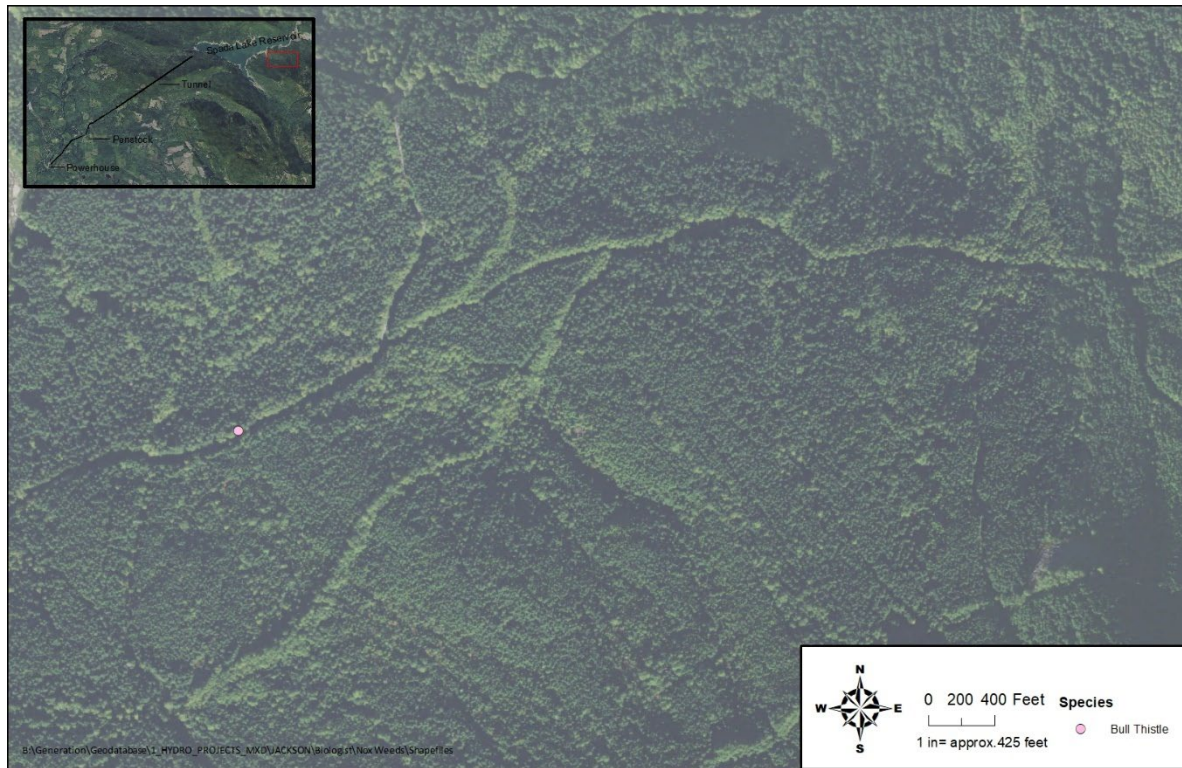


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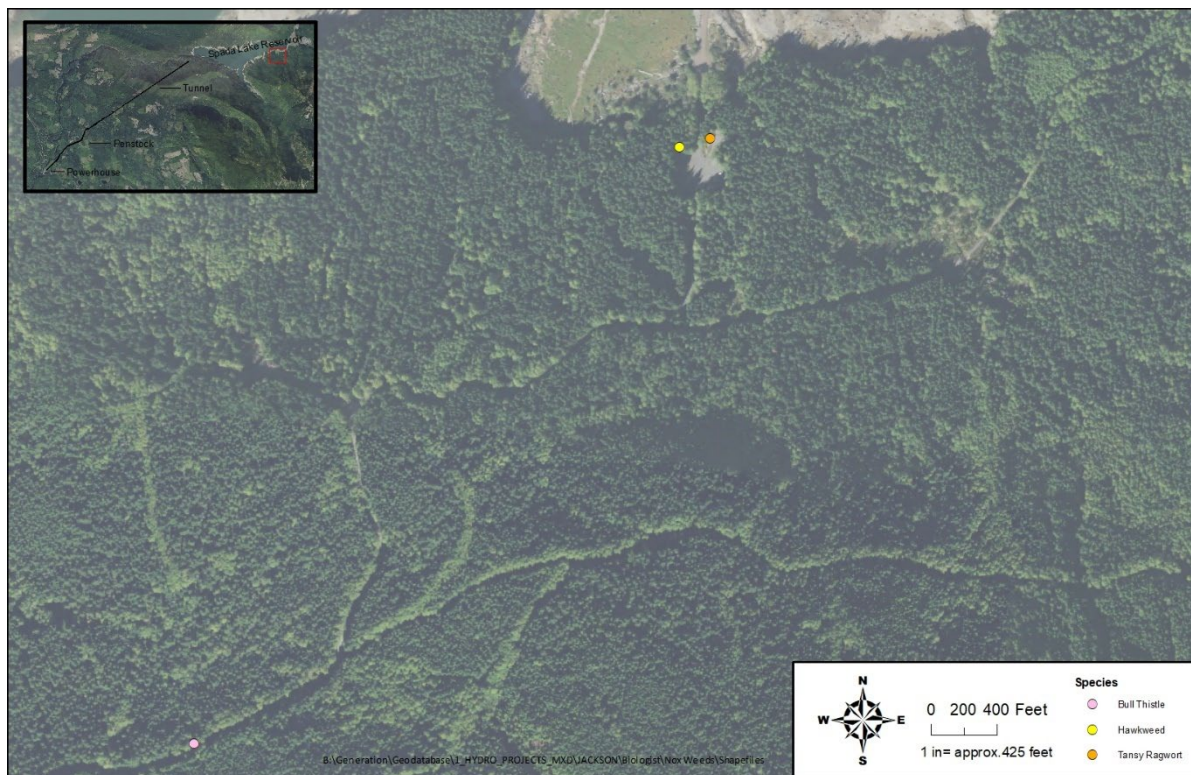


Figure A-17

APPENDIX B

Consultation Documentation Regarding Draft Report

From: [Schutt, Mike](#)
To: [Brock Applegate \(brock.applegate@dfw.wa.gov\)](#); [jeffrey_garnett@fws.gov](#); [Eric Ozog USFS](#); [Kurt.Aluzas@usda.gov](#); [Jonathane Schmitt USFS](#); [Kevin James USFS](#); [Michael Sevigny \(msevigny@tulaliptribes-nsn.gov\)](#); [noxiousweeds@snoco.org](#)
Cc: [Tengs, Hayley](#); [Presler, Dawn](#); [Kees, Ashley](#); [McDonnell, Andrew](#)
Subject: Snohomish County PUD Jackson Project Terrestrial Resources Mgmt. Plan DRAFT Annual Report
Date: Thursday, February 27, 2025 1:20:00 PM
Attachments: [JHP TRMP Annual Report DRAFT 02252025.pdf](#)

Dear Jackson Project Terrestrial Resource Group Members:

Attached for your review and comment is the draft report covering the Jackson Hydro Project's Terrestrial Resource Management Plan (TRMP), Noxious Weed Management Plan (NWMP), and Marbled Murrelet Habitat Protection Plan (MMHPP).

The attached draft report summarizes activities accomplished pursuant to the License and associated terrestrial management plans for the Jackson Hydro Project for 2024 and those activities planned for 2025. If you have any comments on the draft report, please email them to me by end of day Friday April 18, 2025. Comments will be reviewed and responded to as appropriate prior to finalizing the report; the report will not be filed with FERC this year.

This year, we want to draw your particular attention to our plan to conduct commercial thinning activities on several sites at Spada Lake (Section 2.2.3). We are sending this report earlier than usual and leaving the comment period open longer than the typical 30 days to provide ample time for comments, questions, and field visits. Commercial thinning is proposed and permitted by the TRMP, but in an effort to maximize the area that will benefit from the thinning we are proposing to reconstruct 2 short spur roads and extend one of those 250 additional feet. Without these roads, approximately 60 acres would be unreachable and therefore would not benefit from the forest thinning. No new stream crossings are proposed, and all roads re-opened will be abandoned after use and blocked to ensure no vehicular access is possible.

The management plans governing activities can be found on the District's website at:

[Terrestrial Management Plans and Reports - Snohomish County PUD \(snopud.com\)](#)

If you have any questions regarding the attached draft report or management plans, don't hesitate to contact me and please share with any others within your work groups who would be interested.

Mike Schutt (he/him)

Sr. Wildlife Biologist

Terrestrial and Recreation Management

Generation Dept. – Natural Resources

Snohomish County PUD

Office) 425-783-1712

Cell) 425-210-5816

From: [Applegate, Brock A \(DFW\)](#)
To: [Schutt, Mike](#)
Subject: [External Sender] RE: Site Visit to Snohomish County PUD Jackson Project Terrestrial Resources Mitigation Lands
Date: Wednesday, March 12, 2025 4:28:38 PM

CAUTION: THIS EMAIL IS FROM AN EXTERNAL SENDER.
Do not click on links or open attachments if the sender is unknown or the email is suspect.

Hi Mike, Sorry, I am still tied up with the Skagit Settlement. :=(

Thanks For Offering, Brock

From: Schutt, Mike <MSSchutt@snopud.com>
Sent: Wednesday, March 12, 2025 10:22 AM
To: Applegate, Brock A (DFW) <Brock.Applegate@dfw.wa.gov>; jeffrey_garnett@fws.gov; Eric Ozog USFS <eric.ozog@usda.gov>; 'Kurt.Aluzas@usda.gov' <kurt.aluzas@usda.gov>; Jonathane Schmitt USFS <jonathane.schmitt@usda.gov>; Kevin James USFS <Kevin.James@usda.gov>; Michael Sevigny (msevigny@tulaliptribes-nsn.gov) <msevigny@tulaliptribes-nsn.gov>; 'noxiousweeds@snoco.org' <noxiousweeds@snoco.org>
Subject: Site Visit to Snohomish County PUD Jackson Project Terrestrial Resources Mitigation Lands

External Email

Hello all,

I wanted to offer an opportunity for a site visit to see any of the mitigation topics discussed in the annual report that was sent for your review at the end of February. I have tentatively reserved the following dates if you are interested:

Wednesday 4/16

Thursday 4/17

Monday 4/21- Thursday 4/24

Please let me know if you are interested, and I will set up a meeting on the date that is most chosen.

thanks

Mike Schutt (he/him)

Sr. Wildlife Biologist

Terrestrial and Recreation Management

Generation Dept. – Natural Resources

Snohomish County PUD

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