Massachusetts Department of Conservation and Recreation
Bureau of Forest Fire Control and Forestry
Forest Management Proposal
Name: Bristol Lot

Date Posted:	**February 16, 2017**
End of Comment Period:	**April 2, 2017**

Region:	**South**
Recreation District:	**South Coast.**
Forest Management District:	**Southeast**
State Forest:	**F. Gilbert Hills State Forest**
Closest Road:	**High Rock Road**
Town	**Wrentham**

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Overview

The F. Gilbert Hills State Forest was selected for a forest management project in order to increase oak regeneration in oak stands in the northwest portion of the state forest. Despite the widespread occurrence of oak forest types across Massachusetts, oak regeneration is being replaced by other hardwood species. This conversion not only reduces the diversity of our forests, but many wildlife species rely on oak species for their subsistence and survival.

The area was selected for forest management at this time because:

- The lack of oak regeneration in oak dominated forest stands;
- To increase age class diversity and structural complexity;
- Access to the proposed project area is excellent; and
- This project offers an opportunity to demonstrate and fulfill an ecosystem services approach to forest management on DCR Woodlands.

The Bristol Lot Forest Management Project endeavors to:

- Demonstrate a two-age silvicultural system - shelterwood with reserves;
- Sustain regeneration of oak species through the use of prescribed fire;
- Demonstrate harvesting techniques and best management practices that protect and enhance forest productivity, soil, and water resources; and
- Create and provide ecosystem services from this Woodland as directed by the Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines (2012).
    - Provide locally grown forest products to the local economy
    - Create a more diverse forest structure that is resilient to disturbance

- Sequester carbon in retained overstory trees, permanent forest products produced from the harvest, and in the vigorous regenerating forest.
- Provide the conditions for early seral or regenerating forest that will support diverse species.

Project Area Description

Stand Information: The proposed area is within a section of the state forest that was purchased in 1995 from the Foxboro Company. It is an even-aged stand. The proposed area consists of 42 acres mainly comprised of sawlog and pole size red oak and mixed oak forest types. Red oak is more prevalent on the eastern side of the project area. Throughout the project area the dominate tree species are northern red oak (*Quercus rubra*), white oak (*Quercus alba*), black oak (*Quercus velutina*), and red maple (*Acer rubrum*). Hickory (*Carya* sp.), eastern white pine (*Pinus strobus*), American beech (*Fagus grandifolia*), and black birch (*Betula lenta*) were also present to a lesser degree. The understory consists of low amounts of white pine, red maple, and hickory. The project area ranges in age from approximately 85 to 100 years old. On average, overstory trees are sawtimber in size with medium to high densities.

The DCR Management Guidelines state that forest stands will be classed and considered for silvicultural treatments that generally fit their productivity, structural complexity (or potential thereof) and diversity. An analysis of the Bristol Lot site history (land use; agriculture/logging) and conditions (soil types, productivity; vegetation cover) suggests a medium to medium-high level of complexity. This implies that the site is suited for both even-aged management and uneven-aged management. With the site being comprised of mostly oak species, which tend to be intolerant of shade during the regeneration phase, an even-age regeneration method, shelterwood, was selected.

Topography: The project area is located in the town of Wrentham with the town boundary being the eastern boundary of the project. High Rock Road is the northwest edge of the project and then splits the project area to the south. The highest portion of the project area is approximately 390 feet in elevation at its southeastern corner. The slope is mostly gentle with steeper slopes slanting towards Route 1.

Soil: Three soils types comprise the project area: Paxton fine sandy loam and Hollis-Rock outcrop-Charlton complex, and Charlton-Hollis-Rock outcrop complex. All are well drained soils derived from glacial till. The Paxton soil type varies in the degree of stoniness.

Previous Silvicultural Treatments: In 1999, 3.3 acres of the most southerly end of the proposed area was thinned. It was part of a 24 acre thinning just to the south to improve the quality and spacing of the stand. Four home fuelwood lots along the northern side of High Rock Road, totaling 4.1 acres, were sold in November of 2015. Cutting occurred from November 2015 to January 2016.

Aesthetics, Recreation, Wetlands, Cultural, Rare Species and Wildlife Considerations:

Aesthetics: The project area is not near any designated scenic roads. High Rock Road is a paved road that runs through the southwest part of the project area. An old right of way, now a forest road, runs through the eastern part of the project area. A forest road starts at High Rock Road and travels southwest through the project area. Trees will be felled so as to not impact stonewalls.

Existing legal DCR trails will have 50' wide corridors, where timber harvesting activities will occur, and will be designed to promote large-diameter trees, forest structure, forest health, a safe recreation experience, and quality scenery. Slash within 25 feet of forest roads will be managed to result in a light and natural appearing forest ground cover. All slash will be dealt with that meets or exceeds the Massachusetts Slash Law.

Recreation: Cross-country skiing, geocaching, hiking, horseback riding, hunting, mountain biking, seasonal motorcycle riding, and snowmobiling, occur in F. Gilbert Hills State Forest. There are 23 miles of trails. A portion of the Warner Trail runs through the state forest. The Warner Trail is a long-distance trail starting in Sharon Massachusetts and travels more than 30 miles southwest to Cumberland, Rhode Island.

The State Forest is supported by the State Forests Advisory Council. The council's mission statement is to assist the State Forest staff to maximize the recreational uses of the F. Gilbert Hills, Franklin and Wrentham State Forests.

A paved road and two forest roads are located within the proposed project area. The proposed forest management project will reduce the number of dead and dying trees that could potentially impact safe travel on High Rock Road and the adjacent forest roads. There will be minimum impact to recreational activities within the state forest.

Wetlands: All required BMP's set forth in the most recent edition of the "Massachusetts Forestry: Best Management Practices Manual" will be implemented across the project area. No wetland resources occur in the project area. A forested wetland and two potential vernal pools exist just to the northeast of the project area. A potential vernal pool exists just to the west of the project area. These vernal pools will be protected to filter strip standards of the "Massachusetts Forestry Best Management Practices Manual" as needed.

The proposed timber harvest area is not within 100 feet of a certified vernal pool according to the Natural Heritage & Endangered Species Program (NHESP) datalayer downloaded December 8, 2016 available from MassGIS.

Cultural Resources: Stone walls are found throughout the state forest with portions within the proposed project area. Where possible, pre-existing bar-ways will be used to cross the stone walls. If a portion of a stonewall needs to be dismantled, it will be rebuilt at the conclusion of the sale to presale conditions. Trees will be felled away from stonewalls in order to prevent damage. No known or significant historic or archaeological resources exist in the project area as reviewed by DCR's archeologist.

Rare and Endangered Species: The proposed project area is not within priority habitats of rare species as published in the current 13th Edition of the Massachusetts Natural Heritage Atlas (http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/regulatory-maps-priority-and-estimated-habitats/natural-heritage-atlas-book.html).

Wildlife: Tree tops will be left on site creating fine and coarse woody materials which are beneficial to a variety of insects and for nutrient cycling. Over time, production of acorns and other mast for wildlife will likely increase on retained trees within the project area. Hard mast tree species, e.g. hickory, will be favored for retention. Animals noted were turkey vulture, chipmunk, deer, and dragon flies. For a more detailed discussion of wildlife resources associated with the central hardwood (oak/hickory) forest type occurring in the F. Gilbert Hills State Forest, please

refer to pgs. 159-164 of the Massachusetts State Wildlife Action Plan (SWAP) at: http://www.mass.gov/eea/docs/dfg/dfw/habitat/ma-swap-public-draft-26june2015-chapter4.pdf.

Sale Layout and Harvesting Limitations

Project access: Access to the project area will be from Route 1 to High Rock Road.
Landings: Two landings will be located on High Rock Road.
Skid Road and Trails: The existing forest roads will be utilized as skid roads. Additional skid roads will also need to be created.
Wetland & Stream Crossing: None at this time.
Road and Trail Buffers: As per the Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines forest management within 50 foot trail corridors will be designed to promote native diverse vegetation, large-diameter trees, multiple age classes and forest structures, forest health, a safe recreation experience, and quality scenery.
Equipment limitations: Timber harvesting equipment will be restricted to its ability to process up to 4" tops. There will be no whole tree harvesting. Skidding will be permitted to provide scarification for oak regeneration. Hand felling of trees will be permitted provided proper directional felling techniques are used to protect residual trees and any cultural resources.
Excluded areas: None at this time.
Erosion and Sedimentation: All work will be limited to dry or frozen soil conditions. Unwanted movement of soil will be controlled by following recommendations in the Massachusetts Forestry: Best Management Practices Manual.
Site Restoration: Upon completion of harvest activity all skid roads, and skid trails and landings will be stabilized with water bars, and seeded and mulched according to the recommendations found in the Massachusetts Forestry: Best Management Practices Manual.
In-kind Services: There are no definitive in-kind services to be attached to this project to date. Below is a list of possibilities:

- Installation of a double gate on High Rock Road,
- Gravel to stabilize the upper portions of High Rock Road beyond the sale boundary.

Silviculture

Primary and secondary goals: The primary silvicultural goal is to establish oak regeneration. Very little oak regeneration is occurring in the project area. A secondary goal is to increase the structural and species diversity of the forest. A third goal is the demonstration of a shelterwood with reserves system and the use of prescribed fire to perpetuate oak regeneration.

Silvicultural Method: Oak will be regenerated using the shelterwood with reserves system. This silvicultural system is a modification of even-aged methods. The shelterwood with reserves silvicultural system is an even-aged (two-age) regeneration method where some trees are left to provide sufficient shade (shelter), provide seed, and to produce a new age class in a moderated environment. The long term development of the stand differs from a traditional shelterwood in that a set of mature trees (reserves) are retained for a substantial period while the new age class grows up around them.

The project area will be managed for oaks species in a two-aged class structure. The majority of the large oak trees will be harvested. A mixture of small, medium, and large trees of various other species will be harvested. Scarification will occur to encourage germination and survival of oak seedlings.

Desired Future Conditions: The long term desired condition of the stand is having the young oak trees approach the height of the reserve trees. By applying the shelterwood with reserves system aspects of a mature forest are maintained while still providing for timber production. The retention of a subset of mature trees will retain habitat elements of the mature forest (e.g. mast production, vertical structural diversity), lessen the visual impact of the shift in complete removal of overstory trees, and will retain trees to produce large diameter older trees. The shelterwood with reserves approach can provide beneficial habitat for various wildlife species of conservation concern in this region that benefit from even-aged regeneration harvesting such as whip-poor-will, Eastern towhee, brown thrasher, Eastern hognose snake, and Eastern rat snake (see Table 4-13 on pg. 163 of the SWAP).

Anticipated Future Treatments: If oak seedlings are being overtopped by other hardwood species, e. g. red maple and/or black birch, a prescribed burn will be conducted to release the oak from competition. In a shelterwood with reserves system one or more removal cuts could follow this establishment cut. For example, when thinning the younger age class it may be possible to harvest the reserve trees in the openings created without substantial injury to the stand.

Gypsy Moth Infestation: Many trees in the proposed project area were inundated with gypsy moths (*Lymantria dispar*) this past spring. As oak is their preferred host, this stand is highly susceptible to heavy defoliation, a decrease in growth, and an increase in mortality. Silvicultural treatments can help to mitigate the susceptibility and vulnerability of trees to gypsy moths by reducing competition and increasing site resources (light, water, nutrients). Dependent on the coming year's possible gypsy moth infestation, coupled with the current drought, the proposed silvicultural treatment may have to be adjusted to manage for a potential in high oak mortality.

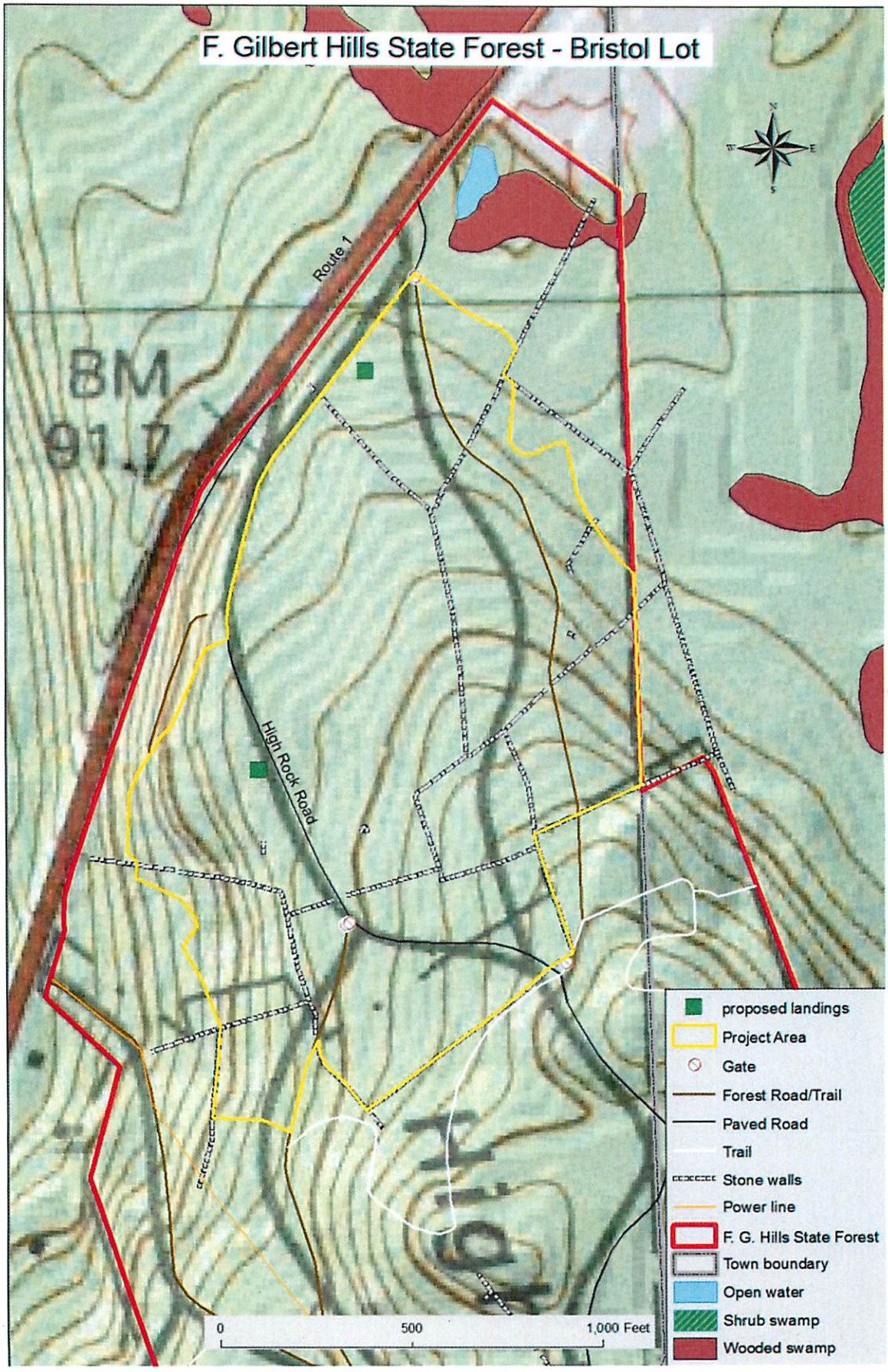
District Forester: Paul Gregory **Date:** 1/4/17

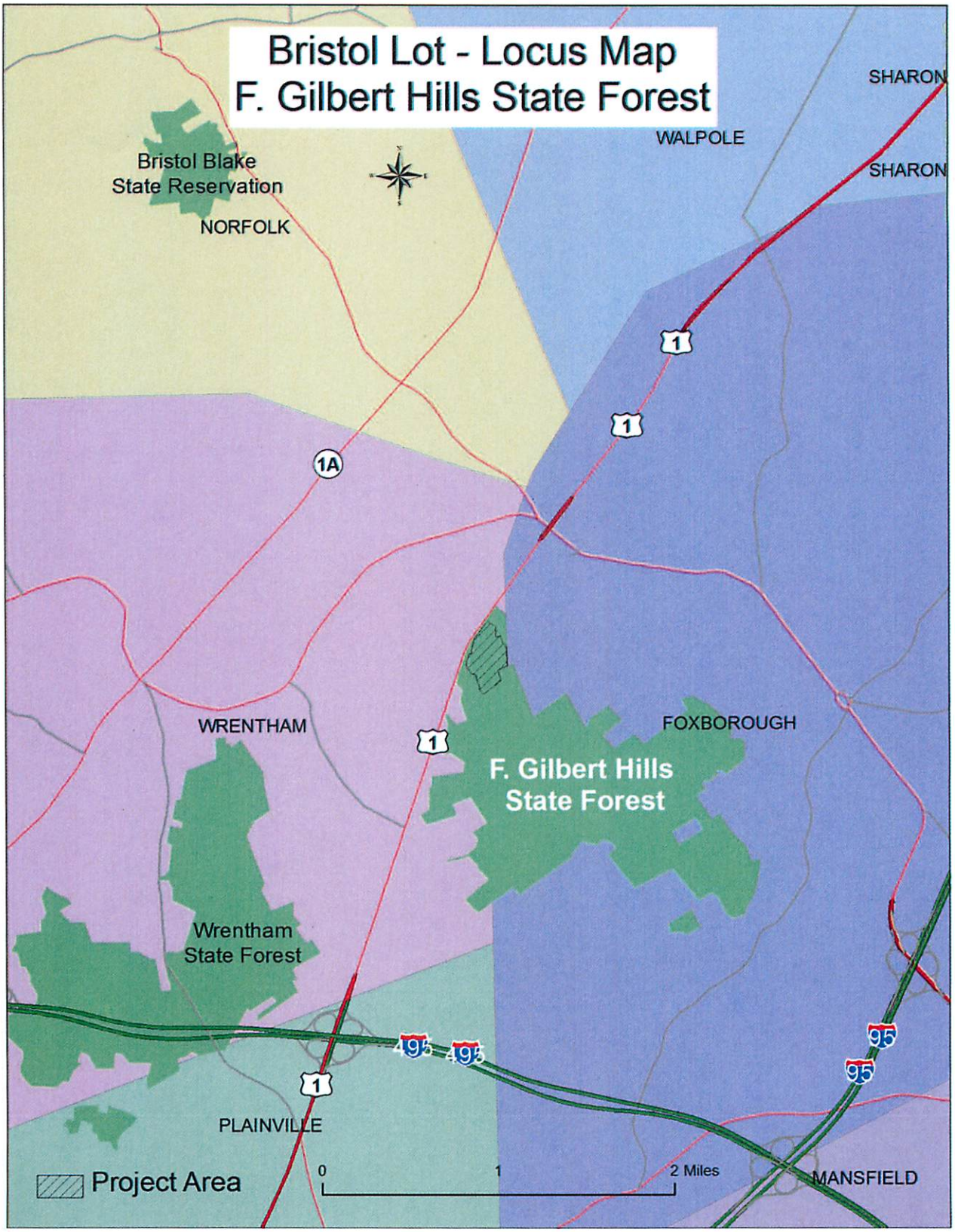
Field Operations Team Leader Or Park Supervisor: Wilbur Ast **Date:** 1/10/17

Regional Director: Karl Pastor **Date:** 1/4/17

Management Forestry Program Supervisor: [signature] **Date:** 2/13/2017

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


F. Gilbert Hills State Forest - Bristol Lot
Route 1
BM
91.7
High Rock Road
proposed landings
Project Area
Gate
Forest Road/Trail
Paved Road
Trail
Stone walls
Power line
F. G. Hills State Forest
Town boundary
Open water
Shrub swamp
Wooded swamp
0
500
1,000 Feet


Bristol Lot - Locus Map
F. Gilbert Hills State Forest
Bristol Blake State Reservation
NORFOLK
WALPOLE
SHARON
SHARON
1
1
1A
WRENTHAM
1
FOXBOROUGH
F. Gilbert Hills State Forest
Wrentham State Forest
495
495
95
95
1
PLAINVILLE
Project Area
0
1
2 Miles
MANSFIELD