

FOREST MANAGEMENT PLAN

ESTHER CURRIER WILDLIFE MANAGEMENT AREA AT LOW PLAINS
±169 ACRES

PROPERTY OF THE
TOWN OF NEW LONDON
NH ROUTE 11 and MOUNTAIN ROAD
New London, NH

PREPARED FOR THE
NEW LONDON CONSERVATION COMMISSION

DECEMBER 14, 2011

PREPARED BY
CLAYTON PLATT, LIC. FORESTER NO.50
PENNYROYAL HILL LAND SURVEYING AND FORESTERY LLC
414 PINE HILL ROAD, CROYDON, NH 03770
(603) 863-0981

LANDOWNER OBJECTIVES

1. To maintain and improve the wildlife habitat on the property and to increase the availability of food and shelter for a wide range of birds and animals, with special emphasis on the protection and enhancement of the habitat areas adjoining the low plains marsh.
2. To encourage recreational use for the general public and provide an aesthetically managed town forest.
3. To manage the timber component of the property to promote long term forest health and periodic harvests for income that will support the costs of managing and maintaining Town properties.
4. To manage the forest to ensure water quality is maintained within the Pleasant Lake watershed
5. To insure public involvement and education in the implementation of the management recommendations outlined in the forest plan.
6. To insure compliance with the terms of the conservation easement covering the northerly 98 acres of the property.

PROPERTY OVERVIEW

The property consists of ±168 acres and is highlighted by the low plains marsh area. This ±40 acre beaver pond and meadow is fed by Cascade Brook which then flows north from the low plains area to Pleasant Lake. It is an important component of the Pleasant Lake watershed. Along the southeast edge of the marsh is a ±2 acre quaking bog. There is a woods road running from Route 11 to Mountain Road along the east side of the marsh (Davis Path). This was used as an old gravel pit road and provides excellent access to the east half of the property. Hiking trails and recreational use is concentrated in the northerly and easterly parts of the property.

Most of the property was acquired from the Ausbon Sargent Land Trust in 1998. This included most of the pond and meadow area, as well as the northerly land along Route 11 (±98 acres). This land is subject to a conservation easement held by NH Fish and Game (MCR 1976-1366, 1994). Among other things, this easement requires that all forest management be conducted in conjunction with the primary goals of preserving wildlife habitat. There is also a requirement that all proposed harvesting plans be submitted to the State for their review and approval. The area to the south and west was once part of the Shaker Pines subdivision. The southerly part of the forest was purchased in 1978-1979 and the westerly area closest to Wilder Road was acquired in 1998 (including the roadway out to Wilder Road.) A land trade in 2008 altered the easterly boundary and resulted in the Davis Path trail running wholly on Town land.

The surrounding forestland is a diverse mix of timber types based on the soils and the recent cutting history. The southerly 40 acres is dominated by poorly drained soils and mix of smaller maple, hemlock, and hardwoods. The southeasterly area along Davis Path was excavated 40 years ago and is comprised of wetland pits and esker mounds left by the construction. This excavation extends northerly ±400' past the south end of the meadow. Once north of the excavated areas, the ground consists of gravel eskers of well drained, productive soils. There is an excellent, mature stand of white pine on both sides of the marsh. This stand is not a contiguous plantation looking forest, but a mix of large pine, younger pine and hemlock, and areas of mixed hardwood and pine – depending on the local terrain and soils. This area contains stands of large, over-crowded pine that should be harvested in the near future.

The westerly side of the marsh has a forest type more typical of the forest cover types found in the area. There is a history of timber harvesting during the past 50 years – the most recent 25-30 years ago. This area totals about 45 acres and is predominantly mature pine and hardwood forest (with more pine to the south). The land slopes moderately to the east with 2 brooks and a number of seasonal drainages flowing into the marsh. Unlike the lower and flatter ground there are not measurable areas wetlands amongst this forest. There are areas with an abundance of mature pine and other stands with more hemlock and hardwood (red maple, yellow birch, and scattered oak). This is another area that would benefit from a selective harvest in the near future. This harvest could be landed in an area near Route 11 or from the access onto Wilder Road (which would require some upgrading.) This area was proposed for development in the 1980's. There is a 1500' x 100' wide road cut (with a spur) that totals 8 acres. While clearing this strip may not have been motivated by wildlife concerns – these present an opportunity to add some unique and diverse habitat to the property.

The boundaries are well maintained and have recently been blazed and painted red. Being part of an older subdivision, there are numerous surveys on record. I cannot be sure, but I believe that monuments can be found at all the property corners. With the cleaning up of the line along Davis Path, I did not come across any issues with the boundaries or any encroachments. The northerly boundary along the wall was the only line I found not blazed, and this should be finished up in the near future. After this, boundaries should be re-painted every 10 years or so. A good guide may be to plan for this in 2020, 2030...

WILDLIFE

The preservation and enhancement of a diverse wildlife habitat appears to be the number one priority in the Low Plains Forest. The pond and meadow provides a special habitat for aquatic favoring mammals and waterfowl. The associated wetlands add a complimentary habitat of grassland and scrub-shrub cover. The old burrow pit area is hodge-podge of man-made wetland pools and upland forest/saplings. The large pine forest provides cavity nesting sites that are important to many species of ducks, owls, mammals, and woodpeckers. During the few days I spent in the forest, I saw moose, a mother bear and her cub, an abundance of deer sign, a barred owl hunting in the old road cut, ducks, and a pileated woodpecker.

I am not an expert in wildlife or wetland management. If the Town has specific goals or concerns regarding the wildlife component, a wildlife biologist should be consulted (through the State or cooperative extension.) Beaver management and control can be a complicated undertaking. Establishing osprey sites or duck nesting boxes are specialized activities that have more to do with the wetland than the forest. The quaking bog is a unique ecosystem that will require special consideration or protection when planning management activates.

There are a number of important activities and goals that should be incorporated in the management of the forest land surrounding the forest. These involve creating special habitat that maybe now be lacking in the forest and encouraging a wider variety of trees species. Specific recommendations are as follows:

1. Encourage and retain the existing mast producing trees in the forest. Oak, cherry, and beech are the most common food producing trees in this area. They make up about 3% of the total tree cover and large, mature mast trees are few and far between. Younger beech and oaks should be encouraged (especially in the road strip areas). In areas where larger oaks provide an acorn source, future harvesting should consider openings large enough to allow oak to regenerate.

2. Retain larger and smaller dead or decaying trees for nesting and roosting sites. Special care should be taken to leave these trees along the marsh and pond, along woods road, and any strip clearings and/wildlife openings.

3. Seed in all landing area and maintain these as wildlife field openings. Larger openings of $\frac{3}{4}$ acre or more will provide the greatest benefit and diversity. The forest around these openings should be managed as a diverse mix of tree species, ages, and heights.

4. The old road strip should be periodically cut to maintain these strips in field and early successional sapling and shrub habitat. This will add important diversity that supports bird and mammal species that prefer more open spaces. These corridors also provide good hunting ground for owls and hawks. These strips can be cleared by hand (by insured chainsaw operators) or mechanically (similar to work done on powerlines). The edges can also be managed to curve some of the straight shots and favor mast producing trees (oak, beech, cherry.). This cutting should be continued every 5-7 years on different strips to vary the age and structure throughout the stand.

5. There is currently a 1.5-2 acre stand of hardwood saplings along the northeast edge of the pond. This stand appears to serve as the major food source for the beavers. This area could be enlarged or managed on varied rotation to maximize the food source of the beaver and other animals that need young hardwood saplings for food and cover. Over time, the poplar component should be encouraged and the number of white birch saplings reduced

6. Any policy establishing a buffer around the pond will likely be based on the needs of the wildlife and waterfowl on the pond. Certainly any timber harvesting within 200' of the treeline should be limited and planned with great care. The conservation commission may want to establish a broad policy restricting logging 50, 100' or 200' from the pond – or you may want to proceed on a case by case basis as harvests and other management activities are proposed. This is a decision that should be made with the input of the NH Fish and Game.

7. Additional investigation should be made into the presence of endangered species. I did file an inquiry with the NH Heritage Inventory and there is a listing for endangered species and/or critical habitat. Due to changes in their processing, I was unable to get any details about this. Information may well be available in the easement guidelines and all management activities should proceed with the protection of these habitats as a priority.

RECREATION

The Low Plains forest is an intensively used recreation area. Hiking, cross skiing, bird watching and wild life viewing are all encouraged and actively managed. Hunting for deer, game birds, and waterfowl is allowed. The primary access is from Route 11 and the northerly part of the property is most accessible and sees the greatest use. Davis Path is an old roadway that serves as the main recreational trail from Route 4 to Mountain Road. (± 1 mile). Spur trails run off from this woods road to access points on the pond and meadow. There is also a cross country ski trail that ties into the Norsk trail system east of the property.

Based on my observations, there is no marked trail along the westerly side of the pond . There is a beaten path along the clearcut road strip north of the pond and a proposed trail flagged beyond this. There is also a marked ski trail crossing an old beaver dam along the south edge of the meadow that runs out to Wilder Road. This trail is very wet and is not well traveled in summer. I did not see any connection that would create an easy way to hike around the pond. As an intensively used property, it is important to have some thoughtful policy as to how all aspects of the town property is managed. This is wildlife management area and it may be desirable to concentrate the access for walkers and their dogs to the north and east parts of the forest. There has been a recent effort to close some of the trails along the east side of the pond – apparently to protect the nesting sites and wildlife habitat along the meadow.

The trick of forest and park recreation management is deciding how to guide people through the property. I would not encourage the Town to close the westerly half Low Plains to foot travel. I do encourage you to have some policy ready when the boy scouts (or snowmobilers, or four wheelers) want to develop trail around the pond. This may be that there will be one westerly trail along the cleared areas away from the meadow. It may be that there will be the greatest access possible to all parts of the property – or no developed access. What is most important is that as stewards of the property, each decision is given some thought and review. There also needs to be consideration of what impact a winter logging operation will have on winter recreational use. This will no doubt be an important aspect of any public outreach prior to harvesting.

ACCESS CONCERNS

The most important part of a successful logging operation and long term forest management (that includes harvesting) is planning the access, landing, and skid trail system. It is far better to invest in a permanent landing and road system now, than to try to rebuild everything in ten years and then in twenty years when additional harvesting is proposed. In general, it is best to minimize the crossings of streams and wetlands, and to minimize the distance needed to skid any wood out of the forest. Ideally the main landing would be sited off of Mountain Road (less visible, less impact to the heavily used recreation area off Route 11). Unfortunately, there is very little merchantable timber on the south half of the forest. Any permanent landing area would probably need to be located 800-1000' into the property. The existing road (Davis Path) appears to be in good shape, but there will be wear and tear if logging trucks use this (even in winter).. The benefit of a landing with access to Mountain Road is that any trees cut along the east side of the pond could be removed without crossing the outlet/beaver dam area. This outlet area is very wide and any logging trail would require a significant bridge and have a visible and intrusive impact to the dam area. I would consider the pond outlet a management boundary where cutting south of the brook is pulled south and north of the brook pulled to Route 11.

With the large area of wetlands south of the meadow, it is unlikely that trees from the west side of the pond could be accessed from a yard on Davis path. One question is whether or not to re-establish a semi-permanent road out to Wilder Road. There is a 50' strip that is owned by the Town. This runs close to a new house and drive. There is a ski trail that runs to Wilder Road through the strip, but this crosses the neighbor's property before returning to Town Land. There is no developed access along the town owned strip and improving this access could raise objections (fair or otherwise). There is also the question of cost. It will take an investment of ±\$5-8,000 to establish a new gravel road and landing in this area. It is also one of the higher points on the property and any logging would require the logs to be pulled up hill (although it is not by any means unfeasible) The big benefit is that there is high volume of heavily stocked pine in this stand behind the house lots. A landing here will provide yard area with a short skid that would preclude crossing the two brooks between this area and Route 11. This site will be ±500' from the meadow and would have less potential impact to the wetlands and recreational uses on the property (skiers being the exception).

An alternative is to utilize single landing area west of the parking area off Route 4/11. This area is flat and well drained. The landing could incorporate part of the 100' road strip and would be separate from the parking area. There would a shared access to Route 11, but the landing should be constructed with a buffer to the park entrance. This are can be maintained as a ½-1 acre field/wildlife opening when logging is complete. This landing will need to be constructed when and if any harvesting is done in the north part of the property.

Most logging should take place in the winter where damage to trails and woods roads will be minimal and disturbance to the general public should be lessened. All wetlands and brook crossing should be carefully planned and utilized based on the State's Best Management Practices. I would recommend some extraordinary work in developing the brook crossings. Where a pole ford may be typically used to cross a 4-8' brook, a skidder bridge (temporary or permanent) may be a better alternative. Logging trails need to be designed to avoid sensitive areas – perhaps requiring a forwarding system from a remote landing, or multiple trail access where one trail would normally be used. In estimating the value of the pine timber, a very conservative number of \$130/MBF is used. Today, the usual stumpage value for pine is \$150/MBF. This timber is larger and of generally high quality and a valuation of \$170-200/mbf is not unreasonable. My feeling is that the need and cost of extraordinary care, planning and cleanup should be incorporated into the valuation of the stumpage.

Winter harvesting will also eliminate the impact to wildlife during nesting season. There should be public involvement and education before and during the harvests. It is always advisable to meet with any neighbors adjoining harvest areas. This meeting can review boundaries, and discuss the scope of the project what to expect. As part of this process, consideration can be made as to hours of operation for the loggers, any access issues, and providing contact information if there are concerns. All this should be done early, so that it can be included in the final logging contract. As noted, all harvesting in the northerly part of the forest requires that a plan be submitted to NH Fish and Game for their review and approval.

FOREST MANAGEMENT REVIEW

Timber management is a tricky on highly used public properties. There is the question of whether or not timber harvesting should take place at all. There is the question of how much harvesting and should occur and what type of logging is appropriate. There is also the problem of public outreach – getting the stakeholders and users, and concerned citizens informed about the what and whys of harvesting at Low Plains.

Why do any forest management? From a forester's viewpoint, harvesting timber can have numerous benefits beyond the financial gain to the Town. In the long term, a younger forest will be a healthier forest. There is nothing inherently better having a monoculture of large pine trees than having a mix of larger and younger pines and hardwoods. A managed forest will improve wildlife habitat diversity and long term water quality protection. There are also financial benefits. Based on my timber cruise, the total value of the standing timber is ±\$185,000 - 90% all of this is in pine trees over the northerly 80 acres of the property. If ¼ of this is harvested over the next 10 years, the Town should realize ±\$45,000 (conservatively). This is income that can be used for other conservation activities in the Low Plains forest and elsewhere.

Another question is how to proceed with the logging. There are large mechanized outfits, smaller operations with 1-2 skidders or a larger tractor and horses. In the past I have always favored the smaller operations with their ability to more carefully harvest trees selectively. In recent years the professionalism and quality of the work preformed mechanically has (for the most) part improved dramatically. There has been a very successful program in NH to train and certify loggers. With the reduced amount of harvesting work available in recent times, most of the "cut and run" logging companies are gone.

The benefits of the larger operation are that they specialize in whole tree harvesting and the residual forest is aesthetically pleasing (little slash or piles of debris). They also tend to get in and get out in a short amount of time. I would estimate it would be a week for them to complete a harvest on 30 acres northwest of the pond. This can be important; it reduces the weeks of noise and interference with winter recreation, and it reduces the risk of warmer weather causing erosion

and water quality problems during a harvest. The down side is that they require a large landing area and it is a more intensive and sudden impact than smaller operator. It is a large scale operation. They are less likely to come in and cut 40-50 mbf of pine on 12 acres and the come back next year and harvest another ten acres.

While I don't have strong feeling one way or the other – it seems that a mechanized operation may be appropriate on the areas north and west of the meadow, and a smaller operator in the area east of the meadow (accessing from Mountain Road.) There is room for a large landing area west of the parking lot, and this could be maintained as wildlife opening/field. Using this public access for as short a period of time as possible has its benefits. Because of the existing road cuts and longer skid trails, I think the land and forest west of the meadow lends itself better to a larger one time harvest than a season long or multiple year series of harvests.

Lastly is the question of reaching out to the public. For the most part, a majority of people, properly informed, would not object to some harvesting on the property. The question is how to make that connection. The County Extension program can certainly help (assuming it survives looming budget cuts). There may also be assistance (both technical and financial) available from the forestry community. The NH Timberland Owners may support public outreach efforts (mailing or on-site seminar). Private companies such as Meadowsend Timber or Durgin and Crowell may be willing to join an outreach effort that seeks to educate the public about forest management and timber harvesting. Many towns have town forests that are harvested on a regular basis. My concern on this particular property is that it is heavily used and has been managed and advertised as a wildlife habitat area. It will be important to lay the ground work for timber harvesting and to convey the message that it is being pursued in conjunction with the wildlife goals of Town.

FOREST MANAGEMENT RECCOMENDATIONS

For purposes of analyzing the forest composition and timber volumes the forest was divided into two sections or stands. In conducting the cruise, a sampling of plots is taken along transects laid out in each stand. Sixteen plots were sampled with a 20 BAF (basal area factor) prism in the southerly maple stand and 27 in the northerly pine forest. Approximately $\pm 2\%$ of the trees were sampled (by basal area). The sampling data is analyzed using a USFS program and the results are presented as average per acre values for each tree species. This average can then be expanded by the acreage of the stand. A copy of the summary results for each stand is included in the Appendices.

STAND 1 -

The southerly 38 acres is dominated pole size red maple, large and small hemlock and scattered large white pines. About half the soils consist of very poorly drained wetland soils. About 2 acres of this wetland are saturated enough that no tree cover exists. Closer to Davis path, the areas of excavation are grown up in 25-30 year hardwoods, with a haphazard mix of older hemlock and pine scattered in undisturbed areas. The highlights of the timber cruise are as follows:

Dominant species: Red Maple (32%); Hemlock (22%); White Pine (18%); Spruce(13%)
Basal Area Per Acre: 157 Sq. Ft.
Trees Per Acre (6"+): 240
Mean Stand Diameter: 12" DBH
Estimated Timber Volume:
White Pine: 2.4 MBF/Acre (\$310/ac)

Hemlock: 2.5 MBF/Acre (\$150/ac)
Red Maple: 1.4 MBF/Acre (\$110/ac)
Spruce: 1.0 MBF/Acre (\$80/ac.)

Predominant Soils: Chocorua mucky peat, 0-3% slopes, very poorly drained

Overall this stand is not well suited to timber management. The wetland conditions make most of the land unsuitable for timber growth. The excavated areas were clearcut ±30-40 years ago, and with the topsoil removed or churned up, these lands are not productive. Operation within the pockets of wetland holes and steep ridges would be difficult. That said there are isolated areas along Davis Path with good young pine and hemlock regeneration. There is an upland esker area to the north with a mature stand of mixed hemlock and hardwood and scattered large pine. The goals in this stand should revolve around wildlife and aesthetics. It is expected that Davis-Mountain Road will be used to access the timber easterly of the meadow. This creates an opportunity to do some wildlife clearing and mast tree releases in conjunction with harvesting to the north. Over time there will also be opportunities for limited commercial harvests in isolated spots along Davis path. Unfortunately, the underlying soils conditions do not offer much hope for land term stand improvement or productivity.

STAND 2 – This is 81 acres in the middle and northern part of the property, surrounding the pond and meadow. It is the stand that provides the best opportunities for active forest management. This stand is dominated by larger white pine, many 80-100 years old. For purposes of planning and discussion, the stand is divided into 6 units that each are unique based on the geography, soils, access, and stand history. Overall, the pine forest conditions are summarized as follows:

Dominant species: W.Pine (64%); Red Maple (13%); Hemlock (13%);

Basal Area Per Acre: 205 Sq. Ft.

Trees Per Acre (6"+): 230

Mean Stand Diameter: 15" DBH

Estimated Timber Volume:

White Pine: 18.8 MBF/Acre (\$2600/ac)

Hemlock: 1.6 MBF/Acre (\$ 95/ac)

Red Maple/Hardwood: 0.9 MBF/Acre (\$75/ac)

Predominant soils:

East – Colton loamy fine sand, 3-15% slopes, excessively well drained

West- Dixfield fine sandy loam, 3-15% slopes, moderately well drained

Unit A – WP 1A , ±12 Acres southeast of meadow along Davis path

This area has the largest pine trees on the property. It is dominated by the gravel esker running between the quaking bog and the beaver meadow. These soils are especially productive for white pine growth and reproduction. Recreational trails run throughout the forest – along the pond, accessing the observation blinds, and along the east side of the bog. There is approximately 400 MBF of pine in the unit with a stumpage value of ±\$52,000. The access from Davis Path is good, but special consideration will be needed when and if any logging takes place along the esker or around the bog. This is the most sensitive area on the property for timber management – both because of the importance of the wetlands and esker ecosystems, and the heavy recreational use.

Recommendation: The Town should proceed with limited timber harvesting of the larger pines over the course of the next forty years. This would be individual or small group selection cuts ½-1 acre in size. This could be conducted in conjunction with harvests to the north (Unit B) or on its own in the future years. The goals of the harvesting would be to remove 20-30% of the

large pine, release oak and beech trees for future mast production, and increase the diversity of tree species and overstory heights (including young pine). Areas within 50' of the pond and meadow and west of the quaking bog should remain natural with little or no cutting. A priority area is east of the bog. This is a ±3 acre stand of 12-20" pine that is overstocked and could use selective thinning. Because there is a good mix of pole size and large pines, removing 40-50% of the larger trees (18" dbh+) will allow the younger trees to thrive. Care should be taken to limit skidding along and near hiking trails. All management needs to be carefully planned and executed. This is an area where a small logging operation could harvest 50-60 pine trees (30-40 mbf) every 6-7 years with minimal impact to the other activities on the forest. Over time, regeneration of white pine can be encouraged by scarifying the soil following a winter harvest – probably as a separate treatment following the harvest.

Unit B – WP 1A, ±10 acres east of pond along Davis Path

This unit is similar in pine cover to Unit A. It is differentiated by the lack of wetland areas and less intensive recreational use. This unit runs from the brook flowing across David path, south to the jog in the property line. West of the trail, the soils are mostly Colton well drained loamy sand; east of Davis Path there is an area of somewhat poorly drained soils to the south, rising to moderately drained soils to the north. All the soils are productive for pine and hardwood growth. About one acre along the trail was recently harvested by the previous owner, and has a low stocking of large pine trees. A priority for management is the area east of Davis Path and south of the wetland area that runs to Route 11. This is overstocked with larger pine and mixed hardwood, and is an area where careful harvesting should not conflict with recreational and wetland uses.

Recommendation: This unit should be harvested in the next 1-3 years. A selective harvest where about 50% of the large pines east of Davis path are removed (±50 mbf). This will allow better growth in the remaining stand. Because of the somewhat poorly drained soils, harvesting should be limited to frozen ground conditions. In the higher area to the north, individual tree selection should be matched with one group selection cut of ½-¾ acre. This will create an opening that should regenerate in young hardwood (oak, poplar, red maple). This will provide browse for moose and deer and a long term food source for partridge and beaver. In the long term, this unit could be harvested 10-15 years after the initial harvest, again removing half the remaining pine and creating a second group selection opening.

UNIT C – WP1/2B RM/HM/HW2C ±13 Acres Along Route 11

This unit is younger than much of the other areas. White pine is the dominant species, but pole-sized red maple and hemlock are an important part of the stand. This area appears to have been thinned ±30 years ago when most of the very large pines were cut. Much of the remaining pine timber is moderate- low quality (much more of young pasture pine component than is found than in the rest of the stand). The soils are well drained and flat, offering few limits to logging. This unit sits on both sides of the parking area and aesthetic concerns carry a higher concern than in more remote part of the property.

Recommendation: There is no immediate need for thinning or timber management in this unit. There may be a landing area established west of the parking area and this should involve expanding the existing road cut into the forest. This will maximize the diversity of the forest edge for the wildlife opening that should be maintained when the landing is not used. Some individual tree thinning in the 2-3 acres around the landing area may be warranted. The goal would be to encourage oak, cherry, and poplar trees. In the ±20 years, a commercial thinning of the pine should be warranted. This could occur in conjunction with a second harvest in the westerly part of the property.

UNIT D – WP1B HM/RM/HW ±8 Acres Along Northwest Edge Pond

This unit lies along the northwest edge of the Pond below the road cut. It is characterized by large pine and hemlock cover with a mix of red maple and yellow birch. There are existing skid roads in the stand and a light thinning occurred ±25 years ago. The soils are Dixfield moderately drained sand loam with mix of upland hills and somewhat poorly drained depressions. This soil is rated high for white pine growth. It is bounded to the south by Cascade Brook and to the north a 4' brook flowing into the north side of the Pond. The pine is not as dominant in this area and the total volume is ±75 MBF.

Recommendations – This is another area that is well stocked but not overly crowded. Some limited thinning in the upper areas close to the road cut will have long term benefits and release some of the younger pine trees. This should be done in conjunction with harvests on the the upper units (E,F) and about 10 MBF of pine should be harvested in the near future. With most of the pine remaining and growing well, a second harvest in 20 years will be needed. This could be more intensive, removing 25-30 MBF of pine and some of the larger hardwoods (red maple, yellow birch). Again, releasing and retaining the few oak trees in this stand will be important.

UNIT E - WP1B RM/RO/YB 2/1B ±14 Acres in Northwest Corner

This area lies above the road cut in the north part of the lot. It is characterized by a much more diverse mix of large white pine and hardwood – with less red maple and more yellow birch, beech, white birch and ash. White Pine is still the predominant tree species making up about ½ of the basal area/ac. The soils in this are also Dixfield loams that are well drained and good for pine growth. There is an estimated 150 mbf of pine in this area. The road cut runs along the length of this unit, and all areas accessible from the road cut. A main tributary to Cascade Brook runs through this stand and special care should be taken along the brook bank. .

Recommendations – About half of the pine in this stand should be removed. This will release some of the remaining pine and hardwood. At least 1-2 group selection opening should be made to encourage reproduction of pine and oak – both of which prefer a somewhat sunny site. This should result in a harvest of 75 mbf of pine with a value of ±\$10,000. Like other units west of the meadow, a second thinning in 20 years will be warranted. This second harvest should emphasize establishing the regeneration for the next forest. As this is a good site for pine, special treatment maybe needed to provide a good seed bed for pine seeds to take hold.

UNIT F – WP1/2A ±22 Acres West of Meadow

Unit F is a pine stand covering the central area along the west side of the meadow. Much of the unit is mixed hemlock-hardwood, but there are 4-5 acres of large, very over stocked pine. Thinning these areas should be a priority. There is little evidence of cutting in this stand over the last 50 years. I estimate there is 440 mbf of pine in this part of the property. The soils are well drained sandy loam. There are no steep slope areas, but some seasonal drainages and isolated wet areas closer to the meadow. There is an old wood road that runs through the northerly part of the stand. The southerly 10 acres (where much of the overstocked pine is concentrated) is accessible from Wilder Road if that is deemed appropriate. This area is not heavily used for hiking or wildlife viewing. It is the backyard for a number of homes on wilder Road, and good public communication before any harvesting is advisable.

Recommendations – About half of the pine more than 150' from the meadow should be removed within the next 2-3 years. This should total ±150 mbf (±\$19,000) . For the most part this will be a commercial thinning leaving a moderately stocked stand of 12-14" pine. These upland areas are very good pine sites and growth in the remaining trees should be excellent. As always, where healthy red oak stems exist, they should be released. Care should also be taken to retain larger den and cavity trees – especially along the road cut sapling stand.

FOREST MANAGEMENT PRIORITIES

1. Establish a 100' buffer around the marsh and a 50' buffer around the bog allowing for only limited individual tree selection and extra special consideration for erosion control.

2. Within the next 5 years conduct an individual selection harvest of 20-30% of the large pine and hemlock in the overstocked areas east of the marsh. This will couple cutting \pm 40-50% of the pine in heavily stocked areas along Davis Path with harvesting 10-15% of the larger pines closer to the marsh. While the final timber cruise numbers are not in, I would estimate this would raise \$7-8,000 for the town..

3. Within 6 years a similar harvest in the area west of the marsh. This would thin 50% of the large pine in the heavily stocked areas and a few of the larger pines and hardwoods in the mixed areas. I estimate a net harvest revenue of \$5-6,000 (accounting for the cost of access.)

5. The forest areas should be periodically reviewed to assess the health of larger pines and hardwoods remaining. Many of these very large pines are at risk of decline and could pose a potential hazard. With the good access established during previous harvests, it should be possible to remove 15-20 large trees in a small scale harvest and gain some revenue. It is also advisable to leave some large dead or dying trees as roost and cavity trees.

6. In 15-25 years another thinning of the pine, hemlock and hardwood should be warranted. This should proceed similar to the earlier harvests- thinning 30-50% of the larger, less healthy trees and leaving younger, vigorous stems.