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-25-02**
Fiscal Year	2025
Watershed	**Quabbin**
Town(s)	**Shutesbury**
Forester	Richard G MacLean
Total Acres	77
Block	New Salem
Compartment and/or Working Unit	02
Location and Boundary Description	Located Between Camel Brook and Cooleyville Rd in Shutesbury
Previous Proposal?	NS-16-02, PE-19-15-01
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. This proposal contains a prominent hill, vulnerable to high wind disturbance, that has a stand of tall even aged white pine on it. Introducing openings at the top of the hill, with thinning in between openings, will provide an opportunity for new regeneration to grow and increase the resiliency of that area to large scale wind disturbance. In the pine hemlock stand, small openings cooccurring with hemlock regeneration will help encourage hemlock regeneration and provide a refugia for hemlock which is currently struggling with multiple insect and climate stressors.

Forest Cover Types and Acreages

Overstory Forest Types	Acres
White pine - hemlock	51
White pine - oak	14
Mixed oak	8
White pine	4

Understory Cover Types and Relative Importance

Understory Cover Type	**Relative area covered** (Dominant, Secondary, Minor, None)
Tree seedlings and saplings	Primary
Mountain laurel	Secondary
Mesic site - witch hazel, highbush blueberry	Minor
Dry site -Huckleberry, blueberry	Minor

Understory Cover Type	Relative area covered (Dominant, Secondary, Minor, None)
Mesic site - cinnamon fern, mixed hardwood	None
Hayscented fern	None
Invasive shrubs/vines	Minor
Other	

Forest Vegetation Description

Vegetation Topic	Description
General Description, Forest Composition, Stand History, and Harvest History	The proposed harvest area covers a hilltop and the surrounding slopes between the West Branch of the Swift and streams which feed into Camel Brook. A skid road/old cart road wraps the base of the hill leading from Cornwell Rd east below the peak of the hill and the heading north towards the DWSP boundary with private abutters. The area can be divided into four general stands. A majority of the site is a white pine – hemlock stand wrapping around the hill from the west south around to the east. It varies in relative proportion of the two dominant species from heavily pine in the west to more heavily hemlock on the south and eastern sides. There is a secondary component of northern red oak scattered through the southern and eastern portions of the stand. Canopy dominant hemlock mortality from hemlock wooly adelgid is present but is scattered to individual snags. A few areas with a group of canopy hemlock mortality near camel brook, west of Cornwell Road have diverse regeneration now small pole sized. Just north of the intersection of the old skid trail and Cornwell Rd is a 1.4 acre patch opened up in a 1987 has regenerated to pure white pine. The northern slope of the hill leading up to the top is a fourteen acre white pine - oak stand. This stand contains over 100 ‘ tall emergent white pine on a southwest to northwest aspect with some prominence and exposure to open private land to the north west. This position increases vulnerability to large scale hurricane winds or severe winter prevailing winds. The top of the eastern and south facing slopes is dominated by a mixed oak cover with a minor white pine component. There are a few acres on the southwest corner that are unmanageable and a few more on the eastern face that would only be manageable with a cable skidder. Finally, there is a four acre stand of overstory white pine and remnant dying red pine. Under this canopy is a midstory of pole sized northern red oak, hemlock, white pine, black birch, and red maple. This stand is located at the corner of Cornwell Rd and Cooleyville Rd and the tall white pine may represent a hazard to those roads in the event of a large wind disturbance. Past management has occurred throughout the proposed area in multiple entries. Nearly all of the area was harvested with a shelterwood prep cut in 1963 in the seventh commercial harvest at Quabbin. The area west of Cornwell Rd and the top and east/northeastern slope of the hill were harvested in 1984 and 1985 likely related to the record spongy moth outbreak in 1981. Finally, the eastern lowest slopes were treated in 1987 by the Quabbin internal crew.

Vegetation Topic	Description
Advance Regeneration description	The proposed area was sampled at roughly 1 plot per acre. Approximately one third of the proposed area is in monoculture regeneration, almost entirely hemlock, with a small percentage in black birch and white pine. This monoculture hemlock regeneration is distributed across the white pine – hemlock stand. A fifth of the area has little to no regeneration with sparse hemlock, scattered mountain laurel or witch hazel, or no woody stems at all. In the next fifth, regeneration is prevented by interfering dense mountain laurel, and to a smaller degree tall dense witch hazel. All the sampled plots categorized as interfered are in the white pine – oak and mixed oak stands at the top and northern slope of hill. Another tenth was classified as marginally regenerated, but even in these cases where there was some marginal diversity regeneration was still dominated by hemlock. Only one twentieth of the area was found to have diverse regeneration, and again, in these plots hemlock was the dominant species.
Terrestrial Invasive Plants description	Terrestrial invasive species were only observed in small populations of barberry on Cornwell Rd, as well as adjacent to the landing south of the Camel Brook bridge in the former gravel pit.

Description of Wetland Resources Present

Resource Type	Description of resources present
Wetlands	There are small seasonal wetlands associated with the intermittent stream west of Cornwell Rd. These will not be harvested but may need to be crossed to access areas of higher ground. All attempts will be made to avoid crossings. There is a small amount of wetland immediately adjacent to the West Branch of the Swift River that will also be avoided.
Streams	The proposed harvest area is bounded by the West Branch of the Swift River to the east, intermittent streams feeding Camel Brook to the west and Camel Brook to the southwest. No streams crossings will be needed.
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	39	Hinckley sandy loam
Well-drained Thin	11	Chatfield-Hollis complex
Well-drained thick	44	Two thirds Montauk fine sandy loam, one third Canton fine sandy loam and possibly a small amount of Newfields fine sandy loam.
Moderately well-drained	5	Sudbury sandy loam with a small amount of Walpole fine sandy loam.
Poorly to very poorly drained	1	Walpole fine sandy loam

Proposed Silvicultural Activities

Topic	Description
Site Selection and Silvicultural Objectives	The portion of the proposed area made prominent above the surrounding area by the small hill leads to vulnerability of large-scale wind disturbance for the even aged stand. By harvesting here and increasing age diversity through regeneration of a new age class, overall forest resiliency can be increased. In the surrounding lower areas currently dominated by scattered hemlock regeneration increasing light to the understory will encourage a greater diversity of species recruitment and increase the species diversity of the future forest.
Silviculture Prescription	With a focus on this site of recruiting new age classes, silviculture will primarily rely on group selection openings with species diverse edge retention trees. Opening size will vary by cover, between a third of an acre to two acres in size. In the lowest areas of the white pine – hemlock stand opening sizes may be as small as half an acre and focus on release of existing hemlock regeneration in order to treat those low-lying areas as somewhat of a refuge for a hemlock dominant cover type. Steeper slopes will similarly be treated with intermediate thinning to small openings to reduce soil erosion hazards. In areas with more exposed prominence, larger openings will target the tallest most vulnerable white pine, as well as targeting the areas of dense mountain laurel. This will provide a large amount of light as well as high mechanical disturbance of the mountain laurel in order to provide an opportunity for fast growing shade intolerant tree species to establish before the mountain laurel can recover and impede regeneration. Larger openings on prominent hilltops have also been shown in research to have a higher benefit to migrating bird and insect populations than a similar sized opening on flat or low-lying ground. Across Cornwell Rd the current cover type is similar but contains evidence that it was in red and white pine plantation after the original taking. Remnant red pine will be removed to reduce hazardous conditions created by red pine scale related mortality. Larger openings will be implemented to release the few areas of diverse hardwood regeneration that are already present there. To reduce windthrow potential in abutting private land, openings are not planned in the immediately adjacent area.

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, group selection 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.
Diffuse overstory removal, partial cut, late rotation regeneration related. **(*see page 4, Silvicultural Prescription, intermediate thinning on steeper slopes*)**	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**.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
General/other Climate Change Considerations	With higher severity storms a concern with changing climate emergent white pine will be a focus of this harvest. Similarly, when retained, care will be taken to retain tall white pine in clusters, and away from areas of public use to reduce hazards.

Equipment and Access Constraints and Considerations

Constraint Topic	Description and Considerations
Proposed Equipment requirements	Forwarder will be required to transport wood to landing south of Camel Brook on DCR internal roads.
Proposed wetland or stream crossings	This lot will take advantage of the new bridge across Camel Brook when completed. No temporary stream crossings will be needed, a temporary wetland crossing may be necessary to access areas on the west side of Cornwell Rd.
Further wetland comments	
Vernal Pools	None known.
Access improvements needed	Completion of the Camel Brook bridge is needed.
Other EQ issues	None known.
In-kind Services	None planned.
Other Access Concerns (parking, trails, etc.)	An old skid/cart road used in the previous harvests and kept open by foot traffic will be required to be protected where reuse or crossing is necessary. The cart road being in useable condition to foot traffic at the end of the harvest will be a stipulation of the performance bond.

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
59: Camel Brook	351	11.6	76.2	37
90: West Branch of Swift Mainstem	620	5	150	29

Additional comments on Subwatershed analysis: No comments.

Wildlife and Habitat Observations and Considerations

Wildlife/Habitat	Observations and Considerations
Natural Heritage Priority Habitats?	Yes. There are NHESP priority polygons along the northern section and along the eastern side of this 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	Current browse evidence is well distributed across the proposed area with browsed down hemlock, missing browse preferred regeneration species, and even non preferred species browse present throughout. The areas of extensive mountain laurel may be the result of past higher browse levels which prevented any tree regeneration from establishing and selected for the unpalatable mountain laurel monocultures present today.

Cultural Resources Description and proposed protection measures

Cultural Resource	Description and proposed protection measures
Historical features present; comments regarding protection	
Description of site characteristics in relation to Ancient sites modeling or other verified evidence	Surface stone is a relatively minor component outside of the steeper slopes and ledgey areas. Microtopography is somewhat uneven west of Cornwell road and the southern slopes leading down towards Camel Brook. The low lying areas adjacent to the West Branch of the Swift River have the least microtopography. Slope is variable but the areas of steepest slopes are the ledge areas on the southwest side of the hilltop, and the southeast to east face. If applicable, DWSP will follow the recommendations of DCR's Archeologist regarding protection of sensitive sites.

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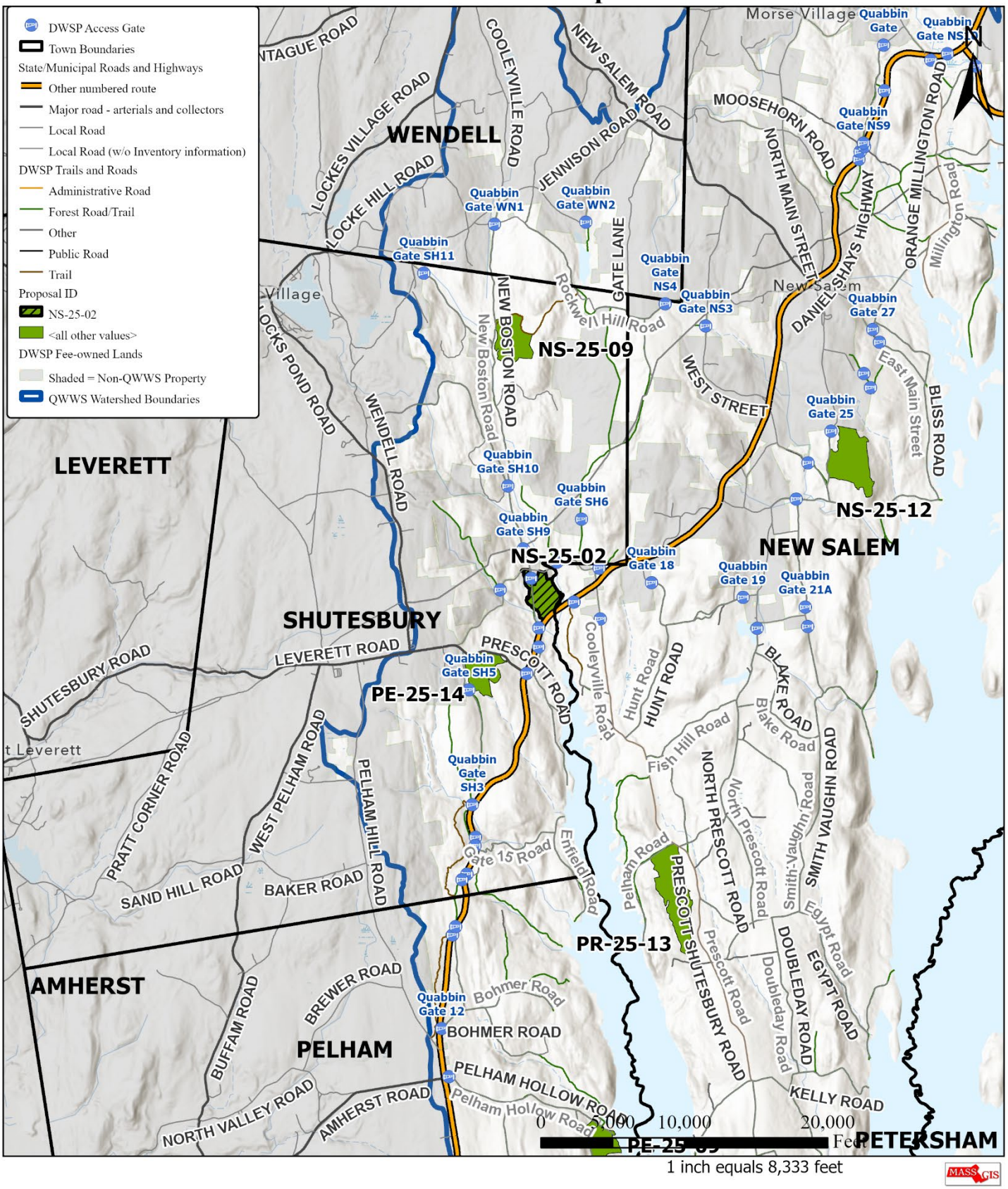
NS-25-02 -- Locus Map



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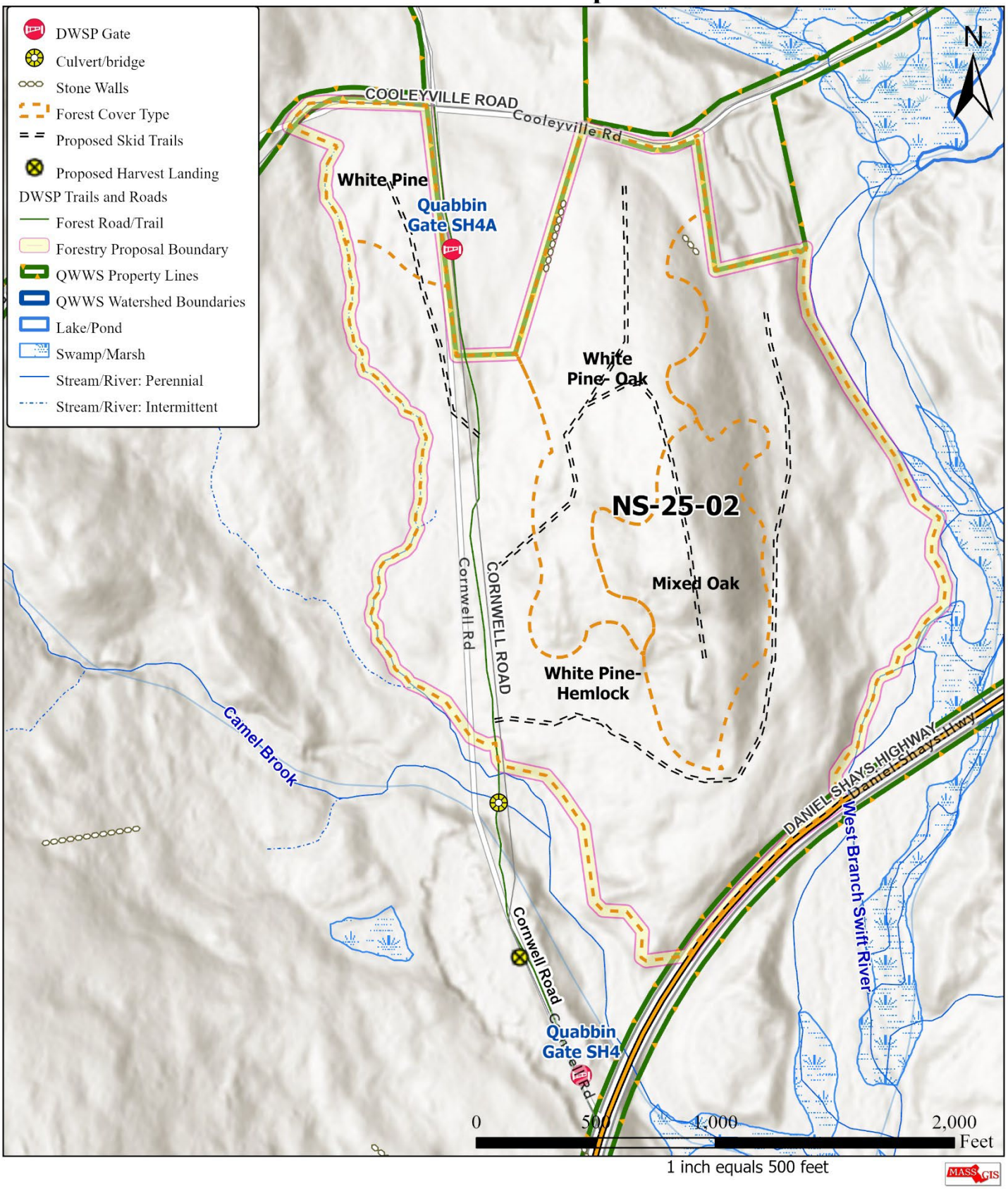
NS-25-02 -- Stand Map



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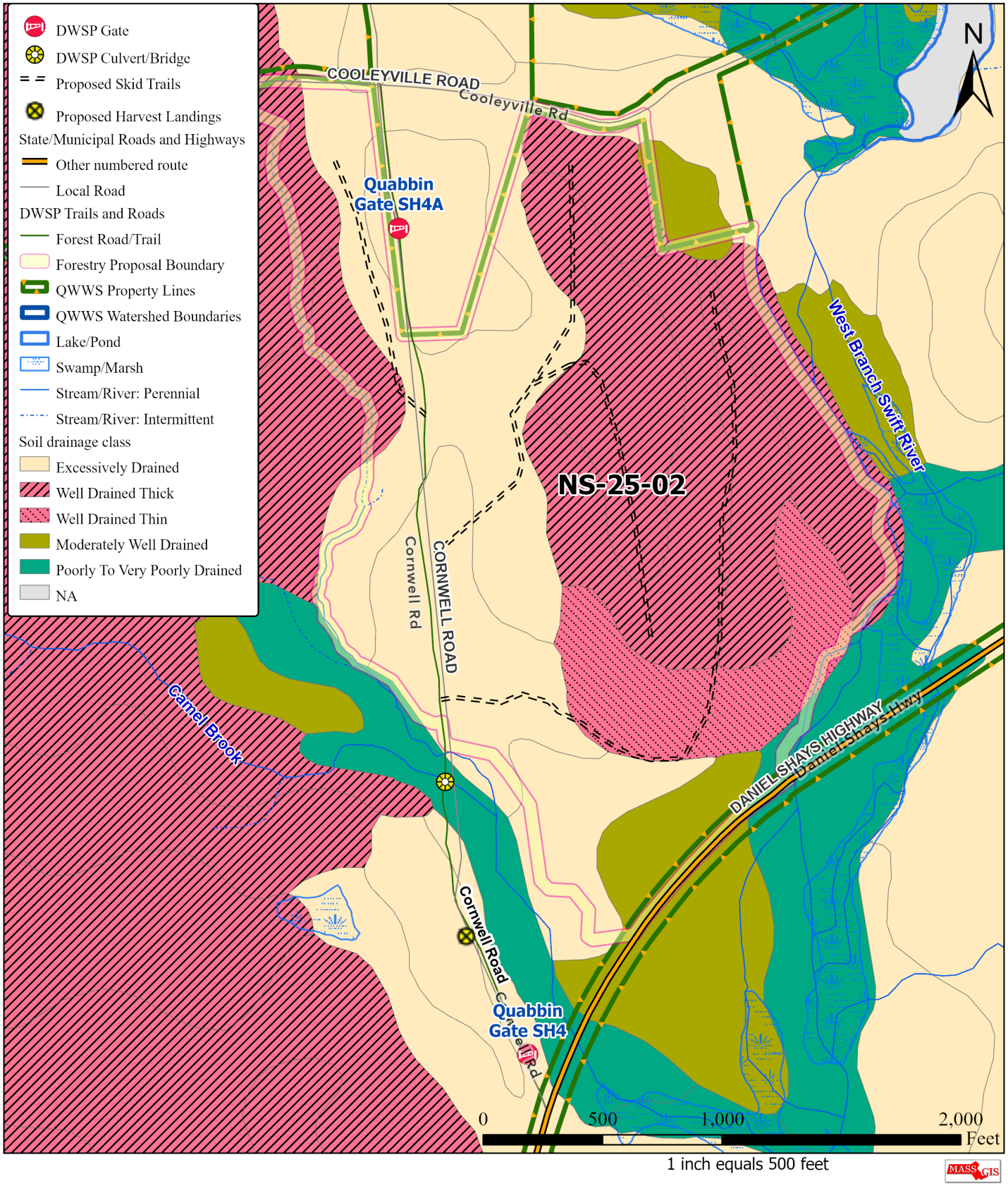
NS-25-02 -- Soil Drainage Class



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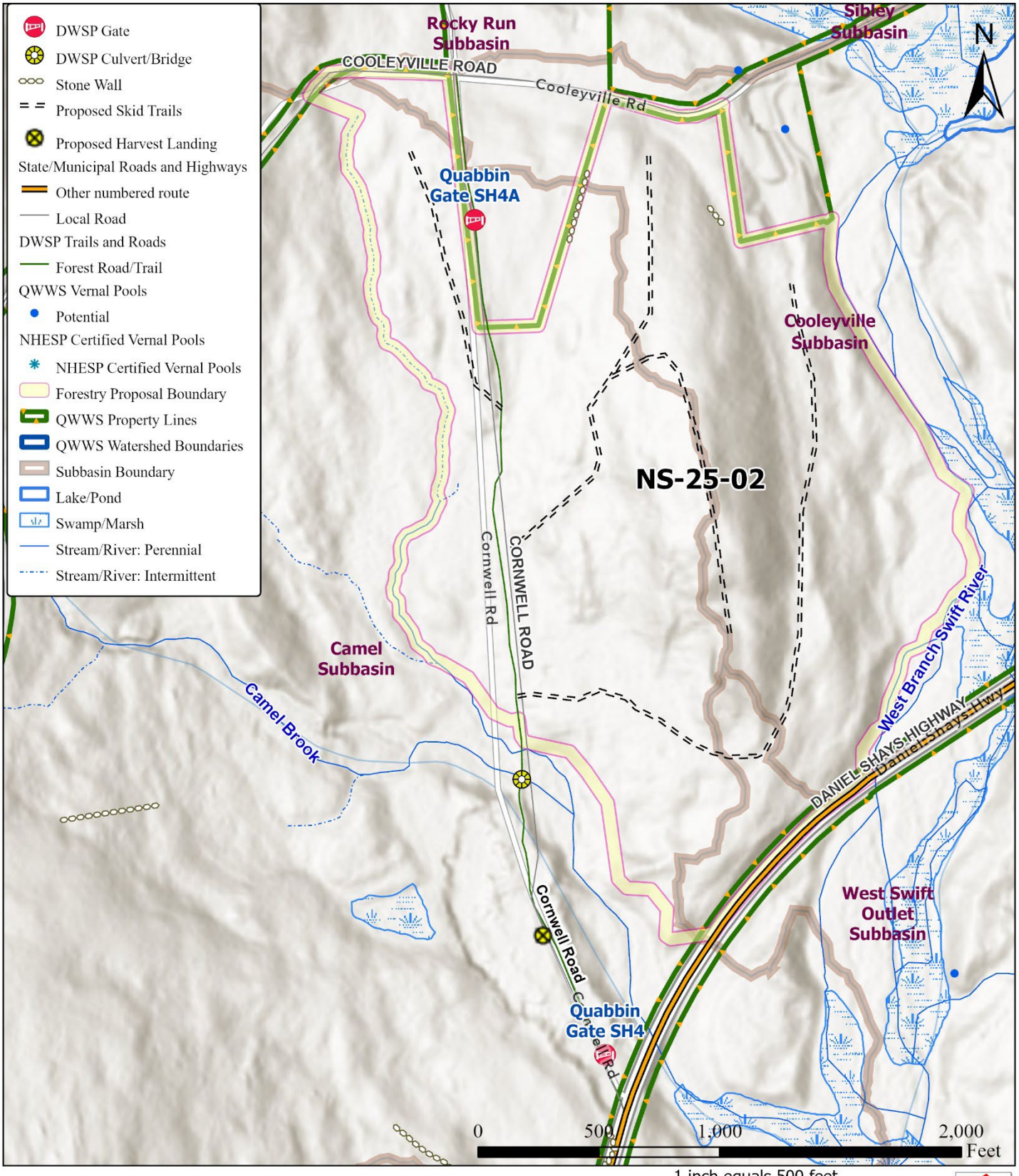
NS-25-02 -- Wetlands and Wildlife Resources



1 inch equals 500 feet

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NS-25-02 -- Cultural Resources and Landscape Characteristics