Massachusetts Department of Conservation and Recreation

Division of Water Supply Protection, Office of Watershed Management

Forest Management Project Proposal Summary for Public Comment

Location, goals, and summary of proposed forest management.

Proposal Summary Item	Item Information/Description
Lot Proposal ID	**WA-25-334/50**
Fiscal Year	2025
Watershed	**Wachusett**
Town(s)	**West Boylston and Sterling**
Forester	Greg Buzzell
Total Acres	76
Block	n/a
Compartment and/or Working Unit	334 & 50
Location and Boundary Description	This is two different working units that are contiguous for only about 100'. Working Unit #334 is bound on the east, south and west sides by private property, some of which is stone wall. The north side is bound by Working Unit #229 which is harvested in 2006 as Lot 5203. Working Unit #50 is bound by private property on all sides except for a small strip of "frontage" on the long-ago discontinued Newell Hill Road extension. All these boundaries have been blazed and tagged.
Previous Proposal?	No
Project Goals and Summary Description	This 76-acre forest is parts of several properties that were acquired from 1998 to 2019 for the protection of water quality. Forests provide exceptional water quality protection and yield high-quality water. Active forest management can increase the resistance and resilience of these watershed protection forests to disturbance by deliberately diversifying forest age structure and species composition. The forest in this area is not sufficiently diverse, particularly in age structure with 96% greater than 80 years old and 0% less than 21 years old. This operation will result in up to 25 acres of young forest through the removal of the older overstory in patches. These patches will range in size up to 2 acres and will be located throughout the area taking advantage of where young seedlings and saplings of diverse species are already present. Mature trees will be retained within nearly all of the patches, particularly those larger than ½-acre in size. This retention provides habitat diversity, ensuring the availability of snags, den trees and future downed woody debris for a variety of wildlife while more closely mimicking natural disturbance patterns than the complete removal of the forest overstory. It has the additional benefit of improving the visual aesthetics of the recently regenerated patches.

Forest Cover Types and Acreages

Overstory Forest Types	Acres
White pine-Oak	44.2
Mixed oak	15.3
White pine	7.7

Understory Cover Types and Relative Importance

Understory Cover Type	**Relative area covered** (Dominant, Secondary, Minor, None)
Tree seedlings and saplings	Secondary
Mountain laurel	Minor
Mesic site - witch hazel, highbush blueberry	Dominant
Dry site -Huckleberry, blueberry	Secondary
Mesic site - cinnamon fern, mixed hardwood	Minor
Hayscented fern	None
Invasive shrubs/vines	None
Other	None

Forest Vegetation Description

Vegetation Topic	Description
General Description, Forest Composition, Stand History, and Harvest History	Working Unit #334: This property, acquired in 2016, is a west-facing hillside dominated by white pine-oak and white pine stands. The primary species are white pine, red oak, scarlet oak along with black birch and white oak and a few pignut hickory and eastern hophornbeam. Near the base of the hill on the west side there are some black cherry, red maple and shagbark hickory among the white pines. The shrub layer is dominated by witchhazel along with lowbush blueberry and, on the top of the hill, huckleberry. The only evidence of past harvest activity is perhaps some light cordwood thinning. There are numerous pits and mounds from some long-past wind event. Working Unit #50: This is made up of several properties, the largest of which was acquired in 1998. It's a generally flat piece of land with a few wetlands strung along the western side adjacent to the power line. The forest is comprised of white pine, scarlet oak, black oak, red oak and white oak along with red maple and black birch and a few scattered beech. In the lower areas along the south side there are black gum and yellow birch. There are some very large swamp white oaks in the wetland in the far south end on the east side of the power line. The shrub layer is primarily witch-hazel along with highbush blueberry and sweet pepperbush in the lowest areas and near the wetlands. This area was logged, probably in the late 1980s. There are also many very old pits and mounds form a wind event that must pre-date the hurricane of 1938.
Advance Regeneration description	Sampling found adequate advance regeneration in 27% of plots with marginal regeneration in another 19%. There were interfering levels of native shrubs, in this case almost entirely witch-hazel, in 24% of the plots. The regeneration is comprised of red maple and black birch along with white pine, white oak, black cherry, sugar maple, hickory and scarlet oak.

Vegetation Topic	Description
Terrestrial Invasive Plants description	Invasive species were found in just 2 of 164 plots and in both cases it was buckthorn. These plots were in the far western edge of Working Unit 334 along the bottom of the hill near the stream and wetland. There were other buckthorn found scattered in this area and a single Norway maple was seen in the area as well.

Description of Wetland Resources Present

Resource Type	Description of resources present
Wetlands	There are several wetlands connected by a small intermittent stream along the east side of the powerline and a bordering vegetated wetland along the larger intermittent stream along the far western edge of this area behind the houses on Fairbanks St.
Streams	See Wetland description.
Vernal pools	None known.
Seeps	None known.

Description of Soils by Hydric Class

Soil Hydric Classes	% of area	Soil series and any further comments
Excessively Drained	0	
Well-drained Thin	5	Chatfield-Hollis-Rock outcrop complex
Well-drained thick	33.5	Paxton fine sandy loam
Moderately well-drained	20	Woodbridge fine sandy loam
Poorly to very poorly drained	30	Whitman and Ridgebury fine sandy loams

Proposed Silvicultural Activities

Topic	Description
Site Selection and Silvicultural Objectives	This working unit was selected due to both the lack of age diversity in the forests of this subwatershed and in this working unit itself. This area is within subwatershed #16 (Washacum Brook). Only 14% of the forest stands within this subwatershed are 20 years old or less. 57% of the stands are more than 80 years old. Within the 40 manageable acres of Working Unit 334, there are no stands 20 years old or less. The full age structure is as follows: 0%, 0-20 years old; 0%, 21-40 years; 8%, 41-60 years; 0%, 61-80 years; 85%, 81-100 years and 7%, >100 years old. Within the 36 manageable acreage of Working Unit 50, there are also no stands 20 years old or less. The entire forest originated in about 1915 making it nearly 110 years old. Given the lack of young stands in this area and given the presence of good advance regeneration comprised of species well suited to this site, the primary goal will be to increase the proportion of young forest stands in this area while also encouraging the establishment of regeneration where it is currently lacking.

Topic	Description
Silviculture Prescription	With the overall goal of having a forest with a diverse age structure with at least 3 age-classes distributed throughout both the subwatershed and the 40 acres within Working Unit 334 and the 36 acres within Working Unit 50, the older overstory will be removed in patches. These patches will total as many as 13 acres within Working Unit 334 and 12 acres within Working Unit 50. They will range in size from as small as 1/5th acre up to a maximum of about 2 acres. They will be as well distributed throughout the working unit as possible, taking advantage of where the advance regeneration is present. With the majority of plots in Working Unit 50 having good advance regeneration, there should be no problem in meeting the goal of having about 1/3rd of the forest in a young age class. This probably will not be case in Working Unit 334. While there is some good advance regeneration, it is not well distributed throughout the area. Therefore, some of the work in this area will be focused on encouraging the establishment of regeneration where it is lacking, including where witch-hazel is interfering with the development of a young forest.

Climate Change Considerations: DWSP has determined that the decision to implement this project is consistent with EEA climate goals and guidelines and agency land management objectives. Carbon and climate change considerations specific to the activities proposed for this project are discussed below.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
Full overstory removal, partial stand, patch regeneration cut. **(*see page 3, Silvicultural Prescription, patch openings*)**	Patch cutting is a regeneration technique that straddles the boundary between classic even-aged and uneven-aged forest management systems. Foresters select appropriate areas ('patches' or 'groups') covering a portion of the stand to harvest rather than removing the entire stand and then return periodically to repeat the process in other portions of the stand. In using patch cutting there is no final regeneration cut. Patch size and shape are determined by many different factors including overstory condition, desired species composition in the regeneration layer, other desirable herbaceous and woody vegetation, location, stand re-entry period, etc. Harvesting in patches aligns with many **climate-smart forestry practices**: • Increasing **structural diversity** improves resiliency by reducing the impact of age/size related disturbances. • Extending regeneration periods minimizes short term impacts to groundwater and nutrient cycling. • Partial stand overstory removals more closely align with **natural disturbance patterns**. • More **carbon is left on the landscape** for longer periods, and within-patch live tree, snag, and coarse debris retention allow for development of old forest characteristics. • Can also be used as opportunities to increase the stocking of **future climate adapted species, current climate imperiled species**, or other types of desirable vegetation.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
Diffuse overstory removal, partial cut, late rotation regeneration related. **(*see page 3, Silvicultural Prescription, work to establish regeneration*)**	Partial cutting via single trees or small groups in a mature stand can advance a variety of management objectives as well as **climate-smart practices**. Single tree or very small group removals, if used exclusively and repeatedly, will perpetuate an **uneven-aged stand condition** with a species mix shifted towards higher shade tolerance. However, this type of harvest can also serve within an even-aged system to establish regeneration of species of lower shade tolerance under a partial canopy for subsequent release using larger group or patch cuts (irregular shelterwood) or complete-stand overstory removals. Advantages of partial overstory removals include, but not limited to: • Partial cutting **retains carbon on the landscape** for extended periods while regeneration develops. • Reducing competition for resources improves growth and **carbon sequestration** rates on residual trees. • Promotion of a diversity of age classes enhances overall forest **resiliency**. • Maintenance of continuous forest corridors provides for wildlife habitat. As part of a regeneration system this method can be used to help guide species diversity towards more **future-adapted mixes**.
General/other Climate Change Considerations	The primary purpose of forest management by the DCR Division of Water Supply Protection is to maintain and improve the **watershed forest resilience**, i.e. the ability to resist and recover quickly from major disturbances, including climactic events such as hurricanes, tornados, microbursts, prolonged drought or excessive rainfall, as well as severe disease or insect infestations. DCR-DWSP conducts timber harvests on <1% of the forest per year in order to achieve that objective, which is accomplished by **fostering forest health and diversity at all levels, resulting in communities of vigorous, healthy trees of multiple species and at various stages of development** (seedlings through large legacy trees). Species diversity improves resistance by reducing canopy loss in the event of major disease or insect outbreaks, because most such forest health issues target a limited selection of species. Age diversity ensures that even if the taller trees are blown over by high force winds, younger trees will be present to continue to hold the soil. These measures, taken for the purpose of maintaining high quality drinking water in perpetuity, are also **highly adaptive for climate change** in that they increase forest **carbon resilience**, the maintenance of both carbon sequestration and carbon storage over time, and **climate resilience,** the ability of a forested ecosystem to survive and thrive despite major disturbances. Specifically, this harvest will improve carbon and climate resilience by:

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
General/other Climate Change Considerations (cont.)	**Enhancing carbon sequestration:** ○ Initiating regeneration (fast-growing young trees) by increasing sunlight to the forest floor. ○ Thinning to increase growth rates of mature trees. **Protecting forest carbon:** ○ Retaining large legacy trees for their full lifespan. ○ Retaining the healthiest, most vigorous (fastest growing) trees. ○ Installing water bars to prevent loss of soil carbon to erosion. ○ Careful routing of skid trails to avoid sensitive soils. **Sustaining forest hydrology:** ○ Protecting riparian areas with filter strips of increasing width based on slope, and avoiding steep slopes altogether. ○ Avoiding stream and wetland crossings, and using Best Management Practices to reduce impact when crossings are necessary. ○ Refraining from harvesting in wetlands, unless absolutely necessary to protect overall forest health. **Maintaining native plant biodiversity:** ○ Minimizing new introductions of invasive plants on vehicles and equipment, and removing existing invasive plants. ○ Ensuring the diversity of the next generation of trees by creating canopy gaps large enough to support the full breadth of tree species diversity. ○ Retaining the healthiest trees of all native species. **Protecting rare wildlife:** ○ Following NHESP guidance for preserving and enhancing habitat for species that are protected under the Massachusetts Endangered Species Act. ○ Creating/maintaining refugia for rare species. ○ Protecting uncommon and vulnerable habitats. **Preserving wildlife habitat:** ○ Retaining uncommon habitat features, such as large diameter logs, snags, and den trees. ○ Protecting current and potential nesting trees for raptors. ○ Maintaining 100 foot shade zones and 200 foot low ground disturbance zones around vernal pools. ○ Maintaining stream water temperature for aquatic species by preserving forested corridors along perennial streams and rivers.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
General/other Climate Change Considerations (cont.)	**Reducing impacts of severe disturbances:** ○ Improving overall forest health. ○ Favoring the tree species that are expected to be best adapted to future climate conditions, such as oak and hickory. ○ Increasing age class diversity to allow rapid recovery after disruption of the forest canopy.

Equipment and Access Constraints and Considerations

Constraint Topic	Description and Considerations
Proposed Equipment requirements	Mechanized felling and forwarding will be required.
Proposed wetland or stream crossings	The existing cart-road that connects Newell Hill Road Extension, west to the powerline, crosses the narrow, southern end of one of the wetlands will be used for the main haul road.
Further wetland comments	No comments.
Vernal Pools	None known.
Access improvements needed	None needed.
Other EQ issues	None.
In-kind Services	None
Other Access Concerns (parking, trails, etc.)	None.

Subwatershed Analysis

Sub-Watershed number/name	Total DCR-owned acres in this sub-watershed	Acres regenerated on DCR land in the last 10 years in this sub-watershed	Total DCR-owned acres remaining for regenerating up to the 25% per 10 year limit for this sub-watershed	Acres in this sub-watershed that are part of this proposed lot
16/Thomas Basin	845	120	91	76

Additional comments on Subwatershed analysis: No comments.

Wildlife and Habitat Observations and Considerations

Wildlife/Habitat	Observations and Considerations
Natural Heritage Priority Habitats?	Yes. There is NHESP priority polygon that is present over most of the proposed lot.
State Listed species present:	NHESP has determined that certain state-listed sensitive species or habitats may exist within the lot proposal area. To protect them from unnecessary disturbance, detailed information regarding affected species and their locations is not included in this report. DWSP will coordinate with NHESP and follow recommendations to protect these species during the proposed activity.
Rare Natural Communities:	None known.
General Wildlife Comments	The stick nests that are present will be protected consistent with all appropriate BMPs. As many high wildlife value trees as possible will be retained. A particular focus will be paid to trees that are used for denning and nesting.

Cultural Resources Description and proposed protection measures

Cultural Resource	Description and proposed protection measures
Historical features present; comments regarding protection	Working Unit 50 is notably devoid of stone walls while much of the perimeter of Working Unit 334 is stone wall.
Description of site characteristics in relation to Ancient sites modeling or other verified evidence	Surface stone is prevalent. Microtopography is pronounced. There are numerous pits and mounds throughout both working units. The majority of both working units is less than 7% sloped apart from the west-facing hillside in Working Unit 334. If applicable, DWSP will follow the recommendations of DCR's Archeologist regarding protection of sensitive sites.

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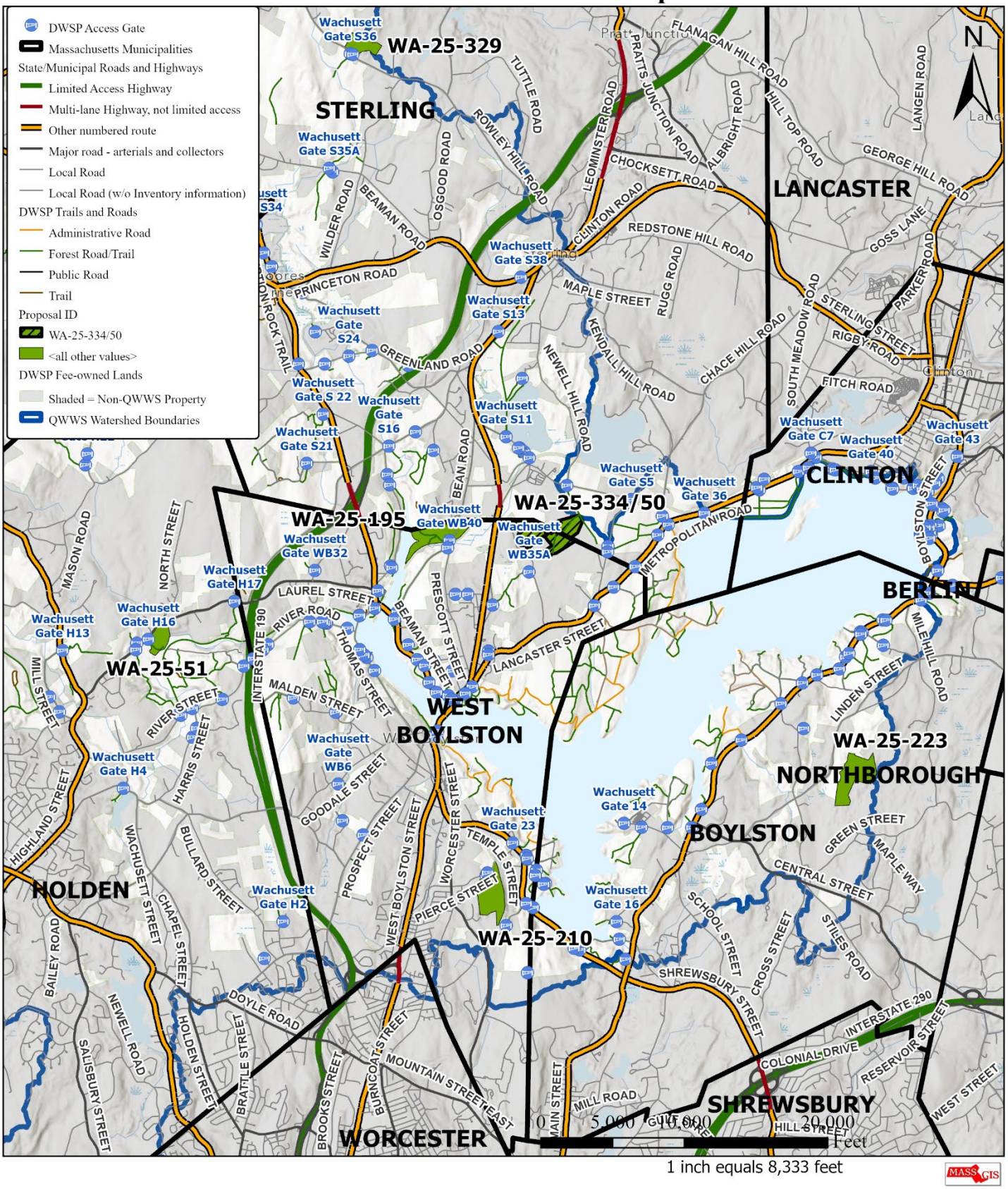
WA-25-334/50 -- Locus Map



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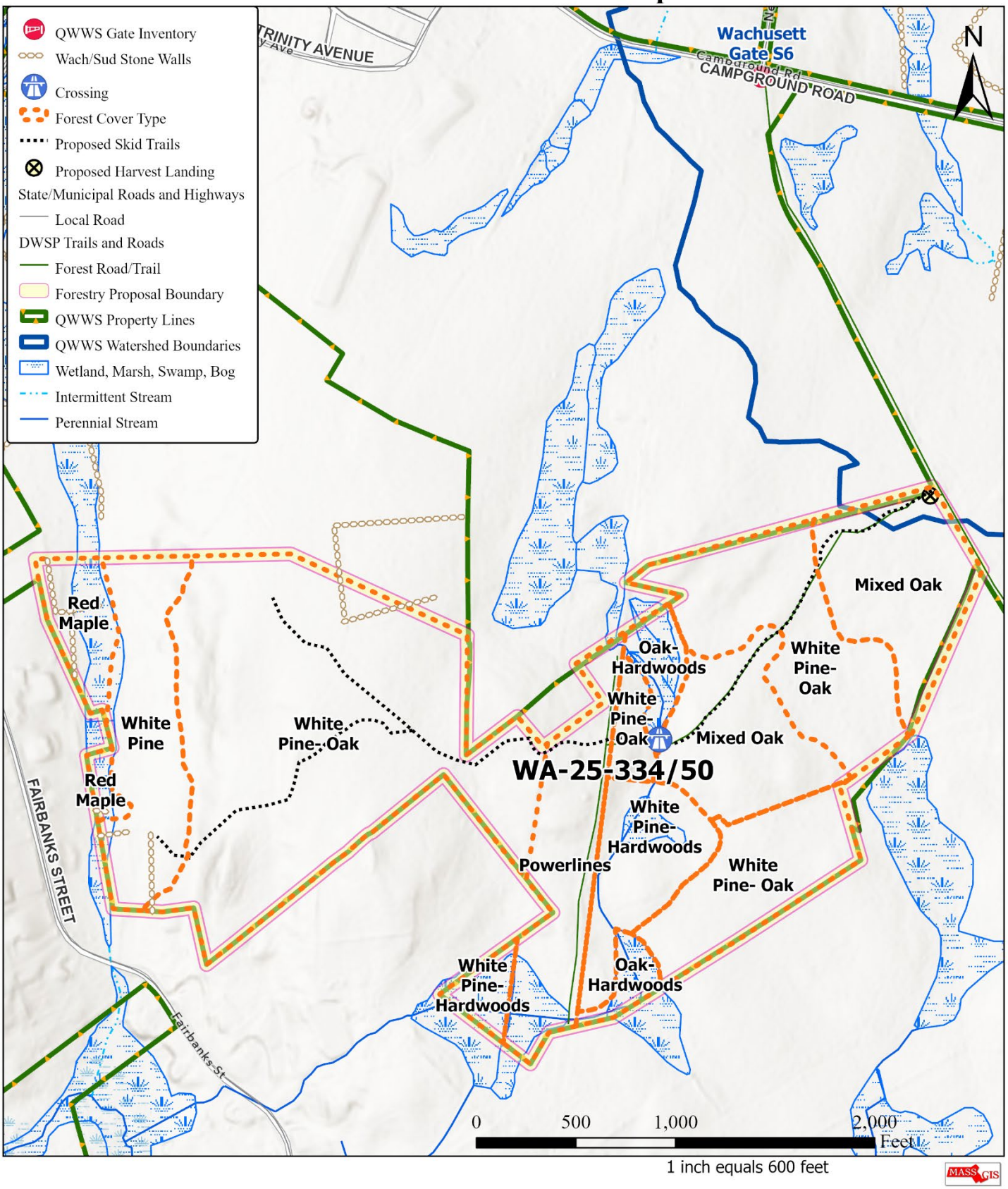
WA-25-334/50 -- Stand Map



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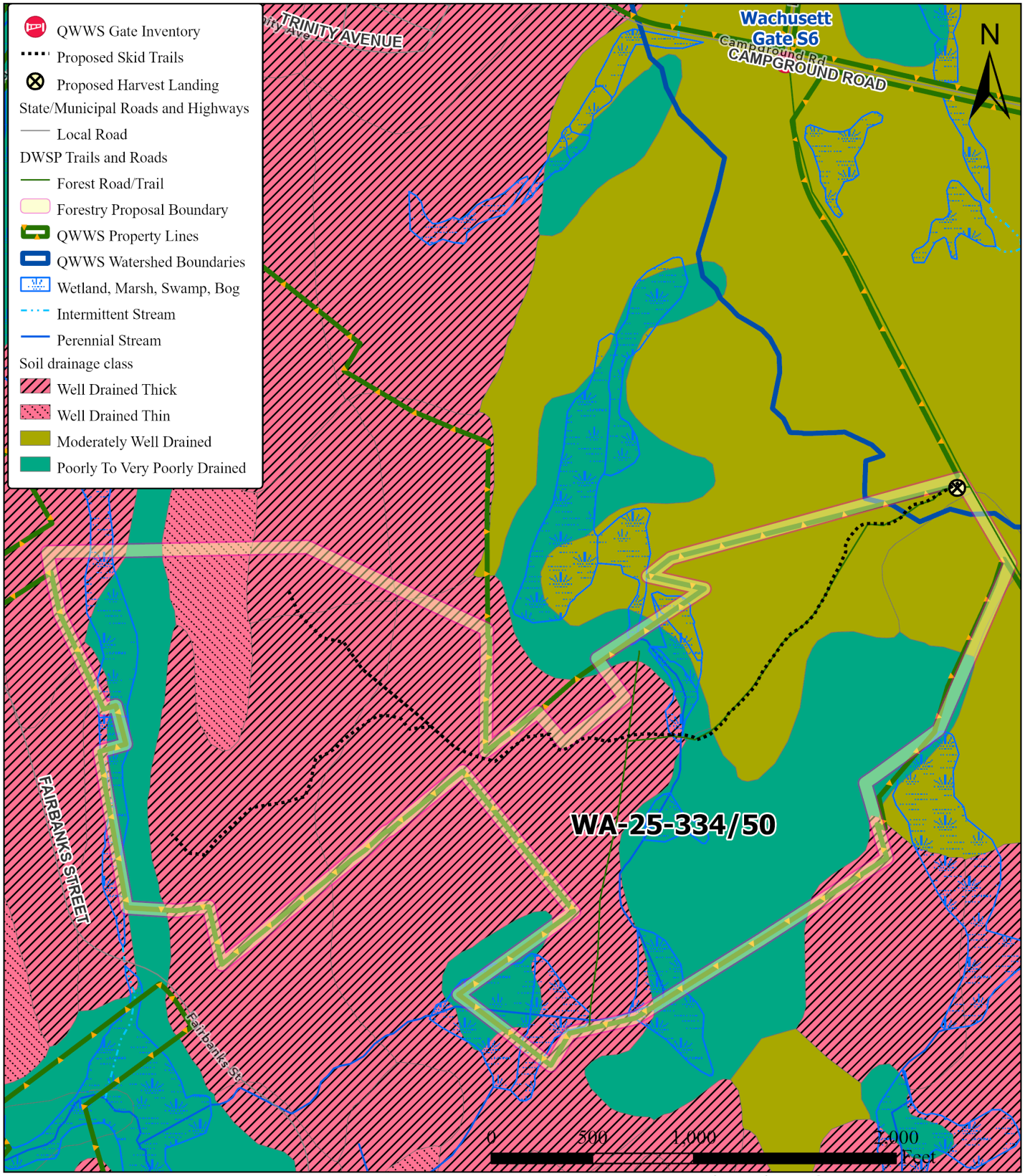
WA-25-334/50 -- Soil Drainage Class



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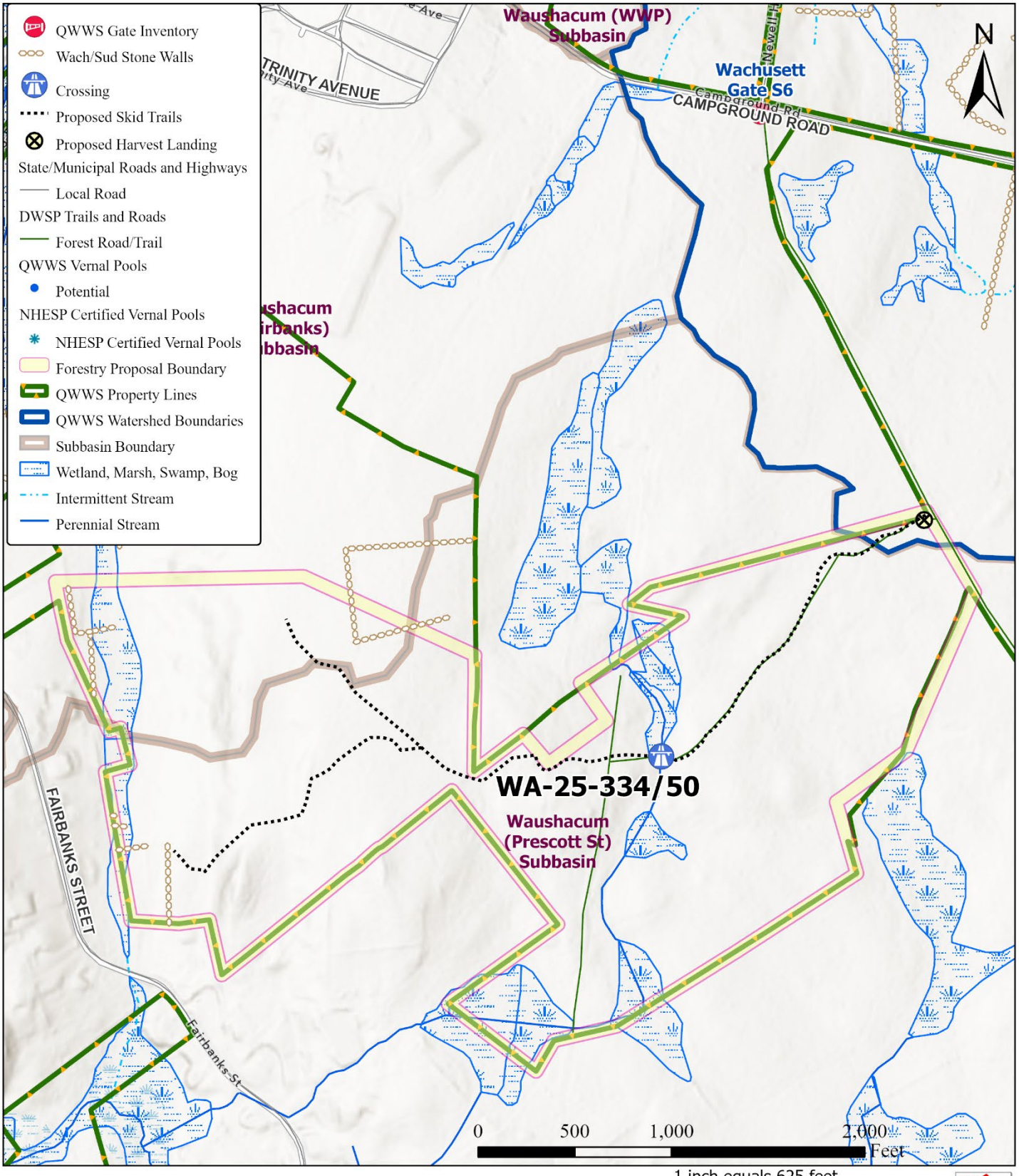
WA-25-334/50 -- Wetlands and Wildlife Resources



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WA-25-334/50 -- Cultural Resources and Landscape Characteristics