



FOREST MANAGEMENT PLAN

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



APR 20 2010

CHECK-OFFS					Administrative Box	
CH61 cert. <input type="checkbox"/>	CH61A cert. <input type="checkbox"/>	CH61B cert. <input type="checkbox"/>	STWSHP new <input checked="" type="checkbox"/>	C-S EEA <input type="checkbox"/>	Case No. <u>153-8955</u>	Orig. Case No. <u>—</u>
recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	renew <input type="checkbox"/>	Other <input type="checkbox"/>	Owner ID <u>502499</u>	Add. Case No. <u>—</u>
amend <input type="checkbox"/>	amend <input type="checkbox"/>	amend <input type="checkbox"/>	Green Cert <input type="checkbox"/>		Date Rec'd <u>4-20-10</u>	Ecoregion <u>221A4</u>
Plan Change: _____ to _____					Plan Period <u>2011-2040</u>	Topo Name <u>Fitchburg</u>
					Conservation Rest. <input type="checkbox"/>	River Basin <u>Nashua R.</u>
					Rare Spp. Hab. <u>yes</u>	
					CR Holder _____	

OWNER, PROPERTY, and PREPARER INFORMATION

Property Owner(s) Leominster Water Department, c/o Patrick LaPointe
Mailing Address 109 Graham Street, Leominster, MA 01453 Phone 978-534-7590 (501)

Property Location: Town(s) Leominster (Notown Reservoir) Road(s) Route 2

Plan Preparer Gary H. Gouldrup, New England Forestry Cons., Inc. Mass. Forester License # 81
Mailing Address 72 Townsend Street, Pepperell, MA 01463 Phone 978-433-8780

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
*	*	*	*	886.64	NA	NA	274.71	611.93
TOTALS				886.64	NA	0.00	274.71	611.93

Excluded Area Description(s) (if additional space needed, continue on separate paper)

There are 274.71 acres of land to be excluded from forest stewardship management. The excluded area includes the 217.20+/- acres of Notown Reservoir, 52.51 acres of powerline right-of-way, and 5.00 acres of open non-forest land.

HISTORY Year acquired 1926 Year management began 2004

Is subdivision plan on file with municipality? Yes No

Are boundaries blazed/painted? Yes No Partially

Have forest products been cut within past 2 years? Yes No

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

stand no. NA treatment NA reason NA

(if additional space needed, continue on separate page)

Previous Management Practices (last 10 years)

Stand #	Cutting Plan #	Treatment	Yield	Value	Acres	Date
<u>All</u>	<u>NA</u>	<u>Trail Management</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>2004-2009</u>
<u>3</u>	<u>No</u>	<u>Storm Damage Clean-up</u>	<u>NA</u>	<u>NA</u>	<u>1+/-</u>	<u>2010</u>

Remarks: (if additional space needed, continue on separate page)

* Acreage for the Notown Reservoir is based on Assessor Maps and GPS field work and calculations. Please see Page 2 for Assessor's Map, Lot, and Book and Page information.

Forest Management Plan Fall Brook 4-20-2010.doc

RECORDS (continued)

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
458	4	-	-	-	NA	NA	-	-
458	3	-	-	-	NA	NA	-	-
362	21A	-	-	-	NA	NA	-	-
362	16	64571	165	-	NA	NA	-	-
362	14	-	-	-	NA	NA	-	-
362	1	5 Deeds	-	-	NA	NA	-	-
361	1	3 Deeds	-	-	NA	NA	-	-
362	6	434	515	-	NA	NA	-	-
429	6	434	515	-	NA	NA	-	-
429	7	527	143	-	NA	NA	-	-
429	8	440	316	-	NA	NA	-	-
429	9	2 Deeds	-	-	NA	NA	-	-
429	10	2 Deeds	-	-	NA	NA	-	-
429	11	449	396	-	NA	NA	-	-
429	12	446	107	-	NA	NA	-	-
362	15	6457	165	-	NA	NA	-	-
TOTALS				886.64	NA	0.00	274.71	611.93

The above property information was taken from town Assessor records and information provided by the Leominster Water Department. Map 361 Lot 1 includes land within the Haynes Reservoir Watershed. Acreage was derived from Assessor maps and GPS field work. Individual lot information is not completely available at the Assessor's Office.

EXCLUDED AREA DESCRIPTION (continued):

There are 274.71 acres of land to be excluded from forest stewardship management. The excluded area includes the 217.20+/- acres of Notown Reservoir, 52.51 acres of powerline right-of-way, and 5.00 acres of open non-forest land.

HISTORY:

Past management includes trail maintenance, fire road maintenance, storm damage clean-up and general reservoir maintenance.

Partial boundary work has been done on properties abutting the Notown Reservoir. The Leominster State Forest has blazed and painted the property lines abutting the Notown Reservoir with blue paint.

Owner(s) Leominster Water Department – Notown Reservoir Town(s) Leominster



Property Overview, Regional Significance, and Management Summary

The Notown Reservoir watershed property is located in the northwestern corner of Leominster on the south side of Route 2. The property was initially acquired by the Town of Leominster in the 1920's with other parcels being added periodically over time.

The property lies in the Nashua River Watershed. Water that passes through the watershed flows west into the Notown Reservoir. From the Reservoir water flows northeast into Goodfellow Pond and Simonds Pond on the south side of Route 2. There is a water filtration plant on the east side of Simonds Pond.

Forest soils on the property are capable of producing high quality timber resources. Upland areas consist of well and moderately drained fine sandy loam soils (Paxton-Chatfield-Hollis-Canton-Woodbridge). The poorly drained sites consist of fine sandy loam (Whitman) and muck (Scarboro).

The property is comprised of mature upland forest types which include red pine and white pine plantations, white pine-hardwoods, red maple swamps, and oak-hardwoods. There are 23-acres of young forest habitat. This area is Stand 13 on the Forest Stand Type Map. The previous owner virtually clearcut this area about 6-8 years ago.

The ice storm of 2008 has severely damaged the red pine plantations and many areas within the oak-hardwood forest type. Approximately 20-25 acres of the red pine stands have received over 75% overstory mortality. Red pine crowns snapped off of the main stems leaving standing snags throughout the damaged stands. The hardwood stands have also received crown damage, and mortality from the storm is estimated to be approximately 10-20% of the total overstory.

No commercial timber harvesting has been conducted on the property since field abandonment. The only timber management on the property was the establishment of the red and white pine plantations. Increment borings of the stands should be made to determine the date of planting for historical records. Cellar holes can be found along Mount Elam Road. These sites will be preserved as cultural resource areas.

Trails have been established on the property by volunteers from the Leominster Land Trust, Leominster Recreation Department, Boy Scouts of America, Trustees of Reservations and Leominster Trail Stewards. Signs at the entrance of the trails indicate the prohibited and allowable uses of the property. Prohibited activities include motor vehicle use, smoking, dogs, horses, fires, fishing, camping, ATV's, snowmobiles, boats, and swimming. Allowable uses include cross country skiing, snowshoeing, hiking, archery, and hunting.



Property Overview, Regional Significance, and Management Summary

The primary management objective of the Notown Reservoir will be to preserve, maintain and improve water quality as a public water resource supply for the residents of Leominster. The Leominster Water Department Commission has reviewed the Quabbin Reservoir Watershed System Land Management Plan, 2007-2017. The Quabbin Forest Management Objectives can be found on page 144 of the Plan. The Leominster Water Department would like to pursue management of the Notown Reservoir as stated in the first paragraph under the “Primary Objectives” (5.2.3.1). *“The primary objective of forest management of the Quabbin (Notown) forest is to create and maintain a complex forest structure, which forms a protective forest cover and a biological filter on the watershed land. This watershed protection forest is designed to be vigorous, diverse in species and age, actively accumulating biomass, conserving ecological and economic values, actively regenerating, and most importantly maintaining a predictable flow of high quality water from the land”*. The Leominster Water Department will use the Quabbin Plan as a guide when managing the Leominster watershed lands.

Management on the Notown Reservoir will be approached by using the “*Subwatershed Administration of Forest Management*”. The Quabbin Plan defines a subwatershed on page 145 (5.2.3.2.1). *“A subwatershed is defined in most cases as the land area that drains to a perennial tributary of the reservoir.”* The Quabbin Plan defines this management theory on page 146 (5.2.3.2.2). *“The general theory behind the use of subwatershed-based planning is to control the proportion of a drainage area that is disturbed by management activities (e.g., logging or road work) during the management period in order to reduce the chances of water quality impacts. This approach is partly based on research on experimental watersheds throughout the eastern US that indicate that until approximately 25-30% of the watershed overstory stocking is harvested (assuming nearly 100% forest cover type), there is no detectable increase in water yield (Hornbeck and Kochenderfer, 2004; Hornbeck et al., 1993). As increases in transport of sediments and nutrients to tributaries and the reservoir are directly related to increases in water yield, it follows that the 25-30% threshold also applies to water quality changes (so long as Conservation Management Practices are in place, the greatest concern is with the movement of nutrients rather than sediments). The same research also demonstrated that water yield generally returns to pre-harvest conditions as the harvested area regenerates – usually within 3-10 years.”*

Owner(s) Leominster (Notown Reservoir) Town(s) Leominster



Property Overview, Regional Significance, and Management Summary

The Quabbin Plan further goes on to say that *“While the 25-30% figure provides a guideline for meeting water quality standards, other factors, such as soil types, topography, proximity of the management work to water courses, and the concentration and distribution of the harvesting can affect the decision about acceptable levels of harvesting.”*

Management priorities will focus on storm damage clean-up to reduce the forest fire threat that has been created from the ice storm. Efforts to reduce the red pine component will also be a priority in order to move towards more natural forest conditions. Creating forest diversity for the overall health of the forest will also be pursued.

Trails on the watershed property are managed by the Leominster Trail Stewards (LTS). The mission of the Leominster Trail Stewards is *“to improve and maintain the City’s trails and to promote their appropriate use for the benefit and enjoyment of its residents and visitors”*. LTS is responsible for developing new trails and enhancing the trail/fire roads network. They are responsible for monitoring and maintaining the trails and work with the Leominster Water Department when determining location, access, parking and safety issues. Their goal is to provide a user-friendly trail system that encourages residents to enjoy the open spaces, parks and conservation land in Leominster. They promote the trails by providing a comprehensive website, distributing trail maps, providing trail pamphlets, maintaining the map houses, running walks and jogs, sponsoring public events and cleanups, setting up and staffing booths for town activities and celebrations, and giving presentations. They foster community involvement by identifying projects and tasks that can be done by youth organizations and volunteers.

Wildlife habitat will be improved in the timber harvesting practices that are scheduled for this forest. Young and early successional forest types beneficial to many form of wildlife represent roughly 3% of the forest structure. This valuable habitat will be created in the salvage and patch cutting of the red pine stands.

Invasive species on the property include Japanese barberry and bittersweet. There do not appear to be any major problems with forest regeneration or the destruction of natural communities as a result of these species. Efforts to eliminate or control the spread of invasive species will be pursued mainly through good timber harvesting practices aimed at establishing vigorously growing regeneration in the forest understory.

Owner(s) Leominster (Notown Reservoir) Town(s) Leominster



Property Overview, Regional Significance, and Management Summary

Timber management will focus on salvage, individual tree selection harvesting, group selection, shelterwood harvesting, patch cutting, and improvement thinning. These practices will be designed to improve tree growing conditions, diversify age classes, increase the timber value of forest stands for the future, and most importantly maintain a healthy watershed environment that produces high quality water for the residents of Leominster. As a general rule, evenaged management (patch cutting and shelterwood harvesting practices) will not be conducted within 400 feet of the bank of the reservoirs and at least 200 feet from the bank of any tributary.

The Forest Cutting Practices Act (Chapter 132) contains BMP's for work in wetland and stream crossing areas which will be followed. The City of Leominster will go above and beyond the general Best Management Practices in areas deemed sensitive by the Conservation Commission when harvesting near wetlands, open bodies of water, or when crossing tributaries of the reservoir. This will involve installing bridges and mitigation structures deemed necessary to protect water quality.

The Forest Cutting Practices Act protects the benefits of forests through a permitting process. Applicable to timber harvesting on both public and private forestland, the FCPA regulates any commercial timber cutting of wood products greater than 25 thousand board feet or 50 cords on any parcel of land at any one time. Activities exempt under the FCPA include harvesting for: 1) rights-of-way for public utilities and public highways, 2) cultivation, pasture or pasture maintenance, 3) non-commercial use of the landowner or tenant, 4) changing land use when permitted by town or city, 5) small commercial harvests (However, a cutting plan may be filed to gain exemption to M.G.L. Ch. 131 the Wetlands Protection Act if wetland resources are involved.)

If an activity is not exempt, the FCPA requires filing a Forest Cutting Plan with the Department of Conservation and Recreation and the local conservation commission at least ten business days before the proposed start date. At the same time the landowner or agent prepares the Notice of Intent to Abutters form, which must be sent to abutters of record whose boundaries are within 200 feet of the cutting area. The purpose of the Notice of Intent to Abutters is to provide an opportunity for landowners to determine if boundary lines have been accurately marked, it is not an opportunity for comment on the operation itself.

Owner(s) Leominster (Notown Reservoir) Town(s) Leominster

Leominster Water Department

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				X
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			X	
Improve Hunting or Fishing			X	
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.

1. In your own words please describe your goals for the property:

To thin out over-grown forest areas to enhance water quality for all of our watersheds.

Stewardship Purpose

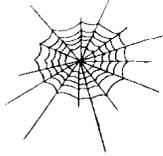
By enrolling in the Forest Stewardship Program and following a Stewardship Plan, I understand that I will be joining with many other landowners across the state in a program that promotes ecologically responsible resource management through the following actions and values:

1. Managing for long-term forest health, productivity, diversity, and quality.
2. Conserving or enhancing water quality, wetlands, soil productivity, 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):  Date 4/20/10

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.

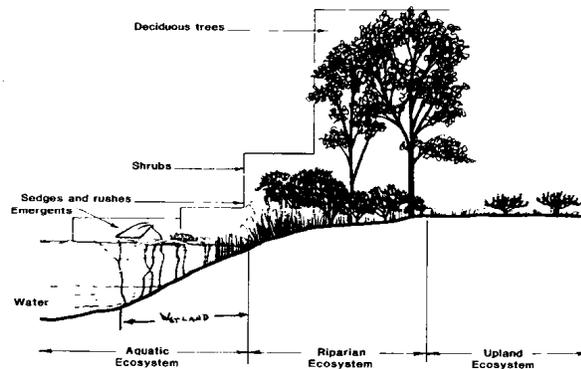


Figure 1: Example of a riparian zone.

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 keep 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. DEM’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 DEM 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 than 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.



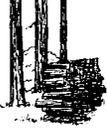
Wildlife Management: Enhancing the wildlife potential of a forested property is a common and important goal for many woodland owners. Sometimes actions can be taken to benefit a particular species of interest (e.g., put up Wood Duck nest boxes). In most cases, recommended management practices can benefit 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.

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.



STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	1	RP	22.85	10.4" DBH Pole-Sawtimber	85 sqft	4,811 BF & 11.9 Cds	63 (RP)

Red pine is the dominant overstory species in this severely damaged plantation. Scattered white pine, red oak, red maple and birch poles and sawtimber of poor to good timber quality can also be found. The 2008 ice storm has resulted in approximately 40% mortality of the stand with most of the damage occurring in the central and southern sections. Tree crowns have snapped off of the main stems. Scattered mixed hardwood saplings are present in the understory competing with mountain laurel and witch hazel. The area is flat to gently sloped with well to moderately drained fine sandy loam soils (Chatfield-Hollis-Hinckley) capable of producing high quality timber resources. Management will focus on salvaging the storm damaged trees to remove fire hazards as well as removing a majority of the red pine component that still remains in order to develop native regeneration that exists the understory. Efforts will be made to leave and encourage white pine and red oak stems. The desired future condition is a stand that is free from the threat of forest fire fuel as well as a stand that is vigorously growing native species in the understory for the benefit of early successional and young forest wildlife species. The protection of water quality is the primary management objective.

STEW	2	WO	55.77	9.9" DBH Pole-Sawtimber	130 sqft	3,745 BF & 27.0 Cds	63 (RO)
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White pine and red oak dominate the overstory of this well stocked pole and sawtimber sized stand. The white pine and red oak stems range from poor to good in form and timber quality. Scattered black oak, black birch and red maple poles and sawtimber sized stems of poor to good form and timber quality can also be found. The understory vegetation includes scattered pockets of witch hazel and mountain laurel. Forest regeneration is scattered and consists of mixed hardwood, hemlock and white pine saplings. The area is gently to moderately sloped, rocky in spots, with well to moderately drained soils (Canton-Paxton) capable of producing high quality timber resources. Management will focus on timber resource management and trail maintenance. The primary desired future condition is a stand that is growing a healthy crop of trees in several age and size classes for the protection of water quality on the Notown watershed.

STEW	3	WR	14.55	12.5" DBH Sawtimber	180 sqft	14,523 BF & 26.2 Cds	63 (WP)
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Red pine and white pine are the dominant overstory species in this well stocked sawtimber sized plantation. Damage from the 2008 ice storm was minimal. Scattered red oak, red maple and mixed hardwood poles and sawtimber of poor to good form and quality can also be found. Advanced Forest regeneration is scattered and includes mixed hardwood saplings competing with mountain laurel and witch hazel. The area is gently to moderately sloped with well to moderately drained soils (Chatfield-Hollis-Hinckley) capable of producing high quality timber resources. Management will focus on salvaging the storm damaged trees to remove fire hazards as well as reducing the red pine component in favor of developing native tree species. The desired future condition is a stand that is free from the threat of forest fire fuel as well as a stand that is vigorously growing native species in the overstory and understory. The primary desired future condition is a stand that is growing a healthy crop of trees in several age and size classes for the protection of water quality on the Notown watershed.

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) Leominster Water Department (Notown Reservoir) Town(s) Leominster

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	4	WH	58.82	10.6" DBH Pole-Sawtimber	113 sqft	5,373 BF & 21.1 Cds	63 (WP)

White pine and mixed hardwoods dominate the overstory of this adequately stocked pole and sawtimber sized stand. Species composition, stand density and size class vary throughout the area. The white pine stems range from poor to good in form and timber quality. The mixed hardwood component includes red maple, red oak, black cherry, hickory, white ash, sugar maple, birch and aspen poles and sawtimber sized stems of poor to good form and timber quality. Scattered red pine stems are present as well. The 2008 ice storm has damaged sections within the stand. The red maple component in the low lying drainage areas received most of the damage. Uprooted trees and blowdown is extensive in these wetland resource areas. High TOC (Total Organic Carbon) readings from these wetland areas are a water quality concern of the Leominster Water Department. It is believed that the high organic wetland areas are contributing to the high TOC levels. Regeneration consists of scattered mixed hardwood and white pine saplings. The area is flat to moderately sloped with well to moderately drained fine sandy loam upland soils (Hinckley-Woodbridge). The low lying wetland resource areas consist of poorly drained, mucky, fine sandy loam soils (Scarboro). Goodfellow and Simonds Pond are located along Route 2 within this forest type. Management will focus on salvage, woodland improvement, trail maintenance and general watershed maintenance. The primary desired future condition is a stand that is growing a healthy crop of trees in several age and size classes for the protection of water quality on the Notown watershed.

STEW	5	OH	64.78	9.0" DBH Pole-Sawtimber	105 sqft	4,003 BF & 17.5 Cds	65 (RO)
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Red oak and mixed hardwoods are the dominant overstory species in this adequately stocked pole and sawtimber sized stand. Species composition, stand density and size class varies throughout the area. Scattered white pine and hemlock poles and sawtimber can also be found. Areas within this stand were damaged in the 2008 ice storm. The red oak stems that were not severely damaged tend to be fair to high in timber quality. Forest regeneration is scattered and includes mixed hardwood, hemlock and white pine saplings. Witch hazel and mountain laurel are present in the understory in varying densities. The terrain is gently to steeply sloped. Forest soils are well to moderately drained fine sandy loam (Woodbridge-Paxton-Chatfield-Hollis) capable of producing high quality timber resources. Management will focus on salvage and improvement thinning. The primary desired future condition is a stand that is growing a healthy crop of trees in several age and size classes for the protection of water quality on the Notown watershed.

STEW	6	WH	33.59	10.3" DBH Sawtimber-Pole	110 sqft	5,611 BF & 17.8 Cds	63 (WP)
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White pine and mixed hardwoods dominate the overstory of this adequately stocked pole and sawtimber sized stand. Species composition, stand density and size class varies throughout the area. The white pine stems range from poor to good in form and timber quality. The mixed hardwood component includes red maple, red oak, black cherry, hickory, white ash, birch, and white oak poles and sawtimber sized stems of poor to good form and timber quality. The 2008 ice storm has damaged sections within the stand. Regeneration consists of scattered mixed hardwood and white pine saplings. The understory vegetation includes highbush blueberry, witch hazel, and pockets of mountain laurel. The area is gently to moderately sloped with well to moderately drained soils (Chatfield-Hollis-Paxton) capable of producing high quality timber resources. Management will focus on improvement thinning. The primary desired future condition is a stand that is growing a healthy crop of trees in several age and size classes for the protection of water quality on the Notown watershed.

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 STD= stand AC= acre MSD= mean stand diameter MBF= thousand board feet BA= basal area VOL= volume

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Forest Management Plan Fall Brook 4-20-2010.doc

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	7	RP	2.09	11.8" DBH Small Sawtimber	160 sqft	15,291 BF & 18.9 Cds	63 (RP)

Red pine is the dominant overstory species in this plantation. Scattered white pine poles and sawtimber can also be found. Minimal damage resulted from the 2008 ice storm. Mountain laurel is dense in the understory. The area is flat with well to moderately drained fine sandy loam soils (Woodbridge) capable of producing high quality timber resources. Management will focus on removing a majority of the red pine component in order to favor the production of native trees in both the overstory and understory. The primary desired future condition is a stand that is growing a healthy crop of native trees in several age and size classes for the protection of water quality on the Notown watershed.

STEW	8	RM	16.62	11.0" DBH Pole	10 sqft	2.4 Cords	50 (RM)
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Red maple is the only species within this wetland resource area. Most of the overstory has died as a result of flooding. Flooding is most likely the result of beaver dams. Dead standing snags outnumber the living stems within this area. The area is flat, hummocky and flooded. The soils are poorly drained fine sand loam (Whitman). No management is recommended at this time. The area will be left to provide wetland wildlife habitat. The desired future condition is an area that will provide wetland habitat for wildlife.

STEW	9	RP	16.28	12.7" DBH Small Sawtimber	67 sqft	5,325 BF & 10.6 Cds	63 (RP)
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Red pine is the dominant overstory species in this severely damaged plantation. The 2008 ice storm has resulted in approximately 60-70% mortality. Tree crowns have snapped off of the main stems. Scattered white pine and mixed hardwood poles and sawtimber can also be found. Mixed hardwood saplings are present in the understory. The area is flat to gently sloped with well to moderately drained fine sandy loam soils (Paxton-Woodbridge) capable of producing high quality timber resources. Management will focus on salvaging the storm damaged trees to remove fire hazards as well as removing a majority of the red pine component that still remains in order to develop native regeneration that exists in the understory. The desired future condition is a stand that is free from the threat of forest fire fuel as well as a stand that is vigorously growing native species in the understory for the benefit of early successional and young forest wildlife species. The protection of water quality on the Notown watershed is the primary management objective.

STEW	10	WH	77.62	12.4" DBH Sawtimber-Pole	120 sqft	5,508 BF & 23.7 Cds	63 (WP)
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White pine and mixed hardwoods dominate the overstory of this adequately stocked sawtimber and pole sized stand. Pockets of planted red pine small sawtimber can also be found. Species composition, stand density and size class varies throughout the area. The white pine stems range from poor to good in form and timber quality. The mixed hardwood component includes red maple, red oak, black cherry, white ash, sugar maple and aspen poles and sawtimber sized stems of poor to good form and timber quality. The 2008 ice storm has damaged sections within the stand. Regeneration consists of scattered mixed hardwood and white pine saplings. The understory vegetation includes pockets of witch hazel and mountain laurel. The area is gently to moderately sloped with well to moderately drained soils (Paxton-Chatfield-Hollis) capable of producing high quality timber resources. Management will focus on salvage, improvement thinning and harvesting to reduce the red pine component. The primary desired future condition is a stand that is growing a healthy crop of trees in several age and size classes for the protection of water quality on the Notown watershed.

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STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
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STEW	11	OH	214.43	10.1" DBH Pole-Sawtimber	91 sqft	3,202 BF & 16.7 Cds	65 (RO)
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Red oak and mixed hardwoods are the dominant overstory species in this adequately stocked pole and sawtimber sized stand. Species composition, stand density and size class varies throughout the area. Areas within this stand were damaged in the 2008 ice storm. Mortality from the storm in this stand is estimated to be 10-20% of the total overstory. Higher elevations received the most damage. The red oak stems that were not severely damaged tend to be fair to high in timber quality. The mixed hardwood component includes red maple, black birch, black cherry, American beech, hickory, sugar maple, white ash, white birch, yellow birch, aspen, white oak, and black oak of poor to good form and timber quality. Scattered hemlock and white pine poles and sawtimber can also be found. Forest regeneration is scattered and includes mixed hardwood, hemlock and white pine saplings. Witch hazel and mountain laurel are present in the understory in varying densities. The terrain is gently to moderately sloped with rock and exposed ledge in the higher elevations. Forest soils are well to moderately drained fine sandy loam (Paxton-Canton-Chatfield-Hollis-Woodbridge) capable of producing high quality timber resources. Drainage areas and low lying areas are poorly drained and seasonally wet (Whitman). Management will focus on salvage and improvement thinning and trail maintenance. The primary desired future condition is a stand that is growing a healthy crop of trees in several age and size classes for the protection of water quality on the Notown watershed.

STEW	12	OH	11.08	12.7" DBH Pole-Sawtimber	67 sqft	5,325 BF & 10.6 Cds	60 (RO)
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Red maple and red oak are the dominant overstory species in this understocked pole and small sawtimber sized stand. Scattered white ash and yellow birch poles of poor quality can also be found. The understory vegetation is dense and includes witch hazel and mountain laurel. Forest regeneration is limited due to the dense understory vegetation. The area is flat to gently sloped with poorly drained soils (Whitman) capable of producing fair quality timber resources. No management is recommended at this time. The primary desired future condition is a stand that is growing a healthy crop of trees in several age and size classes for the protection of water quality on the Notown watershed.

STEW	13	MH	23.45	Sapling	----	----	65 (RO)
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Mixed hardwoods are the dominant overstory species in this stand that was virtually clearcut by the previous landowner approximately eight years ago. The Leominster Water Department acquired the property in 2007. Red maple, red oak, birch, black cherry, beech, white ash, white pine, hemlock and aspen saplings are all present. Witch hazel, wild raspberry, highbush blueberry, sheep laurel, mountain laurel, ferns, grasses and a variety of early successional forms of vegetation can all be found in the understory. Some scattered pole sized trees are growing in the seasonally wet resource areas and drainages. The area is flat to gently sloped with moderately drained fine sandy loam soils (Woodbridge) and poorly drained soils on uplands. The soils are capable of producing high quality timber resources. The area will be allowed to develop naturally over the next ten years of management. The desired future condition is a stand that is developing naturally and provides habitat for early successional and young forest wildlife species. The protection of water quality on the Notown watershed is the primary management objective.

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Owner(s) Leominster Water Department (Notown Reservoir) Town(s) Leominster

MANAGEMENT PRACTICES
to be done within next 10 years

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

Timber Management

STEW	1	RP	Salvage & Selection Individual & Small Group	22+/-	40 sqft	45 MBF & 400 Tons	2010
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Management will focus on salvaging dead and dying red pine stems that have been severely damaged in the ice storm of 2008. These trees and portion of trees will be cut and skidded to a landing area where they will be chipped and trucked off of the property in order to reduce the threat of forest fire. Individual and group selection harvesting within the remaining red pine that remains within the plantation will also be done to encourage native forest regeneration in the understory and create valuable young forest habitat for wildlife. Efforts will be made to leave red oak, white pine and mixed hardwoods that appear to be wind resistant and have healthy crowns that are capable of dispersing seed into the former plantation areas. This stand is in close proximity to the Notown Reservoir and Route 2. Filter and buffer strips will be retained along the edges of the reservoir and Route 2 as the extent of the storm damage permits.

STEW	3	WR	Selection Harvest Individual and Small Group	14+/-	50 sqft	40 MBF & 280 Tons	2010-2015
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Management will focus on small group selection harvesting in the red pine stands in the northern sections of this area, while individual selection harvesting will be conducted in the areas to the south where white pine is the dominant overstory species. Efforts to remove the storm damaged trees will be a priority. Removing individual and small groups of trees will be done to improve the growth and value of the developing high quality white pine and red oak poles and developing sawtimber sized trees. The harvest will be designed to release advanced regeneration as well as improve growing conditions of trees in the pole (4-11" DBH) and small sawtimber (12-16" DBH) classes. The cutting will assist in the development of wind-firm trees. The percentage of the overstory removal will vary based on the forest type. The target is approximately 20 to 30% of the white pine forest type overstory and approximately 60% of the red pine forest type overstory. Thinning will also prepare the site for native tree species regeneration. Utilizing the wood to the lowest possible diameter will be done to maintain good aesthetics. Selecting a harvester with the ability to chip tops will also be considered for aesthetic purposes. The stand borders the reservoir and filter strips will be retained.

STEW	4	WH	Selection Harvest Individual & Small Group	20+/-	40 sqft	50 MBF & 400 Tons	2010-2015
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Management will focus on harvesting white pine and mixed hardwood poles and sawtimber by group and individual selection harvesting. Efforts to remove the storm damaged trees will be a priority. Removing individual and small groups of trees will be done to improve the growth and value of the developing high quality white pine and red oak poles and developing sawtimber. The harvest will be designed to release advanced regeneration as well as improve growing conditions of trees in the pole (4-11" DBH) and small sawtimber (12-16" DBH) classes. The cutting will assist in the development of wind-firm trees. The percentage of the overstory removal will vary based on the varying tree sizes and stand density that currently exists within the stand. The target is approximately 20 to 30% of the overstory. Harvesting low quality hardwoods for firewood will also be done as part of the thinning. Thinning will also prepare the site for new production. Utilizing the wood to the lowest possible diameter will be done to maintain good aesthetics. Selecting a harvester with the ability to chip tops will also be considered for aesthetic purposes. Most of the thinning will occur on the west side of Mount Elam Road.

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Owner(s) Leominster Water Department (Notown Reservoir) Town(s) Leominster
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MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	
STEW	5	OH	Salvage & Selection Individual & Small Group	30+/-	30 sqft	30 MBF & 600 Tons	2010-2015

Management will focus on salvaging dead and dying red oak and mixed hardwood stems that have been damaged in the ice storm of 2008. Individual and group selection harvesting throughout the stand will be done to improve the growth and development of the high quality red oak and mixed hardwood poles (4-11" DBH) and small sawtimber (12-16" DBH) that were not damaged in the storm. Living sawtimber sized stems and poor quality trees will all be harvested in order to accomplish this objective. Harvesting will release advanced regeneration and prepare the stand for new production. The target is to harvest approximately 20-30% of the overstory, although some of the areas that were hit the hardest by the storm will require greater harvesting intensity.

STEW	6	WH	Selection Harvest Individual & Small Group	20+/-	40 sqft	50 MBF & 400 Tons	2010-2015
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Management will focus on harvesting white pine, mixed oak, and mixed hardwood poles and sawtimber by group and individual selection harvesting. Efforts to remove the storm damaged trees will be a priority. Removing individual and small groups of trees will be done to improve the growth and value of the developing high quality white pine and red oak poles and developing sawtimber. The harvest will be designed to release advanced regeneration as well as improve growing conditions of trees in the pole (4-11" DBH) and small sawtimber (12-16" DBH) classes. The cutting will assist in the development of wind-firm trees. The percentage of the overstory removal will vary based on the varying tree sizes and stand density that currently exists within the stand. The target is approximately 20 to 30% of the overstory. Harvesting low quality hardwoods for firewood will also be done as part of the thinning. Thinning will also prepare the site for new production. Utilizing the wood to the lowest possible diameter will be done to maintain good aesthetics. Selecting a harvester with the ability to chip tops will also be considered for aesthetic purposes.

STEW	7	RP	Patch Cut & Seed Tree	2+/-	140 sqft	13.4 MBF & 100 Tons	2010
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Patch cutting this red pine plantation will be done to reduce the red pine component in favor of establishing native tree species regeneration. Efforts will be made to leave the white pine sawtimber sized trees (14"DBH+) that appear to be wind resistant and have healthy crowns that are capable of dispersing seed into the former plantation areas. The harvesting should eliminate most of the mountain laurel in the understory and prepare the site for native regeneration. The target is to harvest 85% of the overstory.

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Owner(s) Leominster Water Department (Notown Reservoir) Town(s) Leominster
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MANAGEMENT PRACTICES
to be done within next 10 years

OBJ	STD NO	TYPE	SILVICULTURAL PRESCRIPTION	AC	TO BE REMOVED		TIMING
					BA/AC	TOT VOL	
STEW	9	RP	Salvage & Patch Cut & Seed Tree	15+/-	50 sqft	55 MBF & 300 Tons	2010

Management will focus on salvaging dead and dying red pine stems that have been severely damaged in the ice storm of 2008. These trees and portion of trees will be cut and skidded to a landing area where they will be chipped and trucked off of the property in order to reduce the threat of forest fire. Patch cutting most of the remaining red pine that remains within the plantations will also be done to encourage native forest regeneration in the understory and create valuable young forest habitat for wildlife. Efforts will be made to leave any red oak, white pine and mixed hardwood seed trees that appear to be wind resistant and have healthy crowns that are capable of dispersing seed into the former plantation areas.

STEW	10	WR	Selection Harvest Individual and Small Group	70+/-	40 sqft	140 MBF & 1,400 Tons	2010-2015
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Management will focus on harvesting white pine, red pine and mixed hardwood poles and sawtimber by group and individual selection harvesting. Efforts to remove the storm damaged trees will be a priority. Removing individual and small groups of trees will be done to improve the growth and value of the developing high quality white pine and red oak poles and developing sawtimber. The harvest will be designed to release advanced regeneration as well as improve growing conditions of trees in the pole (4-11" DBH) and small sawtimber (12-16" DBH) classes. The cutting will assist in the development of wind-firm trees. Removing a majority of the red pine component on the west side of the powerlines will be done to encourage native tree regeneration. The percentage of the overstory removal will vary based on the varying tree sizes and stand density that currently exists within the stand. The target is approximately 20 to 30% of the overstory. Harvesting low quality hardwoods for firewood will also be done as part of the thinning. Thinning will also prepare the site for new production. Utilizing the wood to the lowest possible diameter will be done to maintain good aesthetics. Selecting a harvester with the ability to chip tops will also be considered for aesthetic purposes.

Recreation Management

Trails on the watershed property are managed by the Leominster Trail Stewards (LTS). The mission of the Leominster Trail Stewards is "to improve and maintain the City's trails and to promote their appropriate use for the benefit and enjoyment of its residents and visitors". LTS is responsible for developing new trails and enhancing the trail/fire roads network. They are responsible for monitoring and maintaining the trails and work with the Leominster Water Department when determining location, access, parking and safety issues. Their goal is to provide a user-friendly trail system that encourages residents to enjoy the open spaces, parks and conservation land in Leominster. They promote the trails by providing a comprehensive website, distributing trail maps, providing trail pamphlets, maintaining the map houses, running walks and jogs, sponsoring public events and cleanups, setting up and staffing booths for town activities and celebrations, and giving presentations. They foster community involvement by identifying projects and tasks that can be done by youth organizations and volunteers.

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MANAGEMENT PRACTICES
to be done within next 10 years

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

Fire Road Management

Fire road maintenance will be a cooperative effort between the Leominster Water Department (LWD), the Leominster Trail Stewards (LTS) and the Leominster Fire Department (LFD). The 2008 ice storm has blocked many of the existing fire roads and trails on the Notown Reservoir. LTS has re-opened most of the trails. Timber harvesting operations will further improve access to some of the more remote areas of the property over time.

Wildlife Habitat Enhancement

Timber harvesting practices alone will enhance wildlife habitat. Creating an unevenaged forest structure while maintaining a variety of forest types and vegetation will greatly increase the diversity of wildlife species using the Notown Reservoir property for food, protection, mating and nesting. For more information on wildlife management please refer to *"Enhancing Wildlife Habitats: A Practical Guide For Forest Landowners"*.

General Reservoir Maintenance & Water Quality Monitoring

General reservoir maintenance will include the cleaning of spillways, waterways and dams by removing undesirable vegetation. Forest areas that are contributing high levels of TOC (Total Organic Carbon) will also be managed. The following was taken directly from the Quabbin Reservoir Watershed System Land Management Plan: *"TOC is composed of dissolved organic carbon (DOC) and of particulate organic carbon (POC). DOC normally accounts for approximately 90% of TOC. DOC is directly related to the eutrophic state of a water body. Eutrophication is related to the amount of nutrients, mainly nitrogen and phosphorous, available for algal growth, with phosphorous usually the most limiting. Eutrophication is driven by external loading of organic matter, nutrients and silt. A well managed, forested watershed sequesters nutrients"*. Removal of trees and vegetation within forested areas that are contributing to TOC will be done based on water quality monitoring by the Water Department.

Boundary Management

STEW	All	All	Identify, Blaze & Paint	886+/-	NA	NA	2010-
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Boundary identification, blazing and painting of the property lines will be done along property lines abutting private lands and lands not belonging to the City of Leominster. The Leominster State Forest has been blazed and painted with light blue paint.

Forest Stewardship Education

Public notices and pre-harvest timber walks will help educate the residents of Leominster about the forest resources and management of the Notown Reservoir.

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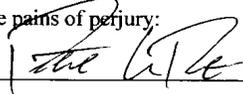
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Signature Page Please check each box that applies.

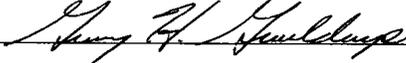
CH. 61/61A Management Plan I attest that I am familiar with and will be bound by all applicable Federal, State, and Local environmental laws and /or rules and regulations of the Department of Conservation and Recreation. I further understand that in the event that I convey all or any portion of this 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. I pledge to abide by the management provisions of this Stewardship Management Plan for a period of at least ten years, 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.

Signed under the pains of perjury:

Owner(s)  Date 4/20/10
Date _____

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

Plan Preparer  Date 4-17-2010

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

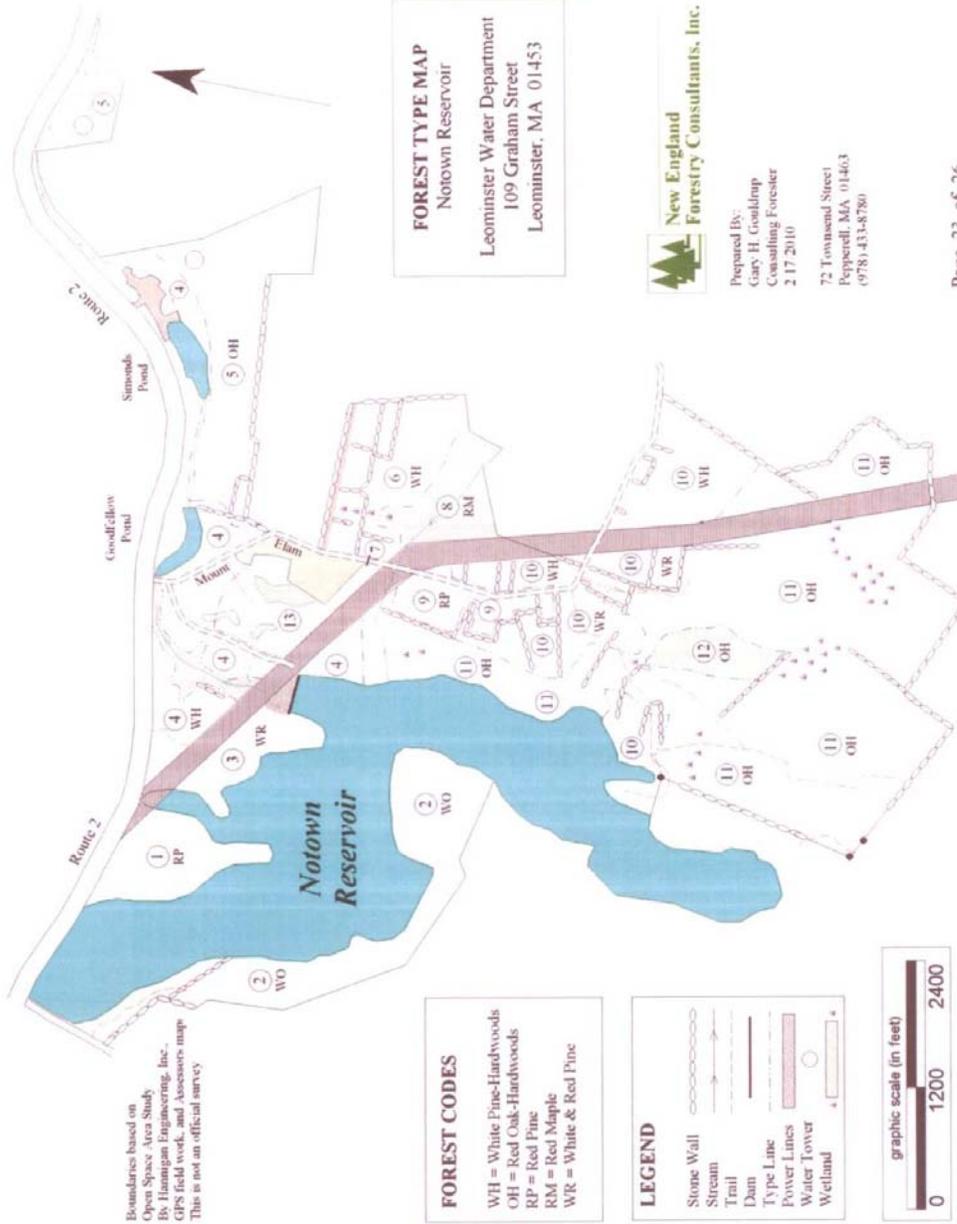
Approved, Service Forester  Date 5-6-10

Approved, Regional Supervisor N/A 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) Leominster Water Department (Notown Reservoir) Town(s) Leominster

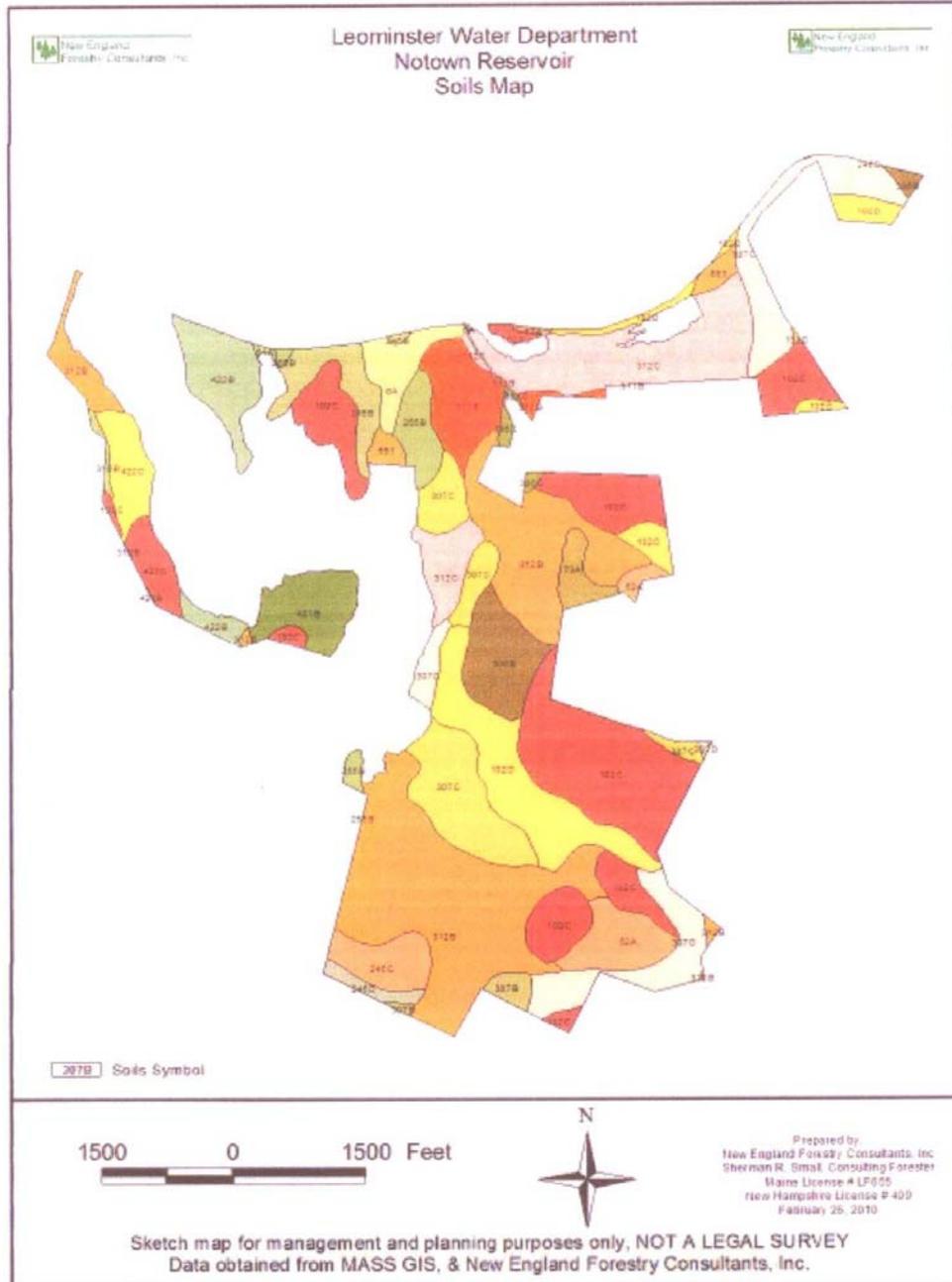
Leominster Water Department
 Forest Stewardship Plan
 Notown Reservoir



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