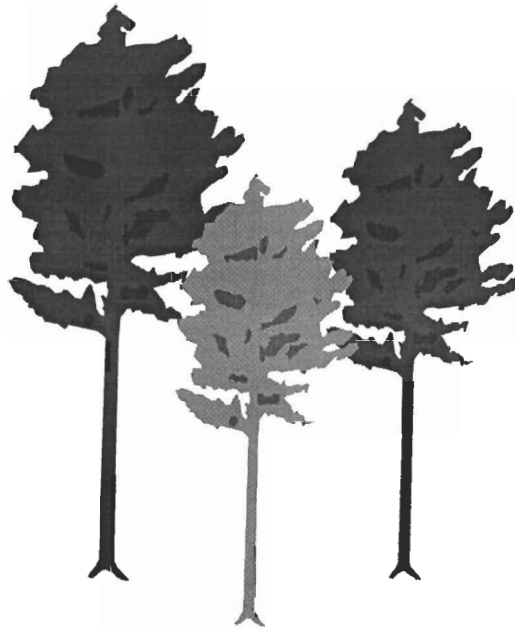


# FOREST MANAGEMENT PLAN



For Land Of

Endless Energy Corporation

Located In

T1 R2 WBKP Redington Township  
Franklin County, Maine

Prepared by  
Peter B. Farnsworth  
Professional Forester-License # 894  
PO Box 398  
Stratton, Me 04982

03-25-1999

## **FOREST MANAGEMENT AND HARVEST PLAN**

This Forest Management Plan is prepared for Endless Energy Corporation in accordance with Maine Tree Growth Tax Law (M.R.S.A. title 36, sections 571-584-A). The Plan is prepared for a 515.5 acre parcel of land located in T1R2 WBKP Redington Township, Franklin County, Maine.

### MANAGEMENT OBJECTIVES

A primary goal of Endless Energy Corporation is the development of potential windpower sites. As all of their acreage lies well above the 2700 foot elevation, the Redington Pond range provides some excellent locations. Locations for tower sites and transmission lines however, comprise only a small portion of their acreage. The remaining acres are well forested and fit well into Endless Energy's goals of multiple use management. Therefore, a secondary goal would be to manage these forested acres on a long term basis for the production of commercial forest products, to conserve existing wildlife habitats, and to enhance watershed management.

### STAND DESCRIPTION

The parcel is located in the southeast corner of T1R2 Redington Township, and is made up largely by the Redington Pond Range of mountains. Mount Redington is its primary feature, and tops out at an elevation of about 4,000 feet. Most of the parcel lies above the 3500' elevation. The parcel is bounded on the east by Carrabassett Valley, on the south by the U. S. Navy Survival Training land, and to the north and west by Dallas Co. ownership- a private timberland owner. The topography is mostly steep and mountainous. The parcel lies at the headwaters of the east branch of Nash Stream. The soils are typically fragile mountain soils, and the terrain is rocky. Slopes in excess of 37% are common. It is tough country to log in, but it does grow trees! It is prime moose habitat, as evidenced by the amount of browse observed. It is remote, and not readily accessed by many sportsmen.

The predominant commercial tree species on the parcel are Spruce, Fir, White Birch, and Yellow Birch. Mountain (Moose) Maple is also widespread, and this is the species that provides for the good moose habitat, as it is not commercially valuable. Our stand typing system is taken directly from the stand type map prepared by James Sewall Company, and is a traditional Maine forest land typing system. An S means softwood stems comprise 75% or more of the stand; H means hardwood stems comprise 75% or more of the stand. An SH or HS designation means that neither softwood nor hardwoods comprise 75% or more, but are present in a mixed combination, with either softwood slightly leading the mix, or hardwoods slightly leading. The numerical suffixes; 1, 2, 3, denote a suggested volume range. This gives an idea of how big the trees may be. The 1 designator typically means 0-10 cords per acre. These stands typically include the sapling stage of tree growth-trees under 6" DBH, and especially the trees in the 2" -4" DBH range. These stands are not ready for any commercial harvesting activity, but can benefit from thinning

to encourage more rapid diameter growth. We have identified 54 acres in this class 1 designation. We listed these acres as unsuitable for commercial forest production for the following reasons. These acres are on the steepest sections of the terrain. There are ledge outcroppings, and the trees are basically alpine or right at the tree line. The trees are stunted, and wind blown. The foliage has been blasted by the wind, as well as browsed by the moose. Stems are small-2-4'', but the trees are no doubt old. They just cannot grow well at these altitudes, and with the cold climate conditions. They are on thin soils, and are at the top of the watershed, so they do not benefit as well from the rainfall. Now, because they are so remotely located, it becomes marginally feasible to do any real thinning in efforts to spur tree growth. The good part of these stands is that Red Spruce is present in good numbers. Red Spruce is slower growing than its more prolific partner-Fir, but Red Spruce is the more hardy of the two. For wildlife cover, and watershed protection these class 1 stands serve a very useful purpose. We tend to stay out of them with equipment, and this preserves their benefits. I would continue to classify these 54 acres as not suitable for commercial forest production at this time, in favor of their other values.

This leaves 462 acres classified as commercially productive; 6 acres in the hardwood type, 213 acres in softwood, and 243 acres in mixedwood type. These would be stands of a volume class of 2(11-18 cords per acre), or 3(19+ cords per acre). Class 2 volume stands account for 386 of these 462 acres, Class 3 volume type accounts for 76 acres of the 462 total. These are respectable stands. The softwood component is Spruce and Fir with diameters of 12'' DBH and higher. The hardwood component is largely White Birch and Yellow Birch of good diameter. These are certainly merchantable stands of wood. The Fir has been hard hit by past Spruce Budworm epidemics, and there are some stem losses. This has opened holes in the forest canopy, and these have been regenerated with good spruce and fir regeneration. Again, the beauty of these Redington Range forest stands is that Red Spruce does regenerate in good numbers. There are many stems 6-10 feet tall and healthy. The fir has taken the brunt of wind, and moose browsing, and the red spruce stems have been untouched, and are growing well. The White Birch is suffering some from dieback, but is basically healthy. The Yellow Birch is healthy and hardy overall. These stands have not been cut through for many years, due to their remote location, and the operating difficulties of steep slopes. These difficulties would remain obstacles for any potential harvests. All of the acreage falls within the LURC protection zone P-MA- mountain area. As such, there are limitations to harvest operations, and permits are required for activities at these elevations. But, there are appreciable volumes of wood up here. 386 acres at 15 cords per acre gives an estimated volume of 5,790 cords. 76 acres at 19 cords per acre gives 1,444 cords. Total volume is estimated at about 7250 cords. These are map based estimates, as well as from my on the ground cruising of similar sites north of this parcel, and on Black Nubble which lies to the west. All the stands are similar, and have been successfully logged over the years. More accurate, current volume estimates can be obtained from some pre- harvest cruising.

## MANAGEMENT RECOMMENDATIONS

Silviculturally, I would recommend at least one commercial harvest within the next ten years. I would seek to remove as much of the White Birch as possible due to its susceptibility to dieback. I would secondly, seek to recover as much Fir as I could. The Fir is stressed from its age, and the past budworm exposure. There is blowdown occurring, as well a numerous dead stubs. The mature Fir has pretty much reached its longevity and should be removed to make way for the more vigorous Spruce in the regeneration. In harvesting the Fir, I would recommend a light cut of the Spruce component and Yellow Birch. All harvest goals should be to favor Spruce and Yellow Birch regeneration. To help protect the spruce component, I would recommend that harvests be laid out by a professional forester. It would be best to mark the stand prior to harvest. This will avoid clearcuts, which at these elevations, can be detrimental. Road construction for potential wind tower sites will open up much of the area conducive to logging. This road building may help make some of the steeper areas more accessible to logging through a high-lead logging system. With this system, a better job can often be done if access roads are at the top of ridges, and mountains. This may fit well with the location of access roads to tower sites, as they will tend to be on the tops of the ridges. We have not estimated the amount of acres, and associated volumes inaccessible to logging. Our estimate of 7250 cords on 462 acres presupposes that all of the 462 acres are operable by some harvest method. If you used the guideline of a 40% harvest in a ten year period, you could look to harvest 2900 cords in an initial cut over the 462 acres. That would be a harvest of 6.27 cords per acre, and is certainly within reason for these stands and topography.

Basically, time a harvest with any efforts to establish wind tower sites and transmission lines if possible. Within the next 5 years, harvest to salvage fir, and white birch. Some time spent on the ground, cruising, would give a clearer picture of potential volumes. I would think though, that at least 2900 cords would be a good initial harvest goal. At that point you could review your options, depending upon stand conditions.

Commercial forest products at this time are limited to traditional products of sawlog, pulpwood, and biomass chips. There is no Maple sugar bush potential. Christmas tree and wreath tips products are severely limited. On the plus side, the red spruce regeneration is producing some quality trees. But the Christmas tree favorite is the Balsam Fir, and these are not of good quality in this parcel. All the negatives of climate, past disease, and moose browsing takes too much of a toll. The area is hard to reach- Christmas trees need a lot of attention- and you are far from the markets. You might look at the S1 stands to see if there are any possibilities- thinning may produce some credible trees. But research should be done to see if there is any real benefit to getting into this arena. I would monitor the advancement of the Red Spruce stems- if they begin to put on good diameter growth, I would look at some future harvest work within these stands. You may want to then include them in the commercial forest products classification. In ten years, you need to review your plan, so then may be the time to decide.

## MISCELLANEOUS

I did a little map work for slope estimates. The attached copy of the topographical map is enlarged by 129% from the original. But I did all my measurements on the base sheet and simply used the blow-up for ease of writing on- it wouldn't look so crowded. It gives a fairly good estimate, because it pretty much agrees with what we have found on the ground. In past logging, under LURC rules we cannot have equipment on slopes greater than 37%. The slopes I marked 37%+ are certainly the sites we would have difficulty with under this rule. We hope, on Dallas Co. land that we can get some permission to operate on snow covered ground on 37%+ slopes. We are in the process of documenting and preparing our exhibits in order to apply for permits to harvest above 2700' on the Dallas ownership. It might be worthwhile to keep contact with them on their progress. This would help you in any harvest plans you might want to develop-based on this Plan.


A definition to help you.

DBH- Diameter Breast Height-the diameter of a tree as measured 4.5' above the ground(breast height).

I believe any other technical terms are explained in the text.

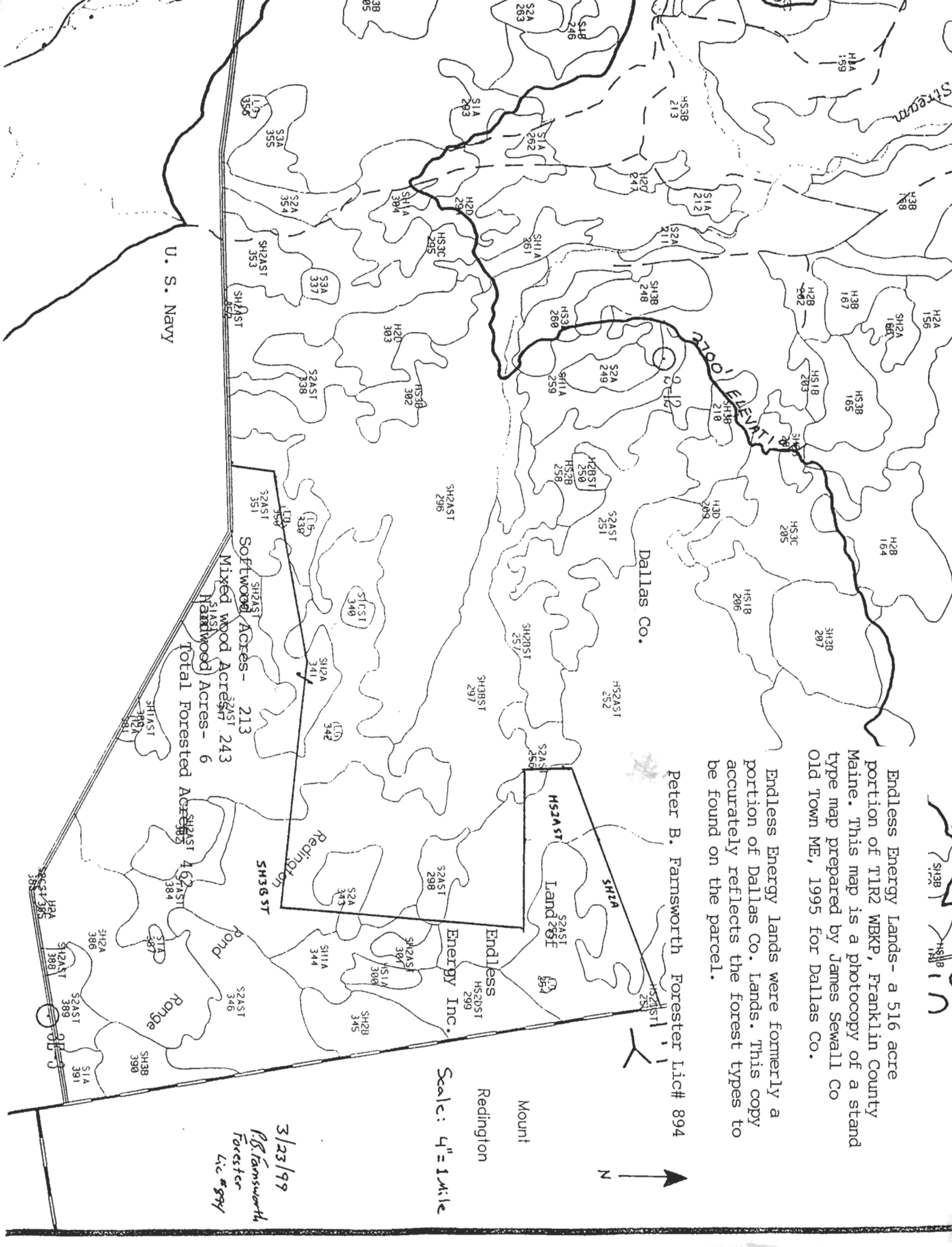
If you have any questions, do not hesitate to contact me. If you want any further assistance in proceeding with these goals, or adjusting them, I can assist you at any time. I have tried to give you recommendations without locking you into any specific action at any specific time, but under tree growth, the idea is to at some point-perform a harvest. I just would try to do something at least to recover ongoing Fir loss to stress and age. Every tree lost is potential income. Done in conjunction with developing any tower sites, I believe you could quite easily realize some income potential from periodic harvests.

Respectfully submitted;

 3-25-99

Peter B. Farnsworth

Professional Forester- Lic. # 894



U. S. Navy

Dallas Co.

Peter B. Farnsworth Forester Lic# 894

Endless Energy lands - a 516 acre portion of T1R2 WBKP, Franklin County Maine. This map is a photocopy of a stand type map prepared by James Sewall Co Old Town ME, 1995 for Dallas Co.

Endless Energy lands were formerly a portion of Dallas Co. lands. This copy accurately reflects the forest types to be found on the parcel.

SOFTWOOD Acres - 213  
 Mixed wood Acres - 243  
 Hardwood Acres - 6  
 Total Forested Acres - 462

Scale: 4" = 1 mile



3/23/99  
 P.B. Farnsworth  
 Forester  
 Lic # 894