Forest Stewardship Plan

(10-Year Planning Period)

Town of Pelham, NH
Peabody Town Forest
155.0 Acres
July 16, 2009

Brian E. Johnsen
NH LPF #363
47 Wildwood Rd.
Weare, NH 03281
(603) 731-9325

Property Owners: Town of Pelham
Location: Peabody Town Forest, Old Lawrence Road, Pelham, NH
Total Acreage: **155.0 +/- Acres**[1]
Forested Acres: 132.5 Acres
Powerline Acres: 14.9 Acres
Wetland Acres: 7.6 Acres
Map/Lot Numbers: Map 7, Lots 3, 4, 5, 6, 7, 8, 9, 12, 13
Date Prepared: July 16, 2009

General Description of the Property

This well-managed parcel of forestland is located in central Pelham, west of Little Island Pond, on both sides of Old Lawrence Road. Although most of the property is forested, there are a few areas of open wetland (none bigger than 2 acres) as well as a maintained powerline right-of-way that runs through the middle of the property. The property is not heavily used by the public, although the ROW provides ATV access onto the lot and the main trail into the northern block of forest is used by recreationists who target shoot at junk metal or have campfires. Other than a couple of walking trails from neighboring developments, this property is fairly isolated. This is due to the fact that the northwestern boundary consists of the Girl Scout camp land and the fact that this end of Old Lawrence Road turns to Class 6, unmaintained roadway at the Peabody Forest.

Boundaries

The boundaries on this property range from very discernible to unknown. Most of the boundaries are stone wall, although there are a few lines without discernible corner points. The bulk of the property lies to the north of Old Lawrence Road, with only a small 30-acre parcel isolated from the rest of the property on the southern side of the road.

The southern parcel is almost completely bounded by stone walls, has drill holes and iron rods at many corners, and has a small 30' access point on Fletcher Drive in addition to the roughly 750' of frontage on Old Lawrence Road, most of which has been paved. One houselot on the southwestern line has installed net fencing over the stone wall onto town property for at least 100' with varying depths onto Town property, which should be addressed for boundary maintenance purposes and the to prevent unauthorized use or cutting of Town Forest vegetation (particularly regenerating pine saplings.) There are two sections of boundary on the western line that go along ledge, and no stone wall can be found, although the boundaries are not in contention by anyone at this time.

Another 10-acre outlying lot begins on the northern side of Old Lawrence Road where the southern lot ends, and has about 1,300' of frontage on the Class 6 portion of the road. This lot is triangular in shape, following a stone wall northeast onto the powerline, and then turning at a right angle and following a stone wall southeast through the powerline back to the road, meeting the road roughly where the powerline and

[1] This acreage figure was ascertained using GPS field data and the latest GIS aerial photography available from the UNH GRANIT database, and may or may not match the Assessor's data exactly.

treeline meet. The right-angle corner in the powerline is the only shared point with the rest of the Town Forest.

The bulk of the Town Forest is situated north of Old Lawrence Road, with about 1,000' of frontage on the road, beginning near the intersection where Fletcher Drive leaves the road. The line turns northeast from the road and heads up a stonewall to a corner of walls, and leaves the wall and turns southeast along a line through wetland to an iron rod on the west side of an access road. The line then follows the western edge of that access road north onto the powerline, then cuts southeast along stone wall to the junction of 4 walls, being the point in common with the 10-acre parcel. From here, the line travels northeast along wall to a corner, then follows stone wall to the southeast. This line is somewhat broken by small vernal pools where no wall can be found, and ends at an unknown point in a red maple swamp. This is the beginning of the most unknown section of boundary. The line turns northeast along an unknown line to a point simply marked with an old survey stake in the ground. Parts of this line have been blazed in the past. The line corners west of due north to another point marked by a survey stake, and this line has been blazed. The blazes continue heading northward along the former boundary of the Town Forest, but the new boundary line should turn northeast to an unknown point. Old "No Trespassing" signs can be found in the vicinity of this line, although no other monumentation can be found. The line turns and heads northwest, roughly in line with the same signs, going through a few wet area, and ending at a 3' tall stone-ringed well near an old foundation located on new Town property. The line then heads northerly to an unknown point in a red maple swamp, then westerly through alternating areas of wet and areas of forestland to an iron rod at the end of a stone wall, connecting back up with old blazes from the original Town Forest boundary. From here the line heads northwest through the red maple swamp, meeting up with and traveling along a stone wall to a junction of walls. The line then turns southwest along this stone wall for quite some length, passing a junction of 4 walls and continuing to a corner. The line heads northwest along the wall to a junction of walls, then turns southwest along wall heading across the powerline to an unknown point. Here the property corners around 3 houselots, but no monumentation can be found on the ground or on any plot plans. The line heads southeast, roughly paralleling the powerline, then turns at an unknown point and heads southwest back to the starting point on the north side of Old Lawrence Road near Fletcher Drive.

Although there is not a phenomenal amount of timber to be lost or gained in any of the unknown boundary areas, these lines should be surveyed and monuments laid out as soon as possible in preparation for the upcoming timber sale during the early part of this planning period.

Access

Despite the narrow access point on Fletcher Drive on paper, this property tends only to be accessed from Old Lawrence Road and the powerline by wheeled vehicles.

There is an established landing area for each of the outlying parcels, located at the northeastern corner of the southern lot, and located in the middle of the triangular lot. An access road has been built off of Old Lawrence Road for the bulk of the acreage, with a landing location on the edge of the powerline, but this access point has been blocked off by boulders at the edge of the road. ATVs appear to use the trail that heads up and down the powerline to access the property, or gain access through the elderly housing. There is a main trail that heads back to the old foundation deep in the northern section of this property, and that trail is well-used by people on wheeled vehicles, building fires, dumping trash, and target shooting. Various small footpaths can be found meandering through the property from a few houselots abutting this land.

This main trail should be upgraded into a truck road for future forestry usage, with a landing proposed at the northern end of this property on one of the new parcels. This would significantly cut down skidding distances for future forestry operations and would also increase the ability for fire and other emergency vehicles to access the property. Upgrading this road would also aid local police crews in patrolling the area more frequently to cut down on illegal fires and careless target-shooting. A steel gate has been proposed at the entrance of the access road on Old Lawrence Road, which will make quick access easier than dealing with boulders, although in an emergency situation like a fire, the road past the elderly housing facility could be used.

A parking area with a property map and kiosk should be set up at an appropriate area to facilitate more public recreational use of the property, since better public use can often discourage trash-dumping by irresponsible users. A trail loop should be considered around this property, highlighting any unique features such as large boulders or open wetland areas; such a project could be undertaken by a local Eagle Scout, as has been done in the past on Town lands.

Forest Types & Harvest History

Forests with varying composition in terms of species, age, and density are able to respond with more resilience to catastrophic events than monocultures. Most trees in unmanaged, overgrown forests are chronically short of much-needed nutrients, sunlight, and water, and are therefore constantly living in a stressed environment. Pre-stressed trees are much more susceptible to disease than their healthy counterparts growing in a well-spaced, healthy forest. Forests are broken down into management units called stands, which are areas of trees with similar species composition, size, and frequency of occurrence.

This particular property has an abundance of harvest history. Judging from the stone walls and proximity to rivers, this woodlot most likely was cleared in the mid-1800s for sheep pasture, part of the movement across much of New England to increase

wool production for water-powered mills along the banks of most New Hampshire waterways. When the pastures were abandoned, white pine grew in and the area was forested again. Subsequent cutting removed the white pine from some areas, and the open environment allowed red oak to seed in and become established in direct sunlight. The oldest trees on this property are likely 80-100 years old, although most are younger.

More recently, this property has undergone excellent forest management that included mapping out and inventorying the property and planning harvests for all accessible areas. The forestland has been thinned under the guidance of professional foresters, yielding significant income and providing a better growing environment for increased forest health and vigor while also providing better wildlife habitat and feeding areas. During the late 1990s, 3 harvests occurred over an area of about 100 acres, yielding about $42,000 in timber revenues and about 330 MBF of timber. Additionally, these harvests removed more than 140 cords and 1,100 tons of whole-tree chips' worth of low-grade trees, and the harvests established landing areas and a good access road.

In quantitative terms, about 130 acres of this property are considered forestland, growing about 1.5 MMBF (million board feet) of timber and about 1,200 cords of hardwood and softwood pulp. White pine is by far the dominant species, accounting for 67% of the standing timber volume with just over a million board feet of timber. Red oak accounts for another 1/5 of the total volume, with nearly 300 MBF, while black oak accounts for only 8% of the volume, about 115 MBF. The remaining 5% of timber volume is made up of various hardwoods, including red maple, white oak, beech, and white birch, along with some hemlock. More details on the timber cruise are available below, and a complete summary is available on page 6.

What is of notable significance is the comparison with this 2009 timber cruise and the previous 1995 cruise and subsequent harvests. The original cruise estimated 580 MBF, broken down into white pine, then black oak, and then red oak. Despite harvesting 330 MBF in 3 harvests, this forest has responded fantastically to the thinning efforts done by foresters, particularly in removing much of the poor-quality black oak and encouraging the red oak component. Furthermore, the high volume of whole-tree chips and cordwood removal (seen as a low-paying investment in previous harvests) has paid off impressively with the excellent growth on residual trees. The end result has been a high-quality, faster-growing, healthier forest, capable of producing more income in the future and one that is already regenerating itself in order to replace those trees that were cut 10 years ago. Although variations in cruising may account for slight differences in volume estimates between foresters, the conclusion is that this forest had been stagnating due to lack of management in the past and has now had a chance to grow to its potential.

Soils, Terrain, & Hydrology

Forests are essential for preventing erosion of existing soil and maintaining clean water. Riparian and wetland areas are the places that open water and upland sites meet. A riparian zone is the general term for the area where water and land meet, whereas a wetland is an area in a riparian zone that specifically has hydric, or wet, soils as well as vegetation that grows on that type of soil. Riparian areas are important a number of reasons. They offer critical habitat for many wildlife species, providing shelter, food, water, and travel corridors. They are also very useful for flood control by acting as a sponge during times of high water volume, and then releasing that water slowly and consistently over time. Without wetlands, streams would fluctuate greatly between periods of high flow and dry streambeds. Finally, riparian areas are key for filtering water as it travels from upland sites to the open water, keeping out many chemical impurities and keeping water silt-free.

There are numerous pockets of wetland areas, some of which are connected with overland or subterranean flows. Most of these surface streams, and many of the wet holes, dry up in the summer months, although some of the larger wet areas remain wet the whole year round. That being said, there has been little distinction made on the Stand Map between vernal pools (which are only seasonal) and year-round wetland areas.

Soils on this property vary considerably, from excessively-drained upland soils with exposed bedrock to very poorly-drained soils with standing water. Some areas have deep, fertile soils, and with appropriate management these areas have increased production of quality red oaks. Appendix A handles the soil types found on this property in depth. Drainage on this property tends to be towards the northeast or to the south, with the powerline acting roughly as the dividing line between watersheds. The southern drainage flows into Tonus Brook, which empties into Beaver Brook, which in turn flows south into the Merrimack River. The northern drainage, on the other hand, makes it way onto the Girl Scout property and flows into Little Island Pond.

Overall, this property has gently rolling terrain, with very few rock outcrops or sheer cliffs, although the southwestern corner of the southern parcel and the western areas of the powerline ROW would be exceptions to that fact.

Wildlife

Biological diversity can be described as the variety of plants and animals located in a given tract of land or landscape and the communities that are formed by that variety of species. This property has enormous value for wildlife, in the areas of food, water, cover, and breeding habitat. The wide variety of forest types and ages, the gentle terrain, and presence of standing water all help to make the property very diverse when it comes to flora and fauna.

As mentioned, the presence of water adds a great deal to the value of this property for wildlife. Wildlife professionals have often documented that water greatly increases the diversity of wildlife populations. This is most likely due to the wide variety of fish, birds, mammals, amphibians, reptiles, and invertebrates that depend on water for life, which then attract predators as well, the great horned owl being one example.

Another habitat type that is rapidly becoming rare in New England is that of early successional species. This dense, brushy growth is excellent cover and breeding grounds for a number of small upland mammals and birds. The maintained powerline provides excellent early successional habitat at no maintenance cost to the Town.

Two of the biggest threats to biological diversity today are loss of habitat to non-forest uses and invasive species. Although this property is not in danger of being altered into a non-forest use, some small pockets of invasive species have been found around the property. These small areas should be addressed aggressively while the outbreaks are still small, in order to prevent the species from spreading any further through the forest and overtaking more acreage. One such area is the north corner of the southern lot, next to the neighbor's driveway along Old Lawrence Road. It appears that someone has been dumping shingles, fill, and other similar construction debris in this corner, and some of the fill held Japanese knotweed (bamboo). A small area smaller than ½ acre been affected thus far, and it should be treated before the invasion spreads. The landing on this lot, as well as the powerline, also had a few bushes that strongly resembled multi-flora rose, and these easy-to-kill plants should be dealt with before they spread out of control.

Overall, this property has a wealth of diverse habitats that support a large number of different species of birds, waterfowl, upland game, mammals, amphibians, reptiles, and their supporting flora.

Timber Cruise

A detailed timber cruise was completed on the property yielding 45 plots of tree data across each forested stand. This data was used to tabulate the current tree growth on the property and the field notes made during this cruise helped to create many of the maps in this management plan. A cruise is a statistical sample that is used to determine the volumes of various forest products growing on the property. This cruise generates volumes in terms of cords (for all trees 6-11" in diameter, or trees larger than 11" that are not suitable for sawtimber) and board feet (for trees 12" and greater in diameter that could be sold and sawn into boards). The diameter of a tree is measured at 4.5' above the ground, which is an industry standard referred to as diameter at breast height (DBH). From this intensive cruise, a total of 11 stands were delineated for this property. Stands are areas of trees with similar species composition, size, and frequency of occurrence. These stands will be the basis for the methodical analysis of the forest management plan, and are depicted on the following Stand Map.

Landowner Goals & Objectives

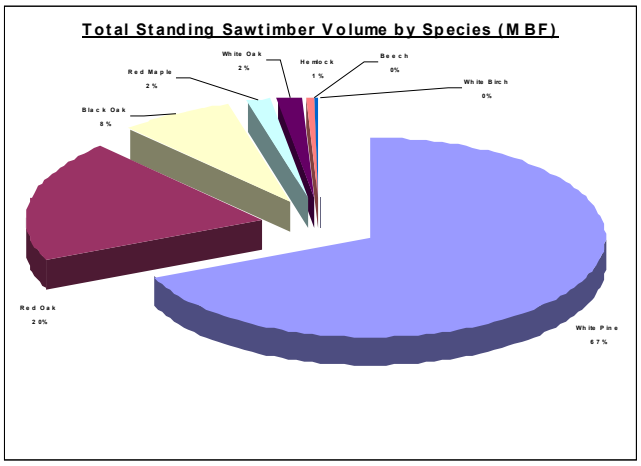
The Town of Pelham has been very proactive in protecting various areas around the town from development by keeping areas open for recreational use and maintaining areas of forestland for wildlife habitat. Many of these parcels are associated with wetland areas that benefit greatly from the forested buffer they have instead of having pavement and lawns in the riparian zones. The Town continues to educate citizens and developers alike, explaining the benefits of forested lands around built-up areas. The general goals of the Town can best be summed up with the key words of the New Hampshire Tree Farm System, of which the Town is a member: wood, water, wildlife, and recreation. The Town is interested in managing their woodlots for long-term, sustainable forest management. They are interested in generating periodic revenue from timber harvests that encourage quality wood growth on residual trees as well as encourage regeneration, in order to grow tomorrow's forest beneath the forest of today. The Town owns many of their properties in order to protect sensitive wetland sites and waterways by maintaining a forested buffer between the open water and built-up areas. Because Pelham is a town with many people, the municipal officials recognize that families, individuals, and schoolchildren benefit from having wooded areas for walking and nature watching. The Town hopes to keep these areas open to responsible recreation without compromising the other three goals. Finally, the Town recognizes that the native wildlife species of New Hampshire need areas for food, water, shelter, and raising young. To that end, these forests are kept as biologically diverse as possible while maintaining the other three goals as simultaneously as possible.

The goals for this specific property are to periodically thin the forest to gain some revenue over the years; maintain a trail system through the area for walking, biking, and non-motorized winter activities; maintain the integrity of the wetland areas with no pollution, siltation, or alteration of the terrain; and provide a diversity of species with enough cover, food, and water so as not to lose species from living in this area of Pelham. Sound forest management will be able to meet most of these goals.

Currently, the property is being used by only a small cross-section of the public, and better access to this Town Forest by more of the general populace would be desired. To that end, a parking area and better trail system should be established for future recreation. Furthermore, a better road system should be built that would allow forestry access deeper into the forest. Finally, forests should continue to be managed under the sound, proven management of field forestry professionals.

Forest Products Summary Table for All Stands
Town of Pelham
Peabody Town Forest
Total Acreage: 155 +/- acres

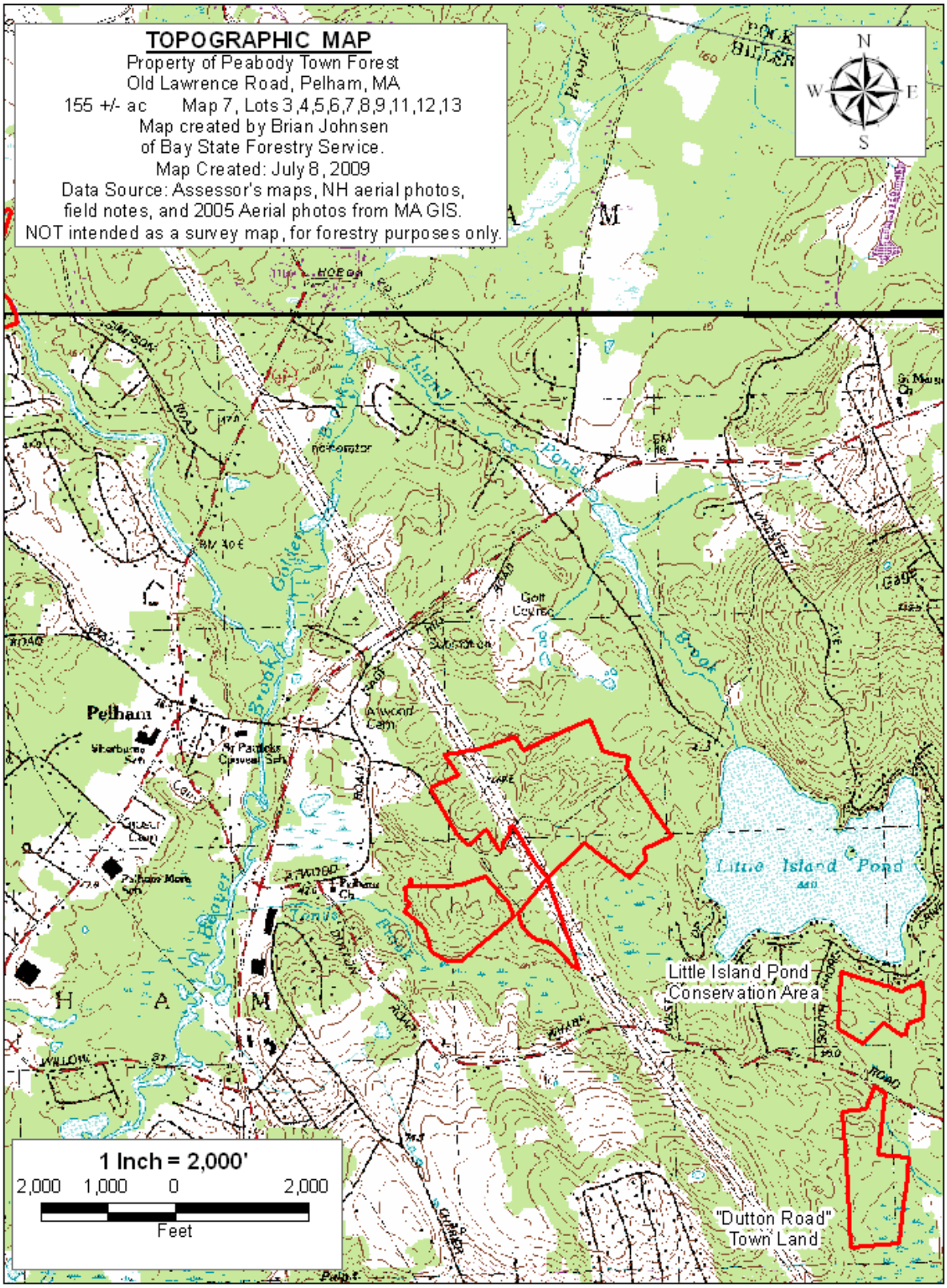
Species	Board Feet
White Pine	1,023,485
Red Oak	292,866
Black Oak	116,425
Red Maple	25,298
White Oak	23,791
Hemlock	2,620
Beech	2,481
White Birch	1,965
Total Sawtimber	**1,495,950**[2]
Hardwood Cordwood	887 Cords
Softwood Pulpwood	351 Cords
Total Cordwood	**1,238 Cords**[3]



A basal area factor 10 prism was used to conduct the inventory sample. A total of 45 plots, distributed across each forested stand, were taken to arrive at this cruise summary.

[2] This sawtimber total represents all the trees of sawtimber quality 12 inches and greater in diameter found in this block. In order to capture this total volume, all trees of this specification would have to be harvested.

[3] These cordwood totals, both softwood and hardwood, represent all the standing trees with diameters of 6-11.9 inches found in this block, as well as trees of larger diameters that do not meet sawtimber quality specifications. In order to capture this total volume, all trees of this specification would have to be harvested.


TOPOGRAPHIC MAP
Property of Peabody Town Forest
Old Lawrence Road, Pelham, MA
155 +/- ac Map 7, Lots 3,4,5,6,7,8,9,11,12,13
Map created by Brian Johnsen
of Bay State Forestry Service.
Map Created: July 8, 2009
Data Source: Assessor's maps, NH aerial photos,
field notes, and 2005 Aerial photos from MA GIS.
NOT intended as a survey map, for forestry purposes only.
N
W
E
S
Pelham
Little Island Pond
Little Island Pond
Conservation Area
"Dutton Road"
Town Land
1 Inch = 2,000'
2,000 1,000 0 2,000
Feet

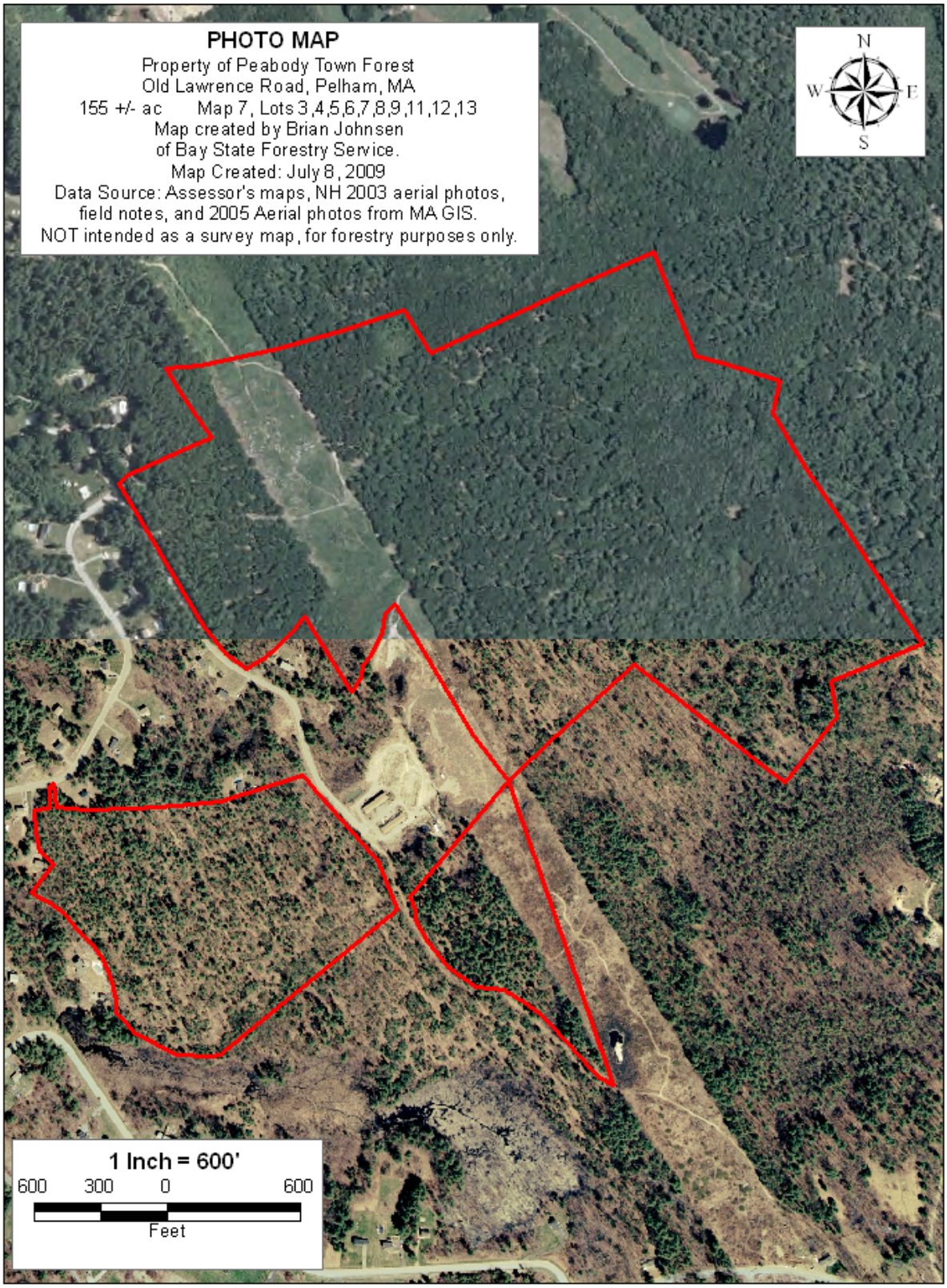
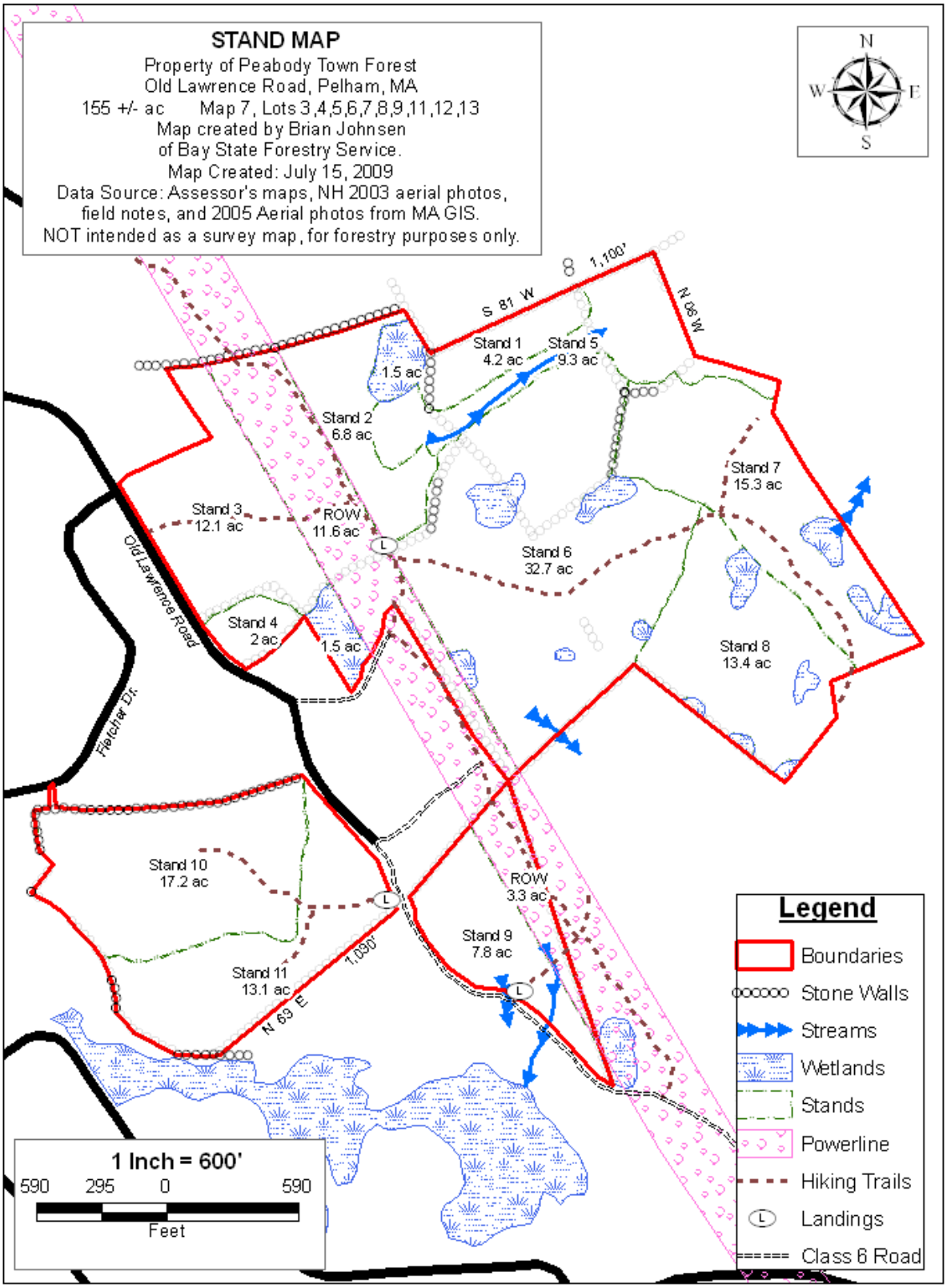


PHOTO MAP
Property of Peabody Town Forest
Old Lawrence Road, Pelham, MA
155 +/- ac Map 7, Lots 3,4,5,6,7,8,9,11,12,13
Map created by Brian Johnsen
of Bay State Forestry Service.
Map Created: July 8, 2009
Data Source: Assessor's maps, NH 2003 aerial photos,
field notes, and 2005 Aerial photos from MA GIS.
NOT intended as a survey map, for forestry purposes only.
N
W
E
S
1 Inch = 600'
600 300 0 600
Feet


STAND MAP
Property of Peabody Town Forest
Old Lawrence Road, Pelham, MA
155 +/- ac Map 7, Lots 3,4,5,6,7,8,9,11,12,13
Map created by Brian Johnsen
of Bay State Forestry Service.
Map Created: July 15, 2009
Data Source: Assessor's maps, NH 2003 aerial photos,
field notes, and 2005 Aerial photos from MA GIS.
NOT intended as a survey map, for forestry purposes only.
N
W
E
S
1,100'
S 81 W
N 06 W
Stand 1
4.2 ac
Stand 5
9.3 ac
1.5 ac
Stand 2
6.8 ac
Stand 7
15.3 ac
Stand 3
12.1 ac
ROW
11.6 ac
Stand 6
32.7 ac
Old Lawrence Road
Stand 4
2 ac
1.5 ac
Stand 8
13.4 ac
Fletcher Dr.
Stand 10
17.2 ac
ROW
3.3 ac
Stand 9
7.8 ac
1,050'
N 69 E
Stand 11
13.1 ac
1 Inch = 600'
590 295 0 590
Feet
Legend
Boundaries
Stone Walls
Streams
Wetlands
Stands
Powerline
Hiking Trails
Landings
Class 6 Road

General Management Strategies

Timber – One of the main goals for this property is sound timber management in order to produce a periodic income. A list of management strategies on a stand-by-stand basis is discussed later in this plan.

Fish/Wildlife Habitat – Although some activities can manage for a specific plant or animal (species specialists), most forest management activity focuses on habitat generalists by managing for a diversity of species, protecting existing critical habitat, and enhancing existing habitat. Keeping large browsers in mind, there will be some areas that are opened up to sunlight to encourage young growth on the forest floor. Harvesting methods will minimize damage to young saplings to provide food low to the ground. Some large mast trees (oaks) will be maintained despite poor quality as lumber as a food source for small mammals; their presence will, in turn, help to feed the hawk population that frequents this area for food.

Soil – Care will be taken to not harvest in mud season, when the ground is too soft, or on excessive slopes, to minimize rutting and erosion during harvest operations. Landings will be seeded with a conservation mix and limed at the conclusion of the job to stabilize the soil, and waterbars will be installed on skid trails where necessary. All these erosion controls will not prevent erosion, however, if OHRV's are not controlled. The Town will need to decide the best way the handle this situation.

Water Quality – Buffers will be left along streams and the wetland edges to avoid removing too many trees at once; this will provide soil stabilization along waterways and adequate shade. This shade will decrease water temperature and therefore increase the water's oxygen-holding capacity. The wetlands and steams will be left intact to keep the water clean and silt-free. Poled fords will be used when crossing smaller steams to further prevent siltation. Fueling of machines will not take place near the water's edge to prevent pollution.

Wetlands – In order to preserve the integrity of more sensitive areas of this woodlot, wetlands will only be harvested under dry or frozen conditions. Currently, no serious damage is being done to wetland areas by OHRVs – harvest trails will stay away from wet holes to keep from tempting 4-wheelers to enter wet areas.

Recreational Resources – The skid trails will provide a nice network of trails for recreational opportunities, both for walking and wildlife viewing. To this end, trails will be kept free of slash where possible. A walking trail system should be designed and completed during this 10-year period, along with a parking area and kiosk describing the natural features of the Town Forest as well as the beneficial outcomes of timber harvesting.

Aesthetic Values – To maintain good aesthetics, logging operations will not rut up the soils and will cut up the tops so they lay close to the ground for rapid decay. Logging crews may specifically leave high brush, rocks, and log barricades along trails that should be closed to OHRV's, but this will be an exception, following the landowner's goals to prevent erosion and maintain the integrity of sensitive wetlands.

Cultural Features – Care will be taken to avoid breaching or breaking the stone walls during timber harvests unless no openings exist to allow the trees to be skidded to the landing. To accomplish this, loggers will use existing barways for skidding.

Forest Protection – The diversity of tree species does well to protect this property from a forest pest looking for a monoculture of timber. By keeping logging slash low to the ground, decay is speeded up; this prevents too much of a buildup of fuels as a fire hazard.

Threatened/Endangered Species and Unique Natural Communities – During all the walks through this forestland, no species were identified as either threatened or endangered. If at some time any flora or fauna are identified on this property as such, appropriate measures will be taken to prevent disturbing that species.

Invasive Species Considerations – During all the walks through this forestland, some species were identified as non-native, exotic, invasive species. As described above, these locations should be pinpointed and treated aggressively through physical (cutting, removing) and chemical (herbicide) means early in this planning period in order to prevent further spread of the species to a point at which it is unmanageable.

Forest Management Plan

Stand 1 – Mixed Oak Sawtimber

Standing Volumes -- Stand 1			4.2 Acres	
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
Red Oak	40	1.1	3,125	13,125
Black Oak	20	1.1	1,625	6,825
White Pine	10	2.3	1,375	5,775
White Oak	10	1.3	875	3,675
Red Maple	5	1.0	375	1,575
Sawtimber Total:	**85**	**1.3**	**7,375**	**30,975**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	5	5.0	2	6
Softwood Pulp	15	3.3	3	13
Total BA/acre	**105**			

Description:

This stand, located the northern boundary line of the property, appears to be a healthy, vigorous stand of mixed oak and scattered white pine 10-18" in diameter. This stand was thinned in the late 1990s, which is the reason for so little pulp-quality wood in the understory—it had been thinned out in order to allow the best sawtimber trees to flourish. The lower strata consists mostly of black and red oak 8-10" in diameter along with some white pine of similar size, although much of this pine is of poor quality, struggling for sunlight under the oaks. Regeneration consists of blueberries 1-2' tall, as well as patches of white pine 4-12' tall that appear to be growing quite well. Soils are dry, upland, and somewhat stony, and the stand is located on a south-facing hill with slopes of 8-15%. Access to this stand only comes from a few select points of crossing through Stand 5, which is a wet red maple area with a stream flowing northward. However, old skid trails can be used to relocate the best crossing areas.

Recommendations:

This stand is growing well, and should only receive a light thinning in any upcoming harvest in the next 5 years. The regeneration is coming along, and much of the sawtimber is not quite mature at this point. A light thinning would be helpful to open up holes in the canopy around the best sawtimber trees in order to speed up their growth, but currently the stocking levels are about where they should be to encourage good growth. Such a harvest would only remove the largest overstory white pines as well as poorly-formed red oaks and competing black oaks.

Stand 2 –Upland Stunted Black Oak

Standing Volumes -- Stand 2			6.8 Acres	
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
Black Oak	45	1.1	3,625	24,650
Sawtimber Total:	**45**	**1.1**	**3,625**	**24,650**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	25	5.2	7.8	53
Softwood Pulp	20	2.5	3.4	23
Total BA/acre	**90**			

Description:

This stand, located on the northwestern edge of the property and just north of the powerline, is a poorer-quality site than that of Stand 1, and consists mostly of upland scrubby oak. This stand has very dry soils, excessively drained, and rocky, with shallow soils and bedrock close to the surface. The red oak does not grow nearly as well here, and so this stand consists mostly of black oak stunted pole-sized trees (along with some scattered white oak, red oak, and red maple) growing over an understory of blueberries and saplings. The sapling component is comprised of white pine, red oak, black oak, and white oak 2-10' tall, very good in some pockets, but generally quite sparse, with heavier amounts of blueberries covering the forest floor or nestled between exposed rock. Although the dense pockets of white pine saplings 4-15' tall seem to be growing very well, the occasional white pine poles found in this stand are of very poor quality, having been weeviled and struggling for sunlight under the heavy oak shade. This stand offers an excellent source of acorns and berries near the powerline, providing very good food and cover for mammals and birds so close to the powerline. Hawks seem to particularly enjoy this area for hunting small mammals. The terrain is rolling, and generally slopes gently to the south with grades of 4-12%. This stand is accessible using the main access road.

Recommendations:

The dry, shallow soils in this stand are not likely to grow excellent timber in the near future. This stand, then, should be used more as a travel-way between harvesting locations and should be treated more as a wildlife habitat area and source of firewood and whole-tree chips than a sawtimber area. Some of the poorest-quality stems could be removed in the upcoming harvest for skid trail layout, and this stand would be used more as an area to travel through rather than an area of intense management. That being said, however, it is a good source of high-quality chips (oak is a heavy wood, and chips are weighed by the ton) that are close to the landing, so in that regard it is still a productive site.

Stand 3 – Upland Stunted Black Oak

Standing Volumes -- Stand 3			12.1 Acres	
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
Black Oak	15	1.1	1,188	14,369
Sawtimber Total:	**15**	**1.1**	**1,188**	**14,369**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	55	3.1	11.0	134
Softwood Pulp	20	2.9	3.8	46
Total BA/acre	**90**			

Description:

This stand, located between Old Lawrence Road and the powerline, is actually a continuation of Stand 2, simply separated by the powerline. This stand has very dry soils, excessively drained, and rocky, with shallow soils and bedrock close to the surface. The red oak does not grow nearly as well here, and so this stand consists mostly of black oak stunted pole-sized trees (along with some scattered white oak, red oak, and red maple) growing over an understory of blueberries and saplings. The sapling component is comprised of white pine, red oak, black oak, and white oak 2-10' tall, very good in some pockets, and in other areas rather sparse, with heavier amounts of blueberries covering the forest floor or nestled between exposed rock. This stand offers an excellent source of acorns near the powerline, providing very good food and cover for mammals and birds so close to the powerline. Hawks seem to particularly enjoy this area for hunting squirrels. The terrain is rolling, and generally slopes gently to the south with grades of 4-12%. This stand is accessible using the main access road.

Recommendations:

The dry, shallow soils in this stand are not likely to grow excellent timber in the near future. This stand, then, should be used more as a travel-way between harvesting locations and should be treated more as a wildlife habitat area and source of firewood and whole-tree chips than a sawtimber area. Some of the poorest-quality stems could be removed in the upcoming harvest for skid trail layout, and this stand would be used more as an area to travel through rather than an area of intense management. That being said, however, it is a good source of high-quality chips (oak is a heavy wood, and chips are weighed by the ton) that are close to the landing, so in that regard it is still a productive site.

This stand is one of the few found along the paved section of Old Lawrence Road, and thus harvest aesthetics would be of prime importance to give the public a positive view of sound forest management at work.

Stand 4 – White Pine/Red Oak Sawtimber

Standing Volumes -- Stand 4				2 Acres
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
White Pine	65	3.3	12,250	24,500
Red Oak	25	1.5	2,500	5,000
Sawtimber Total:	**90**	**2.4**	**14,750**	**29,500**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	15	3.3	3.2	6
Softwood Pulp	10	2.5	1.7	3
Total BA/acre	**115**			

Description:

This small stand, located in a small corner along Old Lawrence Road southwest of the powerline, is a much more fertile stand than the surrounding Stand 3. This area receives some moisture from the wetland area to the northeast along the powerline, and therefore has better soils and consequently grows better timber. This stand consists mostly of large white pine and red oak sawtimber 14-26" in diameter, much of which are of excellent quality. Soils are moderately well-drained and slope to the south with grades of 2-6%. There is very little regeneration under the shady overstory , with only some blueberries and pockets of white pine 6-15' tall. Access to this stand is good, since it is so close to the main access road, although care should be taken not to harvest in wet conditions.

Recommendations:

This stand would benefit greatly from a timber harvest that would remove most of the white pine over 22" in diameter, along with some red oak sawtimber, as a way of allowing the residual stand to grow even better and to establish regeneration on the forest floor to compete with the ferns. Such a harvest would only remove about 10 MBF of white pine and red oak sawtimber, but it would certainly prevent losing any of these large overstory trees to wind damage or rot. This stand is one of the few found along the paved section of Old Lawrence Road, and thus harvest aesthetics would be of prime importance to give the public a positive view of sound forest management at work.

Stand 5 – Wet Red Maple and Swamp

Standing Volumes -- Stand 5			9.3 Acres	
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
White Pine	10	1.8	3,833	35,650
Red Maple	10	1.0	750	6,975
Red Oak	7	1.3	583	5,425
White Oak	3	2.0	417	3,875
Black Oak	3	1.5	333	3,100
Sawtimber Total:	**33**	**1.5**	**5,917**	**55,025**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	63	3.9	15.6	145
Softwood Pulp	3	2.0	0.5	4
Total BA/acre	**100**			

Description:

This very wet stand, located northeast of the powerline south of Stand 1, sits in a thin band running northeast, consists mostly of a red maple swamp to the north and slightly better forestland in the southern half of the stand. The overstory generally consists of red maple 4-16" in diameter growing on hummocky soils that are fairly saturated with water much of the year. Occasional red oak, white pine, and white oak can also be found growing around the edges of this stand or on dry hummocks, but in general this stand has very little in the way of sawtimber-quality wood. The cordwood component of the stand is almost entirely red maple, with only a little bit of white ash and white oak mixed in. The southern half of the stand lacks standing water, and the regeneration is generally thick, consisting of good white pine 6-15' tall and 1-4" in diameter, along with hardwood wetland shrubs. As the stand progresses further north, more and more water accumulates on the surface of the soil, and regeneration gives way to skunk cabbage and wetland shrubs. Soils tend to be very poorly-drained, often with standing water on the surface, and slope generally to the north with grades of 0-3%. The northernmost area of this stand along the northeastern boundary of the property is completely submerged and is inaccessible by conventional harvesting practices.

Recommendations:

This stand is more or less inaccessible for harvesting purposes and should be left alone as a wetland area to help regulate water quality and flow amounts. That being said, if it is possible to reach any sawtimber from the edges of this stand, such harvesting should take place in conjunction with harvesting of adjacent areas, since this timber will merely rot and fall to the ground eventually, and it would make better financial sense to capture this value before it is lost. A biomass harvest can be especially useful in this scenario, or conventional felling with a long cable to remove the trees from the wet area.

Stand 6 – Well-Managed White Pine/Red Oak Sawtimber

Standing Volumes -- Stand 6			31.7 Acres	
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
White Pine	42	3.2	7,806	247,436
Red Oak	37	1.4	3,417	108,308
Black Oak	13	1.1	1,083	34,342
Red Maple	2	1.0	167	5,283
White Oak	2	1.0	167	5,283
Sawtimber Total:	**97**	**1.5**	**12,639**	**400,653**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	31	3.6	7.1	225
Softwood Pulp	7	3.7	1.5	49
Total BA/acre	**134**			

Description:

This large stand, making up the bulk of the property northeast of the powerline, was thinned 12 years ago, managing for sawtimber of most species but focusing on white pine and red oak. The results of this work are impressive. The current stand is an excellent overstory of white pine and red oak sawtimber of exceptional growth and size and quality, ranging from 14-24" in diameter, along with some good-quality black oak 12-18" in diameter. The latter trees were the best of the low-quality black oak that seems to have covered this forest 15 years ago when the first plan was written. The lower strata consists mostly of hardwood poles 8-12" in diameter, including red maple, red oak, white birch, white oak, and black oak, along with white pine poles of similar size. Perhaps the most prominent highlight of the previous harvest is the excellent regeneration, particularly white pine 0-2" in diameter and 6-20' tall, along with red maple, red oak, and white oak stump-sprouts and seedlings of similar size. Although much of this ground is moderately well-drained on rolling hills with few rocks, there are many wet areas between the rolling hills that are rather poorly-drained, with year-round or seasonal standing water in them. Around these many ferns and hardwood shrubs grow, ranging from 1-3' tall ferns to dense 3-6' tall alders and other wetland shrubs. Access to this stand is good using the existing landing next to the powerline. A main trail runs through this stand and off into Stand 7; this trail should be cleaned of trash and junk and upgraded into a usable truck road, so as to access a landing in Stand 7.

Recommendations:

This stand has grown well since the last harvest, and would benefit from another harvest in the near future to prevent the forest from becoming stagnant again. Such a harvest would remove some of the most mature timber, creating growing space for residual timber stock as well as providing sunlight on the forest floor to encourage growth from the advance regeneration that is doing so well. Such a harvest would remove about 80 MBF of white pine, 25 MBF of mixed oak, and about 40 cords of low-grade wood, bringing the basal area per acre down to about 100 square feet.

Stand 7 – Unthinned White Pine, Red Oak, Hemlock Sawtimber

Standing Volumes -- Stand 7			15.2 Acres	
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
White Pine	90	3.1	16,313	247,950
Red Oak	38	1.4	3,563	54,150
Red Maple	8	1.2	625	9,500
Hemlock	8	1.2	625	9,500
Black Oak	3	1.0	188	2,850
White Oak	3	1.0	188	2,850
Sawtimber Total:	**148**	**1.5**	**21,500**	**326,800**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	28	4.2	7.1	108
Softwood Pulp	5	5.0	1.5	23
Total BA/acre	**180**			

Description:

This stand, located along the northeastern boundary line south of Stand 5, is made up mostly of the new land that has been added to Peabody Town Forest. As a result, this stand has not had the good management history the rest of the property has had. The bad news is that this forest is still stuck in its unmanaged "holding pattern" of having reached crown closure long ago, and not being able to grow well; the good news is that it has not be harvested in quite some time, allowing the Town to at least pick up some good timber value during the course of harvesting. This stand strongly resembles what Stand 6 used to look like before management, with small vernal pools and wetland areas hiding between upland areas growing good white pine and red oak sawtimber 12-24" in diameter along with red maple, hemlock, and black oak 12-16" in diameter. The lower strata consists of white oak, red maple, white pine, red oak, and yellow birch poles 8-12" in diameter. Not much regeneration can be found in this area due to the lack of sunlight reaching the forest floor, although some good pockets of white pine 2-6' tall can be found, as well as some yellow birch and red maple saplings 1" in diameter 8-20' tall. The terrain is good, rolling with some surface boulders, and generally well-drained in upland areas with pockets of very poorly-drained soils in between the hills. Some of this ground can become quite hilly, with side-hill grades of 15-25%, although most of the ground has gentler terrain consisting of grades ranging from 4-10%. Access to this stand is fair, using the skid trails through Stand 6. A main trail coming out of Stand 6 can be found here, ending at an old concrete foundation with a well nearby. Some areas of this stand may be inaccessible because of poorly-drained soils lying between the timber and the proposed landing location. An upgraded road and landing location back in this area would help to cut down on skidding distances.

About 1 acre of flat land can be found near this foundation, with a completely different overstory consisting of dense white pine, poplar, birch, and maple poles 4-10" in diameter on an area that had been cleared around the house. The trees in this area are quite crowded, although much of the white pine is of fairly good quality, with little weevil damage. The hardwoods currently overtop the pines.

Recommendations:

This stand is ready for a timber harvest that would remove some of the mature timber of all species, as well as removing most of the poor-quality trees of all species. Specific attention should be given to managing for high-quality red oak and white pine sawtimber, since the results have been so good in Stand 6 in previous harvests. Such a harvest would allow sunlight to reach the forest floor and encourage regeneration of a new forest for the future, as well as provide plenty of young, succulent growth for animals to feed on. Care should be taken during harvesting not to thin too heavily on wet soils, to prevent blowdown. Such a harvest would remove about 90 MBF of white pine timber, 10 MBF of oak, and another 10 MBF of mixed woods,

The trail entering this stand should be upgraded into a trucking road to improve access, and a landing should be built at this end of the forest as a way of cutting down on skid distances.

The 1-acre white pine/hardwood pole area is ready for a chainsaw TSI operation that would remove the poorer-quality pines and most of the hardwoods, allowing space for the best crop trees to grow up into good sawtimber-quality trees. Alternatively, this flat, well-drained area could be used as a landing, although more than likely this area has some deep loam that would not be as conducive to building a landing as it would be for growing good timber.

Stand 8 – Unthinned Hardwood / White Pine Small Sawtimber

Standing Volumes -- Stand 8			13.1 Acres	
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
Red Oak	34	1.1	2,700	35,370
White Pine	28	2.6	4,300	56,330
Black Oak	6	1.0	450	5,895
Beech	2	1.5	200	2,620
White Birch	2	1.0	150	1,965
White Oak	2	1.0	150	1,965
Red Maple	2	1.0	150	1,965
Sawtimber Total:	**76**	**1.3**	**8,100**	**106,110**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	40	3.8	9.4	124
Softwood Pulp	36	2.9	7.0	91
Total BA/acre	**152**			

Description:

This stand, located along the eastern leg of the boundary line south of Stand 7, consists mostly of red oak and white pine along with a mixture of other species, all in the 6-18" diameter classes. Some large white pines are super-canopy individuals greater than 20" in diameter. Terrain is rather hilly, with grades ranging from 10-25%, with small wet areas found in the lower areas. Soils are generally moderately well-drained, with the exception of those wet areas as exceptions. In this way, the stand would seem to be rather similar to Stand 6. However, this stand was not harvested 12 years ago with the rest of the property. Consequently, it does not have the fantastic regeneration that is so prevalent in that stand; rather, there is a obvious pole component of a mixture of species (including white birch, poor-quality maple, and hemlock) that was not thinned out of the stand. Access to this stand is good, using trails that course through Stand 6 and lead back to the landing.

Recommendations:

When harvesting was done on the rest of this property in the late 1990s, this stand was deemed as "still in the growing stage" because it had been "harvested too recently." Its time of growth has happened, and it would be wise to begin thinning it now, given the density it has achieved. A thinning should be conducted when harvesting Stands 6 and 7, removing the most mature white pine and most of the poorly-formed trees of all species. Such a harvest would likely remove 20-30 MBF of timber and about 50 cords of low-grade wood. Harvesting should take care not to remove too much around the wet holes so as to leave enough shade for the creatures using those wet areas.

Stand 9 – Well-stocked High Quality White Pine Sawtimber

Standing Volumes -- Stand 9				7.8 Acres
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
White Pine	110	3.4	21,563	168,188
Red Oak	13	1.4	1,188	9,263
Black Oak	3	1.0	188	1,463
Sawtimber Total:	**125**	**1.9**	**22,938**	**178,913**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	8	3.0	1.5	11
Softwood Pulp	10	3.5	2.2	17
Total BA/acre	**143**			

Description:

This small triangular stand, located southeast of the rest of the property but north of Old Lawrence Road, is a well-stocked high quality stand of excellent white pine sawtimber 14-24" in diameter growing over lush white pine regeneration 2-10' tall. This stand has been well-managed in the past and shows it. There is not much of a lower strata in this forest canopy, although there are some 8-12" poor-quality white pines along with some red oak, red maple, and black oak 8-16" in diameter scattered throughout the stand. Most of the hardwood can be found along a small area of poor drainage running through the southern third of the stand. With the exception of this poorly-drained area, soils tend to be moderately well-drained and quite productive, with few surface rocks. Some areas of this stand have dense pockets of 30-year-old, 3", 20'-tall white pine saplings. The stand has responded well to the harvest 12 years ago has already begun to reach crown closure again. Access to this area is very good from Lawrence Road.

The 1-acre fire that burned a small area of this stand in 1999 is growing back well after the dead timber removal, and is turning into an excellent area of early successional habitat for wildlife, just on the edge of the powerline.

Recommendations:

This stand would benefit greatly from a timber harvest that would remove much of the mature white pine timber in order to further release the residual crop trees as well as allow more sunlight to reach the advance regeneration on the forest floor. Such a harvest would yield 40-50 MBF of timber and the resulting stand would end up with a basal area of about 100 square feet per acre.

The wet area found in this stand is the result of poor drainage management when Old Lawrence Road was built, and could easily be mitigated by installing a 15" culvert to allow water to flow under the road and out of this stand.

This whole stand, particularly the burn area from 1999, should be considered for a TSI operation mid-way through the planning period, after the saplings have gotten used to the more open conditions following the upcoming harvest.

Stand 10 – Quality White Pine Sawtimber

Standing Volumes -- Stand 10			17.2 Acres	
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
White Pine	70	3.2	12,786	219,914
Black Oak	14	1.1	1,143	19,657
White Oak	4	1.2	357	6,143
Sawtimber Total:	**89**	**1.8**	**14,286**	**245,714**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	9	3.3	1.8	32
Softwood Pulp	11	4.3	3.0	52
Total BA/acre	**109**			

Description:

This stand, making up the northwestern 2/3 of the parcel south of Old Lawrence Road, consists mostly of white pine sawtimber 10-24" in diameter along with scattered black and white oak 8-18" in diameter. For the most part, this area has good white pine regeneration in the form of 2-6' tall saplings. However, the soils vary across this stand, ranging from moderately well-drained to very well-drained, and the western corner of this stand has rather dry, upland, rocky, thin soils, with more scrubby oak mixed in with the pine. In this area of the stand, the regeneration also has suffered, with mostly low-growing blueberries growing and few tree seedlings. The terrain is gently rolling and slopes to the east with grades of 3-8%. An old stone quarry can be found in this back section, with large granite chunks still containing the splitting holes made for the "feathers and wedges" used back in the old days. Scattered red pine 10-14" in diameter can also be found in this stand. Access to this stand is very good using the landing in Stand 12.

A small area of dumping can be found at the northern corner of this property near the road. It would appear that this is old demolition and construction fill, and included segments of Japanese knotweed. This is a small infestation of the invasive species that appears to slowly be creeping its way into the forestland.

Recommendations:

This stand would benefit from a light harvest that would remove some of the most mature timber as well as any poorly-formed or diseased trees, thereby reducing the competition for residual crop trees and allowing more sunlight to reach the advance regeneration on the forest floor. Such a harvest would likely remove about 50 MBF of timber and reduce the basal area to around 80 square feet per acre.

Stand 11 – Well-Managed Red Oak/White Pine Sawtimber

Standing Volumes -- Stand 11			13.1 Acres	
Species	**Average BA/acre (sq. ft./ac.)**	**Average Height (16' sticks)**	**Volume per acre (bd. ft./ac.)**	**Total Volume (bd. ft.)**
Red Oak	47	1.5	4,750	62,225
White Pine	20	2.3	2,833	37,117
Black Oak	3	1.0	250	3,275
Sawtimber Total:	**70**	**1.6**	**7,833**	**102,617**
		8' sticks	**Cords/ac.**	**Total Cords**
Cordwood	17	3.0	3.3	43
Softwood Pulp	13	2.4	2.2	29
Total BA/acre	**100**			

Description:

This small stand, located along the southeastern boundary line of the southern parcel, consists of more red oak and less white pine than the neighboring stand. This stand is further down slope from Stand 11 and receives much of the drainage from that stand, resulting in better, deeper soils and more moisture available for the red oak component to flourish. The overstory is comprised of red oak and white pine sawtimber 12-22" in diameter, along with some black oak of similar size. Most of the black oak and poorly-formed trees were removed in the previous harvest about 12 years ago, resulting in this high-quality stand of good sawtimber. Some red maple, hickory, and white pine poles 6-10" in diameter can also be found throughout this stand, growing over excellent white pine regeneration 3-15' tall along with some red oak and red maple of similar size. Where the regeneration has not performed so well, the forest floor is covered with blueberries, ferns, and sassafras 1-3' tall. The soils are moderately well-drained with some surface boulders, and the terrain slopes to the south with grades of 3-8%. Access to this stand is quite good off the paved section of Old Lawrence Road.

A few plants resembling multi-flora rose can be found growing in the landing area. This landing should be double-checked for invasive species and addressed accordingly before spreading the plants through the forest during a harvest.

Recommendations:

This stand would benefit from a light thinning, only removing about 30 MBF of oak and pine as a way of removing competition around future crop trees and allowing more sunlight to reach the advance regeneration on the forest floor. Such a thinning would bring the basal area down to about 80 square feet per acre, which should do well to encourage new growth in a lower strata while maintaining enough of an overstory to prevent extensive white pine weevil damage and to allow smaller-diameter crop trees to develop more in the next 10-15 years.

Management Schedule

2009

- Prepare the forest management plan.
- Blaze and paint identifiable boundary lines and survey unknown boundaries.

2009-10

- Conduct a timber harvest in harvestable areas, using either biomass or conventional equipment. Seed and lime the landing at the conclusion of the timber harvest. A timber access road and landing should be constructed into Stands 6 and 7 to access the northeastern reaches of the forest. A steel gate should be installed at the entrance of the access road heading north.
- Construct a parking area and kiosk in conjunction with the timber harvest.

2010-19

- Monitor the woodlot for wind damage, ice damage, fire, or disease and take appropriate corrective actions as needed to ensure the continued health of this forest block.
- Address parking issues for trailheads, and trail creation and maintenance.
- Re-assess the woodlot in 10 years and write a new 10-year management plan, specifically looking at TSI potential and another harvest midway through the next management period.
- (Recommended Item) Make this property available for Project Learning Tree excursions for the local schools.

Concluding Remarks

The recommendations proposed in this 10-year management plan should be implemented within the next 10 years, although timing will depend on landowner priorities, market conditions, and environmental conditions such as pest outbreaks and weather. Through sound silvicultural practices and using best management practices (BMP's), mature, diseased, and defective trees will be harvested to allow residual trees to grow in their place. This forest should be monitored for pest outbreaks and destructive weather events; corrective action should be taken as needed over the next 10 years in response to any such events. These recommendations are silviculturally and operationally sound and should result in meeting the landowners' objectives for their woodlot. Implementing these recommendations will help ensure that this forestland is being managed with long-term sustainability in mind.

Respectfully Submitted,

Brian E. Johnsen, Consulting Forester
N.H. License #363