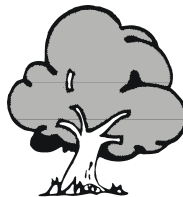


# **LOST LAKE WOODS CLUB 2012 ANNUAL STATE OF THE FOREST REPORT**



Gerald Grossman  
Grossman Forestry Co.  
PO Box 426  
Newberry, MI 49868  
906-293-8707  
[gfc@up.net](mailto:gfc@up.net)



Terry Manty  
Grossman Forestry Co.  
PO Box 426  
Newberry, MI 49868  
906-293-8707  
[terrymanty@grossmanforestry.com](mailto:terrymanty@grossmanforestry.com)

## INITIAL COMMENTS

We are pleased to present the tenth annual State of the Forest Report to the Lost Lake Woods Club, Conservation Committee. As you know this process began in April 2003. We wish to express our appreciation to the LLWC membership, Members of the Conservation Committee, the Conservation liaison, Mr. Joel Blohm, the entire LLWC Board of Directors, General Manager, Mr. Ron Lamrock, and the many, many dedicated volunteers and LLWC staff who helped make this a successful year. Your support has made it possible for us to provide the best natural resource management possible.

We have been operating under the Lost Lake Woods Management System as reviewed by the Conservation Committee and Board of Directors. This system has significant advantages for all current and future members of Lost Lake Woods Club including:

- Efficient to maintain.
- Efficient to implement (organization understands and supports over time).
- Flexible over time.
- Data is timely and available when needed.
- Cost effective (reduce cost and increase gross revenue).
- Continuous improvement via periodic review (annual?) and revisions.
- System allows review and input from members

The database we have developed provides additional analysis of all pertinent timber/habitat information. Initial Geographic Information System (GIS) layers were developed, and additional layers have been developed each year as needs arise. We expect that this report will generate as many questions as answers. The systems that it is based on will position the Club to make the best management decisions for all current and future Club members.

We hope the BOD and LLWC membership can see the advantages this system brings to the efficient management of the entire natural resource base of LLWC ownership. We have continued challenges for the coming year, but through close cooperation, we will continue to bring the membership the highest quality resource management options available.

## **Forest Inventory System & State of the Forest Report**

Information is critical to making good management decisions. The Forest inventory system is fully described within the Lost Lake Woods Club Conservation Committee Guidelines, Appendix C. The Forest inventory system provides the necessary information to generate the long-term management plan, with 5-year management targets and the annual management recommendations. These will be summarized annually in the State of the Forest Report.

The State of the Forest Report will include the following:

1. Discussion of past years events.
2. Discussion of challenges/opportunities for future years.
3. Five year management plan targets
4. Discussion of current habitat distribution and conditions.
5. Size class distribution for selected habitat types.
6. Age Class distribution for aspen.
7. An overview of Special Places designations.
8. Color Digitized Maps:
  - a. By Habitat type
  - b. Aspen by Age Class
  - c. Oak distribution
  - d. Food Plots, Grassy Openings & Roads
  - e. Special Places (when GIS Theme is available)
  - f. Heritage Forest
  - g. Treatment History

## **Forest Management Philosophy**

The forests, waters and wildlife on the Lost Lake Woods Club (LLWC), are important to the members. Through the years many members have made the club property their permanent residence because of the unique natural resource values found here. Our land and water provide an opportunity to participate in and enjoy the benefits of responsible stewardship for approximately 10,000 acres of land. Healthy forests provide a diversity of trees, shrubs, forbs and other plants which provide habitat for many species of wildlife, and provide high quality water for organisms that make up the web of life in our many lakes and streams. Forests are pleasant places to visit and experience nature. The forest of LLWC is used by members and their guests for a wide variety of outdoor recreational activities. The forest also provides a place where members can walk or jog while enjoying the solitude that only a forest can provide. The forest also provides places for people to hunt, fish, and observe or photograph nature. Healthy forests also produce wood products. The harvesting of wood will be done in ways that assure continuing reproduction of this valuable resource, continues to provide optimum wildlife habitat, and maintains visual qualities for current and future LLWC members and guests.

## Forest Management Goals and Objectives

- **Maintain healthy forest ecosystem (maintain relatively stable flow of benefits).**
  - Maintain aspen acreage at approximate current level (1999).
  - Maintain or increase the amount of healthy oak crown from the 1990's levels.
  - Increase conifer cover by 20%
  - Maintain the existing upland openings.
- **Sustainably manage Club resources so future generations have current and/or increased benefits.**
  - Forest Resource base.
  - Fisheries.
  - Wildlife related recreation benefits.
  - Outdoor recreation.

Financial aspects of management will **NOT** be considered while making forest management decisions in support of forest management goals and objectives. However, once management decisions are made, a fiduciary responsibility exists to get the most benefit for the resources available (i.e. minimize cost and/or maximize revenue holding the desired outcome constant).

## 2012 Events

Highlights for 2012 include:

- Grossman Forestry Company became a single point of contact for all natural resource technical recommendations and the forest management and wildlife habitat management on club property.
- Working with LeMarbe and Associates for a wide variety of wildlife and forest management services.
- Maintenance and updating of Geographic Information System. System was updated in 2004 after acquisition of the latest aerial photos for Alcona County and continues to be updated as management practices are proposed and completed.
- Maintenance and updating of database to support management planning.
- Completion of Natural Resources and Wildlife Tours.
- Established 2013 timber sale: to provide continued habitat improvement for deer, wild turkeys, ruffed grouse, woodcock, and other wildlife species. Set up, bid out and currently administering the sale in progress. Timber harvests established since 2003 have provided over 2,000 acres of top quality wildlife habitat and have provided the club more than \$1.2 million in revenue.
- 2014 timber sale fully planned and field work in progress. Bidding will take place in spring 2013.
- Continuing analysis of the status of forest and wildlife resources.
- Continued to work with LLWC staff to improve web access by members to area maps, aerial photos, natural resource technical information and reports.
- Provided technical input to the CC for establishment of new openings/food plots

The 2013 timber harvests were sold on June 20, 2012 to the high bidder for a total of \$106,133.00. It is estimated that Management expenses to establish, and monitor this sale will

be approximately \$13,500 (approximately 12.7% of the sale value). This continues to be a significant source of income and realization of savings to LLWC for timber harvest and wildlife habitat improvement. Per acre costs have increased as the percentage of oak improvement thinnings increase. Significant value is passed onto the Club by making sure each timber sale unit maximizes wildlife habitat.

#### **TIMBER SALE REVENUE & EXPENSE SUMMARY BY SALE THROUGH 1/1/2013**

<b>SALE</b>	<b>YEAR</b>	<b>BUYER</b>	<b>Gross Revenue</b>	<b>Sale expense to 1/1/13</b>	<b>Status</b>	<b>Sale Expenses as % of Gross</b>
6-04	2005	Weyerhaeuser	\$137,856	\$4,597	Closed	3.3%
1-05	2006	AJD	\$200,000	\$11,320	Closed	5.7%
14-06	2007	Welch	\$102,238	\$13,007	Closed	12.7%
1-07	2008	Hincka	\$83,232	\$13,671	Closed	16.4%
5&6-08	2009	Welch	\$151,108	\$12,058	Closed	8.0%
8-08	2009	Pinney	\$97,929	\$3,968	Closed	4.1%
2&3-09	2010	Hincka	\$102,916	\$10,032	Closed	9.7%
15-10	2011	Hincka	\$87,684	\$18,955	Closed	21.6%
7-11	2012	Hincka	\$157,250	\$13,791	Closed	8.8%
20-12	2013	Welch	\$106,133	\$12,098	Sold	11.4%
	2014				Proposed	

Notes: 2007 sale expenses include \$2,100 in costs for marking alternate harvest areas requested by BOD and CC after initial sites were determined and on-the-ground work had been completed. 2011 includes non-commercial red pine thinning.

We are seeing an increase in the per acre costs for timber sales at LLWC. The increases in costs are tied directly to increasing oak marking in aspen stands and the percentage of oak improvement thinnings. The value of oak in these cuttings is considerably lower than aspen. We have witnessed a decrease in the per acre revenue due to softening of timber markets. The timber markets appear to be stabilizing at the present lower levels, but we expect future prices to continue to fluctuate with the economy. Significant value is passed onto the Club by making sure each timber sale unit maximizes wildlife habitat.

#### **TIMBER SALE HISTORY AND TREATMENT SUMMARY**

<b>SALE</b>	<b>YEAR</b>	<b>Aspen Regeneration</b>	<b>Oak Improvement</b>	<b>Red Pine Thinning</b>	<b>Total</b>
6-04	2005	217			217
1-05	2006	239			239
14-06	2007	234	8		242
1-07	2008	195	38		233
5&6-08,8-08	2009	247		97	344
2&3-09	2010	203	22		225
15-10	2011	117	29	15	161
7-11	2012	146	44		190
20-12	2013	146	45		191
	<b>Total</b>	<b>1,744</b>	<b>186</b>	<b>112</b>	<b>2042</b>

**TOTAL FORESTRY EXPENSES BY ACTIVITY AND YEAR 2003 – 2012**

Sum of \$ Expense			Sum of \$ Expense		
Year	Activity Code	Total	Year	Activity Code	Total
2003	Admin	\$625.00	2008	Admin	\$1,210.00
	INV	\$3,035.00		INV	\$467.50
	Travel	\$437.50		Meet	\$907.50
<b>2003 Total</b>		<b>\$4,097.50</b>		Travel	\$1,098.43
2004	Admin	\$3,732.00		TS	\$10,184.75
	INV	\$3,967.65		TS-travel	\$4,253.98
	Meet	\$512.50	<b>2008 Total</b>		<b>\$18,122.16</b>
	Travel	\$1,162.50	2009	Admin	\$877.50
	TS	\$8,446.69		Meet	\$302.50
	TS-travel	\$1,628.75		Travel	\$123.75
<b>2004 Total</b>		<b>\$19,450.09</b>		TS	\$10,503.50
2005	Admin	\$1,451.50		TS-travel	\$4,966.60
	INV	\$800.00	<b>2009 Total</b>		<b>\$16,773.85</b>
	Travel	\$275.00	2010	Admin	\$887.50
	TS	\$6,532.30		Meet	\$171.00
	TS-travel	\$1,856.20		Travel	\$195.23
<b>2005 Total</b>		<b>\$10,915.00</b>		TS	\$9,071.37
2006	Admin	\$1,770.55		TS-travel	\$4,329.23
	INV	\$1,947.50	<b>2010 Total</b>		<b>\$14,654.33</b>
	Travel	\$267.69	2011	Admin	\$895.75
	TS	\$12,294.85		Meet	\$456.00
	TS-travel	\$3,800.73		Travel	\$374.75
				TS	\$7,911.19
<b>2006 Total</b>		<b>\$20,081.32</b>		TS-travel	\$2,844.37
2007	Admin	\$711.25		Other	\$57.00
	INV	\$1,320.00	<b>2011 Total</b>		<b>\$12,539.06</b>
	Meet	\$467.50	2012	Admin	\$411.25
	Travel	\$207.05		TS	\$10,753.27
	TS	\$11,216.00		TS-travel	\$4,421.13
	TS-travel	\$4,090.87	<b>2012 Total</b>		<b>\$15,585.64</b>
<b>2007 Total</b>		<b>\$18,012.66</b>	<b>Grand Total</b>		

## 2013 Challenges & Opportunities

- Implement procedures included in Conservation Committee Guidelines:
  - Forest management planning procedures.
  - Special Places program implementation.
  - Timber Sale procedures.
  - Conservation Committee Policies.
- Review & Implement recommended Natural Resources Management Practices.
  - Implement 2013-14 habitat management including timber harvest and food plot/meadow restoration/development.
  - Continue to refine food plot GIS layer to facilitate management decisions.
  - Develop and refine the five year management targets for the period of 2013-2018.
  - Maintain special places GIS layer, including Michigan Natural Features Inventory.
  - Continue to develop the Heritage Forest System and approval of the Heritage Forest System Plan.
  - Continue to expand communications with LLWC members to assure they have the best information possible for the management of their natural resources.
  - Continue identification in the GIS database, special points of interest for management. These will include, gas and oil well sites, turkey feeding sites, and other specific features identified by the CC.
  - Continue to improve the system allowing LLWC members and staff to use the LLWC web page to directly access natural resource reports, technical data, timber harvest proposals/maps and trail maps for the property.

## Forest Inventory & Analysis

**The aspen/birch habitat types** cover approximately 5,510 acres (59%) of the total habitat on the Club. Aspen is one of the most important wildlife habitats on LLWC, due in part to the range of densities and structure it provides to a wide variety of wildlife. Aspen is a short-lived, fast growing tree species. It is called a pioneer species because it needs full sunlight to grow and becomes established after a severe disturbance (fire, wind throw, flooding, or man made disturbance). From the perspective of ruffed grouse, woodcock, deer and many other species aspen is the preferred habitat. Maintaining the existing aspen habitat will be the primary focus for healthy wildlife populations in the future. There are areas which are presently typed as aspen which have a significant understory of lowland conifers which will be converted to Conifers when the stands are cut in the future. This conversion will be done to increase future winter cover areas for turkeys, snowshoe hares and deer. Some aspen acreage is proposed to revert to natural succession as part of the Heritage Forest management.

### Acres by Habitat Type 2012

Description	2012 acres	%
Aspen	5495	59%
Oak	1237	13%
Water	654	7%
Cedar	503	5%
Lowland Conifer	312	3%
Red Pine	263	3%
Lowland Brush	250	3%
Grass	197	2%
Northern Hardwood	125	1%
Food plot or Field	113	1%
Upland Brush	95	1%
Well	46	<1%
Spruce/Fir	31	<1%
Non-stocked	15	<1%
Paper Birch	15	<1%
<b>Total Forest</b>	<b>9356</b>	<b>100%</b>
Residential	559	
Golf	238	

**These figures reflect edits to the database as a result of inclusion of forested area around the golf course and enhancement of grass opening/food plot data. Previously, forested area around the golf course was included as part of the golf course.**

**The oak habitat type** covers approximately 1,237 acres (13%). However the inventory indicates that individual oak trees are well distributed within other habitat types (3,366 additional acres with oak trees) throughout the LLWC property. Oak mast (acorns) will be a key factor in most years for the health and growth of the LLWC deer herd. One very common misconception about oak is that all oak trees are “good” acorn producers. **It is not the amount of oak trees but the amount of healthy oak tree crowns that determines the amount of acorns produced.** Maintaining dense stands of oak actually minimizes the amount of acorns produced and is risky as dense, unhealthy stands are more susceptible to insect and disease attack (defoliators as well as oak wilt). Consider an apple or cherry orchard where each tree has maximum crown without competition from the neighboring trees. Management prescriptions for oak on LLWC were defined and a draft policy for the management of oak stands was developed during 2006. As we gain more knowledge of the status of this valuable resource at LLWC, we will develop prescriptions for the management of oak which are specific to stands at LLWC.

A map showing the LLWC oak distribution is at the end of the report.

**The conifer habitat type** covers approximately 1,109 acres (12%). Management recommendations within the Conservation Committee Guidelines are designed to slowly increase

the conifer cover by 20% within the next rotational period (60 years). This will be accomplished primarily within the aspen habitat type. Particular priority for treatment will be given to stands immediately adjacent to existing conifers, which provide deer winter cover and areas which can provide corridors of cover connecting critically identified blocks of wildlife habitat. These will be a portion of the aspen type which we allow to revert out of aspen, to a more valuable type for long term wildlife habitat. These sites and stands will be identified as we put together the 5 year management direction. In general, conversion will be targeted in the areas of existing winter deer yards: Peterson Swamp area, western Sucker Creek area, Lost lake area, and North of the Golf Course

Lowland conifers are a very important winter habitat component for wildlife in Northern forests. They provide secure protection from predators, as well as shelter from the wind, cold and snow of the northern Michigan winter. Lowland conifer stands will be specifically managed to retain and expand the type wherever possible. The ultimate goal will be to expand these lowland & upland conifer acres to meet the habitat needs of whitetail deer using LLWC property during most winters. There are several good quality cedar stands within the forest. These stands provide top quality deer winter cover and will be managed for old growth, and not cut unless environmental conditions dictate a salvage cutting to maintain the health of the cedar type of overall forest. Such management will benefit many other species of wildlife and plants, which are found in these habitat types.

**The upland opening habitat type** covers approximately 310 acres, excluding the golf course, and shooting ranges. The Golf Course and ranges add an additional 237 acres to the opening acreage. Since openings are of particularly high value to many species of wildlife, all openings within LLWC ownership, as well as openings and crop fields within ½ mile of LLWC property, must be included into the overall wildlife management scheme. Due to the generally poor soil quality of most of the LLWC property the value of these openings is even more important. The location of these openings will be evaluated in relationship to other timber types and existing habitat developed specifically for wildlife. A GIS layer specifically designed to identify and track the management of food plots and managed openings has been started, and needs to be updated with accurate acreages for each opening.

The LLWC Forest Type Map showing the distribution of all habitats on the ownership is included later in the report.

## **Aspen/Birch Resource**

The aspen habitat type represents 59% of the total habitat on the Club. In a “perfect world” the age distribution would be equal from age 0 through age 50. In other words 1/50<sup>th</sup> would be regenerated per year on a consistent basis or approximately 20% of the acres would be in each 10-year age class.



**Aspen/Birch acres by age class for 2012 and 2004.**

Age Class	Total (ac)	Total (ac)			
	2012			2004	
0-10	1649	30%		1449	26%
10-20	1127	21%		342	6%
20-30	257	5%		250	4%
30-40	187	3%		603	11%
40-50	626	11%		1432	26%
50+	1649	30%		1527	27%
<b>Total</b>	<b>5495</b>	<b>100%</b>		<b>5604</b>	<b>100%</b>

The above chart shows the change in aspen/birch age distribution for the past eight years of forest management. Holding aspen acreage past 50 years of age is a common practice, but is not without risk. The ability of aspen stands to regenerate after a fire, windthrow, or regeneration harvest deteriorates over time. The inventory indicates over 800 acres of aspen exceed 60 years of age. These acres may not be able to recover from an insect defoliation (forest tent caterpillar, gypsy moth, aspen totrix etc.) due to deteriorating vigor. In addition the ability to sprout vigorously, and create the desired wildlife habitat, is deteriorating.

Aspen requires full sunlight to properly regenerate. Aspen is regenerated by removing the majority of the trees (shade). The ability of aspen stands to properly sprout is impacted by age of

the trees. In general, plans should be made to regenerate aspen areas when the stand is between 40 and 50 years of age. Stand vigor begins to deteriorate when the stand exceeds 60 years of age. **Currently there are approximately 964 aspen acres that exceed 60 years of age.**

A map showing the LLWC aspen/birch by age class is at the end of the report.

**Habitat inclusion within aspen management areas:**

- Individual oak/beech trees and small oak/beech inclusions are important habitat components within aspen areas. Poor quality oak/beech trees occurring within the aspen habitat will be individually evaluated and individually marked for harvest only if removal will help increase the amount of healthy oak crown remaining (its removal will release a healthy oak tree). Harvest of these trees will occur in conjunction with harvest of the aspen stand they are part of.
- Softwood (spruce, fir, pine) inclusions are important habitat components within aspen areas. Established softwood regeneration should be left within most aspen harvest units.

**Visual management and cutting patterns in proposed sale areas:**

- a) Harvest units along roads should allow people to drive in and out of a variety of habitat types and age structures.
- b) Roads, through the area, should provide diversity, by giving a partial view of harvest units, as well as views of uncut and/or partially cut stands.
- c) Harvest units, larger than 40 acres, will be broken up by uncut islands of trees and/or individually designated trees.
- d) Harvest units will have irregular shapes achieved by following type lines between stands, moving diagonally across contour lines, copying the shapes and size of natural openings in the area, moving in and out along roads, leaving islands of trees uncut, etc.

**Oak management:** It was recommended that an initial demonstration area be established with the 2006-07 timber harvest to demonstrate the positive harvest impacts on oak stands. This unit was used as a demonstration site during the 2008 forest tours. The site informed and educated members to the valuable of management of oak for future mast production. The oak stands are in need of treatment on LLWC property to assure the long term health of valuable oak stands. We will continue to educate members in the need to maintain healthy viable stands of oak on the property. Since 2006, oak management has continued to be a component of the habitat management program. A portion of each year's habitat management program will also focus on oak management. Management options will range from removal of poor quality oak trees in aspen sites to thinning of oak stands where appropriate. We propose a harvest of approximately 40 acres per year of mixed oak/aspen stands (typed as oak). In these stands, we will propose heavy removal of oak to allow expansion of aspen. Oak retained in these stands will be selected to provide large open crowned trees which will provide mast production for wildlife. We also propose 20-30 acres of high quality oak be thinned each year with the main objective to release crowns for future mast production. These thinnings will be in designated oak pole stands, primarily in the NW portion of the club.

**Opening/Meadow management:** In 2005 it was recommended that the opening component be expanded by at least 200 acres by 2010. Location of the newly created openings will be critical. Where possible, new openings will be coordinated in scheduled for timber harvest areas. It is possible to use abandoned decking sites and skid trails for openings.<sup>1</sup> It appears that our goal of openings is close to being met by the aspen cuttings completed in the past 4 years. Emphasis for opening management will be to maintain the present acreage in quality herbaceous cover and to work to distribute openings better over the landscape. This will require the abandonment of some poor quality openings and/ or “moving” opening acreage from one portion of the property, to other areas lacking adequate opening components. **The opening management program should be reviewed and new targets established for the next 5 year period.**

## Five-year Management Plan Targets

In accordance with the Conservation Committee Guidelines, the following 5-year management plan targets are recommended. The 5-year targets will be reviewed and updated annually. Each year a 1-year implementation plan will also be developed. These plans and targets will support the Forest Management Goals and Objectives.

For the 5-year period 2013-2018, emphasis will be on continuing to implement positive steps to preserve the aspen habitat since this is the habitat type most susceptible to conversion to other habitat types. The older aspen is also most susceptible to insect and disease loss and wind throw. The goal set by the BOD/CC in 2003 was at least 1,000 acres of aspen be regenerated during the 5-year period (2004-2009) or 200 acres+/-/year. Of the approximately 1509 acres of aspen that was cut and regenerated over the past 10 years, slightly more than 1500 acres of this regeneration occurred since 2004. The average aspen harvest prior to 2004 averaged approximately 100 acres per year. It is recommended that this degree of aspen harvest be continued due to the current age structure, which is at risk to undesirable conversion over the next 5-10 years. Due to the age structure, we recommend 150 acres of aspen be cut for the next 2 years and after that the acreage of aspen harvest should be approximately 150-170 acres per year.

Individual site priority for annual aspen regeneration during this period will continue to be:

- Continue to distribute cutting across the large old aged aspen stands to reduce stand size and create a better distribution of various age classes.
- A least one regeneration, unit should be immediately adjacent to deer wintering cover. The size of these cuts will be determined by the number of deer expected to be present during the winter of the harvest, as well as expected deer numbers during subsequent growing seasons. Sale areas must be large enough in size to assure adequate regeneration of aspen sprouts to escape browsing by deer during the subsequent two growing seasons. As the deer herd is increased again, harvest sites adjacent to deer winter areas may have to be in excess of 40 acres in size to assure adequate regeneration of the aspen.
- Aspen regeneration units will be distributed to ensure the most optimum age class distribution possible to benefit the most wildlife species as possible.

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<sup>1</sup> See the report: A Proposal for restoration, maintenance and development of Openings on LLWC submitted to the BOD in July, 2005 for details.

LLWC Treatment by Priority map is included at the end of the report.

**Tops left in harvested areas:**

- Tops offer feeding areas, roosting sites, and breeding and rearing areas for shrews, voles, chipmunks, bats, rabbits, squirrels, pine martins, salamanders, tree frogs and toads, woodpeckers, wood ducks, ruffed grouse, chickadees, and even bears.
- Smaller life forms such as insects, centipedes, spiders, snails, mushrooms, mosses, lichens, and microorganisms are key players in nutrient recycling and decomposition processes, and are an important food source for many birds, mammals, and reptiles.
- Intact downed tree tops protect small plants, sprouts, and seedlings from over-browsing by deer.
- Tops left provide benefits to the wildlife as a valuable winter food source. In the short term the highly nutritious buds are eaten by deer.

As time goes by and the tops decomposed, the minerals held in the tops will be released, helping to build top soil. This is especially important in areas that have low productivity sandy soil. By requiring tops be left and eliminating whole tree skidding, there is also much less disturbance to the soil.

**Forest Health**

All of the forest management activities on LLWC are designed to improve wildlife habitat. An integral part of improved wildlife habitat is improved forest health. For example, aspen management has targeted older stands at risk of mortality. Management of the red oak stands improves their overall health and quality. In spite of our best efforts, there are insects and diseases, mostly non-native species, which threaten healthy trees.

In the summer of 2008, a suspected case of Oak Wilt was investigated and found to be not Oak Wilt but an infestation of Two-Lined Chestnut Borer (TLCB). The TLCB (*Agrilus bilineatus*), is a wood boring insect in the same genus as the Emerald Ash Borer. It attacks oak trees of all species but is more commonly found in oak trees that are stressed. TLCB was discovered west of the horse barn in oak trees left after a previous aspen harvest. Grossman Forestry Company and LLWC staff will continue to monitor this site during the coming years to track any further evidence of infestation.

During the summer of 2009, ash trees were found with symptoms of Emerald Ash Borer (EAB) infestation. Trees were found west of the five corners area along the main trail. Lost Lake Woods Club is included within the EAB quarantine area, along with the rest of the Lower Peninsula and some counties in the Upper Peninsula. Emerald Ash Borer is a non-native pest that attacks ash trees (white, black and green ash). Mountain Ash is not a member of the ash family and has not been found to be susceptible to EAB.

In 2011 symptoms of beech bark disease were identified on American Beech in an isolated portion of the Club. Beech bark disease is a necrotic canker (spread by insects) that kills beech trees. Beech bark disease is found throughout the range of beech in northern Michigan. As with any other suspected diseased tree, care should be taken to minimize the spread of diseases (i.e. do not spread disease by moving firewood). Continued monitoring of the infected area will take place.

## Carbon Markets

Lost Lake Woods Club joined the Michigan Managed Forest Off-set Program in the spring of 2009. As part of this program a carbon cruise was completed, prior to the 2009 growing season. The preliminary results are as follows:

	Carbon Credit Distribution (CO2e mT)				
	Gross Cseq	Removals	Subtotal	Reserve 20%	Salable
2009	40829.11	0	40829.11	8165.82	32663.29
2010	40138.62	0	40138.62	8027.72	32110.89
2011	38598.84	0	38598.84	7719.77	30879.07
2012	32349.54	0	32349.54	6469.91	25879.63

Removals for 2009 will be "0" as the cruise was after the 2009 harvest. For 2009 the estimated salable tons are 32,663. This is subject to an audit and registration of the credits.

With all the political uncertainty surrounding the carbon offset market, the current price for carbon on the Chicago Climate Exchange is essentially \$0.00/Ton. This topic is constantly changing and the Delta Institute and/or Grossman Forestry Company will keep LLWC informed as the situation changes (January 2010).

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The information above was compiled in January 2010. Since then the Chicago Climate Exchange has folded. There are 3 articles on the Grossman Forestry Company web site that pertain to this (<http://www.grossmanforestry.com/CarbonCredits.php>)

- CCX Carbon Project comes to an end -NY Times article 1/3/11
- Delta Institute - Michigan / Illinois Pilot Project --CASE STUDY
- PRESS RELEASE -- Carbon Credits SOLD -- 11/10/08

This topic is constantly changing and the Delta Institute and/or Grossman Forestry Company will keep the Club informed as the situation changes.

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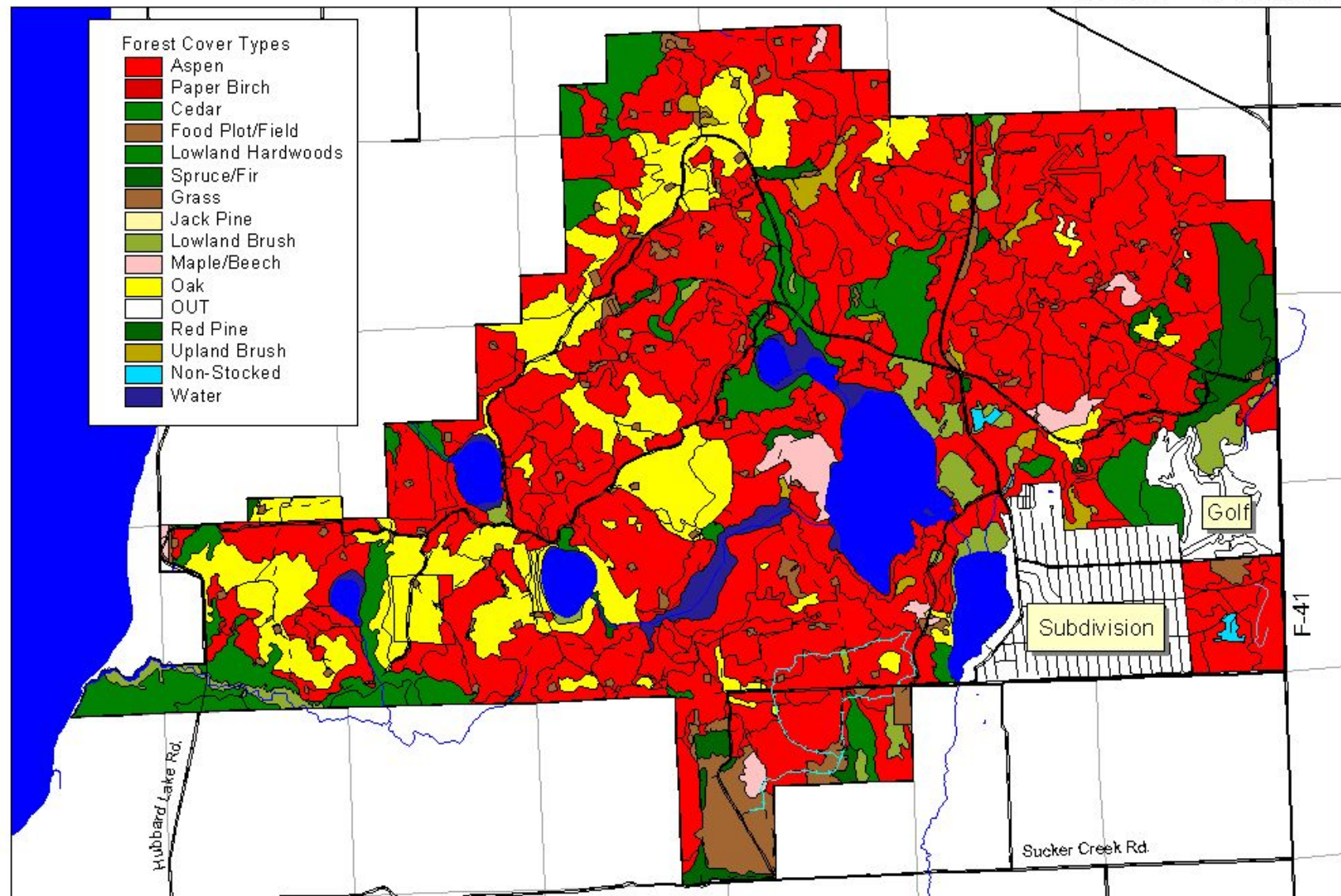
In 2011 the Delta Institute and Grossman Forestry Company began preliminary discussions with Finite Carbon <http://www.finitecarbon.com/index.html>. To date nothing has progressed beyond preliminary discussions.

# LOST LAKE WOODS Forest Cover Type

1 0 1 Miles

1:44000

01/10/13

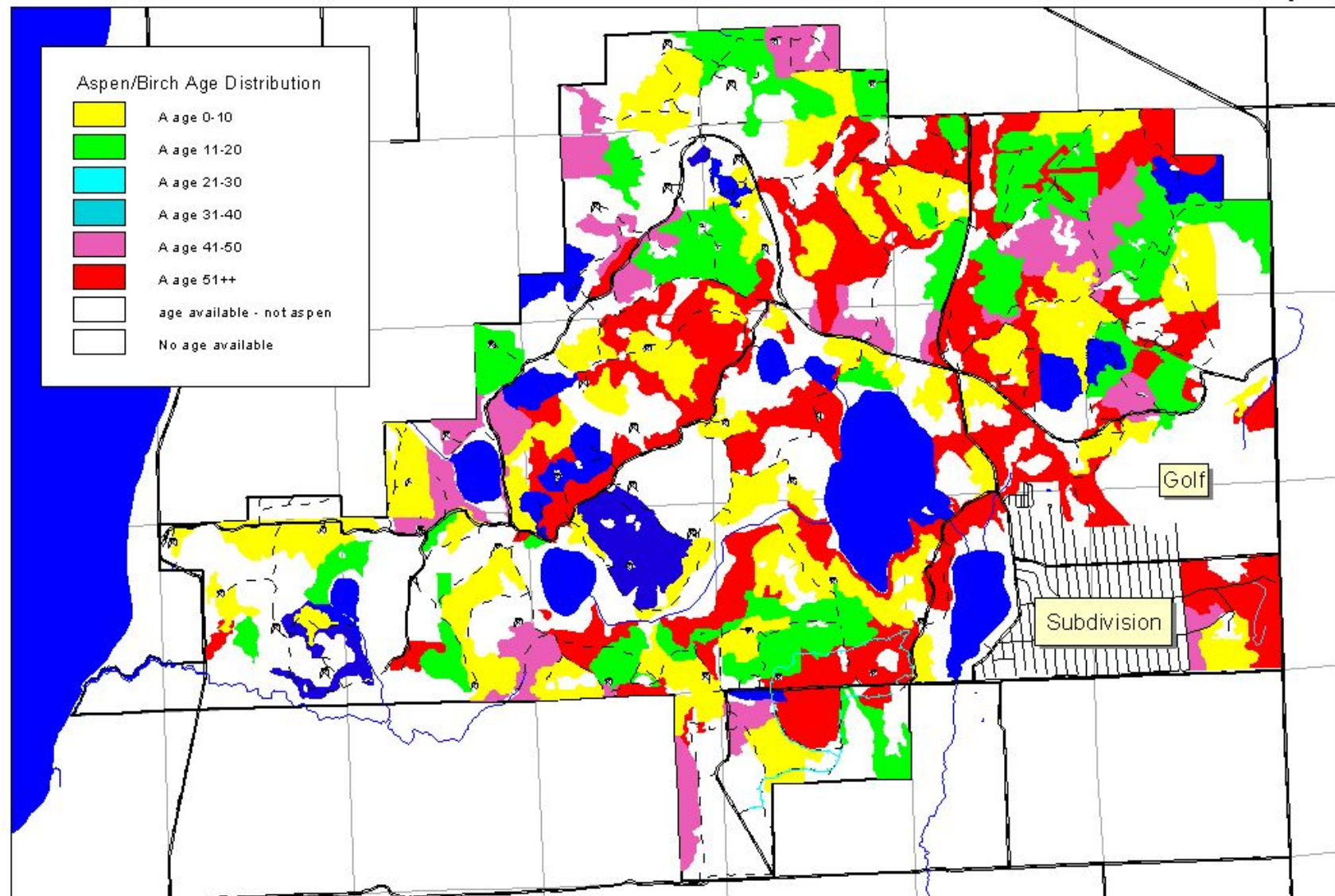


LOST LAKE WOODS  
Aspen/Birch by Age Class

1 0 1 Miles

1:44000

01/10/13



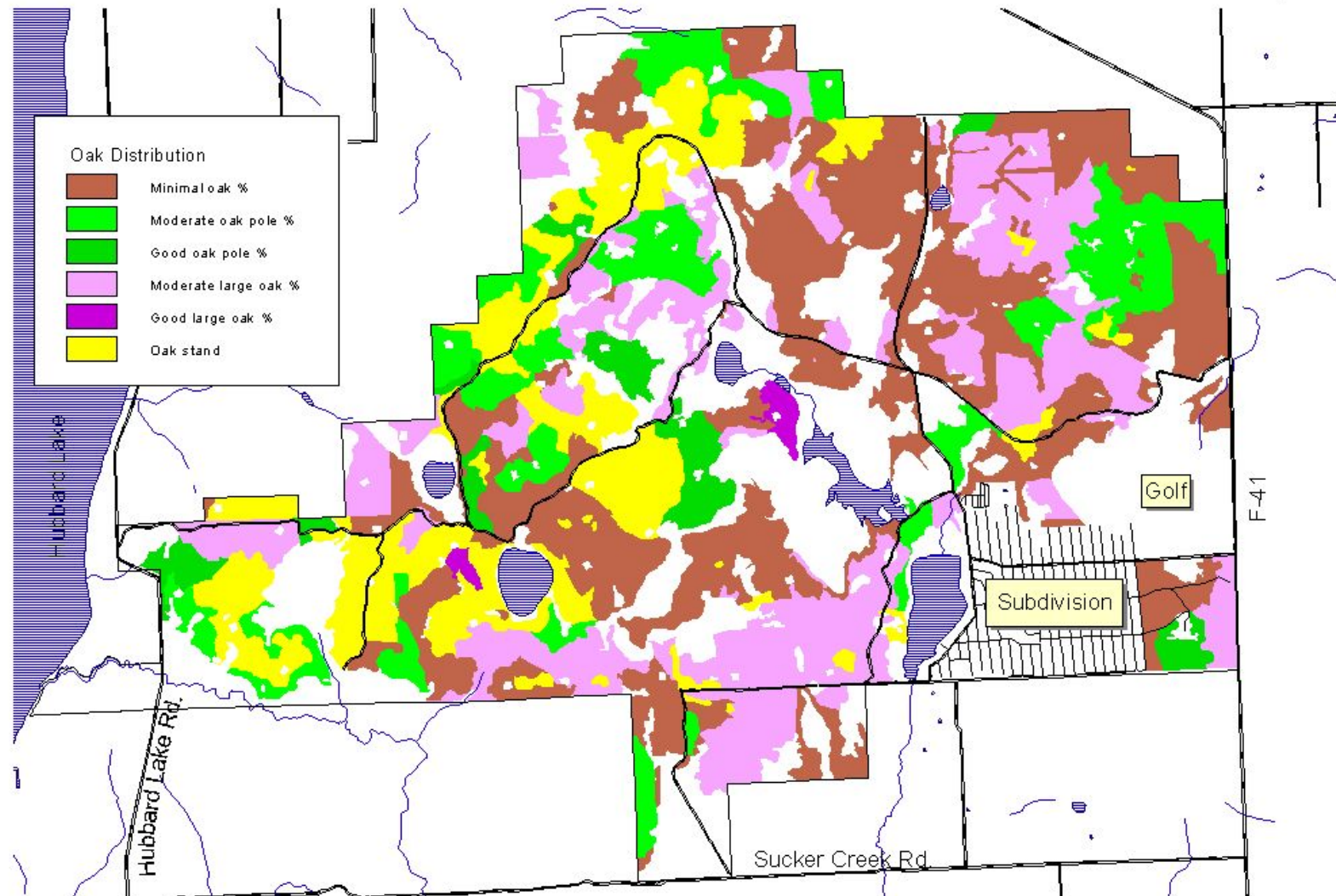
LOST LAKE WOODS  
Oak Distribution

01/05/12

1:44000




1 0 1 Miles



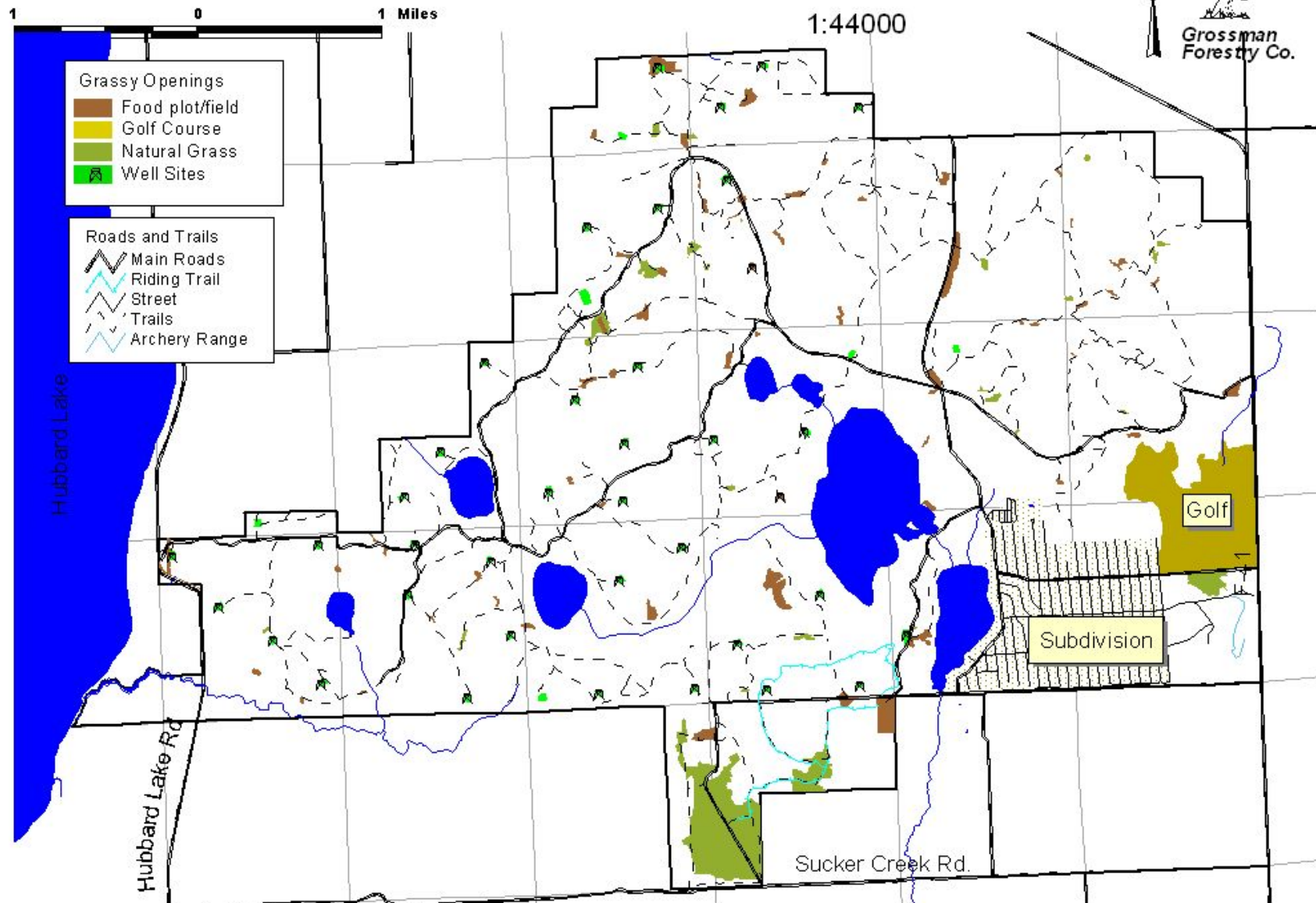
# LOST LAKE WOODS Food Plots and Openings

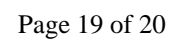
01/10/13

N



Grossman  
Forestry Co.





LOST LAKE WOODS  
Heritage Forest

1 Miles

1:44000

01/16/07

