Otsego County Forest #2
Harry D. Bilderbeck Memorial
Forest Management Plan

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Introduction

Forest Management is a comprehensive science that allows for the maintenance of ecosystem health, sustainable growth and harvest of forest products, administration, aesthetics, and resource protection. Otsego County is dedicated to applying the principles of Silviculture to balance timber harvesting and forest growth to ensure the future viability of our forests. Otsego County forests are a public resource that is managed for timber production, outdoor recreation, wildlife, water, and natural resource conservation. By taking this multipurpose management approach we will be able to benefit the natural resources on county land and give residents the opportunity to enjoy their public land.

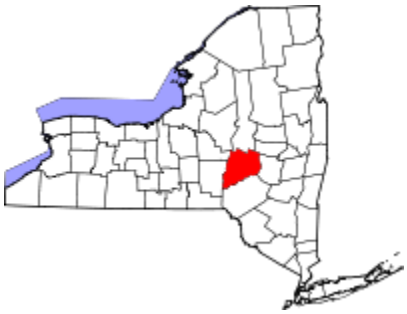
Forester Biography

Dan Zimmerman's experience revolves around procurement and consulting Forestry having worked extensively with landowners, timber harvesters, Foresters both public and private, trucking and construction firms, and the forest industry with over 35 years of experience. Presently, chapter chair of The New York Forest Owners Association's Central New York Chapter and past chapter chair of the Society of American Foresters Iroquois Chapter. Dan's education: Graduate of Morrisville State College, SUNY Polytechnic Institute, the University of Phoenix, and Leadership Mohawk Valley.

Property Attributes/Access

Otsego County Forest #2 is essentially a 330 acre+- plantation and natural hardwood forest located off Arnold Lake Road in the Town of Hartwick, Otsego County, New York. Access is limited to a dirt road/driveway that runs northerly and parallels the narrow strip of county land from Arnolds Lake Road that is used jointly with ad joiner Dwight Burch (tax map parcels # 177.00-1-02, 177.00-1-21.01). Mr. Burch states he owns the first 250 feet of said road, rest is county road. This road is the primary roadway/access to Mr. Burch's residence. Extensive system of well maintained hiking/recreational trails exists on the property that connects to neighboring New York State forest lands. No parking area exists and public access is limited.

Otsego County, New York



Town of Hartwick, Otsego County

Desired Future Conditions

The overall future condition of this property should focus on the continuous production of high quality forest products from commercially important softwood and some hardwood species. Substantial amount of merchantable softwood (White Pine, Red Pine and Spruce) is present together with hardwood (Sugar and Red Maple, Red Oak, and some Ash) in this parcel in varying degrees of density in many of the forest stands. It is envisioned that a harvesting program be instituted for the whole parcel depending on optimal market conditions. Control of interfering vegetation: mainly ferns and some beech to be instituted prior to commencement of harvesting. Future end state would be: completed harvesting for the parcel as a whole, on a twenty year rotation before any additional substantial forest management activities. Encouraging and promoting biodiversity helps overall forest and ecosystem health. Resiliency of the forest through diversity is another future benefit in the face of possible threats from invasive species, native pathogens, and possible climate change. It is envisioned a future forest with three or more succession stages of forest stands.

Timber Harvesting

Ad joiner Dwight Burch gave a brief history of the last harvesting operation that occurred in Otsego #2. Access for harvesting was granted by Mr. Burch for egress of timber products through his property and also a landing/truck loading area. Said egress and landing utilized an existing dirt farm access road running easterly/westerly through his property to/from Otsego #2. Before any future harvesting, consultation with Mr. Burch should be undertaken. Otherwise, using county owned land would produce skidding distances that could be prohibitive, and there is a lack of a good, developed landing area on county property.

Proposed Forest Stands for Timber Harvesting

Stands: A: 3, 4, 5, 6, 9, 10, 11, 14, 19, 23, 25, 26, and 29.

Property Lines

Before any forest management activities take place, a comprehensive assessment of all the property lines should take place.

Otsego #42 Harry Bilderbeck Memorial Forest: Forest and Ferns

Throughout the course of inventorying the forest resources, ferns were noted in most of the forest stands. Ranging from domination of the forest site to a "light" presence in the understory, ferns are a problem or will be a problem presently or to the future. Recognition of this problem should be undertaken before timber harvesting or forest canopy disturbance that is proposed within some of the forest stand prescriptions found in this forest management plan.

Ferns are indicative of another problem – White tailed Deer. Deer populations and their resulting impact on the ecosystem rests on selective browsing – browsing or consuming native valuable hardwood tree seedlings, blackberry plants, and some other woody and herbaceous plants (hobblebush, lady slippers, etcetera) and not feeding on ferns.

This gives ferns an important competitive advantage allowing for less competition for sunlight, moisture, and nutrients. Ferns are usually indicative of out of balance deer populations with their habitat over time. Ferns also have the ability to reproduce, grow, and become established under intense shade – another competitive advantage.

Dense fern communities as exist or will exist (after timber harvest produces increased light and releases understory fern) producing near biological deserts – severely decreasing plant and wildlife diversity through lack of cover and food. The sustainability of our important forest resource – future timber production of commercially important hardwoods and softwoods is severely limited by ferns.

Considered to be an interfering plant, ferns form a dense, sunlight eliminating sub canopy that inhibits the establishment and growth of desirable tree seedlings. In addition, ferns form a matt that inhibits tree seeds from reaching the forest floor and germinating. Thus, ferns can dominate forest landscapes for decades into the future.

Studies have shown that herbicidal treatment of fern under stories before timber harvest or forest canopy disturbance with glyphosate herbicide (e.g., Roundup) at the rate of 1 quart per acre. Optimal dates for best control were from early July until mid-September. It is also recommended that sulfometuron-methyl herbicide (e.g., Oust) a soil-active herbicide that is readily taken up by fern rhizomes. It also has pre emergent activity, which prevents undesirable grass and sedge seed from germinating. A licensed pesticide/herbicide applicator is required to apply the above within New York State.

Currently, there is a bill recently passed by the New York State Legislature (Senate 6502/Assembly 732-B) that would prohibit the use of all glyphosate based herbicides on state land. I would recommend further research into alternative herbicides or control systems before applying glyphosate to county lands.

Consideration of Bilderbeck Memorial deer herd density and its effects on the forest ecosystem and regeneration should be undertaken before undergoing any herbicidal treatment of ferns. Higher deer densities could negate any benefits of application. Failure to control ferns can negate forest regeneration and the future forest tree species constituencies.

Goals and Objectives

Forest Inventory

Complete a comprehensive inventory of the twenty seven forest stands found in this parcel. Inventory was completed September 2020 that included assessment of commercially important timber species, Acceptable Growing Stock (A.G.S.) and also low grade or pulpwood that also includes interfering vegetation.

Problem identification

Results of the inventory, together with observations of the Forester on any threats or impediments that would mitigate the overall effort to achieve the Desired future condition of the parcel or stand. The "Keep Forests Healthy" scorecard by The Nature Conservancy, Cornell Cooperative Extension of Onondaga County will be implemented also.

Trail Maintenance

There is a good set of well maintained hiking/cross country skiing trails on the property that are in excellent condition. These trails ultimately connect with trails from state land. A goal would be to continue the present condition of these hiking trails. Overall access is attained through driveway from Arnold Lake Road; no parking area exists for public access. Parking is road side.

Unique areas

In stand A7 is found approximately 4.3 acres of wetlands that offer unique remoteness, flora, and fauna not found in the remainder of parcel #2. In addition, forest stands 15, 16, 17, and 18 contain old field plantation and naturally seeded early succession/developing forest stands that offer an interesting educational experience into early forest stand development.

Disease/Insect Concerns

Stand A 13 has a possible fungal infection and Stand A16 has a possible insect infestation that will require future monitoring.

Recommendations

Prescriptions on individual forest stand to be outlined and aligned with future desired conditions. Recommendations to include implementation and alignment with the desired future forest condition. Prescriptions will include considerations for basal area and trees per acre (TPA), volume (board feet and cords), Acceptable Growing Stock (A.G.S.), pulpwood, but also for species, vigor, invasive species, wildlife, ecology, and Forester experience.

Inventory Methodology

Forest inventory was conducted on the twenty seven forest stands that compromise Otsego County Forest #2. Forest Stands were constructed based on species composition, basal area, forest cover type, geological considerations, and past cutting history.

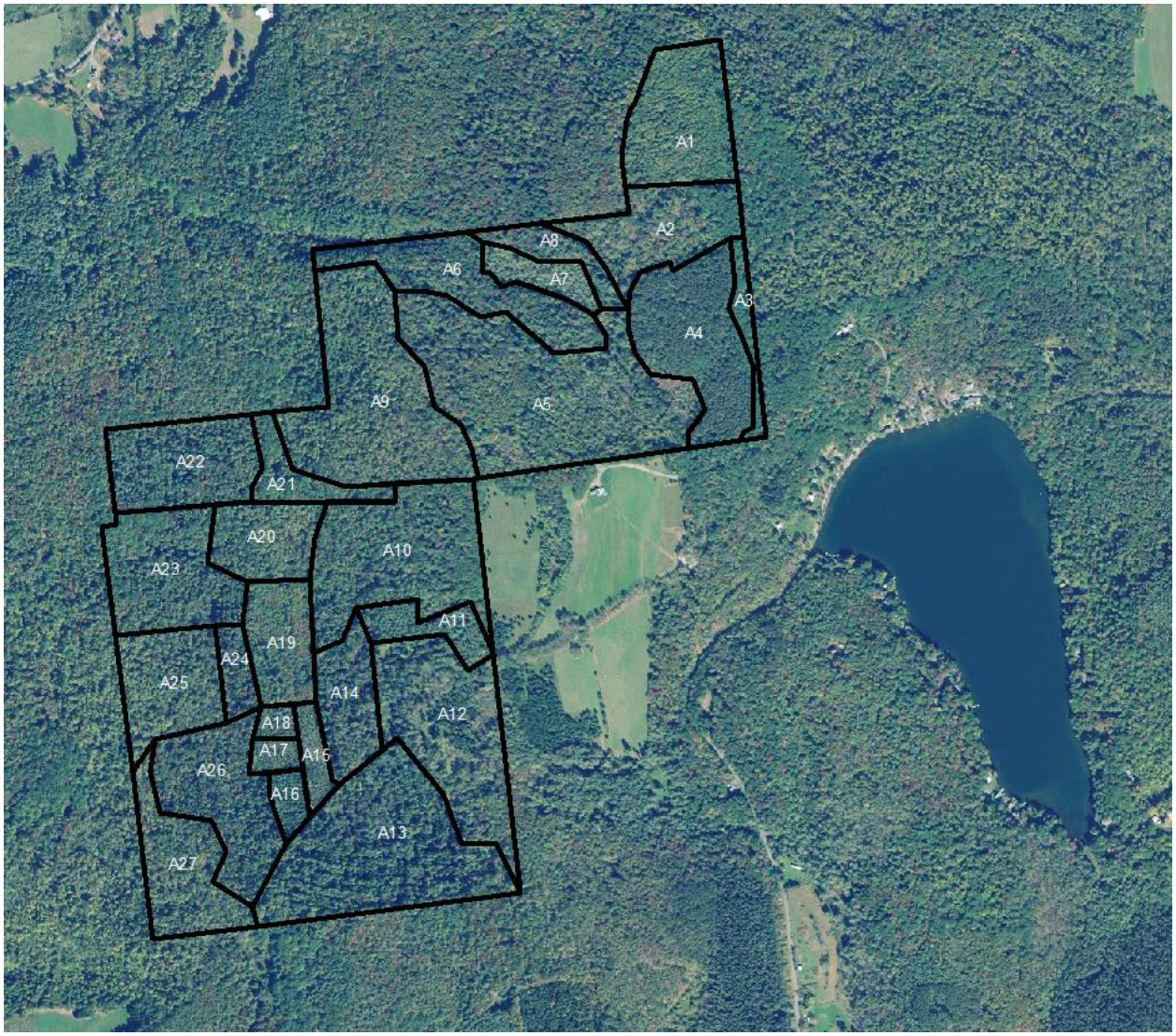
Each stand was inventoried by using variable plot radius data points with a 10 Basal Area Factor (**BAF**) wedge prism. Trees that fall into each data plot was measured for Diameter at Breast Height (**DBH**) with a Biltmore stick and their height will be determined by the judgment of the Forester. Species of every tree in the data plot will also be recorded. Recorded data will be averaged throughout the stand to determine the stand's basal area, trees per acre, species composition, product classification, and overall health. Each stand will have a different number of data plots based on their area measured in acres. The chart used to determine the number of data plots for each stand can be seen in **Table 1**.

Table 1 Ratio chart of plots in a stand

Acres	**# of Plots**
0 - 4	3
5 - 7	4
7 - 10	5
10 - 15	7
15 -25	10
26 - 30	14
40	15

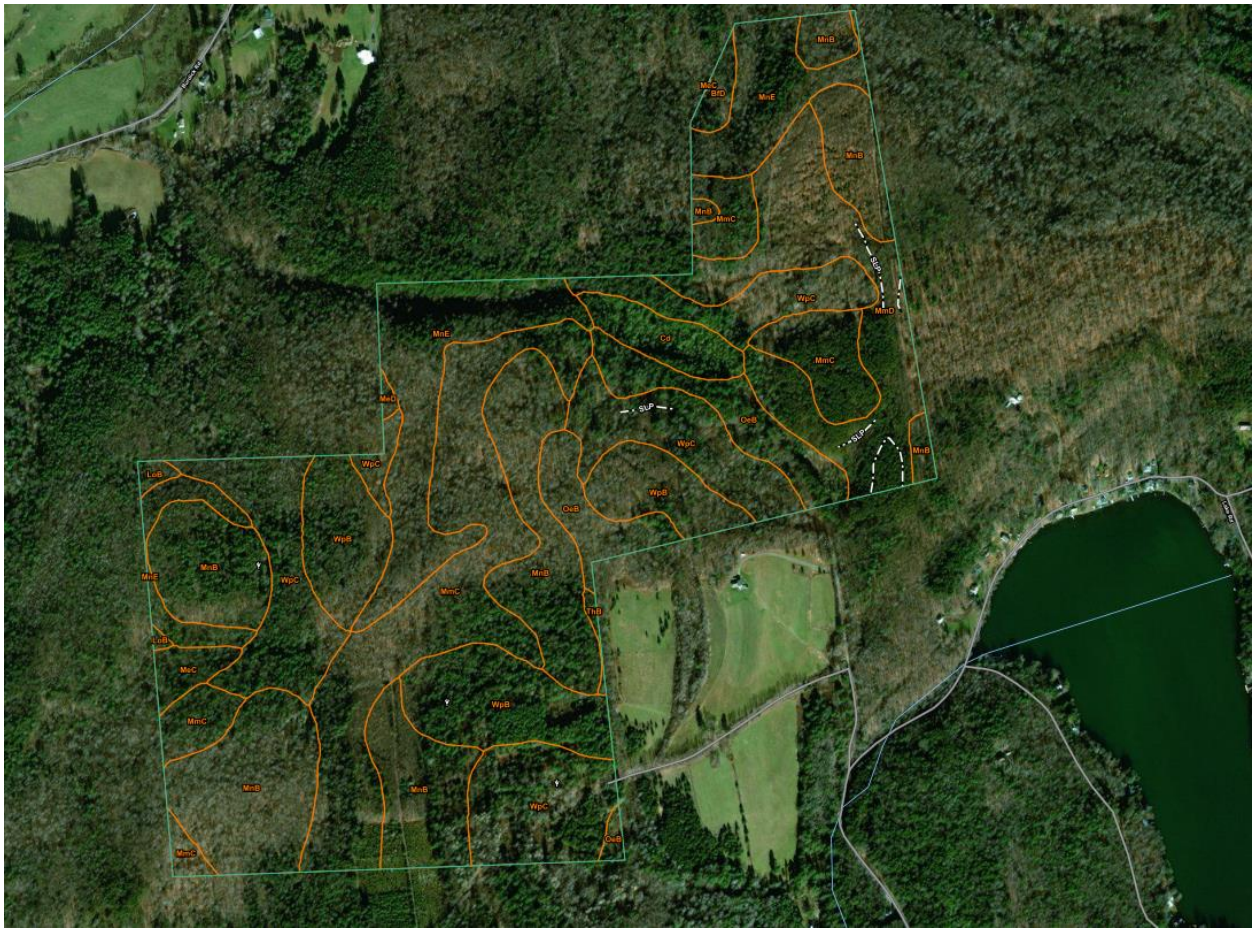
Otsego Parcel #2 Stand Map

Harry D. Bilderbeck Memorial Forest



USDA Soils Map

Otsego #2 Arnolds Lake



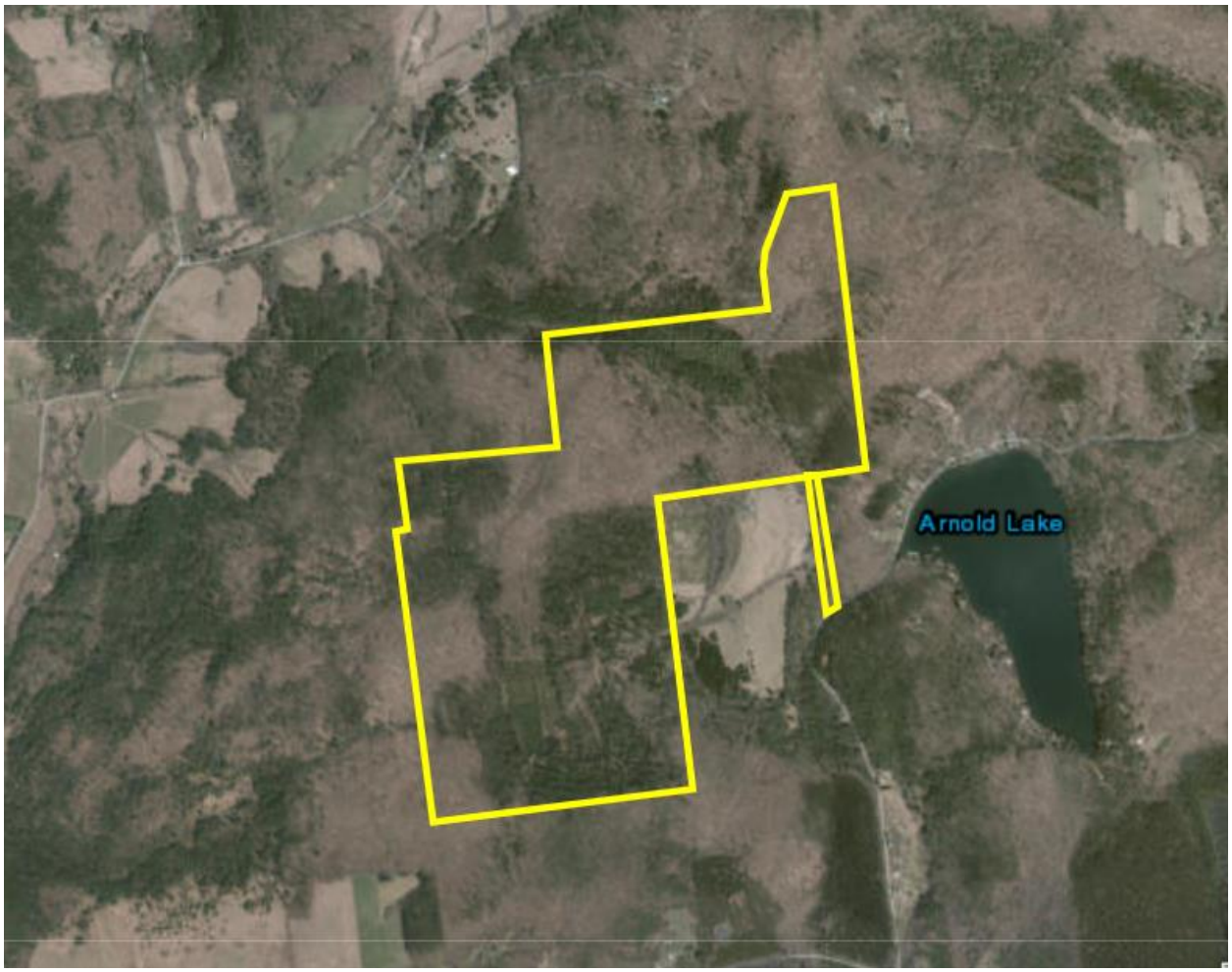
USDA Soils Legend
Otsego #2 Arnolds Lake

Map Unit Symbol	Map Unit Name
BfD	Bath channery silt loam, 15 to 25 percent slopes. Well Drained
Cd	Carbondale mucky peat. Very poorly drained
LoB	Lordstown-Arnot complex, 1 to 8 percent slopes, rocky Well drained
MeC	Mardin channery silt loam, 8 to 15 percent slopes. Moderately well drained
MeD	Mardin channery silt loam, 15 to 25 percent slopes. Moderately well drained
MmC	Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained
mD	Mongaup-Franklinville complex, 15 to 25 percent slopes. Well drained

MnB	Mongaup-Hawksnest complex, 1 to 8 percent slopes, rock y. Well drained
MnE	Mongaup-Hawksnest complex, 25 to 50 percent slopes, rock y. Well drained
OeB	Ontusia channery silt loam, 2 to 8 percent slopes. Somewhat poorly drained
ThB	Torull-Gretor complex, 1 to 6 percent slopes. Poorly drained
WpB	Willdin channery silt loam, 3 to 8 percent slopes. Moderately well drained
WpC	Willdin channery silt loam, 8 to 15 percent slopes. Moderately well drained

Otsego County Forest #2

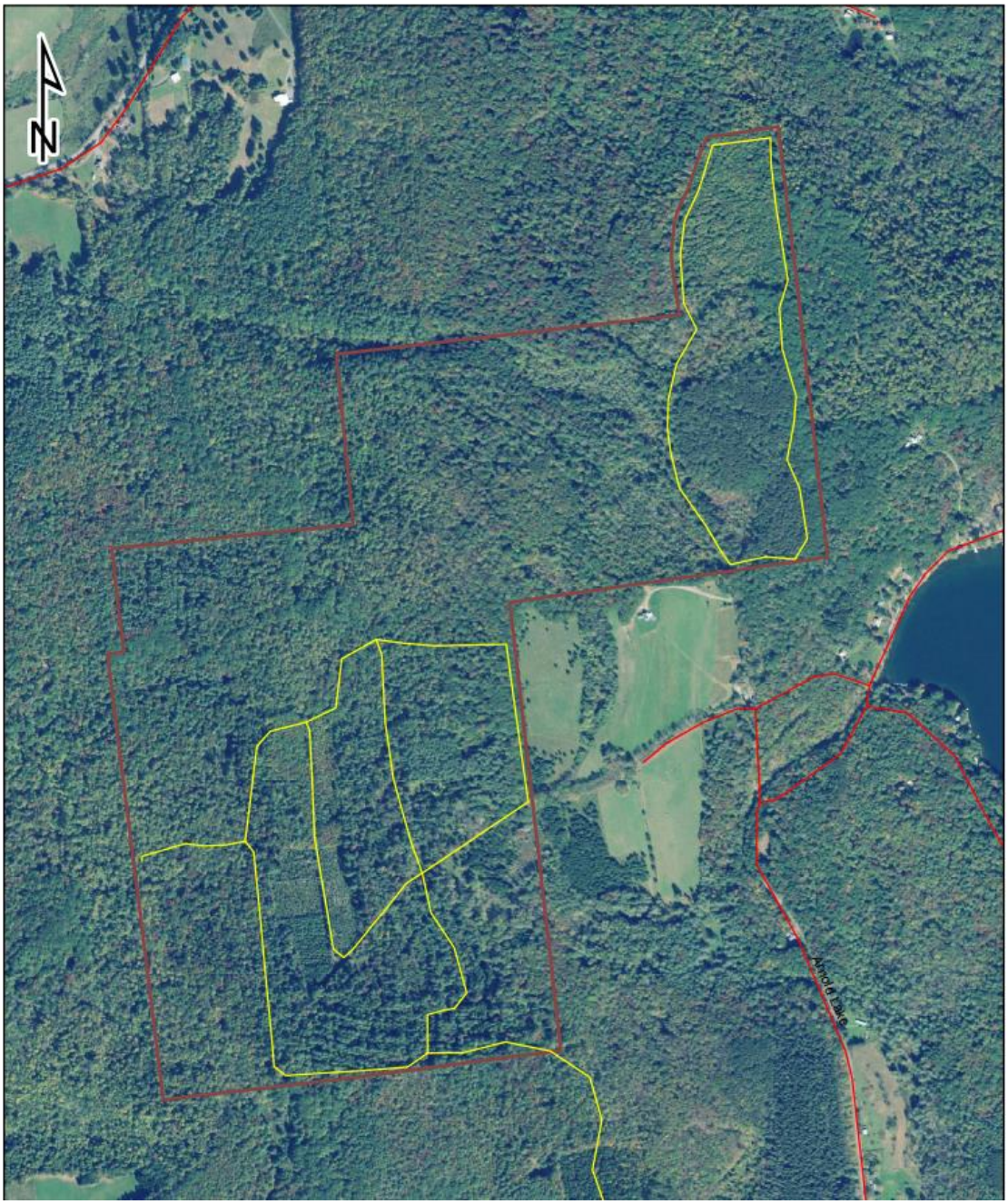
Harry D. Bilderbeck Memorial Forest Overview



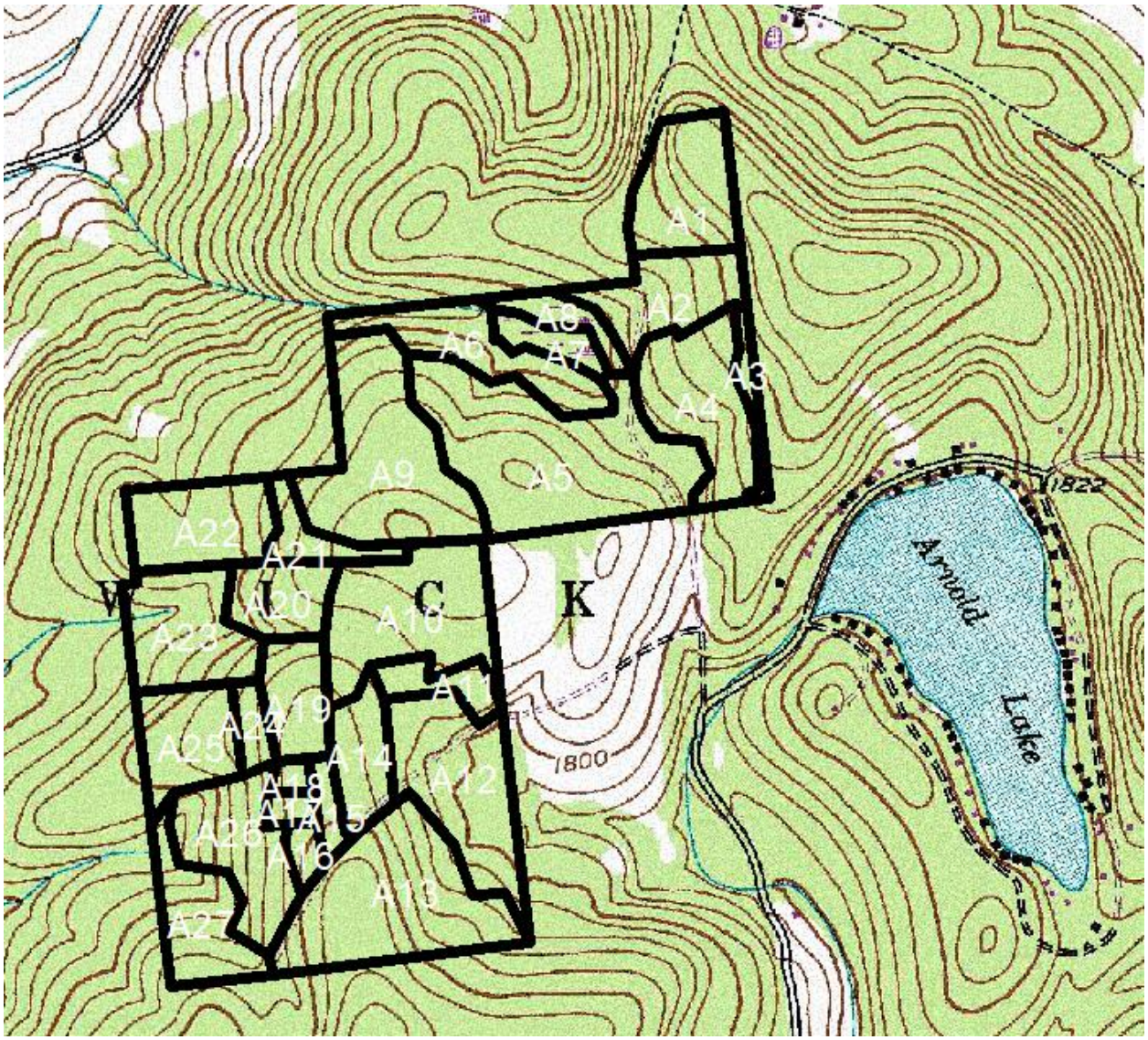
Otsego #2 Overview

Access Map/Photo

Bilderbeck County Forest trails



Bilderbeck Topographic Map



Forest Stand A1

This forest stand consists of approximately 14.7 acres and is located in the most northerly section of Otsego #2 Bilderbeck Memorial Forest. Essentially, this stand is an old (30+) year Red Pine Clear cut, stand conversion. Soil types: Bath channery silt loam, 15 to 25 percent slopes. Well Drained; Mardin channery silt loam, 8 to 15 percent slopes. Moderately well drained; Mongaup-Hawksnest complex, 1 to 8 percent slopes, rocky, well drained; Mongaup-Hawksnest complex, 25 to 50 percent slopes, rocky. Well drained; and Mongaup-Franklinville complex, 15 to 25 percent slopes. Well drained. Ability to work this site is good. Because there is no forest products within this stand, no forest measurements were undertaken.

Forest Diversity and Composition

Species diversity is good with over five hardwood species and one softwood species present. General tree health is good and no insect or disease issues were observed.

Forest Structure

Structural diversity is lacking within this stand due to the results of the past clear cut. The developing future forest consists mainly in the sapling and seedling stages effectively yielding trees in the same or similar size. No standing dead trees or down dead wood was observed thus limiting certain wildlife cover and habitat. Tree crowns are developing through succession aspects while tree spacing/stocking is high, typical of a developing stand.

Regeneration

Desirable tree seedlings and sapling were found in abundance and consist of Red Maple, Red Oak, Sugar Maple, Black Birch, and Red Pine. Species suitability to the growing site is judged to be good by growth characteristics and site potential. Interfering plants present is American Beech but not in substantial numbers to have a high impact on the developing stand. Deer browse present but judged to be not a high factor as much of the developing stands tree crowns are above the browse line.

Site Level Risks

Soil types are predominately well or moderately well drained. Moisture stress and extreme rainfall are judged to be of lesser risk than other possible extreme weather. Shorter and milder winters would impact this stand primarily through access.

Prescription

Allow this stand to develop through succession. Let it grow. Revisit in ten years to monitor any changes and stand development.

Forest Stand A2

12.9 acres more or less make up stand #2. Located in the northerly section of Otsego #2, part of this stand was partly a long ago Red Pine clear-cut, and part is an original hardwood stand. The clear cut was done at the same time neighboring stand A1 was done. It also appears the hardwood section had a harvest at about the same time. Soils found here are Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained; and Willdin channery silt loam, 8 to 15 percent slopes. Moderately well drained. These soil types will allow for adequate forest management activity.

Forest Diversity and Composition

Species diversity within A2 is average with Ash, Red Oak, Red Maple, and Sugar Maple found. General tree health is average; growth characteristics indicate average health and growth. No insect or disease problems were noted.

Forest Structure

In the old Pine clear cut section of A2 structural diversity is lacking due to the residual stand being mainly seedlings and saplings. Diversity in the hardwood stand is average to lower with some different sizes, ages, and some layering. Significant standing dead trees and down dead wood in the hard wood component due to the heavier cut and less density with significant sunshine entering the stand. Tree crowns are average in size with tree spacing inadequately stocked and too widely spaced.

Regeneration

Regeneration consists mainly of Ash, Red Oak, Red Maple, and Sugar Maple for desirable species. Average Acceptable growing stock with a basal area of 2.68, trees per acre of 46.41 yielding 1.89 cords per acre. Species suitability to the growing site is average. Beech interfering plant is present but not in significant amounts as to pose an impediment to the overall growth of the residual stand. Deer browse is judged to be low.

Site Level Risks

Soil types and topography limit the risk to moisture stress and extreme rainfall. Other extreme weather risk is judged to be low also. Shorter and milder winters would affect accessibility.

Forest Stand A2 Prescription

Let this stand develop on its own. The old clear cut area has yet to differentiate into good structure and will in time. Hardwood section needs to have the good amount of seedlings and saplings develop into pole timber classification.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
White Ash	25.58	23.94	2390
Red Oak	18.40	13.38	1647
Red Maple	5.00	7.16	771
Sugar Maple	7.01	3.83	484
Total	55.99	48.31	5592

A.G.S.	46.41	2.68	1.89 cords
Hardwood pulp	5.30	4.69	.71 cords

Forest Stand A3

2.9 acres = or – make up this Otsego #2 forest stand Located in the eastern part of the northern section of Otsego #2 this stand borders state land. Mostly a sliver of land separating said state land and stand A4 Red Pine, this hardwood stand soils are mainly Mongaup-Franklinville complex, 15 to 25 percent slopes. Well drained; and Mongaup-Hawksnest complex, 1 to 8 percent slopes, rocky. Well drained. Main feature is large Red Oak.

Forest Diversity and Composition

Species diversity is good with 6 commercial species inventoried. Red Oak does occupy the largest share of growing space with 44 square feet of basal area. General tree health is good with some of the Red Oak now approaching over maturity. No insect or disease vectors were noted.

Forest Structure

Structural diversity is relatively good with the stand having several vertical layers. Pole timber class was underrepresented. Few dead standing trees and down dead wood was observed. Tree crowns and tree spacing are good leading to good crown size.

Regeneration

Desirable species regeneration exists with predominate Red Oak, Red Maple, Ash. And Sugar Maple represented. Seedlings and saplings were present in acceptable amounts. Beech is present also and in varying amounts throughout the stand, typical of heavily shaded areas and as such constitutes interfering plant. Deer browse was present but judged not to be a large risk.

Site Level Risks

Wind throw was judged highest risk because of topographical prominence. Moisture stress, extreme rainfall was judged to be lesser risk. Shorter and milder winters would affect this stands accessibility.

Stand Prescription

Despite the basal area of 44 square feet within this stand, it is judged that all of the larger, merchantable Red Oak approaching over maturity is harvested in conjuncture with harvesting in an adjacent forest stand. At the same time, removal of some of the hardwood pulp judicially to benefit the residual stand density and growing space.

Forest Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Red Oak	54.42	44.04	8091
Red Pine	1.89	1.77	518
Hemlock	8.49	1.57	476
White Pine	1.89	1.77	440
White Birch	2.30	1.40	253
Red Maple	4.25	.79	238
Total	73.33	51.34	10,016

Hardwood Pulp	40.13	.94	1.47 cords

Forest Stand A4

This stand is located in the northerly block of Otsego #2, the most southeastern section. Soils found: Mongaup-Hawksnest complex, 1 to 8 percent slopes, rock y. Well drained; Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained; and Mongaup-Franklinville complex, 15 to 25 percent slopes. Well drained. Soils are conducive to harvesting machinery. Essentially, a Red Pine plantation that has had an individual tree commercial thinning long time ago. Very high quality Pine exhibiting good growth characteristics. This plantation has pole quality and good saw log/cabin log product classifications.

Forest Diversity and Composition

Low species diversity as this stand is a Red Pine plantation. General tree health is excellent with the Red Pine exhibiting exceptional health. No insect or disease problems or infestations were observed.

Forest Structure

Simple forest canopy with trees primarily same age and size. This stand contains some down dead wood but has little to no standing dead trees thus limiting some wildlife habitat. Tree crowns are well developed and have good healthy crowns. Tree spacing is showing high stocking levels and occupation of growing space (basal area) with overall growth rates beginning to slow.

Regeneration

Fair stocking of desirable hardwood species in the seedling and sapling stage are found in Stand A4. Species present: Red Maple, Sugar Maple. Canopy closure, high basal area and stocking densities of dominant Red Pine are limiting the amount of seedlings and saplings. Sunlight needs to penetrate to the forest floor. Interfering beech is slowly becoming more prevalent due to shade tolerance. Deer browsing is present also.

Site Level Risks

Wind throw and ice storm damage are judged to be of highest concern for risk due to topographic prominence. Moisture stress and extreme rainfall are considered to be of less risk to the stand. Shorter and milder winter's greatest affect on this stand would be through accessibility.

Stand A4 Prescription

This stand was thinned years ago with the individual tree silvical selection method successfully. I propose the same with a 50 square foot plus or minus reduction in basal area. The goal is to increase sunlight penetration to the forest floor, increase desirable regeneration, lesson density to keep the residual stand growing at optimal levels.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Red Pine	86.36	153.90	18,627
Red Maple	.95	4.41	218
Red Oak	.42	2.41	136
Total	87.73	160.72	18,981

A.G.S.	5.73	.70	.29 cords

Forest Stand A5

38 acres more or less are found in this stand located in the central section of the most northern parcel of Otsego #2. Stand A5 is an old Red Pine clear cut or stand conversion to hardwood. AGS with 36 trees per acre together with timber class 32.33 trees per acre suggest fairly good to average stocking levels. Pulp wood measurements of 17 trees per acre and 18.85 basal area stands out as requiring mitigation within this stand.

Soils found within this stand are: Ontusia channery silt loam, 2 to 8 percent slopes. Somewhat poorly drained; Willdin channery silt loam, 8 to 15 percent slopes. Moderately well drained; and Willdin channery silt loam, 3 to 8 percent slopes, moderately well drained. The drainage conditions vary within this stand and as such, careful weather timing is required for forest equipment workability.

Forest Diversity and Composition

Species diversity is good with no one species thoroughly dominating. General tree health is judged to be average with just average growth characteristics. Growing site is judged to be in variance due to nature of soils drainage/wet areas. No insect or disease vectors were observed.

Forest Structure

The forest includes trees of different sizes as well as multiple layers. Standing dead wood occurs with low frequency while dead down wood is present significantly due in part to old blow down. Tree crowns are of average size and spacing.

Regeneration

Desirable hardwood regeneration is very pronounced with a plethora of both quantity and species in the seedling/sapling stages. The wide variance in species is directly related to the soil types and growing site variances found within this stand. Species suitability is excellent in stand A5. Ferns are found in the northern and western parts of this stand and as such constitute as interfering plants that are awaiting release. Deer browse is present but not significant.

Site Level Risks

Within this stands history, a significant blow down occurred. Blow down is judged as the most significant risk factor. Extreme rainfall would be of significance also due to the wet nature and locations of some of the soils. Shorter and milder winters would have a large impact on the amount of time (less) available to work the site.

Stand Prescription

Due to the good amount of regeneration found in this stand together with a basal area of 68 and good species diversity it is recommended that this stand be left to grow. However, it is recommended that a reduction in the amount of pulpwood occupying growing space be reduced by timber stand improvement silvical system that would be employed in conjuncture with neighboring stand timber harvest if feasible.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Red Maple	11.88	19.54	1473
Red Oak	4.39	11.28	564
White Ash	3.48	7.53	439
Eastern Hemlock	4.11	10.01	550
Black Cherry	2.42	6.12	308
Yellow Birch	4.18	4.40	237
Sugar Maple	1.15	5.33	230
White Birch	.31	2.18	92
Red Pine	.38	1.77	119
Total	32.33	68.16	4012
Hardwood pulp	17.02	18.85	1.46 cords
A.G.S.	36.34	2.81	1.21 cords

Forest Stand A6

This stand is located in the northerly/central part of the northerly block of Otsego #2 and has 13.9 acres + or -. Two stands actually comprise stand A6: northerly section is basically a natural hardwood stand with some steep ground while the southerly portion of A6 is essentially a border for wet lands found in stand A7. Soil and drainage classifications: Mongaup-Hawksnest complex, 25 to 50 percent slopes, rocky. Well drained and Ontusia channery silt loam, 2 to 8 percent slopes. Somewhat poorly drained. Despite the preceding, it is the judgment of the Forester that the soils in the southerly section of stand A6 will support harvesting equipment during normal summer months.

Forest Diversity and Composition

Good species diversity exemplifies stand A6 with six commercially important species represented. General tree health is excellent in the hardwood section with poorer health due to over maturity and crowding in the southerly section of A6. No insect or diseases were observed within this stand.

Forest Structure

Hardwood section show good structural diversity with multiple vertical layers present while the southerly section lacks seedlings and saplings exhibiting more of a two layering structure – poles and mature timber. Standing and down dead wood was more pronounced in the southerly section of A6. Tree crowns and spacing in northerly hardwood section was good, showing less crowding and healthier crowns. Southerly tree crowns were less healthy and lessoning development due to crowding and over maturity. More pulp wood evident.

Regeneration

Desirable reproduction was notably absent in both sub stands. Southerly showing a park like condition. American Beech was much in evidence as an interfering plant occupying the majority of regeneration growing space in the northerly sub stand and is present in the south. Some deer browsing in the north sub stand but not significant.

Site Level Risks

Highest risk factor in the hardwood section is blow down due to elevation, in the southerly section extreme rainfall due to proximity to wetlands. Shorter and milder winters would shorten the time frame to be able to work the southerly section of A6.

Forest Stand A6 Prescription

Excellent quality Red Oak is found in the northerly section of this stand while significant Hemlock of poorer quality together with good White Pine in the southerly section. It is proposed harvesting mature Red Oak and other hardwoods at the same time careful harvesting of the Hemlock at correct time of year. Reducing overall stand basal area by about 40 to 50 square feet, including hardwood pulp basal area. Not cutting White Pine and removing competitors judiciously so to promote Pine regeneration.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Eastern Hemlock	40.82	59.84	7446
Eastern White Pine	4.74	35.16	2080
Red Oak	3.70	15.87	1476
Red Maple	12.77	7.44	1185
Yellow Birch	11.38	4.96	715
Black Cherry	1.82	.79	102
Total	75.23	124.06	13,004

A.G.S.	11.38	.55	.42 cords
Hardwood pulp	35.01	18.45	2.57 cords

Forest Stand A7

Not really a forest stand, A7 consists of about 4.3 acres more or less. Primarily a wet land with no mature forest products that are measurable, no data measurements were undertaken. Located in the north central section of Otsego #2 most northerly block, main soil type and drainage is Carbondale mucky peat. Very poorly drained, standing water is present throughout A7 and as such is not workable.

Forest Diversity and Composition

A7 has good species composition mainly in the seedling/sapling stage with many tree species establishing themselves. General tree health is judged to be about average especially for a hydrophilic site. No insect or diseases were noted.

Forest Structure

Developing structure is the best description for this stand. Both hardwood and softwood (Hemlock) seedlings and saplings are succeeding in this wetland along with a substantial fern presence. Some standing and down dead wood exists within this wetland. Tree crowns and spacing are developing.

Regeneration

Succession factors along with the slow conversion of this wetland to a very wet forest stand consisting of Red Maple, Yellow Birch, and Eastern Hemlock seedlings/saplings. Species suitability to the growing site is good. Interfering plants consists of ferns in significant numbers. Deer browsing was not noted.

Site Level Risks

Extreme rainfall is the greatest risk to this wetland, however, due to its nature and drainage or outlet stream, this “risk” is heavily mitigated as to adverse effects.

Prescription

Excellent wildlife cover and good contrast to surrounding ecosystems this wetland constitutes biodiversity. No forest management activity is advised, let the stand slowly develop.

Forest Stand A8

4.4 acres plus or minus make up Forest Stand 8. Essentially this stand is a border or protection strip of undisturbed trees for Forest Stand 7 wetlands. Soil type and drainage class: Willdin channery silt loam, 8 to 15 percent slopes, moderately well drained. Forester's judgment is that the soils found within this stand are sensitive to forest management equipment.

Forest Diversity and Composition

Good species diversity is found within stand 8 with six commercial species present. General tree health is poor especially on the Hemlock, White Pine, and Red Maple due to over maturity. Significant rot and poor form are primary causal agents of poorer tree health. Softwood and hardwood pulp are in larger amounts than found in most thriving forest stands. Basal area is 16.55 square feet for softwood pulp and 18.26 square feet for hardwood pulp. No insect or diseases were observed within the confines of this stand.

Forest Stand Structure

Structural diversity is lacking due to the over maturity of the overall stand. Tree size is large with vertical layering lacking. Standing dead trees and down dead wood are commonly found within this stand. Tree crowns are large but commonly unhealthy with tree spacing exhibiting crowding.

Regeneration

Tree seedlings and saplings are largely absent from the understory leading to park like appearances. Interfering plant species were not found within stand 8. Deer browsing not found due to lack of forest tree seedlings.

Site level risks

Highest risk to this stand is extreme rainfall due to the proximity to wetlands. Secondary risk would be assigned to blow down due to the over maturity of this stand. Shorter and milder winters would affect the ability to work within this stand with harvesting equipment by lowering the operational time window.

Forest Stand A8 Prescription

Leave as is, as a border protection for Forest Stand 7. Wildlife habitat and cover serves as additional positive aspects of this stand.

Stand A8 Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Eastern Hemlock	60.92	25.11	7790
Eastern White Pine	11.51	15.32	3213
Red Maple	6.39	4.74	1307
Yellow Birch	6.94	2.43	489
Northern Red Oak	1.53	2.15	614
Black Cherry	3.61	.92	324
Total	90.90	50.67	13,737

Hardwood Pulp	16.48	18.26	3.09 cords
Softwood pulp	6.78	16.55	1.45 cords
A.G.S.	72.21	1.79	.99 cords

Forest Stand A9

This stand has 28.3 acres more or less and is located in the central section of Otsego #2. A9 is a natural hardwood stand. The soil types and drainage classifications are: Mongaup-Hawksnest complex, 1 to 8 percent slopes, rocky. Well drained; Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained; Mongaup-Hawksnest complex, 25 to 50 percent slopes, rock y. Well drained; and Willdin channery silt loam, 8 to 15 percent slopes. Moderately well drained. These soils will support forest management equipment.

Forest Diversity and Composition

Eight commercial tree species are growing within this stand making for good species diversity. General tree health is good with Sugar Maple, White Ash, Black Cherry, Red Oak, and Red Maple showing good growth characteristics. Stand dominant Sugar Maple shows varying timber quality throughout the stand. No insect or disease vectors were found within Stand A9. The White Ash is susceptible in the future to the emerald Ash Borer and is found in enough numbers (TPA 11.49, Basal area of 39.33, 2023 board feet/acre) to be of significant concern.

Forest Structure

The forest stand exhibits multiple vertical layering – over story, poles, and understory together with trees of varying sizes thus giving stand A9 good structural diversity and complexity. No standing dead trees were observed while there was some down dead wood. Trees are becoming increasingly crowded with fading healthy crowns due to tree density and stocking levels.

Regeneration

Sugar maple seedlings and saplings make up a relatively small part of the stands reproduction. Regeneration is dominated by American Beech and to a lesser extent eastern Hophornbeam. Ferns await sunlight also. These interfering plants impede natural regeneration. Species suitability to the growing site is adequate. Deer browsing is deemed average at present due to lack of good browse, high in the past.

Site Level Risks

Highest magnitude of risk rests with other extreme weather with ice storms and wind throw rating highest. Excess rainfall and moisture stress is limited in risk due to soil characteristics. Shorter and milder winters would affect the accessibility of this Otsego #2 stand.

Forest Stand A9 Prescription

Silvical system individual tree selection method is recommended to promote uneven age management of this stand and to also harvest any merchantable White Ash trees before infection by Emerald Ash Borer. A reduction of 50 to 60 square feet in the merchantable timber and also a reduction of at least 6 square feet in the pulpwood classification of forest stand A9 are recommended. Pretreatment by herbicide is recommended of the ferns and beech.

Stand A 9 Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Sugar Maple	47.90	83.61	4172
White Ash	11.49	39.33	2023
Black Cherry	3.69	16.80	915
Red Maple	3.65	11.35	505
Red Oak	1.78	4.16	272
Yellow Birch	2.33	2.97	194
American Basswood	.92	3.17	163
American Beech	.57	5.05	1.57
Total	72.33	166.44	8401
Hardwood Pulp	24.55	17.81	1.63 cords
A.G.S.	17.52	2.14	.73 cords

Forest Stand A10

A10 consists of 23.3 acres + or – and is located in the northeast corner of the southerly section of Otsego #2, This is a mixed wood stand that lies flat with a long ago history of harvesting softwood species with an educated guess was White Pine. The soils and drainage classification are: Mongaup-Hawksnest complex, 1 to 8 percent slopes, rock y. Well drained; Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained; and Willdin channery silt loam, 3 to 8 percent slopes. Moderately well drained. The ability to work this stand with forest management equipment is good.

Forest Diversity and Composition

There are seven commercial tree species tallied within this stand with three dominating trees per acre numbers. Being a mixed wood stand, species diversity is good. General tree health is about average for most of the species that show common growth characteristics. No insect or disease factors were noted.

Stand Structure

Three stand stages are present with poles in the A.G.S. showing the lowest amount. Trees of different sizes and ages are present in significant amounts for average structural diversity. Lots of standing dead trees and dead down wood (long ago blow down) exist. Tree crowns show average crown size and development with spacing or occupation of growing space becoming increasingly crowded.

Regeneration

Norway spruce regeneration exists throughout the stand though there are pockets of densely natural reproduction. Pockets of dense White Pine regeneration are found scattered throughout the stand also. Some hardwood reproduction exists but in small, more isolated groupings. Species suitability to the growing site is good. Beech regeneration is dominate within this stand and is considered interfering with natural hardwood reproduction. Ferns exist close to the ground and are not dominate but scattered awaiting release. Deer browse is negligible due to lack of preferred hardwood seedlings.

Site Level Risks

Highest risks due to stand history and soil types are blow down. Moisture stress and extreme rainfall would be secondary. Shorter and milder winters would affect accessibility of this stand.

Forest Stand A10 Prescription

Silvical system to be employed is single tree selection methodology. Overall basal area reduction of 60 square feet is recommended with possibility of more depending on field density and residual stand factors. Timber harvesting species selection should select White Pine which has a significant amount of poor quality (bully) and Red Maple because of poor quality whenever possible. Reductions in softwood and hardwood pulp basal area should also be employed. Strategy is to favor Norway spruce crop trees, encourage/release spruce and White Pine seedlings, and discourage beech and fern dominance by increasing sunlight penetration of the forest floor.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Norway Spruce	44.69	33.96	3766
Eastern White Pine	10.04	54.45	2806
Red Maple	22.50	27.53	2372
Northern Red Oak	1.85	14.38	707
Red Pine	3.32	4.95	594
Yellow Birch	3.68	5.49	381
Black Cherry	.72	1.40	76

Total	83.12	142.16	10,702’

Softwood Pulp	4.38	13.11	.81 cords
Hardwood Pulp	11.92	8.13	1.18 cords
A.G.S.	2.61	1.48	.26 cords

Forest Stand A11

Location: East central portion of the southerly block of Otsego #2, this stand is the remnants of a White Pine plantation that was harvested years ago using the shelter wood silvical system. This residual stand consists of good quality, mature, large White Pine. Soil type and drainage classification: Willdin channery silt loam, 3 to 8 percent slopes. Moderately well drained. It is the Foresters opinion that the soils in this stand are well drained and can support forest management equipment.

Forest Diversity and Composition

One tree species dominates this stand – White Pine and as such, species diversity is poor. General health of the Pine is good, growth characteristics are good, and overall timber quality is good. No insect or diseases were observed within this stand.

Forest Structure

Structural diversity is poor to almost nonexistent as this stand contains trees that are mostly same age and size that creates a single, simplistic canopy. Little to no dead wood, either standing or down. Tree crowns are healthy with fairly wide spacing between crop trees.

Regeneration

Little regeneration exists within stand A11; those observed were Red Maple and Norway spruce. Regeneration appears to be suitable to the growing site. Interfering plants noted were ferns and grasses that have negated the desired reproduction of the White Pine from the previously employed shelter wood silvical system. Deer browsing was negligible due to lack of brows able vegetation.

Site Level Risks

Highest risk is assigned to wind throw due to topography – hill top/side hill. Moisture stress and excess rainfall were deemed less threatening. Shorter and milder winters can affect the workability and the access of this stand.

Forest Stand A11 Prescription

The White Pine within this stand is mature and of good quality, while this stand is not reproducing itself. It is recommended that this stand be converted to a naturally propagated hardwood stand resulting in a young forest that will benefit wildlife with food and cover. If possible, herbicidal treatment of the ferns before logging is proposed. When removal of the White Pine commences, it is further recommended that harvesting equipment disturb the forest floor to mineral soil to encourage hardwood seeding. Due to the small acreage, harvesting should be done in tandem with neighboring forest stands (A10).

Forest Stand A11 Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Eastern White Pine	31.07	87.14	13,082
Norway Spruce	.51	4.91	366
White Ash	11.90	7.75	712
Northern Red Oak	.80	3.14	418
Black Cherry	.95	2.64	350
Scotch Pine	1.15	2.18	197
Yellow Birch	4.59	.55	165

Total	50.97 TPA	108.31 BA.	15,290 BdFt.

Hardwood Pulp	15.76 TPA	4.27 BA.	1.62 cords

Forest Stand A12

Location: most easterly part of the southerly block of Otsego #2 and forms part of the easterly border. 21.5 acres more or less make up this stand. Soils in this stand are: Ontusia channery silt loam, 2 to 8 percent slopes. Somewhat poorly drained, and Willdin channery silt loam, 8 to 15 percent slopes. Moderately well drained. This stand consists of three distinct sub compartments: #1: most northerly consists mostly of dense Norway and White Spruce seeding and plantation, #2: open wetlands, and most southerly, #3: old larch plantation that was cut heavily years ago. This stand is a study in contrasts.

Forest Diversity and Composition

#1 Species diversity consists mostly Norway and White Spruce: poor diversity. General tree health is poor with much of this stand stagnating due to extreme crowding. There are no observed insect or disease issues found at this time.

#3 Better diversity of species with 5 commercial species present (three are significant). Remnants of the original Larch stand are outstanding individual trees – mammoth in size and excellent in quality. General tree health is good with no observable insect or disease issues.

Forest Structure

#1 consists of trees mainly of a single size and age class forming a simplistic canopy. Some dead down wood but not much standing dead trees within this stand. Tree crowns are underdeveloped and exhibit poor growth due to extreme crowding.

#3 includes trees of different size and age classifications forming multiple vertical layering. Both standing dead and down dead trees are present in A12. Tree crowns are much better developed due to less crowding.

Regeneration

#1 has very dense spruce regeneration leading to overcrowding. Species suitability to the growing site is judged to be average at best. No interfering plants were noted. Deer browsing not a factor within this stand.

#3 Hardwood (desirable) regeneration is found throughout this subcomponent with species suitability to the growing site good. Interfering plants and deer browsing not a factor in this component.

Site Level Risks

For all three subcomponents the highest risk would be extreme rainfall due to soils, wetlands proximity, and lack of good drainage. Shorter and milder winters would affect the ability to conduct forest management activities by shortening the time frame for workability.

Stand Prescription

Due to the nature of the three components in this stand, high sensitivity due to wetlands proximity, and soils consideration it is recommended that this stand be left to develop on its own and be revisited in 10 years.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Larch	4.62	34.73	2276
Red Maple	10.50	25.17	1842
Norway Spruce	10.00	5.02	488
White Ash	5.80	2.94	330
Black Cherry	.78	6.68	214
Eastern White Pine	.94	1.07	73
Red Oak	1.51	.66	70

Total	34.15	76.27	5293

Hardwood Pulp	7.01	14.97	.66 cords
A.G.S.	8.60	1.05	.43 cords

Forest Stand A13

Stand 13 is located in the south central most section of the southerly block of Otsego #2. Comprised of approximately 29.4 acres, this stand is the residual stand of a long ago White Pine plantation heavy harvest. Norway and some White Spruce have substantially regenerated within the confines of the old cut. Soils found are: Willdin channery silt loam, 8 to 15 percent slopes. Moderately well drained, Mongaup-Hawksnest complex, 1 to 8 percent slopes, rocky. Well drained, and Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained. This stand will support forest management equipment.

Forest Diversity and Composition

Low species diversity is found within stand A13 with only two species that are significant. General tree health is below average to low due to stagnation and low growth due to crowding. Black canker infection (possibly Cytospora canker) was noticed on certain individual trees constituting a light infection. Difficult to ascertain if the infection is progressing in the spruce component of this stand or is stabilized. Infection is judged to be a factor of crowding.

Forest Structure

Forest complexity is lacking within stand 13 with much of the stand exhibiting spruce trees of similar sizes and ages forming a simplistic canopy. White Pine residuals from long ago harvesting do form an additional canopy but their basal area and trees per acre do not establish much of a stocking level. Few standing dead trees are found in this stand, but lots of down dead wood. Trees (spruce) are too crowded and as a result tree growth is very slow and in some areas stagnating.

Regeneration

Substantial regeneration of Norway and some White spruce thorough natural seeding and in areas, plantation has occurred. A.G.S. of 104.7 trees (6 and 8 inch dbh) shows emerging spruce stand that is growing very, very slowly. Species suitability to the growing site is judged to be average at best. No interfering plants or deer browsing were observed.

Site level Risks

Extreme rainfall is judged to be highest risk to this stand due to its proximity to wet lands to the north and its flat topography. Shorter and milder winters would affect accessibility of this stand.

Stand Prescription

This stand had two forest management actions taken: 1) long ago substantial White Pine harvest and 2) a row thinning twenty or more years ago. The effects are: slow growth of the succeeding spruce with heavy stocking of the site with stagnation occurring in certain areas. It is recommended that one of two options be undertaken: A) stand conversion to native hardwoods or B) leave as is and let the spruce eventually form a more or less monoculture with Eastern White Pine scattered throughout the stand.

Option B is selected due to lack of merchantable timber to form an economic basis to pay for conversion. Acceptable growing stocking (A.G.S.) levels suggest the spruce will someday form a merchantable forest stand. This stand should be inspected within three years to check on the possible Cytospora canker.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Eastern White Pine	6.01	27.25	1624
Norway spruce	3.17	7.42	496
Black Cherry	.73	3.95	191
Total	9.91	38.62	2311

Hard wood pulp	27.89	3.91	1.15 cords
A.G.S.	104.70	8.50	3.63 cords

Forest Stand A14

Location: center of the southerly block of Otsego #2, this stand contains 8.7 acres more or less. Soils found in this stand: Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained. Soils will support forest management equipment.

Forest Diversity and Composition

Fairly good species diversity when taking into account all product classes and regeneration, stand A14 is dominated by larch and White Pine in the commercial timber class. General tree health is good to excellent with one exception – the White Pine. Pine showing poor growth and timber quality with in this stand. No insect or diseases were noted.

Forest Structure

Structural diversity is good with different size and age trees throughout the stand forming several vertical layers. Some standing dead trees but much more down dead wood that is promoting good wildlife habitat. Tree crowns are healthy except for White Pine. Spacing is good but the canopy is closing.

Regeneration

Desirable regeneration consists mostly of Red Maple and Yellow Birch and is sparsely distributed within the stand. Park like appearance due to crown closure in stand 14. Most of the species present are suitable to the growing site. Interfering plants and deer browsing are not factors.

Site Level Risks

Highest risk is assigned to extreme rainfall due to proximity to wet lands. Shorter and milder winters would affect accessibility.

Stand Prescription

Harvesting the White Pine and at the same time as much of the hardwood pulp as possible. Strategy would eliminate a poor grower – White Pine, reduce the amount of poor form hardwood, and allow more sunlight to the forest floor thus enabling native hardwood regeneration and also the acceptable growing stock (A.G.S.) – poles.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Larch	17.88	31.81	5483
Eastern White Pine	28.93	22.61	3706
Yellow Birch	10.20	3.51	570
Sugar Maple	.63	3.14	278
White Ash	1.43	1.40	205
Black Cherry	.54	3.69	392
Red Maple	1.43	1.40	152

Total	61.04	67.56	10,786

Hardwood pulp	28.75	14.02	2.28 cords
A.G.S.	72.68	1.88	.60 cords

Forest Stands A15, A16, A17, and A18

There is no stand data for these stands as there are no forest products existing within the confines of these four stands. All four have similar characteristics and as such are portrayed in this one writing. All four were open fields planted and also naturally seeded with the following species: Red Pine, White Pine, Scotch Pine, Norway Spruce, White Spruce, and Trembling Aspen (Popple). These trees are in the seedling and sapling stages of development. Certain stands are stocked heavier to certain species: A15: Red & White Pine, natural seeding, A16: Red and Scotch Pine, White Pine, Popple, and Spruce, A17 Red Pine with natural seeding of White Pine, and A18 Red and Scotch Pines. Located in the south central section of the southerly square of Otsego # 2, Stand A15 has 2.9 acres, A16 2.3 acres, A17 1.8 acres, A18 1.5 acres all more or less. Soil type and drainage: Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained.

Forest Diversity and Composition

Overall, the four stands constitute fairly good species diversity in the coniferous species, individually, species diversity is very limited. General tree health in the four stands appears to be good. Insects and disease vectors were largely not evident with one exception: stand A16 Spruce is showing terminal leader death/damage. The damage appears to be insect induced, could be White Pine weevil but would require closer inspection of the affected trees.

Forest Structure

Structural diversity within all of the stands is not evident; the developing stands are trees basically of the same size and age – typical of plantations and also early succession young forests. Little to no standing or down dead wood is found in these four stands that limit a substantial amount of wildlife habitat that constitutes cover. Tree crowns and spacing are typical of developing stands, crowding is evident and tree crowns are in the differentiating stage of expressing dominance.

Regeneration

In addition to plantation, considerable natural seeding has occurred with a species mix largely coniferous and commercial. Forest stand A17 is interesting in that the planted Red Pine is being usurped by natural seeded White Pine that appears to be better adapted to the growing site. No interfering plants were observed to be exerting any influence over reproduction. Deer Browsing is largely negligible.

Site Level Risks

Good soils and drainage characterize these four stands of Otsego #2. Highest risk factor appears to be drought conditions or other extreme weather such as ice storms. Shorter and milder winters would affect these stands chiefly through accessibility.

Stands Prescription

Largely let the stands develop through natural succession development. Checking on their development in 5 to 10 years should focus on their development into pole stands and resulting stocking and density factors that may suggest pre commercial thinning. Stand health should be monitored as well, specifically the spruce in stand A 16 that may need pesticide application or sanitation cuts in the future.

Forest Stand A19

A19 is located in the center of the most southerly block of Otsego #2 and has 8.7 acres + or -. This stand is the result of an old plantation seed/ clear cut. The Eastern White Pine is the residual trees left after the seed/clear cut and it is believed they were left for seed to start a new stand of White Pine. The resulting stand is exclusively northern hardwoods, mostly sapling/pole stage Red Maple with no White Pine regeneration. Soil Type and drainage classification: Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained. Good workability for this stand.

Forest Diversity and Composition

Species diversity within this stand consists mainly of two species: Eastern White Pine and Red Maple making diversity relatively poor. General tree health is good with the developing hardwood stand of sapling/pole Red Maple showing excellent form and growth characteristics. Same quality for the scattered, mature White Pine. No insect or disease vectors were noted.

Forest Structure

Structural diversity is lacking since this stand is even age resulting from a seed cutting long ago. The stand is slowly evolving into a two stage or layered canopy due to succession factors but still can be classified as one layer or over story. No standing dead trees were observed and little down dead wood thus limiting wildlife cover within this stand. Tree crowns and spacing is very crowded which is typical with an early, naturally seeded developing hardwood stand. Very high tree counts per acre.

Regeneration

Due to the succession stage, tree seedlings are not present but saplings are dominant throughout this stand. These saplings mostly Red Maple is slowly developing into pole timber classification but the poles are scattered throughout the stand. Species (Red Maple) suitability to the growing site is judged to be excellent by their growth characteristics. Some American Beech was observed within the stand but stocking is not high and the species is judged to be not a interfering plant. There are ferns present in light stocking awaiting release. Deer browsing is judged to be inconsequential since the saplings are above the browse line.

Site Level Risks

Blow down, ice storms, and possible drought conditions were assigned highest risks for this stand. Shorter and milder winters affect the access to this stand.

Stand Prescription

Harvest the White Pine as it is mature and of good quality and is not regenerating within the stand. Harvesting due to scattered nature of the Pine's density factor, should be dependent on neighboring stand (s) harvest nature and scheduling and of course market conditions. The remainder of this stands hardwoods to continue to develop into pole timber.

Stand Data

Species	Trees per Acre (TPA	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Eastern White Pine	2.41	14.47	1461
Red Maple	5.10	1.94	246
Red Oak	3.67	.55	132
White Birch	3.67	.55	132
Total	14.85	17.51	1971

Hardwood Pulp	26.20	6,74	1.54 cords
A.G.S.	187.40	5.03	6.31 cords

Forest Stand A20

This naturally occurring hardwood stand has 8.7 acres more or less. Not dense when it comes to stocking levels or basal area, stand 20 boasts some very good quality Sugar Maple Trees that in approximately ten to fifteen years should show exceptional quality in maturity and great growth characteristics. Soil type is: Mardin channery silt loam, 8 to 15 percent slopes. Moderately well drained. This forest stand is located in the northerly central part of the southerly black of Otsego #2.

Forest Diversity and Composition

Species diversity within stand 20 is good with six commercial species of hardwood represented. Sugar maple does dominate in TPA, Basal area per acre, and volume but at levels representing lower percentage of total overall stand acreage. General tree health within this stand is excellent with good growth characteristics. No insect or disease issues were observed.

Forest Structure

Structural diversity is average with timber class trees and pole sized trees both forming over and under stories. Seedling/sapling understory scattered at best. Some dead standing and down were observed but not in higher amounts. Tree crowns are well shaped and occupy most of the crown layer with tree spacing tending to under stocked/wider spacing.

Regeneration

Tree seedlings are absent from this stand with tree commercial saplings widely dispersed throughout the stand. This stand presents a park like appearance. Species suitability to the growing site is excellent with sustaining, good growth. Interfering plant American Beech is found in the northerly section together with interfering ferns throughout the stand. Both are indicative of heavy browsing of deer.

Site level Risks

Highest risk factor would be assigned to ice storm or blow down due to soils and topography. Shorter and milder winters would affect accessibility

Stand Prescription

Due to basal area densities and stocking levels together with Sugar Maple DBH readings, it recommended that no timber harvest occur. However, TSI – Timber Stand Improvement cutting could occur if neighboring stand (s) are conducting forest management activities. Reduction in hardwood pulp basal area would help provide sunlight to the forest floor in amounts not exceeding heavy or light, increase the overall quality of the residual stand, encourage regeneration, and increased growth. It is recommended that this stand be reappraised in ten years.

Strand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Sugar Maple	35.63	23.37	3825
Red Maple	3.92	5.02	572
White Birch	6.93	3.54	641
White Ash	7.37	2.50	430
Red Oak	.92	2.18	272
Yellow Birch	3.03	.66	139
Total	57.80	37.27	5879

Hardwood Pulp	17.15	.11.33	1.89 cords
A.G.S.	47.80	1.64	1.78 cords

Forest Stand A21

This 5.3 acres + or – stand is located in the north central section of the southerly block of Otsego #2. Essentially a mixed wood stand comprised of Eastern White Pine, Norway Spruce and Red Maple this stand is not dense, but not growing well with the Red Maple showing poorer timber quality. Soil types found within stand 21 are: Willdin channery silt loam, 8 to 15 percent slopes. Moderately well drained, and Willdin channery silt loam, 3 to 8 percent slopes. Moderately well drained making for fairly well workability for this stand.

Forest Diversity and Composition

Specie diversity is average to below average with only three major commercial tree species found within the stand. General tree health is average with the Eastern White Pine showing good quality and growth, the Norway Spruce showing slow growth and average quality (branching and size relative to its age), and Red Maple showing poor form and signs of rot present. No insect or diseases were found in this stand

Forest Structure

The forest stand shows multiple vertical layers with Norway Spruce making up both the understory and part of the overstory, Eastern White Pine in the overstory, and Red Maple mostly in the overstory. Significant amounts of both standing and down dead wood are present throughout the stand presenting good wildlife cover but at the same time showing low stand density, low overall growth, and past blow down. Tree crowns show fair crown development with Norway Spruce crowns less developed. Tree spacing is widely applied throughout the stand.

Regeneration

Regeneration within the confines of stand A21 consists mainly of Norway Spruce that is not growing well, and has pronounced mortality. The suitability of the Spruce to the growing site is questionable. The preponderance of Norway Spruce regeneration is a direct result of selective browsing by white tailed deer. Extensive and heavy browsing is evident on the Northern Red Oak seedlings found in this stand. In addition, interfering plants Striped Maple, American Beech are found in significant amounts to impede hardwood regeneration, the results of deer browsing. Ferns exist on the forest floor awaiting sunlight.

Site Level Risks

Highest risk factors are: 1) blow down, and also 2) excessive rainfall as there are signs of past wet problems. Shorter and milder winters would affect the workability of this stand and also the access.

Stand Prescription

With the lack of density (low basal area), and low commercial forest products within this stand, it is recommended that this stand be allowed to naturally progress in stocking levels for the foreseeable future. The main benefits for this stand appear to be for wildlife.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Eastern White Pine	12.91	18.45	3165
Red Maple	38.40	22.25	2847
Norway Spruce	38.79	8.79	2399
Yellow Birch	2.71	.92	182
Total	92.82	50.41	8593

Hard wood pulp	11.89	5.38	1.56 cords
A.G.S.	83.69	1.53	2.66 cords

Forest Stand A22

13.9 acres more or less are found in the confines of stand 22. Located in the north western corner of the southerly block of Otsego #2, this stand is a mixed wood stand. Major soil types and drainage classification: Mongaup-Hawksnest complex, 1 to 8 percent slopes, rock y. Well drained; Mongaup-Hawksnest complex, 25 to 50 percent slopes, rocky. Well drained; and Lordstown-Arnot complex, 1 to 8 percent slopes, rocky Well drained.

Forest Diversity and Composition

This stand has good species diversity with seven (5 significant) commercial species represented. Two species are coniferous, five are deciduous. General tree health is average with growth, form, and quality characteristics that are average at best. White Pine exudes significant upper branching, Norway & White Spruce show very slow growth and average quality, and Red Maple showing average in all categories. No insect or disease factors were observed.

Forest Structure

Structural diversity is good with the stand showing multiple vertical layering: coniferous seedlings and saplings, pole timber (A.G.S), and timber class well established. Considerable standing and down dead wood exists distributed across this stand. Tree crowns and spacing are average at best with crowns not developing to a high degree and tree spacing static.

Regeneration

Little to no hardwood regeneration can be found within this stand due to heavy selective browsing by white tailed deer. Reproduction is mainly coniferous: Norway & White Spruce and Balsam Fir. It appears that species suitability to the growing site is marginal at best. Interfering plant is Striped Maple, scattered in light densities throughout the stand.

Site Level Risks

Without a doubt, highest risk is wind storms – blow down. Ample historical evidence exists throughout this stand. Shorter and milder winters would affect the access to the stand.

Stand Prescription

Little to no forest management has occurred in this stand. Given the slow growth of the Spruce and average growth of the other species together with quality that is average at best; it is recommended that this stand be left to develop naturally and maybe in ten years, a harvest to be employed. In that time, densities should approach higher basal area levels.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Norway, White Spruce	16.58	11.70	1734
Red Maple	15.33	18.64	1656
Eastern White Pine	9.25	14.26	1444
White Ash	10.43	10.14	1226
Northern Red Oak	1.69	7.71	733
Black Cherry	4.44	5.70	666
Trembling Aspen	.39	3.69	206

Total	58.11	71.84	7665

Hardwood Pulp	24.62	15.21	2.49 cords
A.G.S. *	42.33	2.33	1.66 cords

*Most of the A.G.S. consists of slow growth and overtopped spruce.

Forest Stand A23

23 is located in the north western section of the southerly block of Otsego #2 and contains 16 acres + or -. This stand is mixed wood that has had no forest management activity. This stand has a significant old blow down consisting of approximately 2 to 3 acres in size that has eliminated most trees in its vicinity. Soils types and drainage classifications: Mongaup-Hawksnest complex, 1 to 8 percent slopes, rock y. Well drained; and Mongaup-Hawksnest complex, 25 to 50 percent slopes, rocky. Well drained. Workability of this stand for forest management equipment is good.

Forest Diversity and Composition

Six commercial species have been inventoried within stand A23, with four in statistical significance making for good species diversity. General tree health is observed to be good with good to average growth characteristics and resulting good quality in the Red Oak, average quality in the White Pine. No insect or disease threats were observed within this stand.

Forest Structure

Structural diversity is fair with A.G.S. pole timber forming the main understory and the more mature, larger timber class forming the over story. It should be noted however that the A.G.S. (acceptable growing stock) is heavy to Norway Spruce that is slow growing and can best be described as overtopped. Little seedlings or saplings exist in the understory. Considerable standing and down dead wood exists distributed across this stand. Extensive, concentrated blow down exists in this stand from an old wind storm that eliminated trees within a 2 to 3 acre section. Tree crowns are fully developed within stand 23 and growing space or density is fully occupied.

Regeneration

Desirable regeneration of commercial tree species in both the seedling and sapling stages is nonexistent. Species suitability to the growing site can best be described as average, with the Red Oak excellent, and the Spruce poorly suited. Dominant Eastern White Pine is average suitability. Little interfering plants were found, mainly an occasional beech and or striped maple. Main reason for lack of regeneration appears to be crown closure, no sunlight reaching the forest floor. Maturity of the stand and no history of thinning or other forest management activity are additional influencers on lack of regeneration.

Site Level Risks

Highest risk to this stand is obviously blow down due to the stands history of blow downs occurring throughout the stand and the major 2 to 3 acre concentrated blow down. Shorter and milder winter's highest affect on this stand would be access.

Stand Prescription

Timber harvest reducing overall stand basal area by 50 to 60 square feet, employing individual tree selection silvical methodology. Timber harvesting to center on where practical mature White Pine, Red Oak, and hardwood pulp wood where possible.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Eastern White Pine	18.17	72.40	4580
Northern Red Oak	3.58	20.80	916
Red Maple	17.67	18.36	1322
White Ash	2.35	11.99	726
Norway Spruce	14.69	5.77	709
Eastern Hemlock	.82	1.20	75
Total	57.28	130.52	8328

Hardwood Pulp	25.69	31.10	2.98 cords
A.G.S.*	25.16	2.64	1.15 cords

*Consists mainly of Norway Spruce

Forest Stand A24

This Stand consists of 3.3 acres located in the central section of the southerly block of Otsego #2 Mongaup-Franklinville complex, 8 to 15 percent slopes, well drained make up the soil type and drainage class for stand 24. This stand is a Norway Spruce plantation that is not well suited to the growing site and as such is very slow growing and is being usurped by Red Maple coming in from the understory.

Forest Diversity and Composition

Forest diversity within this plantation is poor with only two species occupying important stocking and forest products classifications. General tree health is poor in the Spruce, average to above average in the Red maple. No insect or disease issues were noted.

Forest Structure

There is structural diversity within this stand, mainly an understory and an over story, however, the understory if Red Maple is developing into the over story while much of the over story Spruce is quickly becoming the understory. Little pole sized timber class trees are found in this stand. Some standing and down dead wood exists but is widely scattered. Tree crowns if Red Maple are developing larger crowns given adequate time while the Norway Spruce crowns are not that well developed due to very slow growth.

Regeneration

Little exists within stand A24 in the way of seedlings and saplings of any species. Species suitability to the growing site appears to be Red Maple, not Norway Spruce. No significant interfering plants were observed. Scattered ferns awaiting sunlight on the forest floor exist scattered throughout the stand. Deer browse was insignificant.

Site Level Risks

Blow down is the highest risk factor given the slow growth Norway Spruce slowly being replaced within the stand by the Red Maple through succession. The spruce is susceptible.

Stand Prescription

Let succession work, allow the tree species best suited to the growing site succeed. No course of action is recommended.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Red Maple	47.73	17.16	4004
Norway Spruce	41.93	9.11	3376
Yellow Birch	2.72	1.23	220
Eastern White Pine	.68	4.91	674
Total	93.06	32.41	8274

Hardwood Pulp	18.82	9.66	2.41 cords

Forest Stand A25

11.9 acres more or less are found within this stand located on the midpoint of the most westerly section of the southerly block of Otsego #2. Forest Stand A25 is a natural hardwood stand that contains excellent, mature Sugar Maple and some White Ash. Main soil types and drainage classification: Mardin channery silt loam, 8 to 15 percent slopes. Moderately well drained; and Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained. Workability of the stand is good.

Forest Diversity and Composition

Four species of commercial importance were found on inventory. Species diversity is average with Sugar Maple playing a more dominant role. General tree health is good but significant amounts of Sugar Maple are exhibiting over maturity. No insect or disease vectors were noted within this stand.

Forest Structure

The stand has trees of varying sizes but most reside within the timber class with seedlings and saplings very sparse and pole timber (A.G.S.) amounts relatively low with 12 trees per acre. Structural diversity is lacking, low. Average or common amounts of dead wood – both standing and down are found in 25. Tree crowns are well developed with most of the crown space occupied. Tree spacing is occupying most of the growing space.

Regeneration

This stand, A25 presents a park like appearance due to the lack of seedlings and saplings of commercial species. An occasional Sugar Maple sapling is found but relatively rare. Interfering plant American Beech is lightly scattered throughout the stand. Fern presence is high, awaiting forest disturbance to become very prevalent. Sugar Maple and White Ash show good growing characteristics and as such are judged to be well suited to the growing site. Deer browsing is judged to be high and as such – an impediment to good regeneration.

Site Level Risks

Without question, the highest risk to this stand is blow down. Older and some newer blow downs exist throughout the stand. Shorter and milder winters would affect access to this stand.

Stand Prescription

The Sugar Maple is of good quality and many individuals are showing signs of over maturity and a reduction in vigor and rate of growth. It is recommended that a timber harvest utilizing the silvical system individual tree selection be implemented. 30 to 40 square feet reduction of basal area to be harvested within stand 25. Selection of timber to be harvested should be heavy to Sugar Maple, White Ash, and also hardwood pulp.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Sugar Maple	30.76	69.45	6657
White Ash	9.60	15.01	1377
Red Maple	4.73	8.27	774
Yellow Birch	1.02	1.40	184
Total	46.11	94.13	8992

Hardwood pulp	43.05	11.17	1.88 cords
A.G.S.	12.28	1.05	.60 cords

Forest Stand A26

Stand 26 is located in the south westerly section of the southerly block of Otsego #2. Comprised of approximately 15.8 acres, this stand is basically a mixed wood stand with mature White Pine of good quality, slower growth Norway Spruce of average quality, and some mature Red Maple of poorer quality. This stand is the residual of a long ago plantation row thinning/harvest. Soil types and drainage classifications: Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained, and Mongaup-Hawksnest complex, 1 to 8 percent slopes, rock y. Well drained. The ability to work this stand with forest management equipment is good.

Forest Diversity and Composition

Species diversity is average with five commercial species inventoried; three species dominate. General tree health is average with one species (White Pine) showing excellent growth, one (Norway Spruce) showing average health and growth, and one species showing poorer growth (Red Maple). No insect or disease issues were observed.

Forest Structure

The forest contains a wide variety of tree sizes and ages that contribute to good complexity and layering of the over and under stories. Saplings are lacking. There are ample dead wood both down and standing for wildlife concerns. Trees in this stand are exhibiting high stand stocking and density, essentially competing for diminishing growing space with canopy space fully occupied by various tree crowns.

Regeneration

Through time, there has been fairly good reproduction of White Pine and Spruce but much of this natural seeding is now dead, succumbing to crown closure and the resulting lack of sunlight. Some are surviving not much. Hardwood seeding and some saplings are occurring in the species of red Maple and Yellow Birch but not profusely. Interfering plant American Beech is slowly occupying more of the understory due to its shade tolerance. Little deer browsing was noted.

Site Level Risks

Highest risk factor was judged to be blow down as type of soils is well drained and the Pine is very tall and susceptible. Shorter and milder winters would affect the accessibility of this stand.

Stand Prescription

It is recommended that a basal area reduction of 50 to 60 square feet in the merchantable timber class using the individual tree selection silvical system of marking. Harvesting of the mature White Pine, some mature Norway Spruce, and most of the mature Red Maple where the benefits will be favorable to a good residual crop tree, and allow more sunlight into the stand thereby promoting more regeneration. Reduction of the hardwood pulp stocking is recommended to be implemented at the same time/sale to at least half its basal area being careful of wildlife nesting and cover requirements.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Eastern White Pine	21.58	73.36	5491
Norway Spruce	49.04	45.24	4401
Red Maple	18.75	20.64	1422
Red Pine	2.34	6.89	712
Yellow Birch	1.84	.55	66
Total	93.55	146.68	12,092

Hardwood Pulp	41.50	15.39	2.83 cords
A.G.S.	7.97	.55	.29cords

Forest Stand A27

12.3 acres more or less make up stand 27. A natural hardwood stand exhibiting Sugar Maple and Red Maple as the primary species with American Basswood as tertiary in stocking levels. Red Maple shows poor quality issues, Sugar Maple, good quality. Located in the South Western corner of the Southerly block of Otsego parcel #2, this stand presents a park like appearance. Soils: Mongaup-Hawksnest complex, 1 to 8 percent slopes, rocky. Well drained, and Mongaup-Franklinville complex, 8 to 15 percent slopes. Well drained making for good workability for equipment within this stand.

Forest Diversity and Composition

Four hardwood species make up the vast majority of stocking levels and stand density making for average species diversity. General tree health is good in the Sugar Maple, Basswood, and Ash species having good growth characteristics. Red Maple exhibits poorer growth form, slower growth form, and soundness/rot characteristics. No current or immediate future insect or disease threats observed within this stand.

Forest Structure

This stand shows primarily a two tiered layering with the fastest or more prolific individual crop trees in the dominant crown class with the slower in the co dominant and somewhat overtopped. Some saplings exist along with poles but not in appreciable numbers. Some standing dead and down dead wood is found but not in notable amounts, thus limiting wildlife habitat. Stand shows a park like appearance. Tree crowns are well developed and becoming crowded especially in the Sugar Maple, Red Maple, and Basswood. Tree spacing is good.

Regeneration

Regeneration in Forest Stand A27 is seriously lacking with few to no commercial specie seedlings and a few Sugar Maple saplings in the northern part of this stand. American Beech is present throughout this stand but not in substantial density, Eastern Hophornbeam is widely scattered, and ferns exhibit an underlying presence. Though these plants are interfering, their impact on regeneration is minimal. Primary reason is twofold: 1) White tailed deer browsing, and 2) lack of sunlight to the forest floor.

Site Level Risks

Highest judged risk to this stand would be ice storm damage. Shorter and milder winters would affect the accessibility but not the time frame for working within this stand.

Stand Prescription

With crown closure evident and mature timber present it is recommended that a harvest of approximately 20 to 25 square feet of basal area be instituted to discriminate against the Red Maple and hardwood pulpwood. It is further recognized that one would have to harvest some Sugar Maple to sell the Red, A very experienced Forester to implement. Another goal would be to increase sunlight to the forest floor but not in levels to encourage beech and ferns.

Stand Data

Species	Trees per Acre (TPA)	Basal Area/acre (Sq. Ft.)	Volume/acre (int.1/4) BdFt F.C. 78
Sugar Maple	28.04	31.50	3329
Red Maple	21.56	30.12	2984
American Basswood	6.56	11.15	1472
White Ash	5.25	6.05	792
Yellow Birch	4.79	1.20	193
Total	66.20	80.11	8770

Hard wood pulp	37.86	14.64	2.98 cords
A.G.S.	26.85	1.44	1.04 cords