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	**NS-25-09**
Fiscal Year	2025
Watershed	**Quabbin**
Town(s)	**Shutesbury**
Forester	Richard G MacLean
Total Acres	81
Block	New Salem
Compartment and/or Working Unit	09
Location and Boundary Description	Located southeast of where the New England Trail meets New Boston Road in Shutesbury.
Previous Proposal?	
Project Goals and Summary Description	This proposal seeks to advance overall watershed goals of increasing age and species diversity through harvest. Species diversity will be improved by harvesting areas with low species diversity while retaining underrepresented species. Age diversity goals will be pursued by opening the forest canopy over existing regeneration and providing open patches with high sunlight to create opportunities for new regeneration to establish. Releasing existing regeneration established under the existing canopy, and opening up full sun light for new establishment will create conditions for a variety of species of different shade tolerance to establish at the site.

Forest Cover Types and Acreages

Overstory Forest Types	Acres
Hemlock - hardwood	55
White pine – hemlock	21
White pine	3
Oak hardwood	2

Understory Cover Types and Relative Importance

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

Understory Cover Type	**Relative area covered** (Dominant, Secondary, Minor, None)
Other	An open understory with sparse vegetation is Dominant

Forest Vegetation Description

Vegetation Topic	Description
General Description, Forest Composition, Stand History, and Harvest History	The proposed area can be divided into five stands. A fifty five acre hemlock - hardwood stand covers a majority of the proposed area. This stand, averaging 147 ft² per acre in basal area, is two thirds even-aged sawtimber sized hemlock with northern red oak, black cherry, and black and yellow birch. Another quarter is made up of pole sized quarter to third acre openings regenerated to black birch, with small amounts of red maple and even fewer red oak stems. The southern three quarters of this stand were acquired in 1987, and these small openings were established prior to that acquisition. The remaining quarter in the north was acquired in 1990. Records from DCR Service Forestry indicate that area was treated with an intermediate thinning prior to taking by the Commonwealth. This stand covers most of the upper eastern slope top and extends west down the slope, reaching the western edge near the middle of the proposed area. The second stand is a thirteen acre white pine – hemlock stand in the southwest corner of the proposed area. Averaging 137 ft² per acre in basal area, this stand is mostly an even aged sawtimber stand with an acre two aged with a second poled sized cohort, and a third acre fully multi aged. While the stand is dominated by white pine and hemlock it picks up a hardwood component of red oak and yellow birch abutting the abutting branch of the West Branch of the Swift River. Another white pine – hemlock stand, occupying 8 acres in the northwest corner, is the only portion of the proposed area that was acquired during the original taking establishing the Quabbin. This stand was harvested as Quabbin Lots 13 in 1964 and 606 in 1993. The harvest in 1993 established tenth to half acre areas of established white pine, hemlock, and black birch regeneration. The previous treatments have established this stand as the most structurally diverse with fifths in sapling, pole, and sawtimber sized areas, and the remaining two fifths with a two-aged structure. Located at the southern edge of the proposed area, the fourth stand is a three acre even aged white pine stand, emergent above the surrounding forest. The height of the trees, slope position of the stand, monoculture composition, and mountain laurel understory leaves it the most vulnerable to large scale wind disturbance. Finally, on a bench at the top of the slope there is a small, 2 acre red oak stand nestled in the larger Stand 1 hemlock - hardwood. This two-aged stand has an overstory of northern red oak and an established second age class of small pole sized black birch.

Vegetation Topic	Description
Advance Regeneration description	Regeneration was sampled at 1 plot per 1.3 acres. With its dense hemlock dominated canopy three quarters of stand one had little to no regeneration, and in those areas the few woody stems present were mountain laurel in two thirds of plots. Another fifth of regeneration plots in the stand were dominated by dense mountain laurel cover. The remaining two percent of the stand was in monoculture hemlock regeneration. Half of stand two was covered in dense mountain laurel, impeding tree regeneration. A fifth of the area had no regeneration, and final fifth contained monoculture hemlock regeneration. Stand three was similarly interfered by mountain laurel, over two fifths of the area. A second two fifths is in monoculture pockets of white pine or hemlock regeneration. The remaining fifth was classified as having diverse regeneration, but was still dominated by white pine. The fourth stand understory is entirely covered in dense mountain laurel. Finally, the small red oak stand is split between pole sized black birch and red oak overstory with sparse woody stems in the understory. The area dominated by the pole sized black birch contains sparse mountain laurel, and little other woody regeneration.
Terrestrial Invasive Plants description	No invasive species were observed during internal sampling. Glossy buckthorn populations are present nearby on New Boston Road.

Description of Wetland Resources Present

Resource Type	Description of resources present
Wetlands	There are small wetlands present on some of the benches that are either isolated or drain into intermittent streams. Most of these drainages are not connected at the surface to other resources. There is an intermittent stream related wetland than nearly bisects the lot which will need to be crossed.
Streams	Small intermittent to ephemeral streams are located in multiple places in the lot, most of which end in subsurface flow or infiltration.
Vernal pools	None known
Seeps	There are some seeps associated with downhill flow of intermittent streams.

Description of Soils by Hydric Class

Soil Hydric Classes	% of area	Soil series and any further comments
Excessively Drained	4	Hinckley sandy loam
Well-drained Thin	51	Primarily Chatfield-Hollis complex and small portion of Hollis-Chatfield complex
Well-drained thick	27	Half Canton-Chatfield-Hollis complex, a third Canton fine sandy loam, and the remainder is Montauk fine sandy loam
Moderately well-drained	7	Sudbury sandy loam
Poorly to very poorly drained	11	Half Whitman very stony mucky fine sandy loam, a third Ridgebury gravelly fine sandy loam, the remainder in Walpole fine sandy loam with a possibility of a very small amount in Swansea peat

Proposed Silvicultural Activities

Topic	Description
Site Selection and Silvicultural Objectives	The proposed site overall has a combination of limited regeneration opportunities currently present and scattered pockets of a second established age class which could be further tended and released. The scattered canopy hardwood diversity presents an existing seed source opportunity to increase understory diversity by providing increased light conditions to the understory.
Silviculture Prescription	While hemlock dominance is consistent across stand one, the topography and secondary hardwood component are heterogenous enough to require varying silvicultural prescription. Wetland areas in the stand, either streamside associates or slope bench collection wetlands, will be avoided during harvest except where necessary for crossing. This will remove several acres available for management. The greatest canopy species diversity in the stand is in the northern section described above as acquired in 1990. To take advantage of the current hardwood diversity in the overstory and a seed tree system will be implemented, as suggested by the 2017 land management plan and the USFS silvics manual for germination of black cherry. Regeneration assessment will be performed after five years to determine overstory return in ten to fifteen years after initial treatment. During the second stage of the seed tree treatment at least five square feet of basal area will be retained in overstory legacy trees. Legacy tree retention will favor diverse, vigorous, and large diameter individuals. The remaining section of the stand will be treated with regeneration openings to establish a new age class. As much as possible these areas will be placed immediately adjacent to the small existing openings. During this time these openings will be thinned to preferentially retain red oak and other hardwood species of low representation. Alternately, openings will target tall dense patches of mountain laurel to provide a regeneration opportunity. By working to site regeneration openings adjacent to the small patches of pole sized second age class, the proposed harvest can further release this age class or take advantage of the short height in maximizing light to newly establishing regeneration depending on the placement and orientation of new regeneration openings. Stand two has a low amount of canopy species diversity, dense shading canopy and extensive areas of dense mountain laurel. A pair of two acre openings, oriented north south will be placed over the densest areas of mountain laurel. This focused harvest will maximize opportunities for both mechanical treatment of the mountain laurel, and light availability for new regeneration recruitment before the slow growing laurel can recover. Thinning around these openings will be used to facilitate further mechanical treatment of the dense mountain laurel and improve the regeneration opportunities on the north and west edges of the openings. Underrepresented canopy hardwoods will be targets for edge retention. Stand three has small pockets of established regeneration and the least amount of interfering vegetation for the amount of canopy light penetration. This stand will be treated with smaller scale regeneration openings (half to three quarter acre) placed adjacent to the existing regeneration to maximize light available for new regeneration to establish and the existing regeneration protected. The area of the stand immediately around the New England Trail will be treated with intermediate thinning to protect the integrity of the trail's path. Retention of legacy trees will focus on large diameter individuals of limited representation to serve as carbon stores and seed sources. This stand will have at least three age classes after new regeneration establishes and will not need to be revisited for several decades.

Topic	Description
Silviculture Prescription	Stand four is the most vulnerable to regeneration failure after a large scale natural disturbance. The mountain laurel is so dense as to shade out any new establishing tree regeneration, and the white pine overstory has grown above the neighboring stands and is on a vulnerable slope and aspect to future hurricane or windstorm. A large regeneration opening will be placed in this stand removing most of the existing overstory. Retention will be limited and consolidated to reduce windthrow vulnerability and maximize light. Any girdled overstory trees will be included in these retention groups to lengthen their time as standing dead snags. The areas adjacent and to the north of stand four, in stands one and two will be thinned and interfering vegetation mechanically treated to attempt to ameliorate the increased light penetration from the opening in stand four on the areas of dense laurel in stands one and two. Given the somewhat even aged treated being prescribed this stand will need to be revisited for tending at the next entry into stand one. Given its small size and the mixed nature of its age classes treatments in stand five will focus on tending the immature small pole sized age class and the overstory red oak. This area is somewhat protected (for the proposed area as a whole) and can serve as a continuing seed source of oak for the surrounding hemlock - hardwood stand. At future treatments of stand one, stand five should be reassessed for broader regeneration opportunities.

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 4, Silvicultural Prescription, regeneration openings in stands 1-4*)**	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 4, Silvicultural Prescription, seed tree cutting in stand 1, thinning around openings in stand 2, thinning along the NET in stand 3*)**	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**.
Diffuse overstory removal, partial cut, mid-rotation thinning. **(*see page 4, Silvicultural Prescription, tending immature age class and overstory oak in stand 5*)**	Classic thinnings are partial cuts implemented during the 'middle years' of stand development ('intermediate treatments') to **adjust species composition**, shift growth towards desirable and more vigorous trees, and maintain desired density and stocking levels. Stands may be thinned multiple times prior to initiating the regeneration phase near the end of a planned rotation. Time intervals between thinnings are generally considerations between rotation lengths and the response of the trees on the site. Climate-smart practices that agency foresters keep in mind when conducting thinnings include: • **Retaining higher residual densities** that maintain higher levels of carbon stocks on the landscape. • Retaining better-formed and more vigorous individuals which will improve **carbon sequestration capacity**. • Taking the opportunity to favor **desired species**, especially those species that are better adapted to **future climate scenarios.**
General/other Climate Change Considerations	

Equipment and Access Constraints and Considerations

Constraint Topic	Description and Considerations
Proposed Equipment requirements	None
Proposed wetland or stream crossings	Minor Wetland crossings will be necessary to get from the landing to the remainder of the proposed area. Swamp mats will be required.

Constraint Topic	Description and Considerations
Further wetland comments	The hemlock hardwood and white pine hemlock stands, near the bottom of the slope, contain drainage wetlands. These areas will be largely left unmanaged.
Vernal Pools	None known
Access improvements needed	Access improvements will be needed on New Boston Road from Gate WN-1 to allow truck traffic. Landing improvement will be needed to allow for tractor trailers to turn around.
Other EQ issues	
In-kind Services	
Other Access Concerns (parking, trails, etc.)	An old abandoned road is the northern boundary of the proposal. The New England Scenic Trail follows this old road and exits onto New Boston Road at the only available landing. The trail will be avoided as much as possible and where it must be crossed protection and restoration will be required. DWSP will coordinate with AMC to close that portion of the trail during harvesting and reroute hikers via Rockwell Hill Road.

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
54: Upper West Branch Swift	1469	0	367	82

Additional comments on Subwatershed analysis: No comments.

Wildlife and Habitat Observations and Considerations

Wildlife/Habitat	Observations and Considerations
Natural Heritage Priority Habitats?	None
State Listed species present:	None known
Rare Natural Communities:	None known
General Wildlife Comments	Three quarters of the lot could be classified as Moderately Impacted to Impacted by browse. Browse was evident in the hemlock regeneration and the absence of preferred species. Past browse history is suggested by the black birch dominance in the species composition of the small openings present in the hemlock – hardwood stand.

Cultural Resources Description and proposed protection measures

Cultural Resource	Description and proposed protection measures
Historical features present; comments regarding protection	There are few stone walls present in the proposed area and the Quabbin Real Estate sheet indicates Virginia rail was the more common property boundary in this area. There is a likely cellar hole of an old foundation at the eastern edge.
Description of site characteristics in relation to Ancient sites modeling or other verified evidence	Surface stone is fairly abundant, especially at the bottom of the slope. Microtopography is rolling along the slope in east-west fingers Slope is fairly consistent with a western aspect. There are north-south oriented benches in the middle and eastern edge of the proposal. If applicable, DWSP will follow the recommendations of DCR's Archeologist regarding protection of sensitive sites.

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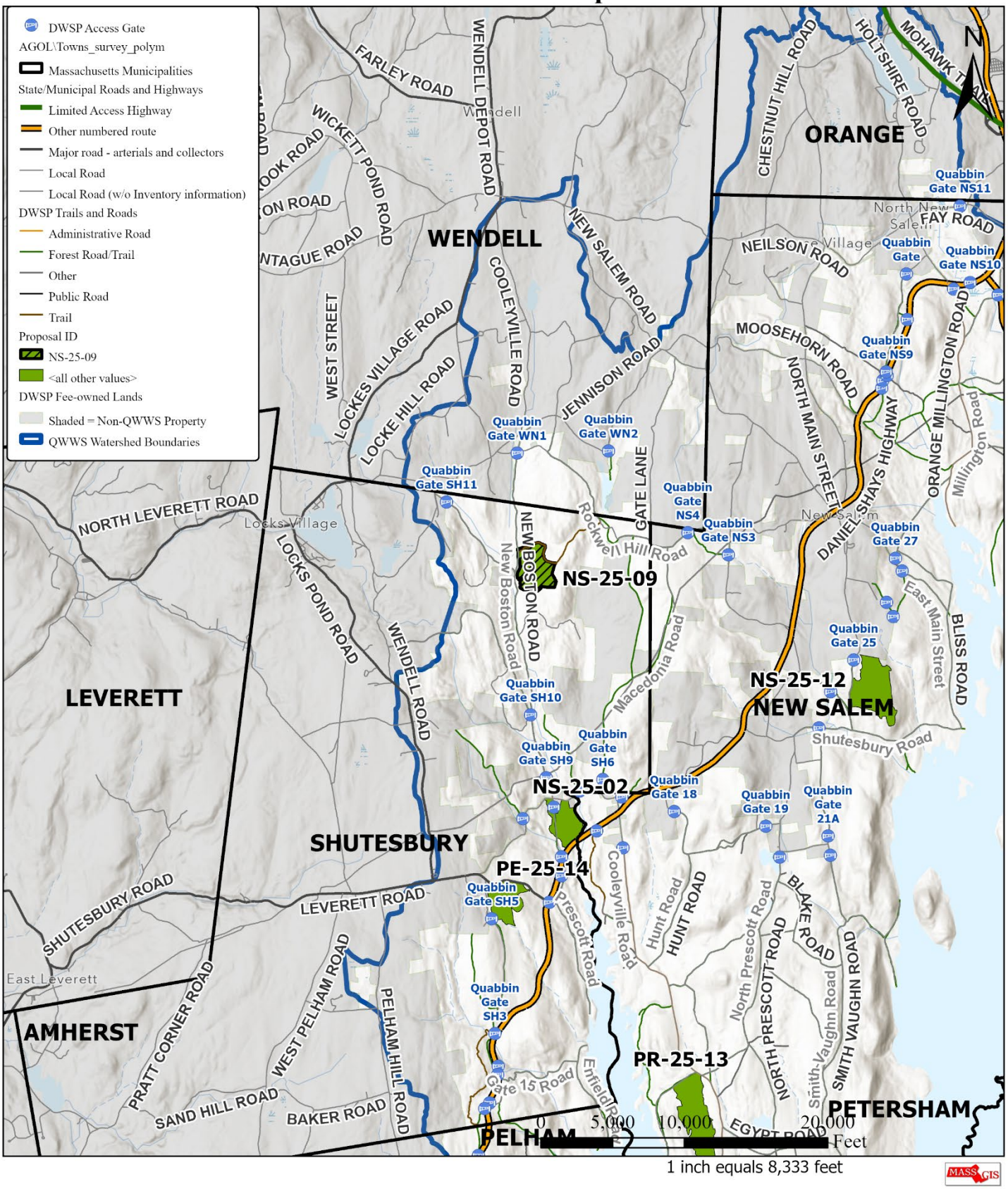
NS-25-09 -- Locus Map



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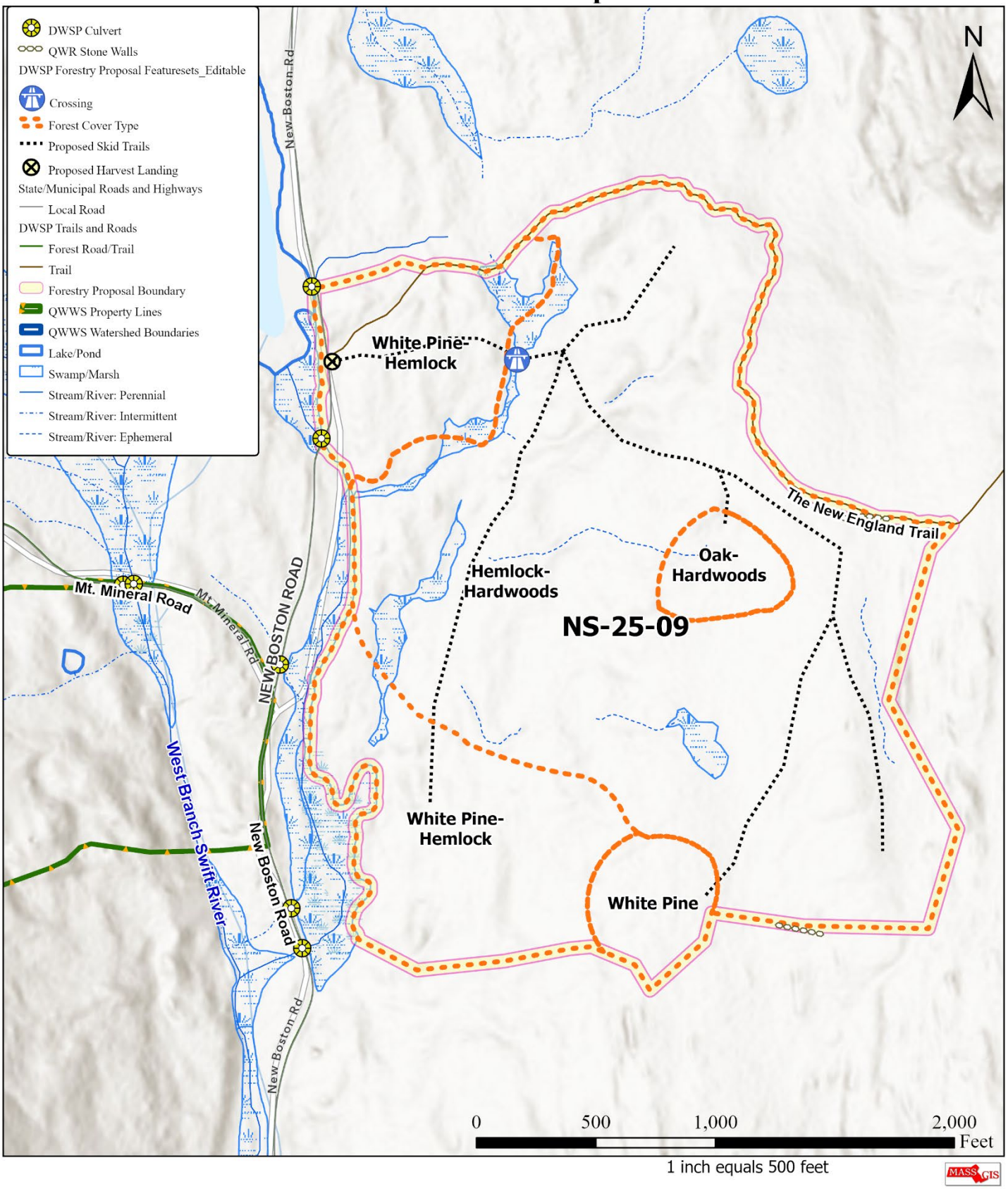
NS-25-09 -- Stand Map



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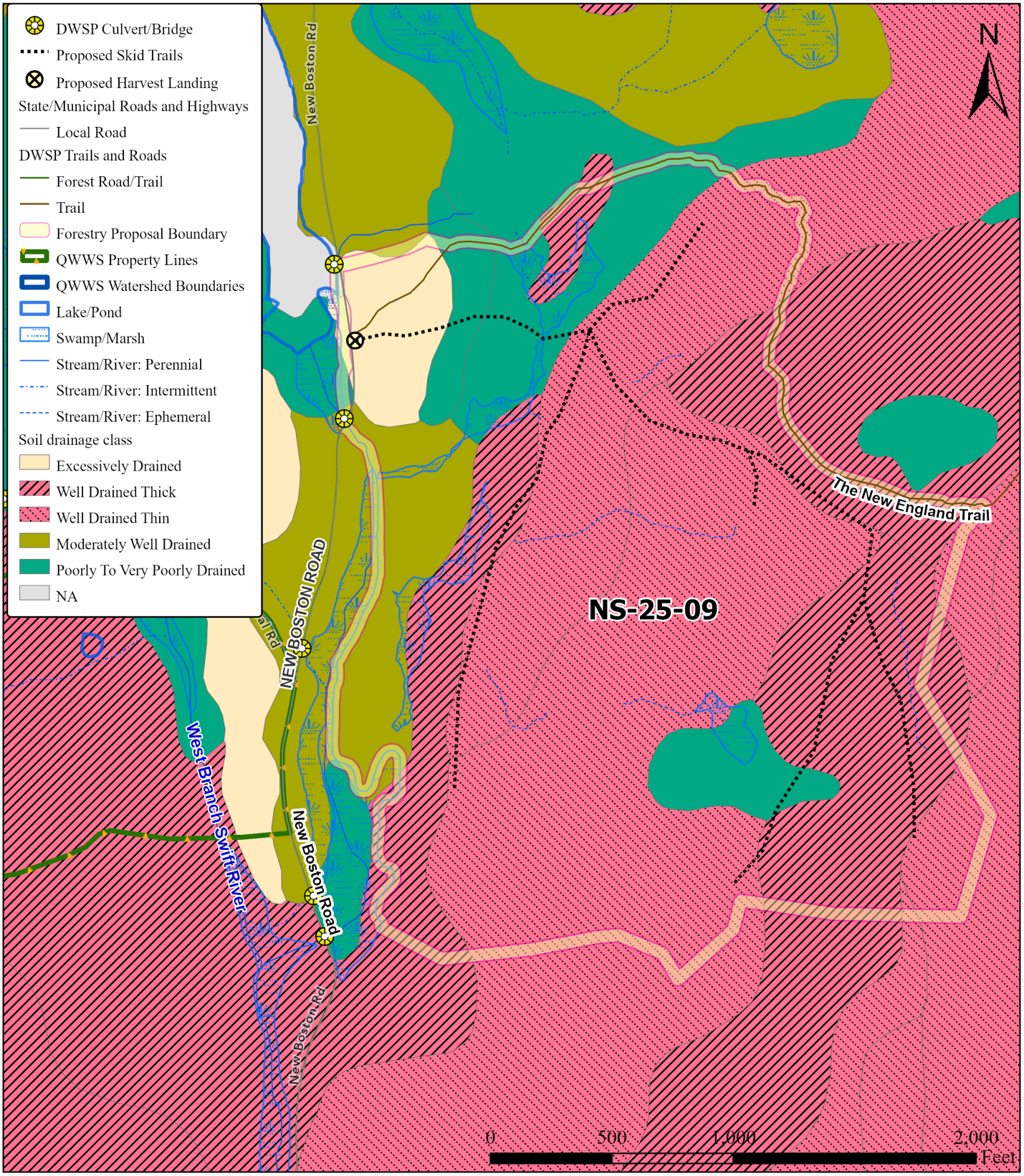
NS-25-09 -- Soil Drainage Class



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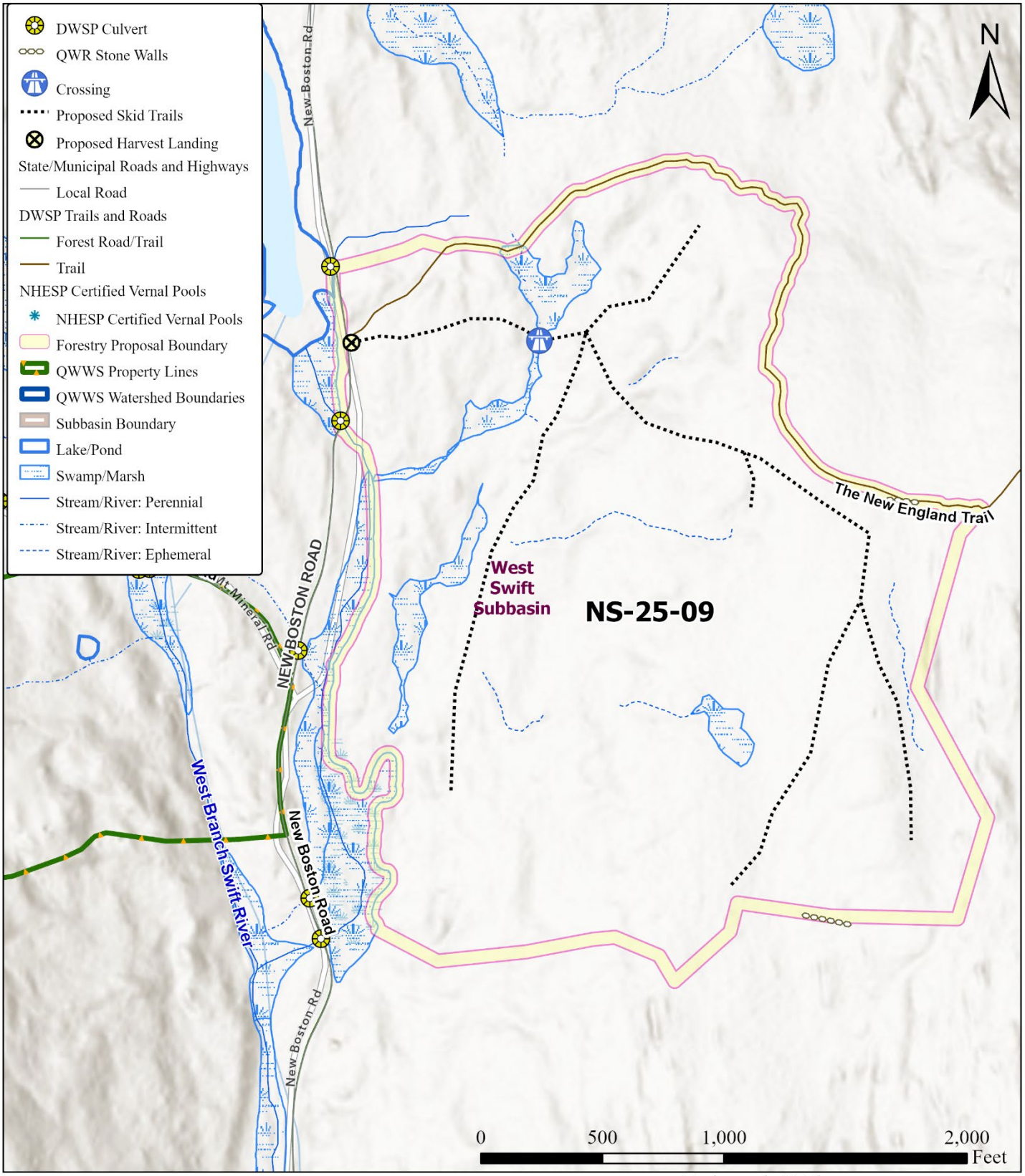
NS-25-09 -- Wetlands and Wildlife Resources



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NS-25-09 -- Cultural Resources and Landscape Characteristics