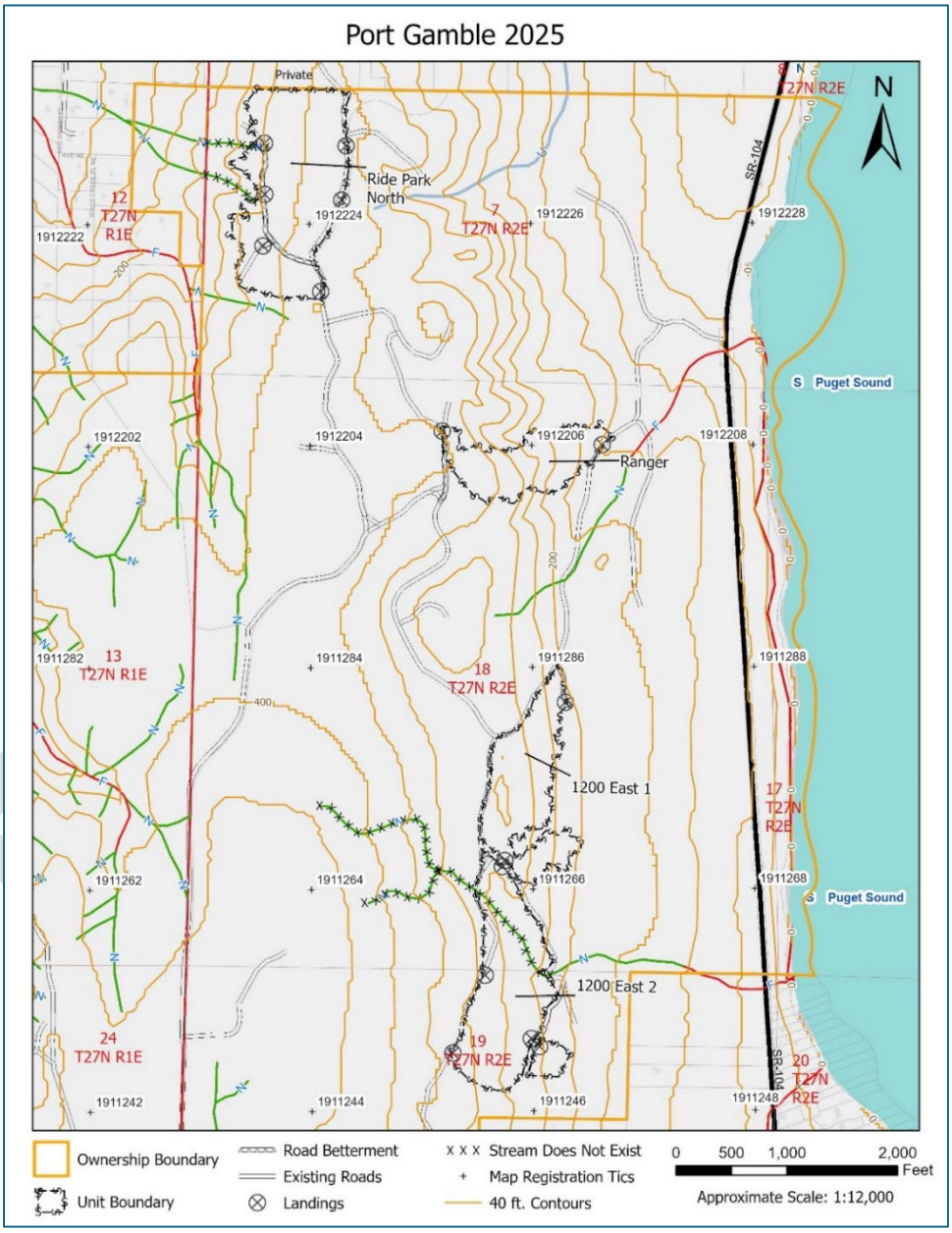
Port Gamble 2025 Stewardship and Restoration Project

Project Plan and Report



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Introduction

Approximately 97 acres within Port Gamble Heritage Park will receive stewardship and restoration treatments during 2025 to help create conditions that facilitate tree growth; increase resiliency to insects, diseases, expected climate change, and potential wildfires and; improve habitat quality and ecological function (Ceder and Weber, in review). Thinning will preferentially remove smaller trees making more room for remaining larger trees. This will reduce competition between trees and physiological stresses and allow the remaining trees to grow vigorously[1] and increase resiliency to insects, diseases, wildfires, and expected climate change. Space created in the canopy will allow light to reach the forest floor and encourage the reestablishment and growth of understory vegetation. Healthy, vigorous understory vegetation will improve wildlife habitats, resist invasive species establishment, and create more visually appealing conditions. Removing smaller trees that are becoming unstable and dying will reduce potential risks to park users.

Treatments will occur within four distinct units across the northern part of Port Gamble Heritage Park (Figure 1). These areas were regenerated following harvesting in the 1980s and have seen little, if any, management since that time. Currently these forests are very dense and uniform with little, if any, understory vegetation. Two of the units, which comprise about half of the area, are within the Evergreen Mountain Bike Alliance (EMBA) managed mountain bike ride park, which they currently maintain and manage. These trails see heavy recreational use. The other areas see recreational use that is limited to access roads adjacent to the treatment areas.

This document summarizes conditions in the areas that will receive treatments, why these treatments are needed, treatment prescriptions and specifications, and what effects are expected from the treatments during operations and both the short-term and long-term.

Data and Information Sources

Data and information sources used to describe conditions across the 2025 Port Gamble Stewardship and Restoration Project are a combination of field-collected, remotely sensed, and other publicly available data along with aerial imagery including:

- Forest inventory plot data were collected by American Forest Management during March 2025 to quantify tree conditions. These data were processed using the USDA Forest Service's Forest Vegetation Simulator[2] (FVS) to summarize the data and simulate forest growth and development with and without proposed treatments.
- Unit walkthroughs were completed by Parks Stewardship Forester during the spring of 2025 to describe and quantify forest conditions including:
    - Understory vegetation cover and condition.
    - Forest health, including insect and disease activity and tree mortality.

[1] "Vigor" refers to tree growth.

[2] The Forest Vegetation Simulator is publicly available online at: https://www.fs.usda.gov/managing-land/forest-management/fvs (Last accessed May 29, 2025)

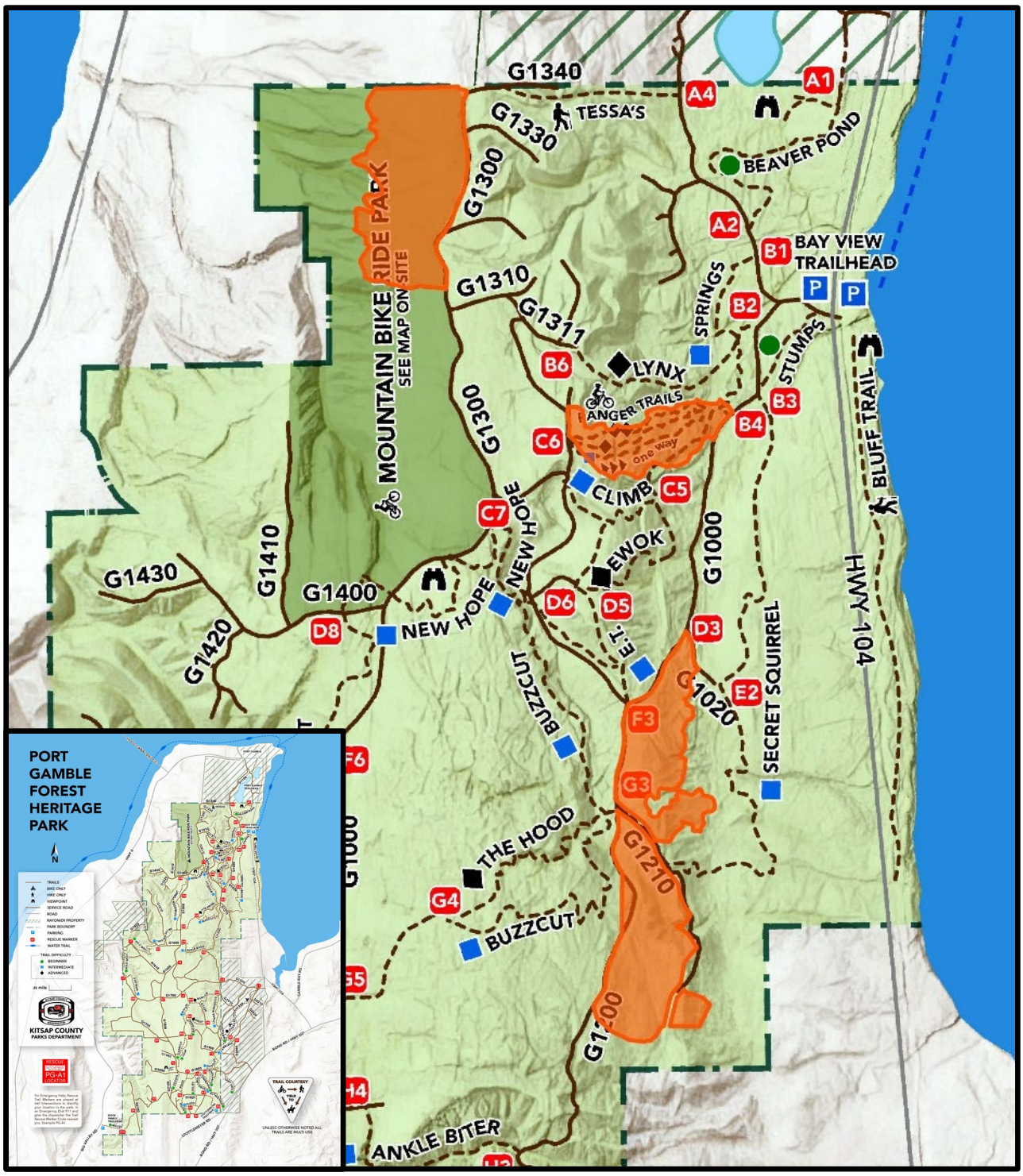

Figure 1: Location of the Port Gamble 2025 Stewardship and Restoration Project units within Port Gamble Heritage Park.

    - Operability limitations, including steep slope, wet areas, streams, etc.
- Historical aerial photography from the US Geological Survey[3] to understand the timing and extent of previous harvests.
- Remotely Sensed Forest Resource Inventory System (RS FRIS) data from the Washington Department of Natural Resources[4] provide additional forest condition information not collected during forest inventory or unit walkthroughs.
- Soil survey data from the Washington Department of Natural Resources[5] provides detailed information about soil conditions in the units.
- Financial information from past stewardship and restoration projects provides estimated operational costs for preliminary financial analyses.
- Recent log price information from the Washington Department of Natural Resources[6] along with input from log buyers and timber operators provide information about expected log prices for preliminary financial analyses.
- Model results from National Environmental Modeling and Analysis Center (NEMAC) for Kitsap County[7] provide information about potential future conditions under expected climate change scenarios.

Soils

Port Gamble 2025 project area soils are highly productive and stable but are water limited, which may have potential drought impacts with expected climate change (Table 1). Trees grow very well within the project area with expected height of 117-126 feet at 50 years old – an average of approximately 2.5 feet per year. However, growth potential may be limited by the water-holding capabilities of the soils, which are recharged completely by rain[8]. Reduced growth potential may be exacerbated if climate change results in longer, drier summers that deplete soil water sooner during the growing season.

Soils in the project area are well suited to forest stewardship and restoration activities. Potential for erosion during operations is relatively low, which may help minimize adverse impacts from the

[3] Aerial imagery is available online at https://earthexplorer.usgs.gov/ (last accessed May 16, 2025)
[4] RS FRIS data from the Washington Department of Natural Resources is available online at: https://data-wadnr.opendata.arcgis.com/maps/cfdfaab44b9b49adb2740e84ed722b68/explore?location=47.246086%2C-120.762700%2C8.20 (last accessed May 16, 2025)
[5] Soils data from Washington Department of Natural Resources. Available online at: https://data-wadnr.opendata.arcgis.com/search?groupIds=49418a134958413bbb538e4d1d5a5e2b (last accessed April 25, 2025)
[6] Log survey process are available online from the Washington Department of Natural Resources at: https://www.dnr.wa.gov/programs-and-services/product-sales-and-leasing/timber-sales/timber-sale-querylog-prices (last accessed May 16, 2025)
[7] Climate model outputs from the National Environmental Modeling and Analysis Center (NEMAC) for Kitsap County are available online at: https://crt-climate-explorer.nemac.org/cards_home/?city=Kitsap%2BCounty%2C+WA&county=Kitsap%2BCounty&area-id=53035&fips=53035&zoom=7&lat=47.6476607&lon=-122.6412583 (last accessed May 15, 2025)
[8] There are no areas near Port Gamble what have seasonal snowpack that provide additional dry season water.

treatments. Trees are likely to remain stable following treatment with relatively low potential for windthrow, a concern following stewardship and restoration activities.

Table 1: Port Gamble 2025 Stewardship and Restoration Project Soil Conditions.

Soil Name	Percent	Site Index[9] (50-year, Douglas-fir)	Water Holding Capacity	Windthrow Potential	Drought Potential	Erosion Potential
Poulsbo-Ragnar Complex	44	121-126	Low-Moderate	Low-Medium	Medium-High	Low-Medium
Ragnar	41	126	Moderate	Low	Medium	Low-Medium
Poulsbo	8	121	Low	Medium	High	Low
Indialola-Kitsap Complex	7	115-127	Low-Moderate	Low-Medium	Low-Medium	Medium-High

Current Forest Conditions

Dense forest conditions with small, tall, skinny trees (Table 2, Figure 2) are the result of planting following clearcut harvesting in the 1980s and 1990s. Current stocking – the numbers and sizes of trees – is approaching maximum stocking levels (Heiderman & Kimsey 2021). At these stocking levels trees have developed high height-to-diameter (H:D) ratios and small crowns (expressed as percent crown ratio, the percent of tree stem in the crown). Trees with small crowns (generally less than 40%) result from high levels of competition and cause high levels of physiological stress. Stress by competition increasingly predispose trees to mortality from competition, insects, and diseases (Waring 1987). Tall, skinny trees (generally with height-to-diameter ratio over 80) are increasingly susceptible to falling and breakage, which may create potential hazards for park users and increased workloads for park maintenance and operations staff.

Douglas-fir trees dominate the forest in a single, dense canopy layer (Table 2). The shade created by this dense canopy has suppressed or eliminated understory vegetation. Shade-tolerant trees species, including western hemlock and western redcedar, are a minor component of the forest in limited areas as remnants from the previous stand (as leave trees or advance regeneration[10] or seeded in following the last harvest). Occasional patches of hardwoods, including red alder and bigleaf maple are present, primarily in small areas with moist soils.

Table 2: Stand table summary representing the average forest conditions across treatment units. TPA is the average number of trees per acre. QMD is the average quadratic mean diameter of trees. BA is the average amount of basal area (cross sectional area of all trees) per acre. Crown Ratio is the average percentage of the tree stem in the crown. H:D Ratio

[9] Site index, a measure of site productivity, is the expected height of the largest trees at an index age. King's (1966) 50-year site index is used here as an estimate of heights at 50 years for Douglas-fir.

[10] Advance regeneration are small trees present in the understory of an older forest. When the large trees are harvested the advance regeneration trees are ready to grow.

is the average ratio of tree height (in feet) to diameter (in feet). Relative stocking is the average percent of maximum stocking (Heiderman and Kimsey 2021). Canopy cover is the average amount of an acre covered by tree crowns.

Unit	TPA	QMD (in)	BA (ft^2/ac)	Crown Ratio (%)	Top Height (ft)	H:D Ratio	Relative Stocking (%)	5-year Dia. Growth (in)	Canopy Cover (%)
Ride Park North	462	9.4	225	36	86	94	95	1.0	81
Ranger	305	12.0	240	32	98	97	91	0.7	79
1200 East 1	460	9.6	232	33	96	91	96	0.8	87
1200 East 2	335	9.8	176	45	89	92	73	1.1	82

High stocking levels have reduced tree growth (Table 2). Current high stocking levels suggest that previous owners intended to thin this forest at least once to maintain growth before a clearcut harvest. However, there is no evidence of past thinning in this unit by the prior owners in much of the proposed treatment area[11]. At current growth rates it may take decades for large trees to develop. During that time trees will be stressed and at risk of mortality, breakage, and falling.

High tree stocking and past management have impacted habitat values through suppression or elimination of understory vegetation and removal of standing dead trees (snags) and downed logs. Dense tree canopies cause deep shade leaving insufficient light for even the shade-tolerant evergreen huckleberry and salal to live. Understory vegetation that does remain produces little fruit for wildlife forage. Dead wood in these units is limited to small-diameter trees that have been killed by competition, insects, and diseases. These snags and logs are generally too small to function as wildlife habitat for vertebrate species.

Active mortality is happening in all units with a mix of individual tree mortality and disease-driven patch morality. Currently, trees are beginning to die from competition, insects, and diseases resulting in unstable snags and downed logs. Windthrow is impacting trees throughout this project. Unit 1200 East 1 has active root disease pockets containing dead and dying trees that are providing, and will continue to provide, standing dead and downed wood to the unit.

Legacy trees, stumps, and downed logs are present in Unit 1200 East 1. A few very large (over 4-foot DBH) remnant trees are present along the eastern boundary. This area also has a few very large stumps (over 4-foot diameter) and large (over 2-foot diameter) downed logs.

All units are accessible from adjacent forest roads. The majority of these roads are currently usable with de minimis maintenance needed. Spur roads accessing the Ride Park North and Ranger units, totaling approximately 2,600 feet need improvement prior to hauling including brushing, grading, ditching, and, possibly, spreading crushed rock on the road surface.

Ride Park North and Ranger units see extensive recreation on a system of trails developed and maintained by the Evergreen Mountain Bike Alliance.

[11] Some areas of Ride Park North and in the southern portion of 1200 East 2 have had precommercial and/or commercial thinning resulting in decreased stocking. It's unclear when these treatments happened.

Figure 2: Examples of current conditions in each of the Port Gamble 2025 Stewardship and Restoration Project units.

Desired Conditions

Desired conditions for forests in Kitsap County Parks include (Ceder & Weber, in review):

- Forest containing vigorous, large diameter (over 24" diameter at 4.5' above the ground (DBH)) trees
- Diverse, plant species mixes that include shade-tolerant and hardwood species including western hemlock, western redcedar, western white pine, grand fir, red alder, and bigleaf maple, where appropriate, based on locally expected plant associations[12].
- Multiple canopy layers
- Vigorous understory vegetation with species composition and cover based on locally expected plant associations[13]
- Large (>12" diameter[14]) snags and downed logs are present.
- Trees with forks, large branches, crooks, broken tops, and/or other unique elements are present.

Specific targets for each condition, including guidance sources, area shown in Table 3.

Table 3: Desired condition targets with guidance source references.

Element		**Desired Conditions**	**Guidance source**
Large Trees (>24" DBH)		8 or more per acre	USDA Forest Service 2023. Table 14. Western hemlock plant association zone[15].
Species composition	Overstory: Primarily DF	55-65%	Chappell 2006. Douglas-fir – western hemlock / evergreen huckleberry plant association
	Understory: WH, RC, WP	30-50%	Chappell 2006. Douglas-fir – western hemlock / evergreen huckleberry plant association
Canopy layers		2 or more	USDA FS 1993. Western hemlock series
Understory Vegetation cover		50-70%	Chappell 2006. Douglas-fir – western hemlock / evergreen huckleberry plant association
Largs (>12" DBH) snags		2 or more per acre	Size: WAC 222-30-020 Number: Mellen-McLean 2017. Westside lowland conifer hardwood forest. Late structure
Large (>12" dia., >20' long) downed logs		10 or more per acre	Size: WAC 222-30-020 Number: Mellen-McLean 2017. Westside lowland conifer hardwood forest. Late structure
Wildlife trees (forks, large branches, crooks, broken tops) > 12" DBH		2 or more per acre	WAC 222-30-020

[12] Guided by Chappell 2006
[13] See footnote12.
[14] WAC 222-30-020
[15] The western hemlock plant association zone covers forests, including those that are currently dominated by Douglas-fir, in Kitsap County.

Purpose and Need

The purpose of stewardship and restoration treatments in the treatment units is to create conditions that:

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

Stewardship and restoration treatments are needed because current conditions are highly departed from desired conditions (Table 4) including:

- No trees over 24" DBH are present,
- Excessive overstory tree cover,
- Understory tree cover is lacking,
- The tree canopies have only one layer,
- Understory vegetation cover is lacking,
- Snags, downed logs, and wildlife trees are lacking

Table 4: Comparison of current conditions in stewardship and restoration treatment units and desired conditions. Green shading represents values that meet desired conditions. Orange shading represents values that are departed from desired conditions.

Element		**Desired Conditions**	**Ride Park North**	**Ranger**	**1200 East 1**	**1200 East 2**
Large Trees (>24" DBH)		8 or more per acre	0	0	0	0
Species composition	Douglas-fir cover	55-65%	96%	82%	47%	53%
	Other conifer cover	30-50%	4%	11%	45%	24%
Canopy layers		2 or more	1	1	1	1
Understory Vegetation cover		50-70%	<10%	<10%	20-25%	<10%
Largs (>12" DBH) snags		2 or more per acre	0	0	0	0
Large (>12" dia., >20' long) downed logs		10 or more per acre	0	0	0	0
Wildlife trees (forks, large branches, crooks, broken tops) > 12" DBH		2 or more per acre	0	0	0	0

Without proposed treatments in the units, the high stocking and competition levels would increasingly stress trees predisposing them to dying for the foreseeable future. Current mortality caused by competition, insects, and diseases would continue, and possibly increase, resulting in an increasing number of small snags and downed logs. Windthrow occurring in the stands would continue, and possibly increase, as trees become increasingly tall and skinny. Elevated levels of mortality and windthrow would increase hazards to park users, especially within the Ride Park North and Ranger units.

Wildlife habitat values would continue to be degraded without treatment. Snags and logs created by mortality would continue to be too small to be functional habitat elements. Tree growth would remain slow, ensuring that it would take many decades to produce large, functional dead wood. Canopy openings created by tree mortality would allow light to reach the forest floor in places facilitating understory vegetation recovery in these areas. However, these areas would be limited to small areas in a matrix of otherwise dense canopy resulting in small patches of understory vegetation surrounded by areas with little or no vegetation.

Treatment Prescriptions and Specifications

Forest restoration prescriptions

Treatments prescriptions and specifications address treatment needs and are intended to move forests towards desired conditions (Table 5).

- Prescriptions define the actions within each treatment unit to modify stand.
- Specifications provide targets, recommendations, opportunities, limitations, etc., for how tree cutting and removal would be conducted.

Together these will help ensure that conditions following treatments will set the forest up to develop toward desired conditions. See Appendix A for unit-specific prescriptions and specifications and Appendix B for visualizations of expected conditions following treatments.

Generally, forest stewardship and restoration treatments will cut trees to increase the growing space and resources available to the remaining trees, while also shifting species composition and enhancing standing dead and downed wood. Treatments will remove approximately 50% of the basal area[16] of the trees in the treatment areas preferentially cutting smaller trees while leaving the largest trees. Trees left standing following the treatment will generally have the largest crowns, which are most likely to respond quickly to the additional growing space and resources. Douglas-fir trees, which dominate the units, are the primary target for removal while other species, including western hemlock, western redcedar, western white pine, and hardwoods, will generally be retained to help move species composition toward desired conditions. Where western white pines are found, which are relatively rare on the landscape, important for diversity, and susceptible to

[16] Basal area, measured in square feet per acre, stand density metric. It is the accumulated cross-sectional areas of all trees at 4.5 feet above the ground.

competition, all competing trees will be removed with 20-30 feet to help ensure tree health and vigorous growth to keep these trees on the landscape. Tree canopy cover reductions will increase sunlight reaching the forest floor, which will facilitate the growth and re-establishment of understory vegetation. Existing snags and downed loges will be retained wherever possible. Snags will be created by cutting some trees as high as the tree felling equipment will reach. Habitat piles and large log analogs will be constructed following the project using low-value logs from cut trees to enhance wildlife habitat value.

Table 5: Project-level silvicultural prescriptions and specifications to address treatment needs and move the forest toward desired conditions. See Appendix A for unit-specific prescriptions and specifications.

Desired Conditions & Objectives	Treatment Prescription & Specifications
Large Trees: • Reduce stocking to increase tree growth and vigor. • Reduce competition with large, old remnant trees.	**Post-treatment conditions outside skips and gaps:** Average (range) • TPA: 140 (115 – 165) • QMD (in): 12 (11 – 13) • BA (ft^2/ac): 110 (90 – 120) • SDI: 185 (150 – 200) • Relative Stocking 41% (33-44%) • Spacing (feet): 18 (16 – 19) • Wherever possible preferentially leave the largest trees with large crowns • Where feasible, leave clumps of larger trees that are closer that spacing specifications • Where feasible, remove competing Douglas-fir trees within 25 feet of large, old remnant trees.
Species Composition: • Retain and enhance western redcedar, western hemlock, western white pine, and hardwoods	• Unless removal is needed for operations and safety or to meet restoration goals, retain western redcedar, western hemlock, western white pine, and hardwoods. • Remove all competing trees within 20-30 feet of western white pine
Understory vegetation: • Reduce canopy cover to allow more light to hit the forest floor to encourage understory vegetation.	• Post-treatment canopy cover averaging 52% (range 50 – 55%)
Snags and downed wood: • Retain and protect existing snags and downed wood. • Increase tree growth to facilitate larger trees as a source of large snags and downed wood. • Increase the amounts of standing dead and downed wood.	• Wherever feasible, retain and buffer large (>12” DBH) snags where they exist unless they present a safety hazard. • All large snag (>12” DBH) removal must be approved by County Stewardship Forester. • Create an average of 3 snags per acre by cutting trees as high as operationally feasible. Favor trees with defective butts. • Retain sufficient logs (approximately 30-50%) that will not need sawlog criteria

	(small logs, deformed/defective logs, long butts) on site to allow creation of approximately 3 habitat piles and 3 large log analogs per acre.
Wildlife trees: • Retain trees with unique features that would benefit wildlife including, but not limited to, forks, large branches, crooks, broken tops, etc.	• Unless removal is required for operations and safety, retain trees with unique features that would benefit wildlife including, but not limited to, forks, large branches, crooks, broken tops, dwarf mistletoe brooms etc.

Access Road prescriptions

Access roads that may require maintenance and betterment are existing spur roads that have seen minimal use since previous harvests. Prescriptions for these roads will bring them to minimal standards for timber hauling before they are allowed to revert to trail use until the roads are needed again in 20-30 years.

Access road prescription elements include:

- Grade road to provide a running surface that is at least 12 feet wide.
- Retain and redistribute any existing road surface rock.
- Apply additional rock on the road surface if needed to prevent erosion.
    - Wherever possible, source rock from weed-free pits.
- Create roadside ditches where needed to contain potential runoff and sediment.
    - Install or replace culverts as needed to divert water away from roads
- Clear and trim roadside trees, brush and other vegetation to at least 8 feet from either side of the road centerline.

Expected Effects

Port Gamble 2025 forest stewardship and restoration activities will directly impact the trees and other vegetation in the treatment areas with expected effects that include visual impacts, reduced recreation opportunities, and wildlife disturbance during operations; tree and vegetation growth and recovery along with visual and wildlife habitat improvements in the short-term (1-5 years); and improved forest health and habitat conditions in the long term (6-30 years). Ongoing monitoring of treated areas will be performed at regular intervals to evaluate progress towards desired conditions.

During operations

The most dramatic impacts may happen during operations when heavy equipment is being used to cut and remove trees (Figure 3). These impacts include:

Vegetation: During operations extant understory vegetation may be impacted as heavy equipment moves through the forests cutting and processing trees then moving them to a landing (Figure 3). Vegetation would likely be heavily impacted on skid trails, where equipment is operated, that would cover approximately 20% of the area. Impacts may include crushing and other damage by the equipment, slash (limbs and tops removed from felled trees), and piles of logs. Between skid trails impacts may be less as trees are felled and moved to the skid trail for processing. Overall, vegetation cover loss is expected during operations.

Visual: Operations may have large visual impacts on forests (Figure 3). Slash will be piled on the ground and skid trails after trees are felled and processed into logs are piled on the ground. Some remaining vegetation may be heavily disturbed. Parks users may find the skid trails, slash, and disturbed vegetation jarring and visually unappealing during operations. However, sightlines may be opened providing views deeper into the forest to view birds and wildlife and better see the surrounding area.

Wildlife: During operations noise and activity may drive some wildlife away from the treatment unit during daily activities. This is expected to be minimal because there is little evidence of wildlife use in these units. Following daily activities some species may return to the unit to forage on slash and insects.

Recreation: During operations trails will be closed as needed to help ensure the safety of park users and the crews implementing forest stewardship and restoration activities (Figure 3). Closures may last from a few days to a few weeks. Where possible, closures will be limited to operation hours, generally sunrise, when the park opens, until about 5:00 PM, when daily operations would end.

Figure 3: Examples of conditions during forest stewardship and restoration operations, including trail closures.

Short term (1 - 5 years)

During the first five years following forest stewardship and restoration activities forests are recovering from activity-related disturbances and impacts (Figure 4). Conditions following treatment may, in the short-term, move the forest in the treatment units away from desired conditions with expectation that conditions will trend towards desired conditions in the long-term (6 - 30 years). In most cases treatments will likely reduce canopy cover below plant association appropriate levels. This additional space around trees is needed for trees to grow and become larger as the forest moves toward desired conditions in the long-term.

Expected short-term effects 1 - 5 years following stewardship and restoration activities include:

Trees: Following stewardship and restoration activities trees are expected to acclimate to the increased space and resources. Trees would change their needles and crown architecture to take advantage of increased light. Epicormic branches would begin developing on tree stems adding to the crown and creating complexity. Expanded crowns would produce more carbohydrates for the tree to start increasing tree growth.

Some trees may fall or break during this time. Trees in these units tend to be tall and skinny with small crowns and rooting areas from growing in very dense, closed conditions. With fewer neighbors, winds may exert forces on tree crowns, possibly causing some of them to uproot (windthrow) or snap their stems (windsnap). This may happen on 1-3% of the trees (1-4 trees per acre) providing much-needed dead wood to help move the forest toward desired conditions.

Sub-canopy shade-tolerant trees that remained following stewardship and restoration activities would likely start growing in response to the increased light and resources. These trees would begin creating a second canopy layer in the forest. A second cohort of trees may begin to establish from seeds dropped by remaining trees, which is anticipated but not an objective of the stewardship and restoration activities Disturbed soils following operations provides opportunities for seeds to germinate. Species composition would likely be comparable to the remaining trees in and around the unit as these are the trees most likely source of seeds Together understory tree growth and regeneration will help establish diverse understory and midstory canopies that move the forest towards desired conditions.

Vegetation: Understory vegetation is expected to respond to increased light following thinning with extant vegetation growing and capturing space or re-establishing where understory vegetation is lacking (Figure 3). Much of the existing shrub vegetation will likely recover from damage during operations, adding new shoots that can grow vigorously with the additional light reaching the forest floor. Herbaceous annuals damaged during operations would likely begin re-establishing from the soil seed bank and/or dispersed seeds. In areas where vegetation is lacking it would likely begin re-establishing through seeds present in the soil seed bank, rhizomatous spread, and seed dispersal into the treatment area. Overall, vegetation cover and diversity has likely started increasing understory cover and diversity moving the forest toward desired conditions.

Invasive species present in the area, such as scotch broom, holly, and Himalayan blackberry, may also begin to establish through similar mechanisms. Invasive species treatments may be needed if/when invasive species begin to establish.

Figure 4: Examples of short-term conditions following stewardship and restoration activities. All photos were taken approximately 1 year after activities at Port Gamble Forest Heritage Park.

Visual: Slash remaining after stewardship and restoration activities has lost its green foliage and is now a mass of brown sticks. Where understory vegetation was present prior to treatment, green vegetation will recover and expand, screening remaining slash and stumps. Park users may find this recovery a pleasant change from immediate post-treatment conditions. Where understory vegetation was lacking in pre-harvest conditions, vegetation may still be recovering, providing some green vegetation but, possibly, not enough to screen remaining slash and stumps. Some park users may still find these conditions visually unappealing.

Sightlines into the forest created by stewardship and restoration activities likely remain open providing increased visibility and providing opportunities for landscape and wildlife viewing.

Wildlife: Wildlife use of forests in the units is likely to increase with improved forage, nesting, roosting, and cover opportunities. Wildlife foraging opportunities would likely increase as vigorous understory vegetation would likely produce more berries, nuts, and palatable foliage. Increased vegetation cover will likely provide increased nesting and cover opportunities. Created habitat features – snags, habitat piles, large log analogs – are would likely provide increased nesting, roosting, and foraging opportunities.

Long-term (6 - 30 years)

During the period from 6-30 years following treatment the forest would have largely recovered from short-term restoration treatment impacts (Figure 5) and be developing toward desired conditions. Expected long-term effects include:

Trees: Trees have expanded their crowns and growth has increased. Simulations of expected post-treatment conditions with the Forest Vegetation Simulator forest growth model suggest that forests in the project area would likely be developing toward and, possibly, reaching large tree desired conditions. As the retained trees grow, the largest may begin meeting the large tree diameter criterion of a 24" DBH. By 30 years following treatment all units may meet the large tree desired condition. Understory and midstory trees that remained or established following treatment would likely create a second canopy layer that increases species diversity and structural complexity within the forest.

With growth, trees may return to high competition levels in 20-30 years following treatment. As canopies close and competition increases tree growth and vigor would likely begin to decline. Shade would likely increase under the dense canopies, which would begin to suppress understory vegetation and trees. These conditions may create the need for follow-on stewardship and restoration treatments to keep the forests developing toward desired conditions.

Vegetation: Vegetation cover may reach its peak before tree canopies begin to close and grow vigorously (Figure 4). Flowers, fruit, and foliage available for insects, birds, animals, and foragers would likely peak at this time. However, as the canopies close and shading increases, understory vigor and forage production would likely begin decreasing. Reduced fruit, seed, and vegetation production may begin to reduce the forage available for wildlife.

Figure 5: Expected long-term conditions following stewardship and restoration activities. All photos taken approximately 8 years after activities at Port Gamble Forest Heritage Park.

Visual: As tree canopies close and shading increases there are likely impacts on understory vegetation that may change some sight lines within the forest. Established understory trees have

likely increased in size causing some screening but may also add to the visual complexity of the forest. Herbaceous vegetation would likely have rebounded, especially in gaps and along edges. Composition, cover, and diversity would likely vary with plant association, seed source, disturbance, water availability, aspect, and other factors.

Wildlife: Wildlife use of the treatment areas would likely continue with a potential increase in species associated with dead wood. Created habitat structures – snags, habitat piles, large log analogs – would likely be decaying providing soft wood for nest cavity excavation and foraging for insects living in the wood. Habitat piles would likely provide nesting and denning opportunities. Woodpeckers would likely forage on created snags. In larger created snags, heart rot may soften the interior wood providing excavation opportunities for cavity nesting birds.

Project Schedule

The Port Gamble 2025 Forest Stewardship and Restoration Project began in January 2025 and is expected to be completed by the end of November 2025 (Table 6). Assessments during the first quarter of 2025 quantified and qualitatively described forest conditions in the treatment areas. Results from assessments were used to determine treatment needs. Project planning and permitting during the second quarter of 2025 prepared for implementation, which begins in June 2025. Required pre-treatment road maintenance to allow timber hauling would happen at times during June and July 2025 likely interspersed with treatments operations as contractors move through the treatment areas. Treatments continue through the summer and into the fall with completion expected in November 2025 followed by any needed post-treatment road maintenance. Monitoring of treatment activities will happen in parallel with treatment activities to ensure contract compliance and to ensure that treatments are meeting prescription targets. Ongoing monitoring of treated areas will be performed at regular intervals to evaluate progress towards desired conditions.

Table 6: Port Gamble 2025 Forest Stewardship and Restoration Project schedule.

Task	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Assessments											
Walkthroughs											
Inventory collection and compilation											
Planning											
Permitting											
Implementation											
Road maintenance											
Monitoring											

Financial Performance

Trees removed during stewardship and restoration activities to meet treatment objectives are a valuable commodity that can be sold to cover activity costs and, potentially, generate revenue. At

the completion of this stewardship and restoration project there is the potential to net revenues of approximately $50,000 by selling logs resulting from stewardship and restoration activities (Table 7). Larger logs with small-end diameters of at least 5 inches that are free of deformities would be sold as sawlogs, with an expected delivered price of $90/ton. These logs are expected to be approximately 70% of the logs resulting from this project. Logs that are too small and/or malformed logs to meet sawlog criteria may be sold as firewood/pulp logs or maintained onsite and used to create habitat piles and large log analogs. Approximately 15% of the logs resulting from this project would be sold for pulp (used to make paper) or firewood with an expected delivered price of $27/ton. The remaining logs resulting from this project would be left onsite to meet dead wood and habitat enhancement needs. Gross revenue from log sales is expected to be approximately $392,000 before activity costs are deducted.

Stewardship and restoration treatment activity costs are charged by contractors for services provided to complete this project. Gross activity costs for harvesting, hauling, log marketing, and road maintenance are expected to be approximately $69/ton (Table 7). After including the cost of pre-harvest timber inventory data collection, the gross activity cost for the project is approximately $342,000.

At the completion of this stewardship and restoration project a net revenue of approximately $50,000 (Table 7) is expected after meeting ecological restoration goals. Sawlogs resulting from this project would be sold expected to return net revenues of approximately $86,100 (approximately $21/ton). Pulp/firewood logs resulting from this project are expected to be sold at a loss of approximately $35,700 (approximately $42/ton). Pulp/firewood log sales, even at a loss, are needed to ensure that the amount of dead wood left on site following stewardship and restoration activities is in line with the amounts needed to meet ecological objectives. Leaving too many small logs on site may cause excessive ground cover that may impede understory vegetation recovery and growth. Excess small logs may also increase fuel loadings and potentially elevate wildfire hazards.

Table 7: Expected financial performance of the Port Gamble 2025 Forest Stewardship and Restoration Project.

Harvest volumes and revenues	**Price**	**Tons**	**Gross Revenue**
Sawlogs (Manke)	$80/ton	4,100	$328,000
Pulp (Pt Townsend Paper)	$31/ton	425	$13,175
Pulp (C&C Timber)	$31/ton	425	$13,175
Total		*4,950*	*$354,350*

Costs	**Price**	**Tons**	**Gross Cost**
Forest Inventory	$2,250	-	$2,250
Harvesting (Stump to Truck)	$41.50/ton	4,950	$205,425
Hauling (Manke)	$19.00/ton	4,100	$77,900
Hauling (Pt Townsend Paper)	$19.00/ton	425	$8,075
Hauling (C&C Timber)	$8.50/ton	425	$3,613
AFM service commission	$4.08/ton	4,950	$20,198
Road maintenance	$2.26/ton	4,950	$11,200
Total			*$328,660*

Net Revenue			**$25,690**

Summary

The Port Gamble 2025 Stewardship and Restoration Project will treat approximately 97 acres achieving ecological restoration goals while also generating approximately $25,000 in net revenue to the Forest Stewardship Program. Forest stewardship and restoration will remove trees from the forests in the treatment units to increase the amount of space available for the remaining trees. Conditions following treatments would facilitate vigorous tree growth to increase resiliency to forest insects, diseases, expected climate change, and potential wildfires. Understory vegetation, following initial impacts during treatment operations, would re-establish and grow vigorously with additional light and space producing improved quantities of berries, flowers, and palatable forage for wildlife. Standing dead trees and downed logs retained or created in the treatment units would provide nesting, roosting, and foraging opportunities for wildlife. Following initial short-term impacts to forest vegetation and recreational opportunities, forests in the treatment units would be in conditions that are expected to begin developing toward desired conditions in the long-term.

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Appendix A – Unit Prescriptions and Specifications

This appendix contains unit-specific treatment prescriptions and specifications. Each prescription includes:

Stand narrative description: A detailed narrative description of current stand conditions and a history of the stand to provide context for how these conditions developed.

Current conditions: Summary tables of current conditions including:

- Plant association, site class, topographic information, and approximate age.
- Forest inventory summaries including the numbers and sizes of trees in the unit, stocking levels, current growth rages and canopy cover.
- Comparisons with desired conditions to determine departures.

Stewardship and restoration treatment needs and objectives: A summary of why treatments are needed and what the objectives of the treatments are.

Treatment prescriptions and specifications: Detailed information about stand conditions following the treatment including:

- Expected numbers and sizes of trees that would be left following treatment
- What types of trees should be targeted for removal or retained and enhanced.
- Habitat elements (snags, logs, etc.) that would be left onsite or created.
- Where applicable, how to address areas of active disease outbreaks.

Post-treatment conditions: A description of expected post-treatment conditions and how the forest is expected to respond to the treatments.

Operational considerations: Descriptions of things that may impact the restoration thinning operations.

Haul roads used, maintenance and betterment needed: A listing of what roads would be used to access the unit and haul logs resulting from the treatments, roads here maintenance and betterment is needed, and specifications of maintenance and betterment activities.

Stewardship and Restoration Treatment Prescription – Ride Park North

Park: Port Gamble	**Unit:** Ride Park North/Unit 1	**FPA/N #:** 2424353	**Acres:** 35

Stand Narrative Description:

This unit contains primarily dense, relatively uniform Douglas-fir trees that were planted following clearcutting in the 1980s. Currently the unit is dominated by Douglas-fir with occasional patches of hardwoods including red alder and bigleaf maple. Trees are self-pruning as lower limbs have been shaded out following canopy closure. Crown ratios on dominant trees range from 20 – 70%. Crowns are forming a single canopy layer. Shade tolerant species, such as western redcedar, western hemlock, and western white pine, are lacking in this unit. Understory is sparse with a patchy mix of evergreen huckleberry and salal. Large trees, snags, and downed logs are lacking. This unit is in the biomass accumulation/stem exclusion structural stage[17].

This unit is very dense with diameter growth reduced and crown ratios decreasing. Trees are becoming tall and skinny, which will make them unstable and susceptible to wind throw, wind snap, and wet noodling (bending over because the stem will no longer hold up the tree), especially in smaller diameter trees. Competition mortality is occurring, especially in denser patches that were not thinned. Small crowns from competition with neighboring trees are limiting diameter growth and tree vigor. Stressed trees are increasingly susceptible to diseases and insects. Without treatment tree growth will remain low, mortality will be elevated, and trees would be at risk for wind throw, wind snap, and mortality through diseases and insects. Elevated mortality would increase hazards to park users. Reaching desired conditions with large trees may take many decades or centuries without thinning to create growing space for remaining trees.

Mountain bike trails have been developed throughout this unit. Trails primarily run east-west through the unit with one trail running north-south in the eastern part of the unit. Minimizing damage to these trails during operations will be critical. Areas between trails may be accessed from a road in the western portion of the unit. Landings should be located to minimize trail crossing. Trails provide opportunities to create spatial variability in the unit by leaving higher densities along trails.

[17] Van Pelt, R. 2007. Identifying Mature and Old Forests in Western Washington. Washington State Department of Natural Resources, Olympia, WA. 104p.

Current Conditions Summaries:

Unit Information				
Plant Association	**Site Class**	**Slope**	**Aspect**	**Age (Approx)**
PSME-TSHE/VAOV	II	0-20%	W	40

Forest Conditions (2025 forest inventory)								
TPA (>4.5" DBH)	**QMD (in)**	**BA (ft^2/ac)**	**Crown Ratio (%)**	**Top Height (feet)**	**Height: Diameter Ratio**	**Relative Stocking (%)**	**5-Year Dia. Growth (in)**	**Canopy Cover (%)**
462	9.4	225	36	86	94	95	1.0	81

Conditions Comparison			
Element		**Desired Conditions**	**Current Conditions**
Large Trees (>24" DBH)		8 or more per acre	0
Species composition	Douglas-fir cover	55-65%	96%
	Other conifer cover	30-50%	4%
Canopy layers		2 or more	1
Understory Vegetation cover		50-70%	<10%
Largs (>12" DBH) snags		2 or more per acre	0
Large (>12" dia., >20' long) downed logs		10 or more per acre	0
Wildlife trees (forks, large branches, crooks, broken tops) > 12" DBH		2 or more per acre	0

Stewardship and Restoration Treatment Need and Objectives:

Current conditions are departed from desired conditions for large trees, species composition, canopy layers, understory vegetation cover, and dead wood. Stewardship and restoration treatment is needed in this unit to move the forest towards desired conditions. Objectives include:

- Reduce stocking to provide space and resources to facilitate tree growth
- Reduce the proportion of Douglas-fir trees relative to other species
- Encourage growth of existing shade-tolerant trees
- Facilitate the re-establishment and growth of understory vegetation.
- Create snags and downed logs

Treatment Prescription and Specifications

Desired Condition	Prescription and Specifications
Large Trees: • Reduce stocking to increase tree growth and vigor	**Post-treatment conditions outside skips and gaps:** Average (range) • BA (ft^2/ac): 120 (100 – 180) • QMD (in) 12 (11 – 13) • TPA: 150 (100 – 200) • Spacing (feet): 17 (15-20) **Specifications:** • Wherever possible, preferentially leave largest trees with large crowns • Wherever possible, leave clumps of large trees that may be closer than spacing specifications. **Examples:** ○ 2 large trees: Leave both ○ 3 large trees: Take 1, leave 2 ○ 4 large trees: Take 1-2, leave 2-3 ○ 5 large trees: Take 2, leave 3 ○ 6 large trees: Take 2-3, leave 3-4 • Vary tree spacing across the unit as conditions allow. ○ Uniform spacing is NOT a treatment objective. ○ Let stand condition guide density differences. **Examples:**

	▪ Areas of smaller trees may have higher densities ▪ Areas with larger trees may have lower densities ▪ Areas with fewer merch trees may have higher densities ▪ Steep areas may be skipped ▪ Dense areas with tall, skinny trees may be cleared as a gap. ▪ Areas along trails may have higher densities • Retain trees near mountain bike trails within area marked with white flagging • Remove trees near trails marked with blue flagging
Species Composition: • Retain and enhance western redcedar, western hemlock, western white pine, and hardwoods	• Unless removal is needed for operations, safety, or to meet treatment objectives, retain all western redcedar, western hemlock, western white pine, and hardwoods. • Remove all competing trees within 20-30 feet of western white pine
Snags and downed wood: • Retain and protect existing snags and downed wood. • Increase tree growth to facilitate larger trees as a source of large snags and downed wood.	• Retain approximately 50% of the pulp logs for habitat pile and large log analog creation o Wherever possible pile logs. o Wherever possible create 2-3 small slash piles per acre • Retain and buffer large (>12”) snags where they exist unless they present a safety hazard. • Any large snag removal must be approved by the Stewardship Forester. • Create approximately 2 snags per acre by cutting trees as high as safely possible. • Leave approximately 5 logs per acre with top diameter over 5”.

	• Favor trees with defective logs or poor form for snag and downed wood creation.
Diseased areas • Maintain dead, dying, and infected trees to provide a source of naturally occurring dead wood.	• Remove all healthy Douglas-fir trees within 20-30 feet of infected trees.

Post-treatment Conditions

Following treatment stand stocking will be reduced and the forest canopy opened. The increased spacing between trees will result in increased tree vigor and growth. Preferentially retaining large trees will increase the overall average diameter of the stand. The larger, more vigorous leave trees will put the unit on a trajectory to develop large trees faster than would happen with pre-treatment conditions. Preferentially removing Douglas-fir and retaining western redcedar, western hemlock and western white pine will help shift the species composition toward desired conditions. Reduced canopy cover will allow understory to develop where it is lacking and allow a quick recovery where it is currently present. Created snags and retained logs will help move the forest toward standing dead and downed wood desired conditions.

Overall, the changes in the unit following treatment will put the unit on a trajectory to meet desired conditions – large trees; western redcedar, western hemlock, western white pine present; multiple canopy layer; healthy understory vegetation; and large snags and downed wood – faster than would happen with pre-treatment conditions.

Operational considerations:

This unit has several constructed mountain bike trails through the unit.

- Trails to avoid during operations will be marked with white flagging. Tails face AWAY from the trail.
- Retain trees within area flagged with whiter flagging EXCEPT remove trees with blue flagging
- Wherever possible minimize crossing mountain bike trails with equipment. If crossings are necessary, use logs or other materials to minimize trail impacts.
- Avoid damaging constructed berms and other mountain bike trail structures to the greatest extent possible.

Construction on the Port Gamble North Parking Lot, located along the G1300 road, may occurring during the same time as treating this unit. Coordination with the contractor may be needed when thinning along the north part of the G1300 road. The Stewardship Forester will conduct any needed coordination.

Wherever possible, avoid disturbing hardwood patches.

There are no streams or wetlands present in the unit.

There are no steep slopes in the unit.

Haul roads used, maintenance and betterment needed:

Unit will be accessed from the G1000, G1300, G1320, and G1321 roads. Landings may be located along the G1300, G1320, and G1321 roads.

Road betterment will be needed on approximately 1,400 feet (14 stations) of the G1320 and G1321 roads prior to hauling including:

- Clearing: Clear brush and trees from within 8 feet of the road centerline.
- Grading: Grade the existing road surface to create a 12-foot running surface. If possible, outslope road for drainage.
- Surfacing: Use minimal rock for road surfacing to facilitate transition to trail use following harvest. Wherever possible source rock from weed-free pits.
- Ditching/drainage: Create ditches as needed to collect and distribute runoff. Replace or install culverts were needed to divert water away from roads and aquatic resources.

Stewardship and Restoration Treatment Prescription – Ranger Corridor

Park: Port Gamble	**Unit:** Ranger/Unit 2	**FPA/N #:** 2424353	**Acres:** 14

Stand Narrative Description:

This unit contains primarily dense, relatively uniform Douglas-fir trees that were planted following clearcutting in the 1980s. Currently the unit is dominated by Douglas-fir with occasional patches western hemlock, western redcedar, and hardwoods including red alder and bigleaf maple. Trees are self-pruning as lower limbs have been shaded out following canopy closure. Crown ratios on dominant trees range from 20 – 60%. Crowns are forming a single canopy layer. Shade tolerant species, such as western redcedar, western hemlock, and western white pine, are lacking in much of this unit. Understory is sparse with a patchy mix of evergreen huckleberry and salal. Large trees, snags, and downed logs are lacking. This unit is in the biomass accumulation/stem exclusion structural stage[18].

This unit is very dense with diameter growth reduced and crown ratios decreasing. Trees are becoming tall and skinny, which will make them unstable and susceptible to wind throw, wind snap, and wet noodling (bending over because the stem will no longer hold up the tree), especially in smaller diameter trees. Competition mortality is occurring, especially in denser areas. Small crowns from competition with neighboring trees are limiting diameter growth and tree vigor. Stressed trees are increasingly susceptible to diseases and insects. Without treatment tree growth will remain low, mortality will be elevated, and trees would be at risk for wind throw, wind snap, and mortality through diseases and insects. Elevated mortality would increase hazards to park users. Reaching desired conditions with large trees may take many decades or centuries without thinning to create growing space for remaining trees.

Mountain bike trails have been developed through the northern part of this unit. Trails primarily run east-west through from the top to the bottom of the unit. Minimizing damage to these trails during operations will be critical. Landings and skid trails should be located to minimize trail crossing. Hand-falling may be used between trails to minimize impacts. Trails provide opportunities to create spatial variability in the unit by leaving higher densities along trails.

[18] Van Pelt, R. 2007. Identifying Mature and Old Forests in Western Washington. Washington State Department of Natural Resources, Olympia, WA. 104p.

Current Conditions Summaries:

Unit Information				
Plant Association	**Site Class**	**Slope**	**Aspect**	**Age (Approx)**
PSME-TSHE/VAOV	II	0-40%	E	45

Forest Conditions (2025 forest inventory)								
TPA (>4.5" DBH)	**QMD (in)**	**BA (ft^2/ac)**	**Crown Ratio (%)**	**Top Height (feet)**	**Height: Diameter Ratio**	**Relative Stocking (%)**	**5-Year Dia. Growth (in)**	**Canopy Cover (%)**
305	12.0	240	32	98	97	91	.07	79

Conditions Comparison			
Element		**Desired Conditions**	**Current Conditions**
Large Trees (>24" DBH)		8 or more per acre	0
Species composition	Douglas-fir cover	55-65%	82%
	Other conifer cover	30-50%	11%
Canopy layers		2 or more	1
Understory Vegetation cover		50-70%	<10%
Largs (>12" DBH) snags		2 or more per acre	0
Large (>12" dia., >20' long) downed logs		10 or more per acre	0
Wildlife trees (forks, large branches, crooks, broken tops) > 12" DBH		2 or more per acre	0

Stewardship and Restoration Treatment Need and Objectives:

Current conditions are departed from desired conditions for large trees, species composition, canopy layers, understory vegetation cover, and dead wood. Stewardship and restoration treatment is needed in this unit to move the forest towards desired conditions. Objectives include:

- Reduce stocking to provide space and resources to facilitate tree growth
- Reduce the proportion of Douglas-fir trees relative to other species
- Encourage growth of existing shade-tolerant trees
- Facilitate the re-establishment and growth of understory vegetation.
- Create snags and downed logs

Treatment Prescription and Specifications

Desired Condition	Prescription and Specifications
Large Trees: • Reduce stocking to increase tree growth and vigor	**Post-treatment conditions outside skips and gaps:** Average (range) • BA (ft^2/ac): 120 (100 – 180) • QMD (in) 14 (12 – 15) • TPA: 105 (90 – 180) • Spacing (feet): 20 (15-25) **Specifications:** • Wherever possible, preferentially leave largest trees with large crowns • Wherever possible, leave clumps of large trees that may be closer than spacing specifications. **Examples:** ○ 2 large trees: Leave both ○ 3 large trees: Take 1, leave 2 ○ 4 large trees: Take 1-2, leave 2-3 ○ 5 large trees: Take 2, leave 3 ○ 6 large trees: Take 2-3, leave 3-4 • Vary tree spacing across the unit as conditions allow. ○ Uniform spacing is NOT a treatment objective. ○ Let stand condition guide density differences. **Examples:**

	▪ Areas of smaller trees may have higher densities ▪ Areas with larger trees may have lower densities ▪ Areas with fewer merch trees may have higher densities ▪ Steep areas may be skipped ▪ Dense areas with tall, skinny trees may be cleared as a gap. ▪ Areas along trails may have higher densities • Retain trees near mountain bike trails within area marked with white flagging • Remove trees near trails marked with blue flagging
Species Composition: • Retain and enhance western redcedar, western hemlock, western white pine, and hardwoods	• Unless removal is needed for operations, safety, or to meet treatment objectives, retain all western redcedar, western hemlock, western white pine, and hardwoods. • Remove all competing trees within 20-30 feet of western white pine
Snags and downed wood: • Retain and protect existing snags and downed wood. • Increase tree growth to facilitate larger trees as a source of large snags and downed wood.	• Retain approximately 50% of the pulp logs for habitat pile and large log analog creation o Wherever possible pile logs. o Wherever possible create 2-3 small slash piles per acre • Retain and buffer large (>12”) snags where they exist unless they present a safety hazard. • Any large snag removal must be approved by the Stewardship Forester. • Create approximately 2 snags per acre by cutting trees as high as safely possible. • Leave approximately 5 logs per acre with top diameter over 5”.

	• Favor trees with defective logs or poor form for snag and downed wood creation.
Diseased areas • Maintain dead, dying, and infected trees to provide a source of naturally occurring dead wood.	• Remove all healthy Douglas-fir trees within 20-30 feet of infected trees.

Post-treatment Conditions

Following treatment stand stocking will be reduced and the forest canopy opened. The increased spacing between trees will result in increased tree vigor and growth. Preferentially retaining large trees will increase the overall average diameter of the stand. The larger, more vigorous leave trees will put the unit on a trajectory to develop large trees faster than would happen with pre-treatment conditions. Preferentially removing Douglas-fir and retaining western redcedar, western hemlock and western white pine will help shift the species composition toward desired conditions. Reduced canopy cover will allow understory to develop where it is lacking and allow a quick recovery where it is currently present. Created snags and retained logs will help move the forest toward standing dead and downed wood desired conditions.

Overall, the changes in the unit following treatment will put the unit on a trajectory to meet desired conditions – large trees; western redcedar, western hemlock, western white pine present; multiple canopy layer; healthy understory vegetation; and large snags and downed wood – faster than would happen with pre-treatment conditions.

Operational considerations:

Avoid areas with slopes over 35%

Operations will happen only in dry conditions to minimize soil disturbance.

This unit has several constructed mountain bike trails through the unit.

- Trails to avoid during operations will be marked with white flagging. Tails face AWAY from the trail.
- Retain trees within area flagged with whiter flagging EXCEPT remove trees with blue flagging
- Wherever possible minimize crossing mountain bike trails with equipment. If crossings are necessary, use logs or other materials to minimize trail impacts.
- Avoid damaging constructed berms and other mountain bike trail structures to the greatest extent possible.
- If necessary, hand-fall trees among trails to help reduce trail damage.

When operating out of the landing along the G1000 road coordinate with Stewardship Forester on road closures and user assess rerouting.

Wherever possible, avoid disturbing hardwood patches.

There are no streams or wetlands present in the unit.

Haul roads used, maintenance and betterment needed:

This unit will be accessed from the G1000 and G1030 roads. Landings may be located along the G1000 and G1030 roads.

Road betterment will be needed on approximately 650 feet (6.25 stations) of the G1030 road prior to hauling including:

- Clearing: Clear brush and trees from within 8 feet of the road centerline.
- Grading: Grade the existing road surface to create a 12-foot running surface. If possible, outslope road for drainage.
- Surfacing: Use minimal rock for road surfacing to facilitate transition to trail use following harvest. Wherever possible source rock from weed-free pits.
- Ditching/drainage: Create ditches as needed to collect and distribute runoff. Replace or install culverts were needed to divert water away from roads and aquatic resources.

Stewardship and Restoration Treatment Prescription – 1200 East 1

Park: Port Gamble	**Unit:** 1200 East 1/Unit 3	**FPA/N #:** 2424353	**Acres:** 20

Stand Narrative Description:

This unit contains primarily dense, relatively uniform Douglas-fir trees that were planted following clearcutting in the 1980s. Currently the unit is a mix of Douglas-fir western hemlock, western redcedar, and western white pine with occasional patches hardwoods including red alder and bigleaf maple. Trees are self-pruning as lower limbs have been shaded out following canopy closure. Crown ratios on dominant trees range from 20 – 70%. Crowns are forming a single canopy layer. Shade tolerant species, such as western redcedar, western hemlock, and western white pine in a second canopy layer are lacking in this unit. Understory is a patchy mix of evergreen huckleberry and salal. Large trees, snags, and downed logs are lacking. A few large remnant Douglas-fir a present along the eastern boundary of the unit. This unit is in the biomass accumulation/stem exclusion structural stage[19].

This unit is very dense with diameter growth reduced and crown ratios decreasing. Trees are becoming tall and skinny, which will make them unstable and susceptible to wind throw, wind snap, and wet noodling (bending over because the stem will no longer hold up the tree), especially in smaller diameter trees. Competition mortality is occurring, especially in denser patches that were not thinned. Small crowns from competition with neighboring trees are limiting diameter growth and tree vigor. Stressed trees are increasingly susceptible to diseases and insects. Without treatment tree growth will remain low, mortality will be elevated, and trees would be at risk for wind throw, wind snap, and mortality through diseases and insects. Elevated mortality would increase hazards to park users. Reaching desired conditions with large trees may take many decades or centuries without thinning to create growing space for remaining trees.

Roads at the north and south end of the unit connect to the Secret Squirrel trail. This trail is popular with park users and sees heavy use. These roads and part of Secret Squirrel may need to be closed during operations.

[19] Van Pelt, R. 2007. Identifying Mature and Old Forests in Western Washington. Washington State Department of Natural Resources, Olympia, WA. 104p.

Current Conditions Summaries:

Unit Information				
Plant Association	**Site Class**	**Slope**	**Aspect**	**Age (Approx)**
PSME-TSHE/VAOV	II	0-35%	E	40

Forest Conditions (2025 forest inventory)								
TPA (>4.5" DBH)	**QMD (in)**	**BA (ft^2/ac)**	**Crown Ratio (%)**	**Top Height (feet)**	**Height: Diameter Ratio**	**Relative Stocking (%)**	**5-Year Dia. Growth (in)**	**Canopy Cover (%)**
460	9.6	232	33	96	91	96	0.8	87

Conditions Comparison			
Element		**Desired Conditions**	**Current Conditions**
Large Trees (>24" DBH)		8 or more per acre	0
Species composition	Douglas-fir cover	55-65%	47%
	Other conifer cover	30-50%	45%
Canopy layers		2 or more	1
Understory Vegetation cover		50-70%	20-25%
Largs (>12" DBH) snags		2 or more per acre	0
Large (>12" dia., >20' long) downed logs		10 or more per acre	0
Wildlife trees (forks, large branches, crooks, broken tops) > 12" DBH		2 or more per acre	0

Stewardship and Restoration Treatment Need and Objectives:

Current conditions are departed from desired conditions for large trees, species composition, canopy layers, understory vegetation cover, and dead wood. Stewardship and restoration treatment is needed in this unit to move the forest towards desired conditions. Objectives include:

- Reduce stocking to provide space and resources to facilitate tree growth
- Encourage growth of existing shade-tolerant trees
- Facilitate the re-establishment and growth of understory vegetation.
- Create snags and downed logs

Treatment Prescription and Specifications

Desired Condition	Prescription and Specifications
Large Trees: • Reduce stocking to increase tree growth and vigor	**Post-treatment conditions outside skips and gaps:** Average (range) • BA (ft^2/ac): 120 (100 – 180) • QMD (in) 13 (12 – 14) • TPA: 120 (100 – 180) • Spacing (feet): 20 (15-25) **Specifications:** • Wherever possible, preferentially leave largest trees with large crowns • Wherever possible, leave clumps of large trees that may be closer than spacing specifications. **Examples:** ○ 2 large trees: Leave both ○ 3 large trees: Take 1, leave 2 ○ 4 large trees: Take 1-2, leave 2-3 ○ 5 large trees: Take 2, leave 3 ○ 6 large trees: Take 2-3, leave 3-4 • Vary tree spacing across the unit as conditions allow. ○ Uniform spacing is NOT a treatment objective. ○ Let stand condition guide density differences. **Examples:**

	▪ Areas of smaller trees may have higher densities ▪ Areas with larger trees may have lower densities ▪ Areas with fewer merch trees may have higher densities ▪ Steep areas may be skipped ▪ Dense areas with tall, skinny trees may be cleared as a gap. • If feasible, remove competing Douglas-fir from within 20-30 feet from large, remnant Doulas-firs.
Species Composition: • Retain and enhance western redcedar, western hemlock, western white pine, and hardwoods	• Unless removal is needed for operations, safety, or to meet treatment objectives, retain all western redcedar, western hemlock, western white pine, and hardwoods. • Remove all competing trees within 20-30 feet of western white pine
Snags and downed wood: • Retain and protect existing snags and downed wood. • Increase tree growth to facilitate larger trees as a source of large snags and downed wood.	• Retain approximately 50% of the pulp logs for habitat pile and large log analog creation o Wherever possible pile logs. o Wherever possible create 2-3 small slash piles per acre • Retain and buffer large (>12”) snags where they exist unless they present a safety hazard. • Any large snag removal must be approved by the Stewardship Forester. • Create approximately 2 snags per acre by cutting trees as high as safely possible. • Leave approximately 5 logs per acre with top diameter over 5”. • Favor trees with defective logs or poor form for snag and downed wood creation.

Diseased areas • Maintain dead, dying, and infected trees to provide a source of naturally occurring dead wood.	• Remove all healthy Douglas-fir trees within 20-30 feet of infected trees.

Post-treatment Conditions

Following treatment stand stocking will be reduced and the forest canopy opened. The increased spacing between trees will result in increased tree vigor and growth. Preferentially retaining large trees will increase the overall average diameter of the stand. The larger, more vigorous leave trees will put the unit on a trajectory to develop large trees faster than would happen with pre-treatment conditions. Reduced canopy cover will allow understory to develop where it is lacking and allow a quick recovery where it is currently present. Created snags and retained logs will help move the forest toward standing dead and downed wood desired conditions.

Overall, the changes in the unit following treatment will put the unit on a trajectory to meet desired conditions – large trees; western redcedar, western hemlock, western white pine present; multiple canopy layer; healthy understory vegetation; and large snags and downed wood – faster than would happen with pre-treatment conditions.

Operational considerations:

Minimize equipment travel on the G1210 road to minimize road disturbance.

Coordinate closures of the G1020, G1210, and Secret Squirrel trail. with the Stewardship Forester

Wherever possible, avoid disturbing hardwood patches.

There are no streams or wetlands present in the unit.

Haul roads used, maintenance and betterment needed:

This unit will be accessed from the G1000, G1020, G1200, and G1210 roads. Landings may be located along the G1210 and G1030 roads.

Road betterment will be needed on approximately 400 feet (4 stations) of the G1020 road prior to hauling including:

- Clearing: Clear brush and trees from within 8 feet of the road centerline.
- Grading: Grade the existing road surface to create a 12-foot running surface. If possible, outslope road for drainage.
- Surfacing: Use minimal rock for road surfacing to facilitate transition to trail use following harvest. Wherever possible source rock from weed-free pits.
- Ditching/drainage: Create ditches as needed to collect and distribute runoff. Replace or install culverts were needed to divert water away from roads and aquatic resources.

Stewardship and Restoration Treatment Prescription – 1200 East 2

Park: Port Gamble	**Unit:** 1200 East 2/Units 4 & 5	**FPA/N #:** 2424353	**Acres:** 28

Stand Narrative Description:

This unit contains primarily dense, relatively uniform Douglas-fir trees that were planted following clearcutting in the 1980s. Areas in the southern part of the unit were thinned, both commercially and precommercially, sometime likely between 15 and 25 years ago. Currently the unit is dominated by Douglas-fir with occasional patches of hardwoods including red alder and bigleaf maple. Trees are self-pruning as lower limbs have been shaded out following canopy closure. Crown ratios on dominant trees range from 20 – 70%. Crowns are forming a single canopy layer. Shade tolerant species, such as western redcedar, western hemlock, and western white pine in a second canopy layer are lacking in this unit. Understory is a patchy mix of evergreen huckleberry and salal. Large trees, snags, and downed logs are lacking. This unit is in the biomass accumulation/stem exclusion structural stage[20].

Much of this unit is very dense with diameter growth reduced and crown ratios decreasing. Trees are becoming tall and skinny, which will make them unstable and susceptible to wind throw, wind snap, and wet noodling (bending over because the stem will no longer hold up the tree), especially in smaller diameter trees. Competition mortality is occurring, especially in denser patches that were not thinned. Small crowns from competition with neighboring trees are limiting diameter growth and tree vigor. Stressed trees are increasingly susceptible to diseases and insects. Without treatment tree growth will remain low, mortality will be elevated, and trees would be at risk for wind throw, wind snap, and mortality through diseases and insects. Elevated mortality would increase hazards to park users. Reaching desired conditions with large trees may take many decades or centuries without thinning to create growing space for remaining trees.

[20] Van Pelt, R. 2007. Identifying Mature and Old Forests in Western Washington. Washington State Department of Natural Resources, Olympia, WA. 104p.

Current Conditions Summaries:

Unit Information				
Plant Association	**Site Class**	**Slope**	**Aspect**	**Age (Approx)**
PSME-TSHE/VAOV	II	0-40%	E	40

Forest Conditions (2025 forest inventory)								
TPA (>4.5" DBH)	**QMD (in)**	**BA (ft^2/ac)**	**Crown Ratio (%)**	**Top Height (feet)**	**Height: Diameter Ratio**	**Relative Stocking (%)**	**5-Year Dia. Growth (in)**	**Canopy Cover (%)**
335	9.8	176	45	89	92	73	1.1	82

Conditions Comparison			
Element		**Desired Conditions**	**Current Conditions**
Large Trees (>24" DBH)		8 or more per acre	0
Species composition	Douglas-fir cover	55-65%	53%
	Other conifer cover	30-50%	24%
Canopy layers		2 or more	1
Understory Vegetation cover		50-70%	<10%
Largs (>12" DBH) snags		2 or more per acre	0
Large (>12" dia., >20' long) downed logs		10 or more per acre	0
Wildlife trees (forks, large branches, crooks, broken tops) > 12" DBH		2 or more per acre	0

Stewardship and Restoration Treatment Need and Objectives:

Current conditions are departed from desired conditions for large trees, species composition, canopy layers, understory vegetation cover, and dead wood. Stewardship and restoration treatment is needed in this unit to move the forest towards desired conditions. Objectives include:

- Reduce stocking to provide space and resources to facilitate tree growth
- Encourage growth of existing shade-tolerant trees
- Facilitate the re-establishment and growth of understory vegetation.
- Create snags and downed logs

Treatment Prescription and Specifications

Desired Condition	Prescription and Specifications
Large Trees: • Reduce stocking to increase tree growth and vigor	**Post-treatment conditions outside skips and gaps:** Average (range) • BA (ft^2/ac): 80 (60 – 120) • QMD (in) 12 (11 – 13) • TPA: 100 (90 – 150) • Spacing (feet): 20 (15-25) **Specifications:** • Wherever possible, preferentially leave largest trees with large crowns • Wherever possible, leave clumps of large trees that may be closer than spacing specifications. **Examples:** ○ 2 large trees: Leave both ○ 3 large trees: Take 1, leave 2 ○ 4 large trees: Take 1-2, leave 2-3 ○ 5 large trees: Take 2, leave 3 ○ 6 large trees: Take 2-3, leave 3-4 • Vary tree spacing across the unit as conditions allow. ○ Uniform spacing is NOT a treatment objective. ○ Let stand condition guide density differences. **Examples:**

	▪ Areas of smaller trees may have higher densities ▪ Areas with larger trees may have lower densities ▪ Areas with fewer merch trees may have higher densities ▪ Steep areas may be skipped ▪ Dense areas with tall, skinny trees may be cleared as a gap.
Species Composition: • Retain and enhance western redcedar, western hemlock, western white pine, and hardwoods	• Unless removal is needed for operations, safety, or to meet treatment objectives, retain all western redcedar, western hemlock, western white pine, and hardwoods. • Remove all competing trees within 20-30 feet of western white pine
Snags and downed wood: • Retain and protect existing snags and downed wood. • Increase tree growth to facilitate larger trees as a source of large snags and downed wood.	• Retain approximately 50% of the pulp logs for habitat pile and large log analog creation o Wherever possible pile logs. o Wherever possible create 2-3 small slash piles per acre • Retain and buffer large (>12”) snags where they exist unless they present a safety hazard. • Any large snag removal must be approved by the Stewardship Forester. • Create approximately 2 snags per acre by cutting trees as high as safely possible. • Leave approximately 5 logs per acre with top diameter over 5”. • Favor trees with defective logs or poor form for snag and downed wood creation.
Diseased areas • Maintain dead, dying, and infected trees to provide a source of naturally occurring dead wood.	• Remove all healthy Douglas-fir trees within 20-30 feet of infected trees.

Post-treatment Conditions

Following treatment stand stocking will be reduced and the forest canopy opened. The increased spacing between trees will result in increased tree vigor and growth. Preferentially retaining large trees will increase the overall average diameter of the stand. The larger, more vigorous leave trees will put the unit on a trajectory to develop large trees faster than would happen with pre-treatment conditions. Reduced canopy cover will allow understory to develop where it is lacking and allow a quick recovery where it is currently present. Created snags and retained logs will help move the forest toward standing dead and downed wood desired conditions.

Overall, the changes in the unit following treatment will put the unit on a trajectory to meet desired conditions – large trees; western redcedar, western hemlock, western white pine present; multiple canopy layer; healthy understory vegetation; and large snags and downed wood – faster than would happen with pre-treatment conditions.

Operational considerations:

Minimize equipment travel on the G1210 road to minimize road disturbance.

Coordinate closures of the G1020, G1210, and Secret Squirrel trail. with the Stewardship Forester.

Avoid slopes over 35%.

Operate only in dry conditions to minimize soil disturbance.

Wherever possible, avoid disturbing hardwood patches.

There are no streams or wetlands present in the unit.

Haul roads used, maintenance and betterment needed:

This unit will be accessed from the G1000, G1200, and G1210 roads. Landings may be located along the G1200 and G1210 roads.

Road betterment is not needed.

Appendix B – Visualizations of Expected Conditions

This appendix contains visualizations of expected "average" conditions within each treatment unit. Forest inventory data that was collected during pre-project timber inventory are compiled and displayed to show the range of conditions. Expected conditions following treatment are generated from simulations using the USDA Forest Service's Forest Vegetation Simulator forest growth model.

Each pane in each figure shows the conditions from a different perspective. The left pain shows a perspective viewpoint showing trees (each species has a different shape and color) and range poles (striped poles on corners) to show relative heights. The upper right pane is an overhead view to show the relative canopy closure/openness. Each area in the overhead grid displays the pre-project/expected conditions in one forest inventory plot. The horizontal band in the overhead view shows the trees used in the cross-sectional view. The lower right pane provides a cross-sectional view of the forest to highlight the canopy structure in the unit.

Conditions are shown for each unit include:

2025 Conditions: Pre-treatment forest inventory conditions

2030 Conditions: Expected conditions 5-year after treatment. This coincides with the end of the short-term expected effects following treatment

2035, 2045, and 2055 Conditions: These conditions represent different points in time to see how the forest is expected to develop during the long-term effects period.

Visualizations only include trees in the units. While understory vegetation is present in the treatment units, these data were not inventoried so not included in the visulaizations.

Ride Park North

2025 Conditions – Pre-treatment

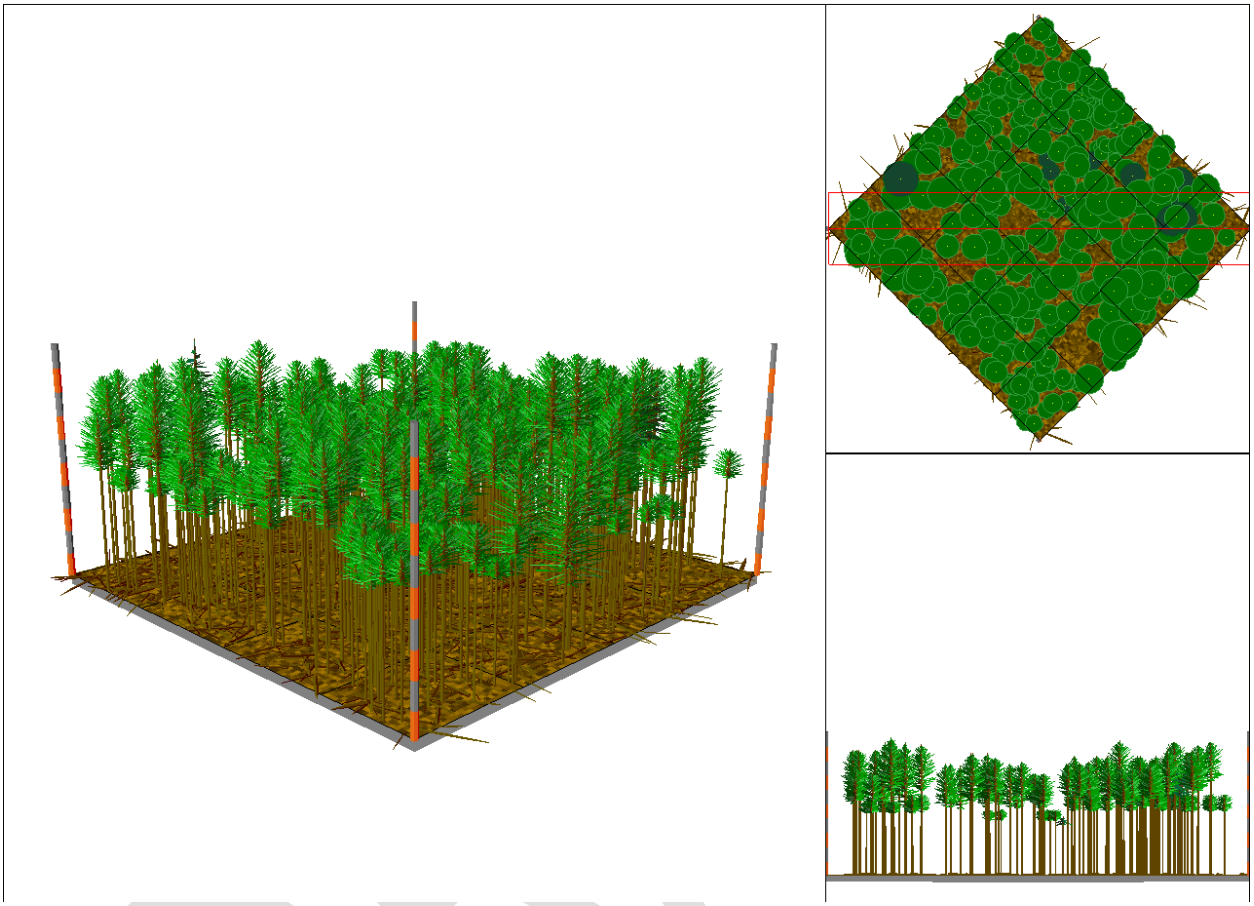

Figure 6: Stand Visualization System visualization of pre-treatment conditions in the Ride Park North unit. Trees are drawn using forest inventory data collected in 2025. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2030 Conditions

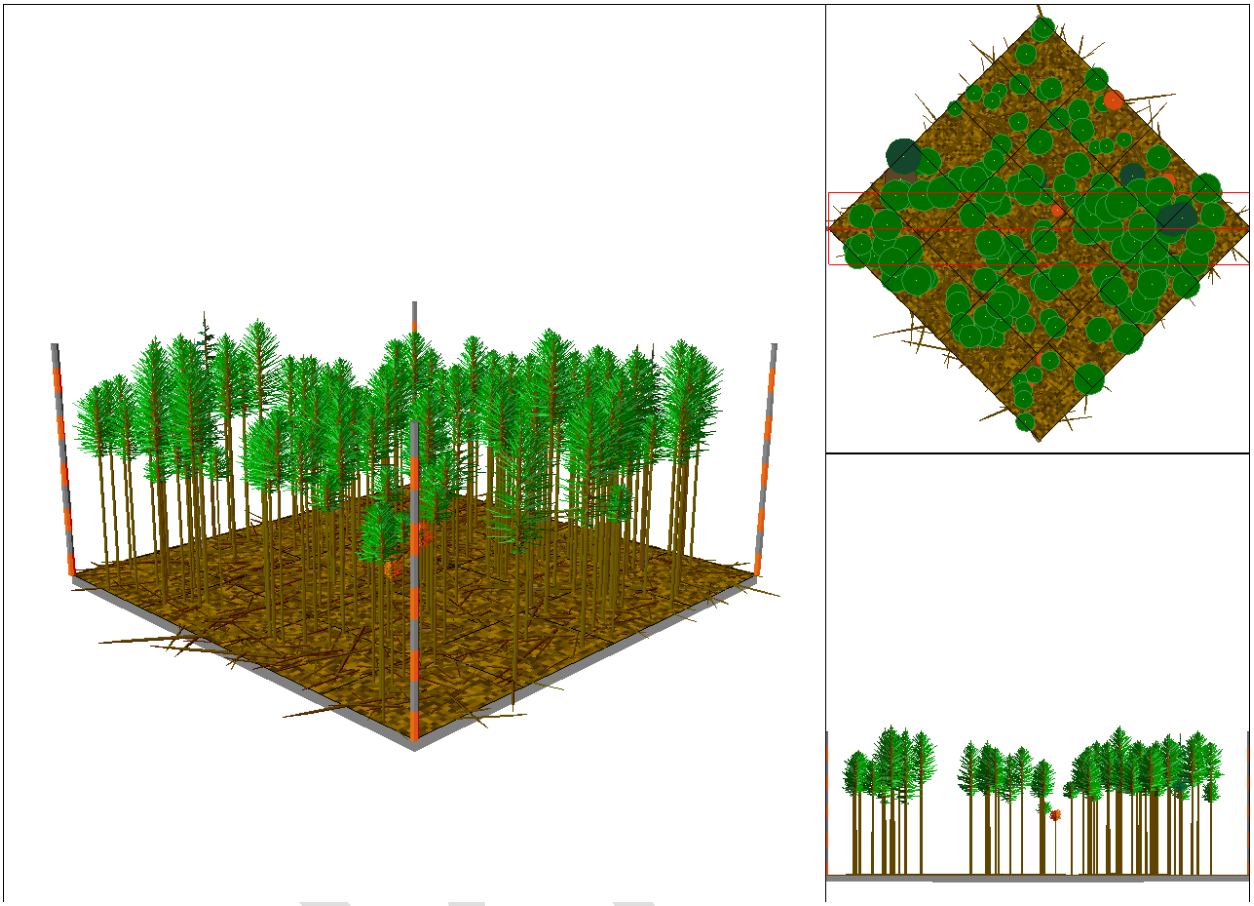

Figure 7: Stand Visualization System visualization of expected conditions in 2030 for the Ride Park North unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2035 Conditions

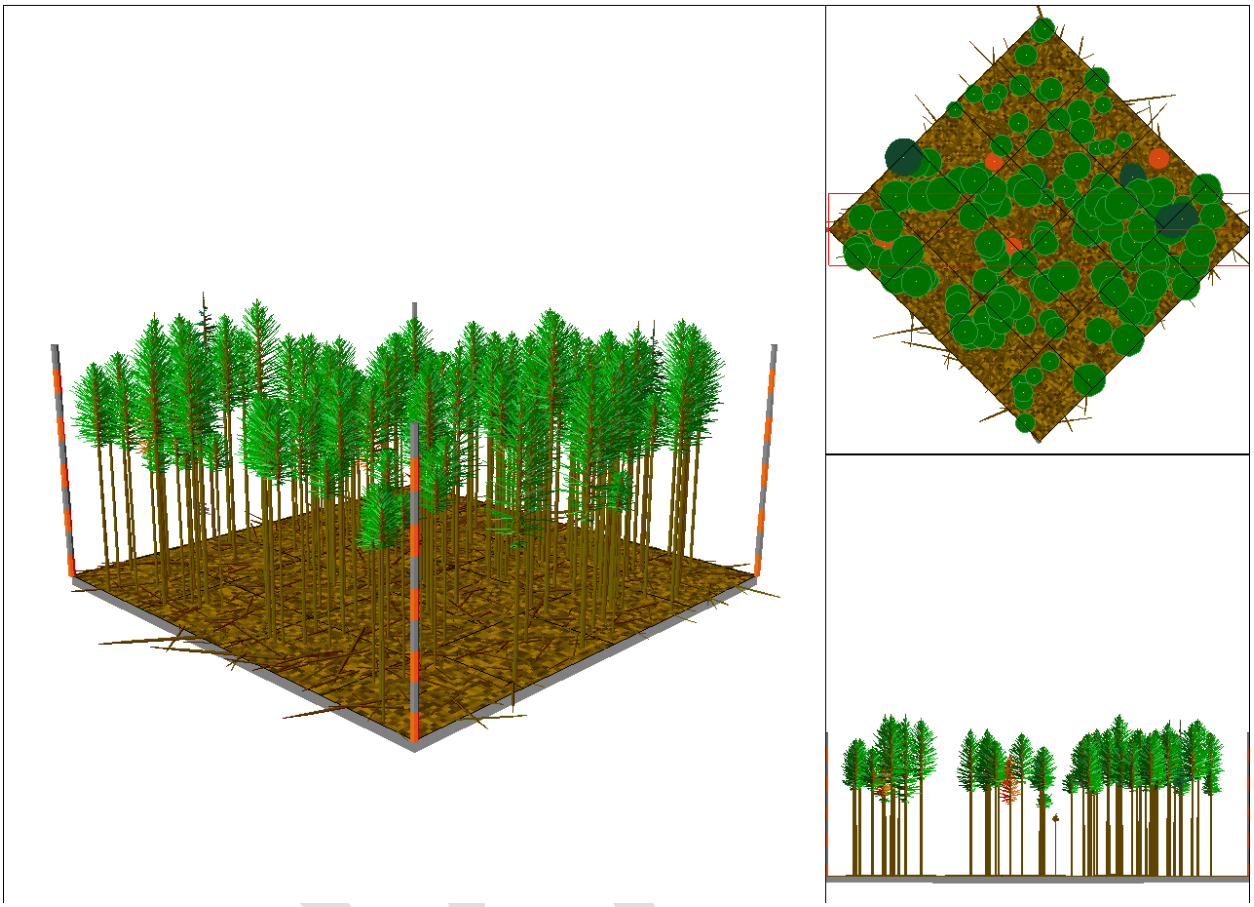

Figure 8: Stand Visualization System visualization of expected conditions in 2035 for the Ride Park North unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2045 Conditions

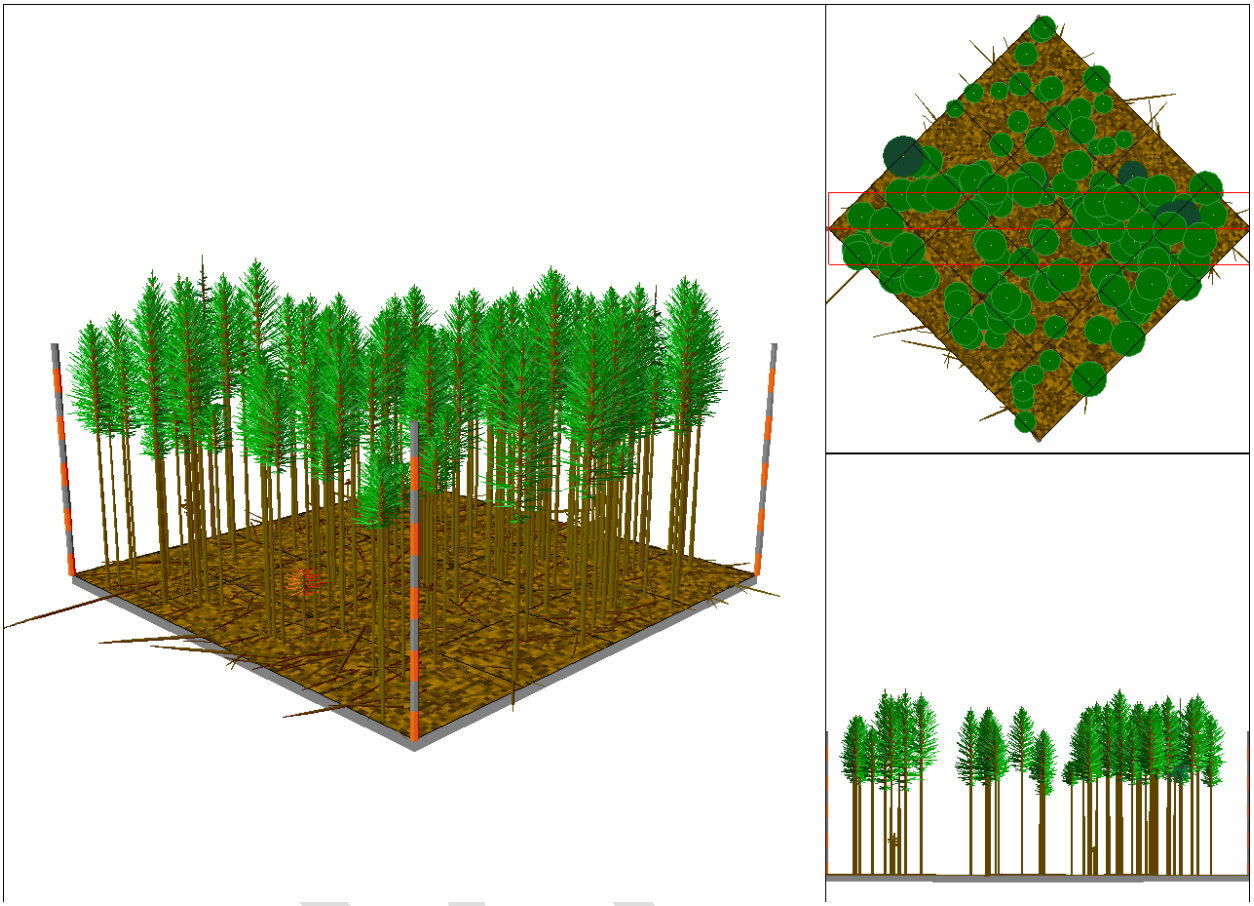

Figure 9: Stand Visualization System visualization of expected conditions in 2045 for the Ride Park North unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2055 Conditions

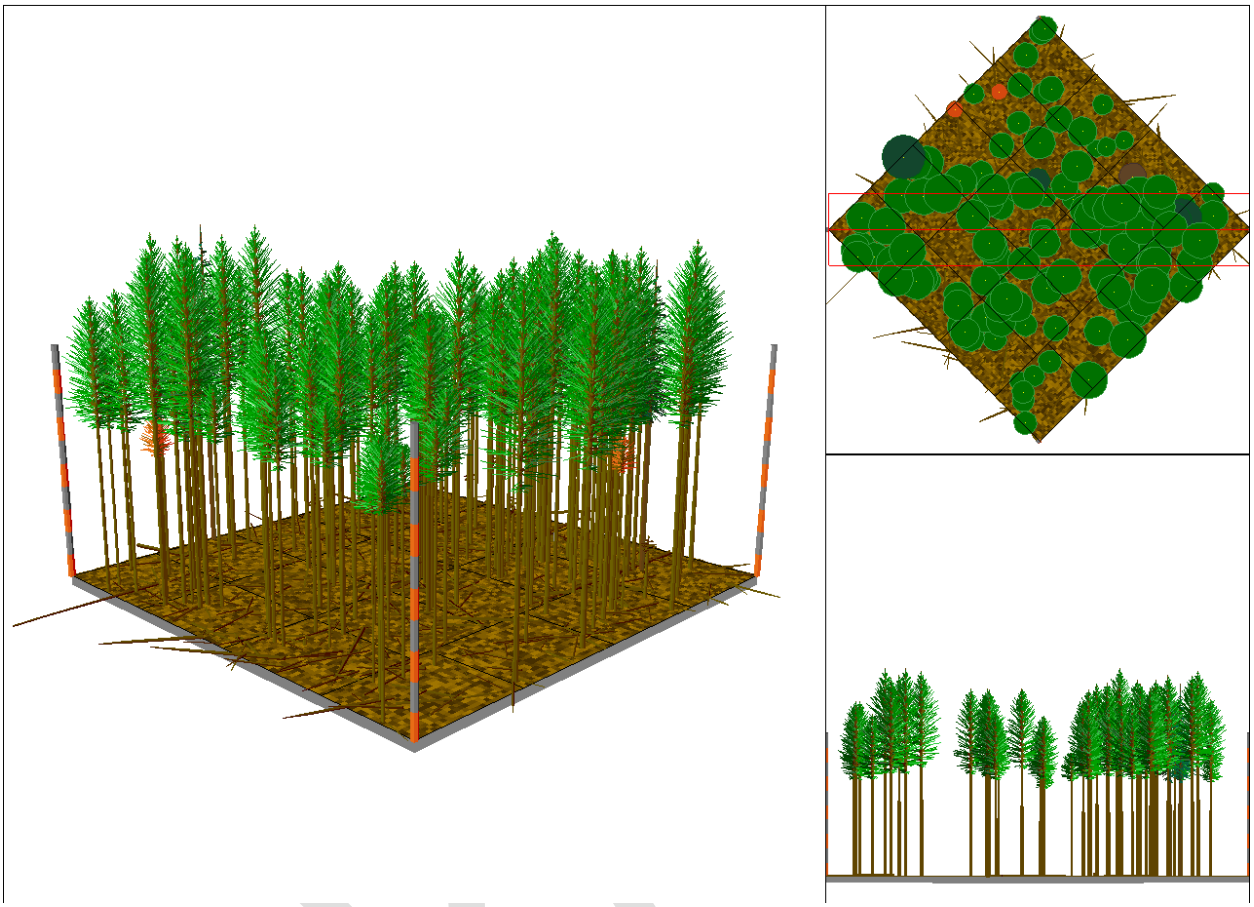

Figure 10: Stand Visualization System visualization of expected conditions in 2055 for the Ride Park North unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

Ranger Corridor

2025 Conditions – Pre-Treatment

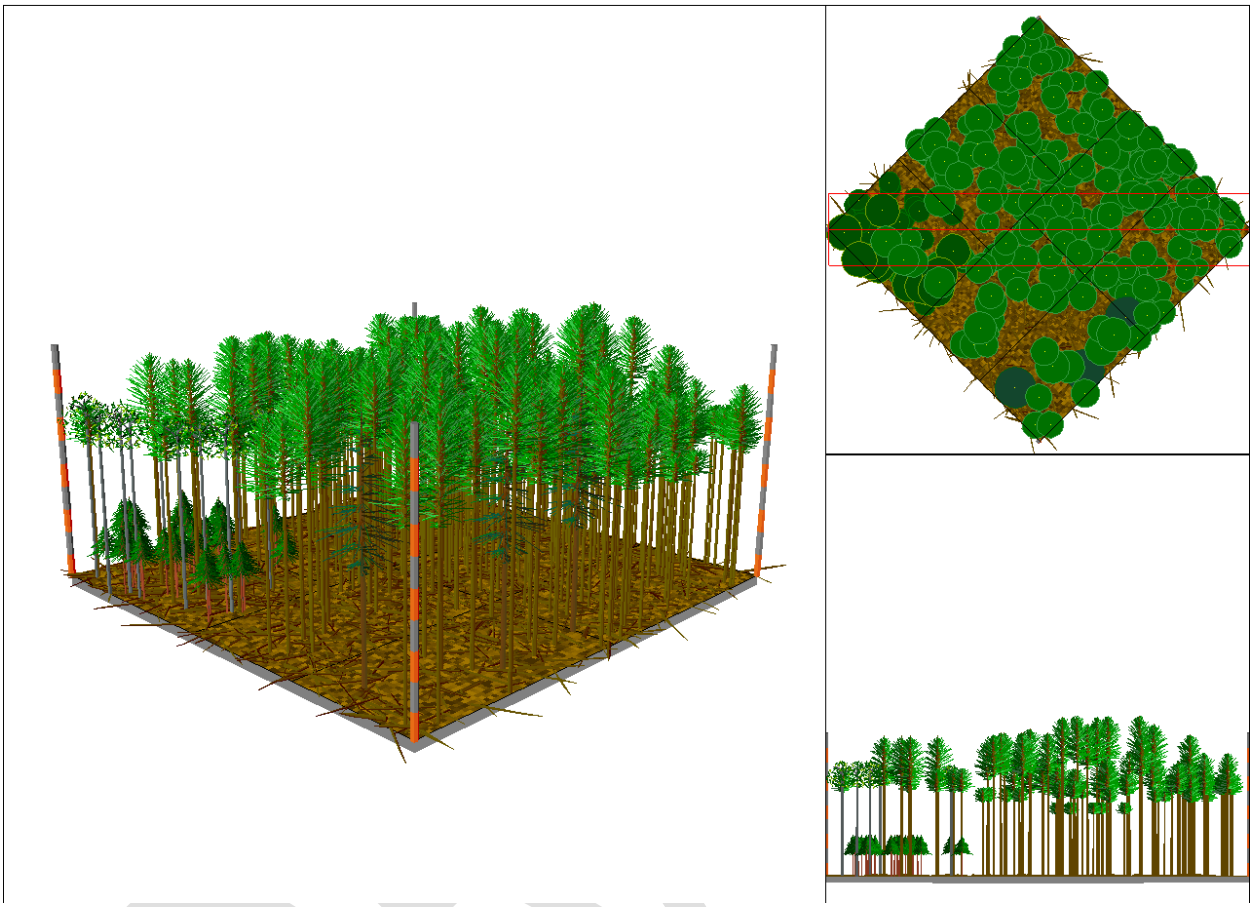

Figure 11: Stand Visualization System visualization of pre-treatment conditions in the Ranger Corridor unit. Trees are drawn using forest inventory data collected in 2025. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2030 Conditions

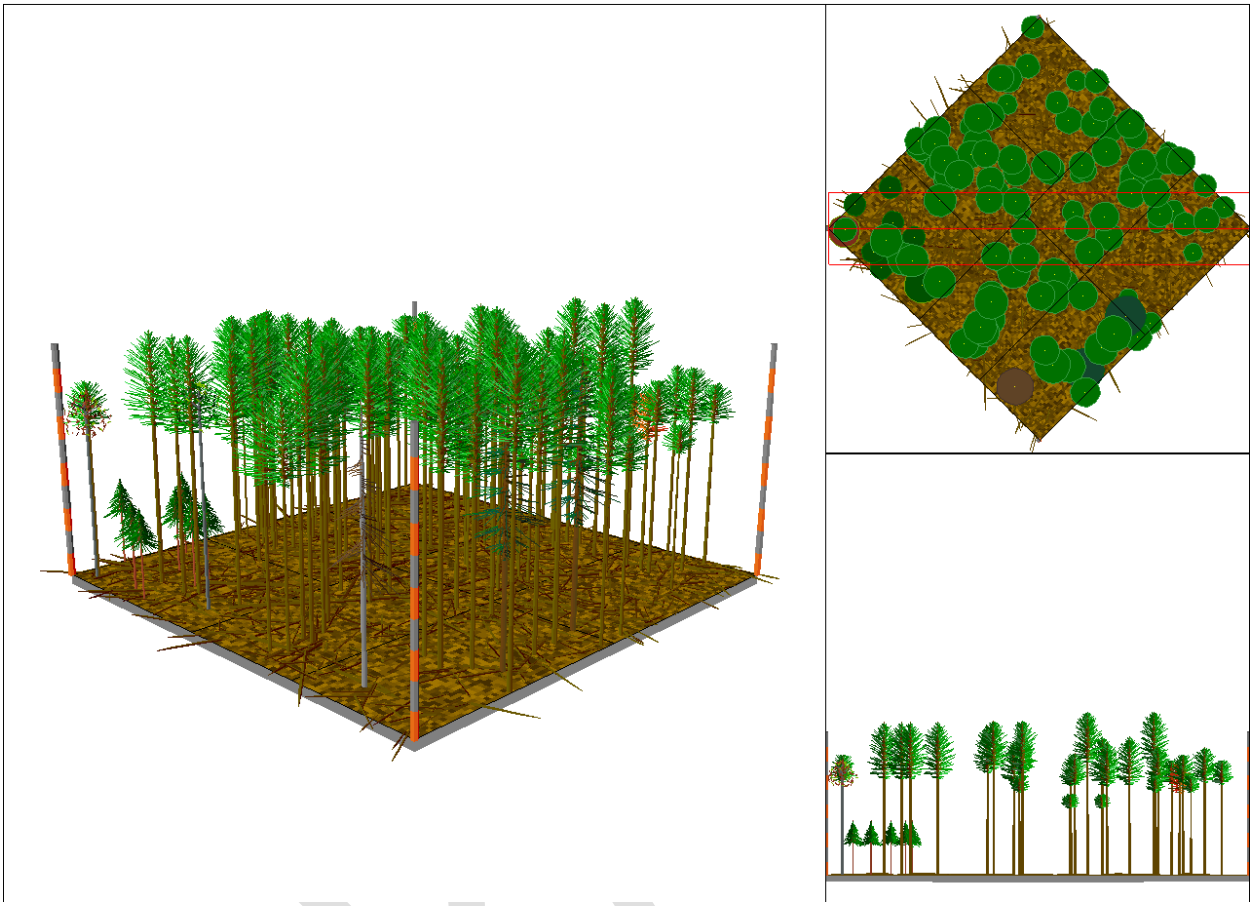

Figure 12: Stand Visualization System visualization of expected conditions in 2030 for the Ranger Corridor unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2035 Conditions

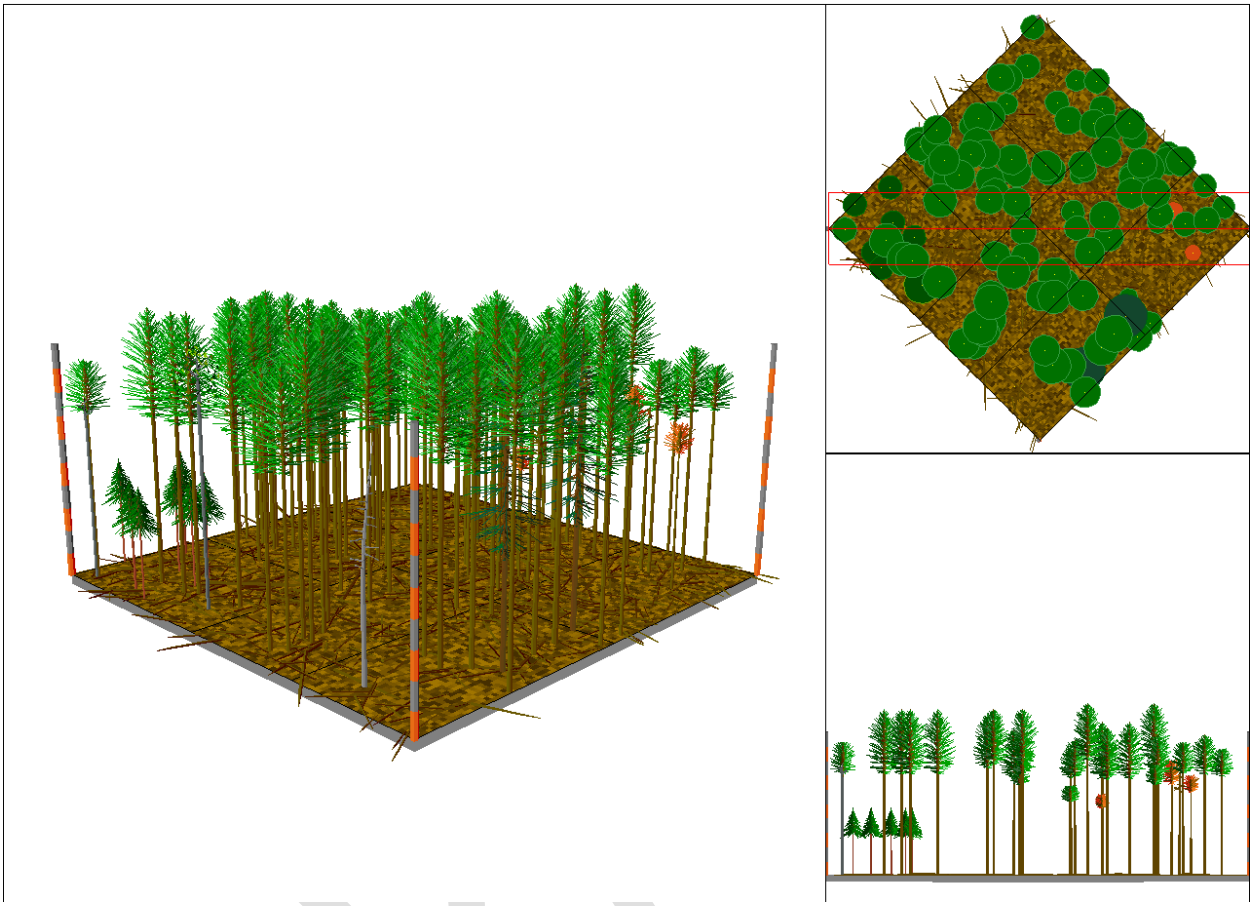

Figure 13: Stand Visualization System visualization of expected conditions in 2035 for the Ranger Corridor unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2045 Conditions

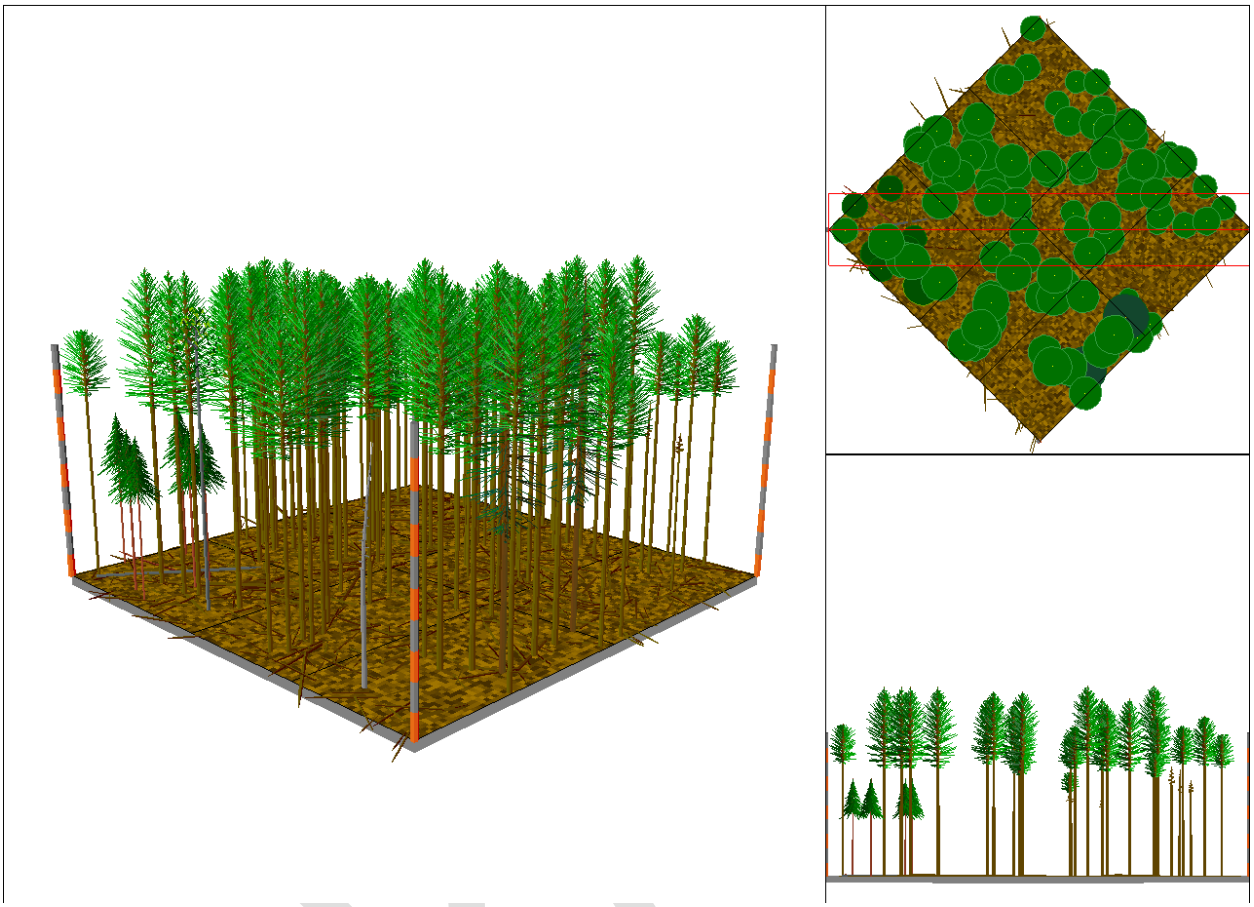

Figure 14: Stand Visualization System visualization of expected conditions in 2045 for the Ranger Corridor unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2055 Conditions

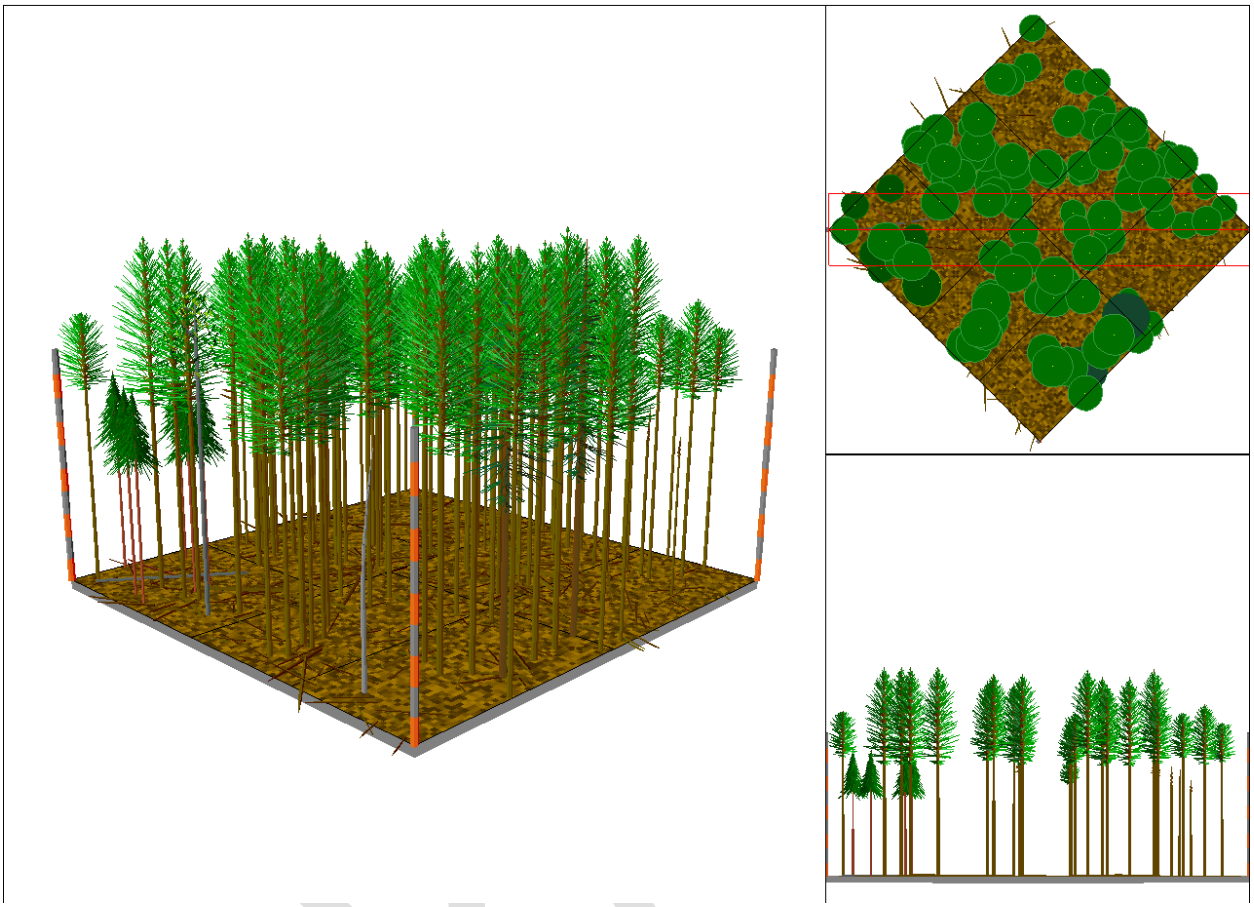

Figure 15: Stand Visualization System visualization of expected conditions in 2055 for the Ranger Corridor unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

1200 East 1

2025 Conditions – Pre-treatment

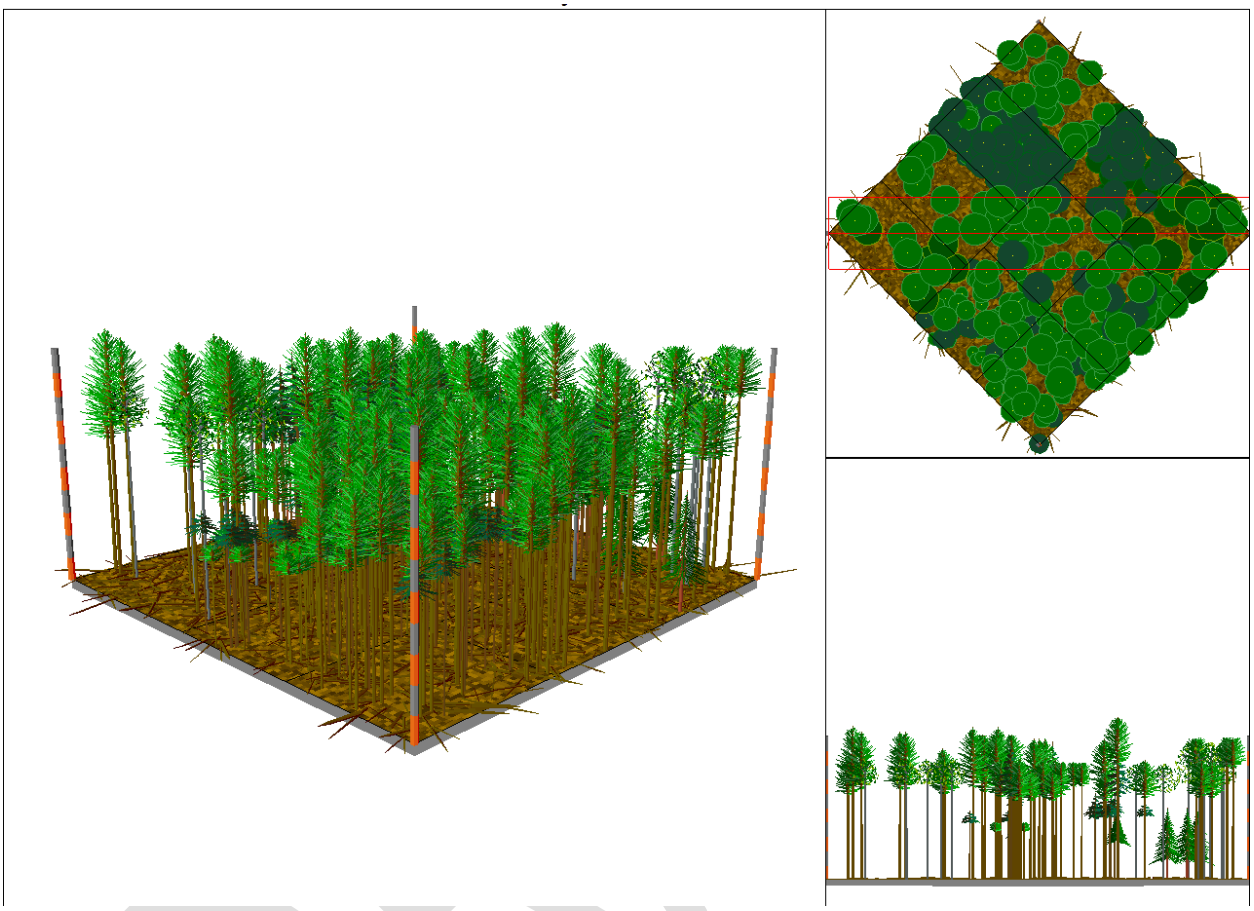

Figure 16: Stand Visualization System visualization of pre-treatment conditions in the 1200 East 1 unit. Trees are drawn using forest inventory data collected in 2025. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2030 Conditions

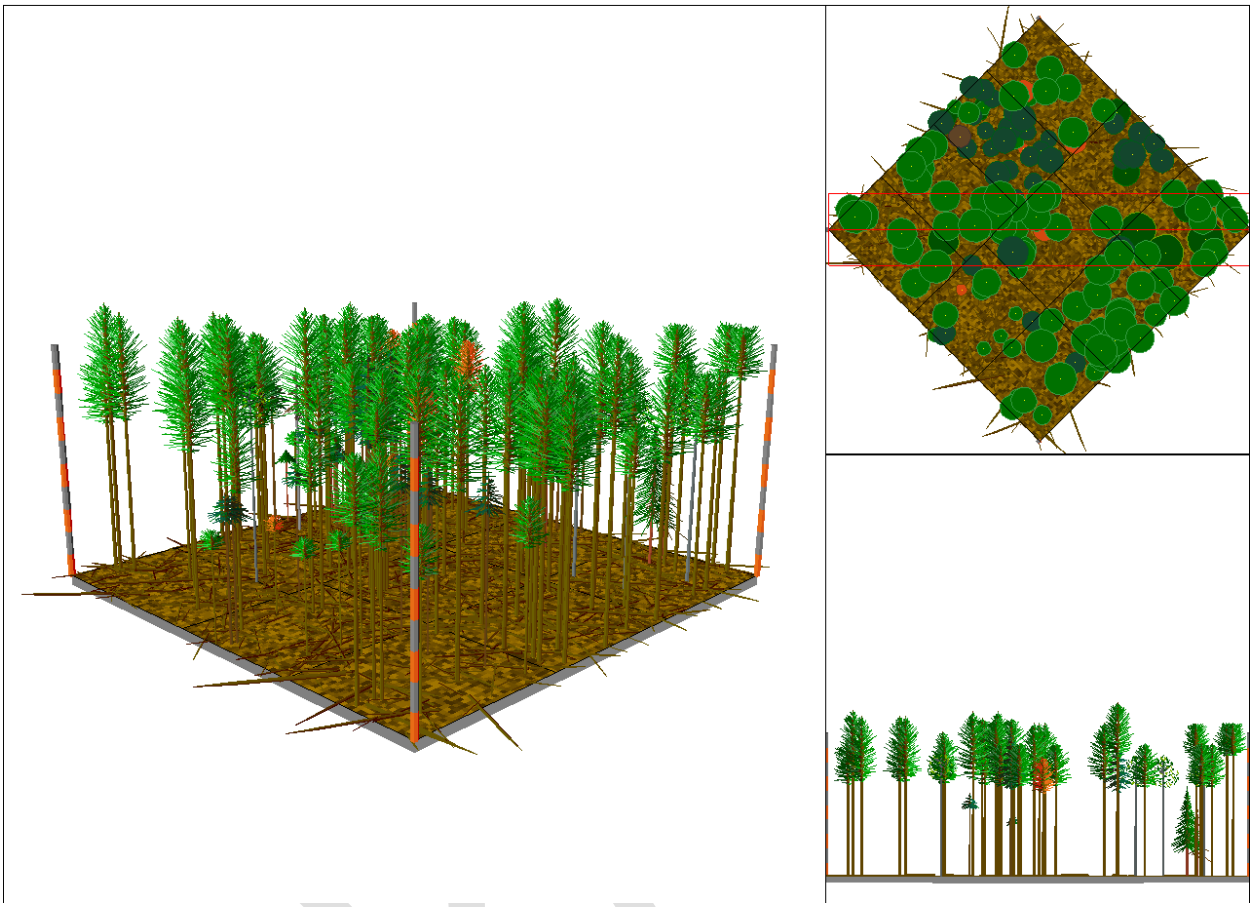

Figure 17: Stand Visualization System visualization of expected conditions in 2030 for the 1200 East 1 unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2035 Conditions

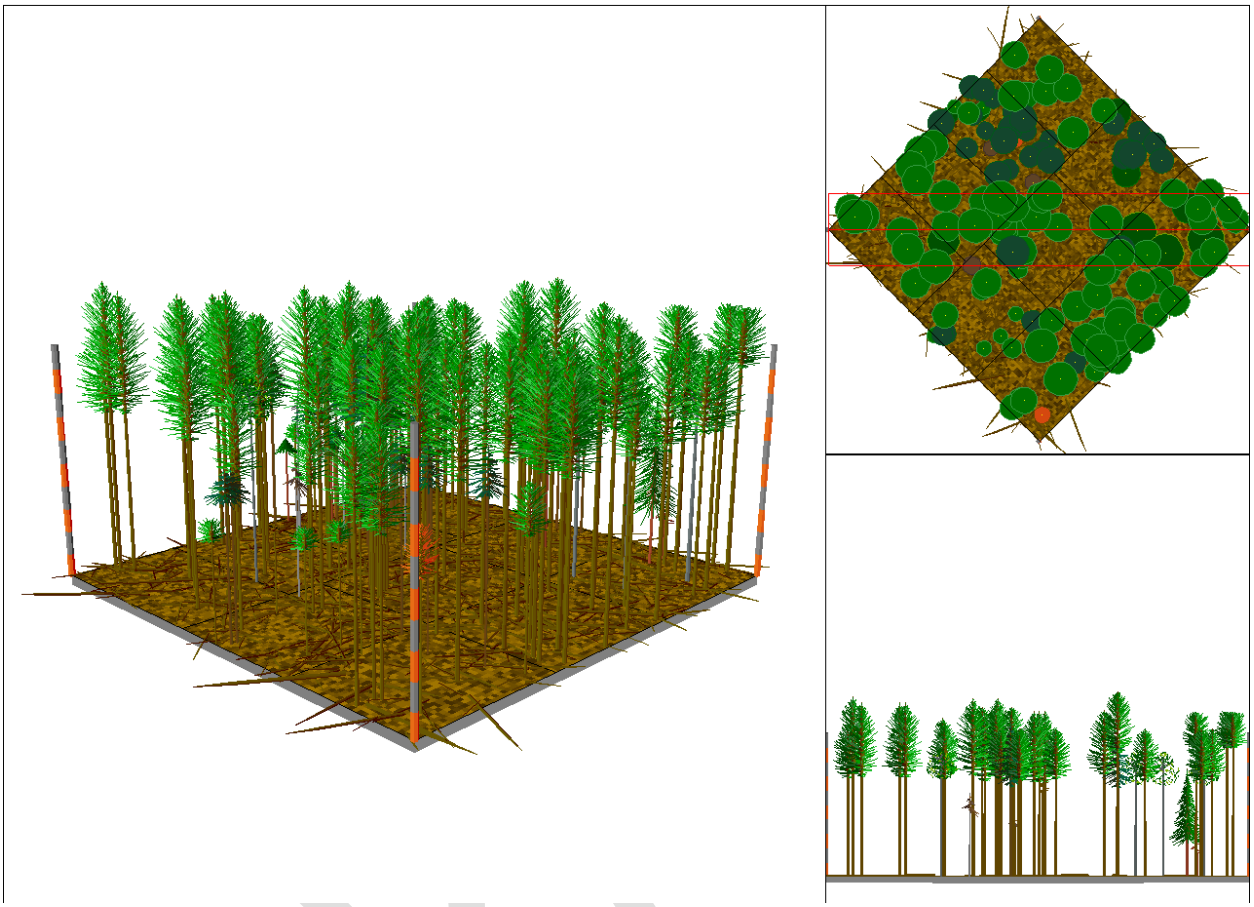

Figure 18: Stand Visualization System visualization of expected conditions in 2035 for the 1200 East 1 unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2045 Conditions

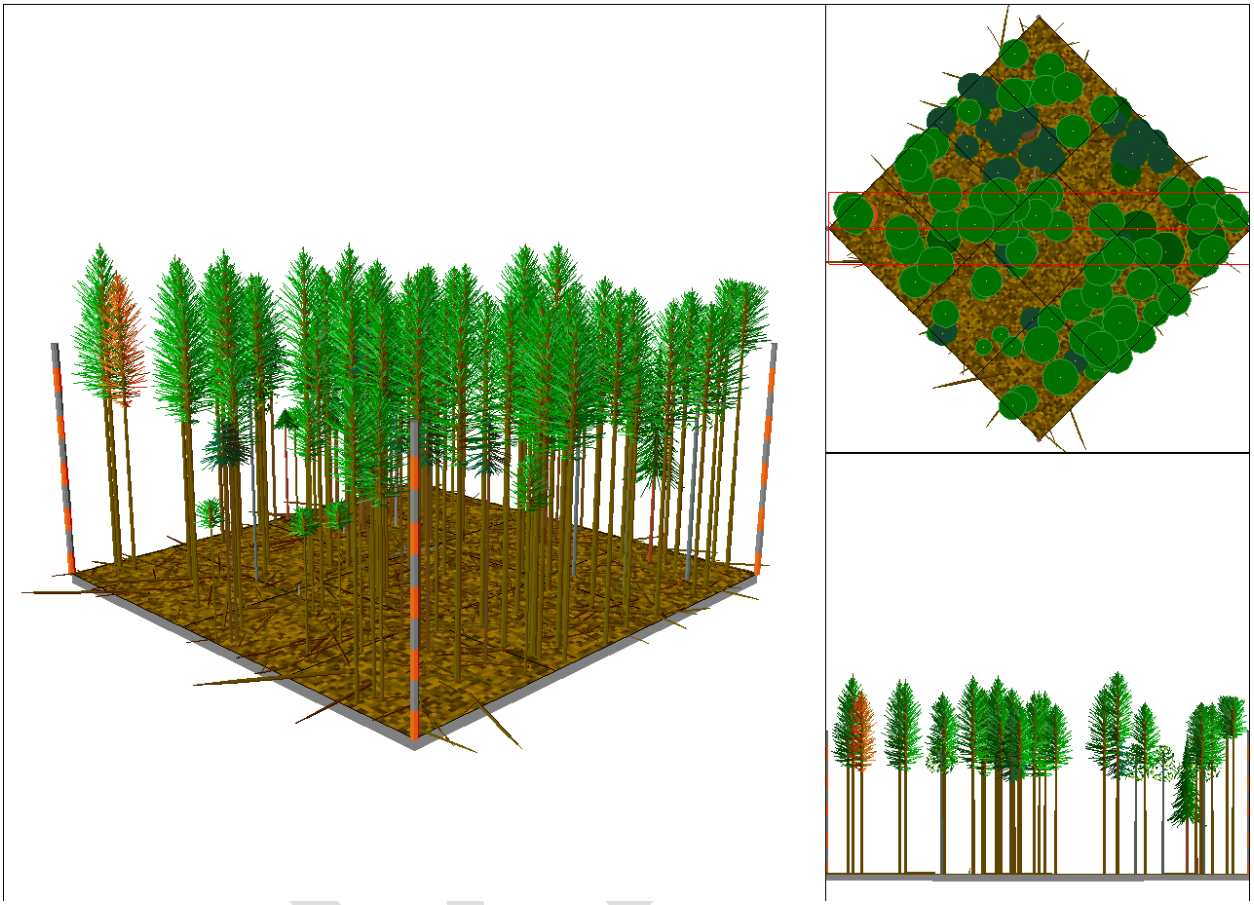

Figure 19 Stand Visualization System visualization of expected conditions in 2045 for the 1200 East 1 unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2055 Conditions

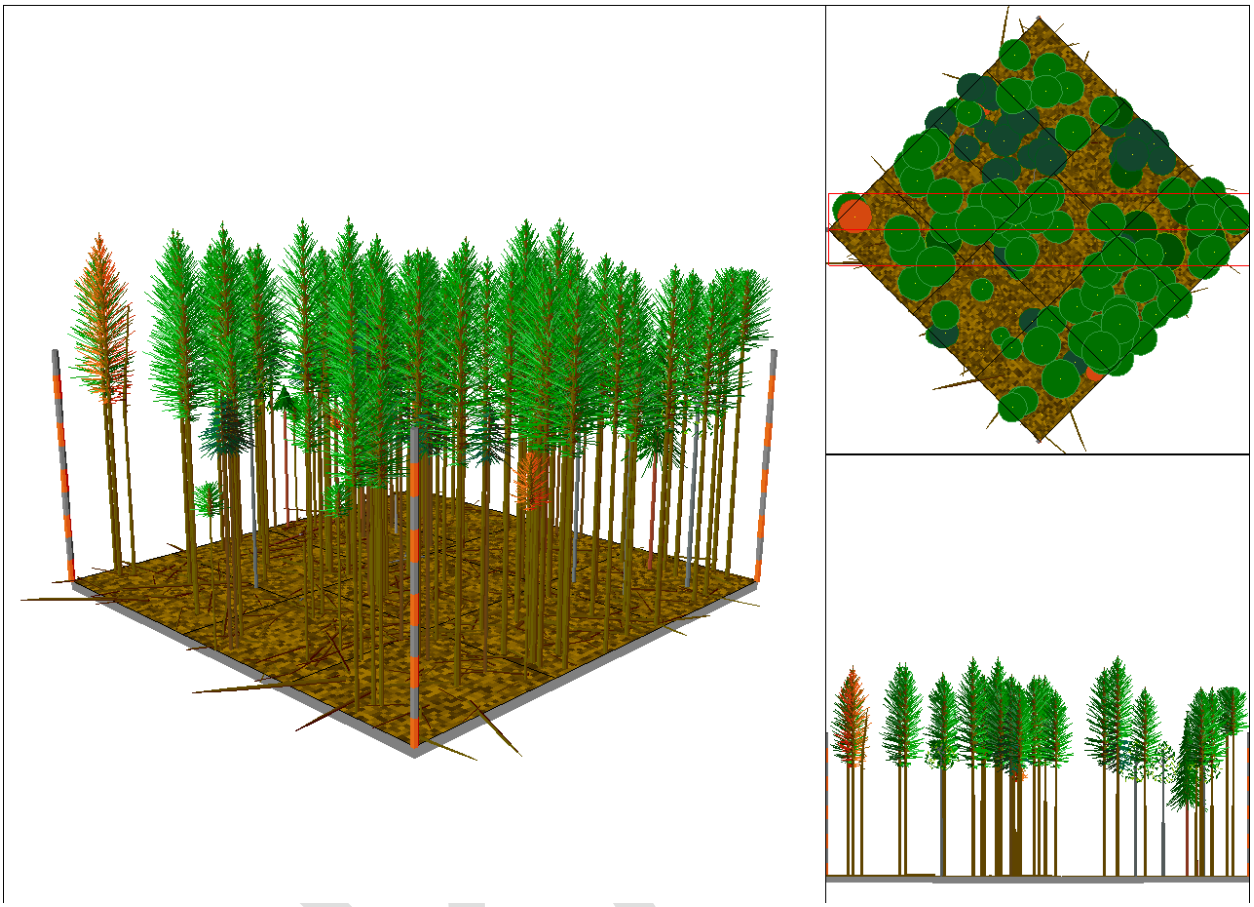

Figure 20 Stand Visualization System visualization of expected conditions in 2055 for the 1200 East 1 unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

1200 East 2

2025 Conditions – Pre-Treatment

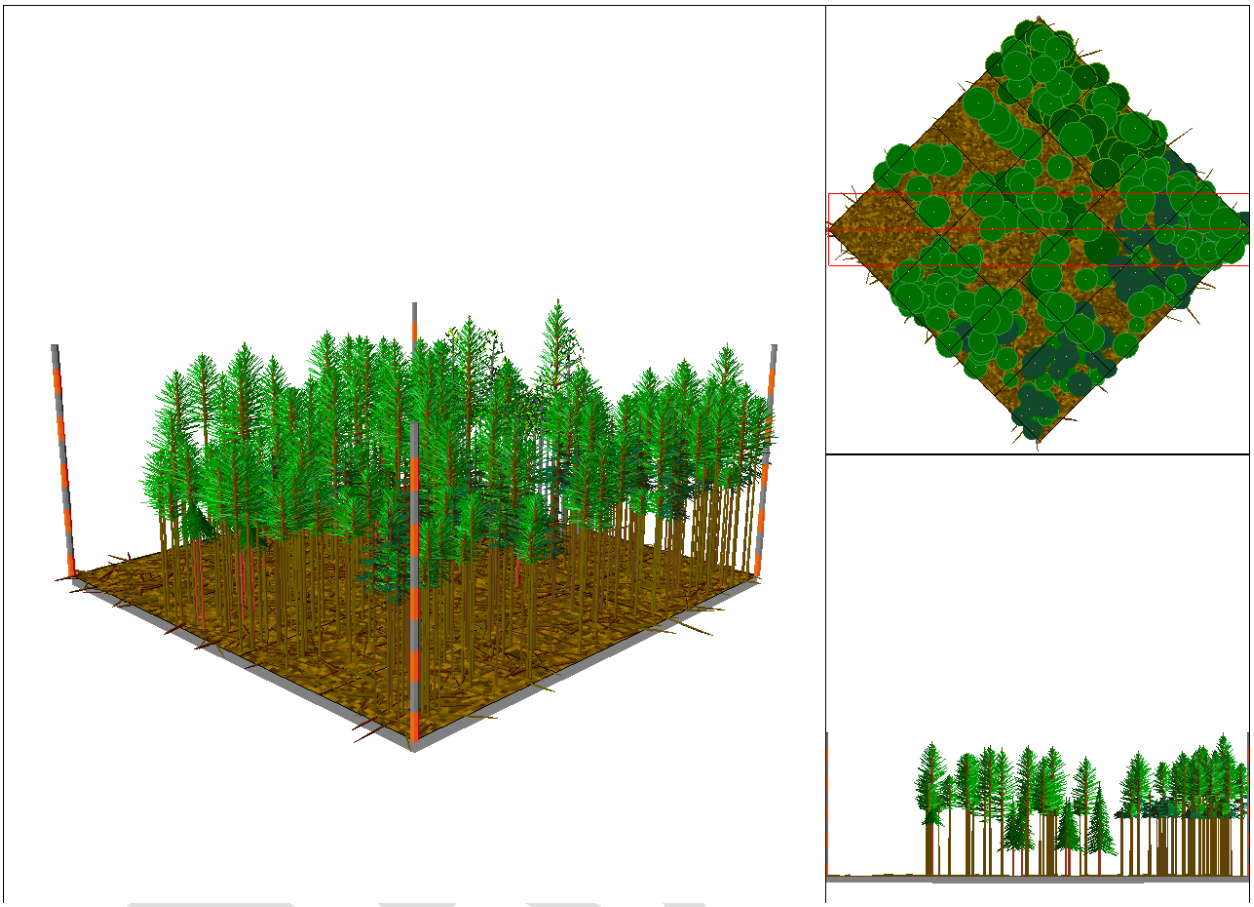

Figure 21: Stand Visualization System visualization of pre-treatment conditions in the 1200 East 2 unit. Trees are drawn using forest inventory data collected in 2025. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2030 Conditions

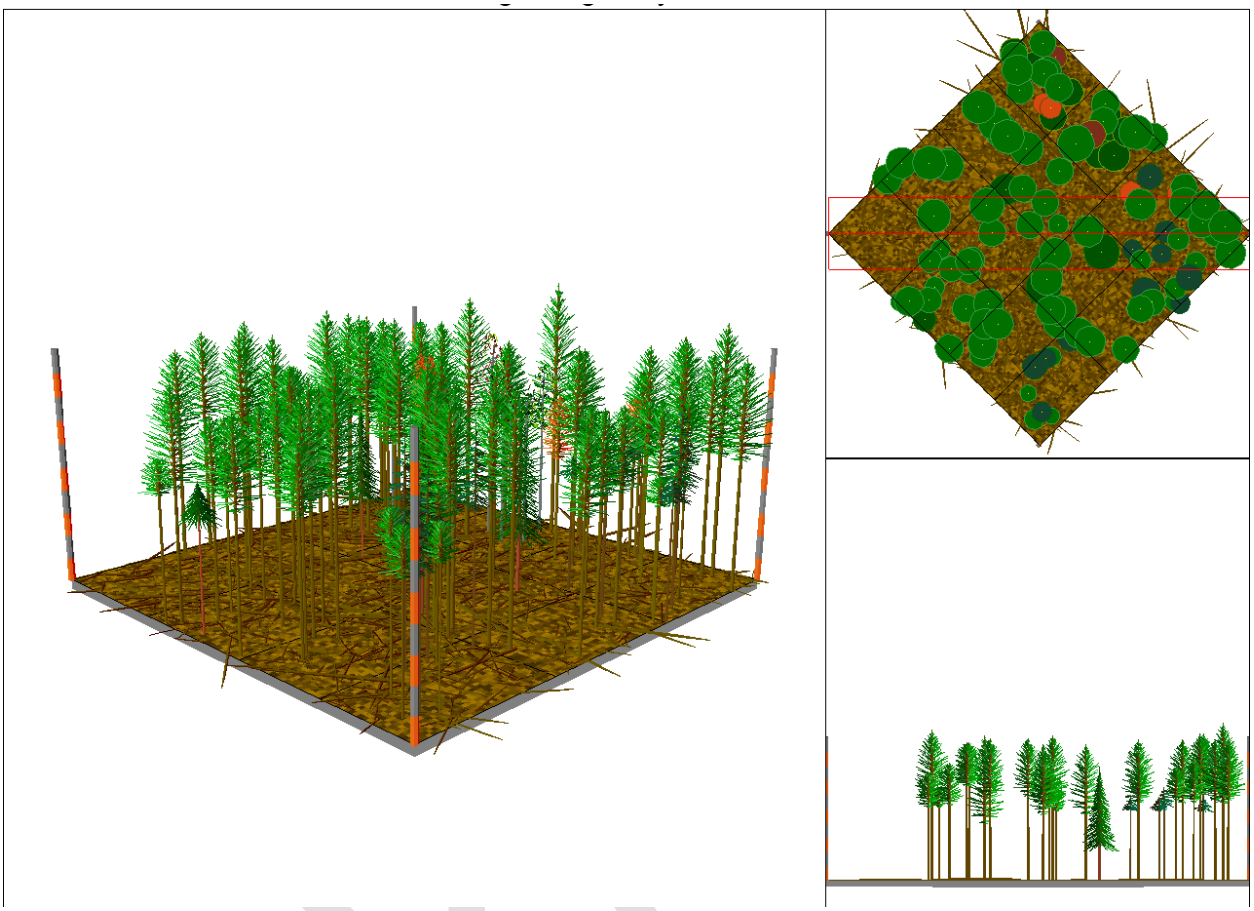

Figure 22: Stand Visualization System visualization of expected conditions in 2030 for the 1200 East 2 unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2035 Conditions

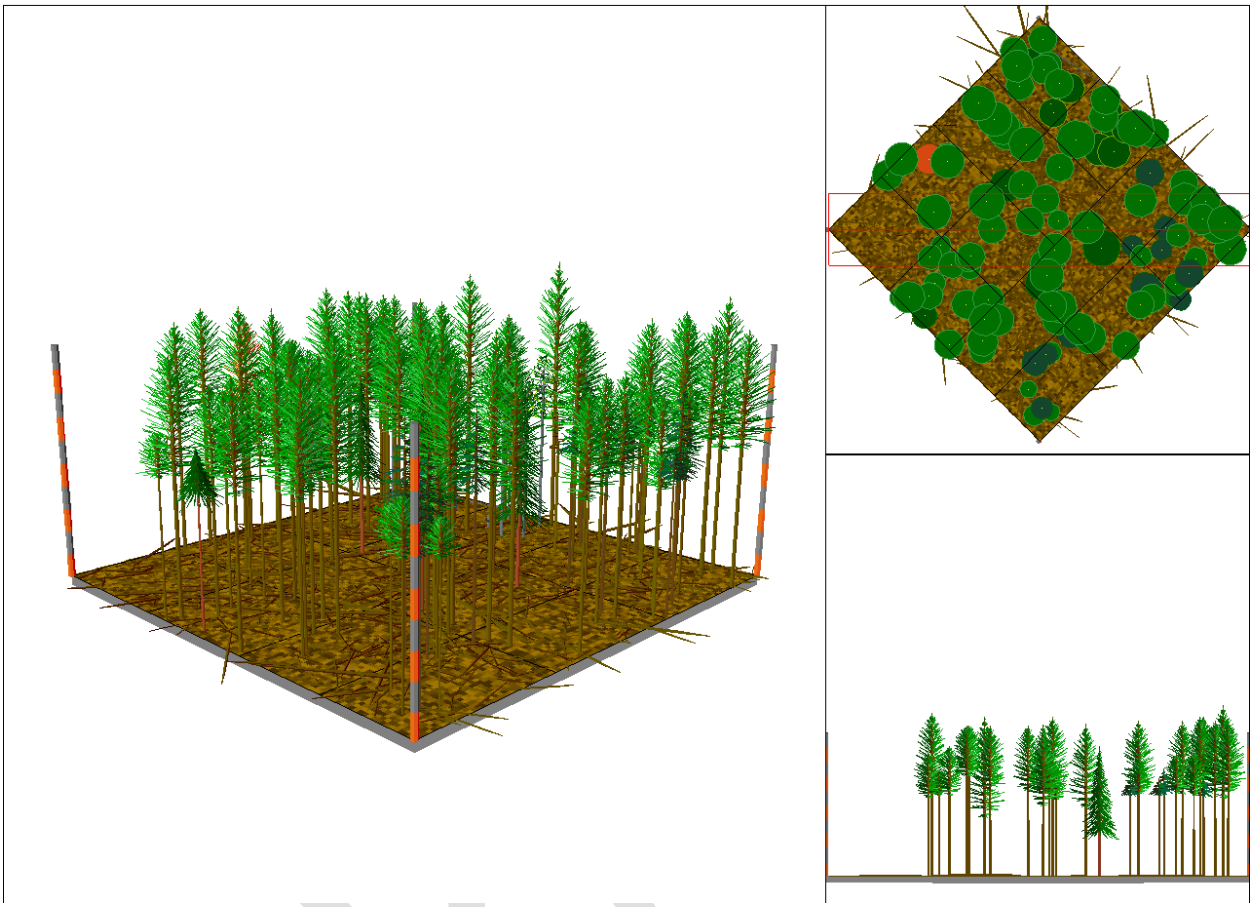

Figure 23: Stand Visualization System visualization of expected conditions in 2035 for the 1200 East 2 unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2045 Conditions

Figure 24: Stand Visualization System visualization of expected conditions in 2045 for the 1200 East 2 unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.

2055 Conditions

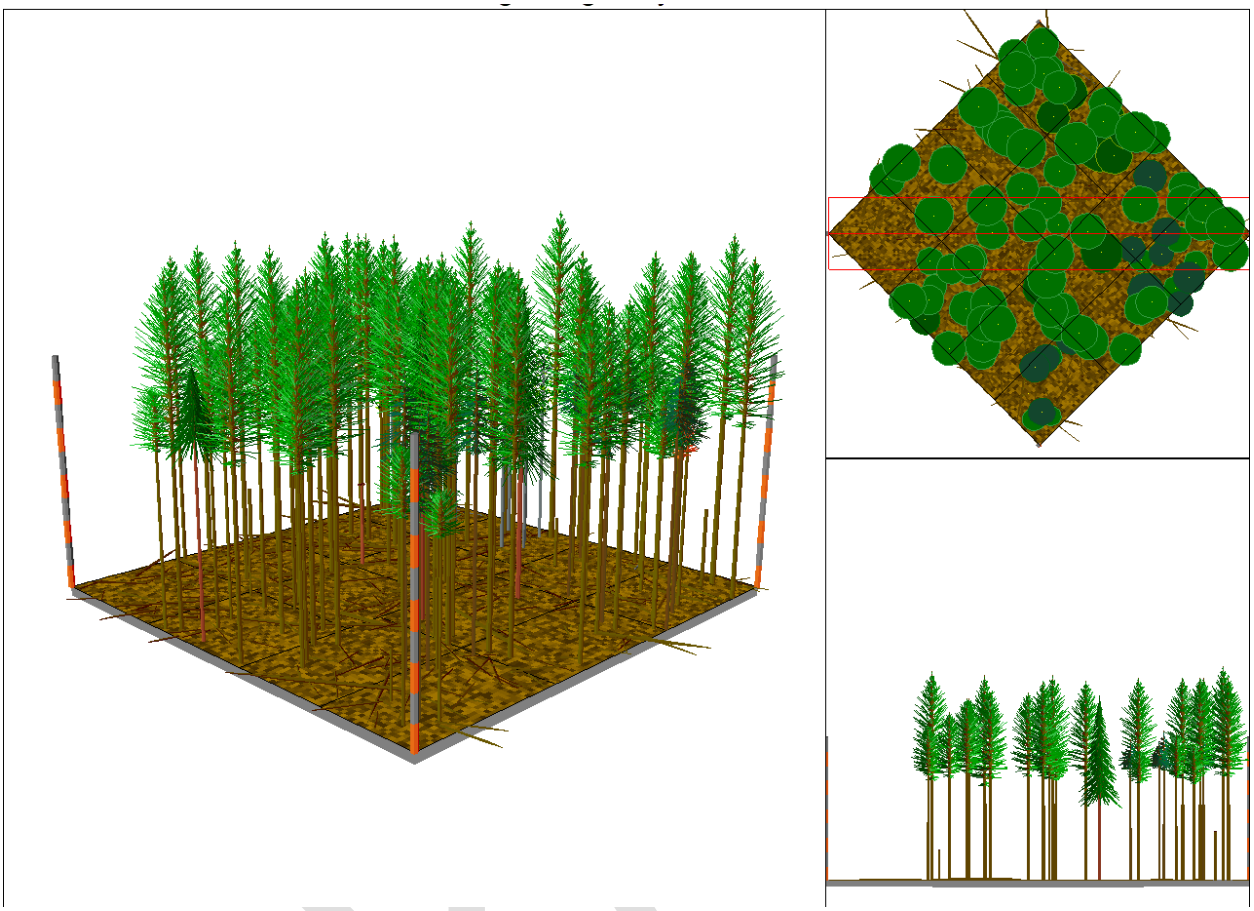

Figure 25: Stand Visualization System visualization of expected conditions in 2055 for the 1200 East 2 unit. Trees are drawn using forest inventory data collected in 2025 with prescribed treatments and growth simulated using the Forest Vegetation Simulator forest growth model. Each area in the upper right pane (overhead view) represents the conditions on one inventory plot. Range poles at each corner of the main pane (perspective view) are 100' tall. The profile view (bottom left pane) represents a strip of forest to show crown sizes.