Massachusetts Department of Conservation and Recreation

Silviculture Prescription
Brett Road

Massachusetts Department of Conservation and Recreation
Bureau of Forestry

Southern Berkshire District
Beartown State Forest
Monterey, MA

Prepared by:

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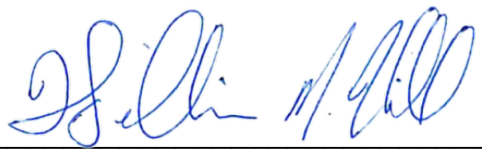
Program Supervisor  Date: August 1, 2019

William N. Hill, CF

Overview:

The Brett Road Forest Management project is located around the administrative headquarters of Beartown State Forest and adjacent town roads. The project will include work in 22 acres of declining plantations currently designated as Parklands and consisting of red pine, white pine and spruce. There will also be a roadside treatment of abutting State Forest Reserve lands bordering on Blue Hill Road, Brett Road, and Swann Road where declining red pine, spruce and white ash trees will be removed. The roadside treatment area will extend 100 feet from the edge of the town road boundary encompassing approximately 30 acres of Forest Reserve land. All 30 acres of roadside Reserve lands will not be treated as some areas do not contain any threatened or dying tree species.

This prescription is based on the Brett Road - Forest Management Proposal that was posted on March 15, 2019 and approved by the Forest Reserve Scientific Advisory Committee (FRSAC) on June 27, 2019. As outlined in the proposal this 52 acre project will include forested areas in both Parkland and Forest Reserve designated areas that normally do not have commercial forest product sales. Public safety is the driving force behind this project and by proactively salvaging declining plantations and ash at this location the Department of Conservation and Recreation (DCR) will hopefully offset the cost of hazard tree removal along town roads and powerlines.

The conditions that led to selecting this project for forest management are:

- Declining plantations affected by biotic agents (red pine scale, root rot, Norway spruce shoot gall midge, wood rotting fungal pathogens, and white pine needle rust) that are causing mortality in the overstory of all plantations.
- Emerald ash borer will imminently infest the project area causing mortality in the overstory white ash trees.
- Significant hazard reduction for administrative infrastructure and human safety along town roads and recreational corridors.

The Brett Road Forest Management Project proposes to:

- Remove/salvage dying trees while retaining and protecting other native/planted overstory species and improving the health and vigor of remaining trees.
- Reduce the costs and safety concerns to DCR and the town by removing dying trees along town roads and powerlines.
- Demonstrate harvesting techniques and best management practices that protect and enhance the aesthetic values associated within roadside buffers.
- Practice vegetation management necessary to protect public health and safety, public interests, public assets and/or restore or maintain recreation sites following significant natural disturbances or destructive insects or diseases.

Site Data:

Property Information: The proposed project area consists of approximately 52 acres surrounding the satellite parcel of Beartown State Forest and including the 100' safety strip along the three town roads in the project area. Hazardous tree work is required around two administrative park buildings, the historic "foresters" house, the Swann Lodge, and a large fenced area where park equipment is stored. Most of the town road frontage (30 acres) involves working within a confined space where power lines and stonewalls will make tree removal difficult and costly. Many of the red pines planted along the northern stretch of Brett Road are in the towns ROW and will need to be cut while the road is closed. Fortunately, the road in this section is gravel surfaced and will not be permanently damaged by the use of heavy tree removal equipment.

Geology and Landforms: This project area is generally flat with some rolling terrain and limestone rock outcroppings. The property is surrounded by several active agricultural fields, private residences, private woodlots and additional contiguous state forest lands of the larger Beartown complex (Swann locale only). The average elevation is 1100 feet above sea level.

Soils: There are several soil types mapped within the salvage portion of this project area; PmC, PoB, and BmE. These types can be considered the same for forestry use. The soils are loamy, moderately deep, well drained, considered moderate to excellent for tree growth, low risk for erosion, and have few equipment limitations. (Excerpts from "Soil Survey of Berkshire County", NRCS 1995)

Climate: The project location lies in an area of mild summers and moderate winters with year-round precipitation possible. Winds generally come from the west. Although major weather events can happen in any given year, the chances of hurricanes, tornadoes, ice storms or other large-scale disturbance events are seldom but do occur. The figures below (Table 1) are excerpt from the National Weather Service 2012 Climatological Report for Pittsfield, MA. The climate period used to determine normal value is 1981 through 2010.

Table 1:

	2012 Annual	2011 Annual	Normal Annual Value	Normal Winter	Normal Spring	Normal Summer	Normal Fall
Annual Maximum Temp	58.4	56.5	55.3	31.7	54.3	76.7	57.9
Annual Minimum Temp	39.2	37.4	35.4	15.4	32.9	55	38
Annual Mean Temp	50	50.2	48.3	23.6	43.6	65.8	48
Total Precipitation (in)	36.36	59.46	45.38	8.6	11.44	12.74	12.6
Days with >= .01 Precipitation	144						
Average Wind Speed	6.1						

Hydrology and Watershed: The project area falls entirely within Housatonic River Watershed. All rain fall within this project area drains directly into or through wetlands linked with intermittent and perennial streams that flow into Lake Buel or Swann Brook, and eventually into the Housatonic.

There may be several small seeps, intermittent streams and small forested wetlands located throughout the area that are not currently mapped. There are no anticipated forested stream crossings for this project and there will be no harvesting within wetlands. All streams and

wetlands will have a filter strip meeting or exceeding standards of the "Massachusetts Forestry Best Management Practices".

Disease and Insects: The trees in the project area have been affected by a myriad of diseases and insects. Norway spruce (Picea abies) is suffering from the effects of Norway spruce shoot gall midge (Piceacecis abietiperda) and Armillaria root rot (Armillaria spp.) The red pine (Pinus resinosa) and Scots pine (Pinus sylvestris) stands are suffering from red pine scale (Matsucoccus resinosae) and associated bark beetles that are attracted to weakened trees. Most red pine stands in the area have already succumbed to these pests. Eastern white pine (Pinus strobus) are suffering from symptoms of white pine needle disease (WPND) caused by several fungal pathogens which then helps facilitate Caliciopsis canker caused by Caliciopcis pinea. Brown cubicle rot and red ring rot caused by velvet topped fungus (Phaeolus schweinitzii) leads to decay in the heartwood of white pine and further reduces the strength of the tree and its ability to bend. Emerald Ash Borer (EAB) has spread into the area and is attacking and causing mortality in white ash (Fraxinus americana) populations. This insect feeds exclusively on ash trees and has destroyed millions of trees across its range already.

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Wildlife Habitat Conditions: The NHESP "Massachusetts Natural Heritage Atlas 13th Edition" shows that there is no Priority Habitat within or adjacent to the project area. No other listed plants have been identified in the field to date. Care will be taken to properly report and address the needs of any listed plant or wildlife species if found on the site. To protect habitat conditions non-native invasive plants will be identified and treated in the project area. Pretreat invasive plants with a foliar herbicide application after leaf out in the spring of 2020. Implement a two year invasive plant monitoring program after the harvest is completed to insure that invasive plants do not regenerate in the project area.

No listed animals or critical habitat were noted upon the initial site visits. Large mammals noted through observed signs were moose, deer, bear and coyote. Small mammals noted were turkey, squirrel and chipmunks. Due to the deteriorating nature of the forest types in this project there is an abundance of large diameter coarse woody debris (CWD) and both live and dead wildlife trees (snags).

Infrastructure and Recreation:

Cultural and Archeological Feature: The former forest supervisor's house, which was also the CCC's Forester's residence, and a barn are listed in DCR's inventory of historic properties in Beartown State Forest. The larger of the two red pine plantations slated for removal is located directly south of the historic barn and appropriate care will be taken to protect the structure during the harvesting operation. Stone walls occur intermittently on both sides of abutting town roads and within the project area. Additionally, there is one known historic foundation within the proposed project area. These and other cultural resources found in the project area will be protected according to guidelines set forth in *Bureau of Forestry Cultural Resource Management Protection Standards and Guidelines,* and as indicated on project maps.

<u>Stand Descriptions:</u>

Red Pine, Norway Spruce, White Pine: All three of these major types are present in the project area. The current stands originated as plantations of primarily Norway spruce, red pine and white pine, with smaller amounts of Scots pine and European larch after the state acquired the abandoned agricultural lands in the early 1920's and promptly initiated reforestation efforts. These areas in general are heavily stocked and would be considered a high "A" level based on stocking charts. Forest stands that are overstocked contain many trees that are competing for limited resources thus stressing physiological functions and making them more susceptible to diseases and insects.

There are approximately 5 acres of red pine plantation (including Scot's pine) that are rapidly deteriorating from red pine scale and other biotic agents. Tree diameters range from 12-18 inches, with heights approximately 70 feet and few smaller trees surviving due to lack of sunlight. There are also numerous red pine snags and other recently dead trees in the stands. There are generally smaller Scots pine, which are also succumbing to the scale, located along the road and throughout portions of the red pine stand. The native understory of seedling and saplings consists of sugar maple, red maple, white ash, yellow birch and red oak. Where red pines are declining, the understory composed of small trees and shrubs is emerging and is 10-20 feet tall depending on available sunlight. Understory shrubs present in the stand include serviceberry (Amelanchier alnifolia), witch hazel (Hamamelis virginiana), striped maple (Acer pensylvanicum), hawthorn (Crataegus spp.) and arrowhead viburnum (Viburnum dentatum).

Norway spruce plantations occupy approximately 6 acres of the project area. These trees are larger than the red pines with an average diameter of 18-22 inches and heights of 90-100 feet tall. Many trees have thinning crowns due to the Norway spruce shoot gall midge and the presence of Armillaria root rot. The understory vegetation in the spruce stand is sparser; some sugar maple, red maple, and white pine are present. Sporadic clumps of spruce seedlings may persist here but will be outgrown by native hardwoods when more light is introduced into the stand. Many fallen spruce are present on the forest floor making navigation difficult for wildlife and humans alike. Intact portions of the stand, with low mortality are overstocked and have a thick duff layer inhibiting tree regeneration and herbaceous vegetation.

White pine plantations cover approximately 13 acres of the project area and are also overstocked, though there was some thinning done in the northern part of the stand some 15 years ago. Trees in the stand are large with diameters ranging from 18-24 inches and heights exceeding 100 feet. White pine needle disease and stem decay fungus are both contributing to the decline of many of the pines in the stand. Besides white pine there are a few transient European larch that ended up in the planter's bags and they have grown well on the deep soils of the stand. The understory contains an established component of northern hardwood species including sugar maple, red maple, yellow birch and white ash seedlings and saplings with an average height of 10 -20 feet. Understory shrubs are common throughout including blueberry, hawthorn, service berry and witch hazel.

Roadside Stands: The forest in the 100' wide roadside treatment area is composed of a mix of planted conifers described above and native hardwoods including white ash (Fraxinus Americana), red oak (Quercus rubra), black birch (Betula lenta), red maple (Acer rubrum), black cherry (Prunus serotine) and even some black walnut (Juglans nigra) that has persisted after early settlers planted it for the dye in its seeds. These stands vary in size class, species composition, and density due to past harvesting practices and their proximity to the roadway. Striped maple

and witch hazel dominate the understory with lesser amounts of service berry, blueberry, and maple leaf viburnum.

Silviculture and Projected Results:

Primary/Secondary goals: The primary goal of the treatment is public safety and protection of roads, buildings, and private property from hazardous trees. The secondary goal is to offset the costs of hazardous tree removal to the town of Monterey and DCR with a salvage timber sale before tree mortality occurs on the site. Additional goals of this project are to thin the declining plantations around the headquarters to create a healthier more stable forest for the public to enjoy.

Silviculture Methods:
In the two red pine plantations (one in Parkland, one Reserves) indicated on the headquarters stand map, all red pines will be cut and removed from the site, except for dead trees which will be cut and left. In the red pine stands, scattered hardwoods and occasional white pines will be retained in the treatment. The red pine harvest will need approval of the DCR Commissioner as required in the "Landscape Designations for DCR Parks and Forests: Selection and Criteria and Management Guidelines 2012" for openings larger than 1/3 acre. In the Parklands surrounding the headquarters, Norway spruce and white pine stands will be thinned using the irregular shelterwood method. Approximately 1/3 of the stand will be removed with the healthiest and most vigorous trees to remain. Individual trees will be evaluated for removal based on spacing, crown health, notable stem defects (conks indicative of decay) and the presence of root rot in the vicinity. All scattered ash and red pines will also be removed in the Parkland stands.

The roadside stands, as indicated by the red cross-hatch and labeled as forest Reserve Hazard area on the maps, will be thinned of all red pine, ash trees and, individual trees posing a current or future hazard to the road, public, or private property. Other tree species may also need to be removed if they are deemed a felling hazard near target species or in a skid road or landing area. The percentage of the roadside stand to be harvested will depend on target species density and will likely look similar to the irregular shelterwood treatment in the Parkland stands.

Desired Future Conditions: The harvest in the red pine will leave a stand of seedling and sapling northern hardwoods (sugar maple, red maple, yellow birch, and cherry) that are established in the understory of the stand. Understory trees damaged in the harvesting operation will be cut flush so that they can grow free and straight from established root systems.

The harvest in the white pine and Norway spruce stands will remove 40-50% of the trees based on crown density, spacing, and overall tree health. There will be no openings greater than 1/3 of an acre in the stands. A strip of pine trees approximately 40' by 100' abutting the fenced-in equipment yard will be removed to protect the area from falling debris and to allow more sun on the headquarters building. The residual stand will be a more vigorous one where increased sunlight and less competition will enable the forest to withstand the various biotic agents affecting them. The stand will remain close to fully stocked and trees will have ample opportunity to grow. The white

pine stand will look very similar to the portion of the stand that was thinned 15 years ago (half of this stand is outside the parkland bubble) and is now a two storied stand consisting of 3-5" diameter hardwoods and large mature pines. As the stand matures wildlife trees will become larger and provide more habitat opportunities.

Anticipated Future Treatments: There are no current plans to harvest this area again as it is currently designated parklands and reserve lands. This is a one-time treatment in declining plantations and along town-maintained roadways.

Access/Logging System: This operation will utilize several log landings on Brett Road and possibly one landing on Blue Hill Rd. Most of the landings have been used in the past for harvesting operations.

The forester will consider all conventional and mechanical logging equipment as suitable for the operation. A fixed head harvester will be ideal for hazard trees near the roadside or near wires or the contractor may choose to use a conventional bucket truck/tree climbing system for hazardous trees. Whole tree harvesting and skidding will not be permitted in this project area, all trees felled will be processed or limbed within the stand leaving slash treated in the felled location except where removal is needed in buffer areas. Slash will be removed for the first 25' from the road edge and lopped to under 2' in the remaining sale area.

Throughout the project area skid trails will be laid out to avoid adverse slopes, to avoid any water features, and to reduce negative aesthetics. Skid trails will also be laid out to avoid damage to stonewalls by utilizing existing bar ways and if necessary, by going outside treatment area boundaries. Any unavoidable stream or wetland crossing will be designed at or above the standards of the "Massachusetts Forestry Best Management Practices".

Upon completion of all harvesting activity all landings will be free of debris, graded and seeded with "Berkshire Conservation Mix" grass seed and mulched with straw. Skid roads will be left in a stable state, graded with water bars installed according the "Massachusetts Forestry Best Management Practices", and seeded with "Berkshire Conservation Mix" grass seed and mulched with straw as needed. Any utilized stream/wetland crossing will be stabilized.

Wildlife Resources: Current snags will be retained where they do not pose a safety issue; however, operators have the right to remove any snag that poses a safety hazard to themselves or equipment. Operators will not be required to utilize cull trees, if left behind they will add to the amount of large diameter CWD. Limbs and tops (slash) will also be left in place to augment existing CWD and add soil nutrients through decomposition.

In-kind Services: The in-kind services generated by this project include the removal of hundreds of hazardous roadside trees near powerlines, public roads, private driveways, and buildings. It is hoped that this operation will provide the parks operations at Beartown SF with rough boards milled from some of the European larch marked for removal in the parklands forest surrounding the headquarters' building. These boards will be used for recreational trail and bridge projects throughout the complex.

Project Marking Guidelines: Follow the directions below for marking instructions of sale and stand level features.

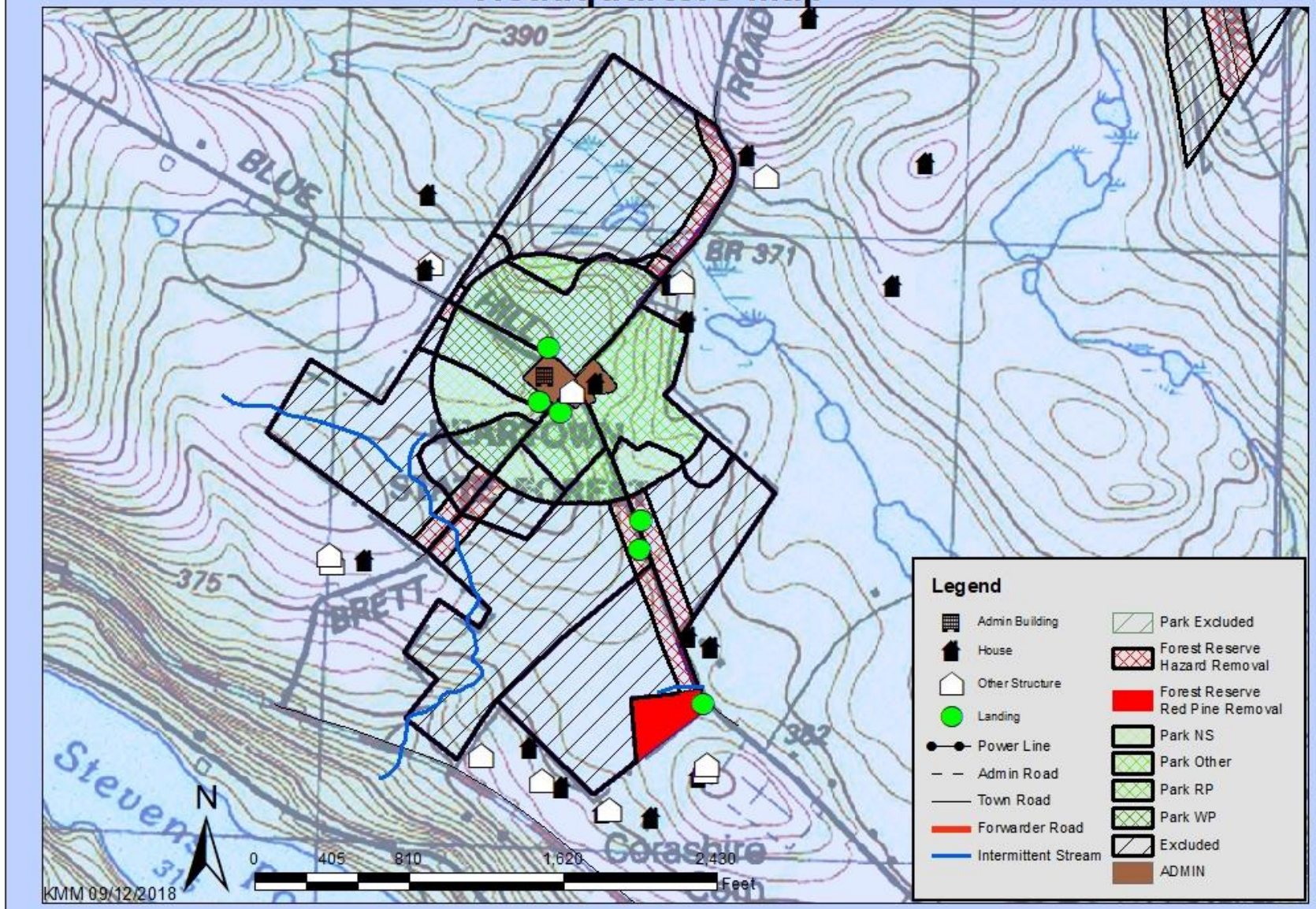
Sale Level:

1. Locate and paint with two orange diagonal stripes the buffers and filter strips along all wetland and associated streams found on site.
2. Locate and paint with two orange diagonal stripes the remaining wooded project boundary line. This will not be done where the project boundary is a road.
3. Flag temporary layout of the section access points and primary skid trails with orange flagging.
4. Flag temporary layout of any unavoidable wetland and stream crossing found with labeled flagging. Using Red paint mark and label each crossing upon completion of marking and any final adjustment to location.
5. General tree marking guide:

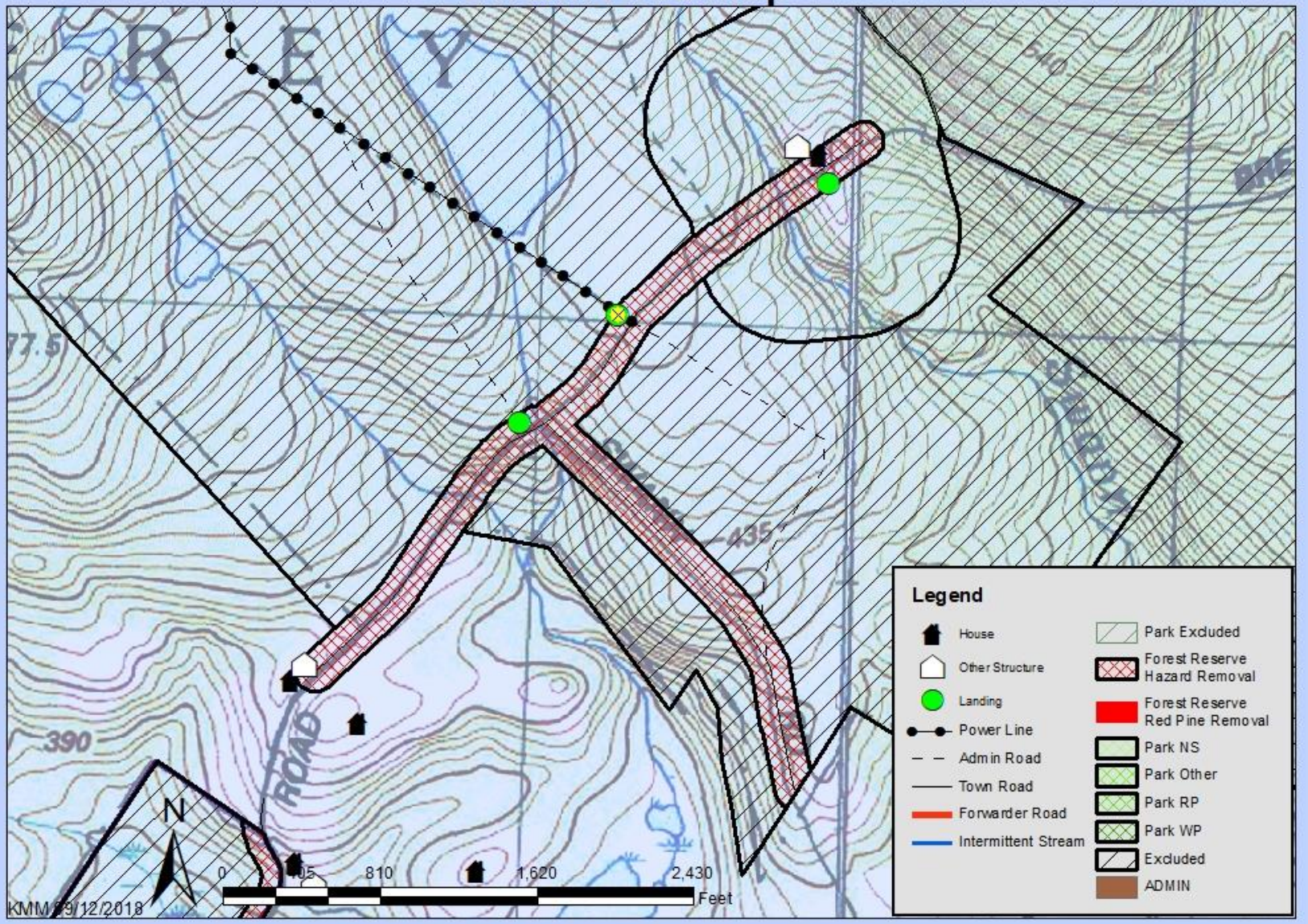
Marking type	Type of Tree	Tally Method	Mark Type
Leave Tree	Leave Tree	As needed	Blue Horizontal Ring
Cut Tree	Cut Saw Log	Individual tally DBH & height	Red Horizontal Line
Cut Tree	Cut Pulp/Cord Wood	Individual tally DBH - 1/10 height	Red Vertical Slash
Cut Tree	Cut Live Cull Tree	No tally	Red X
Cut Tree	Dead Tree Warning	No tally	Red X

The road buffer may be reduced below the 50% basal area restriction for removal of red pine and white ash only.

Brett Road - Beartown State Forest
Headquarters Map



Brett Road - Beartown State Forest
Swann Area Map



Brett Road - Beartown State Forest
Forest Mangement Proposal