



*Silviculture Prescription
Pease - Curtin Ash Removal*

*Massachusetts Department of Conservation and Recreation
Bureau of Forestry*

*Central Berkshire District
Peru State Forest
Middlefield & Peru, MA*

Prepared by:

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Approved by:

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Overview:

The Pease-Curtin Ash Removal Forest Management project is located along the main vehicle access within the Peru State Forest. Pease Road (Middlefield) changes names to Curtin Road (Peru) as it travels through the state forest, both are town owned roads. This project will removal white ash that is infested or imminently will be infested with emerald ash borer (EAB) and other identified hazard trees within 200 feet of the road for a length of 2.15 miles and consisting of 92 acres.

This prescription is based on the Berkshire Road and Trail Ash Removal - Forest Management Proposal that was vetted and approved in the spring of 2017. As outlined in the proposal this 92-acre project will include forested and wooded areas within a 200-foot buffer of roads and parking areas for the removal of ash. By proactively removing ash at this location the DCR will save considerable amounts of tax dollars associated with individual removals, provide a safer experience for staff and visitors, and recover the lumber, firewood and pulp which would otherwise be lost. (<http://www.mass.gov/eea/docs/dcr/stewardship/forestry/manage/forest-product/berkshire-ash.pdf>)

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

- Emerald ash borer has infested the project area causing mortality in the overstory white ash trees.
- Public safety concerns due to declining/dead ash trees along Pease Road, Curtin Road, and the associated parking areas.
- This project will provide a cost savings to DCR, the Town of Middlefield, and the Town of Peru by removing current and future hazards while there is a value to the ash trees. Once dead, these trees will become a financial and safety liability.

The Pease-Curtin Ash Removal Forest Management Project proposes to:

- Remove dying white ash trees while retaining and protecting other native overstory species.
- Reduce the costs and safety concerns due to the dying white ash trees along access roads and parking areas.
- Use proceeds for road improvement increasing public access.
- Demonstrate harvesting techniques and best management practices that protect and enhance the aesthetic values associated within road side buffers.
- Fulfill management approaches for woodlands as directed by the Forest Futures Visioning Process (2010) and subsequent Management Guidelines (2012).

The Pease - Curtin Ash Removal Forest Management Project is 92 acres in size and will be completed with a single entry. This prescription covers the entire project area.

Site Data:

Property Information: The proposed project area consists of approximately 92 acres of which 63 acres have a high percentage of ash. The remaining 29 acres consist of mixed wood stands (hardwood species mixed with white pine, hemlock, red spruce) and former plantations with lower levels of white ash. (Map: 1). Throughout the project area the dominant tree species that were observed are white ash, sugar maple, red maple, white birch, black cherry, American beech, aspen, white pine, hemlock, and red spruce. As EAB becomes more established in the forest the rate of mortality has increased as has the number of dead trees falling into the road.

Geology and Landforms: The southern boundary of this project area begins in Middlefield at the boundary between DCR and the Massachusetts Department of Fish and Wildlife (DFW) and continues northerly along Pease Road crossing the town line with Peru onto Curtin Road ending at the DCR boundary with private landowners to the north. This portion of the Peru SF is relatively flat with little elevation change in the road from start to finish. The average elevation is 1800 feet.

Soils: There are several soil types mapped within this project area; BmE (901E), PmC (905C), LtE (904C), and PoB (922B). These types may be considered the same for forestry use. The soils are loamy, moderately deep, well drained, considered moderate to excellent for forest growth, low risk for erosion, and have few equipment limitations. (Excerpts from “Soil Survey of Hampden County Massachusetts”, NRCS 1995 & “Soil Survey of Berkshire County Massachusetts”, NRCS 1988)

Hydrology and Watershed: The project area falls entirely within the Westfield River Watershed. Streams and connected wetlands in the Peru SF generally drain to the south and east merging into larger water courses while flowing to the Middle Branch of the Westfield River. There are no surface water supplies within the Peru SF, however this entire project area and much of the Peru State Forest falls within the Outstanding Resource Water (ORW) area delineated by the Massachusetts Surface Water Quality Standards, 314 CMR 4.00. This project will have no negative affect on the watershed.

Currently there are six known perennial and intermittent streams which flow across the project area at existing road crossings and four locations where adjacent forested wetland encroach into the project area. There may be several small seeps, intermittent streams, and small forested wetland not currently mapped, if found they will be added. There are no anticipated forested stream crossing for this project and there will be no harvesting within wetlands. All streams will have a filter strip meeting or exceeding standards of the “Massachusetts Forestry Best Management Practices”.

Disease and Insects: The current threat to this project area is the emerald ash borer (EAB). Damage from these insects can be seen both in the project area and in the surrounding landscape. This insect can cause rapid collapse of the associated stands.

Emerald Ash Borer (EAB) was first found in Michigan and Ontario in 2002. It was introduced from Asia and has few natural predators here to control populations. EAB has spread from Michigan and is now located throughout the northeastern part of the United States and Canada. This insect feeds exclusively on ash trees and has destroyed millions of trees across its range already. EAB is generally attracted to trees which were previously weakened or stressed.



The EAB has a one year life cycle in which each female lays 30-60 eggs on average with maximum of 200 in some cases. After the eggs are deposited in bark the larvae chew into the tree and begin feeding on the phloem of the tree. The following year the adult will exit the tree through a D-shaped hole and begin feeding on foliage to continue the cycle.

The first infestation found in Massachusetts is located approximately 10 miles from this project area in Dalton, MA. It is generally accepted that there is no way to stop or effectively control EAB once an area is infested.

Wildlife Habitat Conditions: The NHESP “Massachusetts Natural Heritage Atlas 13th Edition” shows no Priority Habitat, Estimated Habitat, Certified Vernal Pools, or Potential Vernal Pools within the project area. No listed species 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.

Due to the deteriorating nature of the white ash, there will be an abundance of large diameter course woody debris (CWD) as the dead trees fall. There were also a large amount of live wildlife trees observed in the field. These included large trees of various species with large cavities, rotten portions, large dead branches and broken tops.

Infrastructure and Recreation: Access to the State Forest from Pease Road begins at the intersection with Bell Road in Middlefield and continues as Curtin Road after the town line with Peru to an intersection with Route 143. It is a secondary road of asphalt, stone and oil and gravel that is maintained by each town for year-round for vehicle traffic from both ends to the last home prior to DCR/DFW property ownership.

Pease Road and Curtin Road are the only passable roads which access the State Forest. These roads are typically closed and blocked for vehicle use during winter months and are open for snowmobiles, snowshoes, and cross-country skis. There are no formal recreational features within the project area, however illegal mountain bike trails/use has been observed recent years.

Coordination with the Town of Middlefield and Peru Highway Superintendents and Tree Wardens will be sought for designation of hazard trees within town jurisdiction. Slash laws identified in the most recent edition of the Massachusetts Forestry Best Management Practices will be followed. Harvesting during dry or frozen conditions will prevent rutting, minimize soil disturbance, and maintain aesthetics. Rubber tired equipment will be required to prevent damage to the road surface.

Cultural and Archeological Feature: There are several known historic foundations of varying condition within the proposed project area that will be protected from disturbance during operation and will be treated according to guidelines set forth in the “Bureau of Forestry – Cultural Resource Management Protection Standards & Guidelines”. During the initial reconnaissance no stone walls were found. If any additional historic/cultural features are found they will be left intact and protected during this project.

Stand Description:

Northern Hardwoods – Mixedwood: These areas in general are heavily stocked and would be considered a high “A” level based on local stocking charts. This type consists of approximately 10-40% ash, with varying amounts of sugar maple, red maple, black cherry, American Beech, and white pine that dominate the overstory. Yellow birch, hemlock, red spruce, fir and hophornbeam are present in smaller amounts. Trees in these stands are generally sawlog size and larger due to previous harvesting (commercial and home fuelwood) with pole and small sawlog size trees mixed throughout. Table 1 below is a summary of MA DCR CFI and USFS FIA data describing the northern hardwoods forest type within the Central Berkshire Forestry District.

	All species	Red Maple	Sugar Maple	Beech	Birch	Hemlock	White Ash	Cherry	Red Oak	White Pine	Spruce (all)	Other
Basal area (square feet/acre)	115	22	20	16	15	12	11	7	6	2	2	13
Stems per unit area (stems / acre)	170	29	28	35	27	17	11	7	3	1	3	7
CCF Volume (CCf/ac)	31.3	6.1	5.6	4.3	3.5	2.3	3.3	2.3	1.9	0.7	0.5	0.8
Board Foot Total (mbf/ac)	9.00	1.72	1.64	.79	0.80	0.63	1.19	0.85		0.33	0.15	0.90

Table 1: Summery MA DCR CFI and USFS FIA date of Northern Hardwood Forest type data for the Central Berkshire District.

The understory of this stand is a diverse mixture of species and size classes. The species in the understory listed by prominence as observed are beech, sugar maple, white ash, black cherry and red oak with occasional softwoods. Shrub and herbaceous ground cover species noted throughout the stand were ferns, grasses, sedges, lycopodium, and rubus. There are several roadside populations of tiger lilies.

The same CFI and FIA data noted above estimates an average of 25 snags per acre through all size classes and species. It also estimates CWD above the minimum standards of 256 cubic feet/acre because of the stand's mortality from EAB.

Former Plantations: From the 1990's until 2006 these plantations were managed with a variety of silvicultural practices to convert to native northern hardwoods. These past practices have resulted with varying overstory densities, understory compositions, and age classes. While the goal was to convert to native species sporadic red pine and Norway spruce still occur. One characteristic in common across the spectrum of past treatments is the occurrence of white ash; it is generally at low levels and closer to the road.

Evaluation of Data, Silviculture and Projected Results:

Primary/Secondary goals: The primary goal of treatment is to ensure public safety through a removal operation. This practice will help ensure a diverse and resilient forest as directed in the goals of the "Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines". This is being accomplished by creating a well planned and balanced science based forestry plan.

Secondary goals of this project are to capture the value of damaged and/or diseased trees, prevent future costs/liability of individual tree removals, and to provide raw materials to the forest products industry.

Silviculture Methods: The removal and pre-removal of dead, dying and imminent mortality white ash and other dead/hazard trees from this project area will resemble a commercial thinning of varying residual density; this will remove approximately 10-40% of the stand. Healthy white ash trees 8" dbh and under will be retained at low densities where they do not pose a future safety issue. The results of this removal (acting as a thinning) will provide the remaining trees with increased light and nutrients, as well as provide light to the forest floor promoting herbaceous species and seedling growth.

Desired Future Conditions: This harvest should lead to a residual stands of high quality northern hardwoods and Norway spruce. The harvest will also reduce public safety and infrastructure damage concerns by removing both live and dead hazard trees. As the stand matures wildlife trees will become larger and provide more habitat opportunities. An example of post harvest tree spacing is pictured to the left.



Anticipated Future Treatments: This project area should be examined in approximately 10 years to verify if the goals of treatment were met.

Access/Logging System: This operation will utilize five existing landings located along Pease Road and Curtin Road. A forwarder without tracks or chains will be required to move forest products from stump the landing. Some travel on the road will be required to avoid stream and wetland crossings. The harvester will have to complete one section prior to beginning work on the next. The Forester and harvester will cooperatively decide which section to begin with, smaller road side landings within each section may be allowed depending on equipment needs.

The preferred method of harvesting this project will be accomplished through a mechanical harvester with a fixed head. Whole tree harvesting or skidding length greater than 32 feet 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 zone or filter strip areas. Slash will be removed 50' 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 found, and to reduce any negative aesthetics. Any unavoidable stream or wetland crossing will be designed at or above the standards of the most recent edition of "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 most recent edition of "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 option 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 cycle soil nutrients through decomposition.

In-kind Services: Upon final tally of product the extent of in-kind services will be determined.

- Road and trail improvements within Peru State Forest; coordination with the Towns of Middlefield and Peru to supply materials for the maintenance of Pease Road and Curtin Road will be sought.

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

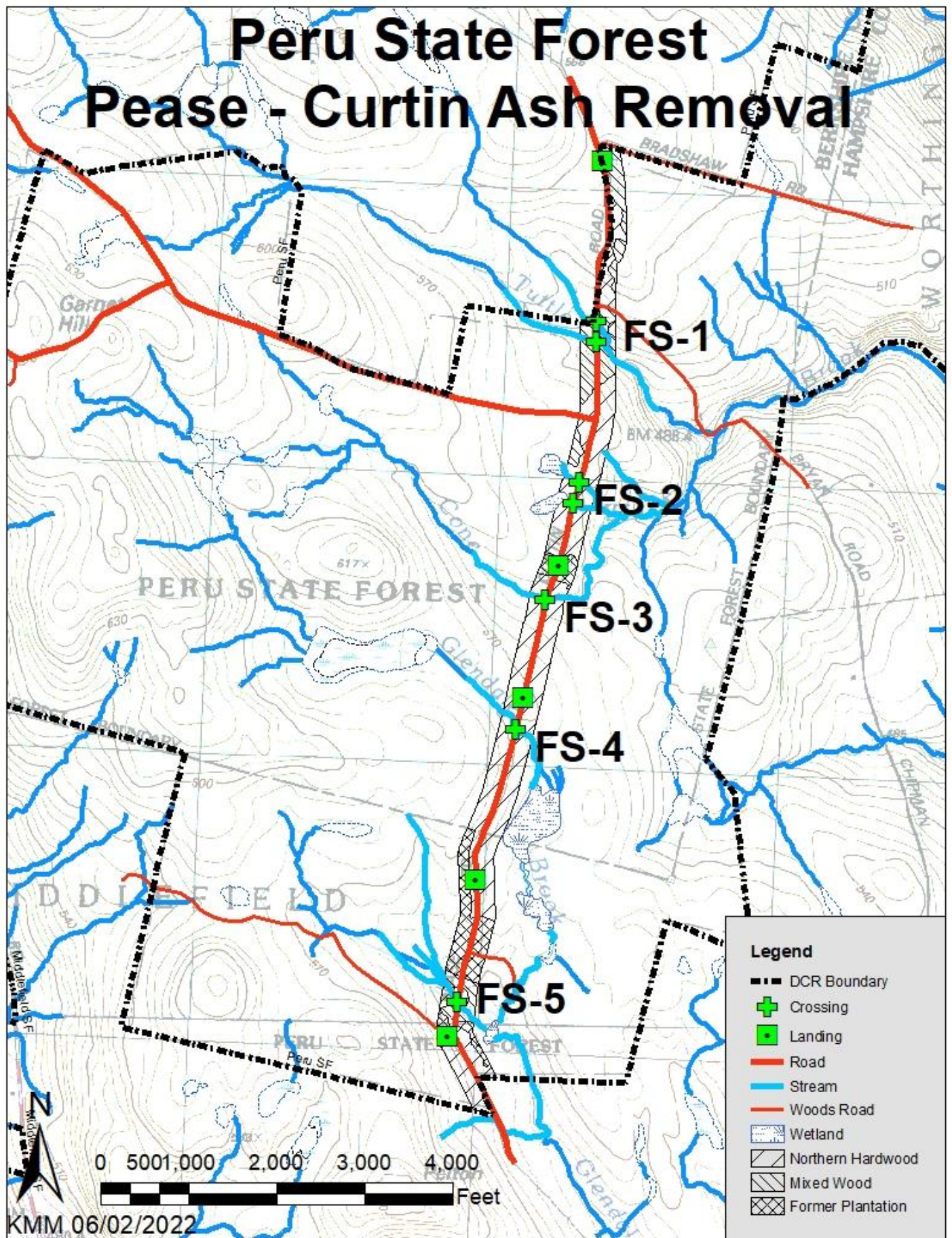
Sale Level:

1. Locate and paint with two yellow, orange, or red diagonal stripes the buffers and filter strips along all wetland and associated streams found on site.
2. Locate and paint with two yellow, orange, or red 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 (if needed) 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	Red Horizontal Ring
Cut Tree	Cut Saw Log	Individual tally DBH & height	Blue Horizontal Line
Cut Tree	Cut Pulp/Cord Wood	Individual tally DBH - 1/10 height	Blue Dot
Cut Tree	Cut Live Cull Tree	No tally	Blue X
Cut Tree	Dead Tree Warning	No tally	Blue X

Remove all white ash greater than 8" dbh within the stand and dead/hazard trees where public safety is a concern. Retention small diameter (< 8"dbh) white ash within the stand where public safety is not threatened is desirable. The roadside buffer may be reduced below the 50% basal area restriction for removal of white ash only, all other trees should be retained to ensure adequate stocking.

Peru State Forest Pease - Curtin Ash Removal



Peru State Forest Pease - Curtin Ash Removal Locus Map

