Forest Stewardship and Restoration Program Implementation Plan

2025 – 2034




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Introduction

The Forest Stewardship and Restoration Program works to ensure the long-term health of the forests on Kitsap County parks by returning habitats, compositions, and structures toward historical and desired conditions. Stewardship of the forests on Kitsap County parks involves management actions and activities that maintain and enhance the forests to ensure that they will be passed to future generations of Kitsap County residents in healthy conditions (*sensu* Helms 1998). Restoration is the process of altering the conditions of forests that have departed from desired conditions through the management by past landowners so they will more closely align with desired conditions in the future (*sensu* Helms 1998). Desired conditions are guided by historical conditions and tempered by past and expected future climate changes. Using both stewardship and restoration over the coming years and decades the Forest Stewardship and Restoration Program seeks to create conditions on Kitsap County parks that are resilient to future expected climate change and provide high quality habitats that are refugia for wildlife and the people of Kitsap County.

This Forest Stewardship and Restoration Implementation Plan provides a high-level, system-wide plan to implement the updated Forest Stewardship and Restoration Policy (Ceder and Weber, in review) for the next 10 years – 2025 through 2034. To provide context for the program moving forward, the program's performance during its first eleven years – 2014 - 2024, including restoration thinning, road maintenance and construction, and financial returns, is reviewed. The scope and scale of the Forest Stewardship and Restoration Program's work is presented in a brief review of the Program's focus parks – larger forested parks that were previously managed as timberland. A statement of the Program's purpose and need provides the reasons for performing forest stewardship and restoration activities within the focus parks. Foreseeable forest stewardship and restoration activities to meet the purpose and need are then presented, which provide the core of the implementation plan. Forest stewardship and restoration activities are summarized by activity type for each focus park for the short- (2025 – 2027) and long-term (2028 – 2034) with expected costs and revenues where they can be reasonably estimated. Expected revenues and costs of foreseeable forest stewardship and restoration activities, along with estimated program costs, are evaluated to determine the potential to the Forest Stewardship and Restoration Program to remain financially sustainable.

Over the next 10 years some type of forest stewardship and restoration activities will take place on all focus parks. Performing assessment and monitoring to determine current conditions and forest stewardship and restoration plan development will happen on all focus parks to update existing assessments and plans, monitor forest growth and development, undertake new assessments and plan development, and get the parks set up for a 10-year assessment and planning cycle moving forward. Approximately 2,742 acres are planned for assessment and monitoring over the next three years, with an expected investment of approximately $41,130[1] for contract forest inventory data collection, with the remaining areas planned or the following 7 years. Forest stewardship and

[1] Estimate based on initial estimates from potential contractors. This estimate is subject to change during implementation when actual prices are realized.

restoration treatments would happen where assessment, monitoring and planning determine where treatments are both ecologically needed and appropriate. Assessments using the best publicly-available data suggests that thinning treatments are needed and appropriate on approximately 527 acres during the next three years, which may result in net revenues of approximately $377,000[2] after acquiring all necessary permits. Additionally, there are approximately 191 acres needing young stand thinning during the next three years, which would require an investment of $120,000[3] to ensure that these stands remain vigorous and grow into healthy forests. Over the coming three years the Forest Stewardship and Restoration Program is expected to have a net income from forest stewardship and restoration activities of approximately $300,100[4] after needed investments in forest inventory data collection and young stand thinning. This is likely insufficient to sustain the Forest Stewardship and Restoration program long-term without changes in the cost and/or revenue structures of the program.

Past Performance

During the first 11 years of the Kitsap County Parks Forest Stewardship and Restoration Program – from 2014 through 2024 – restoration treatments were conducted on approximately 2,467[5] acres of large, forested parks. Along with these treatments approximately 17.25 miles of roads were constructed, maintained, or improved, approximately 0.5 miles were abandoned, 6 water crossing structures removed, improved, or replaced, and 2 drainage structures were added. After accounting for road work and other costs, these treatments generated approximately $2,329,000 of revenue to the Parks Department.

Revenues generated by restoration treatments were sufficient to support the Forest Stewardship and Restoration program during this time, though revenues were highly variable between years (Figure 1). This is the result of highly variable sawlog prices, which ranged from a low of $68/ton in 2014 to a high of $120/ton in 2022, and generally flat pulp log prices ranging from $35-$39/ton. Generally, whenever sawlog prices were over $90/ton, thinning operations were profitable but were not profitable below this price. Profitable years also coincided with thinning projects in older forests with larger trees. Larger trees produce more sawlog volume and less pulp log volume resulting in higher valued log mixes that coincided with high logs prices resulting in some high returns to the Forest Stewardship and Restoration Program account.=. By the end of 2023 that account had grown to approximately $700,000. 2024 was a transition year with the new Stewardship Forester, the addition of the Natural Resources Supervisor, and completion of remaining planned stewardship and restoration treatments. The additional position increased costs to the Forest Stewardship and

[2] Estimate based on publicly-available data, expected log market prices, and expected logging and hauling costs. This estimate is subject to change during implementation when actual market prices and costs are realized.
[3] Estimate is the midpoint of per-acre cost estimate ranges and would likely change during implementation when actual prices are realized. This may also be reduced through publicly-funded cost-sharing programs.
[4] Estimate is subject to change. See footnotes 1, 2, and 3.
[5] Differences exist between acreages reported in Forest Practices Applications and acres reported here as since there is no clear linkage between permitted area and area harvested in some years in available log sales reports.

Restoration Program while log prices decreased to $78/ton reducing net revenues and causing losses from the final stewardship and restoration treatments. By the end of 2024 the account balance had been reduced to approximately $350,000 as stewardship and restoration projects were paused pending additional assessments and planning.

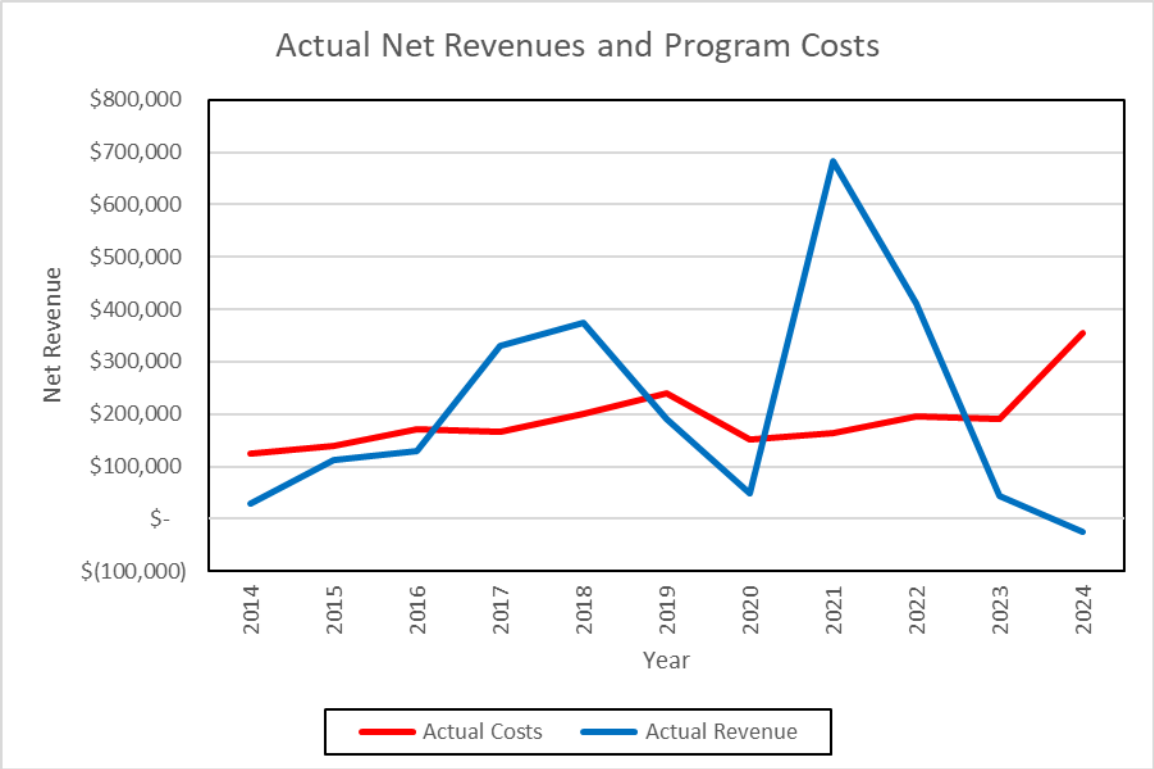

Figure 1: Actual revenue and costs for the Forest Stewardship and Restoration Program from 2014 – 2024. The large uptick in costs for 2024 is the addition of a second salary to the Forest Stewardship and Restoration Program budget.

Though the Forest Stewardship and Restoration Program did complete an extensive amount of revenue-generating thinning projects from 2011-2024, it did leave a backlog of non-commercial thinning and post-harvest monitoring which require investments rather than generating revenue. . Management plans for North Kitsap Heritage Park, Newberry Hill Heritage Park, and Coulter Creek Heritage Park prescribed non-commercial treatments on approximately 280 acres, though it appears that these treatments were not implemented. In addition, there were areas that were not treated during commercial treatments because the trees were too small to be marketable, but no follow-up treatments were completed, though there is treatment need. Avoiding these treatments, which are needed to help maintain healthy, vigorous forests, avoided the costs of these treatments. Likewise, little, if any, post-treatment forest inventory data were collected. These data are needed to determine post-treatment conditions and provide a basis for future planning, avoiding costs of contracting or volunteer oversight. Neglecting these important steps of forest stewardship and restoration increased profitability during the first 10 years of the forest stewardship program but pushed the costs of activities to the future because they will need to happen at some point.

See Appendix A – Past Stewardship and Restoration Activities for a detailed assessment of the past performance of the Forest Stewardship and Restoration Program.

Focus Parks

This plan focuses on 13 larger, forested Kitsap County parks (Table 1) where forest stewardship and restoration activities may take place over the next 10 years. These parks are unique among 75+ parks managed by Kitsap County because they were generally managed as production timberlands by previous owners, including the Washington State Department of Natural Resources and private landowners prior to County acquisition. Most forests in the parks densely and uniformly stocked with Douglas-fir trees that were planted following harvesting[6]. Other areas were naturally regenerated with conditions that range from well-spaced, diversely sized trees to densely packed small diameter trees. Parks management objectives for these lands are to increase the size and diversity of trees in park forests and create forests that are resilient to climate change, insects, and disease through forest stewardship and restoration activities (Ceder and Weber, in review). See Appendix B - Focus Park Descriptions for brief descriptions of each park.

Table 1: Kitsap County Parks where the Forest Stewardship and Restoration Program will focus from 2025 - 2034

Park Name	Region	Acreage
Bandix Dog Park	South	30
Banner Forest Heritage Park	South	636
Coulter Creek Heritage Park	South	1,549
Eglon Forest	North	707
Gordon Park	Central	54
Hansville Greenway	North	283
Illahee Preserve Heritage Park	Central	468
Newberry Hill Heritage Park	Central	1083
North Kitsap Heritage Park	North	818
Port Gamble Heritage Park	North	3,374
Rude Road Site	North	203
South Kitsap Regional Park	South	200
Wicks Lake Park	South	178
Total		9,583

Reserve areas

Across Forest Stewardship and Restoration Program focus parks there are approximately 1,645 acres (approximately 17% of the park area) of reserve areas. Most of the reserve areas, approximately 1,528 acres, are regulatory reserves – riparian management zones (RMZs) and wetland management zones (WMZs) – that are prescribed by the Washington Department of

[6] Planting following regeneration harvesting has been required since January 1, 1946. https://historylink.org/File/5287#:~:text=On%20January%201%2C%201946%2C%20the,logs%20that%20they%20have%20harvested. Last accessed 1/22/2025.

Natural Resources to protect stream and wetland resources during timber harvesting[7]. Within these areas some thinning may happen under specific conditions[8]. On Banner Forest there is an additional 117-acre voluntary reserve. This area is the portion of conservation easement held by the Great Peninsula Conservancy that is outside of regulatory reserves. This conservation easement was established soon after the park was transferred to Kitsap County and does not allow any tree cutting or harvesting within the easement as the easement is currently written. However, this may change if assessments and planning reveal conditions that are not meeting the goals of the conservation easement.

Forest Stewardship and Restoration Purpose and Need

The forest stewardship and restoration purpose and need is taken from the Forest Stewardship and Restoration Policy (Ceder and Weber, in review).

The purpose for forest stewardship and restoration activities by the Forest Stewardship and Restoration Program is to create forest conditions on Kitsap County Parks that:

- Have compositions and structures that facilitate the growth of large, vigorous[9] trees that are resilient to insects, diseases, expected climate change, and potential wildfires,
- Provide high quality terrestrial, aquatic, and riparian habitats that have high ecological function and ecosystem services production,
- Maintain and enhance soil conditions and productivity.
- Allow opportunities for public and cultural foraging and gathering, and
- Are refugia for wildlife and humans in an increasingly developing and urbanizing environment.

Forest stewardship and restoration treatments are needed to create these conditions because:

- Forests on Kitsap County parks are primarily dominated by primarily small (10-15” average DBH) and medium (16-20” average DBH) with high to very high levels of inter-tree competition while lacking areas dominated by large (20-30” average DBH) and very large (>30” average DBH) trees[10] (Figure 2). This is the legacy of the industrial forest management by the previous owners of the park lands.
- Tree growth and vigor are reduced in high and very high competition forests where most trees near or approaching their maximum diameter given the number of trees in the forest.

[7] These areas are different than those prescribed under the Kitsap County Critical Areas Ordinance in that they are based on harvested areas remaining forest, with maintained ecological functions, rather than converted to non-forest uses and the loss of ecological functions.
[8] See WAC 222-30-020 (https://app.leg.wa.gov/Wac/default.aspx?cite=222-30-020, last accessed 1/22/2025) and WAC 222-30-021 (https://app.leg.wa.gov/Wac/default.aspx?cite=222-30-021, last accessed 1/22/2025)
[9] “Vigorous” refers to tree growth.
[10] Donato *et al.* (2020) and D. Danato (personal communication, April 4, 2024) suggest that pre-contact forests in the western Cascade Range and Kitsap County were primarily dominated large and very large trees based on historical disturbance regimes.

- Tree health is reduced in high and very high competition forests where trees are stressed and increasingly susceptible, and succumbing, to mortality from insects, diseases, and competition for limited resources.
- Ecosystem services, including high quality wildlife habitats, carbon sequestration, vegetation diversity, foraging and gathering opportunities, etc., are reduced in high and very high competition forests with slow-growing small to medium diameter trees, little, if any, functional standing dead and downed wood, dense, single-layer tree canopies, and suppressed understory vegetation.
- Ecological function is reduced, especially in previously harvested areas along streams and wetlands, in high and very high competition forests that lack functional large woody debris and trees that would become functional large woody debris, understory vegetation is suppressed and sparse, and deciduous trees are lacking.

Where needed and appropriate[11], forest stewardship and restoration treatments would change forest conditions by:

- Removing trees to create additional room for lager trees and provide access to greater resources. This would include removing smaller trees to mimic competition-related mortality, groups of trees to mimic mortality from root diseases, and/or other treatments.
- Creating openness in the canopy and/or canopy gaps to allow increased light to reach the forest floor to increase growth of existing understory trees and vegetation and/or to establish a new cohort of trees and understory vegetation.
- Creating standing dead and downed wood where they are lacking to improve wildlife habitat and ecosystem function.
- Removing trees and creating openness or openings in the canopy would:
    - Increase tree growth, vigor, and resilience to insects, diseases, and expected climate change.
    - Improve overall forest health by reducing competition, stress, and impacts from insects, diseases, and expected climate change.
    - Improve ecosystem services, including carbon sequestration, wildlife habitat, species diversity, and foraging and gathering opportunities and ecosystem function through increased tree growth and understory vegetation production.

[11] All areas with treatment need may not be treated. This would include, but not limited to, areas excluded from treatment by applicable regulations or where environmental or societal concerns outweigh the ecological need for treatment.

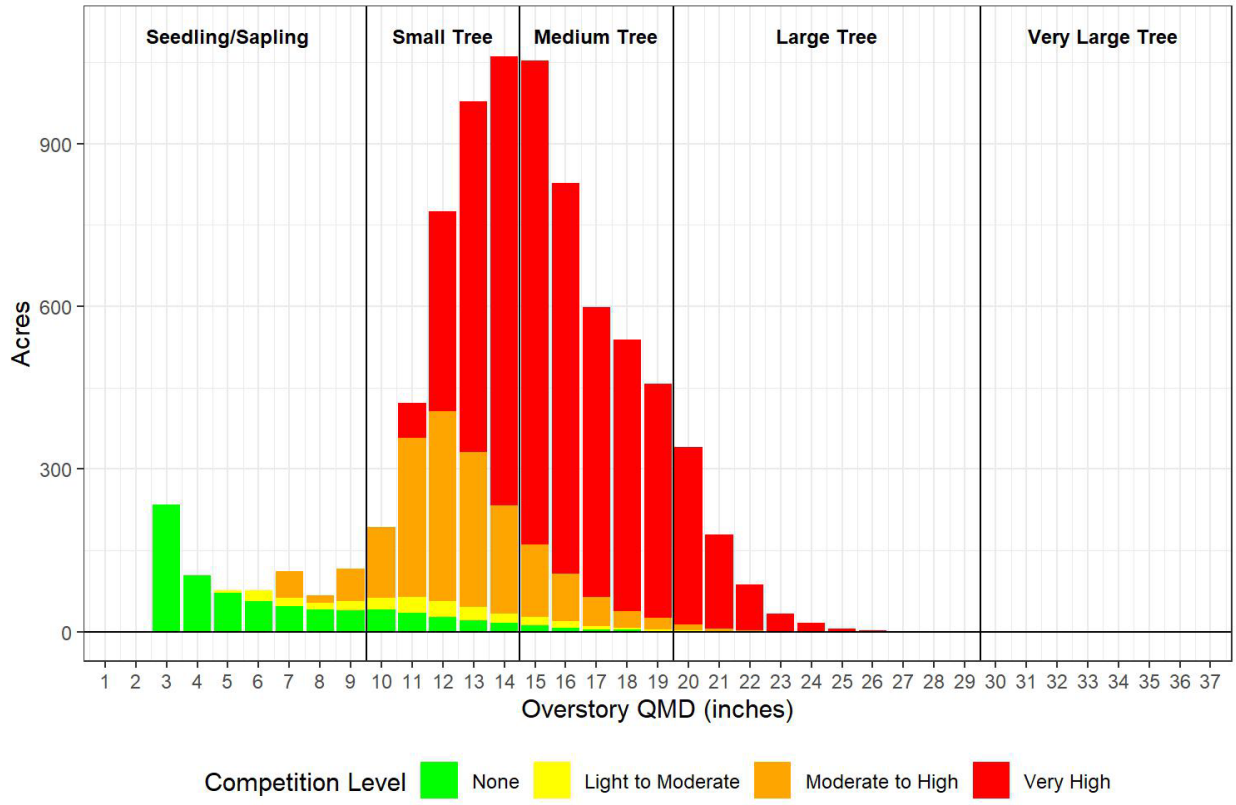

Figure 2: Acreages of parks by dominant tree sizes and competition levels. Dominant tree sizes are the average diameter of the largest 100 trees per acre. Competition levels are based on percentage of maximum stocking[12] as <25%, 25-35%, 35-55%, and >55% for None, Light to Moderate, Moderate to High, and Very High. Data for tree sizes, competition levels and maximum stocking from RS FRIS and other data from the Washinton Department of Natural Resources. Tree size classes, Seedling/Sapling, Small Tree, Medium Tree, Large Tree, and Very Large Tree based on O'Neil et al. *(2001).*

Stewardship and Restoration Activities

Stewardship and Restoration activities are the processes used to address forest stewardship and restoration needs and to move forests on Kitsap County parks toward desired conditions. These activities are generally fall within one of five conceptual components of restoration (Figure 3). In practice these activities would be lumped into three categories – assessment and monitoring, planning and permitting, and implementation and management – where actions are similar, if not the same. Additional information about stewardship and restoration activities can be found in the Forest Stewardship and Restoration Policy document (Ceder and Weber, in review).

[12] "Stocking" refers to the number of trees in an area with the maximum varying based on the sizes and species of trees.

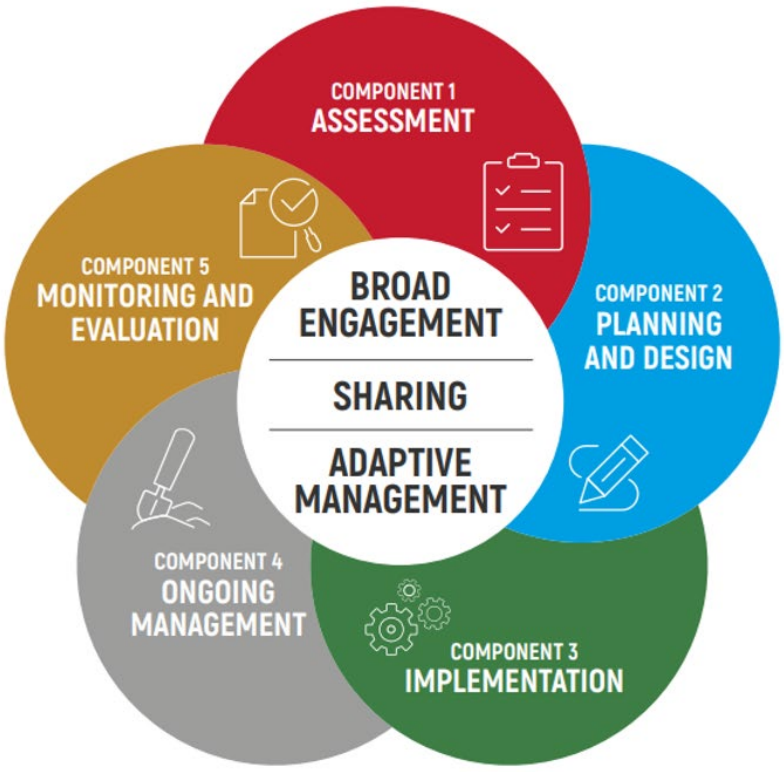

Figure 3: The conceptual framework for restoration that is guiding work by Kitsap County Parks. From SER: STANDARDS OF PRACTICE TO GUIDE ECOSYSTEM RESTORATION A contribution to the United Nations Decade on Ecosystem Restoration 2021–2030.

Over the next 10 years all area with the focus parks would have some type of stewardship and restoration activity (Table 2: Acreages for each stewardship and restoration activity type foreseen to meet forest stewardship and restoration needs in the near-term (2025, 2026-2027) and long-term (2028-2034). The bulk of these activities are assessment and monitoring followed by planning and permitting to get focus parks set up on a 10-year assessment and planning schedule. Permitting and management/implementation would be done on smaller area of the focus parks as specified by completed park-specific forest stewardship and restoration plans.

Table 2: Acreages for each stewardship and restoration activity type foreseen to meet forest stewardship and restoration needs in the near-term (2025, 2026-2027) and long-term (2028-2034)

Activity Type	2025	2026-2027	2028-2034
Assessment/Monitoring	857	1,913	6,924
Planning	857	1,454	7,383
Permitting	130	397	928
Management/Implementation-Thinning/Roadwork	130	397	928
Management/Implementation-Young stand thinning	0	191	464

Assessment and Monitoring

Assessment and monitoring activities are used to describe current conditions, determine differences from desired conditions, and progress made developing toward desired conditions. This generally takes place before other activities, such as thinning, but may also happen after activities, to determine post-treatment conditions, or while treatments are occurring to ensure contract compliance. Work done during assessment and monitoring are similar, if not the same, and often overlap each other to close the loop on a forest stewardship and restoration cycle (Figure 3).

Assessment and monitoring are needed on all parks over the next 10 years to support proposed forest stewardship and restoration planning, permitting and implementation/management activities. Currently, many parks have either not had assessments, the timing of the assessments are unknown, or are currently over 10 years old or will be within the next 10 years. Assessments will be prioritized based on lack of assessment or assessment age along with potential restoration needs (Table 3). Accomplishing this would require assessments on an average of approximately 950 acre per year.

Meeting the proposed schedules and data quality needs will require investments in professional data collection[13]. Past forest inventory data collection relied on trained volunteers to collect pre-harvest inventory and post-harvest monitoring data to meet past program needs. Going forward this paradigm would likely not produce the data quantity and quality needed to support planned stewardship and restoration activities. Contracting professional forest inventory data collection would ensure high quality data are collected in a timely manner and meet proposed stewardship and restoration activity schedules (Table 3) and meet the needs for grant applications, forest certification, and carbon projects. Initial estimates for contract forest inventory data by American Forest Management through the current professional services agreement is approximately $15/acre – approximately $14,250/year to meet data collection needs. Contract inventory and monitoring data collection can be easily overseen and managed with current staffing levels. Performing the needed amount of data collection with trained volunteers, interns, or staff would require 1-2 additional FTEs per year, which is more than the cost of contracting. Additional resource inventories, such as road and culvert conditions, may be collected by Parks staff, interns, and/or trained volunteers.

Table 3: Preliminary park assessment schedule.

Year(s)	Park(s)	Acreage	Estimated forest inventory cost

[13] Other groups performing similar forest restoration, including GPC, rely on contract data collection.

2025	Port Gamble Forest[14]	130	$1,950
	Rude Road Site	20	-[15]
	Eglon Forest	707	$10,605
2026-2027	Banner Forest	636	$9,450
	North Kitsap	818	$12,270
	Illahee Preserve	459	$6,855
2028-2034	Port Gamble	3,373[16]	
	Newberry Hill	1,083	
	Coulter Creek	1,549	
	Hansville Greenway	296	
	South Kitsap	200	TBD
	Wicks Lake	156	
	Rude Road Site	184	
	Gordon Park	53	
	Bandix Dog Park	30	

Stewardship and Restoration Research/Case Studies

Assessment and monitoring in focus parks provides opportunities for forest stewardship and restoration research. Little forest restoration research exists for lowland Douglas-fir forests of the Puget Sound Trough Forests, like those in Kitsap County. This provides an opportunity to start monitoring research projects in focus parks to evaluate the forests' responses to stewardship and restoration treatments. These projects would provide opportunities for collaboration with universities, colleges, and local schools through engaging faculty and students in designing and implementing the research projects. Results from these monitoring projects would be made available to the public, practitioners, and the scientific community through publication in scientific journals, presentations at scientific conferences, or other outlets.

Planning and Permitting

Planning and permitting takes results from assessment and monitoring and creates park- or project-specific stewardship and restoration plans. During planning, park-specific assessment results would be used to determine stewardship and restoration treatment needs for the park. Treatment prescriptions and schedules would be created to address restoration needs along with evaluations of expected short- and long-term treatment effects, including how forests in the park are expected move toward desired conditions.

Planning

Planning is needed on all focus parks during the next 10 years to support forest stewardship and restoration. Plans are developed or updated using park-specific assessment data and results to

[14] Four areas will be assessed prior to forest restoration treatments. The remainder of the park will be assessed at a later time. Additional areas, such as regenerated and released harvest units may be assessed as well.

[15] Forest inventory will be conducted by Parks staff.

[16] Actual acreage will depend on the area released from the timber deed prior to assessment.

determine park-specific stewardship and restoration needs, develop project specifications and prescriptions to meet the needs, a schedule for projects, and quantify and/or qualify expected short- and long-term outcomes from the treatments. Resulting plans would provide:

1. A data driven justification for stewardship and restoration treatments in the park that supports the goals and objectives outlined in the Forest Stewardship and Restoration Policy (Ceder and Weber, in review)..
2. A schedule for projects.
3. Expected short- and long-term effects from the treatments, which may include:
    a. Impacts on recreational opportunities
    b. Changes in forest conditions from treatments
    c. How forests are expected to move toward desired conditions

Additionally, some projects will be planned in parks where stewardship and restoration plans are in place or where the park is currently a working forest. In these cases, planning would be limited to specific treatment areas where needs are known. Planning would be focused on developing project specifications and prescriptions to address treatment needs.

Outreach and collaboration would happen during the planning process to communicate assessment findings, stewardship and restoration needs, and proposed projects to the public and other stakeholders. This would also be an opportunity to solicit comments and feedback about the park stewardship and restoration plan, which would be used to help refine the plan.

To ensure that plans updated on a 10-year schedule moving forward, parks staff, lead by the stewardship forester, would complete one park per year. Park planning would follow completed park assessments. A preliminary schedule for park planning is in Table 4.

Table 4: Preliminary schedule for park plan development or updates.

Year(s)	Park(s)	Acreage	Current plan year
2025	Port Gamble Forest[17]	130	2015
	Rude Road Site	20	No current plan
	Eglon Forest	707	No current plan
2026-2027	Banner Forest	636	2015[18]
	North Kitsap	818	2015[19]

[17] Four areas will be planned prior to forest restoration treatments.
[18] Plan was created by the Banner Forest Watch group independently of Kitsap County Parks and covers all management aspects for Banner Forest providing little guidance for forest stewardship and restoration.
[19] No prescribed treatments completed except minimal thinning completed in only one small unit.

2028-2034	Illahee Preserve	459	2003
	Gordon Park	53	No current plan
	Bandix Dog Park Rude	30	No current plan
	Road Site	184	No current plan
	Port Gamble	3,373[20]	2015
	Newberry Hill	1,083	2013
	Coulter Creek	1,549	2017/2021[21]
	Hansville Greenway	296	2012
	South Kitsap	200	No current plan
	Wicks Lake	156	2022

Permitting

Treatment schedules specified in forest stewardship and restoration plans would be used to schedule project permitting. Necessary permits for projects would be procured from appropriate agencies (e.g. Washington Department of Natural Resources, Washington Department of Fish and Wildlife, Washington Department of Ecology, Kitsap County Department of Community Development, etc.) with sufficient lead time to meet treatment schedules. Permitting may include, but not limited to:

- Forest Practices Application/Notification (FPA) – Submitted to the Washington Department of Natural Resources for thinning projects, forest road construction/betterment, or other activities as required.
- Forest Practices Hydraulic Application (FPHA) - Submitted the Washington Department of Natural Resources for projects involving water crossing structures in forest roads over typed water.
- State Environmental Protection Act (SEPA) Checklist – Submitted to Washington Department of Natural Resources or Washington Department of Ecology for thinning, road, and other projects in parks
- Kitsap County Timber Harvest Permit – Submitted to Kitsap County Department of Community Development when areas of parks would be converted from timber to not-timber use (such as a parking lot or sports field).

Permit applications would be prepared by Parks staff. However, some aspects of preparation for permitting, such as marking treatment area boundaries, riparian management zones, wetland management zones, etc. prior to submitting the FPA, may be completed by contractors through the professional services agreement with American Forest Management[22]. Current foreseeable permitting needs are shown in (Table 5).

Table 5: Expected permitting for forest stewardship and restoration activities.

Year(s)	Park(s)	Activity	Acreage	Expected Cost

[20] Actual acreage will depend on the area released from the timber deed prior to assessment.
[21] 2021 update added Square Lake to the Coulter Creek Forest Stewardship and Restoration Plan.
[22] Assisting in FPA development is included in the scope of work for the professional services agreement and included in the commission price.

2025	Port Gamble Forest[23] Rude Road Site North Kitsap	Thinning Thinning Culvert cleaning	110 20 NA	$150 $150 $150
2026-2027	Eglon Forest	Thinning, Roadwork	397	$600
2028-2034	Banner Forest, North Kitsap Heritage Park, Newberry Hill Heritage Park, Gordon Park, Bandix Dog Park	Thinning, Roadwork, Other.	928	TBD

Permitting beyond 2026 will depend on completed park-specific forest stewardship and restoration plans and associated schedules. However, it is expected that permitting would happen continuously to support treatments on approximately 200 acres[24] of stewardship and restoration projects per year. The scope and scale of permitting would depend on plan schedules and treatment priorities.

Implementation and Management

Implementation and management follow permitting to put projects in place on the ground to address forest stewardship and restoration needs. With permits in-hand, projects would be implemented to address forest stewardship and restoration needs. The types of treatments that would be used to move forests toward desired conditions may include, but is not limited to:

- **Thinning and uneven-aged regeneration harvesting** – Remove a portion of the trees to create additional room for the remaining trees to grow, enhance understory vegetation, and/or establish and new cohort of trees. These treatments produce merchantable trees that would typically generate revenue to fund Forest Stewardship and Restoration Program activities. Any revenues generated would depend on current log markets and logging and hauling costs, which can vary greatly.
- **Young stand thinning** – Remove a portion of the trees in a young stand to create additional room for the remaining trees to grow and develop. These treatments would require investments because the trees removed are too small to be merchantable. Current estimates for this type of thinning range from $300 - $750/acre.
- **Road construction, maintenance, and/or betterment** – Build, brush, grade, repair, rock, ditch or otherwise bring road conditions up to standard for hauling. These treatments would only be used in conjunction with thinning treatments where hauling is needed to bring in

[23] Four areas will be planned prior to forest restoration treatments.
[24] Treatment acreage would be limited to approximately 200 acres per year to ensure that harvest levels are limited to approximately 2 million board-feet per year, which would maintain Small Forest Landowner status with the Washington Department of Natural Resources.

equipment and haul out logs. Estimates of cost based on past road work are approximately $20,000/mile, which is equivalent to approximately 4% of the gross timber proceeds.

Thinning and Road Projects

Forest stewardship and restoration thinning projects to address forest stewardship and restoration needs are expected to be implemented on approximately 1,426 acres between 2025 and 2034. To support these treatments road maintenance, betterment, and/or construction projects are expected on approximately 8.5 miles of road. These projects would be performed by contractors through the professional services agreement with American Forest Management with oversight by Parks staff. Currently foreseen thinning and road projects are shows in (Table 6). Preliminary areas needing treatment are shown in Appendix C – Preliminary Park Treatment Needs.

Table 6: Currently foreseeable short-term (2025, 2026-2027) and long-term (2028-2034) thinning and road projects

Year(s)	Park(s)	Thinning acreage[25]	Road mileage	Estimated Net Revenue[26]
2025	Port Gamble Forest[27]	110	Minimal[28]	$66,000
	Rude Road Site	20	Minimal[29]	$30,000
2026-2027	Eglon Forest	397	2	$368,000
2028-2034	Banner Forest, North Kitsap Heritage Park, Newberry Hill Heritage Park, Gordon Park, Bandix Dog Park	928[30]	6.5	TBD

Revenue simulations suggest that combined thinning and road projects would generally generate revenue for the Parks Department (Figure 4). Potential revenues for each log price scenario are highly variable because they depend on the sizes and types of trees being removed and the acreage available for restoration treatments. Revenues would start lower in 2025 when forest stewardship and restoration projects resume on approximately 130 acres of Port Gamble Forest and the Rude Road Site where forests are excessively dense and need treatment. Treatments will predominantly remove smaller trees that produce a larger proportion of low-valued logs. Revenues would increase in 2026 and 2027 as stewardship and restoration projects start in Eglon Forest where more area needs treatment and trees are larger and expected to product a lower proportion of low-valued pulp log volume. Revenues from 2028-2035 are represents estimates of what may be possible under one

[25] Preliminary estimate of thinning acreage. This will be refined during planning and permitting processes.
[26] Estimated net revenue based on simulations with publicly available data using an estimated aggregate sawlog price of $90/ton, average past logging and hauling costs, 5.7% AMF commission, and 4% road costs. These will be refined following pre-harvest or assessment inventory data collection.
[27] Four areas will be planned prior to forest restoration treatments.
[28] Minimal road work would be needed to for these treatments because previous treatments have brought roads up to standard.
[29] Access road for this site is used by neighboring residents with status is currently unknown. Some road grading and/or rocking may be needed pending road status and/or agreements with neighbors.
[30] The location and schedule of thinning and road work will be determined after assessment and planning

of many potential scenarios. A notable aspect to the scenarios is the reduction in revenues in 2033 and 2034. This is the point when the first thinning activities are wrapping up but before second thinning activities, which may begin 20 years after the first thinning, might begin. Without areas needing a second thinning during this time, under the current financial model there would need to be additional areas that need thinning to bridge the revenue gap. These estimates will be better defined following park assessments and planning.

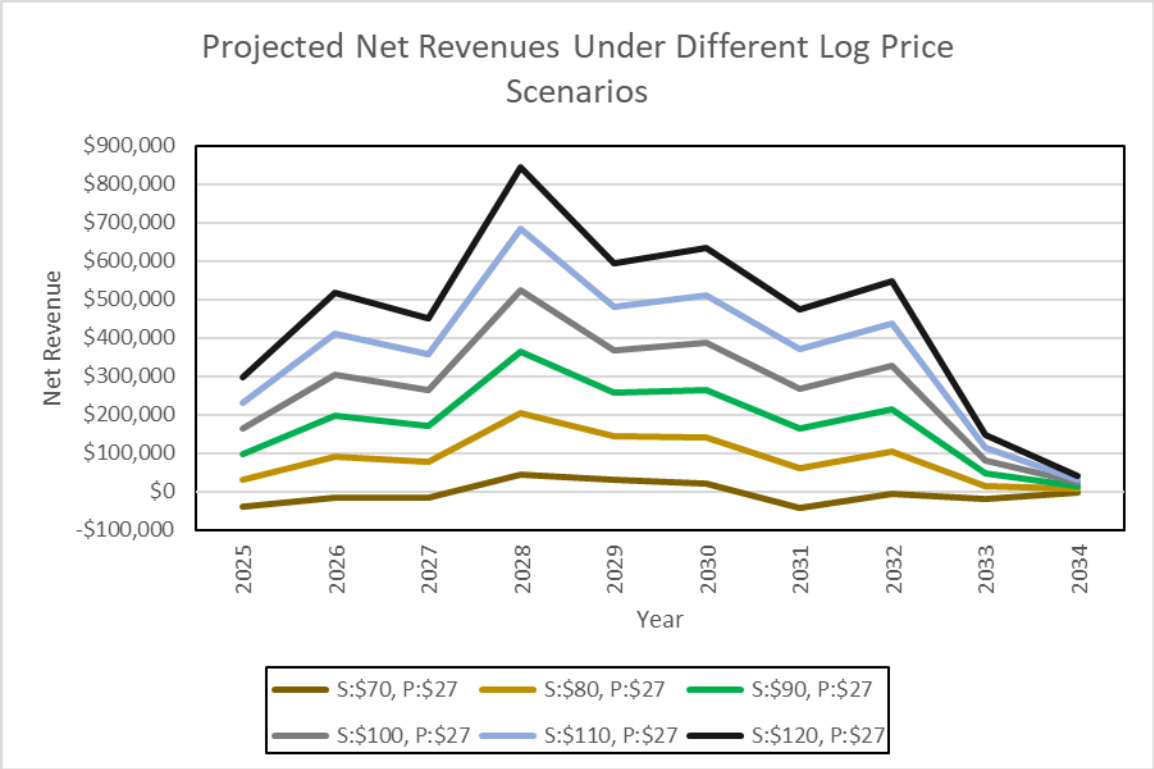

Figure 4: Projected net revenue generated from thinning and road project under different sawlog price scenarios. Sawlog $70/ton (S:$70) to $120/ton (S:$120) to represent a range of potential prices based on what has been realized. Pulp prices are held constant recognizing the poor pulp market conditions with few pulp mills in western Washington.

Young Stand Thinning Projects.

Across the focus parks there are approximately 655 acres of young stands, which contain little, if any, merchantable wood to defray costs. This work would require an investment of approximately $196,500 - $491,250 over the next 10 years (Table 7, Appendix C – Preliminary Park Treatment Needs). These areas were planted at high densities by previous landowners with the assumption that there would be young stand thinning at some point to make space for the best trees to grow larger until they were harvested. Without the young stand thinning these stands have become extremely dense and tree growth has slowed greatly. Delaying thinning would result in trees with very small crowns and tall, slender stems that would not respond well to thinning and be at risk of heavy tree mortality from competition, insects, and diseases. Investments in young stand thinning are needed in the near-term, while trees have sufficiently large crowns to respond well to thinning, to facilitate the development of vigorous, healthy forests, and begin developing complex stand structures that are beneficial to wildlife. Initial assessments of these areas show that approximately

445 acres across the focus parks should be thinned within the next 5 years to prevent excess competition mortality and encourage a return to vigorous tree growth The remaining 210 acres have lower competition levels and may wait for 5-10 years before treatment. Young stand thinning is expected to start in 2026 in Banner Forest, which would allow time to pursue a cost-share project with the Washington Department of Natural Resources. Through this project, the Washington Department of Natural Resources would cover approximately 50% of the cost of implementation. This timing would also allow thinning projects to generate revenue to cover the remaining young stand thinning costs. Additional cost-share projects or grants may help cover a portion of the cost of other projects.

Table 7: Needed young stand thinning project with expected investment

Years	Park(s)	Acreage	Estimated investment
2026-2029	Banner Forest	93	$27,900 - $69,750[31]
	Eglon Forest	98	$29,400 - $73,500
	North Kitsap Heritage Park	127	$38,100 - $95,250
	Newberry Hill Heritage Park	83	$24,900 - $62,250
	Coulter Creek Heritage Park	44	$13,200 - $33,000
2030-2034	Port Gamble Forest	78	$23,400 - $58,500
	Rude Road Site	132	$39,600 - $99,000

Financial Sustainability

While the Forest Steward and Restoration Program was profitable overall through the first 10 years (Figure 1), there may be challenges maintaining financial sustainability going forward (Figure 5). Profitability was driven by strong logs markets during a few years when older stands, with high value large sawlogs and lesser amounts of low-value pulp logs, were thinned combined with postponing needed pure-cost, young stand thinning and post-treatment forest inventory data collection. This provided some large revenues while reducing stewardship and restoration costs. Staffing changes to the Forest Stewardship and Restoration Program in 2023-2024, post-COVID pandemic economic changes, and the deferred restoration needs is likely to reduce thinning revenues and increase program costs during the next 10 years. Reduced revenues and increased costs may result in net losses from stewardship and restoration program activities that would deplete account reserves over time making the Forest Stewardship and Restoration Program not financially viable under the current business model. However, there may be ways to restructure program costs and revenues to help ensure that the program remains financially sustainable.

Three-year Estimates

Foreseeable forest stewardship and restoration projects during 2025-2027, including thinning, forest inventory, permitting, and young stand thinning may result in net positive returns to the Parks Department prior to accounting for salaries and other costs/overhead (Table 8). Preliminary

[31] Currently in discussions with the Washington Department of Natural Resources Service Forester about developing a forest health cost share project where the DNR would cover half the cost of the young stand thinning.

estimates of net forest product revenue[32] net of treatment, transportation, road system, and professional services agreement commission costs that are comparable to past revenues with comparable log prices – 2014-2016, 2019-20220, and 2023. During these years revenues did not meet program past costs (Figure 1), which did not include investments in forest inventory data collection and young stand thinning. These revenues would not cover the current 2-salary load on the budget and would result in budget reserves being depleted in 2026 or 2027, even without needed investments in forest inventory and young stand thinning. Making needed investments in forest inventory data collection and young stand thinning would produce high-quality data and healthy young forests but would deplete budget reserves even faster.

Table 8: Estimated revenues and costs for forest stewardship and restoration activities for 2025-2027 before paying salaries and other operating costs.

Revenue/cost	2025	2026	2027	Total
Thinning net	$96,000	$ 198,000	$ 170,000	$378,000
Permitting	$ (450)	$ (300)	$ (300)	$(1,050)
Inventory	$ (14,000)	$ (14,300)	$ (14,300)	$(42,600)
Young Stand Thinning[33]		$ (58,200)[34]	$ (61,300)	$ (119,500)
Remaining	$81,550	$125,200	$94,100	$300,850

Ten-year Scenario Analysis

Long-term financial sustainability of the Forest Stewardship and Restoration Program depends on the program's cost structure, which the County controls, and log prices, which are subject to local, national, and global market pressures (Figure 5). Financial sustainability was assessed using a multiple revenue and cost scenarios. Revenue scenarios vary sawlog[35] prices that cover the range of realized log prices during the past 10 years and reflect current markets – from $70/ton to $120/ton. Pulp log[36] prices were held constant at $27/ton to reflect expectations of low pulp prices going forward because western Washington has few pulp mills that are primarily fed with sawmill residuals leaving little market for pulp logs. Harvest volumes used for revenue calculation are modeled using Washington Department of Natural Resources and USDA Forest Service data "grown" with USDA Forest Service models. For full details of data and modeling seeAppendix D – Financial Scenario Assumptions. Cost scenarios assume different levels of salary support – 2, 1, and no salaries – in addition to program operating costs along with needed investments in forest inventory data collection ($15/ac), which supports assessments, planning, and treatments, and young stand thinning ($500/ac), which ensures that trees planted by prior landowners have the

[32] Preliminary revenue estimates are based on modeling results with publicly-available data. These data are generally representative of current forest conditions, but results may not accurately represent revenues.
[33] Costs are the midpoint of the range in Table 7.
[34] See footnote 20
[35] Sawlogs are logs with an inside-bark small-end diameter of at least 5 inches.
[36] Pulp logs are logs with an inside-bar small-end diameter of less than 5 inches.

room needed to grow and remain healthy. Appendix E – Combined Revenues and Costs provides context for future financial scenarios relative to past performance.

Results of the scenario analysis suggest that the Forest Stewardship and Restoration would be financially sustainable, as currently funded, only under certain circumstances with a dependence on both log prices and salary support levels (Figure 5). Higher program costs, which are primarily driven by salaries, would necessitate higher revenues to support these higher costs. Revenues may be increased through higher log prices and/or increasing amount of area that is treated. Logs are a commodity and the log market is generally a buyers' market – if you want to sell logs you must accept the buyer's price. If higher prices are needed to meet costs, sellers are not able to demand these prices so they must find other ways to balance costs and revenues. Increasing the amount of area treated would incrementally increase revenues by increasing the total volume of logs sold. However, this would result in log sales volumes exceeding the 2 million board-foot harvest limit set by the Washington Department of Natural Resources for designation as a small forest landowner. Losing the small forest landowner designation would greatly increase operational costs for the Forests Stewardship and Restoration Program. Scenario analyses highlight where the balances between revenues under varying log prices and cost under different levels of salary support.

Scenarios Funding 2 Salaries

Supporting both the Stewardship Forester and Natural Resources Supervisor (Figure 5, red dashed line) would require sustained sawlog prices of at least $110/ton. This price level was seen only during 2021 and 2022, which coincided unique market conditions including lumber price spikes associated with COVID-pandemic log and lumber shortages, historically low interest rates, and high levels of housing starts. During these high revenue years, Kitsap County Parks was thinning in older stands that appear to have had a significant proportion of larger, high-value 2 Saw logs which resulted in overall higher log prices[37]. These price levels are high relative to historical prices (Figure 6) so may be unlikely moving forward. Additionally, much of the forests that will need forest stewardship and restoration treatments in the coming years have smaller diameter trees that will have lower-valued logs resulting in lower overall log prices and revenues. This scenario would not be able to sustain the Forest Stewardship and Restoration Program as currently funded. With current sawlog prices of approximately $80/ton the Forest Stewardship and Restoration Program budget would likely be depleted in 2026 after needed investments in young stand thinning and forest inventory.

[37] Sawlogs from thinning on Kitsap County parks are primarily purchased by Manke Lumber of Tacoma, WA with a "camp run" price. This price is implicitly reflective of the expected log size distributions in the stands being harvested.

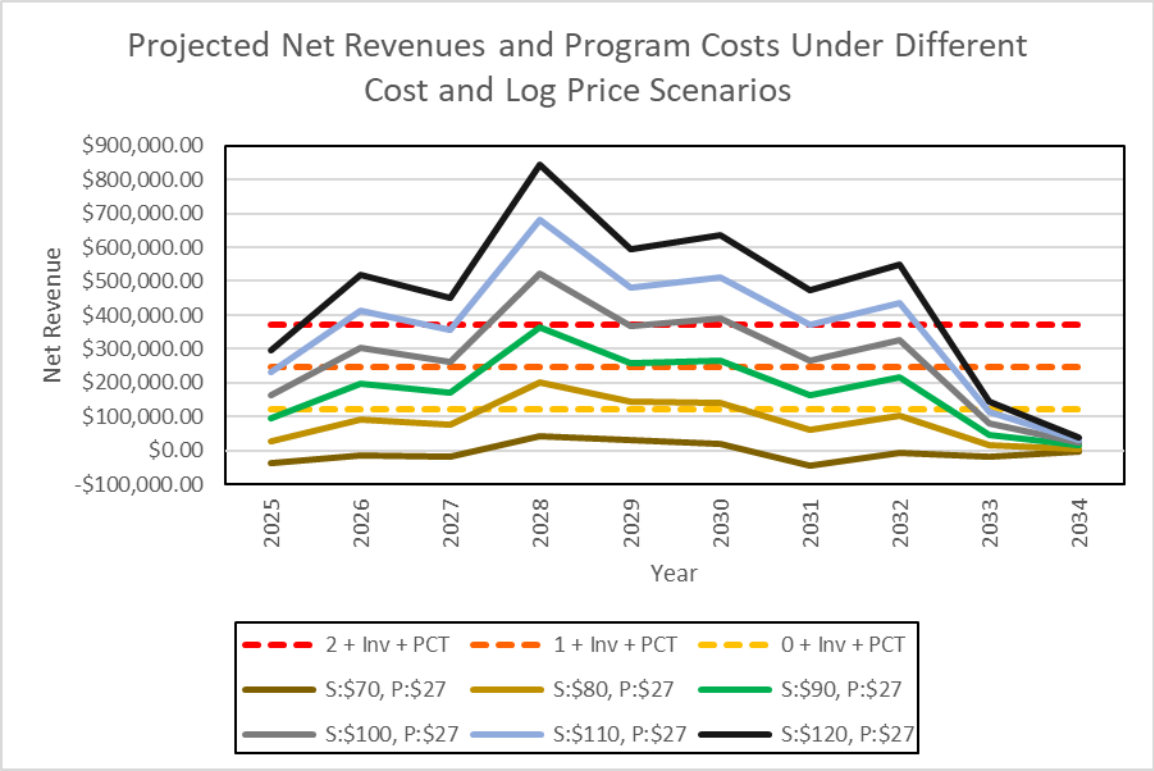

Figure 5: Projected Forest Stewardship Program revenues and costs under different log price and cost scenarios. Cost scenarios include 2 salaries (Stewardship Forester and Natural Resources Supervisor) plus operating, forest inventory (Inv) and young stand thinning (PCT) costs (red dashed line), 1 salary (Stewardship Forester) plus operating, forest inventory (Inv) and young stand thinning (PCT) costs (orange dashed line), and no salaries, only operating, forest inventory (Inv) and young stand thinning (PCT) costs (yellow dashed line). Log price scenarios (solid lines) vary sawlog prices from $70/ton (S:$70) to $120/ton (S:$120) to represent a range of potential prices based on what has been realized. Pulp prices are held constant recognizing the poor pulp market conditions with few pulp mills in western Washington.

Scenarios Funding One Salary

Supporting only one salary, i.e. the Stewardship Forester, (Figure 5, orange dashed line) would require consistent sawlog prices of approximately $100/ton. This level was seen only in 2017, 2018, and 2023 when it appears that the log mix had a significant amount of 3 Saw logs from stewardship and restoration projects in stands with lager trees. These prices are also relatively high relative to historical prices so may not be likely in the future. Like the scenario above, this one is unlikely to sustain the Forest Stewardship and Restoration Program. With current sawlog prices of approximately $80/ton the Forest Stewardship and Restoration Program budget would likely be depleted in 2027 after needed investments in young stand thinning and forest inventory.

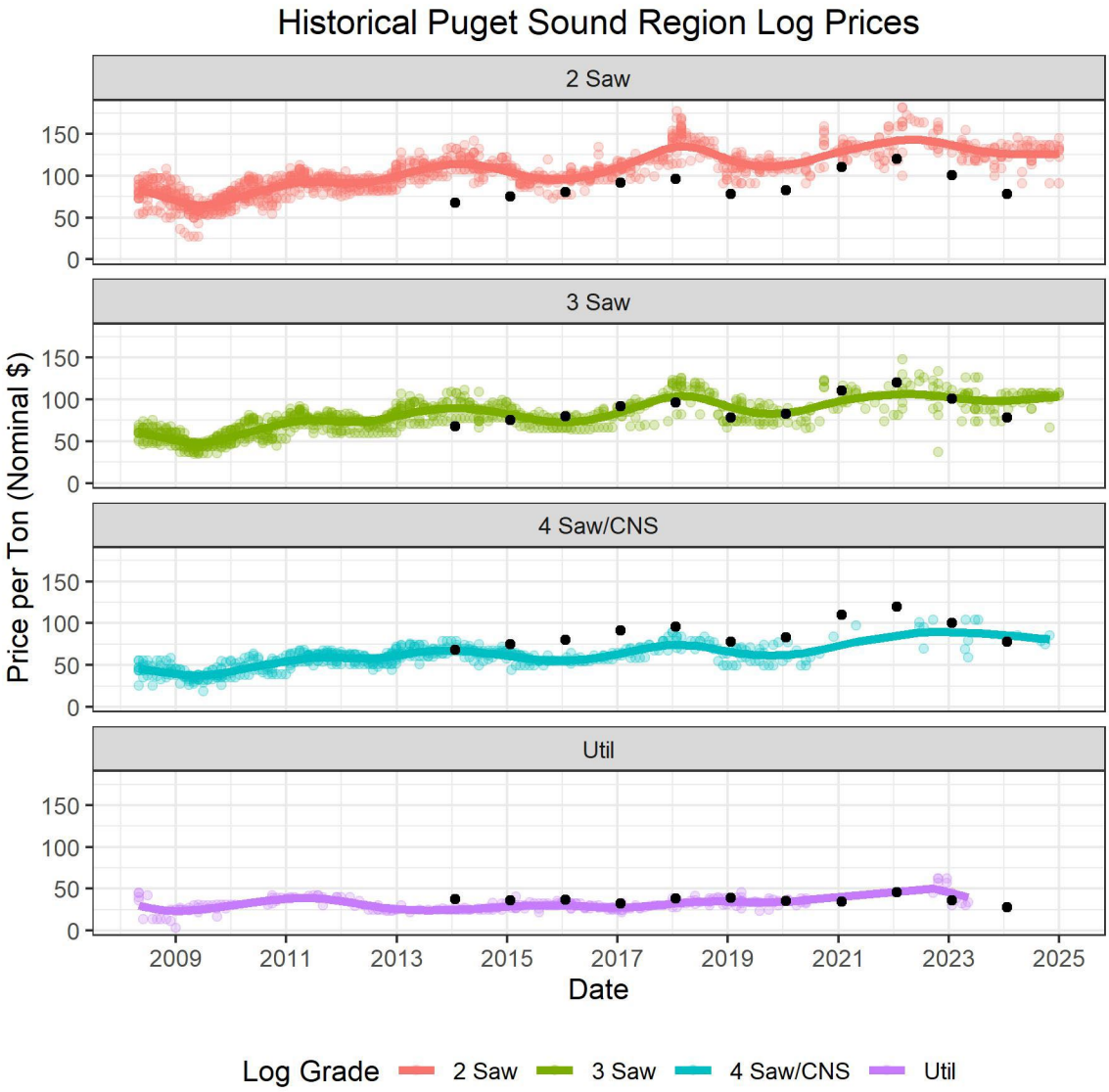

Figure 6: Historical log prices for the Puget Sound region. Points are reported prices. Lines are running average values. 2 Saw logs have a small end diameter of 12" and larger. 3 Saw logs have a small end diameter of 8 – 11 inches. 4 sa4/CNS have a small end diameter of 5-7 inches. Util are logs with a small end diameter of less than 5 inches or excessive defect to use for sawlogs. Black point are actual log prices for sawlogs (2 Saw, 3 Saw, 4 Saw/CNS) or pulp (Util). Price data provided by the Washington Department of Natural Resources.

Scenarios Funding No Salaries

Supporting no salaries, only operating costs and the costs of stewardship and restoration projects, (Figure 5, yellow dashed line) would likely be the most sustainable operating scenario for the Forest Stewardship and Restoration Program. At the current log price of approximately $80/ton thinning would likely generate sufficient revenue to cover non-salary costs along with the needed investments in young stand thinning and forest inventory. There may also be sufficient revenue to support additional restoration projects, such as invasive species removal, and seasonal staff or interns to support restoration projects.

Potential business model changes

Ensuring the long-term financial sustainability of the Forest Stewardship and Restoration Program will likely require changes to the current business model to reduce costs and/or increase revenues, which may include sources that are not tied to forest products sales. Potential opportunities include:

Cost reductions

Potential changes to reduce program costs include:

- **Salary changes:** Move the Natural Resources Supervisor and/or Stewardship Forester salaries off the Forest Stewardship and Restoration budget. Moving one salary to another source would reduce account reserve burn rates and extend the amount of time until the reserves may be depleted. Moving both salaries to another source would likely result in a long-term sustainable program cost structure. This would also bring a benefit of breaking the financial link between thinning and salaries, which may be viewed by some of the public as an incentive to prioritize revenues over restoration from forest stewardship and restoration activities.
- **Bring professional services contract in-house:** The professional services contract with American Forest Management (AFM) currently costs 5.7% of gross log sales receipts, which is expected to be approximately $100,000 over the 2 years remaining in the contract. Services provided under this contract include log marketing, load tracking, contracting loggers and other service providers, and assisting with thinning unit layout. It is unclear if these services are worth the cost. Performing these activities, which cost the equivalent of 0.5 FTE, with County staff may result in reduced costs to the Forest Stewardship Program. However, additional staffing, e.g. seasonal help and/or interns, may be needed to preform some of these tasks.
- **Cost-share programs:** Explore cost-share programs to reduce the County-paid cost of pure-cost stewardship and restoration activities, such as young stand thinning, forest inventory data collection, forest stewardship and restoration plan development, and/or other activities. Participating in cost-share programs would provide reimbursement for a portion of the treatment costs thereby reducing the overall cost to the Forest Stewardship and Restoration Program. This would free up revenue to cover salaries and/or other costs. However, these cost-share programs are often funded through the state or federal government, may be subject to political whims, and should not be considered stable, consistent cost-reduction programs.
- **Volunteers:** Explore the use of volunteers to help with stewardship and restoration activities where appropriate. Using volunteers to help perform stewardship and restoration activities may reduce the cost of investments in data collection and other activities. However, additional staffing would be needed to recruit, train, and manage these volunteer programs. These additional staffing costs may outweigh any cost reductions from using volunteers rather than contractors for activities such as plot inventory or project implementation at the scale that is needed. Volunteer programs have many benefits beyond cost savings including fostering a sense of pride and ownership for the parks and educating

the community about how natural resource management benefits ecosystems. Creating community engagement opportunities for habitat enhancement projects will be prioritized with the hopes of expanding into other opportunities if staff capacity increases.

Revenue Sources

Potential outside revenue sources to support the Forest Stewardship and Restoration Program activities include:

- **Grant funding:** Explore grant opportunities to bring in monies to help fund forest stewardship and restoration program activities. There may be grants available from State agencies (Department of Natural Resources, Department of Fish and Wildlife, Department of Ecology, Recreation and Conservation Office, etc.), Federal agencies (USDA Forest Service, Environmental Protection Agency, Department of Defense, US Fish and Wildlife Service, etc.), or private funding groups.
- **Carbon projects:** Explore developing a carbon project for Kitsap County Parks forests. Carbon projects monetize the carbon that is sequestered in the trees as they grow by selling carbon credits in a carbon market. This is becoming an increasingly common way that landowners can generate non-timber income from their lands. The Nisqually Community Forest developed a carbon project for a portion of their ownership[38]. Currently this project is generating approximately $100,000 annually from approximately 1,500 acres without changing their forest stewardship and restoration activities (Justin Hall, personal communication, September 12, 2024) allowing them to thin to benefit the forest and generate additional revenues.

All these potential opportunities are still in the ideation phase. Further research and exploration are needed to fully understand the impact of these opportunities on the Forest Stewardship and Restoration Program before any are pursued. This will be a focus during the next 2 years to help ensure long-term financial sustainability.

Conclusion

Ensuring the successful stewardship of and restoration of forests on Kitsap County focus parks requires a plan for expected actions and treatments to address stewardship and restoration needs. This Forest Stewardship and Restoration Plan implements the Forest Stewardship and Restoration Policy, proposing a suite of activities and actions for the coming 10 years that address treatment needs and begin to move forests in Kitsap County Parks towards desired conditions. This begins with assessments to describe and quantify current forest conditions. Over the coming 10 years, each focus park would be assessed, including forest and resource inventory data collection, to determine departures from desired conditions and support planning. Following assessments each park would have a park-specific forest stewardship and restoration plan updated or created that is tailored to the specific conditions within the park and is in alignment with the overarching policy

[38] https://waconservationaction.org/first-forest-project-in-washington-state-to-meet-california-carbon-standards/, last accessed 1/31/20204

and plan. Park forest stewardship and restoration plans would determine actions needed to address departures from desired conditions, prescribe and specify proposed treatments, and provide a treatment schedule for the 10-year lifespan of the plan. Expected effects of and outcomes from proposed treatments would be presented at three times scales – during implementation, 1-5 years post-treatment, and 6-30 years post treatment – to communicate what may be expected from the treatments and demonstrate how the treatments would move the forests in the park toward desired conditions.

Based on initial assessment using publicly available data and field observations, there are approximately 1,445 acres needing thinning treatments and approximately 655 acres in need of young stand thinning treatments over the next 10 years. These actions would address treatment needs, primarily decreasing the number of trees to provide the remaining trees adequate space to grow vigorously and increase resiliency to insects, disease, wildfire, and expected climate change. Following treatment these forests would be set up to develop toward desired conditions – the primary objective of stewardship and restoration thinning. In forests that require treatment actions with trees that would produce merchantable logs, thinning would generate revenues that would likely cover treatment costs and may produce additional revenues to fund additional restoration activities, program staff and operating costs. Necessary young stand thinning is unlikely to generate revenue, with a potential cost of $300 – 750/acre. An additional cost to the program is forest inventory data collection to support assessment an planning at approximately $30/acre.

Through the first 10 years, the Forest Steward and Restoration Program was financially sustainable overall, though there may be challenges through the next 10 years related to log markets and FTE staff support. Revenues during the first 10 years fluctuated greatly as log markets and the types of forests that were thinned changed. Costs were also limited because investments in young stand thinning were not made. Looking forward through the next 10 years, it's difficult to be certain where the log markets will go – they may remain at the lower end of the range seen during the first 10 years or they may move to the upper end. Scenario analyses using a range of prices and a potential treatment schedule suggest that program costs, driven by salaries, may be a limiting factor. Moving staff over to a funding source other than recouped costs from timber product sales would help ensure the financial sustainability of the program. Additional funding sources, such as grants or carbon projects, which would pay for carbon sequestered in trees, may be explored to help fund the Forest Stewardship and Restoration Program. Together these would help meet the goals of Kitsap County Park; continued forest stewardship to improve forest health and resiliency, moving forests toward desired conditions, and creating forests that are refugia for wildlife and people in an increasingly urbanizing county.

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Appendix A – Past Stewardship and Restoration Activities

From 2014 to 2024 forest stewardship and restoration activities have thinned approximately 2,467[39] acres generating approximately $2,329,000 of revenue to the County (Table 9). These revenues, which are net of road maintenance, logging, and hauling costs, have been sufficient to support the costs of the Forestry Program, including the salary and benefits of the County Forester and seasonal help, seedlings for diversity plantings, and necessary materials and equipment. Some of these costs may have been reduced through volunteer assistance with data collection and planning to facilitate stewardship and restoration activities.

Road activities associated with stewardship and restoration activities along with one-off projects resulted in the construction, maintenance, and improvement of approximately 17.25 miles of road, abandonment of approximately 0.5 miles of road, removal or replacement/improvement of 6 water crossing structures, and the replacement or addition of 2 drainage structures (Table 10**Error! Reference source not found.**). Roads that were built, maintained, or improved for timber harvest provide opportunities for recreation, emergency services, and other access after stewardship and restoration activities are completed. Bringing roads to current standards minimizes their environmental impact. Water crossing structures on typed waters removed potential fish passage blockages thereby providing additional habitats for aquatic species. Drainage structures replaced or added help ensure that runoff from roads is directed away from streams to minimize sediment delivery to streams and aquatic species.

Overall costs of these projects is difficult to estimate because the costs appear to have been paid through multiple sources. Road work associated with stewardship and restoration activities was paid through the profession services agreements with American Forest Management. However, projects such as a bridge replacement at Newberry Hill Heritage Park, and possibly other projects, appear to have been funded by outside sources as they have not been found in available Forest Stewardship and Restoration Program accounting information.

[39] Differences exist between acreages reported in Forest Practices Applications and acres reported here as since there is no clear linkage between permitted area and area harvested in some years in available log sales reports.

Table 9: Harvest acreage, volume (thousand board feet, MBF) by park and year with annual totals and net revenues to county

Park		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Park Total
Newberry Hill	Acres	130						163					293
	Volume	681						1,454					2,135
Newberry Hill, North Kitsap	Acres		156										156
	Volume		1,062										1,062
Newberry Hill, Port Gamble	Acres			230									230
	Volume			1,326									1,326
Port Gamble, South Kitsap, Newberry Hill	Acres				385								385
	Volume				2,197								2,197
Coulter Creek	Acres					381	332	162					875
	Volume					1,786	1,832	352					3,970
Square Lake	Acres								109	37			146
	Volume								1,961	594			2,556
Wicks Lake	Acres									69			69
	Volume									605			605
Port Gamble	Acres										246	67	313
	Volume										1,325	514	1,839
Annual Total	Acres	130	156	230	385	381	332	325	109	106	246	67	2,467
	Volume	681	1,062	1,326	2,197	1,786	1,832	1,806	1,961	1,199	1,325	514	15,690
	Net Income	$ 29K	$ 113K	$ 129K	$ 329K	$ 374K	$ 190K	$ 48K	$ 683K	$ 412K	$ 45K	$ (24K)	$ 2,329K

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Table 10: Results of road activities associated with stewardship and restoration thinning operations from 2014 - 2024

	Roads (miles)			Water Crossing & Drainage Structures (counts)		
Park	Constructed	Maintained/ Improved	Abandoned	Typed Water Removed	Typed Water Replaced/ Improved	Other Replaced/ Added
Coulter Creek	1.4	2.3	0.1	1	1	
Newberry Hill	1.9	3.6				
North Kitsap				1		
Port Gamble		6.8	0.4	1	2	1
South Kitsap	0.1	0.3				
Square Lake	0.2				1	1
Wicks Lake	0.8					
Total	4.4	12.9	0.5	3	4	2

Revenue from log sales over the first 11 years have been highly variable and tightly coupled with log markets, fuel costs, and the types of trees being harvested (Figure 7). Thinning in older forests, which happened during high revenue years, produces a high proportion of higher-valued sawlogs while thinning in younger forests, which primarily happened in lower revenue years, produces a higher proportion of lower-valued pulp and firewood logs. High revenue years also coincided with high log prices, which further elevated revenues in high revenue years. Low prices for pulp and firewood logs likely reduced overall revenues - prices don't cover logging and hauling costs - but removal was necessary to meet restoration objectives.

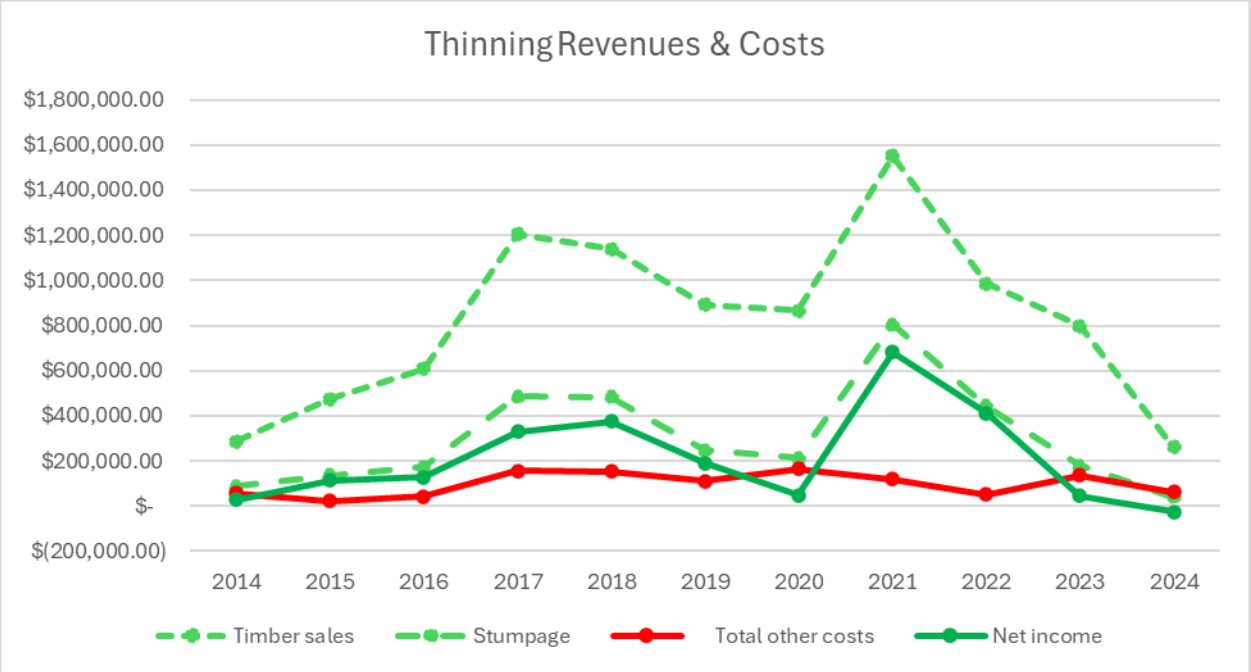

Figure 7: Revenues and costs for thinning operations in Kitsap County Parks from 2014 – 2024. Timber sales is gross revenue from log sales to mills. Stumpage is revenue less harvesting and hauling costs. Total other costs include services contract commissions, road maintenance, and other costs related to harvesting and hauling. Net income is log sales revenue less all costs.

Revenues from stewardship and restoration activities have been sufficient to cover staffing and other County expenses since 2017 (Figure 8). Revenues to the 1721 – KC Forest Stewardship Program budget have been highly variable, generally following net revenues from thinning activities (Figure 7) and surpassed total expenses in half of the last 10 years. Surpluses were often very large due to high log prices and the types of logs being sold resulting in accumulated surpluses in the budget, which have been available when revenues fall short of expenses in years when log prices are low.

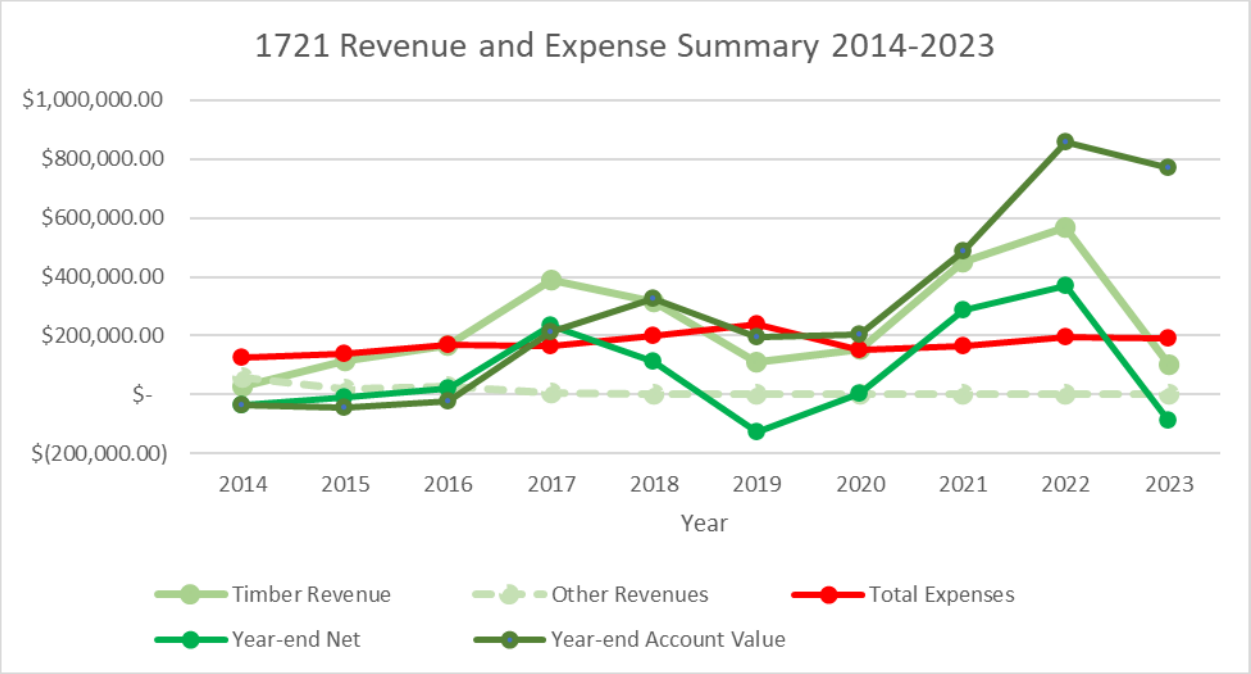

Figure 8: Forest Stewardship and Restoration Program (1721) annual revenues and total expenses and year-end account balance, 2014 – 2023. Timber revenue is net revenue (Figure 8) transferred to the county. Other revenues are grants and other funding. Total expenses include salaries, benefits, and other operational expenses. Year-end net is total revenues for the year less total costs. Year-end Account is the accumulated value of yearly year-end net values.

Volunteer Forest Stewards and other organizations, working in conjunction with Forest Stewardship and Restoration Program Staff, assessed forest conditions and created forest stewardship and restoration plans for 7 parks (Table 4**Error! Reference source not found.**). Assessments and planning were done to determine treatment needs in each of the parks and schedule when the treatments should be applied to meet restoration targets. These assessments and plans focused heavily on forest conditions with other resources playing smaller parts. Inventory data collected in the parks was collected prior to thinning with minimal monitoring data collection following thinning. While these plans provided general treatment prescriptions and treatment schedules, they were not always followed. For example, nearly all prescribed and scheduled treatments in North Kitsap Heritage Park have not been implemented as of 2025. Because post-treatment monitoring data was either not collected or is unavailable, it is unclear how well treatment prescriptions were followed where thinning occurred.

Appendix B - Focus Park Descriptions

Bandix Dog Park

Bandix Dog Park is a 30-acre park in southern Kitsap County with approximately 24 acres of forest ringing a central opening. This forest was regenerated following harvesting in the early 1900s followed by additional thinning along with other harvesting and clearing in the mid- to late-1900s.

The forest ranges from moderately to densely stocked where trees are becoming stressed. This park sees much recreation in the off-leash dog park.

Banner Forest Heritage Park

Banner Forest Heritage Park is a densely forested 636-acre park located in southern Kitsap County that was acquired from the Washington Department of Natural Resources (WADNR) in 2000. Much of the forest on the park regenerated in the late 1800s and/or early 1900s following harvesting and/or fire. The WADNR managed this area to generate revenue for trust beneficiaries by harvesting and regenerating areas in the 1960s, 1970s, and 1980s. This disturbance and regeneration history has created a mix of forest conditions. Some areas were naturally regenerated (i.e., not planted) and now have large trees and multiple canopy layers that may not need restoration treatments. Other natural regenerated areas have uniform tree sizes and spacing and single canopy layer that would benefit from restoration treatments to open the canopy and allow the establishment of additional canopy layers. Areas harvested and regenerated (i.e., planted) prior to County acquisition are highly stocked with elevated competition between trees, slow growth rates, and low vigor. Douglas-fir beetle and western pine beetle are currently active in dense areas of Banner Forest causing Douglas-fir and western white pine mortality. The Great Peninsula Conservancy holds a conservation easement that covers approximately 139 acres in the center of the park. This park is heavily used for recreation with approximately 26 miles of trails.

Coulter Creek Heritage Park

Coulter Creek is a 1,549 acre park located in southern Kitsap County that was assembled through a series of acquisitions from various landowners including the Presbytery of Olympia in 1991 (formerly Camp Calvinwood), McCormick Land Company in 2000s, and the WADNR (formerly Square Lake State Park) in 1990s. Forests in much of Coulter Creek Park were regenerated following harvest and/or fire in the early- to mid-1900s. Much of Coulter Creek Park was then managed for Christmas tree and timber production prior to being acquired by the County. The park received forest stewardship and restoration treatments in 2017, 2019, 2021 and 2022 to address reduce stocking that was a legacy of past management. Much of the remaining untreated areas are reserve areas including wetland buffers, stream buffers, and inaccessible areas. Some additional highly stocked areas remain where treatments may be needed. Follow up treatments may be needed in 15-25 years or as indicated by future monitoring data and assessments.

Eglon Forest

Eglon Forest is 707-acres park located in northern Kitsap County that was acquired from the WADNR in 2025. Much of this park was regenerated through planting following regeneration harvesting in 1970s, 1980s, 1990s with some follow-up thinning around 2010. The resulting forest is a mix of conditions ranging from pure conifer forests (primarily Douglas-fir) to pure hardwood forests (primarily red alder and bigleaf maple) with areas where both types are mixed. Forest in conifer-dominated areas are becoming dense with competition causing decreases in tree growth in vigor. This park sees some recreation use on approximately 6 miles of trail, primarily on old roadbeds used for past timber harvesting.

Gordon Park

Gordon Park is an approximately 54-acre park located in central Kitsap County with approximately 46 acres of forests. These forests were regenerated following logging and/or fire in the early- to mid-1900s and are currently well stocked. However, the dominant trees are becoming large resulting in small trees having heavy competition that has slowed growth and pushed these trees toward mortality. There are also areas of disease mortality that are creating open areas and large snags. This park sees extensive recreation on trails, disc golf course and developed campgrounds.

Hansville Greenway

Hansville Greenway is a 283-acre park located near Hansville in northern Kitsap County. Approximately 140 acres of the park were originally acquired in 1995 with the remaining area acquired at various times since then. Forests in this park regenerated following harvesting in the early 1900s resulting conditions that are densely stocked with compositions ranging from pure conifer to mixes of conifer and hardwood to pure hardwood. Currently the park is managed in conjunction with the Hansville Greenway Association under a management plan approved in 2013, which precludes forest management. Nearly 30 years have passed since the last comprehensive assessment of this park. This park sees extensive recreation on 7 miles of trails within the park and an additional 2.5 miles of trail on surrounding easements.

Illahee Preserve Heritage Park

The Illahee Preserve Heritage Park is a 468-acre park located in the East Bremerton area of central Kitsap County. Most of this park was transferred from the WADNR in 2001 with additional areas purchased from private individuals in following that date. Much of this park was harvested in the early 1900s. The current forests are a mix of pre-harvesting remnants and areas that regenerated following the harvesting. A management plan was created by Illahee Forest Stewardship Committee in 2003. Currently there is an extensive mountain pine beetle outbreak that is impacting many of the western white pine in the park, which have been weakened by competition with other trees. While this is producing standing dead trees (snags), which are important habitat elements, the white pine may be lost from the park in the coming years due to the outbreak. Illahee Creek bisects the park and provides spawning habitat for salmon. This park sees extensive recreation on approximately 5 miles of trails.

Newberry Hill Heritage Park

Newberry Hill Heritage Park is a 1,083-acre park located in central Kitsap County that was acquired from Port Blakely Tree Farms and the WADNR in 2004 and 2009-10, respectively. Forests in this park were generally planted following harvesting in 1980s and1990s. This park received extensive forest stewardship and restoration treatments in 2014, 2016, 2017, and 2020. Remaining untreated areas are a mix of dense upland areas along with wetland and stream buffer reserves. Untreated upland areas are highly stocked with elevated competition between trees, slow growth rates, and decreased vigor. This park has extensive recreation on approximately 17 miles of trails and access roads.

North Kitsap Heritage Park

North Kitsap Heritage Park is a densely forested 818-acre park located in northeast Kitsap County that was acquired from Pope Resources (now Rayonier) in 2005 and 2014. Forests in the park regenerated through planting following clearcutting in the 1980s and 1990s. Planted forests were intended for future timber production and are now very dense with high levels of competition, slow growth rates, lack species diversity, and sparse to non-existent understory vegetation. Forest stewardship and restoration activities have occurred in small areas within the park leaving much of the park highly stocked with elevated competition between trees, slow growth rates, and low vigor. This park sees extensive recreation use on approximately 13 miles of trails, primarily on roadbeds previously used for timber harvesting.

Port Gamble Forest Heritage Park

Port Gamble Forest Heritage Park, located in northern Kitsap County, was acquired from Pope Resources (now Rayonier) as three separate blocks – Shoreline, Gamble Forest, and Gamble Forest West – in 2014, 2016 and 2017, respectively, covering approximately 3,774 acres. Forests within the park are densely stocked resulting from clearcutting and planting from 1980s-2000s. These forests were intended for future timber management. Rayonier currently holds timber deeds on approximately 1,270 acres of the Gamble Forest and Gamble Forest West blocks allowing harvesting these areas until 2042. These areas will be released to the County as recently planed open forests soon after harvesting. The remaining areas are wholly owned by Kitsap County, including approximately 750 acres where timber rights were purchased in 2022 with the assistance of Our Forest Fund and Forterra. Much of the County-owned areas received forest stewardship and restoration treatments in 2016, 2023 and 2024. Remaining untreated areas are a mix of 15–40-year-old forests that are highly stocked that have, or will soon have, high levels of competition, reduced growth, and decreased vigor. A portion of this untreated area will be treated in 2025. Additional areas may be treated in the future following assessments and planning. This park has extensive recreation on 70 miles of trails, access roads, and in a developed mountain bike park.

Rude Road Site

The Rude Road site is a 203-acre park located in central Kitsap County. Much of the park was acquired from the WADNR in 2017 with additional area acquired as a tax title purchase. Much of the area acquired from the WADNR were regenerated following harvesting between 2000 and 2010. The remaining areas were regenerated in the early 1900s following harvesting, part of this area is currently inaccessible. Forest stewardship and restoration treatments will be needed in the in areas that were harvested since 2000 to ensure the development of healthy forests on this site. There is no developed recreation in this site.

South Kitsap Regional Park

South Kitsap Regional Park is a 200-acre park located in south Kitsap County near Port Orchard. Approximately 175 acres of this park is forested with the remaining area developed for recreation. Forests in this park regenerated following harvesting in the late 1800s – early 1900s. Currently the forests are dominated by large Douglas-fir trees with areas of hardwoods in lower-lying, wetter

areas. Much of the forest received forest stewardship and restoration treatments in 2017 to address competition and root-rot issues. This park sees extensive recreational use on baseball diamonds and other sports fields, developed recreation areas, approximately 7 miles of trails, and a miniature steam railroad.

Wicks Lake Park

Wicks Lake Park is a 156-acre park in southern Kitsap County that was acquired from McCormick Land Company and Alpine Evergreen in 2001, 2005 and 2007. These forests regenerated following fire and/or harvesting in the early 1900s and were managed as commercial timberland prior to becoming a County park. In some areas, regeneration harvesting and planting occurred in the late 1900s and commercial thinning in the 1990s. Sixty-nine acres of forest stewardship and restoration treatments occurred in 2022. Remaining untreated areas have not needed treatment, are in buffers along riparian areas, including Wicks Lake, and wetlands, or have limited accessibility. This park is relatively remote and sees light recreation use on trails and in Wicks Lake, which is one of the last undeveloped lakes in Kitsap County.

Appendix C – Preliminary Park Treatment Needs

Figure 9: Preliminary stewardship and restoration treatment needs by treatment type for Bandix Dog Park

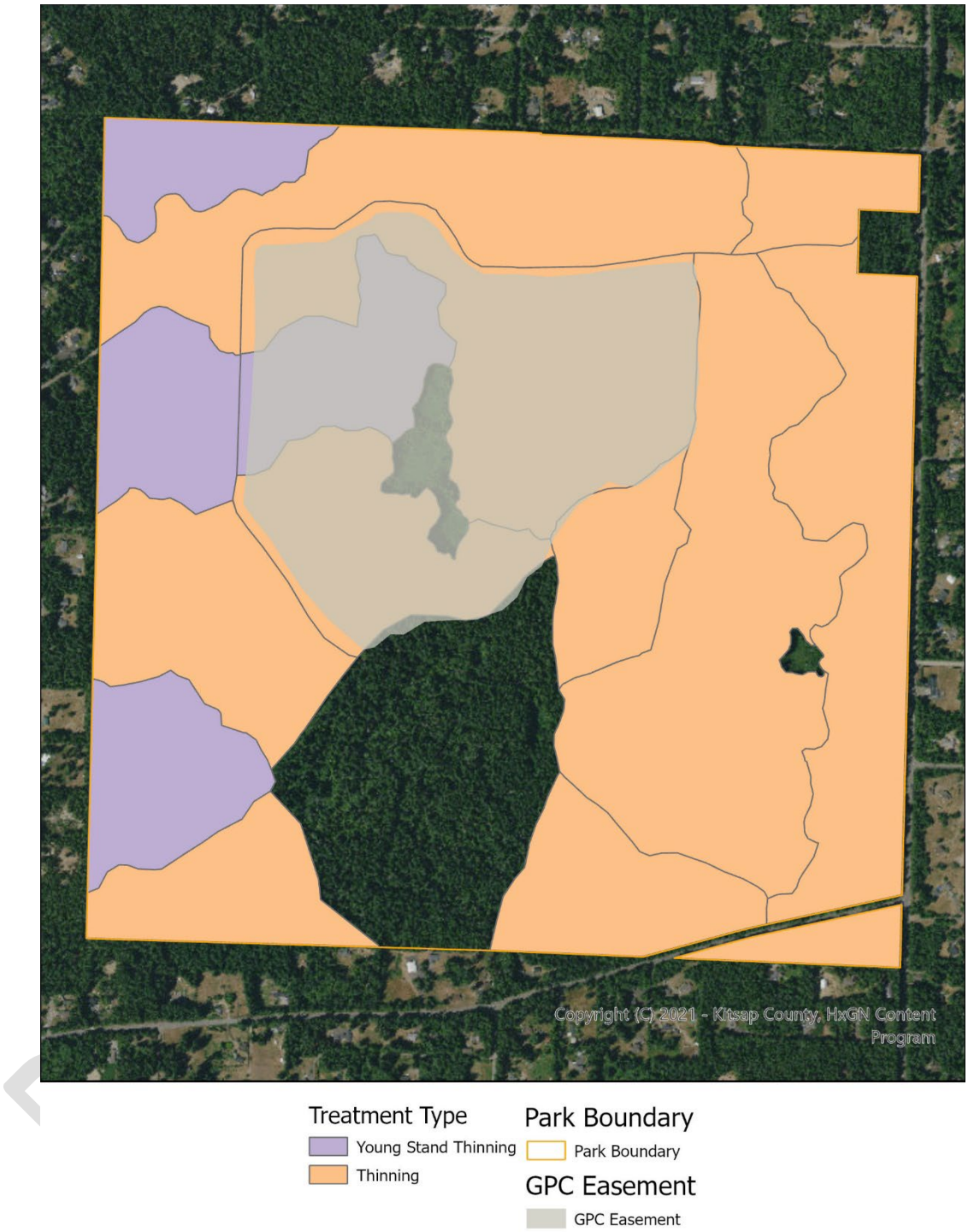

Figure 10: Preliminary stewardship and restoration treatment needs by treatment type for Banner Forest Heritage Park. Treatments in the GPC conservation easement would require easement modifications and updates.

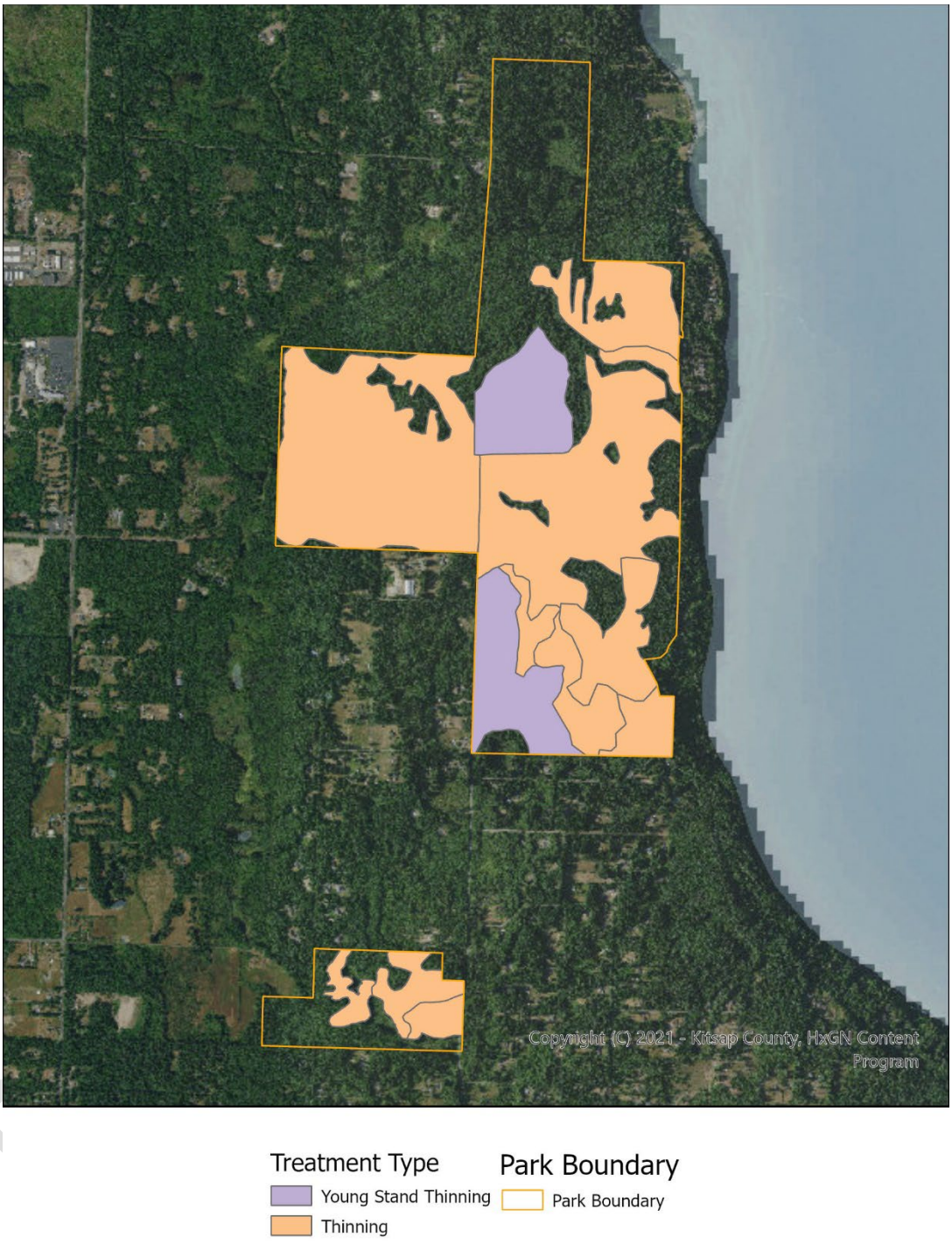

Figure 11: Preliminary stewardship and restoration treatment needs by treatment type for Eglon Forest

Figure 12: Preliminary stewardship and restoration treatment needs by treatment type for Gordon Heritage Park

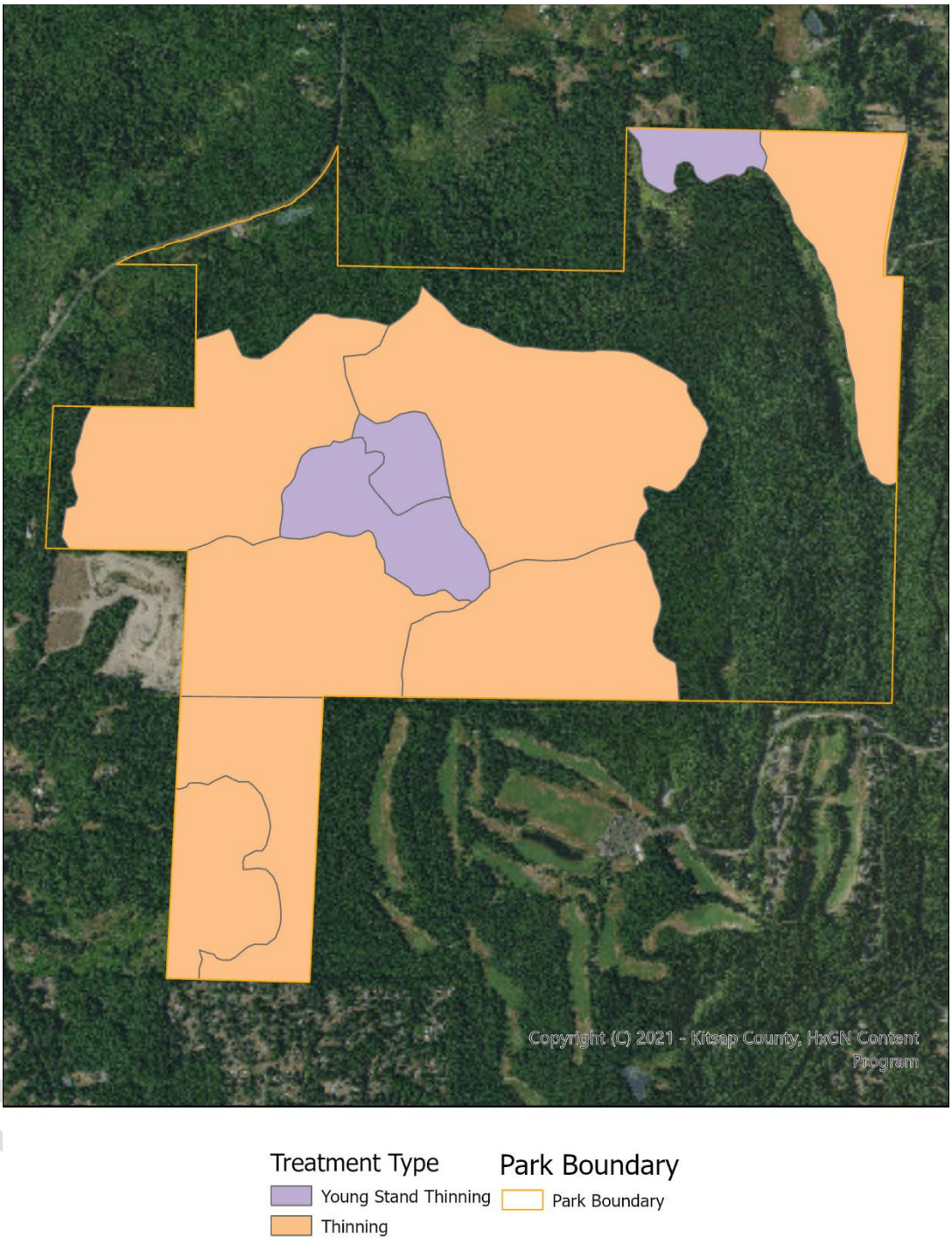

Figure 13: Preliminary stewardship and restoration treatment needs by treatment type for North Kitsap Heritage Park

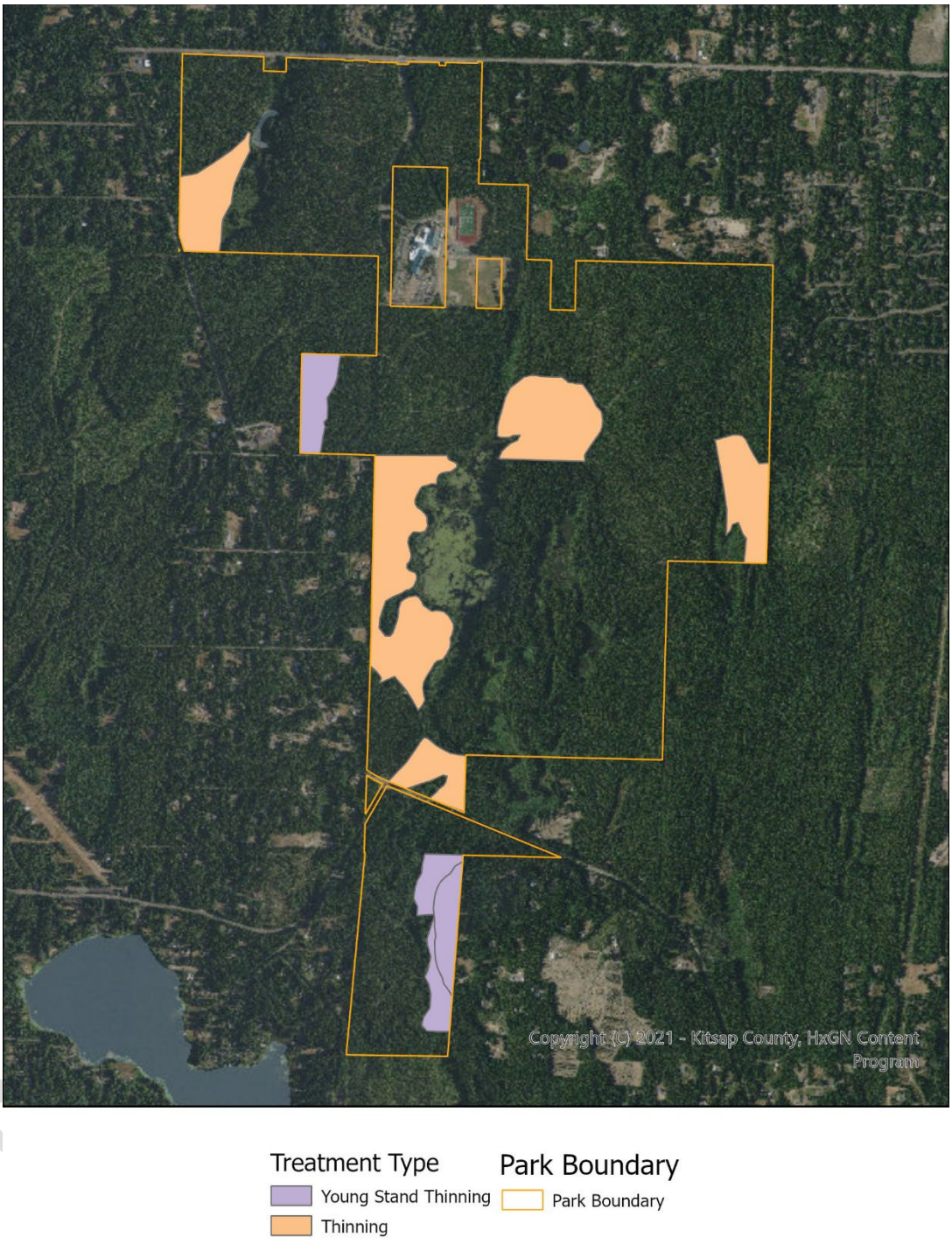

Figure 14: Preliminary stewardship and restoration treatment needs by treatment type for Newberry Hill Heritage Park

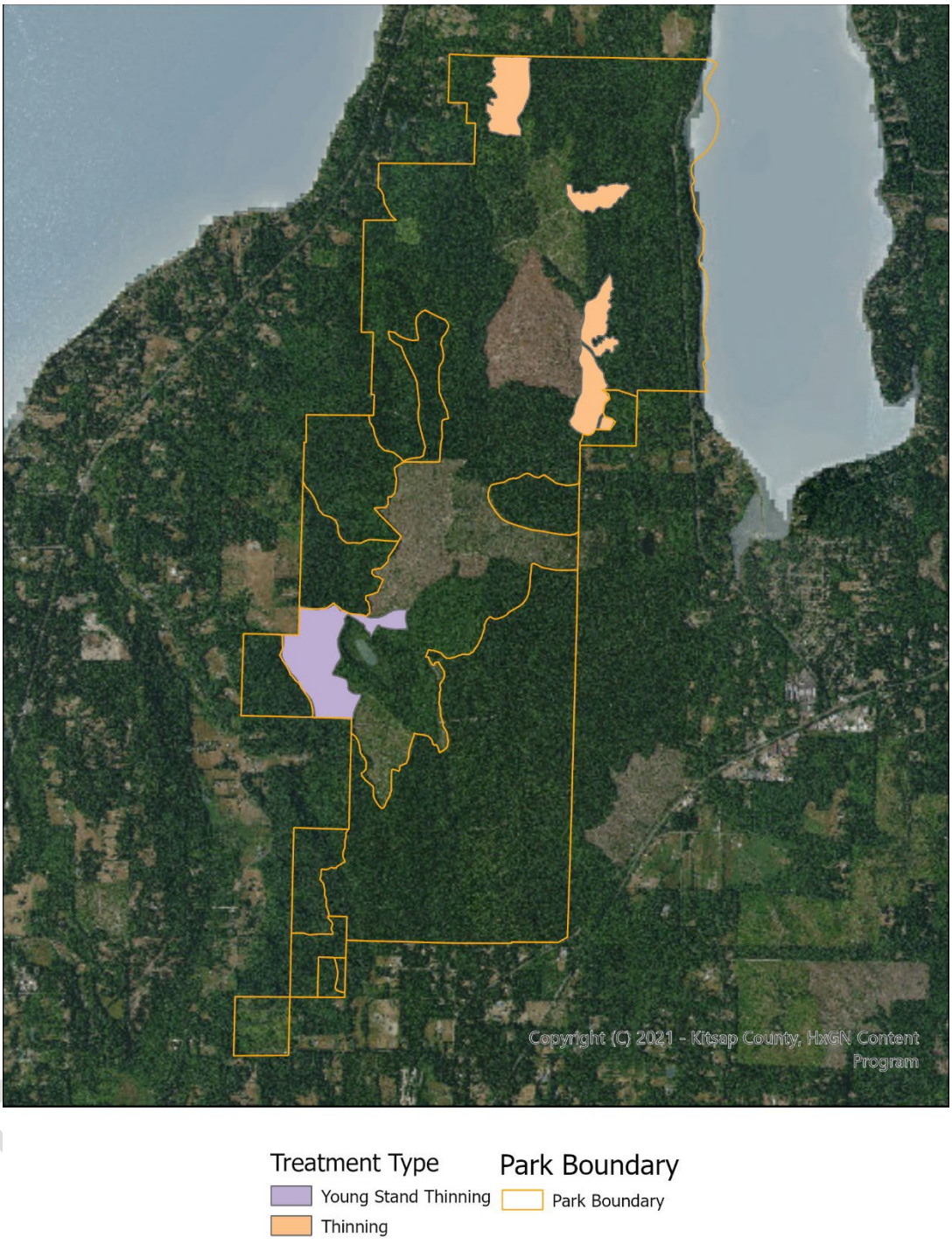

Figure 15: Preliminary stewardship and restoration treatment needs by treatment type for Port Gamble Forest Heritage Park

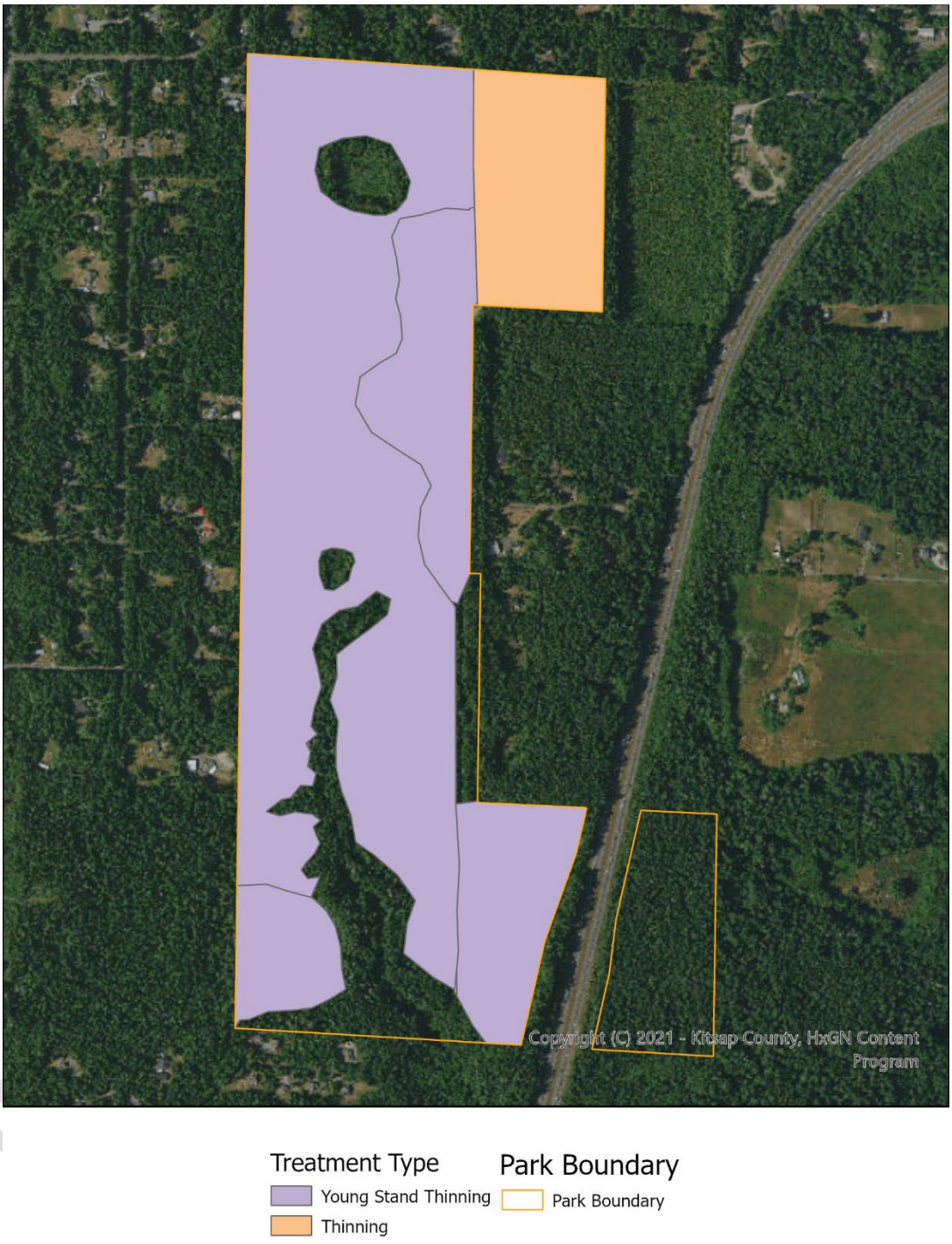

Figure 16: Preliminary stewardship and restoration treatment needs by treatment type for the Rude Road Site

Appendix D – Financial Scenario Assumptions

Financial scenario analyses are based on a combination of publicly available forest inventory data and actual past log prices, harvest costs, and Forest Stewardship Program expenses. The results of these analyses show a range of what may be expected expenses and incomes to the County from forest stewardship and restoration treatments over the coming decade.

Analysis areas

Areas selected for the financial scenario analysis are parks with areas that have not received restoration thinning in the past but where treatment appears to be needed to address departures from desired conditions, climate resiliency, and forest health concerns. These parks include the Banner Forest Heritage Park, Bandix Dog Park, Eglon Forest, North Kitsap Heritage Park, Port Gamble Forest Heritage Park, Gordon Park, and Newberry Hill Heritage Park. Illahee Preserve and Hansville Greenway were excluded from this analysis because of their de facto “preserve” status even though there may be stewardship and restoration treatment needs.

Forest inventory data sources

Forest inventory for the analysis areas are a combination of the Washington Department of Natural Resources RS FRIS (remotely sensed forest resource inventory system) and the USDA Forest Service FIA (forest inventory and analysis) data. RS FRIS data provide inventory summary data including numbers of trees per acre, basal area per acre, mean heights, competition metrics, tree volumes, etc., for all forested areas of Washington State, including Kitsap County. These data layers were summarized within each potential treatment unit in each analysis area to give typical conditions across the unit that are representative 2019 and 2020.

A modeling database was created using data from the USDA Forest Service Forest Inventory and Analysis (FIA) database to support forecasting future forest conditions using USDA Forest Service Forest Vegetation Simulator (FVS) forest growth model. FIA plot data from lower elevation (<1,500’) areas in Kitsap, Thurston, eastern Mason, and eastern Jefferson counties were selected to represent analysis unit conditions data as closely as possible. These data were “grown” using FVS to provide representative forest conditions in each year from 2025 – 2034 to provide potential stewardship and restoration treatment harvest volumes and tree sizes for the scenario analysis.

Operable areas

Operable areas within analysis unit were determined by removing areas that may be in regulatory riparian management zones (RMZs) or wetland management zones (WMZs), are excessively steep (>35% slope), or are inaccessible. Stewardship and restoration and would likely happen only within operable areas within a unit, rather than the entire unit. Estimating these areas using the best available data gives a more accurate view of what potential harvest volumes for each scenario.

Treatment removals

Past restoration treatments removed approximately 40% of the pre-harvest conifer volume within treatment areas. This percentage is used in financial scenario analyses.

Log size class percentages

Sawlog and pulp log percentages in past restoration treatments were related average tree diameters, specifically quadratic mean diameter (QMD), of the unit before harvesting (Figure 17). Generally, the smaller the average diameter of a unit is, the higher the percentage of pulp logs in the overall harvest volume. Likewise, when the unit contains larger trees, on average, the lower the percentage of pulp logs in the overall harvest volume. This function is used to predict the expected percentages of sawlog and pulp volumes when calculating potential thinning revenues.

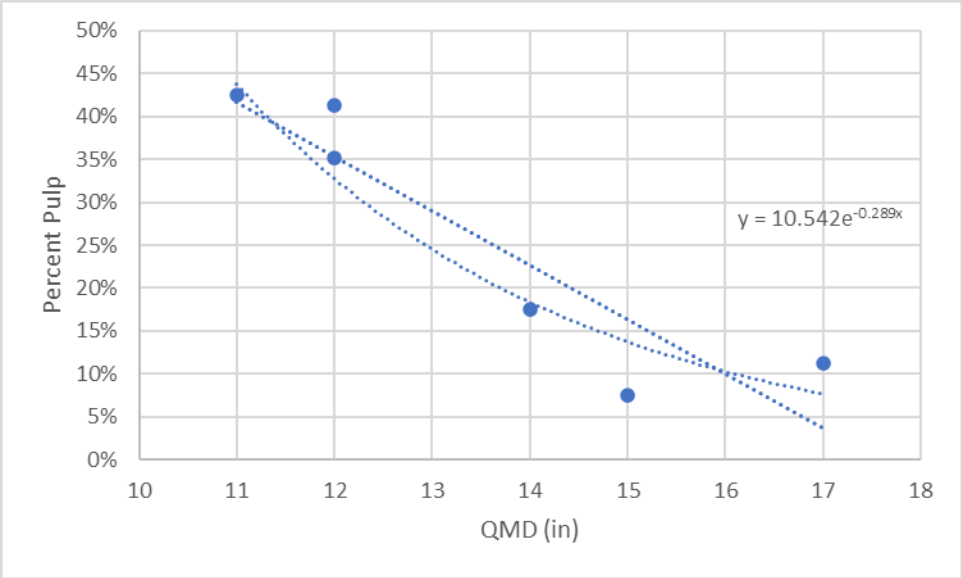

Figure 17: The relationship between percentage of volume in pulp logs relative to pre-harvest quadrative mean diameter (QMD)

Treatment year

Treatment years are assigned based on expected treatment need, as determined by previous planning document treatment need calls, competition metrics, and preliminary field review with harvest limited to an average maximum harvest of approximately 2 million board feet (MMBF) per year. Additionally, treatments are assigned one park at a time to focus impacts during a shorter time and provide long periods with treatment impacts. Treatments were manually assigned and iteratively adjusted to attempt to maximize restoration area and revenue to the County until all thinning needs have been addressed.

Log prices and harvest costs

Log prices and harvest costs used in the scenario analysis are based on past actual prices, average past costs, and expected future costs (Table 11). Log price scenarios cover the range of prices that

the County received from 2014-2024 and cover the range of reported prices in 2025. This range is used for scenario forecasts because log prices are very volatile (Figure 6) and difficult to predict but provides a representation of what may be possible from 2025-2034. Stump to truck cost, the costs associated with felling and bucking trees, moving the logs to the landing, and loading logs onto trucks were relatively consistent from 2014-2024 so a single average used for all scenarios. Hauling costs, the cost for moving logs from the landing to the mill, were also relatively consistent so an average is used for all scenarios. Harvesting would be contracted through a professional services agreement with American Forest Management (AFM) at a cost of 5.7% of log sales from 2024-2027 with an expectation that that would continue through 2034. Road maintenance and improvement costs have been highly variable but averaged approximately 4% of gross log sales from 2014-2024, which is used for all scenarios.

Table 11: Log prices and harvesting costs for each financial analysis scenario.

	$70	$80	$90	$100	$110	$120
Sawlog price $/ton	$ 70	$ 80	$ 90	$ 100	$ 110	$ 120
Stump-truck cost $/ton	$ 38	$ 38	$ 38	$ 38	$ 38	$ 38
Haul cost $/ton	$ 15	$ 15	$ 15	$ 15	$ 15	$ 15
AFM cost $/ton[40]	$ 6	$ 6	$ 7	$8	$9	$ 10
Road cost $/ton[41]	$ 4	$ 4	$ 5	$6	$6	$7

Forest Stewardship Program costs

From 2014-2024 the stewardship and restoration treatments funded Forest Stewardship Program including the Stewardship Forester salary, interns, and other costs. The cost structure of the program changed in late 2023 with the addition of the Natural Resources Supervisor salary and benefits to the Forest Stewardship Program budget. Moving forward investments will be needed in forest inventory data and young stand thinning to meet stewardship and restoration goals. Costs used in scenario analyses include:

- Salary and benefit costs of $125,000/yr per position funded
- Forest inventory investment of $14,250/yr to meet inventory needs
- Young stand thinning investment of $32,500/yr to meet restoration targets
- Other expenses are the average from 2014-2024

[40] Per-ton equivalent of 5.7% of per-ton price.
[41] Per-ton equivalent of 4% of per-ton price.

Appendix E – Combined Revenues and Costs