# Massachusetts Department of Conservation and Recreation
# Bureau of ForestFire Control and Forestry
# Forest Management Proposal
# Name: Shutesbury State Forest – North

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| **Date Posted:** | **February 9, 2018** |
| **End of Comment Period:** | **March 26, 2018** |

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| **Region:** | Central |
| **Recreation District:** | **Central Highlands** |
| **Forest Management District:** | **Eastern CT Valley** |
| **State Forest:** | **Shutesbury State Forest** |
| **Closest Road:** | **Macedonia Road** |
| **Town** | **Shutesbury** |


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**Overview:**

Shutesbury State Forest is comprised of approximately 780 acres of forest land within the towns of Shutesbury and New Salem. This particular state forest complex is separated into 4 parcels, with the largest being located in the northeast corner of Shutesbury, measuring approximately 590 acres. This forest management proposal will focus on the northern most portion of this 590 acre parcel and will encompass approximately 253 acres.

Despite having little records of previous forest management activities, it is evident that some form of forest management has taken place across select portions of this project area.

This site was selected for forest management for the following reasons:

- Predominantly even aged forest conditions persist throughout the selected area, providing limited structural complexity.
- Moderate presence of declining Eastern hemlock (*Tsuga canadensis*) in the overstory.
- Stagnated growth due to high stocking levels.
- Presence of advanced regeneration.
- Opportunity for infrastructure improvements within the state forest complex.
- Minimal presence of invasive species.

## Forest Management Goals

As stated in the DCR "Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines" document, this particular portion of Shutesbury State Forest falls under a woodland designation, which is defined as a "forested area actively managed for forest health, resource protection, sustainable production of timber and recreation." In accordance with the management objectives set forth in the above mentioned document, this forest management project intends to:

- Increase structural complexity
- Stimulate residual forest growth
- Enhance conditions for the establishment of native regeneration
- Diversify age classes throughout the project area
- Provide locally sourced sustainable forest products
- Manage carbon stocks of forest overstory and regenerating young forest.
- Improve forest infrastructure with the use of in kind services

## Site Information

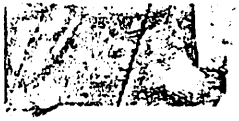
### Forest Composition:

The following stand descriptions are based on observations in the field, as well as information obtained from an array of datalayers in ArcGIS and are subject to change as more information is obtained through a formal inventory of the area.

This site is dominated by a mix of different forest types commonly found throughout the region. The major forest types present include hemlock-hardwoods, oak-hardwoods, white pine-hemlock, and white pine-hardwoods, along with the presence of deciduous vegetated wetlands.

A 1936 forest type map of this area indicates much of the project area as being approximately 50 years in age at the time of the forest survey and consisting of three dominant stand types; including hardwoods, hemlock, and white pine. Species associated with the hardwood type included a mix of red maple (*Acer rubrum*), black birch (*Betula lenta*), sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), white ash (*Fraxinus americana)*, white oak (*Quercus alba*), black cherry (*Prunus serotina*), chestnut oak (*Quercus prinus*), paper birch (*Betula papyrifera*), American chestnut (*Castanea dentata*), and grey birch (*Betula populifolia*), along with inclusions of Eastern hemlock and white pine (*Pinus strobus*). Hemlock was the predominant species indicated throughout the hemlock stand, with other species presentbeing listed as yellow birch (*Betula alleghaniensis*), American beech (*Fagus grandifolia*), white pine, red maple, white ash, red oak, and black birch. In 1936, the white pine stand was dominated primarily by white pine with inclusions of red maple, hemlock, black birch, yellow birch, paper birch and ash. This stand map also indicated the presence of natural regeneration throughout the project area, including white pine, hemlock, and a mix of deciduous hardwood species. The most northern section of the project area was under-planted with white pine sometime around the mid 1930's.

Current stand conditions are as expected nearly 85 years later, considering little management has taken place throughout the majority of the site. The forest composition is similar as to the



descriptions provided in the 1936 forest stand map, with the exception of the trees subject to insects and disease, such as American chestnut, and the shorter lived pioneer species, such as paper and grey birch. Hemlock, white pine, and red oak currently account for the majority of the overstory, with occurrences of white ash, red maple, black birch, black cherry, sugar maple, and yellow birch. Much of the overstory is a single aged mature forest, with the predominant age at approximately 130 years. Canopy cover is nearing 100% through the entire project area, with the exception of some isolated locations where individual natural mortality has occurred. According to an aerial forest inventory completed for the department in 2003, the majority of the project area is classified as bring comprised of predominantly small to large sawtimber sized trees with medium to high stocking levels.

**Topography:**

A prominent west/southwest facing slope persists across much of the project area. The highest elevation is located at the northeast corner and is estimated at approximately 1,150 feet. The lowest point within the project area is located along the banks of a tributary to the west branch of the Swift River and is estimated at approximately 770 feet. According the most recent USGS topographical quadrangle, the maximum slope appears to be located in the most northern portion of the project area and is estimated at approximately 25%.

**Soils:**

Soil types present include Swansea muck, Ridgebury fine sandy loam, Chatfield-Hollis Complex, Canton-Chatfield-Hollis complex, Millsite-Chichester complex, Millsite-Woodstock Complex, Montauk fine sandy loam, Scituate fine sandy loam, Henniker sandy loam, and Metacomet fine sandy loam. The majority of the soils present (covering approximately 86% of proposed harvest area) are described by the NRCS soil survey to be "moderately" or "well" suited for timber harvest operability. All of the above listed soils are classified as well drained or moderately well drained, with the exception of Swansea muck (very poorly drained) and Ridgebury fine sandy loam (poorly drained).

**Aesthetic, Recreation, Wetlands, Cultural, Rare Species and Wildlife Considerations:**

**Aesthetic**:

This project area is unique in the sense that it is completely surrounded by land owned and managed by the DCR Division of Water Supply Protection (DWSP). The only access to this property is through locked gates maintained by DWSP and is not accessible by vehicle to the general public. The forest roads which will be utilized for access are not currently publicly maintained therefore no aesthetic buffers are required. The forest road located directly to the north of the proposed project area is designated as a section of the New England Scenic Trail (NET). The entire length of the NET which borders this proposed site is estimated at approximately 1,500 feet and is located along the northern edge of the proposed harvest area. As stated in the DCR Landscape Designations for DCR Parks & Forest: Selection Criteria and Management Guidelines document, buffers along national or significant trails will be established with the coordination of the Appalachian Mountain

Club; a minimum 50' buffer will be implemented along this section of the trail. Any and all slash created as a result of forest management operations will be disposed of in compliance with current Massachusetts slash laws. If leave tree marking is utilized within 50' of existing forest roads only one side of the tree shall be marked to minimize visibility of paint on residual trees.

**Recreation:**

This portion of Shutesbury State Forest is fairly isolated and appears to see minimal recreation off of the existing road network. In accordance with guidelines set forth in the DCR Landscape Designations document and a Memorandum of Understanding (MOU) DCR currently holds with the AMC, a minimum 50' aesthetic buffer will be implemented along the NET corridor. AMC will be contacted to discuss possible impacts to the trail; including the appropriate level of protection required as well as the possibility of temporary trail closures and rerouting options.

Outside of the presence of the NET, there are no designated trails which run through the project area. Hunting is permitted during designated seasons, along with other forms of passive recreation such as hiking, birding, and cross country skiing. Shutesbury State Forest, in its entirety, is off limits to snowmobile use.

**Wetlands and Water Resources:**

Several wetland resources are contained within or are in close proximity to the proposed project area, including a fairly prominent stream and tributary to the west branch of the Swift River, several wet seeps, multiple streams (both intermittent and perennial), as well as vegetated wetlands. Currently, the Massachusetts Department of Environmental Protection data indicates two small vegetated wetlands being located within the project area encompassing less than two acres combined. The most recent USGS topographical quadrangle indicates two streams located in the south portion of the project area, which flow in a westerly direction eventually reaching the above described stream. Any additional wetland resources within the project area will be identified, mapped, and protected in accordance with the most recent forestry BMP's.

This project area lies within the Chicopee River watershed and is located approximately 2.5 miles upstream from the Quabbin Reservoir. The project area tributaries (perennial streams) contribute to the designated "Outstanding Resource Waters" of the Quabbin Reservoir and therefore will be protected per regulations in MGL 132. Any harvesting operations which impact wetland resources, such as stream and wetland crossings will comply with current Massachusetts BMP's in regards to forest management.

**Cultural Resources:**

During preliminary field reconnaissance, several stone walls were identified and located within the proposed project area. The 1936 forest stand maps indicate the presence of a cellar hole located along the road in the southern portion of the project as well as a small network of old roads throughout the forest. Aside from the above mentioned stone walls and cellar hole, no cultural

resources have been identified within the project area at this time. All historical and cultural resources identified during future site work will be located using GPS and indicated on harvest maps accordingly. All identified sites will be protected from disturbance when and where possible.

**Rare and Endangered Species:**

According to the most recent Natural Heritage and Endangered Species Program (NHESP) layer available at www.mass.gov/mgis, there are currently no areas indicated as primary or estimated habitat within the limits of this proposed project. The nearest area identified as primary habitat lies just over a mile to the south and is associated with the west branch of the Swift River. With a fairly prominent tributary to this stream network crossing through a portion of the proposed project area it is possible for harvesting operations to have an impact on habitats located downstream. This proposal will be subject to a preliminary review by NHESP, who will make recommendations pertaining to potential impacts to sensitive downstream habitats.

**Wildlife:**

Minimal sign of wildlife was observed during the early phases of reconnaissance including visual evidence of deer, squirrels, chipmunks, pileated woodpecker, and wild turkey. Despite deer presence observed and the potential for moose presence, the current state of regeneration is adequate and minimal browsing damage was observed at this time. In accordance to provisions set forth in DCR's Management Guidelines document, the following wildlife habitat considerations will be implemented:

- Retention of at least 1 to 3 large diameter trees (where possible >18" dbh) and 4 live 10"-12" dbh trees per acre that have the potential to serve as cavity and den trees and future snags.
- Retention of all dead snags and stubs in harvest area as safe operating conditions allow.
- Retention of on average one of the oldest, largest diameter, well-formed dominant trees (where possible > 18" dbh) per acre in harvest area to serve as legacy trees.
- Maintain a minimum of 2 cords (256 cubic feet) per acre of coarse woody material within the harvest area

**Sale Layout and Harvesting Limitations:**

Skid roads and landings will be strategically placed in order to minimize soil compaction and erosion potential throughout the harvest areas. Where necessary, erosion mitigation strategies such as water bars, hay bale installation and seeding of disturbed areas will be implemented. All stream crossings, buffers and filter strips will be consistent with the most current Massachusetts BMP manual and will be in compliance with M.G.L. 132. Some in-kind services are to be expected as the project progresses, these may include road maintenance, gate installation, among other infrastructure improvements within Shutesbury State Forest. Road upgrades will be required in order to access portions of this state forest, these improvements will include the installation of stone and gravel along with roadside vegetation removal. Road improvements will be done in collaboration with DWSP staff.

All truck roads will be returned to their prior state, or improved upon during harvesting operations. Landings and skid roads will be graded and seeded where deemed appropriate by the DCR forester. All hiking trails impacted by harvesting operations will be returned to prior conditions, i.e. cleared of slash, graded, and properly marked.

Due to the proximity to the Quabbin Reservoir and being associated with the Outstanding Resource Waters of the Quabbin Reservoir, variable width filter strips will be implemented along all perennial and intermittent streams within the project area. The larger perennial stream located on the western edge of the project area (tributary to the west branch of the Swift River) will be buffered by a variable width filter strip which will maintain a minimum distance of 150' from the stream banks.

**Silviculture:**

Silvicultural treatments will coincide with the management guidelines set forth in DCR's Management Guidelines document. Current stand conditions and forest management goals lend themselves to the implementation of an irregular shelterwood system. Small openings in the canopy will be created in a mosaic across the project area. These openings will vary in size (not to exceed ½ acre individually), be irregularly shaped and are intended to regenerate no more than 20% of the total area proposed. Additionally, thinning will be implemented between the newly created openings with the intent of increasing residual tree growth rates as well as removing poorly formed and high risk individuals. Residual stocking of the forest overstory will vary through the areas subject to single tree selection but will maintain a minimum of 80 square feet per acre.

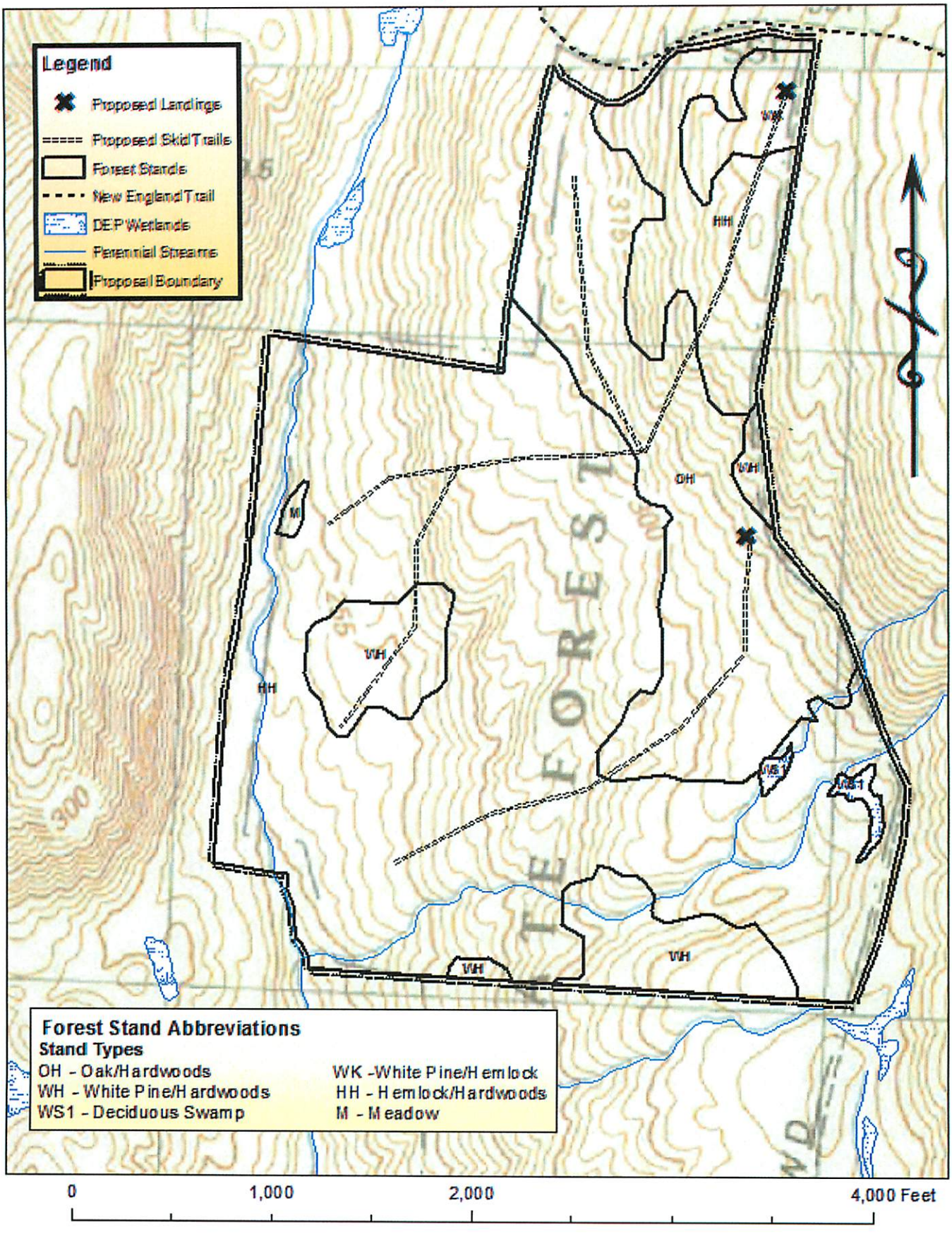
The primary objective of implementing variably sized openings is to establish a new cohort of an array of tree species throughout the project area. Whereas, the thinning operation will be utilized to stimulate residual tree growth, remove poorly formed high risk individuals, and allow for increase light levels into openings where thinning occurs in close proximity. Smaller openings, 0.1 acre to 0.3 acre, will favor the growth of shade tolerant to mid tolerant species. While 0.5 acre openings with thinned edges will allow for the establishment of a wider variety as well as an increased abundance of mid tolerant and intolerant species.

Future entries will focus on expanding upon openings in 20 year intervals, resulting is five cohorts over a 100 year period. Reserve and legacy trees will be retained throughout the multiple entries in order to further stratify age classes across the project area.

1 inch = 600 feet

Shutesbury State Forest - North
Forest Management Proposal

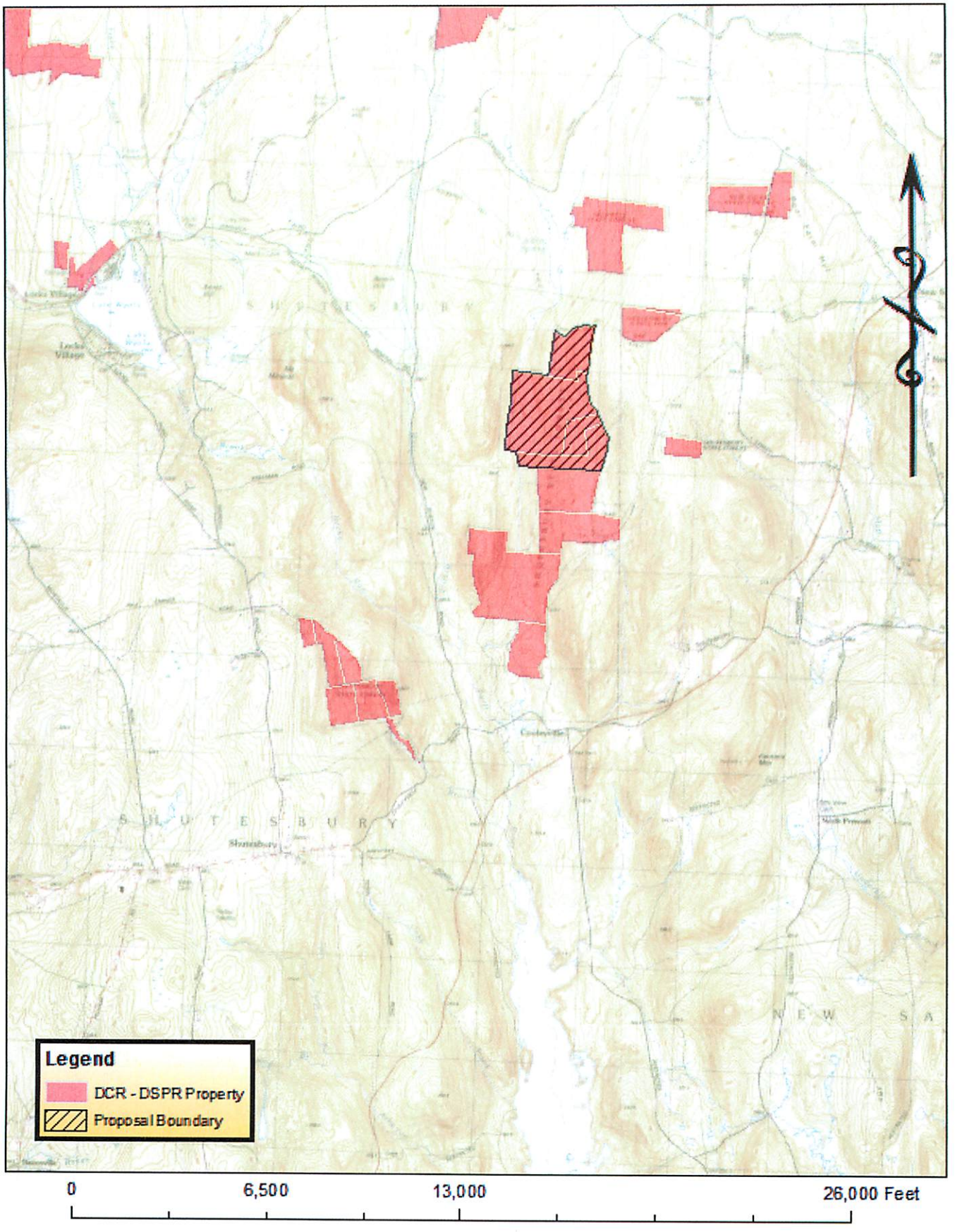
December 2017



1 inch = 4,000 feet

Shutesbury State Forest- North
Locus Map

December 2017



**District Forester:** _____ **Date:** 1/12/2018

**Field Operations Team Leader**
**Or Park Supervisor:** _____ **Date:** 1/11/2018

~~**Regional Director:**~~ District Manager _____ **Date:** 1/10/2018

**Management Forestry**
**Program Supervisor:** _____ **Date:** 1/12/2018

Attached: Topographic map showing project details. Locus map showing project location within regional context.