FOREST STEWARDSHIP PLAN

PREPARED FOR

Town of Greenfield – Conservation Commission
c/o Maureen Pollock, Conservation Agent
14 Court Square
Greenfield, MA 01301

GRISWOLD/GTD CONSERVATION AREA
194.6 Acres
Lampblack Road, Greenfield, MA

white pine regeneration released in 2006 adjacent to large hemlock

Prepared April, 2007, revised Nov. 2016 by Lincoln Fish, Bay State Forestry Service

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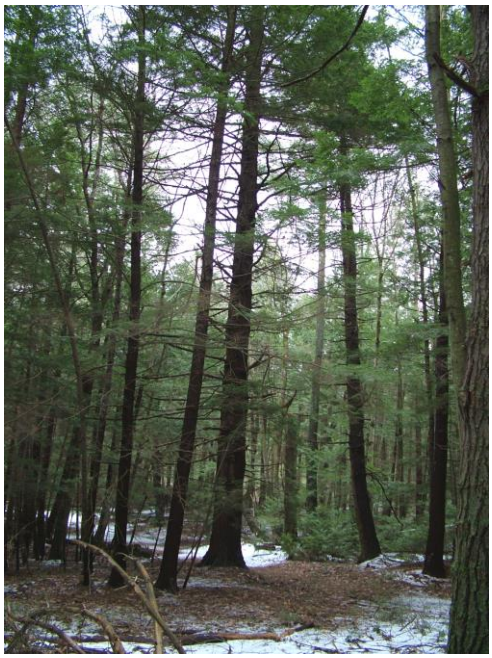
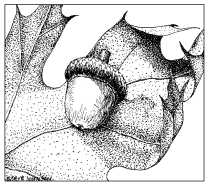


Dense stand of hemlock

All photographs taken on Griswold/GTD Conservation Area, April 2007and November 2016 by Lincoln Fish and Collin Oliver, Bay State Forestry Service

FOREST MANAGEMENT PLAN

Submitted to: Massachusetts Department of Conservation and Recreation
For enrollment in CH61/61A/61B and/or Forest Stewardship Program



CHECK-OFFS

CH61	CH61A	CH61B	STWSHP	C-S
cert. ☐	cert. ☐	cert. ☐	new ☐	EEA ☐
recert. ☐	recert. ☐	recert. ☐	renew ☒	Other ☒
amend ☐	amend ☐	amend ☐	FSC ☐	Birds ☒
			Conservation Rest. ☐	
Plan Change: _____ to _____			CR Holder _____	

Administrative Box

Case No.		Orig. Case No.	
Owner ID		Add. Case No.	
Date Rec'd		Ecoregion	
Plan Period		Topo Name	Bernardst
Rare Spp. Hab.		River Basin	CT

OWNER, PROPERTY, and PREPARER INFORMATION

Property Owner(s) Town of Greenfield – Conservation Commission c/o Maureen Pollock, Conservation Agent
Mailing Address 14 Court Square, Greenfield, MA 01301 Phone 413-772-1548 x 3
Email Address MaureenP@greenfield-ma.gov

Property Location: Town(s) Greenfield Road(s) Lampblack Road

Plan Preparer **Lincoln Fish** Mass. Forester License # 69
Mailing Address 115 Nash Hill Road, Haydenville, MA 01039 Phone 413-575-9790

RECORDS

Assessor's Map No.	Lot/Parcel No.	Deed Book	Deed Page	Total Acres	Ch61/61A 61B *Excluded* Acres	Ch61/61A 61B **Certified** Acres	Stewshp *Excluded* Acres	Stewshp Acres
R-10	16			122.8				122.8
R-8	12C			71.8				71.8
			TOTALS	194.6				194.6

Excluded Area Description(s) **(if additional space needed, continue on separate paper)**
No exclusions

HISTORY

Year acquired 1981 Year management began 1975

Are boundaries marked: Yes ☒ blazed/painted/flagged/signs posted (circle all that apply)? No ☐ Partially ☐

What treatments have been prescribed, but not carried out (last 10 years if plan is a recert.)?

stand no. _____ treatment _____ reason _____
(if additional space needed, continue on separate page)

Previous Management Practices (last 10 years)

Stand #	Cutting Plan #	Treatment	Yield	Acres	Date
1,2	114-1390-5	Shelterwood	162M,127C	35	2006
1,2	N/A	oak regen release	N/A	30	2008-09

Remarks: (if additional space needed, continue on separate page)
Original Stewardship Plan submitted July 1, 1993.

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Landowner Goals

Please **check** the column that best reflects the importance of the following goals:

Goal	Importance to Me			
	High	Medium	Low	Don't Know
Enhance the Quality/Quantity of Timber Products*		X		
Generate Immediate Income			X	
Generate Long Term Income	X			
Produce Firewood			X	
Defer or Defray Taxes				NA
Promote Biological Diversity	X			
Enhance Habitat for Birds	X			
Enhance Habitat for Small Animals	X			
Enhance Habitat for Large Animals	X			
Improve Access for Walking/Skiing/Recreation	X			
Maintain or Enhance Privacy				NA
Improve Hunting or Fishing				NA
Preserve or Improve Scenic Beauty	X			
Protect Water Quality	X			
Protect Unique/Special/ Cultural Areas	X			
Other:				

*This goal must be checked "HIGH" if you are interested in classifying your land under Chapter 61/61A.

In your own words, describe your goals for the property:
Maintain the property as open space, a recreational area for local residents and high quality habitat for a diversity of wildlife species. Fund maintenance and improvement of the property through carefully planned harvests of forest products designed to enhance wildlife and recreation values.

Stewardship Purpose

By enrolling in the Forest Stewardship Program and following a Stewardship Plan, I understand that I will be joining with many other landowners across the state in a program that promotes ecologically responsible resource management through the following actions and values:

1. Managing sustainably for long-term forest health, productivity, diversity, and quality.
2. Conserving or enhancing water quality, wetlands, soil productivity, carbon sequestration, biodiversity, cultural, historical and aesthetic resources.
3. Following a strategy guided by well-founded silvicultural principles to improve timber quality and quantity when wood products are a goal.
4. Setting high standards for foresters, loggers and other operators as practices are implemented; and minimizing negative impacts.
5. Learning how woodlands benefit and affect surrounding communities, and cooperation with neighboring owners to accomplish mutual goals when practical.

Signature(s): Timothy D. Mosher TIMOTHY D. MOSHER, CHAIRMAN **Date:** 11.22.16

Owner(s) (print) Town of Greenfield - Conservation Commission

(This page will be included with the completed plan.)

Property Overview, Regional Significance, and Management Summary

The subject property, 195 acres owned by the Town of Greenfield, has been managed since the 1970's for the multiple objectives of recreation, wildlife habitat and forest products. The property is composed of 4 open fields totalling 13 acres and 182 acres of woods. It is located in the northeast corner of Greenfield, a few hundred feet from the Bernardston Town Line, and bordered on the west by Route 91 and on the east by Lampblack Road.

LANDSCAPE VIEW

This property lies within a roughly 300 acre block of undeveloped forest containing a sprinkling of small meadows near road access. The terrain is pleasant, but unremarkable, being gently rolling with a small 150' tall hill toward the center of the property. Runoff from the eastern side of this hill flows into the Fall River, from the western side, runoff flows into the Green River watershed. One perennial stream flows north along the northeast corner of the property and is associated with a 1.5 acre open wetland. Besides that, there are a handful of seasonal runoffs and small wooded areas of wet soil. What is remarkable about the property is the diversity of trees, both in terms species and size. While large white pines dominate the forest visually, there are also dense inclusions of hemlock and a wide variety of hardwoods, including hickory, blackgum and some large white oaks. Most striking are the huge open-grown trees, relics from the 1800's when this landscape was open pasture. These huge specimens are well distributed throughout the property and have tremendous habitat and visual importance.

Looking at a larger view, the surrounding 2500 acres is moderately fragmented by roads (Route 91 and Route 5) and suburban development to the south, west and north. Here, the percent of forest is roughly 40%, open land 30% and roads/development 30%. To the east across Lampblack Road, there are three large properties amounting to several hundred acres protected from development by either fee ownership or Conservation Restriction. The Fall River runs through these protected properties. Here forestland is roughly 80% of the landscape, open land 15% and developed land less than 5%.

Forest cover in the surrounding landscape is overwhelmingly mature forest. Young, or early-successional forest amounts to less than 5% of the forested landscape, made of of a few small fields that have recently reverted forest and some limited regeneration or habitat cutting.

BIRD AND WILDLIFE HABITAT

The objectives in managing this property include improving the diversity and quality of wildlife habitat. Harvesting is only done if it furthers that goal. Specifically, some things that have been accomplished are to

1. Thin adjacent to many of the oaks, hickories and other mast-producing trees on the property, thereby increasing mast production for wildlife food.
2. Several acres of early-successional (brushy) wildlife habitat have been created, mostly in the vicinity of the open meadows, fostering the growth of native shrubs important in wildlife food production. These patches of brushy habitat provide nesting and feeding opportunities for bird species (i.e. chestnut sided warbler, Eastern towhee) that cannot be found in a closed-canopy forest.
3. Increased ambient light on the forest floor from adjacent harvesting has resulted in a thicker, robust understory of shrubs and saplings, providing adequate cover for ground-nesting forest birds (i.e. wood thrush, black-throated blue warbler).
4. Regeneration of mast-producing trees is currently a priority, to ensure the future diversity and habitat value of the forest. In response to thinnings and forest improvement cuttings, a number of areas now support advance oak regeneration. Cutting to release this regeneration from shade and planting to increase areas of oak are planned.
5. Important wildlife habitat features have been maintained during management activities, including the range of forest age classes from open seedling habitat to dense mature forest. Large cavity trees are abundant along old hedgerows here. These valuable denning trees have been protected during

harvesting activities. Some areas with closed canopy and little understory have been maintained for visual contrast and habitat diversity.
6. Invasive-exotic plants have been controlled here in order to maintain the dominance of native plants and their superior value as wildlife habitat.

In terms of bird habitat, the property has a number of small areas thick with low-growing vegetation and piles of woody debris to hide, nest and forage in. By and large, birds do not share our aesthetic values and some species may find that an aesthetically appealing (to humans) habitat with a closed canopy of large trees and a sparse, tidy understory offers little in terms of usable habitat. This is especially true of ground-nesting forest birds like many of the thrushes and warblers. For these species, it would be helpful if we could re-think our human attitudes to downed woody material, a valuable cover, nesting and foraging habitat for many bird species. For this reason, the reader is instructed to insert the words "woody treasure" whenever the word "slash" is encountered in this document and in life. This does not mean that the entire property needs to be covered with slash and brushy re-growth in order to be valuable bird habitat. A few patches of brushy growth and a few piles of slash, judiciously located, would go a long way towards increasing the diversity and abundance of birds on the property. See Stand Descriptions for more information. For a discussion of statewide bird habitat and populations see: The State of the Birds. 2013, Mass Audubon.

RECREATION

Most recreation on the property involves local residents going for a walk in the woods, often with the family dog. Cross country skiing on the property began about 1986 when the Town's then recreation director saw the potential in timber access roads, which were cleared and graded off at the conclusion of the first timber harvest on the property. Ultimately harvesting roads were used to create a network of trails on the entire property. Since that time, pains have been taken to keep trails clear of debris. At present, a new system of harvesting roads is in place that allows for forestry access and minimal overlap with the recreational trail system. Points of interest or "destinations" have been added to the trail system since its inception, such as vistas of the horizon, views of stately specimen trees and the self-guided stewardship trail stops.

PROPERTY HISTORY

In the past 30 years of active forest management, a number of things have been accomplished. Harvests have taken place in 1984, 1987, 1995 and 2006. Approximately 683,000 board feet of timber and 307 cords have been harvested in those combined harvests. The proceeds from harvesting are put into an account, managed by the Conservation Commission, that is used to fund maintenance on and improvements to the property. Improvements that have been funded by this revenue include:
1) construction of a network of recreational trails servicing the entire 196 acres of the property
2) construction of parking area for recreational users
3) annual maintenance of trail system including mowing and removal of deadfall
4) *construction of a self-guided stewardship trail, with a printed brochure/map, numbered stops along the trail and improvements at each stop
5) *road improvements including crushed stone for the farm crossing between fields at the north end of the property
*indicates partial funding by MA Forest Stewardship Program

In times of tight budgets, we feel that we have found a workable model for maintaining a municipal recreation/conservation area at no expense to the taxpayers. The model works by first identifying the multiple values to be fostered in managing the property and then using carefully planned harvests to implement those goals. Harvesting itself has been used to accomplish some of the desired improvements to the property, such as the clearing of recreational trails and the creation of early successional wildlife habitat. Other improvements and maintenance are funded by the revenue generated by harvesting.

GROWTH AND ALLOWABLE CUT

Estimates of growth are speculative and are subject to modifications due to factors such as insect infestations or storm damage. However, it can be useful for planning purposes to estimate how much the timber on a property can be expected to grow in order to calculate sustainable harvest volumes. The 2007 inventory reveals that there is approximately 1,500,000 board feet of standing timber on the property. Most of this timber is well spaced, of fairly good quality and by all indications growing well. From these observations, it is not unreasonable to expect an annual growth increment of 3%, or 45,000 board feet per year, 250 board feet per acre per year. In fact, growth data from the Quabbin watershed forest in central MA shows average growth to be higher for similar stands, so 3% is a conservative estimate. Compounding the annual growth rate for 10 years would allow for a harvest of over 500,000 board feet in 2017 just to cut the amount that had grown over that interval. In fact, the management objective for this property is to harvest much less than that amount, to base the harvest on accomplishing wildlife habitat enhancement practices and releasing desirable regeneration, and to allow the volume of standing timber to increase in quantity and improve in quality for the forseeable future.

CUTURAL/HISTORICAL VALUES

No old structures such as cellar holes or mill ruins have been found on the property. However, the landscape features of many areas of the property demonstrate its past use as agricultural land. Management activities are engineered to protect these historical landscape features, including old fields, hedgerows and especially large open-grown trees.

WATER QUALITY

Water quality issues are a moderate concern on this property. Due to the gradual terrain and overall scarcity of running water, the property is less vulnerable to erosion and water quality degradation than many sites. The most challenging aspect of the property is the hardpan soil, especially on the western side of the property. The main problems that result are wet recreational trails and skid roads. Dealing with wet roads involves proper road layout, judicious timing of road use, and road maintenance to ensure that muddy conditions do not turn into erosion. It is especially important to maintain water bars for drainage on trails. In wet areas of high use, it is desirable to invest in access improvements such as the stone on the access road to be installed in 2017, to minimize impact to wetlands and water quality.

The following is a description of how management decisions are arrived at on a property managed for a variety of objectives, such as the Griswold/GTD Conservation Area. It is hoped that this description will help readers to understand both the rationale for forest management and how forest values guide the implementation of management practices.

Forestry for Multiple Forest Values

On many of the properties managed by Bay State Forestry Service, the owners desire the benefits from multiple forest values, including *wildlife habitat*, *forest productivity*, *recreational opportunity*, *aesthetics*, *cultural values* and *water quality*. The management of forests for many or all of these values simultaneously is referred to in various circles as eco-forestry, ecosystem management, "green" forestry or, more traditionally, multiple use management. The significance is that cutting or harvesting on such a property will not be done for the ultimate goal of selling timber without consideration of other forest values. Rather, opportunities will be taken to manipulate the forest to enhance any of the above forest values where a significant benefit would result and the change would not adversely impact the other values. Where these values conflict, the conflict is resolved using the *principle of doing the greatest good*. For example, a vista of the horizon from a hilltop may be a desirable improvement to recreation on a property. It would not be cleared if that clearing required eliminating 5 acres of productive oak and cherry trees that would generate a long-term flow of wildlife food and revenue for the landowner. Alternatively, a vista might be cleared if the trees were predominantly low quality, such as beech infected with beech bark disease. A more effective compromise might be clearing the vista while retaining cavity trees for wildlife denning opportunities and beech trees that showed resistance to beech bark disease.

This multiple-value forestry does not necessarily carry a bias toward less cutting or lighter cutting. It recognizes the value of revenue generated by harvesting to the landowner, the value to society from the use of a renewable resource and the value of maintaining employment / a way of life for harvesters of forest products. It also recognizes that all products from a forest are not wood, nor do they necessarily need to be harvested by large yellow machines. It requires evaluation of the effects of any practice, including doing nothing, on the desired forest values. Taking a larger view, the goal of this type of management is to produce a significant portion of the forest products needed by society in an efficient manner, while allowing the productive forest to continue to provide wildlife habitat, open space and other amenities. It is decidedly *not* efficient, or environmentally desirable, to allow the Amazon to be cleared in order to satisfy our appetite for wood fiber while our forests in Massachusetts remain underutilized.

One noticeable difference from timber management is that some trees may be retained far longer than is thrifty from a timber growing perspective. Trees may be allowed to decline or die in the woods, as many wildlife species depend on declining trees that form cavities for denning sites. For the most part, large diameter cavity trees are more desirable than small. Under multiple-value management, a tree with particular wildlife

value may be retained even if its retention has a negative impact on timber growth. In general, blanket prescriptions such as a maximum diameter at which all trees should be harvested are not used in multiple-value forestry.

Aesthetics deserve mention because the tidiness of a harvesting job does more to influence most observers' opinion of that job than any other factor. While the aesthetic impact of multiple-value forestry harvests will vary from job to job, a forester will weigh the effect of different aesthetic treatment options on other forest values in order to determine management strategy. For instance, chipping slash is rarely used as an option since it usually consumes more revenue than most timber sales would generate. In addition, chipping would negatively impact wildlife habitat by eliminating coarse woody debris on the forest floor, an important element of habitat for many species.

a dead log, important wildlife habitat

An option that is often considered in order to reduce the negative aesthetic impacts of harvesting is restricting the equipment used to a forwarder. A forwarder is a machine that carries, rather than drags, logs out of the woods. Requiring a forwarder may result in a lower stumpage price to the landowner, since fewer operators have forwarders than have skidders. However, under the right conditions, it can result in less disruption to the forest floor and less damage to the residual trees. Requiring that slash be lopped low may be desirable for aesthetics, but may have a negative impact on wildlife habitat values and/or success of oak regeneration. Different circumstances may change certain management decisions.

One thing that is avoided by this type of forestry, and by good forestry in general, is the destructive practice of high-grading. High-grading is the extraction of large, high-value trees from the forest without also removing low-value trees. The result is a forest occupied by low-value, poor-form and diseased trees. By selecting out the vigorous, successful trees, high-grading populates the forest of the future with natural selection's losers. High-grading has no place in multiple-value forestry.

In practice, the interaction of values can be complex when applying multiple-value forestry. This approach requires the forester to carry arguments advocating each of the forest values in his/her head while devising and applying management prescriptions. Different options are given weight based on the relative importance of each value, its scarcity, the landowner's objectives and the forester's past experience with similar practices and their impact. Obviously, new information or changing conditions can change the relative desirability of management options. Multiple-value forestry is consequently an evolving practice in which communication with landowners and professionals in related fields is essential.

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	I	WK	137	12.9”	132	9.8 MBF	70 WP

Estimated species volumes per acre in thousand board feet:

white pine	6.2
hemlock	1.9
oak	0.8
red maple	0.4
birch	0.3
misc hdwd	0.2

This white pine stand contains frequent inclusions of hemlock, scattered large oaks (red, black and white) and an interesting variety of other hardwoods including shagbark and pignut hickory; red and sugar maple; black, white and yellow birch; white ash, black cherry, elm, beech and black gum. The site is flat to gently rolling. The soil types include Warwick, Bernardston and Cheshire sandy loams, all excellent and fertile soils for tree growth. A perennial stream and 1.5- acre open wetland are located at the northeast corner of this stand. Otherwise, the site is upland with a few intermittent drainages.

Forest health is generally good. Most stems are of good quality and are growing well. The main concern over the next several years will be the impending infestation of the hemlock wooly adelgid insect, which has the capacity to kill most of the hemlock on the property. Experience further south shows that hemlocks most likely to survive are those located in low, sheltered areas, especially on north-facing slopes.

CURRENT HABITAT CONDITIONS:

Huge white oak den tree

Wildlife values are high. Outstanding features include:

1) The large variety of mast trees as a source of wildlife food. Large-crowned white oaks are particularly valuable, as they are uncommon in this area and have a low tannin content, making them more palatable to many species. Mast production can be increased by thinning adjacent to (releasing) mast-producing trees. The long-term integrity of wildlife habitat here can be enhanced by regenerating mast-producing trees, especially oak and hickory.
2) Some very large cavity trees are well distributed throughout this stand, providing excellent den sites. Many are open-grown relics from the time when this property was largely open pasture. Future cavity trees can be provided by allowing some large trees, especially cull trees, to remain unharvested and decline. Large hemlocks in areas where they are likely to survive a wooly adelgid infestation are especially valuable for this purpose, since hemlock trees can be extremely long-lived.

OBJECTIVE CODE: CH61 = stands classified under CH61/61A STEW= stands not classified under CH61/61A
STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) Greenfield Conservation Commission Town(s) Greenfield

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3) Some early-successional (brushy) habitat is present, occurring in small open wetlands, adjacent to fields and in areas that have been harvested for this purpose. At the present time, the approximate 20 acres of brushy habitat is at the level of brushy habitat recommended for maximum habitat diversity (5-15% of total acreage). Since early-successional habitat grows very rapidly and returns to older forest (10-15 years is expected usefulness of brushy habitat for shrubland birds), creating a few additional acres of upland brushy habitat every 10-15 years would be beneficial. Brushy habitat adjacent to grassy habitat and to existing brushy habitat is more valuable to wildlife.
4) Approximately 10% of the stand is occupied by areas of large trees in which little harvesting takes place and the trees are allowed to become overmature and decline. Most of these areas are around seeps and wetlands and occupied by hemlock stands. These areas favor species, such as oven bird and black-throated green warbler, that thrive in mature forests. The balance of the stand contains numerous trees that are allowed to grow to large proportions (greater than 24" diameter), favoring species that thrive in the habitat created by large trees (e.g. pileated woodpecker).

Forest gap with thick under and mid story

5) General features important to bird habitat:
   - Canopy is 100+ feet tall. Large white pines are generally taller than other trees. Degree of crown closure ranges from 80-100% through most (85%) of property. Gaps in canopy exist where habitat cutting has occurred in the past.
   - Midstory is sparse in unthinned areas, limited to a few spindly hemlocks. A thick midstory exists in areas adjacent to canopy gaps. Most abundant mid-story species are hemlock and black birch, although white pine and oak are present in some areas.
   - Understory is robust in approximately 10% of the stand, largely where gaps were created 10 years ago. Understory under the forest canopy is thick, providing excellent cover adjacent to gaps, fields and wetlands, and where thinning has occurred in the past. Mostly sparse understory in unthinned areas. Species in decreasing order of abundance: black birch, hemlock, red maple, white pine, oak, hickory, beech, ash.
   - Soft mast (i.e. berries and other wildlife food) is abundant in gaps and adjacent areas. Species: raspberries (very thick in some canopy gaps) winterberry, maple-leaf viburnum, blueberry. Under closed canopy: Canada mayflower, wintergreen, partridgeberry.

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- Invasive-exotic plants present, especially around field edges and areas of wet soil.
- Leaf litter is adequate for ground-nesting birds in most areas of the property. A good mix of hardwood and softwood leaf litter is generally present.
- Coarse woody material is abundant in some areas, absent in others. Likely areas to find abundant CWM are adjacent to old hedgerows where large limby trees have died and/or dropped branches and areas where harvesting has occurred. Overall, CWM is adequate to address needs of species that would benefit. Continuing to build some brush piles from harvesting debris would be beneficial. Piles provide different habitat than scattered pieces.
- Fine woody material is not common. It is found only where recent (past 5 years) downing of live branches has occurred. Not lopping tops from harvesting and creating brush piles will increase benefits from fine woody material and enable benefits to last longer.

Desired Stand Conditions

Condition	**Action**	**Responsibility birds that may benefit**
Interior forest condition	No action or light thinning	Scarlet tanager, blackburnian and black-throated green warbler
Enlarge existing canopy gaps, increase density of understory and mid-story	Harvest trees adjacent to gaps, thin forest between gaps	Pewee, chestnut-sided & black-throated blue warblers, white-throated sparrow, blue-headed vireo, veery, wood thrush, grouse, woodcock, towhee
Maintain softwood component	none	Blackburnian & black-throated green warbler, blue-headed vireo
Maintain overmature pines	none	Pileated woodpecker, turkey
Maintain large, limby hedgerow and cavity trees	none	Owls, woodpeckers, woodland hawks, nuthatches
Increase fine woody debris and brush piles (woody treasure)	Pile some tops and harvest debris, avoid lopping tops	Veery, wood thrush, white-throated sparrow
Maintain/increase tree species diversity	Selective practices to regenerate all currently present native tree species	All birds & general forest health

The recreational trails through the property largely travel through this stand. By engineering harvests to avoid recreational trails as much as possible, aesthetics can be protected. Visual interest can be kept high by enhancing the view of large, unique trees, by creating a range of forest stocking levels visible from the trail and by updating the self-guided stewardship trail through the property.

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Large pines along trail

Access for some recreational uses (eg. horses), trail maintenance equipment and harvesting has been problematic in the past due to the stream at the northeast corner of the stand and another small drainage near the northwest corner. “Armoring” these two stream crossings with stone and/or buried logs will prevent them from becoming muddy and protect water quality.

From a silvicultural perspective, this stand is well stocked with a wide variety of healthy, good quality trees. Some areas, especially on the western side of the property, still have a large percentage of the available space occupied by low quality trees. This condition can continue to be addressed over time by improvement thinnings.

Regenerating this stand can be problematic, since it is desired to populate the future forest with at least the same and ideally a larger percentage of mast producing species such as oak and hickory along with white pine, which provides valuable coniferous cover for wildlife and is a superbly well adapted timber tree on this site. Repeated thinnings in the same stand tend to encourage shade tolerant regeneneration, such as red maple, beech, hemlock and black birch. While there is nothing wrong with these species, if they exclude the oaks, hickory and pine, the forest will be less diverse and valuable.

Experience has shown that the most effective way to regenerate a diversity of species on this site is the shelterwood or seed tree silvicultural systems. An overstory of desirable seed trees is left to provide natural seed, while a seedbed is prepared by removing most of the intermediate and understory trees. Once established, the young oak and pine should be released by additional cutting within 10 years. If this very important second cutting is not done, the oak and pine regeneration will eventually be shaded out. Approximately 30 acres of regeneration cutting has been accomplished in the past 20 years. Many of the areas so harvested now support oak and pine seedlings/saplings in the understory. A harvest and improvement cutting to provide more sunlight to this regeneration is planned for the winter of 2016-2017.

The desired future condition of the forest here is very much like what exists now. It is important to maintain the existing species diversity and a range of age classes. In fact, as the application of silviculture here continues to improve tree quality, the average diameter and the timber volume per acre will continue to increase. The harvest objective for the foreseeable future is to harvest less during any ten year period than the amount that grows. Areas that have been regenerated will be available to replace areas that are harvested in the future.

Large Oak

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STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	II	WO	33	11.8”	120	7.8 MBF	70 WP

Estimated species volumes in thousand board feet per acre:
White pine 5.2
Hemlock 0.6
Oak/Hickory 1.4
Red Maple 0.4
Birch 0.2

This stand occupies the top and sloping sides of a hill near the center of the property. The mix of species in this stand is very similar to Stand 1with the addition of pitch pine, an indicator of past fire in this area. There is also less hemlock and slightly more oak and hickory than Stand 1. The soil type of Bernardston sandy loam, an excellent soil for tree growing, but one that contains a hardpan that holds water near the surface. While there are no wetlands in this stand, wet soil conditions often make access problematic on the western side of the hill.

Forest health is good. The site is slightly less fertile than the lower elevations found in Stand 1 and tree quality is slightly lower as a result. Oak competes a little better with other hardwoods on this site and more oak is found in the understory here. Some nectria canker on black birch is present here, but it is not a serious problem. The adelgid insect is not as much of a concern in this stand due to the reduced percentage of hemlock.

CURRENT HABITAT CONDITIONS:

Wildlife habitat benefits from much of the same conditions found in Stand 1: large mast and cavity trees, large conifers and a small area of brushy habitat. An opportunity exists now to release existing oak and hickory regeneration throughout this stand by cutting competing low-quality and unmerchantable trees.

A vista to the northeast was created in the 1970’s and reopened in 1994. This area has largely grown tall enough to obscure the view again and it should be reopened. The area cut will provide an enjoyable destination for hikers and can also provide a small amount of early successional habitat near the grassy habitat of the neighboring property.

Regenerating hardwood saplings in vista cut

OBJECTIVE CODE: CH61 = stands classified under CH61/61A STEW= stands not classified under CH61/61A
STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) Greenfield Conservation Commission Town(s) Greenfield

Prepared April, 2007, revised Nov. 2016 by Lincoln Fish, Bay State Forestry Service

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX

Canopy is 80-100+ feet tall. Large white pines are generally taller than other trees. Degree of crown closure ranges from 80-100% through most of the stand. Gaps in canopy exist where habitat or vista cutting has occurred.

Midstory is sparse in unthinned areas, limited to a few spindly hemlocks. A thick midstory exists in areas adjacent to canopy gaps. Abundant mid-story species: black birch, white pine, hemlock, red maple, hickory and oak.

Understory is robust in approximately 15% of the stand, largely where gaps were created 10 years ago. Understory under the forest canopy is thick, providing excellent cover adjacent to gaps and where thinning has occurred in the past. Mostly sparse understory in unthinned areas. Species in decreasing order of abundance: black birch, red maple, hemlock, white pine, oak, hickory, beech, ash. Witch hazel is an abundant understory shrub.

Soft mast (i.e. berries and other wildlife food) is abundant in gaps and adjacent areas. Species: raspberries (very thick in some canopy gaps) winterberry, maple-leaf viburnum, blueberry. Under closed canopy: Canada mayflower, wintergreen, partridgeberry.

A few scattered invasive-exotic plants present, mostly barberry and bittersweet.

Leaf litter is more than adequate for ground-nesting birds in most areas of the stand.

Coarse woody material is abundant in some areas, absent in others. Likely areas to find abundant CWM are adjacent to old hedgerows where large limby trees have died and/or dropped branches, areas along the ridgetop where blowdown has occurred and areas where harvesting has occurred. Overall, CWM is adequate to address needs of species that would benefit. Continuing to build some brush piles from harvesting debris would be beneficial.

Fine woody material is not common. It is found only where recent (past 5 years) downing of live branches has occurred. Not lopping tops from harvesting and creating brush piles will increase benefits from fine woody material and enable benefits to last longer.

The desired future stand would be somewhat better in quality than what exists now, so future silviculture here will remove low quality stems. Large cull trees that provide denning habitat will be retained, however. Since oak and hickory are well adapted to this site, it makes sense to increase the percentage of these trees here at the expense of maple, birch and hemlock, all of which do not grow as well here.

Desired Stand Conditions

Condition	**Action**	**Responsibility birds that may benefit**
Interior forest condition	No action or light thinning	Scarlet tanager, blackburnian and black-throated green warbler
Enlarge existing canopy gaps, increase density of understory and mid-story	Harvest trees adjacent to gaps, thin forest between gaps	Pewee, chestnut-sided & black-throated blue warblers, white-throated sparrow, blue-headed vireo, veery, wood thrush, grouse, woodcock, towhee
Maintain softwood component	none	Blackburnian & black-throated green warbler, blue-headed vireo
Maintain overmature pines	none	Pileated woodpecker, turkey
Maintain large, limby hedgerow and cavity trees	none	Owls, woodpeckers, woodland hawks, nuthatches
Increase fine woody debris and brush piles (woody treasure)	Pile some tops and harvest debris, avoid lopping tops	Veery, wood thrush, white-throated sparrow
Maintain/increase tree species diversity	Selective practices to regenerate all currently present native tree species	All birds & general forest health

Owner(s) Greenfield Conservation Commission Town(s) Greenfield

Prepared April, 2007, revised Nov. 2016 by Lincoln Fish, Bay State Forestry Service

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	III	MW	13	NA	NA	NA	70 WP

These open, grassy areas provide valuable wildlife habitat and interesting landscape diversity for recreational users. The presence of open areas has allowed the development of huge-crowned mast-producing trees along the field edges. In addition, species such as sassafras, box-elder and red-cedar are found here, as well as numerous shrub species that are uncommon through the rest of the property. At present, these areas are well maintained largely through agricultural lease agreements with an abutting farmer.

CURRENT HABITAT CONDITIONS:

The smaller fields at the southern access road are maintained by occasional brush hogging. The smallest field is near the center of the property at the base of the hill. Over the past 30 years it has grown in to brush and tree saplings. While it does not make sense to maintain this small area as grass anymore, it does provide important brushy habitat. Since it would be fairly easy to maintain by brush hogging and if it is not done soon, the stems will become too large to brush hog, it is recommended that this habitat be brush hogged in the near future and on a cycle of every 3-5 years.

The two northern fields are maintained by haying. A hedgerow between the fields divides this grassy habitat into two, 3-4 acre units. One management option for bird habitat would be to remove the hedgerow, creating for habitat purposes a 7-8 acre opening. This may be important for grassland birds, as some require large grassy openings and will not utilize small ones. Although the area between the fields would not be mowed, it would grow up as brushy habitat to be periodically cut back, it would not be the visual impediment to nesting desirability that a row of large trees would present to grassland/openland birds. Mass Audubon personnel will be consulted about the potential value of this habitat practice.

One concern that has developed around the edge of some of the open areas is the presence of a few exotic-invasive species, including Asiatic bittersweet, multiflora rose, bush honeysuckle, autumn olive and barberry. An herbicide application to control these troublesome plants was accomplished during 2016.

Desired Stand Conditions

Condition	**Action**	**Responsibility birds that may benefit**
Maintain open habitat	Continue haying and brush hogging	Bob-o-link, chestnut sided warbler, pewee, woodcock
Enlarge field habitat	Remove hedgerow between fields	Bob-o-link, woodcock
Maintain native plant community	Control invasive-exotic plants	All birds that feed insect larvae to nestlings. Insect larvae require native plant foliage for feeding.

OBJECTIVE CODE: CH61 = stands classified under CH61/61A STEW= stands not classified under CH61/61A
STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

Owner(s) Greenfield Conservation Commission Town(s) Greenfield

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Management Recommendations

For the purposes of this report management practices with an object code of *CH61* are required to be accomplished as a commitment to the Massachusetts Current Use Program. Practices with object codes of *STEW* are voluntary and are provided as suggestions of activities that can help you achieve your woodland objectives.

Summary of the Management Recommendations for your property

Stand	Object Code	Recommendation	Value/Cost/ Cost Sharing opportunities	Acres	Timing
1, 2, 3	Stew	Invasive plant control	MA Municipal Stewardship Grant	10	2016
	Stew	Harvest to expand gaps, release regeneration	Revenue producing practice	30	2016-17
1	Stew	Cut unmerchantable stems overtopping oak regeneration	MA Municipal Stewardship Grant	30	2016-17
	Stew	Plant oak seedlings	MA Municipal Stewardship Grant	3	2017
3	Stew	Add stone to road between north fields to reduce mud and protect water quality	MA Municipal Stewardship Grant	N/A	2016-17

MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	

The practices described below represent a proposed 10-year work plan for the Griswold/GTD property.

STEW	All	All	Stewardship Trail	All	NA	NA	2016

The 16 numbered posts on the self-guided Stewardship Trail will be visited and the sites cleared as necessary. Shrub display re-planting as necessary to replace plants that have died.

STEW	III	I	Access Improvement	NA	NA	NA	2016-17

As part of the harvest described below, additional stone will be placed in a low area of the road between the two north hayfields in order to reduce mud and protect water quality.

STEW	I, II	WK,WO	Regeneration Harvest	30	80	100M	2016-17

Trees overtopping desirable regeneration will be harvested in and around areas in which regeneration cutting has occurred in the past. In most areas, the forest gaps created in the past will be expanded in order to give more light to advance regeneration.

This practice will provide enough sunlight to maintain the robust understory and allow it to develop into a dense mid-story habitat layer over the next ten years. In addition, a new concentric ring of brushy understory habitat will develop adjacent to existing forest openings, allowing the wildlife habitat benefits of a robust understory to continue.

Tops from this harvest will be left unlopped where possible and piled in several areas, both to form a barrier to deer browsing and to provide habitat for bird and animal species that benefit from brush piles. (white-throated sparrow, veery, ruffed grouse).

STEW	I,II	WK,WO	Oak Regeneration Release	30	10	NA	2016-17

Existing oak regeneration will be released by cutting competing overtopping unmerchantable trees. This practice will be done in conjunction with the regeneration harvest described above. Where oak saplings have been bent over by storms and suppressed by shade, they will be cut to the ground and allowed to sprout back. This practice will increase the chances of oak regeneration success and create long-term benefits for wildlife habitat as well as forest productivity.

STEW	All	All	Invasive-Exotic Control	10	NA	NA	2016

Colonies of invasive-exotic plants were treated with a foliar spray during September 2016. Large individuals, especially bittersweet vines, were cut and stump-treated to prevent re-sprouting. The site should be monitored and touch-up treatment performed every two years. By maintaining the dominance of native plants on the site, the value of the wildlife habitat, especially for nesting birds, is maintained.

STEW	I	WK	Oak Planting	3	N/A	N/A	2017

Three acres harvested during winter 2017 near the western boundary will be planted with oak seedlings during spring 2017. Some unmerchantable hemlocks will be felled and left unlopped after planting is complete to provide a barrier to deer browsing. Woody material left unlopped is beneficial to many bird and animal species.

OBJECTIVE CODE: CH61 = Forest Products (for Ch. 61/61A) STEW= Stewardship Program practices
STD= stand Type= Forest type AC= acre MBF= thousand board feet BA= basal area VOL= volume

Owner(s) Greenfield Conservation Commission Town(s) Greenfield

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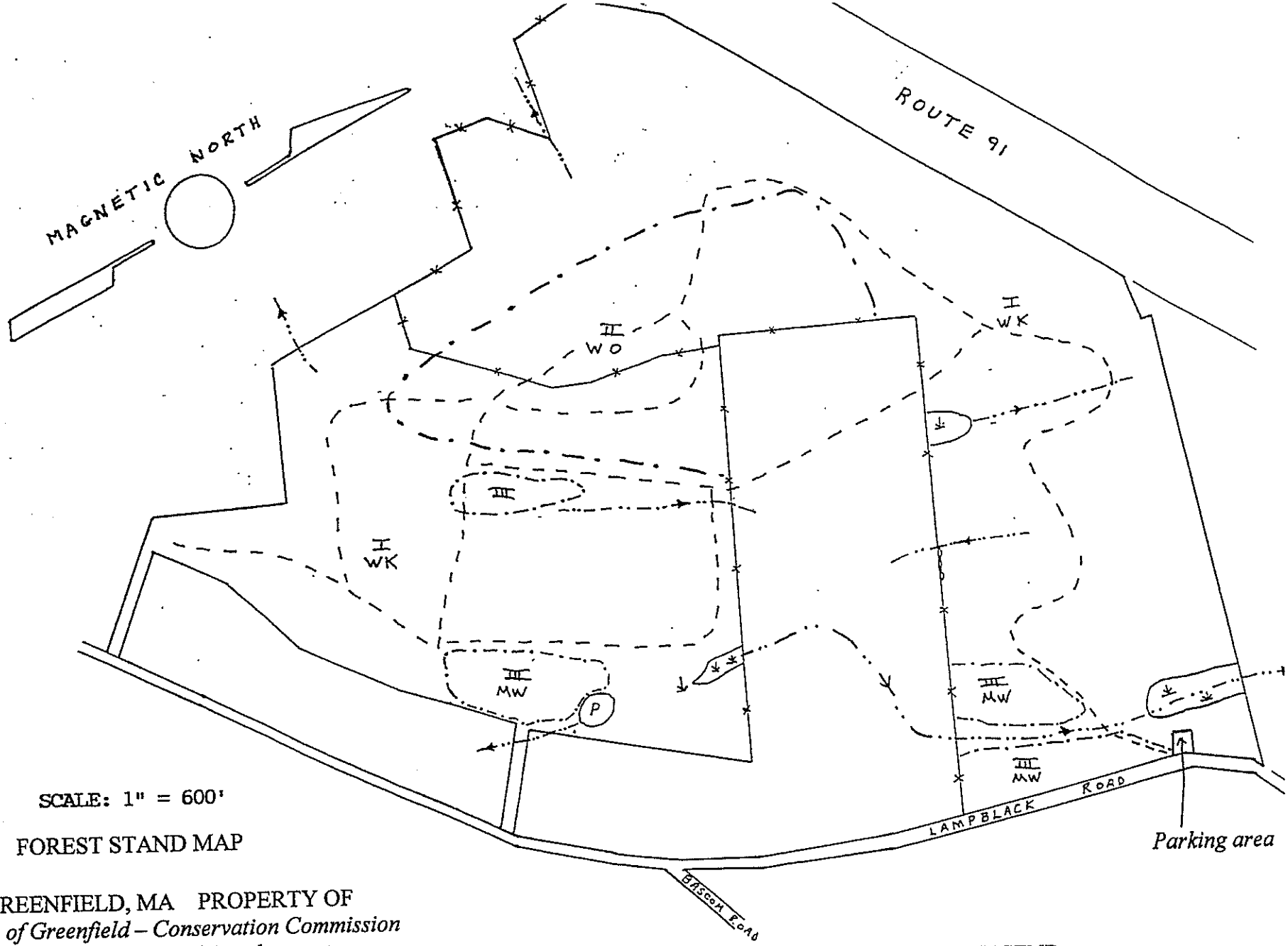
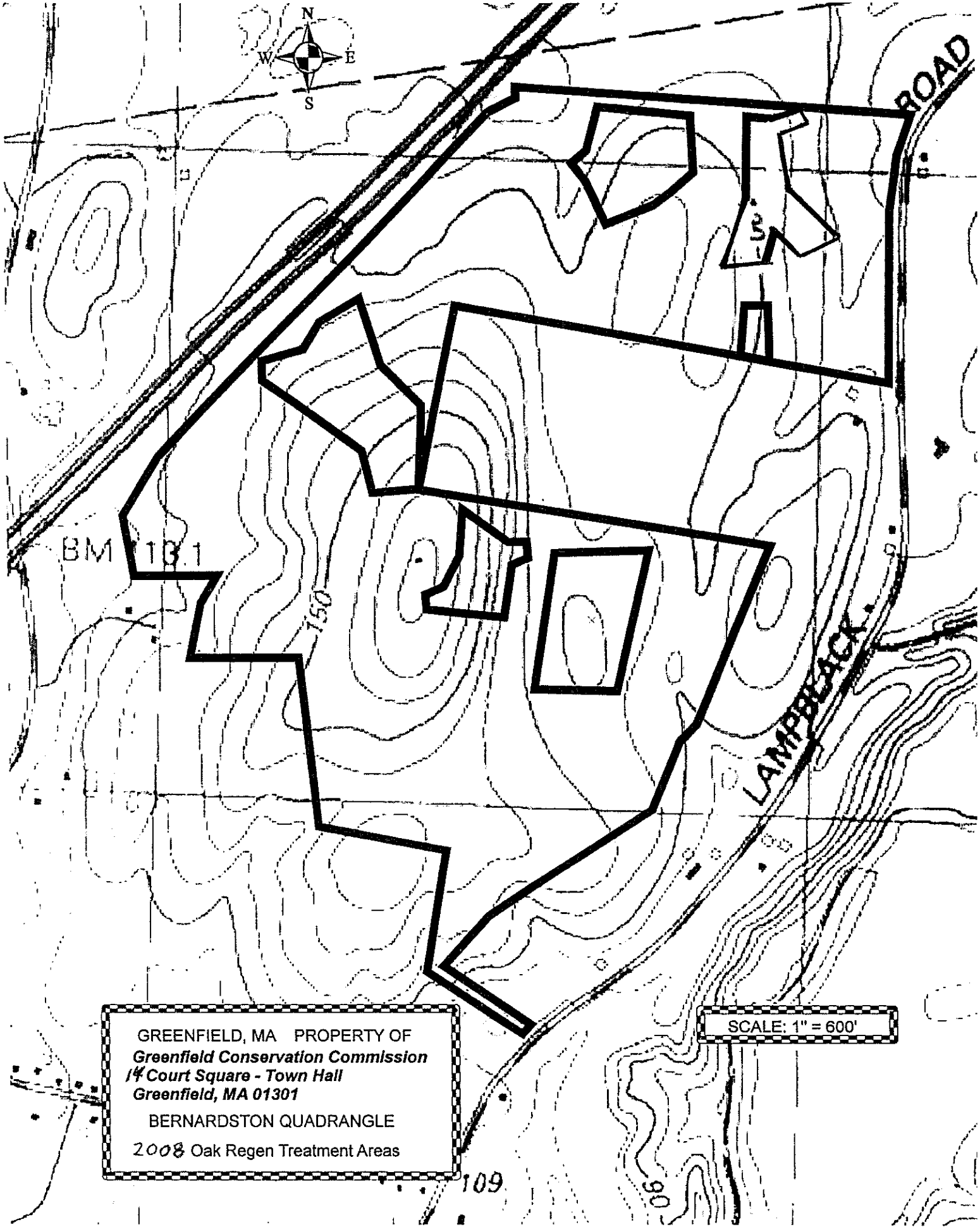


SCALE: 1" = 600'

FOREST STAND MAP

GREENFIELD, MA PROPERTY OF
Town of Greenfield – Conservation Commission
C/o Office of Planning and Development
253 Main Street
Greenfield, MA 01301
Prepared 4/07 by Lincoln Fish
From Avery Map 1956, Soper Map 1975, field data

LEGEND
Forest Stand Boundary
Intermittent Stream
Trail
Wetland Area



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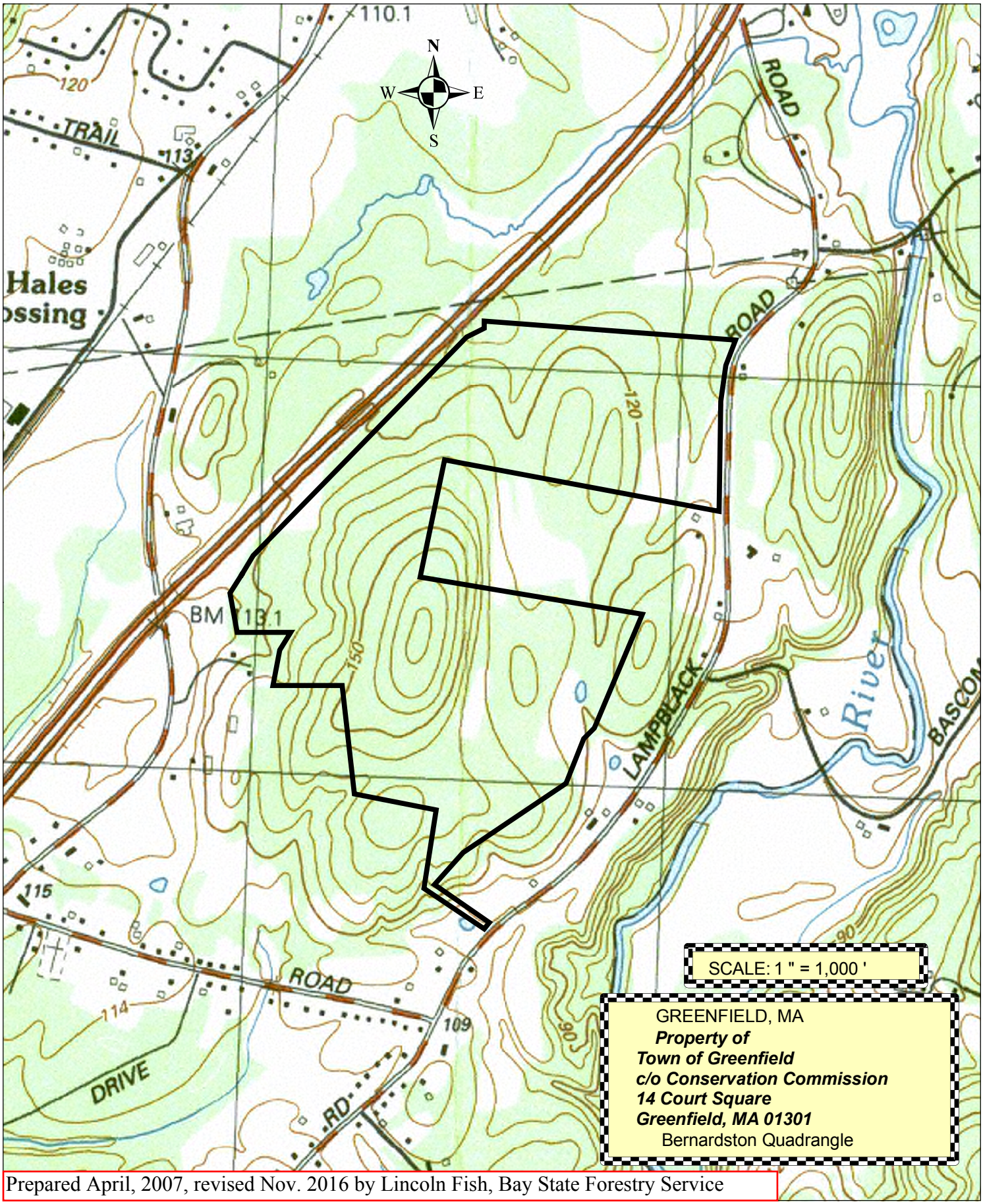

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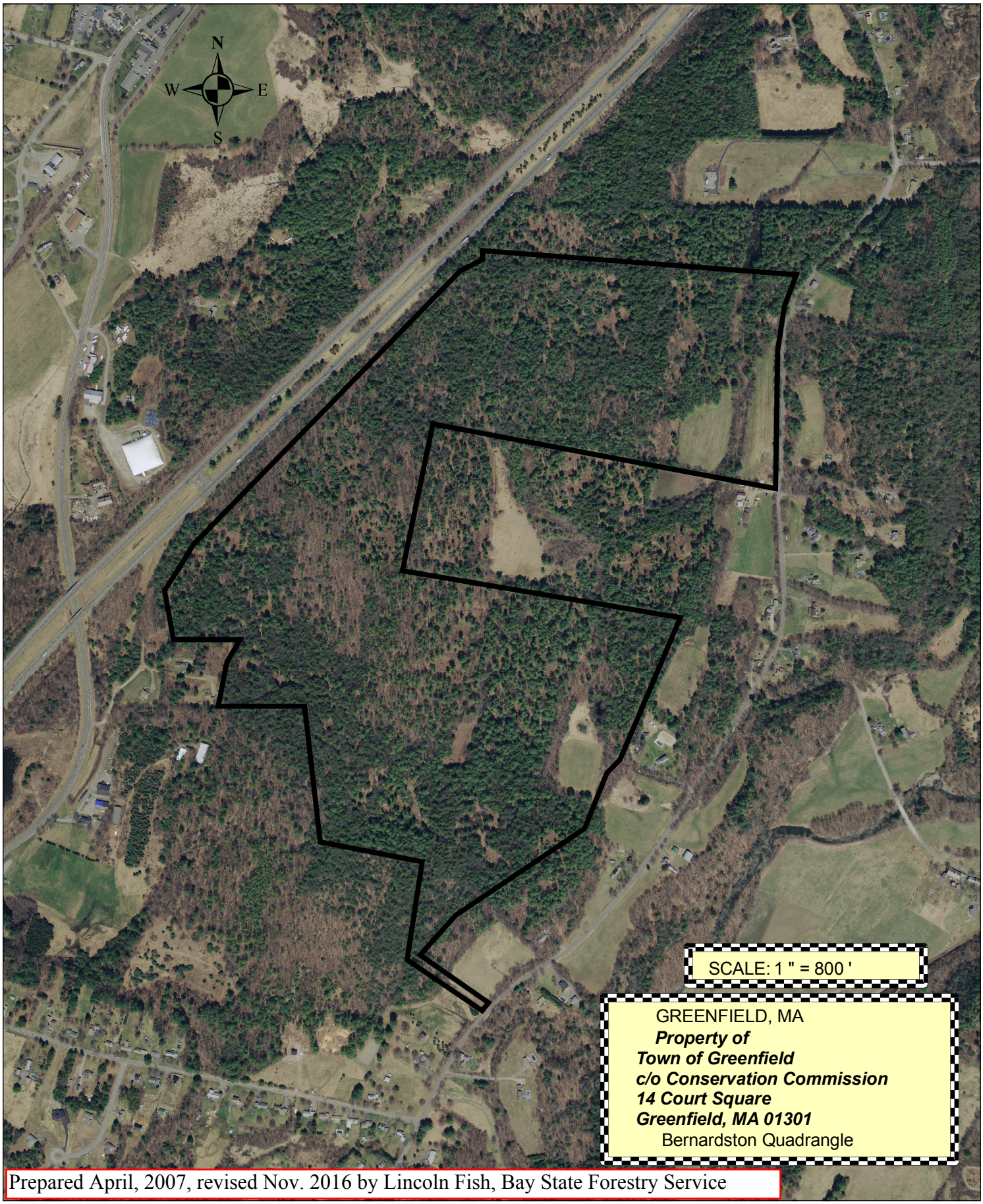

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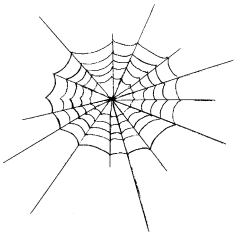
Note: The following 7 pages are educational materials supplied by the MA Forest Stewardship Program

Stewardship Issues

Massachusetts is a small state, but it contains a tremendous variety of ecosystems, plant and animal species, management challenges, and opportunities. This section of your plan will provide background information about the Massachusetts forest landscape as well as issues that might affect your land. **The Stand Descriptions and Management Practices sections of your plan will give more detailed property specific information** on these subjects tailored to your management goals.



Biodiversity: Biological diversity is, in part, a measure of the variety of plants and animals, the communities they form, and the ecological processes (such as water and nutrient cycling) that sustain them. With the recognition that each species has value, individually and as part of its natural community, maintaining biodiversity has become an important resource management goal.

While the biggest threat to biodiversity in Massachusetts is the loss of habitat to development, another threat is the introduction and spread of invasive non-native plants. Non-native invasives like European Buckthorn, Asiatic Bittersweet, and Japanese Honeysuckle spread quickly, crowding out or smothering native species and upsetting and dramatically altering ecosystem structure and function. Once established, invasives are difficult to control and even harder to eradicate. Therefore, vigilance and early intervention are paramount.

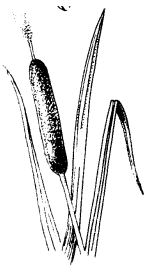
Another factor influencing biodiversity in Massachusetts concerns the amount and distribution of forest growth stages. Wildlife biologists have recommended that, for optimal wildlife habitat on a landscape scale, 5-15% of the forest should be in the seedling stage (less than 1" in diameter). Yet we currently have no more than 2-3% early successional stage seedling forest across the state. There is also a shortage of forest with large diameter trees (greater than 20"). See more about how you can manage your land with biodiversity in mind in the "Wildlife" section below. (Also refer to *Managing Forests to Enhance Wildlife Diversity in Massachusetts* and *A Guide to Invasive Plants in Massachusetts* in the binder pockets.)

Rare Species: Rare species include those that are **threatened** (abundant in parts of its range but declining in total numbers, those of **special concern** (any species that has suffered a decline that could threaten the species if left unchecked), and **endangered** (at immediate risk of extinction and probably cannot survive without direct human intervention). Some species are threatened or endangered globally, while others are common globally but rare in Massachusetts.

Of the 2,040 plant and animal species (not including insects) in Massachusetts, 424 are considered rare. About 100 of these rare species are known to occur in woodlands. Most of these are found in wooded wetlands, especially vernal pools. These temporary shallow pools dry up by late summer, but provide crucial breeding habitat for rare salamanders and a host of other unusual forest dwelling invertebrates. Although many species in Massachusetts are adapted to and thrive in recently disturbed forests, rare species are often very sensitive to any changes in their habitat

Indispensable to rare species protection is a set of maps maintained by the Division of Fisheries and Wildlife's Natural Heritage & Endangered Species Program (NHESP) that show current and historic locations of rare species and their habitats. The maps of your property will be compared to these rare species maps and the result indicated on the upper right corner of the front page of the plan. Prior to any

regulated timber harvest, if an occurrence does show on the map, the NHESP will recommend protective measures. Possible measures include restricting logging operations to frozen periods of the year, or keeping logging equipment out of sensitive areas. You might also use information from NHESP to consider implementing management activities to improve the habitat for these special species.



Riparian and Wetlands Areas: Riparian and wetland areas are transition areas between open water features (lakes, ponds, streams, and rivers) and the drier terrestrial ecosystems. More specifically, a **wetland** is an area that has hydric (wet) soils and a unique community of plants that are adapted to live in these wet soils. Wetlands may be adjacent to streams or ponds, or a wetland may be found isolated in an otherwise drier landscape. A **riparian area** is the transition zone between an open water feature and the uplands (see Figure 1). A riparian zone may contain wetlands, but also includes areas with somewhat better drained soils. It is easiest to think of riparian areas as the places where land and water meet.

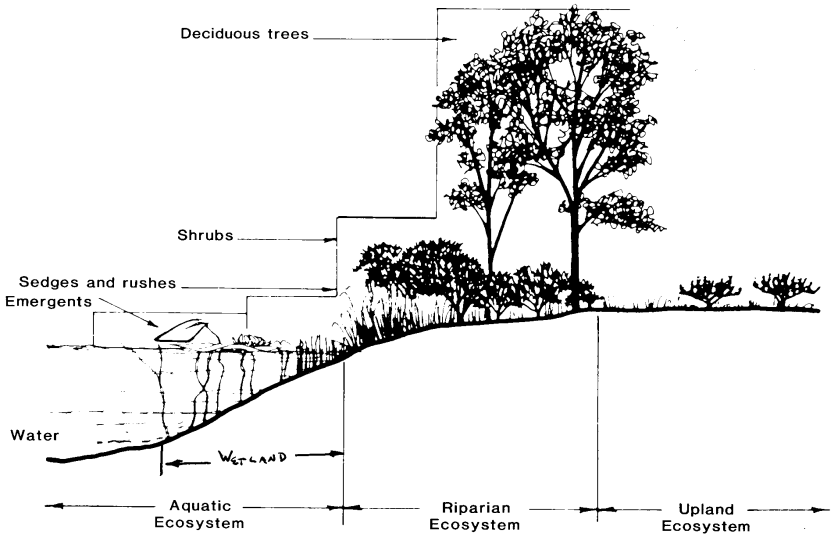


Figure 1: Example of a riparian zone.

The presence of water in riparian and wetland areas make these special places very important. Some of the functions and values that these areas provide are described below:

Filtration: Riparian zones capture and filter out sediment, chemicals and debris before they reach streams, rivers, lakes and drinking water supplies. This helps to keeps our drinking water cleaner, and saves communities money by making the need for costly filtration much less likely.

Flood control: By storing water after rainstorms, these areas reduce downstream flooding. Like a sponge, wetland and riparian areas absorb stormwater, then release it slowly over time instead of in one flush.

Critical wildlife habitat: Many birds and mammals need riparian and wetland areas for all or part of their life cycles. These areas provide food and water, cover, and travel corridors. They are often the most important habitat feature in Massachusetts' forests.

Recreational opportunities: Our lakes, rivers, streams, and ponds are often focal points for recreation. We enjoy them when we boat, fish, swim, or just sit and enjoy the view.

In order to protect wetlands and riparian areas and to prevent soil erosion during timber harvesting activities, Massachusetts promotes the use of "Best Management Practices" or BMPs. Maintaining or reestablishing the protective vegetative layer and protecting critical areas are the two rules that underlie these common sense measures. DCR's Massachusetts Forestry Best Practices Manual (included with this plan) details both the legally required and voluntary specifications for log landings, skid trails, water bars, buffer strips, filter strips, harvest timing, and much more.

The two Massachusetts laws that regulate timber harvesting in and around wetlands and riparian areas are the Massachusetts Wetlands Protection Act (CH 131), and the Forest Cutting Practices Act (CH132). Among other things, CH132 requires the filing of a cutting plan and on-site inspection of a harvest operation by a DCR Service Forester to ensure that required BMPs are being followed when a commercial harvest exceeds 25,000 board feet or 50 cords (or combination thereof).

Soil and Water Quality: Forests provide a very effective natural buffer that holds soil in place and protects the purity of our water. The trees, understory vegetation, and the organic material on the forest floor reduce the impact of falling rain, and help to insure that soil will not be carried into our streams and waterways.

To maintain a supply of clean water, forests must be kept as healthy as possible. Forests with a diverse mixture of vigorous trees of different ages and species can better cope with periodic and unpredictable stress such as insect attacks or windstorms.

Timber harvesting must be conducted with the utmost care to ensure that erosion is minimized and that sediment does not enter streams or wetlands. Sediment causes turbidity which degrades water quality and can harm fish and other aquatic life. As long as Best Management Practices (BMPs) are implemented correctly, it is possible to undertake active forest management without harming water quality.

Forest Health: Like individual organisms, forests vary in their overall health. The health of a forest is affected by many factors including weather, soil, insects, diseases, air quality, and human activity. Forest owners do not usually focus on the health of a single tree, but are concerned about catastrophic events such as insect or disease outbreaks that affect so many individual trees that the whole forest community is impacted.

Like our own health, it is easier to prevent forest health problems then to cure them. This preventative approach usually involves two steps. First, it is desirable to maintain or encourage a wide diversity of tree species and age classes within the forest. This diversity makes a forest less susceptible to a single devastating health threat. Second, by thinning out weaker and less desirable trees, well-spaced healthy individual trees are assured enough water and light to thrive. These two steps will result in a forest of vigorously growing trees that is more resistant to environmental stress.

Fire: Most forests in Massachusetts are relatively resistant to catastrophic fire. Historically, Native Americans commonly burned certain forests to improve hunting grounds. In modern times, fires most often result from careless human actions. The risk of an unintentional and damaging fire in your woods could increase as a result of logging activity if the slash (tree tops, branches, and debris) is not treated correctly. Adherence to the Massachusetts slash law minimizes this risk. Under the law, slash is to be removed from buffer areas near roads, boundaries, and critical areas and lopped close to the ground to speed decay. Well-maintained woods roads are always desirable to provide access should a fire occur.

Depending on the type of fire and the goals of the landowner, fire can also be considered as a management tool to favor certain species of plants and animals. Today the use of prescribed burning is largely restricted to the coast and islands, where it is used to maintain unique natural communities such as sandplain grasslands and pitch pine/scrub oak barrens. However, state land managers are also attempting to bring fire back to many of the fire-adapted communities found elsewhere around the state.

Wildlife Management: Enhancing the wildlife potential of a forested property is a common and important goal for many woodland owners. Sometimes actions can be taken to benefit a particular species of interest (e.g., put up Wood Duck nest boxes). In most cases, recommended management practices can benefit many species, and fall into one of three broad strategies. These are **managing for diversity, protecting existing habitat, and enhancing existing habitat**.

Managing for Diversity – Many species of wildlife need a variety of plant communities to meet their lifecycle requirements. In general, a property that contains a diversity of habitats will support a more varied wildlife population. A thick area of brush and young trees might provide food and cover for grouse and cedar waxwing; a mature stand of oaks provides acorns for foraging deer and turkey; while an open field provides the right food and cover for cottontail rabbits and red fox. It is often possible to create these different habitats on your property through active management. The appropriate mix of habitat types will primarily depend on the composition of the surrounding landscape and your objectives. It may be a good idea to create a brushy area where early successional habitats are rare, but the same practice may be inappropriate in the area's last block of mature forest.

Protecting Existing Habitat – This strategy is commonly associated with managing for rare species or those species that require unique habitat features. These habitat features include vernal pools, springs and seeps, forested wetlands, rock outcrops, snags, den trees, and large blocks of unbroken forest. Some of these features are rare, and they provide the right mix of food, water, and shelter for a particular species or specialized community of wildlife. It is important to recognize their value and protect their function. This usually means not altering the feature and buffering the resource area from potential impacts.

Enhancing Existing Habitat – This strategy falls somewhere between the previous two. One way the wildlife value of a forest can be enhanced is by modifying its structure (number of canopy layers, average tree size, density). Thinning out undesirable trees from around large crowned mast (nut and fruit) trees will allow these trees to grow faster and produce more food. The faster growth will also accelerate the development of a more mature forest structure, which is important for some species. Creating small gaps or forest openings generates groups of seedlings and saplings that provide an additional layer of cover, food, and perch sites.

Each of these three strategies can be applied on a single property. For example, a landowner might want to increase the habitat diversity by reclaiming an old abandoned field. Elsewhere on the property, a stand of young hardwoods might be thinned to reduce competition, while a "no cut" buffer is set up around a vernal pool or other habitat feature. The overview, stand description and management practice sections of this plan will help you understand your woodland within the context of the surrounding landscape and the potential to diversify, protect or enhance wildlife habitat.

Wood Products: If managed wisely, forests can produce a periodic flow of wood products on a sustained basis. Stewardship encompasses finding ways to meet your current needs while protecting the forest's ecological integrity. In this way, you can harvest timber and generate income without compromising the opportunities of future generations.

Massachusetts forests grow many highly valued species (white pine, red oak, sugar maple, white ash, and black cherry) whose lumber is sold throughout the world. Other lower valued species (hemlock, birch, beech, red maple) are marketed locally or regionally, and become products like pallets, pulpwood, firewood, and lumber. These products and their associated value-added industries contribute between 200 and 300 million dollars annually to the Massachusetts economy.

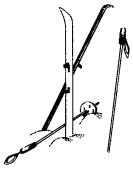
By growing and selling wood products in a responsible way you are helping to our society's demand for these goods. Harvesting from sustainably managed woodlands – rather than from unmanaged or poorly managed forest – benefits the public in a multitude of ways. The sale of timber, pulpwood, and firewood also provides periodic income that you can reinvest in the property, increasing its value and helping you meet your long-term goals. Producing wood products helps defray the costs of owning woodland, and helps private landowners keep their forestland undeveloped.

Cultural Resources: Cultural resources are the places containing evidence of people who once lived in the area. Whether a Native American village from 1,700 years ago, or the remains of a farmstead from the 1800's, these features all tell important and interesting stories about the landscape, and should be protected from damage or loss.

Massachusetts has a long and diverse history of human habitation and use. Native American tribes first took advantage of the natural bounty of this area over 10,000 years ago. Many of these villages were located along the coasts and rivers of the state. The interior woodlands were also used for hunting, traveling, and temporary camps. Signs of these activities are difficult to find in today's forests. They were obscured by the dramatic landscape impacts brought by European settlers as they swept over the area in the 17th and 18th centuries.

By the middle 1800's, more than 70% of the forests of Massachusetts had been cleared for crops and pastureland. Houses, barns, wells, fences, mills, and roads were all constructed as woodlands were converted for agricultural production. But when the Erie Canal connected the Midwest with the eastern cities, New England farms were abandoned for the more productive land in the Ohio River valley, and the landscape began to revert to forest. Many of the abandoned buildings were disassembled and moved, but the supporting stonework and other changes to the landscape can be easily seen today.

One particularly ubiquitous legacy of this period is stone walls. Most were constructed between 1810 and 1840 as stone fences (wooden fence rails had become scarce) to enclose sheep within pastures, or to exclude them from croplands and hayfields. Clues to their purpose are found in their construction. Walls that surrounded pasture areas were comprised mostly of large stones, while walls abutting former cropland accumulated many small stones as farmers cleared rocks turned up by their plows. Other cultural features to look for include cellar holes, wells, old roads and even old trash dumps.



Recreation and Aesthetic Considerations: Recreational opportunities and aesthetic quality are the most important values for many forest landowners, and represent valid goals in and of themselves. Removing interfering vegetation can open a vista or highlight a beautiful tree, for example. When a landowner's goals include timber, thoughtful forest management can be used to accomplish silvicultural objectives while also reaching recreational and/or aesthetic objectives. For example, logging trails might be designed to provide a network of cross-country ski trails that lead through a variety of habitats and reveal points of interest.

If aesthetics is a concern and you are planning a timber harvest, obtain a copy of this excellent booklet: *A Guide to Logging Aesthetics: Practical Tips for Loggers, Foresters & Landowners*, by Geoffrey T. Jones, 1993. (Available from the Northeast Regional Agricultural Engineering Service, (607) 255-7654, for $7). Work closely with your consultant to make sure the aesthetic standards you want are included in the contract and that the logger selected to do the job executes it properly. The time you take to plan ahead of the job will reward you and your family many times over with a fuller enjoyment of your forest, now and well into the future.

Invasive Species Management: Invasive species pose immediate and long-term threats to the woodlands of MA. Defined as a non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human, animal, or plant health, invasives are well-adapted to a variety of environmental conditions, out-compete more desirable native species, and often create monocultures devoid of biological diversity. The websites of the Invasive Plant Atlas of New England, www.nbii-nin.ciesin.columbia.edu/ipane, and the New England Wildflower Society, www.newfs.org are excellent sources of information regarding the identification and management of invasive plants. Some of the common invasive plants found in MA are listed below.

- Oriental Bittersweet (Celastrus orbiculata)
- Glossy Buckthorn (Frangula alnus)
- Multiflora Rose (Rosa multiflora)
- Japanese Barberry (Berbis thunbergii)
- Japanese Knotweed (Fallopia japonica)
- Autumn Olive (Eleaeagnus umbellata)

Early detection and the initiation of control methods soon after detection are critical to suppressing the spread of invasive species. Selective application of the proper herbicide is often the most effective control method. See the next section for information on the use of chemicals in forest management activities.

Pesticide Use

Pesticides such as herbicides, insecticides, fungicides, and rodenticides are used to control "pests". A pest is any mammal, bird, invertebrate, plant, fungi, bacteria or virus deemed injurious to humans and/or other mammals, birds, plants, etc. The most common forest management use of a pesticide by woodland owners is the application of herbicide to combat invasive species. MA DCR suggests using a management system(s) that promotes the development and adoption of an environmentally friendly Integrated Pest Management (IPM) method of pest management that strives to minimize the use of chemical pesticides and minimize impact to desirable native species. If chemicals are used, proper equipment and training should be utilized to minimize health and environmental risks. In Massachusetts, the application of pesticides is regulated by the MA Pesticide Control Board. For more information, contact MA Department of Agricultural Resources (MDAR), Pesticide Bureau at (617) 626-1776

On MA Private Lands Group Certification member properties, no chemicals listed in CHEMICAL PESTICIDES IN CERTIFIED FORESTS: INTERPRETATION OF THE FSC PRINCIPLES AND CRITERIA, Forest Stewardship Council, Revised and Approved, July 2002, may be used.

This is your Stewardship Plan. It is based on the goals that you have identified. The final success of your Stewardship Plan will be determined first, by how well you are able to identify and define your goals, and second, by the support you find and the resources you commit to implement each step.

It can be helpful and enjoyable to visit other properties to sample the range of management activities and see the accomplishments of others. This may help you visualize the outcome of alternative management decisions and can either stimulate new ideas or confirm your own personal philosophies. Don't hesitate to express your thoughts, concerns, and ideas. Keep asking questions! Please be involved and enjoy the fact that you are the steward of a very special place.

Signature Page **Please check each box that applies.**

☐ **CH. 61/61A Management Plan** **I attest that I am familiar with and will be bound by all applicable Federal, State, and Local environmental laws and /or rules and regulations of the Department of Conservation and Recreation. I further understand that in the event that I convey all or any portion of this land during the period of classification, I am under obligation to notify the grantee(s) of all obligations of this plan which become his/hers to perform and will notify the Department of Conservation and Recreation of said change of ownership.**

☒ **Forest Stewardship Plan.** **When undertaking management activities, I pledge to abide by the management provisions of this Stewardship Management Plan during the ten year period following approval. I understand that in the event that I convey all or a portion of the land described in this plan during the period of the plan, I will notify the Department of Conservation and Recreation of this change in ownership.**

☐ **Green Certification.** **I pledge to abide by the FSC-US Forest Management Standard and MA Private Lands Group Certification for a period of five years. To be eligible for Green Certification you must also check the box below.**

☐ **Tax considerations.** **I attest that I am the registered owner of this property and have paid any and all applicable taxes, including outstanding balances, on this property.**

Signed under the pains of perjury:

Owner(s) Timothy D. Mosher, Con Comm Chairman **Date** 11. 22. 16

Owner(s)_____ **Date**_____

I attest that I have prepared this plan in good faith to reflect the landowner's interest.

Plan Preparer Lincoln Fish **Date** November 18, 2016

I attest that the plan satisfactorily meets the requirements of CH61/61A and/or the Forest Stewardship Program.

Approved, Service Forester_____ **Date**_____

Approved, Regional Supervisor_____ **Date**_____

In the event of a change of ownership of all or part of the property, the new owner must file an amended Ch. 61/61A **plan** **within 90 days** **from the transfer of title to insure continuation of** Ch. 61/61A **classification.**

Owner(s) Town of Greenfield – Conservation Commission **Town(s)** Greenfield