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-25-12**
Fiscal Year	2025
Watershed	**Quabbin**
Town(s)	**New Salem**
Forester	Helen Johnson
Total Acres	118.7
Block	New Salem
Compartment and/or Working Unit	12
Location and Boundary Description	Bounded to the west by a pair of wetlands just inside Gate 25 and the upper end of South Main Street, to the north by the DCR-DWSP property boundary leading east from Gate 25, to the east by the top of a steep slope, and to the south by the upper of operability between several southward draining intermittent streams.
Previous Proposal?	NS-17-12 and the eastern portion of NS-15-12
Project Goals and Summary Description	This site was chosen for harvesting because of declining forest health, particularly due to hemlock wooly adelgid / hemlock elongate scale, and low age class diversity. The primary goal for this harvest is to improve forest health, resilience, and structural diversity for the continued provision of outstanding quality drinking water. This will be accomplished by removing clusters of trees that are diseased, declining, or have poor stem structure, or where there are seedlings and saplings in need of more growing space, creating openings that provide sufficient light for young trees to survive and thrive. Where declining trees are scattered between openings, they will be removed in order to increase sunlight and nutrients for healthier adjacent trees. This process, known as thinning, is comparable to thinning a vegetable garden. The overall result will be a diverse, vigorous, climate-resilient forest that provides carbon storage and sequestration, and can recover, survive and thrive in the face of increasing rates and severity of disturbances. An additional goal is removal of hazard trees along South Main Street, for the safety of walkers and hikers on that road. The harvest boundary was drawn to exclude the two wetlands to the east, which function as vernal pools. Two additional vernal pools are located near the west boundary, and at the upper end of one of the intermittent streams that drains to the south. Harvesting near all of those vernal pools and throughout the intermittent stream valleys to the south will be limited in order to protect the soils, streams, and plant and wildlife communities in these areas.

Forest Cover Types and Acreages

Overstory Forest Types	Acres
Hemlock-hardwood	54.4
Northern red oak	37.1
Oak, mixed - dry site	23.3
White pine-hemlock	3.9

Understory Cover Types and Relative Importance

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

Forest Vegetation Description

Vegetation Topic	Description
General Description, Forest Composition, Stand History, and Harvest History	Oaks are the dominant overstory species across all stand types except white pine-hemlock, with red oak most common on the higher slopes and to the north, transitioning to mixed oaks (red, black, white and chestnut) as elevation decreases. Associated hardwoods include hickory, red maple, black and paper birch and white ash, mostly in the pole and small sawtimber size classes. Hemlock is most common around the vernal pools near Gate 25 and along the intermittent streams. White pine is most common in the southeast corner of the proposal, but occurs as occasional emergents throughout the area. Forest health is fair to poor, with the hemlocks particularly under attack by hemlock wooly adelgid and/or hemlock elongate scale. Hemlock form is widely variable, ranging from very good to very bad, but the crowns are universally thin and weak, indicating poor health and low vigor, and many are dead or have snapped or uprooted. Nectria canker is present and sometimes severe on black birch. Oak mortality due to spongy moth is present, but not widespread. Understory species include mountain laurel, particularly near wetlands; lowbush blueberry, especially on high ridges; clubmoss, partridgeberry, and wintergreen; and wetland transition species such as cinnamon fern, New York fern and highbush blueberry near the wetlands and intermittent streams. Ebony spleenwort, an uncommon fern, is present in the rugged stream channels to the south.

Vegetation Topic	Description
Advance Regeneration description	White pine seedlings and saplings with poor vigor are present but patchy through the proposal area. Black birch seedlings and saplings are also common, especially in small openings created by past harvests and overstory mortality. Red maple stump sprouts are present but less dominant than black birch and often show signs of browse. Hemlock regeneration is spotty, located mostly in old skid roads, and in most cases has been heavily browsed by moose and/or porcupine. Oak saplings are present, particularly near the access road, but generally uncommon.
Terrestrial Invasive Plants description	Occasional Japanese barberry is present in the intermittent stream channels and around the wetlands near South Main Street.

Description of Wetland Resources Present

Resource Type	Description of resources present
Wetlands	A tiny (1/10 acre) wetland is near the top of the ridge on the east side of the proposal. The proposal boundary has been drawn to exclude two wetlands just south of Gate 25 and east of South Main Street. All three of these wetlands are verified vernal pools.
Streams	An intermittent stream flows between the two wetlands near South Main Street and then south through the west portion of the proposal area. This is the only stream that will need to be crossed. Another intermittent stream flows east out of the wetland near the east boundary. Four intermittent streams drain southwards through the southern portion of the proposal area. Harvesting will be minimal in this area due to variable width filter strips in these steep-sided valleys.
Vernal pools	There are two verified vernal pools within the proposal area: pool 913 just inside the west boundary, and pool 903 near the upper end of one of the intermittent streams draining to the south. The two wetlands south of Gate 25 along South Main Street are verified vernal pools 780 and 826. The proposal boundary has been drawn to exclude the 100 shade zone for these pools. All four of these pools will be protected by a 100 foot shade zone and 200 foot low ground disturbance zone as required under the 2017 DWSP Land Management Plan, with the caveat that the combination of difficult terrain and wetland resources make it necessary to use the existing skid road just south of pool 826 as the primary access to this harvest. In order to minimize obstructions to salamander migration, if the harvest takes place during breeding season ruts in that skid road will be smoothed daily to ≤6 inches in the approximately 110 feet that pass through the low ground disturbance zone. DWSP wildlife biologists have previously reviewed this situation and approved use of the skid road in order to avoid the additional wetland or stream crossing(s), soil compaction, and risk of erosion and sedimentation that would result from access via other routes.
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	57	Chatfield Hollis Complex, rocky; Hollis-Chatfield complex, very rocky
Well-drained thick	43	Canton-Chatfield-Hollis complex, rocky; Montauk fine sandy loam, very stony
Moderately well-drained	0	
Poorly to very poorly drained	0	

Proposed Silvicultural Activities

Topic	Description
Site Selection and Silvicultural Objectives	This site was chosen for harvesting because of declining forest health, particularly due to hemlock wooly adelgid / hemlock elongate scale, and low age class diversity. The primary goal for this harvest is to initiate a new age class through group selection. Secondary goals include forest stand improvement through intermediate treatments between groups, and removal of hazard trees along South Main Street for the safety of walkers and hikers on that road.
Silviculture Prescription	Openings of up to two acres each totaling up to 31 acres will be located where there are clusters of trees that are diseased, declining, or have poor stem structure, and where there is viable advance regeneration in need of release. Declining hemlocks and nectria-infected black birch will be top priorities for removal; however, the healthiest individuals of all species will be retained. High quality red oak will be favored for retention, as will species that are uncommon locally or regionally, such as white oak, chestnut oak and hickories. Where declining trees are scattered between groups, they will be cut in order to increase sunlight and nutrients for healthier adjacent trees. Trees on the perimeter of openings will have large, healthy crowns (hence strong seed bearing potential), stable stem structure, and will be either vertical or leaning away from the openings so that they will not damage regeneration in the opening if they fall or are cut in the future. Thinning around openings will improve the vigor and seed production of perimeter trees, and will make them more windfirm after a few years. Cutting of all mountain laurel and trees under 6" dbh (TSI) will be required in openings, except for healthy oak and hickory seedlings and saplings, which will be flagged for retention. In 90% of openings over 0.5 acres, 5-10 ft^2 of basal area will be retained unless no longer required by DWSP. Harvesting will be limited in the stream valleys to the south, where steep terrain and variable width filter strips limit operability and options for regeneration. Prior to marking this area will be surveyed for Ebony spleenwort in order to ensure its protection during the harvest and beyond.

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, patch openings on up to 31 acres total*)**	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, thinning around and between patch openings*)**	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

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
General/other Climate Change Considerations	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: **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.

Proposed Activity	Alignment of Activity with Climate Oriented Strategies and Recommendations
General/other Climate Change Considerations	○ 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. **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	None
Proposed wetland or stream crossings	The intermittent stream flowing out of the south wetland will be crossed a little over 200 feet downstream from the wetland.
Further wetland comments	None
Vernal Pools	Approximately 110 feet of the primary skid road passes through the low ground disturbance zone for verified vernal pool 826. In order to prevent obstructions to salamander migration, ruts in this section will be smoothed daily to ≤6 inches if the harvest takes place during the breeding season (see Wetland Resources section for more information).
Access improvements needed	South Main Street (Gate 25 access road) tends to suffer from erosion on the hill south of the lot, and may need grading prior to or during the harvest.
Other EQ issues	None
In-kind Services	TSI, including cutting mountain laurel, will be required in groups. Restoration of the DCR access road to its original condition will be required between Gate 25 and the landing.

Constraint Topic	Description and Considerations
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
78/Hop Brook	1496.8	5.0	369.2	58.3
91/Hop Brook North	274.3	0.0	68.6	36

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
Rare Natural Communities:	None known
General Wildlife Comments	Browse is a concern due to plentiful deer sign (tracks, scat, rubs and browse). Hemlock browse by porcupines and/or moose has also been observed, although moose tracks and scat are not plentiful. Protection and enhancement of wildlife habitat features will be an integral part of the silviculture and job layout for this proposal. Diverse mast-bearing species will be retained and the healthiest trees will be released to improve seed production, which will benefit wildlife directly as well as promoting regeneration. Large diameter snags, logs, and current and potential den trees will be retained wherever possible, as will potential nest trees (i.e. those with 3-way forks or similar canopy structures). No stick nests have been observed in this location, but if found they will be protected. Streams and wetlands will be protected for water quality as well as for wildlife. Vernal pools will be protected as described above and in the 2017 Land Management Plan.

Cultural Resources Description and proposed protection measures

Cultural Resource	Description and proposed protection measures
Historical features present; comments regarding protection	There are “thrown” stone walls along the access road and along the south boundary of the lot. In the middle of the lot there is a small shallow pit with a short rock-lined trench running downhill. Both are dry, but suggestive of a shallow well, possibly once used for watering livestock. Although this area is very dry now, the water table would have been higher when the area was cleared in the mid-1800s. Near the top of one of the intermittent streams there are numerous small human-made rock piles that appear to be arranged in a zig-zag pattern. One such pile was found near another stream. No logging will take place in these areas. The above cultural features, and any others that are located before or during the harvest, will be flagged, avoided and protected, consistent with the guidelines set forth in the 2017 DWSP Land Management Plan.
Description of site characteristics in relation to Ancient sites modeling or other verified evidence	Surface stone is prevalent in the stream valleys to the south, but not within the proposal area. Microtopography is not significant. Terrain is highly variable, with slopes <7% occurring in small areas near the top of the drainages. During the review of the previous proposal with the same footprint, the DCR Archeologist identified this area as Potentially Sensitive, with these recommendations: • minimize soil compaction and disturbance through the use of appropriate BMP’s, • protect forwarding/skid roads with slash when possible, and • flag, map and avoid any previously unknown cultural resources that may be located. DWSP will follow those recommendations, and any additional recommendations from DCR's Archeologist regarding protection of sensitive sites.

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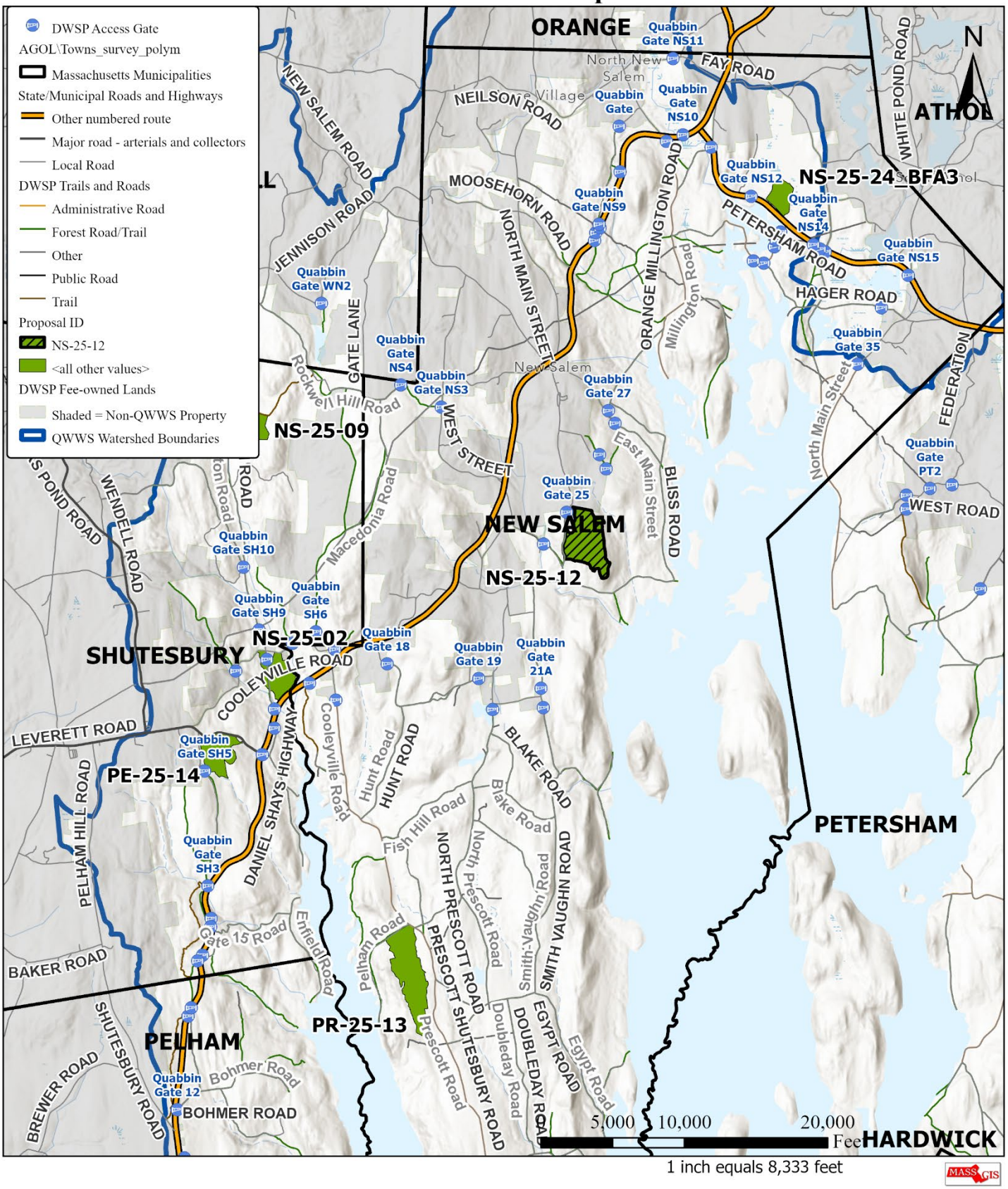
Office of Watershed Management

NS-25-12 -- Locus Map



1 inch equals 8,333 feet

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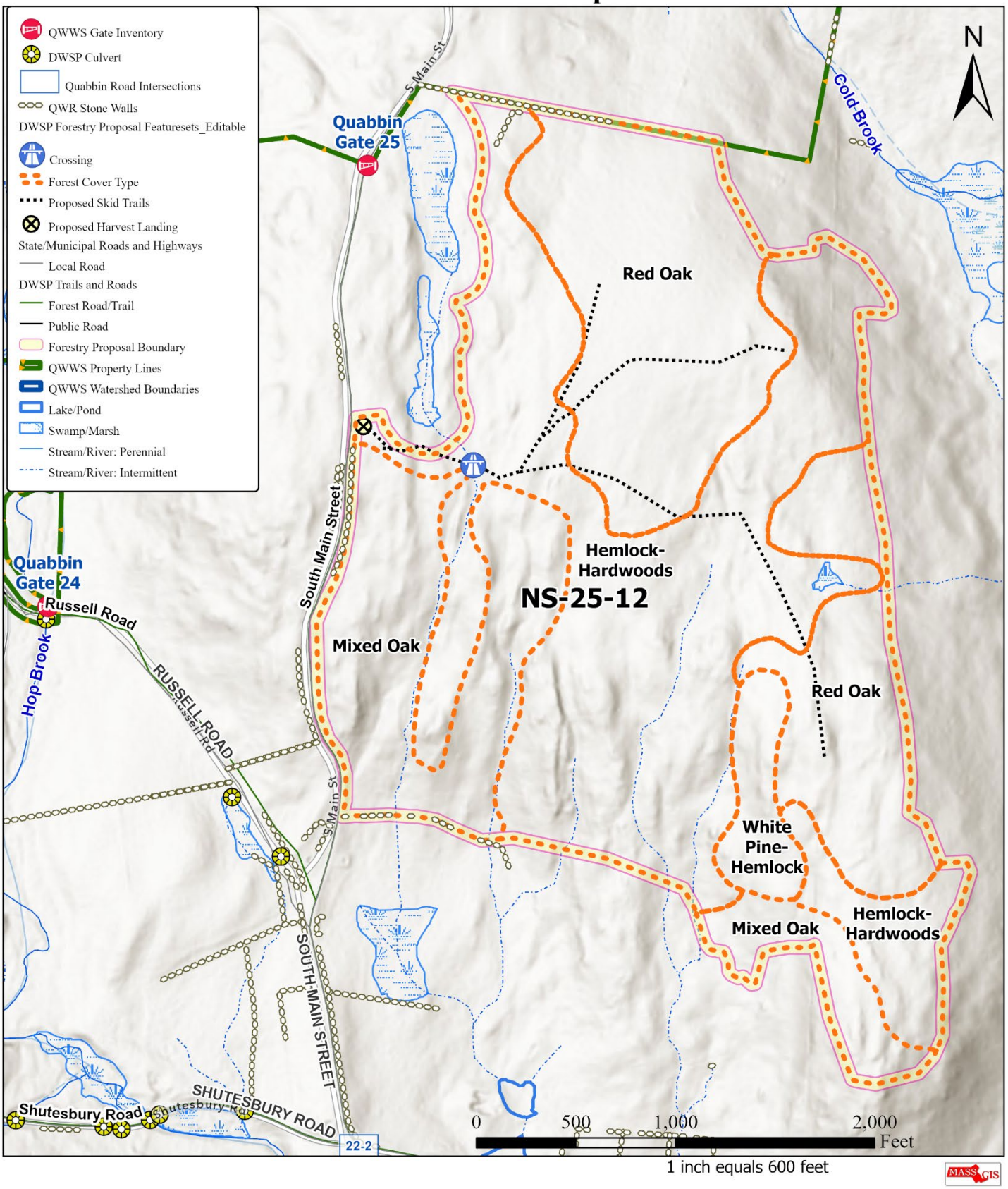
NS-25-12 -- Stand Map



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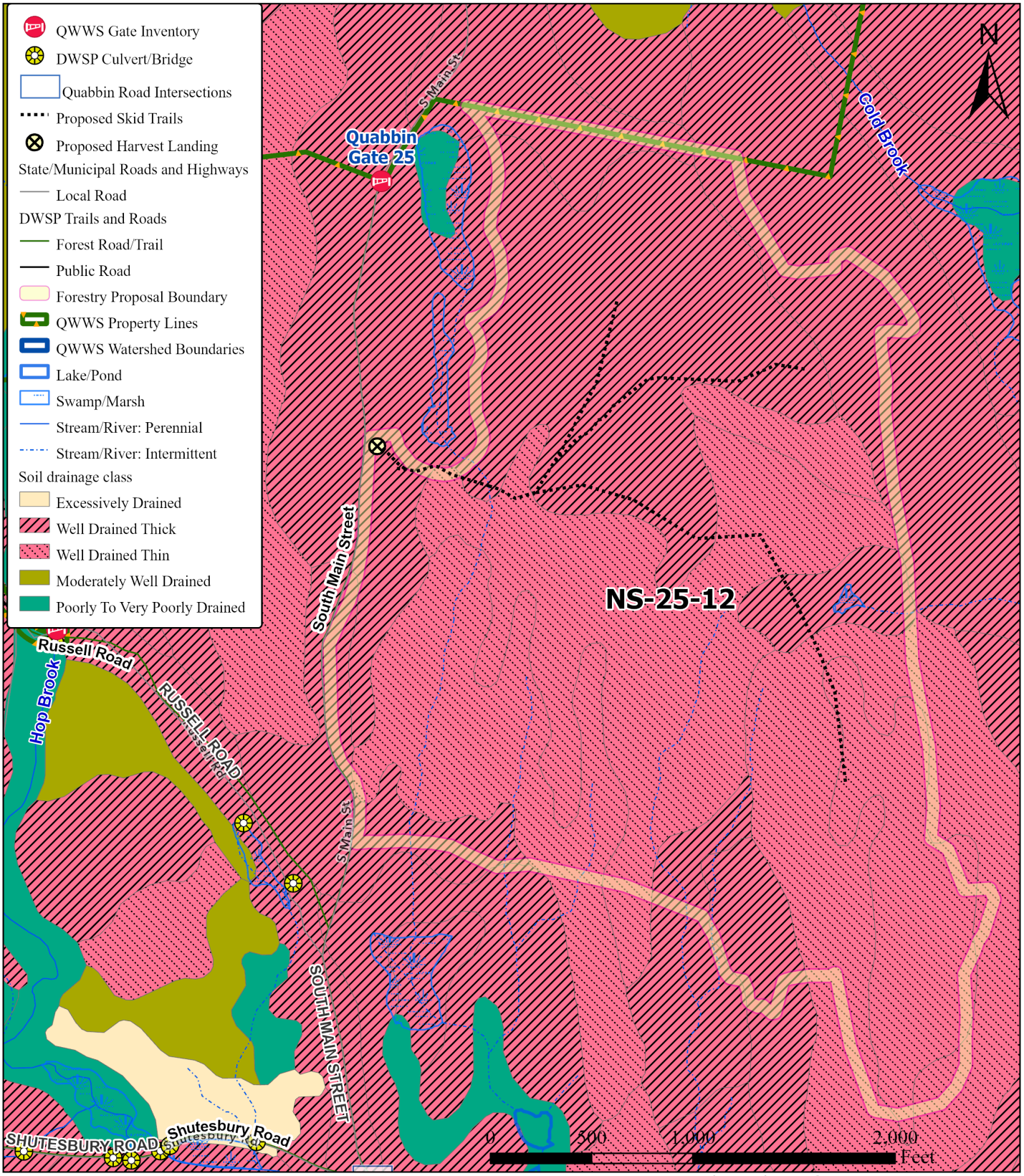
NS-25-12 -- Soil Drainage Class



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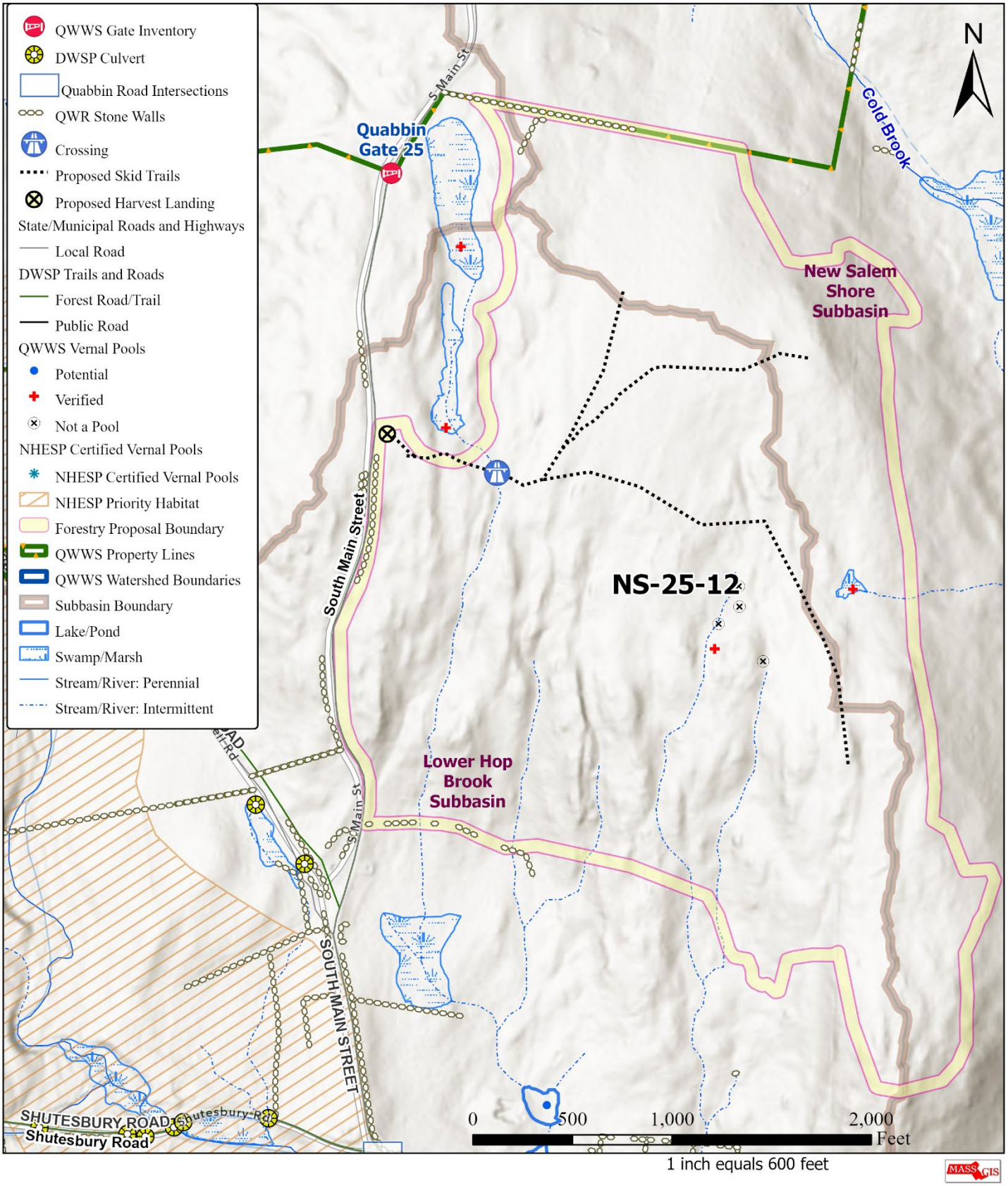
NS-25-12 -- Wetlands and Wildlife Resources



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NS-25-12 -- Cultural Resources and Landscape Characteristics