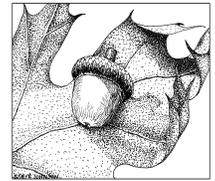




FOREST MANAGEMENT PLAN

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



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. _____	Orig. Case No. _____	
recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	recert. <input type="checkbox"/>	renew <input type="checkbox"/>	Other <input type="checkbox"/>	Owner ID _____	Add. Case No. _____	
amend <input type="checkbox"/>	amend <input type="checkbox"/>	amend <input type="checkbox"/>	Green Cert <input type="checkbox"/>		Date Rec'd _____	Ecoregion _____	
Plan Change: _____ to _____			Conservation Rest. <input type="checkbox"/>		Plan Period _____	Topo Name _____	<i>Ashburnham</i>
			CR Holder _____		Rare Sp. Hab. _____	River Basin _____	<i>Millers & Nashua Rivr</i>

OWNER, PROPERTY, and PREPARER INFORMATION

Property Owner(s) City of Gardner, Gardner Forest Stewardship Committee, c/o Ed Goss
Mailing Address City Hall Room 226, 95 Pleasant Street, Gardner, MA 01440 Phone 978-630-4010

Property Location: Town(s) Gardner Road(s) Stone, Wheeler, Kelton & Raymond St.

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	Forest Legacy Only		
							Stewardship Excluded Acres	Stewardship Agricultural Acres	Stewardship Acres
*	*	*	*	795.49	0.00	0.00	34.87	0.00	760.62
TOTALS				795.49	0.00	0.00	34.87	0.00	760.62

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

There are 34.87 acres to be excluded from forest stewardship management. The area includes the Cowee Pond Reservoir (19.76 acres) and a portion of Lake Wampanoag (15.11 acres).

HISTORY Year acquired Since 1920's Year management began 1982

Is subdivision plan on file with municipality? Yes No
Are boundaries blazed/painted/flagged/signs posted? (circle all that apply) 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>None</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

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

A Forest Management Plan was prepared for the property in 1982 by the New England Forestry Foundation.

* Please See Page #2 for the Assessor's Map & Lot, Deed Book & Page, and acreage listings.

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	Stewardship Excluded Acres	Stewardship Agricultural Acres	Stewardship Acres
Gardner									
R 52	10-4	UK	UK	78.81	NA	NA	0.00	0.00	78.81
R 52	11-3	UK	UK	18.43	NA	NA	0.00	0.00	18.43
R 52	11-3	UK	UK	31.60	NA	NA	0.00	0.00	31.60
R 52	12-2	UK	UK	37.22	NA	NA	0.00	0.00	37.22
R 47	11A-4	UK	UK	20.90	NA	NA	0.00	0.00	20.90
R 47	12-5	UK	UK	105.36	NA	NA	0.00	0.00	105.36
R 47	1-6	UK	UK	127.38	NA	NA	0.00	0.00	127.38
R 47	11-1	UK	UK	50.13	NA	NA	15.11	0.00	35.02
R 42	13-12	UK	UK	81.06	NA	NA	19.76	0.00	61.30
R 42	8A-19	UK	UK	3.98	NA	NA	0.00	0.00	3.98
R 42	8-20	UK	UK	62.32	NA	NA	0.00	0.00	62.32
R 42	14-13	UK	UK	2.39	NA	NA	0.00	0.00	2.39
R 42	2-18	UK	UK	0.88	NA	NA	0.00	0.00	0.88
R 42	16-15	UK	UK	6.31	NA	NA	0.00	0.00	6.31
R 42	17-16	UK	UK	15.52	NA	NA	0.00	0.00	15.52
R 42	7-21	UK	UK	60.08	NA	NA	0.00	0.00	60.08
R 42	10-23	UK	UK	74.00	NA	NA	0.00	0.00	74.00
R 37	7A-24	UK	UK	1.93	NA	NA	0.00	0.00	1.93
R 42	7-21	UK	UK	0.33	NA	NA	0.00	0.00	0.33
R 47	8B-2G	34683	319	7.83	NA	NA	0.00	0.00	7.83
R 42	3-4	22835	144	6.06	NA	NA	0.00	0.00	6.06
R 42	2B-4B	22835	144	2.12	NA	NA	0.00	0.00	2.12
R 42	2B-4B	22835	144	0.85	NA	NA	0.00	0.00	0.85
			TOTALS	795.49	NA	NA	34.87	0.00	760.62

Owner(s) City of Gardner – Cowee Pond Reservoir

Town(s) Gardner



Property Overview, Regional Significance, and Management Summary

The 760+/-acre Cowee Pond Reservoir Forest is located in the northern corner of Gardner along the Winchendon and Ashburnham town lines. The northern boundaries of this forest are the Winchendon and Ashburnham town lines, although the City of Gardner owns additional land adjacent to this parcel in both Winchendon (92-acres) and Ashburnham (125-acres). Route 140 abuts the property to the south. The forest is situated in a rural section of Gardner approximately 2-miles north of Gardner Center.

The property has been acquired periodically over time since the early 1920's. Forest management activities have been pursued on this forest in the past for the primary purpose of protecting the City's drinking water supplies. A Forest Management Plan was prepared in 1982 by the New England Forestry Foundation, Inc. for over 2,200-acres of land belonging to the City of Gardner. Records indicate that several timber harvests were conducted on City lands from 1976-1985.

The property lies in both the Nashua River and the Miller's River Watersheds. Water that passes through the northeastern sections of the property flows south and east into Lake Wampanoag and eventually into the Whitmanville Reservoir in South Asburnham approximately 3-miles southeast of the property. Water that flows into the Cowee Pond Reservoir, located in a southwest section of the property, flows southwest along Perley Brook and empties into the Perley Brook Reservoir located approximately 1-mile from the Cowee Pond Reservoir dam. The property is part of a "Potable Water Supply Watershed" and water quality protection and improvement is very important to the City of Gardner. The Perley Brook Reservoir is the location of the City's pump station that pumps water to the City's water treatment facility at Crystal Lake.

The forest stewardship land is diverse and consists of mature woodlands (91%), open wetland resource areas (8%), and abandoned fields (1%). White pine, red maple and mixed oaks are the dominant tree species in the upland forest areas. Forested wetlands consist of red maple, spruce, fir, tamarack and hemlock. Approximately 20-acres of red pine and Norway spruce plantations are estimated to have been planted on the property in the 1930's. The timber quality ranges from poor to good throughout the forest. There are several "Field Pine" white pine stands that contain weevilled and very poorly formed white pine trees (please see the Boundary & Stand Type Map for locations). Invasive and non-native vegetation on the property include barberry, buckthorn, bittersweet, and honeysuckle. Most of the invasive species can be found growing in the abandoned fields and near the main access roads.

Forest soils on the property include moderately well and well drained fine sandy loam and loam in the upland areas of the forest (Peru-Marlow-Becket-Skerry-Berkshire). The low lying drainage areas consist of poorly drained soils (Pillsbury-Peacham-Lyman-Kendaia) and the open wetlands consist of very poorly drained muck (Bucksport-Wonsqueak).

Wildlife habitat is diverse throughout the property. Active beaver flows, vernal pools, ponds, mature woodlands, an abandoned field, and open shrub wetlands provide habitat for numerous forms of native wildlife. The habitat that has drastically declined on the property over the years is the early successional and young forest habitat. Abandoned fields and young forests in the seedling and sapling stages of growth is approximately 1% of the total forest cover on the Cowee Pond Reservoir Forest.



Property Overview, Regional Significance, and Management Summary

Efforts to reclaim and create this habitat will be made to benefit species such as the roughed grouse, American woodcock, cotton-tail rabbit, American kestrel as well as a variety of native song birds. Patch cutting the poor quality white pine stands of poor quality will be considered as the areas to create this valuable habitat.

The City of Gardner established the Gardner Forest Stewardship Committee in 2010. The Forest Stewardship Committee has developed the following goals for the Cowee Pond Reservoir property:

Management will focus on promoting a healthy forest environment for the safety and enjoyment of the residents of Gardner and others who will visit the property. Watershed protection of Cowee Pond Reservoir is essential. The City would like to specifically accomplish the following on this property:

- Enhance both the quality and quantity of future timber products;
- Conduct timber harvests and biomass operations to improve regeneration and aesthetics;
- Enhance wildlife habitat by diversifying tree age and species, creating and maintaining successional “pockets”, and protecting heritage trees.
- Discourage unauthorized ATV access and use on the property.
- Protect the water quality of the Cowee Pond Reservoir Watershed.
- Improve hiking trails for public recreational use.

Timber resource management will be aimed at enhancing the quality of timber resources into the future while improving wildlife habitats and aesthetics throughout the property. Commercial sales of timber may require whole-tree chipping of low quality trees and portions of trees that do not have firewood or sawtimber products primarily for aesthetic and fire protection purposes.

The primary management objective of the Cowee Pond Reservoir property will be to preserve, maintain and improve water quality as a public water resource supply for the residents of Gardner. The Gardner Forest Stewardship Committee 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 Forest Stewardship Committee would like to pursue management of the Cowee Pond Reservoir property as stated in the first paragraph under the “Primary Objectives” (5.2.3.1). *“The primary objective of forest management of the Quabbin (Cowee Pond Reservoir) 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 Gardner Forest Stewardship Committee will use the Quabbin Plan as a guide when managing the Cowee Pond Reservoir watershed lands.

Continued on page 5



Property Overview, Regional Significance, and Management Summary

Management on the Cowee Pond Reservoir Watershed will be approached by using the “*Subwatershed Administration of Forest Management*”. The Quabbin Plan defines a subwatershed on page 145 (5.2.3.21). “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.”

Wildlife habitats will be enhanced through the timber harvesting practices. Creating multiple age classes within the forest will benefit a variety of wildlife species. Artificial nest boxes for wood ducks will be installed in the open water resource areas with emergent vegetation. Patch cutting within the very poor quality white pine stands will be done to create young forest habitat for wildlife. Identifying large “Legacy Trees” will be done to promote “Old Growth” characteristics within the forest where these trees exist and where this practice is applicable.

All forest management activities will be sensitive to protecting water quality, soils, cultural resources, wildlife habitats, rare and endangered species and their habitats, aesthetics and recreational values. When harvesting timber resources on the property a Chapter 132 Cutting Plan will be filed with the Department of Conservation and Recreation. The Division of Fisheries and Wildlife’s Natural Heritage & Endangered Species Program (NHESP) will make recommendations to protect any special vegetation or wildlife and their habitats should they exist on the property.

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		X		
Improve Fishing			X	
Preserve or Improve Scenic Beauty		X		
Protect Water Quality	X			
Protect Unique/Special/ Cultural Areas	X			
Other: Public Education & Outreach	X			

* **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:

The City of Gardner would like to improve and protect the forest resources on the Cowee Pond Reservoir property for the benefit of the residents of Gardner. Protecting the Cowee Pond Reservoir Watershed is a high priority. These goals will be accomplished by periodically harvesting timber resources, discouraging the use of unauthorized motor vehicle use (ATV's), enhancing wildlife habitat and educating the public on forest stewardship matters.

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:

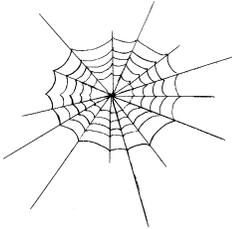
1. Managing for long-term forest health, productivity, diversity, and quality.
2. Conserving or enhancing water quality, wetlands, soil productivity, biodiversity, cultural, historical and aesthetic resources.
3. Following a strategy guided by well-founded silvicultural principles to improve timber quality 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: _____

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.)

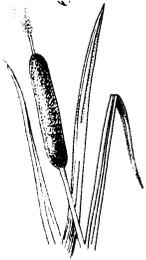


Rare Species: Rare species include those that are **threatened** (abundant in parts of its range but declining in total numbers, those of **special concern** (any species that has suffered a decline that could threaten the species if left unchecked), and **endangered** (at immediate risk of extinction 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.

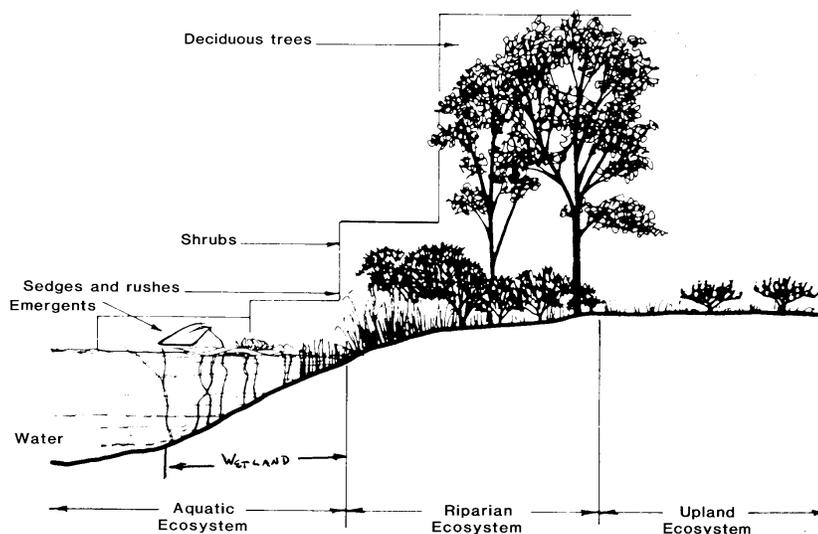


Figure 1: Example of a riparian zone.

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	OH	53.11	10.1" DBH Sawtimber-Pole	95 sqft	4,176 BF & 16.9 Cds	60 (RO)

Red oak and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The red oak stems are generally well formed and fair to good in form and timber quality. The mixed hardwood component includes red maple, white ash, sugar maple and birch poles and sawtimber of poor to fair form and timber quality. Scattered white pine and hemlock poles and sawtimber sized stems are present as well. Mixed hardwood and white pine saplings are the primary source of regeneration. The area is gently to moderately sloped with well to moderately well drained stony soils (Becket-Skerry-Tunbridge-Lyman-Berkshire) capable of producing high quality timber resources. Management will focus on selection harvesting and recreational enhancement of hiking trails. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir Watershed.

STEW	2	RM	14.97	8.8" DBH Pole	60 sqft	375 BF & 13.8 Cds.	50 (RM)
------	---	----	-------	------------------	---------	-----------------------	---------

Red maple is dominant overstory species in this wetland resource area. Stand density and size class varies throughout the area. There are areas where the stocking of trees is adequate and areas of open wetlands. A beaver pond is located within this stand along the properties western boundary line. Forest regeneration is scattered and consists of mixed hardwood saplings competing with wetland shrubs and vegetation. The area is flat with poorly drained rocky soils (Pillsbury-Peacham). No management is recommended at this time. The area will be left to protect water quality and wetland resources. The desired future condition is a wetland resource area that continues to provide habitat for wildlife while protecting water quality.

STEW	3	WH	30.37	10.7" DBH Sawtimber-Pole	118 sqft	5,644 BF & 22.6 Cds	60 (WP)
------	---	----	-------	-----------------------------	----------	------------------------	---------

White pine and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The white pine stems are poor to good in form and timber quality. Black knotted timber is common in the large white pine sawtimber component. The mixed hardwoods include red maple, red oak, white oak, white ash, yellow birch and sugar maple poles and sawtimber of poor to good form and timber quality. Scattered hemlock trees are present as well. The area was harvested approximately 30 years ago. Forest regeneration is scattered and includes white pine and mixed hardwood saplings. The area is gently to moderately sloped with well and moderately well drained stony soils (Becket-Skerry). The forest soils are capable of producing high quality timber resources. Management will focus on selection harvesting and recreational enhancement of hiking trails. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir 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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	4	WP	31.29	11.0" DBH Sawtimber-Pole	123 sqft	2,619 BF & 27.6 Cds	57 (WP)

White pine and mixed hardwoods are the primary species in this very poor quality stand of timber. The trees are in the sawtimber and pole class. The white pine stems have been weevilled and most of the sawtimber is black knotted. The mixed hardwoods include a strong component of red maple with scattered mixed oaks, black cherry aspen and birch. A few scattered apple trees and red pines are present as well. There are at least two cellar holes along the main roads within the stand. This area was most likely open and used for livestock grazing. Forest regeneration is scattered and includes white pine and mixed hardwood saplings. The area is flat to gently sloped with moderately well to somewhat poorly drained loam soils (Peru-Marlow). The forest soils are capable of producing high quality timber resources. Management will focus on patch cutting for the purpose of creating young forest conditions and improving wildlife habitat. The desired future condition is a stand that provides habitat for early successional forms of wildlife.

STEW	5	OH	7.19	9.8" DBH Sawtimber-Pole	80 sqft	3,988 BF & 10.6 Cds	63 (RO)
------	---	----	------	----------------------------	---------	------------------------	---------

Red oak and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The red oak stems are generally well formed and fair to good in form and timber quality. The mixed hardwood component includes red maple, white ash, sugar maple and birch poles and sawtimber of poor to fair form and timber quality. Mixed hardwood saplings are the primary source of regeneration. The area is gently sloped with moderately well to somewhat poorly drained stony loam soils (Pillsbury-Peacham) capable of producing high quality timber resources. Management will focus on improvement thinning. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir Watershed.

STEW	6	WH	47.1	9.1" DBH Sawtimber-Pole	117 sqft	5,473 BF & 19.3 Cds	60 (WP)
------	---	----	------	----------------------------	----------	------------------------	---------

White pine and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The white pine stems are poor to good in form and timber quality. Black knotted timber is common in the large white pine sawtimber component. The mixed hardwoods include red maple, red oak, black cherry, white ash, and yellow birch poles and sawtimber of poor to good form and timber quality. Scattered hemlock and spruce trees are present as well. The area was harvested approximately 30 years ago. Forest regeneration is adequate and includes white pine, hemlock and mixed hardwood saplings. The area is gently to moderately sloped with well and moderately well drained stony loam soils (Peru-Marlow). A few areas are poorly drained and seasonally wet (Pillsbury-Peacham). The forest soils are capable of producing high quality timber resources. Management will focus on selection harvesting and recreational enhancement of hiking trails. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir 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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	7	HH	16.48	8.6" DBH Pole-Sawtimber	145 sqft	1,459 BF & 29.1	57 (HM)

Hemlock, red maple spruce and fir are the dominant overstory species in this variably stocked pole and sawtimber sized stand. Scattered white pine, yellow birch and white ash poles and sawtimber can also be found. The overall timber quality is poor to fair. Scattered mixed hardwood and hemlock saplings are the primary source of regeneration in the understory. Alder, highbush blueberry, ferns, mosses and other wetland vegetation can be found growing in the understory. Most of this area is seasonally wet and a stream runs from north to south through the stand. The area is flat with seasonally wet soils (Pillsbury-Peacham). The soils are not highly productive in the wetter areas due the high water table. No management is recommended at this time. The area will serve as a wildlife management area that protects wetland and water resources. The desired future condition is a wetland resource area that provides habitat for wildlife and protects the Cowee Pond Reservoir Watershed.

STEW	8	WH	118.57	10.7" DBH Sawtimber-Pole	113 sqft	5,148 BF & 20.6 Cds	60 (WP)
------	---	----	--------	-----------------------------	----------	------------------------	---------

White pine and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The white pine stems are poor to good in form and timber quality. Black knotted timber is common in the large white pine sawtimber component. The mixed hardwoods include red maple, red oak, black oak, black cherry, white ash, black birch, and yellow birch poles and sawtimber of poor to good form and timber quality. Scattered hemlock, spruce, fir, and Scotch pine trees are present as well. Several areas were harvested approximately 30 years ago. Forest regeneration is adequate and includes white pine, hemlock, spruce and mixed hardwood saplings. The area is gently to moderately sloped with well and moderately well drained stony loam soils (Peru-Marlow). A few areas are poorly drained and seasonally wet (Pillsbury-Peacham). The forest soils are capable of producing high quality timber resources. Management will focus on selection harvesting and recreational enhancement of hiking trails. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir Watershed.

STEW	9	SF	2.88	9.0" DBH Pole-Small Sawtimber	80 sqft	1,400 BF & 17.3 Cds.	50 (SF)
------	---	----	------	----------------------------------	---------	-------------------------	---------

Spruce, fir and red maple are the dominant overstory species in this variably stocked wetland resource area. Scattered white pine and hemlock poles and sawtimber can also be found. The timber quality is poor to fair. Forest regeneration is scattered and includes spruce, fir and hemlock saplings competing with wetland shrubs and plants in the understory. The area is flat, hummocky in spots and seasonally wet with very poorly drained soils (Pillsbury-Peacham). The soils are only capable of producing fair quality timber resources due to the high water table. No management is recommended at this time. The area will serve as a wildlife management area and a wetland resource protection zone. The desired future condition is a stand that provides habitat for wildlife and wetland resource protection.

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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	10	WH	42.85	10.0" DBH Pole-Sawtimber	105 sqft	3,821 BF & 19.1 Cds	60 (WP)

White pine and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The white pine stems are poor to good in form and timber quality. Black knotted timber is common in the large white pine sawtimber component. The mixed hardwoods include red maple, red oak, black oak, black cherry, white ash, aspen, black birch, and yellow birch poles and sawtimber of poor to good form and timber quality. Scattered hemlock, spruce, Scotch pine and fir trees are present as well. Several areas were harvested approximately 30 years ago. Forest regeneration is adequate and includes white pine, hemlock, spruce and mixed hardwood saplings. The area is gently to moderately sloped with well and moderately well drained stony loam soils (Peru-Marlow). A few areas are poorly drained and seasonally wet (Pillsbury-Peacham). The forest soils are capable of producing high quality timber resources. Management will focus on selection harvesting and recreational enhancement of hiking trails. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir Watershed.

STEW	11	RM	7.58	10.0" DBH Pole-Small Sawtimber	120 sqft	3,470 BF & 22.7 Cds	57 (WP)
------	----	----	------	-----------------------------------	----------	------------------------	---------

Red maple, white pine, larch, spruce, fir, and hemlock are the dominant overstory species in this variably stocked wetland resource area. Species composition varies throughout the area. The timber quality is poor to fair. Forest regeneration is scattered and includes spruce, fir and hemlock saplings competing with wetland shrubs and plants in the understory. The area is flat, hummocky in spots and seasonally wet with very poorly drained soils (Pillsbury-Peacham). The soils are only capable of producing fair quality timber resources due to the high water table. No management is recommended at this time. The area will serve as a wildlife management area and a wetland resource protection zone. The desired future condition is a stand that provides habitat for wildlife and wetland resource protection.

STEW	12	MD	9.55	Wetland Open Marsh	NA	NA	50 (RM)
------	----	----	------	-----------------------	----	----	---------

This wetland resource area is mostly open with wetland shrubs, plants and tree saplings. There are pockets and small groups of red maple, white pine, spruce, hemlock and fir trees in the pole and small sawtimber class within and along the drier sections of the area. The area is flat and hummocky with very poorly drained organic soils (Bucksport-Wonsqueak Muck). The soils are not capable of producing high quality timber resources due to the high water table. Management will focus on wildlife habitat enhancement by installing wood duck boxes. The desired future condition is an area that provides habitat for wildlife and protects wetland and water resources.

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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	13	HH	7.74	10.0" DBH Pole-Sawtimber	150 sqft	2,507 BF & 29.9	57 (HM)

Hemlock, red maple, white pine, and yellow birch can all be found in this well stocked pole and sawtimber sized stand. The overall timber quality is poor to fair. Infrequent hemlock saplings are present in the understory. The area is flat to gently sloped with seasonally wet loamy stone soils (Peru-Marlow). The soils are capable of producing high quality timber resources. No management is recommended at this time. The area will serve as a wildlife management. The desired future condition is a stand of hemlock that provides habitat for wildlife and protects the shoreline of Lake Wampanoag. Currently, there appears to be encroachment onto the property from the abutter along the southern boundary of this stand.

STEW	14	RP	9.73	11.0" DBH Sawtimber-Sapling	45 sqft	5,807 BF & 3.0 Cds	65 (RP)
------	----	----	------	--------------------------------	---------	-----------------------	---------

Red pine is the dominant overstory species in this plantation that was thinned in the past and was damaged in the 2008 ice storm. The red pine stems are fair to good in form and timber quality, although the ice storm of 2008 has broken tops and blown over several of the trees within the stand. Scattered red maple, white pine sugar maple, and black cherry poles and sawtimber can also be found. Forest regeneration is advanced as a result of thinning and the ice storm of 2008. Mixed hardwood saplings are the primary source of advanced regeneration. The area is flat to gently sloped with moderately well drained loam soils (Marlow). The forest soils are capable of producing high quality timber resources. Management will focus on group selection harvesting in order to release the advanced mixed hardwood regeneration in the understory. The desired future condition is a stand that is growing native tree species after the removal of the majority of the red pine overstory.

STEW	15	WH	53.01	12.2" DBH Sawtimber-Pole	130 sqft	7,339 BF & 23.0 Cds	60 (WP)
------	----	----	-------	-----------------------------	----------	------------------------	---------

White pine and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The white pine stems are poor to fair in form and timber quality. Black knotted timber is common in the white pine sawtimber component. The mixed hardwoods include red maple, red oak, black oak, black cherry, white ash, black birch, sugar maple, white birch, and yellow birch poles and sawtimber of poor to good form and timber quality. The ice storm of 2008 has damaged a significant portion of the trees on the east facing slopes. Broken tops of trees and scattered blow-downs can be found throughout the stand. Forest regeneration is scattered and includes white pine and mixed hardwood saplings. The area is gently to moderately sloped with moderately well drained stony loam soils (Peru-Marlow). A few areas are poorly drained and seasonally wet near the northwest corner of Cowee Pond. The forest soils are capable of producing high quality timber resources. Management will focus on group and individual selection harvesting aimed at removing the poor quality and storm damaged timber within the stand. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir 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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	16	RM	14.71	7.1" DBH Wetland Resource Area	20 sqft	3.0 Cds.	50 (RM)

Red maple is the dominant overstory species in this wetland resource area. Stand density and size class varies throughout the area. There are areas where the stocking of trees is adequate and areas of open wetlands. Beaver activities are concentrated in the areas just north of Cowee Pond. Alders, dogwood, highbush blueberry and other wetland plants and shrubs can be found growing in and along the edges of this area. The area is flat with poorly drained rocky soils (Pillsbury-Peacham). Management will focus on wildlife habitat enhancement. Installing wood duck boxes in the open beaver flow areas will be considered. The desired future condition is a wetland resource area that continues to provide habitat for wildlife while protecting water quality.

STEW	17	WH	62.83	9.6" DBH Pole-Sawtimber	100 sqft	4,410 BF & 17.7 Cds.	60 (WP)
------	----	----	-------	----------------------------	----------	-------------------------	---------

White pine and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The white pine stems are poor to good in form and timber quality. Black knotted timber is common in the large white pine sawtimber component. The mixed hardwoods include red maple, aspen, red oak, black oak, black cherry, white ash, black birch, and yellow birch poles and sawtimber of poor to good form and timber quality. Scattered hemlock, spruce, fir, and red pine trees are present as well. Several areas were harvested approximately 30 years ago. Forest regeneration is adequate and includes white pine, hemlock, spruce and mixed hardwood saplings. The area is gently to moderately sloped with well and moderately well drained stony loam and fine sandy loam soils (Peru-Marlow-Becket-Skerry). A few areas are poorly drained and seasonally wet (Pillsbury-Peacham). The forest soils are capable of producing high quality timber resources. Management will focus on improvement thinning, selection harvesting, and recreational enhancement of hiking trails. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir Watershed.

STEW	18	RP	2.65	8.9" DBH Small Sawtimber	220 sqft	18,663 BF & 26.6Cds	60 (RP)
------	----	----	------	-----------------------------	----------	------------------------	---------

Red Pine is the primary species in this overstocked small sawtimber plantation. The red pine is fair to good in form and timber quality. Scattered white pine and mixed hardwood poles and sawtimber can also be found. Forest regeneration is scattered and includes white pine and mixed hardwood saplings. The area is gently to moderately sloped with well drained fine sandy loam soils (Becket-Skerry). The forest soils are capable of producing high quality timber resources. Management will focus on group selection harvesting and patch cutting. The desired future condition is a stand that is growing native tree species in the seedling and sapling class for wildlife habitat while protecting the Cowee Pond Reservoir 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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	19	WH	33.24	10.0" DBH Pole-Sawtimber	127 sqft	5,497 BF & 23.4 Cds	60 (WP)

White pine and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The white pine stems are poor to good in form and timber quality. Black knotted timber is common in the large white pine sawtimber component. The mixed hardwoods include red maple, red oak, black oak, black cherry, white ash, black birch, and yellow birch poles and sawtimber of poor to good form and timber quality. Scattered Norway spruce, fir, larch, red pine and hemlock poles and sawtimber of poor to good form and timber quality can also be found. It is estimated that the non-native red pine, Norway spruce and larch trees were planted in the 1930's. Several areas were harvested approximately 30 years ago. Forest regeneration is scattered and includes white pine, hemlock, spruce and mixed hardwood saplings. The area is gently sloped with moderately well drained stony loam soils (Peru-Marlow) with areas of poorly drained and seasonally wet sites. The forest soils are capable of producing high quality timber resources. Management will focus on improvement thinning, selection harvesting, and recreational enhancement of hiking trails. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir Watershed.

STEW	20	HH	2.21	9.4" DBH Pole-Sawtimber	140 sqft	2,878 BF & 29.8	57 (HM)
------	----	----	------	----------------------------	----------	--------------------	---------

Hemlock, red maple, white pine, red oak and mixed hardwoods can all be found in this well stocked pole and sawtimber sized stand. The overall timber quality is poor to fair. Scattered hemlock and mixed hardwood saplings are present in the understory. The area is gently sloped with well drained fine sandy loam soils (Becket-Skerry). The soils are capable of producing high quality timber resources. No management is recommended at this time. The area will serve as a wildlife management. The desired future condition is a stand of hemlock that provides habitat for wildlife.

STEW	21	RP	2.89	11.9" DBH Small Sawtimber	200 sqft	19,818 BF & 21.3 Cds	60 (RP)
------	----	----	------	------------------------------	----------	-------------------------	---------

Red Pine is the primary species in this overstocked small sawtimber plantation. The red pine is fair to good in form and timber quality. Scattered white pine and mixed hardwood poles and sawtimber can also be found. Forest regeneration is scattered and includes white pine and mixed hardwood saplings. The area is flat to gently sloped with well drained fine sandy loam soils (Becket-Skerry). The forest soils are capable of producing high quality timber resources. Management will focus on group selection harvesting and patch cutting. The desired future condition is a stand that is growing native tree species in the seedling and sapling class for wildlife habitat while protecting the Cowee Pond Reservoir 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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	22	MD	9.55	Wetland Open Marsh	NA	NA	50 (RM)

This wetland resource area is mostly open with wetland shrubs, plants and tree saplings. There are pockets and small groups of red maple, white pine, spruce, hemlock and fir trees in the pole and small sawtimber class within and along the drier sections of the area. The area is flat and hummocky with very poorly drained organic soils (Bucksport-Wonsqueak Muck). The soils are not capable of producing high quality timber resources due to the high water table. Management will focus on wildlife habitat enhancement by installing wood duck boxes. The desired future condition is an area that provides habitat for wildlife and protects wetland and water resources.

STEW	23	WP	4.50	9.9" DBH Pole-Small Sawtimber	230 sqft	3,274 BF & 52.3 Cds.	60 (RM)
------	----	----	------	----------------------------------	----------	-------------------------	---------

White pine is the dominant species in this very poorly formed and low quality white pine stand. Scattered mixed hardwood poles and sawtimber can also be found. The timber has been damaged by the white pine weevil when the stand was much younger. The majority of the trees have very little potential to develop into high quality sawtimber. The recommendation will be to patch cut the entire stand to create wildlife habitat and a young forest structure of seedlings and saplings. The area is gently sloped with well to moderately well drained fine sandy loam soils (Becket-Skerry) capable of producing high quality timber resources. The desired future condition is a young forest structure of seedlings and saplings for enhancing biodiversity and wildlife habitat.

STEW	24	WH	25.74	10.8" DBH Pole-Sawtimber	60 sqft	2,661 BF & 12.0 Cds	53 (WP)
------	----	----	-------	-----------------------------	---------	------------------------	---------

White pine and red maple are the primary species in this stand that is mostly in a wetland resource area. Species composition, stand stocking and size class varies throughout the area. Timber quality is poor to fair. Forest regeneration is scattered and includes mixed hardwood and white pine saplings. Wetland vegetation in the understory includes alder, highbush blueberry, swamp azalea, grasses and ferns. The stand is located on the east and west side of Stone Street and Perley Brook flows from southwest from Cowee Pond through the stand. The area is flat to gently sloped with very poorly drained organic soils (Kendaia Muck) and somewhat poorly and moderately drained loam (Marlow) capable of producing fair to high quality timber resources. There are ponded areas and open wetlands that have been created by beaver activities. Management will focus on wildlife habitat enhancement by installing wood duck boxes. The desired future condition is a wetland resource area that provides habitat for wildlife and protects water quality along Perley Brook.

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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	25	WP	13.15	12.5" DBH Sawtimber-Sapling	140 sqft	15,268 BF & 17.8 Cds	63 (WP)

White pine is the dominant overstory species in this well stocked sawtimber and sapling sized stand. The white pine stems are fair to good in form and timber quality as a result of management in the past. Scattered mixed hardwoods can also be found in the overstory and includes beech, black cherry, red maple and mixed oak poles and sawtimber. The stand was harvested about 30 years ago and crop tree pruning of the high quality white pine was done as well. Forest regeneration is advanced and includes a dense understory of beech, birch, red maple and other mixed hardwood saplings. The ice storm of 2008 has damaged sections of this stand with broken tops and blow-downs. The area is flat to gently sloped with moderately well drained loam soils (Peru-Marlow). The forest soils are capable of producing high quality timber resources. Management will focus on focus selection harvesting. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir Watershed.

STEW	26	WH	33.42	10.5" DBH Pole-Sawtimber	115 sqft	6,048 BF & 18.7	60 (WP)
------	----	----	-------	-----------------------------	----------	--------------------	---------

White pine and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The white pine stems are poor to good in form and timber quality. Black knotted timber is common in the large white pine sawtimber component. The mixed hardwoods include red maple, red oak, black oak, black cherry, white ash, black birch, beech and yellow birch poles and sawtimber of poor to good form and timber quality. Scattered hemlock and spruce trees are present as well. The area was harvested about 30 years ago. Forest regeneration is adequate and includes white pine, hemlock, spruce and mixed hardwood saplings. The area is gently to moderately sloped with well and moderately well drained stony loam soils (Peru-Marlow). A few areas are poorly drained and seasonally wet. The forest soils are capable of producing high quality timber resources. Management will focus on improvement thinning and selection harvesting as well as recreation enhancement by crating trails. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir Watershed.

STEW	27	RM	11.79	10.7" DBH Pole	130 sqft	397 BF & 34.2 Cds	55 (RM)
------	----	----	-------	-------------------	----------	----------------------	---------

Red maple is the dominant overstory species in this well stocked pole sized stand. The red maple is poor to fair in form and timber quality. Scattered white ash, black cherry, white pine, mixed oak, birch and aspen poles and small sawtimber can also be found. Forest regeneration is scattered and includes white pine and mixed hardwood saplings. The area is flat to gently sloped with somewhat poorly drained stony loam soils (Peru-Marlow). The forest soils are capable of producing high quality timber resources. Management will focus on improvement thinning. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while protecting the Cowee Pond Reservoir 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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	28	AF	3.97	Abandoned Field Sapling	5 sqft	0.8 Cds	63 (WP)

This area is an abandoned field and early succession wildlife habitat site located at the intersection of Raymond and Kelton Street. White pine, aspen, black cherry, red maple, mixed oaks, white ash and birch saplings and infrequent poles can all be found. A few apple trees are present as well. Staghorn sumac, highbush blueberry, honeysuckle, field juniper and other abandoned field vegetation are growing on the site. The area is flat to gently sloped with moderately well drained fine sandy loam soils (Becket). The forest soils are capable of producing high quality timber resources. Management will focus on wildlife habitat enhancement in the years to come by clearing undesirable vegetation. This type of management may not be done in this ten year management period. The desired future condition is a stand that continues to provide habitat for early successional forms of wildlife.

STEW	29	MD	21.57	Wetland Open Marsh-Woodland	20 sqft	3.0 Cds.	50 (RM)
------	----	----	-------	--------------------------------	---------	----------	---------

This wetland resource area is mostly open with wetland shrubs, plants and tree saplings. There are pockets and small groups of red maple, white pine, spruce, hemlock and fir trees in the pole and small sawtimber class within and along the drier sections of the area. The area is flat and hummocky with very poorly drained organic soils (Bucksport-Wonsqueak Muck). The soils are not capable of producing high quality timber resources due to the high water table. Management will focus on wildlife habitat enhancement by installing wood duck boxes. The desired future condition is an area that provides habitat for wildlife and protects wetland and water resources.

STEW	30	MH	4.32	12.3" DBH Sawtimber-Pole	90 sqft	2,251 BF & 20.5 Cds	57 (RO)
------	----	----	------	-----------------------------	---------	------------------------	---------

Mixed hardwoods dominate the overstory in this well stocked small sawtimber and pole sized stand. The mixed hardwoods include red maple, sugar maple, white ash, black cherry, mixed oak, birch and aspen poles and small sawtimber of poor to good form and timber quality. Forest regeneration is scattered and includes white pine and mixed hardwood saplings. The area is gently sloped with moderately drained fine sandy loam soils (Becket-Skerry). The forest soils are capable of producing high quality timber resources. Management will focus on improvement thinning. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while protecting the Cowee Pond Reservoir 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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

STAND DESCRIPTIONS

OBJ	STD NO	TYPE	AC	MSD OR SIZE-CLASS	BA/AC	VOL/AC	SITE INDEX
STEW	31	WH	32.66	11.0" DBH Sawtimber-Pole	115 sqft	4,505 BF & 24.9 Cds.	60 (WP)

White pine and mixed hardwoods dominate the overstory in this well stocked sawtimber and pole sized stand. The white pine stems are poor to good in form and timber quality. Black knotted timber is common in the large white pine sawtimber component. The mixed hardwoods include red maple, aspen, red oak, black oak, black cherry, and white ash poles and sawtimber of poor to good form and timber quality. Scattered hemlock trees are present as well. Forest regeneration is scattered and includes white pine, hemlock, spruce and mixed hardwood saplings. The area is gently to steeply sloped with well and moderately well drained stony loam and fine sandy loam soils (Becket-Skerry). A few areas are poorly drained and seasonally wet. The forest soils are capable of producing high quality timber resources. Management will focus on improvement thinning, selection harvesting, and recreational enhancement of hiking trails. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir Watershed.

STEW	32	OH	18.15	8.8" DBH Pole-Small Sawtimber	125 sqft	1,252 BF & 25.8 Cds	60 (RO)
------	----	----	-------	----------------------------------	----------	------------------------	---------

American beech, red maple, and red oak are the dominant overstory in this adequately stocked pole and small sawtimber sized stand. The beech and red maple stems are poorly formed and poor in timber quality. The red oak trees are fair to good in form and timber quality. Scattered white pine, hemlock, white ash, spruce and fir can all be found as well. Forest regeneration is adequate and includes mixed hardwood, hemlock, spruce and fir saplings. The 2008 ice storm damaged the beech trees on the east facing slopes. The area is gently to steeply sloped moderately well to well drained fine sandy loam soils (Becket-Skerry) capable of producing high quality timber resources. The stand is situated on a hill. Management will focus on improvement thinning. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while providing habitat for wildlife and protecting the Cowee Pond Reservoir Watershed.

STEW	33	WH	7.83	9.9" DBH Pole-Small Sawtimber	90 sqft	3,480 BF & 15.6 Cds	60 (WP)
------	----	----	------	----------------------------------	---------	------------------------	---------

White pine and mixed hardwoods are the primary overstory trees in this adequately stocked pole and small sawtimber sized stand. The mixed hardwoods include red oak, red maple, white ash, beech, black cherry and aspen poles and sawtimber of poor to fair form and timber quality. Forest regeneration is scattered and includes white pine and mixed hardwood saplings. The area is gently sloped with moderately drained fine and somewhat poorly drained stony loam soils (Peru-Marlow). The forest soils are capable of producing high quality timber resources. Management will focus creating a trail system that will extend access to other City lands west of the property. The desired future condition is a stand that is growing high quality timber resources in several size and age classes while protecting the Cowee Pond Reservoir 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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

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

The following timber harvesting recommendations have been made based on the “Subwatershed Administration of Forest Management”. The target is to conduct timber harvesting on approximately 25-30% of the total forest land area within this ten year management period. The proposed areas may change based on priority, markets, storm damage, disease and insect damage, and landowner goals for the property.

STEW	4	WH	Improvement Thinning Group Selection Patch Cutting	30+/-	45 sqft	30 MBF & 1,350 Tons	2012-2021
------	---	----	--	-------	---------	------------------------	-----------

Management will focus on harvesting the poor quality white pine and mixed hardwood stems through improvement thinning, individual and group selection harvesting, and patch cutting. The target is to harvest approximately 1/2-3/4 of the overstory volume. The emphasis will be to harvest the weevilled and poorly formed white pine as well as the poor quality mixed hardwoods in all diameter classes (4” DBH+) in order to improve the growing conditions of the developing high quality white pine, red oak and mixed hardwood poles and small sawtimber sized stems. The recommendation is to have a harvesting firm that is capable of chipping the tops and very poor quality trees in order to reduce fire hazards and improve the aesthetics of the harvest area. The low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity. This approach to harvesting will create open pockets that will provide young forest habitat for wildlife and prepare the understory for new production of trees in what is currently a very poor quality stand of timber.

STEW	6	WH	Selection Harvest Improvement Thin	45+/-	35 sqft	81 MBF & 1,350 Tons	2012-2021
------	---	----	---------------------------------------	-------	---------	------------------------	-----------

Management will focus on improvement thinning by selection harvesting. The target is to harvest approximately 1/3 of the overstory volume. The emphasis will be to harvest mature white pine and mixed hardwood sawtimber (16” DBH+) in order to improve the growing conditions of the developing high quality white pine and mixed hardwood poles and small sawtimber sized stems. Poorly formed and low quality white pine and mixed hardwood stems of all sizes will also be harvested to improve the health and productivity of the stand. Advanced regeneration will be released and the site will be prepared for new production in the understory as a result of thinning. The recommendation is to have a harvesting firm that is capable of chipping the tops of trees and very poor quality trees in order to reduce fire hazards and improve the aesthetics of the harvest area. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity.

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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner
 Page 24 of 38

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 8 WH Selection Harvest 50+/- 35 sqft 86 MBF 2011-2021
Improvement Thin & 1,500 Tons

Management will focus on improvement thinning by selection harvesting. The target is to harvest approximately 1/3 of the overstory volume. The emphasis will be to harvest mature white pine and mixed hardwood sawtimber (16" DBH+) in order to improve the growing conditions of the developing high quality white pine and mixed hardwood poles and small sawtimber sized stems. Poorly formed and low quality white pine and mixed hardwood stems of all sizes will also be harvested to improve the health and productivity of the stand. Advanced regeneration will be released and the site will be prepared for new production in the understory as a result of thinning. The recommendation is to have a harvesting firm that is capable of chipping the tops of trees and very poor quality trees in order to reduce fire hazards and improve the aesthetics of the harvest area. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity.

STEW 15 WH Shelterwood 1 30+/- 40 sqft 75 MBF 2011-2021
Improvement Thin & 1,050 Tons

Management will focus on improvement thinning and harvesting through the shelterwood system. The target is to harvest approximately 1/3-1/2 of the overstory volume. The emphasis will be to retain wind firm trees of good form and quality in the overstory. Mature white pine and mixed hardwood sawtimber will be harvested (16" DBH+) in order to improve the growing conditions of the developing high quality white pine and mixed hardwood poles and small sawtimber sized stems. Poorly formed and low quality white pine and mixed hardwood stems of all sizes will also be harvested to improve the health and productivity of the stand. Storm damaged trees will be targeted for removal as well as part of a salvage operation in areas that were damaged by the 2008 ice storm. Advanced regeneration will be released and the site will be prepared for new production in the understory as a result of thinning. The recommendation is to have a harvesting firm that is capable of chipping the tops of trees and very poor quality trees in order to reduce fire hazards and improve the aesthetics of the harvest area. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity.

Continued

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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

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 25, 26 WH Selection Harvest 40+/- 40 sqft 72 MBF 2011-2021
Improvement Thin & 1,200 Tons

Management will focus on improvement thinning by selection harvesting. The target is to harvest approximately 1/3 of the overstory volume. The emphasis will be to harvest mature white pine and mixed hardwood sawtimber (16" DBH+) in order to improve the growing conditions of the developing high quality white pine and mixed hardwood poles and small sawtimber sized stems. Poorly formed and low quality white pine and mixed hardwood stems of all sizes will also be harvested to improve the health and productivity of the stand. Advanced regeneration will be released and the site will be prepared for new production in the understory as a result of thinning. The recommendation is to have a harvesting firm that is capable of chipping the tops of trees and very poor quality trees in order to reduce fire hazards and improve the aesthetics of the harvest area. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity.

STEW 31 WH Selection Harvest 30+/- 35 sqft 55 MBF 2011-2021
Improvement Thin & 900 Tons

Management will focus on improvement thinning by selection harvesting. The target is to harvest approximately 1/3 of the overstory volume. The emphasis will be to harvest mature white pine and mixed hardwood sawtimber (16" DBH+) in order to improve the growing conditions of the developing high quality white pine and mixed hardwood poles and small sawtimber sized stems. Poorly formed and low quality white pine and mixed hardwood stems of all sizes will also be harvested to improve the health and productivity of the stand. Advanced regeneration will be released and the site will be prepared for new production in the understory as a result of thinning. The recommendation is to have a harvesting firm that is capable of chipping the tops of trees and very poor quality trees in order to reduce fire hazards and improve the aesthetics of the harvest area. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity.

Continued

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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

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	23	OM	Patch Cut Create Young Forest Habitat	4.3+/-	230 sqft	14 MBF & 330 Tons	2011-2015
------	----	----	--	--------	----------	----------------------	-----------

This area has been selected as a wildlife habitat improvement site by patch cutting the entire stand. The very poor quality timber that is growing on the site will be cleared in order to create young forest habitat for wildlife. Regeneration will be allowed to develop on the site naturally from adjacent stands. The recommendation is to have a harvesting firm that is capable of chipping the tops of trees and very poor quality trees in order to reduce fire hazards and improve the aesthetics of the harvest area. High value sawtimber will be sold as sawlogs, while the low quality softwood trees and portions of trees will be chipped and utilized at wood burning facilities that generate electricity.

The other areas that will be considered for patch cutting will be the red pine plantations identified as Stand #18 & Stand #21.

Biological Diversity

STEW	1-24	All	Invasive Species Control	453+/-	NA	NA	2012-2021
------	------	-----	--------------------------	--------	----	----	-----------

The Forest Stewardship Committee is interested in promoting biological diversity on the property. Eliminating invasive and non-native trees, plants and shrubs will be done where these species exist and when economically feasible and practical. Buckthorn, bittersweet, honeysuckle, and, Japanese barberry are known to be growing on the property. The heaviest concentrations of invasive species growth can be found in the abandoned field in Stand 28. Cutting the stems with saws will help reduce and control the spread of the invasive species. Controlling the invasive species through well timed timber management activities is another management tool. Encouraging vigorous growth of native tree species in the forest understory will be accomplished by scarifying the soil prior to seed dissemination. Another biodiversity issue is the distribution of forest growth stages. Trying to maintain multiple forest age and size classes on the property will also be pursued by the landowner on this property through periodic timber harvests and wildlife habitat management. Please see the Biological Diversity issues on page #6 for more details.

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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner
 Page 27 of 38

MANAGEMENT PRACTICES
to be done within next 10 years

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

Wildlife Habitat Enhancement

STEW 2,16,12,22,29,24 Artificial Nest Boxes 75+/- NA NA 2012-2021
Wood Duck

These wetland resource areas provide habitat for *wood ducks*. The open water and emergent vegetation within these areas are important for the development of young wood ducks. The boxes should be set up approximately four feet above open water on cedar, or metal poles to protect the young and eggs from predators. The boxes should also be set up over water that is 1-4 feet deep. The boxes should be cleaned every year and new bedding placed on the bottom of the box. The Division of Fisheries and Wildlife can provide further information about the box dimensions, installation, and maintenance. The recommendation is to install no more than one (1) box in each area on an experimental basis.

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 this 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”*. Please also see the Timber Management recommendations on pages 24-27.

Boundary Maintenance

STEW All All Blaze & Paint 760+/- NA NA 2012-2021

No boundary blazing or painting has been done on the property. Abutting property surveys and existing deeds for the property will be used to identify the property lines. Blazing and painting the property lines should be done prior to any timber harvesting activities. Most of the property corners were identified during the field inventory. Iron pipes, stone bounds and wire fences that were found have been indicated on the Boundary Map on pages 32-35.

Illegal Motorized Vehicle Control

STEW All All Discourage ATV Use 760+/- NA NA 2012-2021

ATV and illegal motorized vehicle use is a concern at the Cowee Pond Reservoir Watershed. Access to the property off of Stone Street is open and used by motor vehicle frequently. Installing gates to discourage motorized vehicle use on the property will be pursued. Soil disturbance, erosion and wetland crossings will have an impact on water quality within the watershed. Signs will be posted indicating the allowed and prohibited uses of the property.

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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

MANAGEMENT PRACTICES
to be done within next 10 years

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

***Recreation Enhancement &
Forest Stewardship Education***

STEW	All	All	Trail Construction & Maintenance Forest Stewardship Education	760+/-	NA	NA	2012-2021
------	-----	-----	--	--------	----	----	-----------

Creating new trails and maintaining the existing trails will be done for the safety and enjoyment of the residents of Gardner. Many areas of the forest are not easily accessible at this time. New trail sites will be selected as the landscape, topography and wetland water resources permit. Trail markers, self guided maps and interpretive signs will all be used to guide and educate the public on forest stewardship issues pertaining to this forest. Public site walks, local media, and City Hall meetings will all be useful when educating the residents of Gardner about the management practices in this Plan and forest stewardship in general.

The Stewardship Committee has also considered the possibility of creating scenic vistas along the trails in the higher elevations of the property in order to improve views of the surrounding landscapes.

All forest management activities will be sensitive to protecting water quality, soils, cultural resources, wildlife habitats, rare and endangered species and their habitats, aesthetics and recreational values. When harvesting timber resources on the property a Chapter 132 Cutting Plan will be filed with the Department of Conservation and Recreation. The Division of Fisheries and Wildlife’s Natural Heritage & Endangered Species Program (NHESP) will make recommendations to protect any special vegetation or wildlife and their habitats should they exist on the property.

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) City of Gardner – Cowee Pond Reservoir Town(s) Gardner
 Page 29 of 38

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 _____

_____ Date _____

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

Plan Preparer _____ Date _____

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 _____

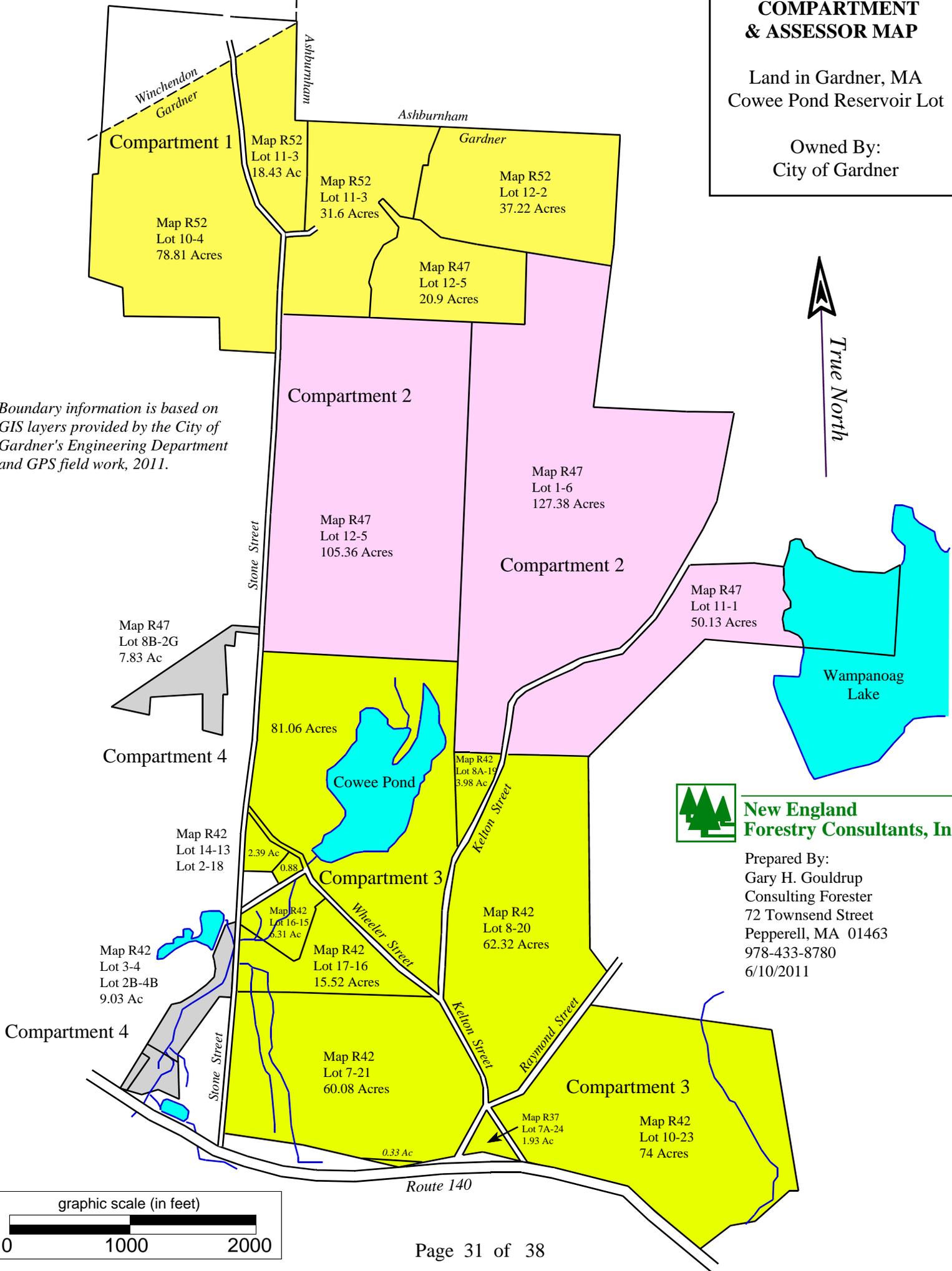
In the event of a change of ownership of all or part of the property, the new owner must file an amended Ch. 61/61A plan within 90 days from the transfer of title to insure continuation of Ch. 61/61A classification.

Owner(s) City of Gardner – Cowee Pond Reservoir Town(s) Gardner

COMPARTMENT & ASSESSOR MAP

Land in Gardner, MA
Cowee Pond Reservoir Lot

Owned By:
City of Gardner

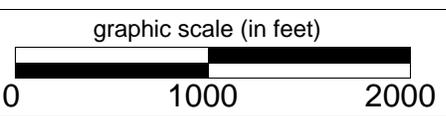


Boundary information is based on GIS layers provided by the City of Gardner's Engineering Department and GPS field work, 2011.



New England Forestry Consultants, Inc.

Prepared By:
Gary H. Gouldrup
Consulting Forester
72 Townsend Street
Pepperell, MA 01463
978-433-8780
6/10/2011





Prepared By:
Gary H. Gouldrup
Consulting Forester
72 Townsend Street
Pepperell, MA 01463
978-433-8780
6/10/2011

BOUNDARY & STAND TYPE MAP

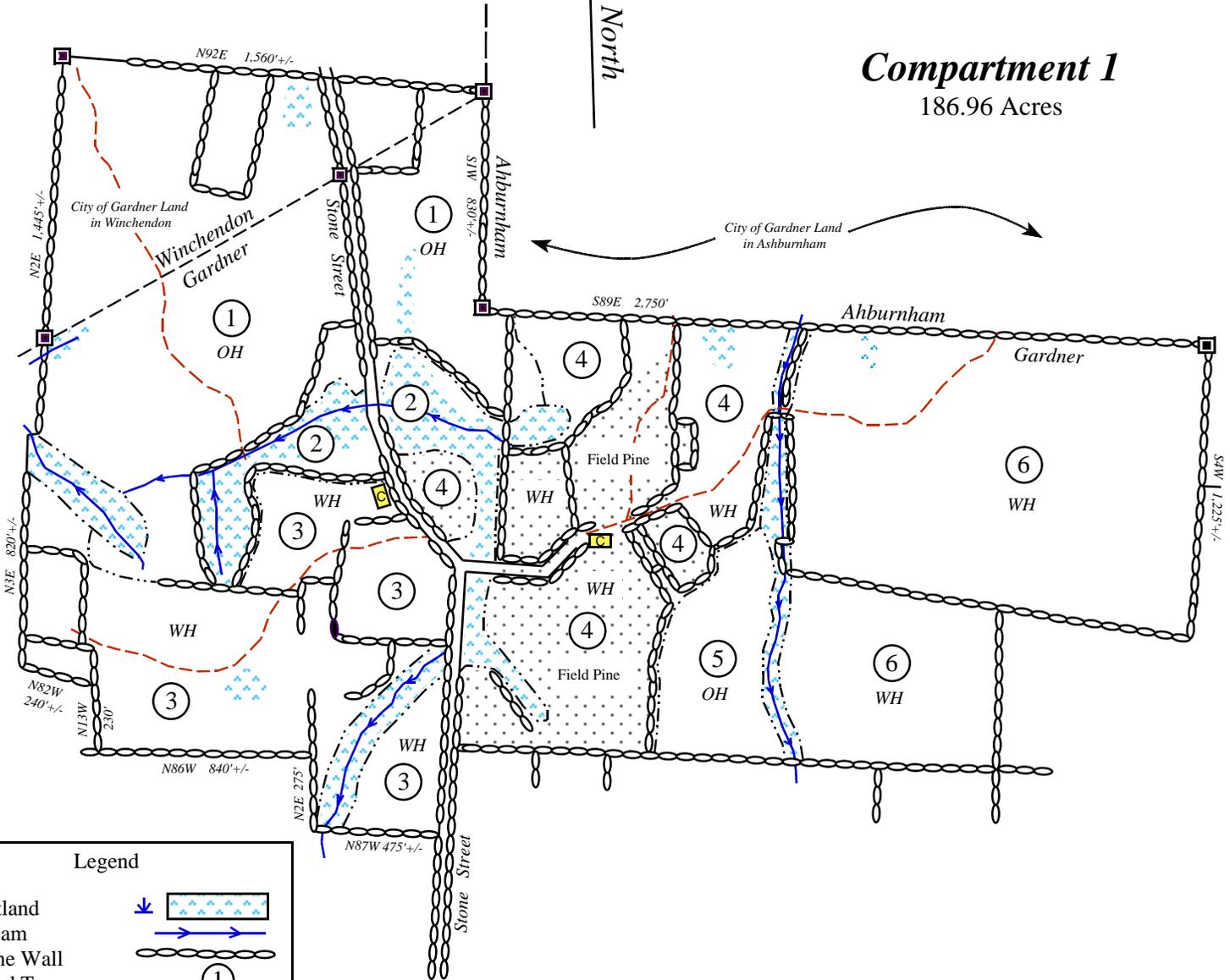
Land in Gardner, MA
Cowee Pond Reservoir Lot

Compartment #1

Owned By:
City of Gardner



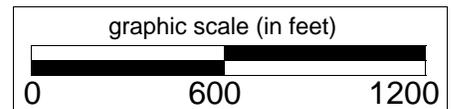
Compartment 1
186.96 Acres



Legend

Wetland	
Stream	
Stone Wall	
Stand Type	
Cellar Hole	
Trails	
Different Owner	
White Pine Hardwood	WH
White Pine	WP
Mixed Hardwoods	MH
Oak-Hardwoods	OH
Open Wetland/Marsh	MD
Hemlock Hardwoods	HH
Spruce-Fir	SF
Red Maple	RM
Stand Type Line	
Iron Pipe	IP
Stone Bound	SB

Boundary information is based on GIS layers provided by the City of Gardner's Engineering Department and GPS field work, 2011.



Compartment 2

282.87 Acres

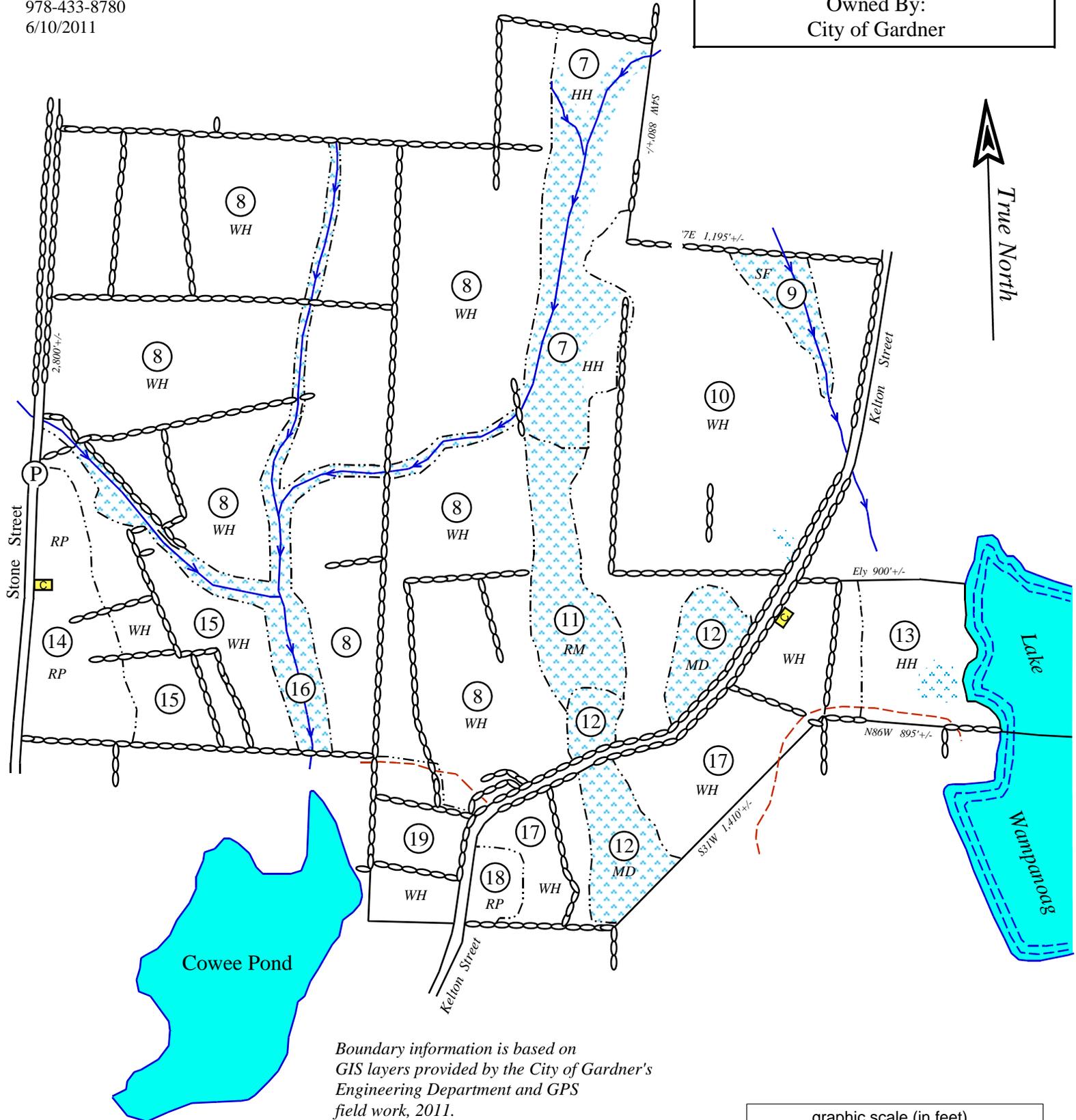
BOUNDARY & STAND TYPE MAP

Land in Gardner, MA
Cowee Pond Reservoir Lot

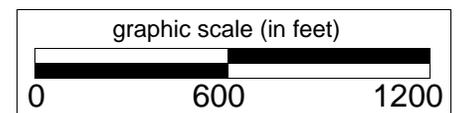
Compartment #2

Owned By:
City of Gardner

Prepared By:
Gary H. Gouldrup
Consulting Forester
72 Townsend Street
Pepperell, MA 01463
978-433-8780
6/10/2011



Boundary information is based on GIS layers provided by the City of Gardner's Engineering Department and GPS field work, 2011.



Compartment 3

308.80 Acres

BOUNDARY & STAND TYPE MAP

Land in Gardner, MA
Cowee Pond Reservoir Lot

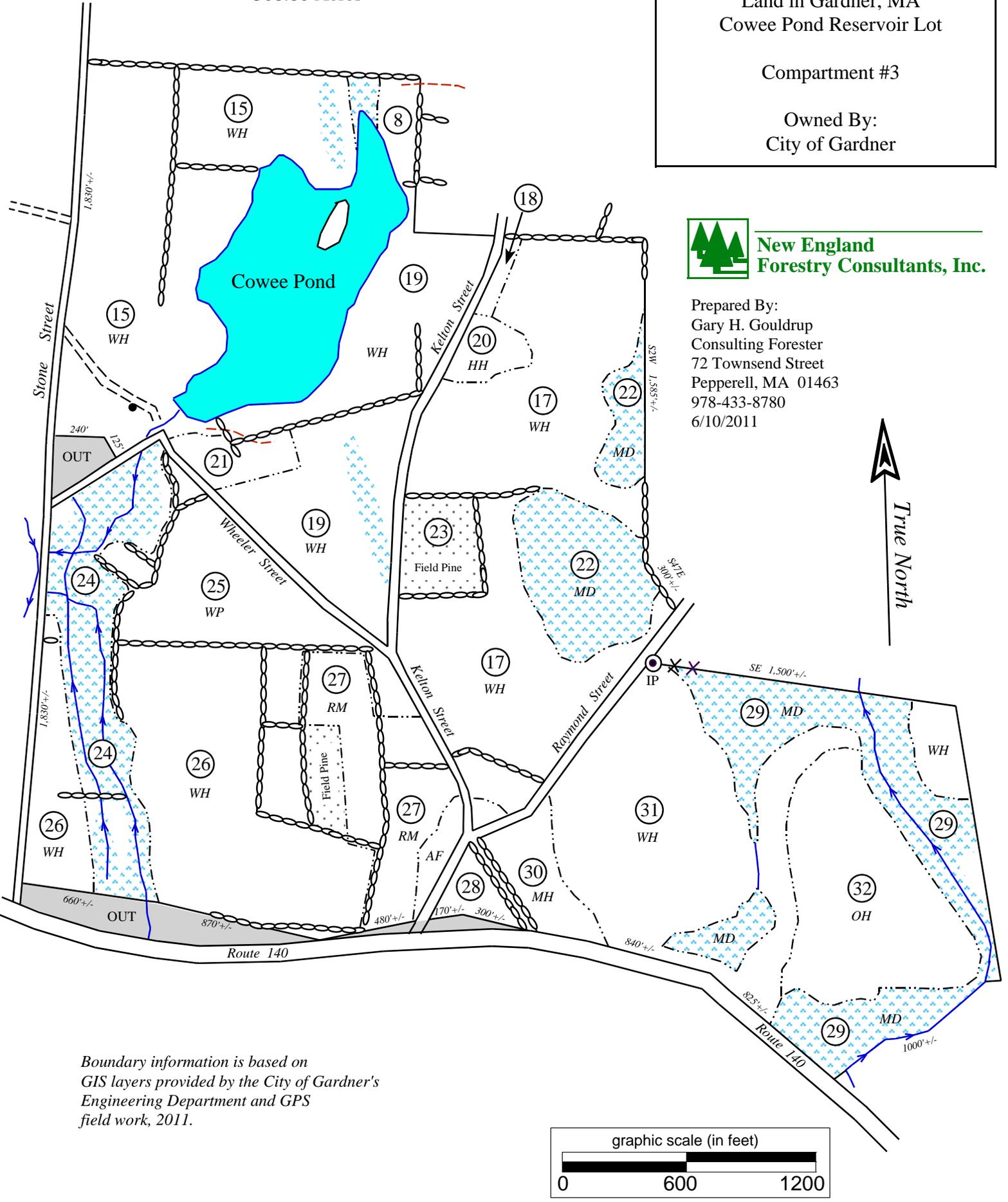
Compartment #3

Owned By:
City of Gardner



**New England
Forestry Consultants, Inc.**

Prepared By:
Gary H. Gouldrup
Consulting Forester
72 Townsend Street
Pepperell, MA 01463
978-433-8780
6/10/2011



Boundary information is based on GIS layers provided by the City of Gardner's Engineering Department and GPS field work, 2011.



Land in Gardner, MA
Cowee Pond Reservoir Lot

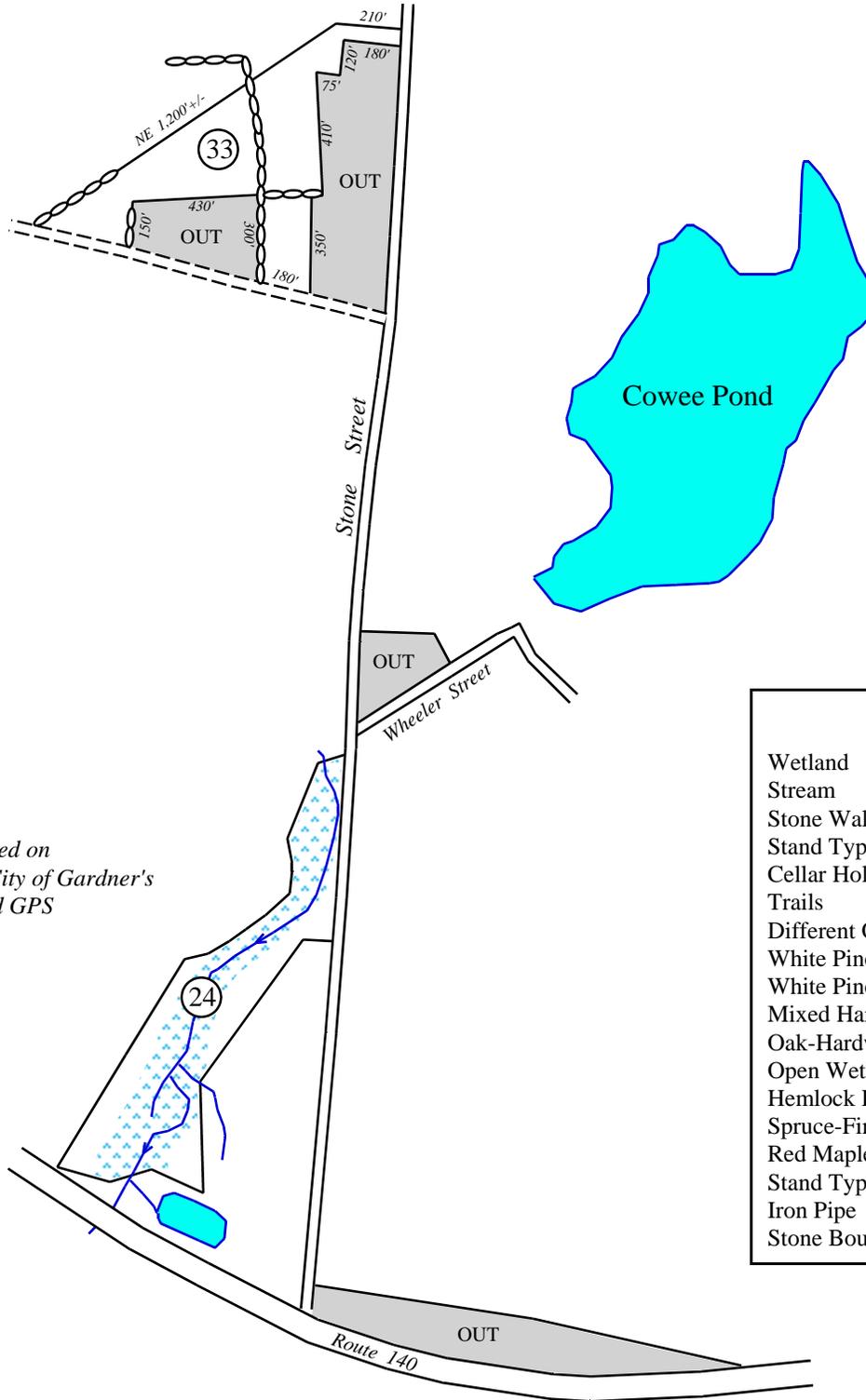
Compartment #4

Owned By:
City of Gardner

Compartment 4

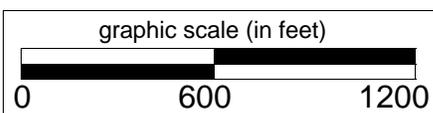
16.86 Acres

Prepared By:
Gary H. Gouldrup
Consulting Forester
72 Townsend Street
Pepperell, MA 01463
978-433-8780
6/10/2011

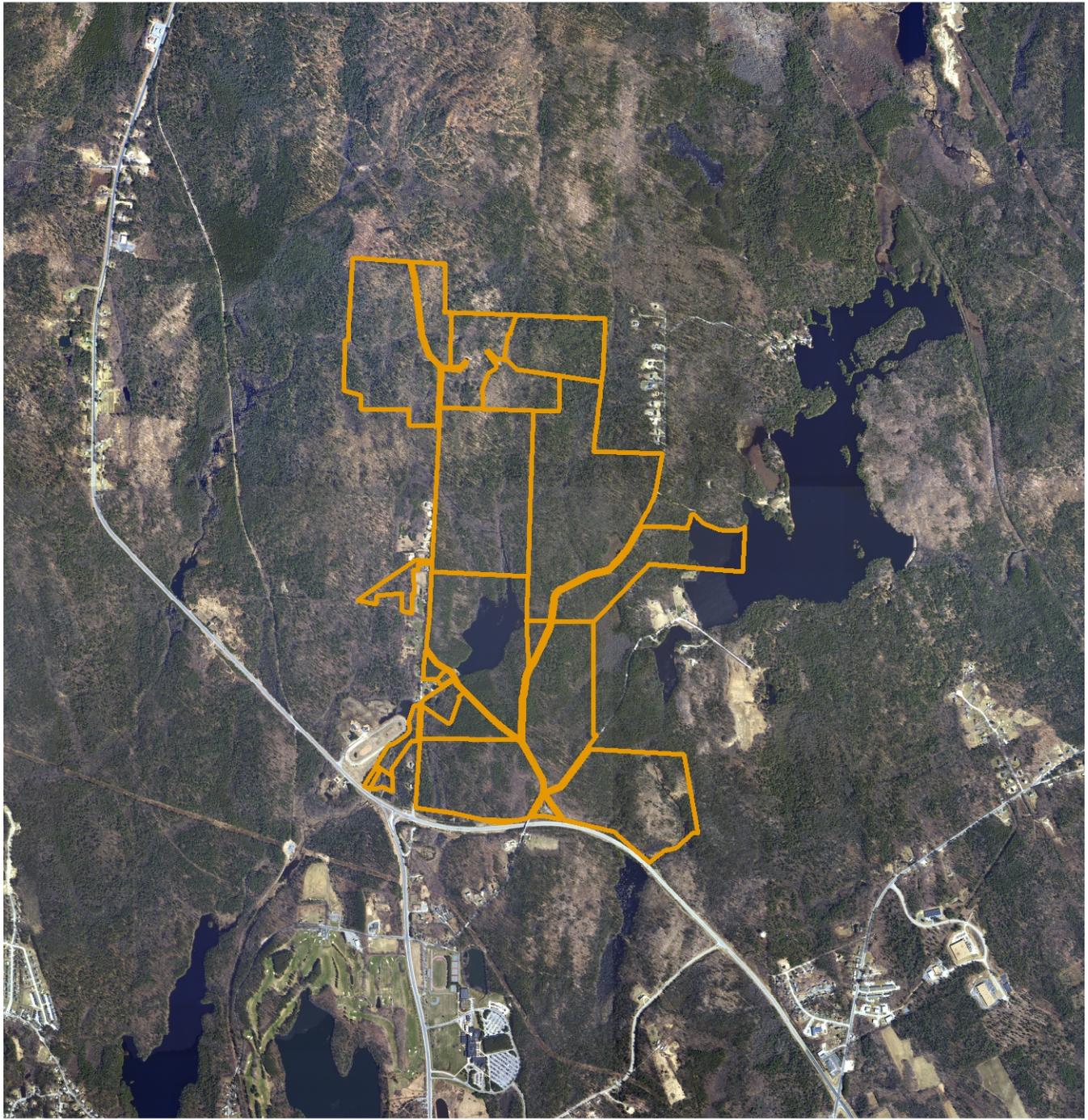


Boundary information is based on
GIS layers provided by the City of Gardner's
Engineering Department and GPS
field work, 2011.

Legend	
Wetland	
Stream	
Stone Wall	
Stand Type	
Cellar Hole	
Trails	
Different Owner	
White Pine Hardwood	WH
White Pine	WP
Mixed Hardwoods	MH
Oak-Hardwoods	OH
Open Wetland/Marsh	MD
Hemlock Hardwoods	HH
Spruce-Fir	SF
Red Maple	RM
Stand Type Line	
Iron Pipe	IP
Stone Bound	SB



City of Gardner
Cowee Pond Lot
Gardner, MA
2005 Aerial Photo



2,640 1,320 0 2,640 5,280 Feet



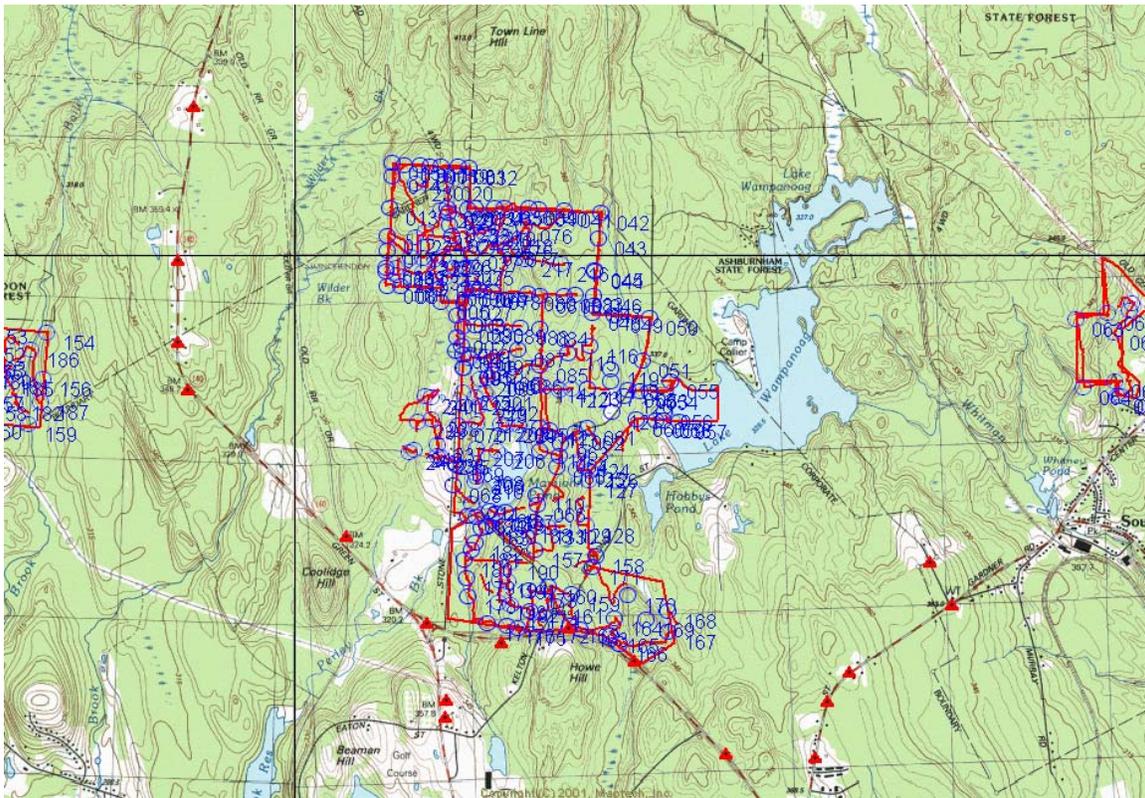
Prepared by:
New England Forestry Consultants, Inc
Sherman R. Small, Consulting Forester
Maine License # LF655
New Hampshire License # 409
April 28, 2011

Sketch map for management and planning purposes only, NOT A LEGAL SURVEY
Data obtained from MASS GIS, & New England Forestry Consultants, Inc.

TOPOGRAPHICAL MAP

Land In:
Gardner, MA

Owned By:
City of Gardner
City Hall Room 226, 95 Pleasant Street
Gardner, MA 01440



Topographical Map – Ashburnham Quadrangle

Scale 1 inch = 1000 feet

June 15, 2011

Prepared By: Gary H. Gouldrup, New England Forestry Consultants, Inc.