

7.0 AGRICULTURAL, NATURAL & CULTURAL RESOURCES

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Chapter 7: Agricultural, Natural, & Cultural Resources

Introduction

This chapter describes existing agricultural, natural and cultural resources in the town of Three Lakes and identifies implementable strategies to preserve important local assets for the enjoyment and benefit of future generations.

Wisconsin's Comprehensive Planning Law includes 14 goals for local comprehensive planning. The goals listed below specifically relate to planning for agricultural and natural resources:

- protection of natural areas including lakes, wetlands, wildlife habitats, woodlands, open spaces and environmental corridors
- protection of economically productive agricultural areas
- protection of agricultural lands for agricultural purposes

Agricultural, Natural & Cultural Resources Vision

In 2030, the Town of Three Lakes has utilized local land-use tools and intergovernmental partnerships to preserve productive agricultural lands, wildlife habitat and natural resources, and places of local cultural and historical importance.

The town's natural environment provides abundant opportunities for outdoor enthusiasts including hunting, boating, fishing, camping, hiking, bicycling, canoeing, kayaking, Nordic skiing, snowmobiling, among others. These same natural assets provide an array of opportunities for outside learning experiences.

Good stewardship of the water, lands and natural resources not only defines the heritage of values we currently have, but also helps to identify our future opportunities.

VISIONS, OBJECTIVES, POLICIES AND GOALS

Wisconsin's Comprehensive Planning law requires that the Agricultural, Natural and Cultural Resources element contain a compilation of objectives, policies, goals, maps and programs for the conservation, and promotion of the effective management, of natural resources such as groundwater, forests, productive agricultural areas, environmentally sensitive areas, threatened and endangered species, stream corridors, surface water, floodplains, wetlands, wildlife habitat, metallic and nonmetallic mineral resources consistent with zoning limitations under s. 295.20 (2), parks, open spaces, historical and cultural resources, community design, recreational resources and other natural resources.

From all of the community forums, surveys and public hearings, the following Housing issues concerned the citizens of Three Lakes. Goals were then developed to address these issues while reflecting the vision statement that guided the development of the comprehensive plan.

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<u>ISSUES</u>	<u>GOALS</u>
MAINTAIN AN ECONOMICALLY VIABLE AGRICULTURAL SYSTEM FOR THE LONG TERM	Preserve rural character by maintaining agricultural lands, open space and rich natural biodiversity
MAINTENANCE OF THE THREE LAKES CHAIN OF LAKES AS A HEALTHY BODY OF WATER	Develop a Comprehensive Lake Management Plan (CLMP)
PROTECT WATER QUALITY AND QUANTITY	Protect ground and surface quality to protect human health and the natural environment
MAINTAIN ECOSYSTEMS DIVERSITY	Preserve and enhance wildlife and fisheries habitat
CULTURAL AND HISTORIC PRESERVATION	Preserve the cultural history (both historic and prehistoric) for interpretive values and the enjoyment and fulfillment of future generations
CULTURAL ARTS	Promote area artists and their talents in the North Woods

A full expansion of the above Issues, Goals, Objectives and Policies can be found in *Chapter 12: Implementation*.

Agricultural Resources

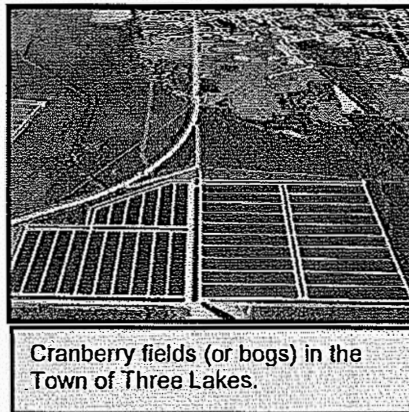
Upon completion of the railroad through the town of Three Lakes in 1881, logging of the virgin pine forests in the town began. The Three Lakes area was logged from the 1880s through 1930, finishing with cutting the stands of the hardwood forests. This timber harvest activity resulted in a timber type change to more hardwoods and early succession species such as aspen. This changed the woodland character on the landscape as the pine timber types diminished. In the 1930s, and again in the 1990s, large-scale reforestation efforts were undertaken to replace and restore the virgin timber with new tree plantings.

Historically, two of the dominant agricultural crops in Three Lakes have been potatoes and cranberries.

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- **Potatoes.** Following the timber harvest and as land was opened up for agriculture in Three Lakes, potato farms sprung up throughout the Town on higher ground. Potato farming was and is particularly adapted to the area. The soils are sandy and nutrient-poor, and the growing period in the area is limited by the average freeze-free summer period of 109 days. Potatoes can grow under these conditions, while many other crops cannot. At one time there were large areas throughout the township, providing an abundance of potatoes for the Midwest region. The last two farms, the UW State Potato Farm and Oneida Farms harvested their last potato crop in the early '80's. Some of the reasons for the demise of the potato farms had to do with lack of family succession, high transportation costs, and opportunities for higher land use value.
- **Cranberries.** Cranberries are native to northeastern North America, including Wisconsin. They are Wisconsin's leading fruit crop both in terms of acreage and value. Cranberries are currently (207) produced on about 18,000 acre of Wisconsin's 72 counties. Commercial cranberry production in Wisconsin began in the late 1860s. Early marshes were developed by simply digging ditches around stands of native vines and encouraging growth. Modern growing practices (see image at right) have significantly increased productive capacity.¹



Cranberry farming is carried out on lower ground in the Town. Low berms isolate cranberry bogs from surrounding marshland, and flooding is used as a method of preventing frost damage and facilitating harvesting.

- **Other Historically Important Crops.** Harvesting of Maple syrup, mushrooms, hay, eggs, etc. have been an important part of our culture since the early settlers. A number of families still value the ability to harvest the fore mentioned crops to either supplement their income or provide a favorite pastime. Granted this is not on a commercial scale, but still very important to those that rely on being to grow and use some of their own food.

LOCAL IMPEDIMENTS TO AGRICULTURAL PRODUCTION

Significant tracts of public lands in Three Lakes are unavailable for agriculture crops and farming other than managing natural forest resources for timber and habitat for wildlife. Approximately 36.4% of Three Lakes is classified as exempt acreage and managed by county, state or federal government. These lands are unavailable for private commercial agricultural use. They include the Chequamegon-Nicolet National Forest land, the Thunder Lake State Wildlife Area, portions of the Rice Lake and Spur Lake State Natural Areas in the town, as well as the significant acreage of other lakes and streams in the town. Additionally, the extensive

¹ Much of the text in this section was excerpted from Wisconsin State Cranberry Growers Association website, www.wiscran.org, 2009.

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wetland acreage and high water table within the town of Three Lakes is unavailable for most forms of agriculture other than cranberry farming.

Weather is also a limiting factor. In Oneida County, the winters are very cold and the summers are fairly warm. However, the growing season is short due to late spring and early fall frosts and a number of cool nights. The total annual precipitation is 33.7 inches per year with the majority falling in the summer. The average winter snowfall is 53 inches. The average summer temperature is 66 degrees Fahrenheit and the average winter temperature is 14 degrees Fahrenheit.

Agricultural land is a threatened component of the Three Lakes landscape. Residential and commercial growth in rural communities typically occurs through "green field" development; that is, it takes place on land not previously developed. Green fields include woodlands, wetlands, grasslands, fallow areas and agricultural lands. In the town of Three Lakes, a substantial portion of land is classified as wetlands. Therefore, anticipated future development in the community will result in a significant decrease in available agricultural acreage unless steps are taken to preserve farming and forest management as both a viable land use and as an income producer for farm families.

Issues that may threaten the long-term viability of farming and forest management in the town of Three Lakes include:

- A projected year-round population approaching 2,600 by the year 2030;
- Continued development of vacation and seasonal homes;
- The desire for large-lot residential development;
- The increasing average age of the typical farm operator combined with fewer young people interested in farming.
- Zoning regulations that discourage the continued agricultural use of lands
- Fragmentation of our open and wild lands into smaller parcels of land
- Spread of non-native invasive species
- Land tax evaluation structure that raises the value of land base such that it favors subdividing and development rather than continued agricultural use.

A variety of tools are available to local governments and farmers to preserve prime agricultural lands. These include Wisconsin's Farmland Preservation Program, various Natural Resource Conservation Service programs, and the purchase or transfer of development rights, among others. These programs are most effective in communities where farming will remain a primary land use over time. Successful farmland preservation efforts are dependent upon the support of local farmers and their ability to pursue new markets to sustain operations over time.

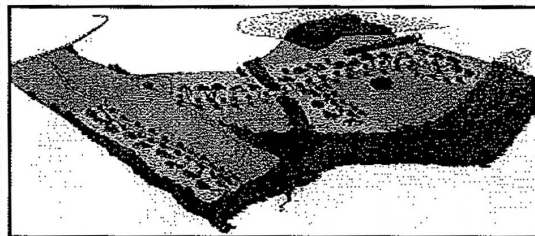
Long-Term Sustainability of Farming

This section provides options available to the town and local farmers to preserve locally owned agricultural operations. Local land trusts and conservation subdivision designs are encouraged, but may not be appropriate in all areas. Other strategies to protect farmland include:

- Permitting value-added operations such as on- and off-farm direct retailing (roadside farm stands);
- Encouraging local schools to provide education to students about careers in farming and forest management;
- Transitioning from conventional to organic farming techniques;
- Assure natural wild foods remain available for those who wish to gather them;
- Encourage a farmers market or co-operative;
- Encourage a tax assessment based on current use of the land as well as its value;
- Continue to encourage the use of managed forest lands and the tax incentive this offers;
- Assure guidelines such as Wisconsin's best management practices are being followed in farming and timber harvest operations
- Encourage certification in programs that increase the professionalism of agriculture and protect our resources such as the Wisconsin Master Logger Certification

CONSERVATION-BASED DEVELOPMENT

Conservation-based development techniques may involve the establishment of a conservation easement (see box on page 7-6). In a conservation subdivision, homes are "clustered" together so that a greater proportion of the land is protected from development.



- Encourage the preservation of natural lakeshore frontage, such that there will continue to be shoreline that is available to public use and protect critical wildlife habitat.
- A typical conservation subdivision will require that 40% of a site be set aside and preserved as undevelopable open space.
- Protection and maintenance of the conserved area can be accomplished through a conservation easement with an appropriate conservation organization, land trust, homeowners association, government body or through deed covenants.
- The areas to be conserved must be protected indefinitely.
- The land designated for protection will be preserved as natural habitat, open space or farmland. If it is farmland, special consideration should be given to where residential development is located (e.g., prevailing winds, buffers, etc.) to allow farm uses to coexist harmoniously with residential uses.

How is a Conservation/Cluster Subdivision Created?

1. **Develop a Yield Plan.** This plan essentially shows how many homes could be developed if a traditional subdivision layout were used.
2. **Identify Primary and Secondary Conservation Areas.** Primary conservation areas include poor soils, steep slopes, wetlands, waterways and floodplains that are not conducive to development. Secondary conservation areas include other areas of local importance targeted for protection (i.e., farmland, woodlands, scenic views, etc.).
3. **Locate the Home Sites.**
4. **Include Roads, Sidewalks and Trails.**
5. **Draw the Lot Lines.** This is usually the first step in a traditional approach.

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- In conservation subdivisions, the development of walking and bicycle trails is encouraged, particularly to provide limited access to protected natural areas.

LAND TRUSTS AND CONSERVATION EASEMENTS

Land trusts provide another option to landowners seeking to protect natural areas and farmland. They offer landowners advice on protection strategies that best meet the landowner's conservation and financial needs. Land trusts accept lands donated by landowners for conservation purposes. Land trusts can also work with landowners to establish conservation easements (see below).

What is a Conservation Easement?

A conservation easement is a voluntary legal agreement between a landowner and a land trust or government agency that limits present and future development of a parcel.

Under a conservation easement, the landowner retains ownership of the land (within the terms of the easement – i.e., only for farmland or natural space, not for development) and the land trust takes the responsibility for protecting the land's conservation values.

Donated conservation easements that meet federal tax code requirements can provide significant tax advantages to landowners because their land will be taxed as undevelopable land, which is a much lower rate than developable land. Qualified easements may also generate charitable contribution deductions for income and transfer tax purposes.

SPECIALTY FARMING

Thus far, this chapter has focused on traditional agricultural operations (e.g., crop and family farming). Specialty or niche farming provides an alternative to conventional agricultural production, particularly for smaller farms attempting to compete with large agricultural operations. The location of the town of Three Lakes and ready highway access provides an opportunity to market directly to the larger population centers of northern Wisconsin. Marketable agricultural products may include:

- Organic fruits and grains (sold locally at a collective farmers' market in the Town of Three Lakes or in nearby cities)
- Maple syrup, and pine trees (for landscaping or holidays) from local tree farms
- Horse farms (offering boarding and potential future trail access)
- Growing of crops for production of energy
- Bio-thermal energy from wood fiber
- Gathering natural occurring foods (mushrooms, berry, herbs, etc.)
- Topsoil or organic soil production using composting

Organic food is a fast-growing industry in the United States. Products that once occupied a boutique marketplace niche are becoming mainstream, as consumers seek healthier alternatives to conventional farm produce. Organic and specialty farming counter the notion that farms must become very big or be lost to development. They provide a profitable choice for small, local farmers. Gathering of natural foods and herbs can be marketed and sold as specialty items. Additional information about strategies to sustain agriculture through specialty farming is included in the Economic Development chapter. In addition, the Future Land Use chapter identifies agricultural districts to target farm preservation.

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Natural Resources

Each community's physical setting, landscape and natural resources will be different. Three Lakes has a rich mosaic of forests, agricultural lands, aquatic communities, as well as developed areas. The comprehensive planning process helps to identify those natural resources in the community which the people value most. Existing development patterns, community issues and concerns, projected growth rate, natural resource opportunities and concerns will require solutions from the local government, residents and landowners.

Citizens are made aware of the natural resource goals in the comprehensive plan to better understand the relationship between natural resources and the economic development, land use, community facilities and transportation. Knowledge about existing natural resource conditions, trends and opportunities is fundamental to a successful planning process. Information about local resources will assist the community in making informed decisions relative to the goals of natural resource use, protection and restoration.

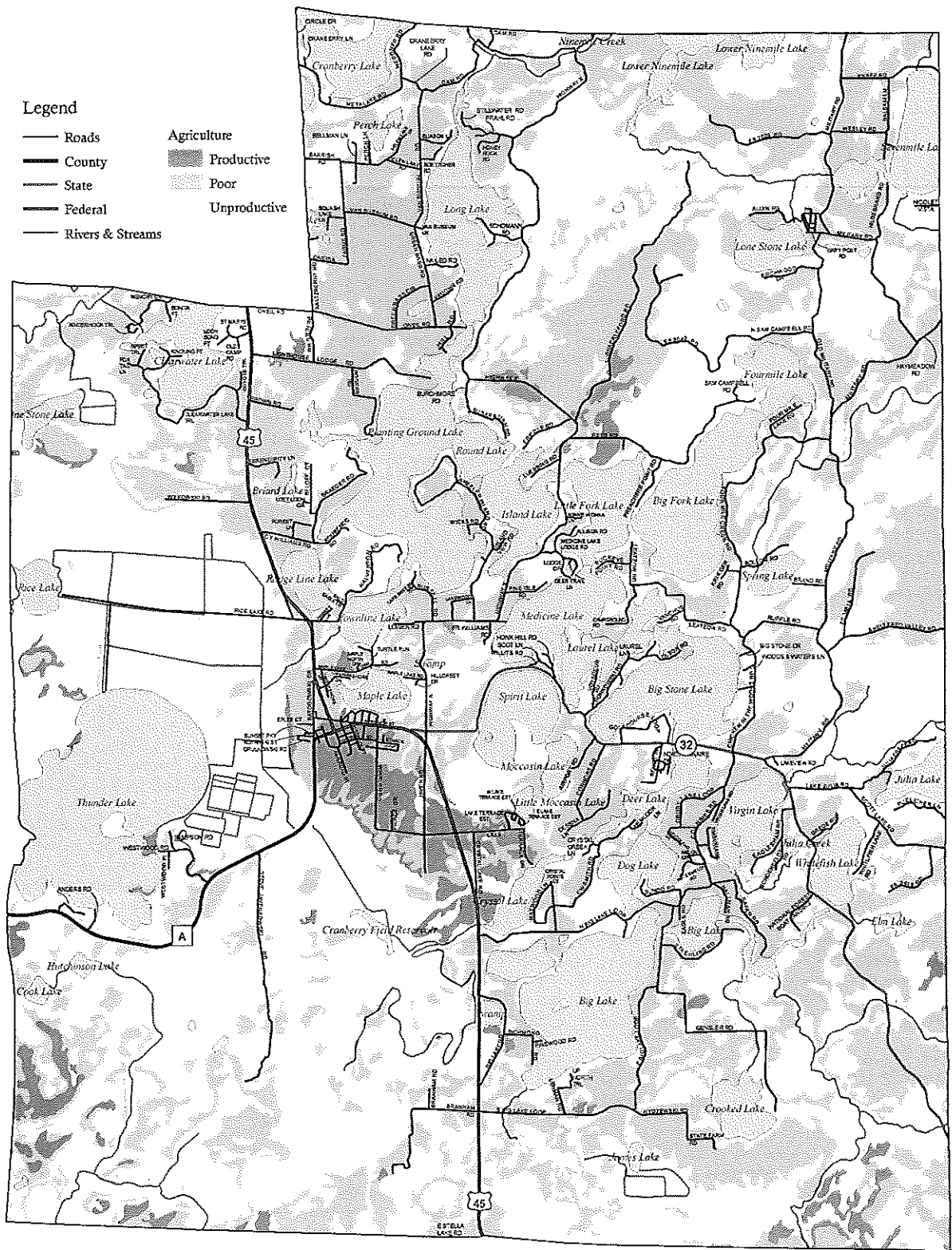
As a community develops, it will need to consider the present conditions of its local natural resources and determine whether protection, enhancement or restoration is needed. Some of the natural resources are facing significant threats due to increasing human demands by a growing or shifting population as well as the introduction of non-native plant and animal species. Drought over the past few years has stressed many timber species, making them more susceptible to insect and disease problems. Unplanned or poorly planned development patterns coinciding with population growth can increase the demand for water, land and raw materials. Rural landscapes are being transformed and fragmented by a demand for "healthy country living," sometimes to the detriment of established neighborhoods and communities.

Land-use conflicts are present in the Three Lakes community. Examples of conflicts include loss of agricultural land to development, water rights, construction of new roads, growing energy demands, private property rights, zoning regulations that discourage continued agricultural use and government regulations. Direct impacts of current and projected development patterns include habitat loss and fragmentation. The changing of the landscape from undeveloped to developed areas can have effects on the natural resources and possibly threaten ecological diversity and sustainability in the future.

The Chequamegon-Nicolet National Forest manages more than 10,327 acres of land within Three Lakes. This accounts for 24.3% of the lands within the area covered by the Town of Three Lakes Comprehensive Plan. These lands are managed by the U.S. Forest Service, as part of the Department of Agriculture, using a 15-year land and resource management plan and final environmental impact statement revised in 2004. The lands are managed for multiple uses with a number of outputs, both consumptive and nonconsumptive. The main strategy of the resource plan is to sustain valued resources and the ecosystem. The recreation, scenery and solitude offered by public forest are of great value to the tourism industry and Three Lakes.

Agricultural

Town of Three Lakes Oneida County, Wisconsin



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The portion of the forest within Three Lakes is mostly accessible with roads ranging from paved roadways to two-track rustic-type roads and trails. The lands offer both motorized as well as nonmotorized opportunities. Trails offer many opportunities, with destinations of outdoor recreation, scenic value, historic learning, and interpretive values. Numerous backwoods hiking trails are available for those wanting to spend time in natural settings. Both developed and non-developed recreation sites can be found in campgrounds, picnic areas, swimming beaches, boat ramps and backcountry hike-in areas. Walking trails and old logging roads offer opportunities for hunters as well as those wanting to observe and learn about nature. Nearby interpretive hiking trails such as the Sam Campbell Trail, Shelp Lake Old-growth Area, old fire locations and Argonne Experimental Forest provide opportunities to view and learn about nature as well as history. Military Road (classified within the U.S. Forest Service as Scenic Byway) offers outstanding scenic as well as historic and interpretive values. With numerous lakes, streams and wildlife habitat, fishing and hunting destinations are an important use of the forest. Winter activities range from cross-country skiing and wildlife viewing to motorize snowmobiling on a designated network of trails.

Portions of the land are managed to protect and enhance habitat of sensitive, threatened or endangered plant and animal species with the designation of special management areas. Portions of the lands within Three Lakes have been designated for old growth potential as well as pine forest-type restoration. The forest offers valuable biological diversity. Various ecosystems are managed to help restore degraded natural communities using timber harvest, prescribed fire and other practices to maintain some ecosystem types.

Special areas have also been designated to preserve historic and interpretive values. For example, at one time there were six Civilian Conservation Corps (CCC) camps located within 10 miles of the town of Three Lakes, and the early logging era had logging camps and narrow-gauge railroads, which transported logs to sawmills in the town of Three Lakes. Military Road contributes to understanding the history of this area with interpretive signs in areas of importance. Archeologists have found evidence of early prehistoric settlements within the forest. These provide outstanding opportunities to study early North American Native American cultures.

The forest contributes directly to the economy of Three Lakes and the surrounding communities through the sale of forest products which include pulpwood, timber, firewood, evergreen boughs for decorative greens, and wild food gathering. A number of products are also available for personal use from the forest by surrounding residents.

With almost a quarter of the land base within Three Lakes being national forest, and more than 10% managed by the state Department of Natural Resources, it will be critical to assure that this comprehensive plan reasonably complements and aligns with the management practices of these areas. It is understood that private and industry lands are not required to be managed the same as public wildlands. However, it is the intent and hope that the Town of Three Lakes Comprehensive Plan and the management of national, state and other agency forestlands will complement one another, leading to meaningful and implementable future opportunities. If there are differences in management direction, these trade-offs will need to be addressed through an intergovernmental relationship.

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The planning process will help define, develop and implement goals and objectives that will preserve those characteristics that are inherent to a small-town setting, which Three Lakes has identified as a core community value. Natural resource issues need to be integrated and made consistent with agricultural and cultural resource issues. It is important to coordinate and balance the preservation of natural resources with that of historic and agricultural resources. In some cases these coincide, while at other times a trade-off may need to be made. Through goals, policies and objectives, the plan for the conservation and effective management of natural resources becomes better defined. Goals become things a community hopes to accomplish, i.e., how the community would like to be in the future. They provide direction for the community decisions. In setting goals, the community should answer questions such as, "What do the people in Three Lakes see as their important natural resources?". How should the community balance future development with natural resource preservation? Through the planning process, policies can be established. Policies can be used to help guide the community decisions in pursuit of its goals.

THE CURRENT LANDSCAPE

The condition of the natural environment is a key ingredient in Three Lakes' "quality of life" and contributes to a strong sense of resident community pride. A correlation exists between the presence and prevalence of clean water and open space and the positive feelings people have about their community. The town's many lakes, wetlands, streams and woodlands provide important wildlife habitat and recreational opportunities for residents. They improve the visual appeal of the town, and provide tourist income from hunting, fishing, boating and other year-round activities. They also function as development buffers.

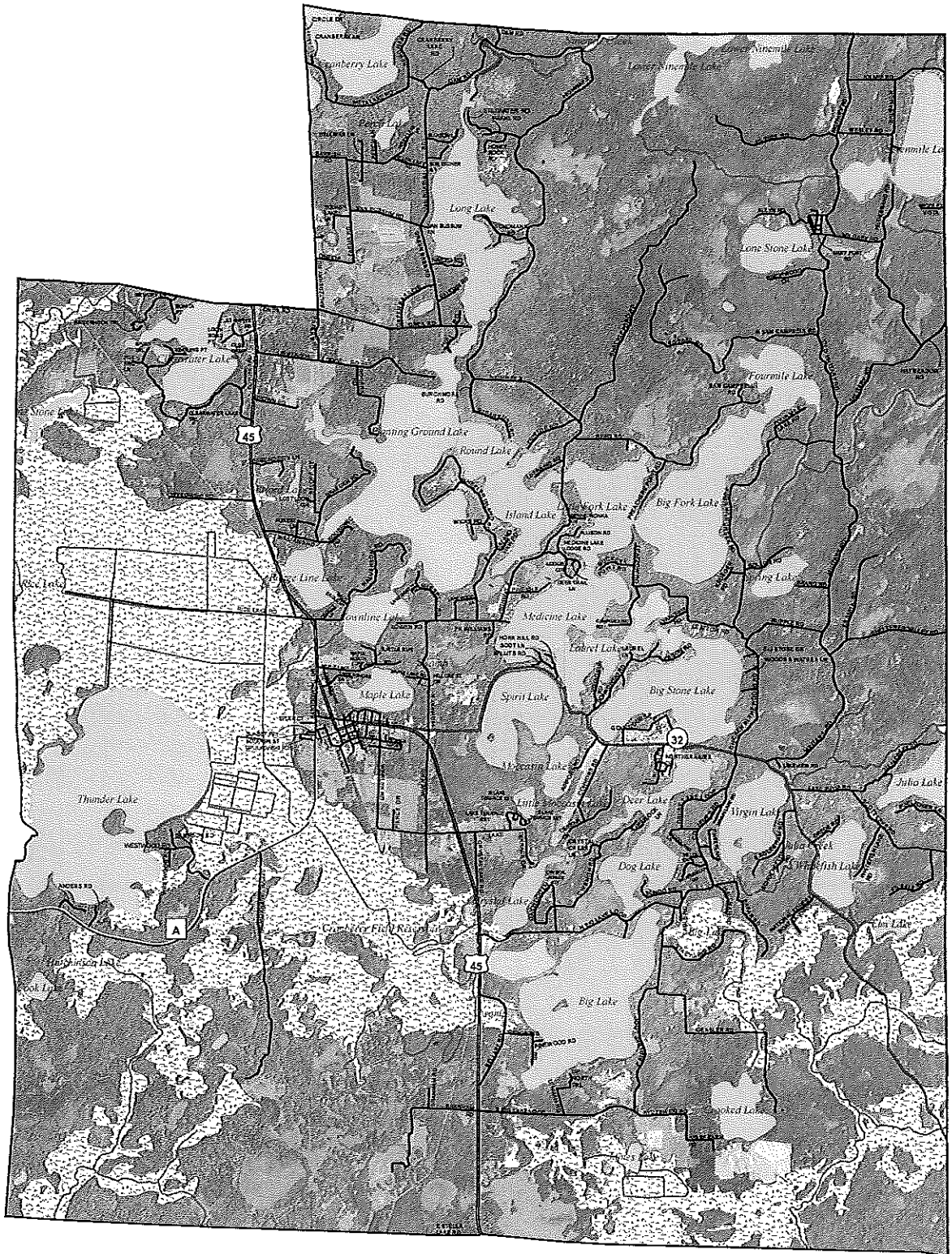
In many respects, the natural landscape determines where development can and cannot happen. The significant wetland acreage in the town is unavailable for development purposes outside of certain recreational and agricultural (e.g., cranberry growing) activities. The many lakes and adjoining floodplains also carry development restrictions. The Chequamegon-Nicolet National Forest, the Rice Lake and Spur Lake State Natural Areas, and the Thunder Lake State Wildlife Area are off-limits to most types of land development.

Three Lakes contains a large diversity of native plant communities ranging from eastern deciduous, northern coniferous and boreal forests to small open areas of natural and planted grasslands. The glaciers left soils that support these diverse communities and a wide array of terrestrial plant and animal species. These glaciers also left a legacy of aquatic features including bogs, lakes, spring ponds and wetlands.



Natural Features

Town of Three Lakes Oneida County, Wisconsin



Legend

- Roads
- County
- State
- Federal
- Rivers & Streams
- Wetlands
- Lakes

0 0.375 0.75 1.5 Miles



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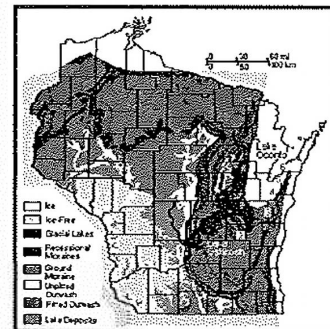
Since 1930, tourism has provided a major economic stimulus to the area. The abundance of unspoiled nature in the town of Three Lakes beckons residents and nonresidents alike to enjoy and refresh themselves and to consider the natural surroundings as an outdoor classroom, but also carries with it the responsibility to care for and preserve the natural treasures in the town. Development must be balanced with conservation.

Based on resident input provided at the November, 2008 meeting, preservation of natural resources (lakes, wetlands and woodlands) is a priority in Three Lakes. Local residents value the benefits (e.g. stormwater control, water quality, air quality, wildlife habitat, aesthetics, recreation, etc.) provided by a healthy and diverse natural environment.

This section of the chapter provides an assessment of the different natural resources in Three Lakes. The information is graphically represented on the *Natural Resources Map* (on previous page). This natural resources information serves as the basis for a land suitability analysis used to determine appropriate (e.g. environmentally sustainable) areas for development as identified on the *Future Land Use Map*.

GEOLOGY AND TOPOGRAPHY

The town of Three Lakes is located in the Northern Highlands physiographic region of Wisconsin with a small portion of North Central Forest along the town's southern boundary. The Northern Highlands Ecological Landscape is known for its pitted outwash plains and kettle lakes mixed with extensive forests and peatlands. Its landforms are characterized mainly by pitted outwash, but also contain some coarse-textured moraines. Soils are generally acidic and relatively unproductive due to low moisture-holding capacity and lack of organic matter.



Source: *Geology of Wisconsin*, Steven Dutch, June 1999.

The area has undergone multiple periods of glaciation. Thick continental ice sheets have moved from Canada southward in various lobes at various times, leveling high areas of the landscape, and laying down glacial drift. The existing geology of the state as shown in the *Geology of Wisconsin Map* insert (at right) coincides with the most recent glacial advances shown in the series of maps on page 7-10.

The Three Lakes area is covered with outwash laid down by melt water from glaciers. The outwash consists primarily of sand and gravel. The area has a poorly developed drainage network, as evidenced by the numerous lakes. The land surface is flat to slightly rolling, ranging in elevation from 1625 to 1700 feet above mean sea level. The surface elevation of the lakes in the town is approximately 1625 feet above mean sea level.

The sand and gravel outwash is 50 to 100 feet thick, and overlies Precambrian bedrock. Drinking water is obtained from wells in the glacial till. The topography of the town of Three Lakes dictates land use. The abundance of lakes and wetlands restricts development for major areas within the town.

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SOILS

Soils are the physical base for development and agriculture. Knowledge of their limitations and potential difficulties is important in evaluating crop production capabilities and other land-use alternatives, such as residential development.

The town of Three Lakes is in the Northern Highlands physiographic region of Wisconsin. The extensive sections of sandy soils in the town are a result of glacial outwash, while the large areas of peat and muck are a result of infilling of low-lying areas with organic material.

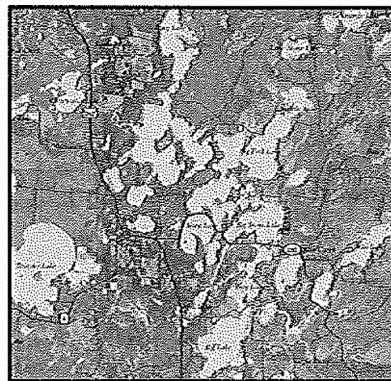
The predominant soil types in higher areas of the landscape in the town of Three Lakes are sands belonging to the Padus, Pence and Vilas series of soils. These are thick sequences of sandy soils, which are highly porous and susceptible to groundwater contamination. The predominant soil types in lower areas in the landscape in Three Lakes are the Au Gres loamy sands, the Greenwood peats and the Carbondale mucks.

For additional information about specific soil characteristics and limitations, refer to the Oneida County Soil Survey.

A detailed map of existing soils in Three Lakes can be found on page 7-20. For a complete listing of soils in Three Lakes, refer to the Oneida County Soils Survey or contact the Oneida County Land Conservation Department.

HYDROLOGIC FEATURES

The Northern Highlands is known for having one of the highest concentrations of kettle lakes in the world. The kettles were formed as glaciers melted, when large ice blocks became stranded and outwash materials were deposited over them. As the ice blocks slowly melted and collapsed, kettles were formed. Lakes developed in portions of these that were below the level of groundwater. This accounts for the formation of the many aquatic features in Three Lakes (approximately 20% of the entire area). The sandy bottoms and shorelines of these lakes make them some of the most desirable areas for water recreation in the state. Wetland types in this area can be fen, or bogs, marshes, wet microsites and high water table that contain rare and sensitive flora and fauna.



Chain of Lakes, town of Three Lakes

LAKES AND STREAMS

The town of Three Lakes, as evidenced by the name, is a town of lakes. The Three Lakes area holds the world's largest chain of freshwater lakes. These lakes formed in glacial till, and consist of 28 lakes, part of the Eagle River watershed. The eastern two-thirds of the town belong to the Eagle River watershed, flowing from northwest to southeast. Thunder Lake and the northwest corner of the town belong to the Sugar Camp Creek watershed, flowing to the west, while the southwest corner of the town is part of the Pelican River watershed, flowing to the southwest.

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The Wisconsin Department of Natural Resources (DNR) has established a "designated waters" program, which classifies the most pristine waters in the state as either "outstanding" or "exceptional." No outstanding or exceptional waters that currently meet these criteria are located in the town of Three Lakes, although the lakes in the town remain a unique resource. Four Mile Creek, designated as Class 3, is the only DNR-classified trout stream in the town of Three Lakes.

Poorly planned future development in the town may threaten water quality and aquatic habitat. Shoreline activities can cause pollution, which impairs the quality of waterways. The removal of natural-occurring plants along the water's edge and replacement with those that do not normally occur such as lawns and ornamentals has a negative impact on the vital edge ecosystem, and increases problems from surface runoff and erosion by removing natural buffers. The introduction of invasive species will also impact the natural interaction of life in the lakes and streams. As shoreline development occurs, and use of the waterways increases, stress on the natural systems will increase.

There are various tools to properly manage lake systems, so that they remain unimpaired. The state of Wisconsin has guidelines in its Best Management Practices which protect water resources during activities such as timber harvest and farming. Many towns in northern Wisconsin have established lake districts as a tool to facilitate planning and implementation. The Three Lakes Waterfront Association was established in 1967, and is one of the largest organizations of its kind in Wisconsin. Counties have established lake classification systems as part of their shoreland ordinances, which dictate permissible building scenarios next to waterways based on the classification of the waterway.

The Town of Three Lakes established the Three Lakes Town Action Group in 2007 to provide long-range comprehensive planning for the town, as well as to initiate short-term improvements identified during the planning process. A key stated purpose of the group is to develop a comprehensive lake management plan for the Three Lakes Chain of Lakes.

The Town of Three Lakes received an aquatic invasive species control grant for fall 2008 – fiscal year '09 in the amount of \$10,000 for education, early detection and response services on the Three Lakes Chain of Lakes.

Efforts are being made to reverse damages to streams caused by past inappropriate agricultural, logging, cropping and road building practices. Much of this past damage is primarily from siltation and sedimentation from runoff and not following proper mitigation and riparian protection. Soil conservation practices primarily involve the vegetation of areas along waterways. The lakes and streams are an important component to the region's substantial tourism industry, providing plentiful opportunities for fishing, boating, hunting and bird watching.

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WATERSHEDS AND DRAINAGE

Three Lakes is located in the Eagle River Watershed within the Upper Wisconsin River Basin (see box at right) and falls on the Western side of the subcontinental divide. Water in the town that doesn't evaporate or infiltrate to groundwater reserves eventually flows, via the Mississippi River, to the Gulf of Mexico. Waters to the east of Three Lakes drain from the Wolf River Watershed to the Great Lakes, St. Lawrence River, and on to the Atlantic Ocean.

Water that results from precipitation or snow-melt will eventually do one of three things: evaporate, infiltrate or run off. Evaporated water re-enters the air column to fall as precipitation at a later time. Infiltrated water soaks through the topsoil and subsurface layers and will enter and recharge groundwater reserves or flow through to the nearest surface water. The greatest percentage of water re-entering the aquatic system does so through runoff, flowing over the land, from the highest point to the lowest, until it reaches a receiving body, e.g. a wetlands, lake or stream.

SHORELINES

Shorelines, riverbanks and floodplains in Three Lakes are protected and regulated by the Wisconsin Department of Natural Resources and Oneida County through the county Shorelands Protection Ordinance. Shoreland zoning regulations are designed for efficient use, conservation, development and protection of water resources. They are intended to:

- Prevent pollution from point and non-point sources;
- Protect spawning ground for fish and aquatic life;
- Control building sites, placement of structures, and land use; and
- Protect the integrity of shoreline edge by maintaining natural habitat and avoiding introducing non-native species;
- Assure Best Management Practices and guidelines are being followed for logging, agricultural and road building activities;
- Provide incentives for people to manage shoreline in a natural condition;
- Identify, report and appropriately mitigate existing problems.

Oneida County has a wide variety of water resources, including lakes, rivers, streams and wetlands. The natural qualities of Oneida County's water resources are important for

What is your watershed address?

Subwatershed – A land area, bounded by ridges or similar topographic features, encompassing only part of a watershed.

Watershed – An area of land draining water, organic matter, dissolved nutrients and sediments into a lake or stream. The topographic boundary, usually a height of land, marks the dividing line from which surface streams flow in two different directions.

Basin – A depressed area having no, or very limited, outlets for surface waters. Basins can vary in size from small rural ponds to the Great Lakes Basin.

Region – The largest watershed classification below the level of ocean. Comprised of one or more basins.

If you live in Three Lakes, your watershed address is within the Eagle River Chain of Lakes subwatershed...within the Eagle River Watershed...within the Upper Wisconsin River Basin...and within the upper Mississippi River Basin.

environmental, economic and cultural reasons. These resources provide habitat for fish and wildlife, natural beauty and serenity, and opportunities for outdoor recreation. Shorelines must not be thought of as a boundary between the land and water, but as a transition area within which the health of land and water ecosystems can be positively or negatively affected. Shoreland vegetation traps and filters sediment and debris from rainfall and snowmelt. Depending upon the size and complexity of a given shoreline, 50% to 100% of the solid particles can settle out as plants slow sediment-laden runoff. Reduced runoff leads to cleaner lakes, healthier aquatic ecosystems and increased recreational opportunities.

GROUNDWATER AND AQUIFERS

Groundwater is the primary source of potable water in the town of Three Lakes, as well as a critical component to the significant cranberry production which takes place in the town. The quality of life in the town is directly related to the quality of its groundwater. Whether an area will have groundwater contamination depends on the type and intensity of land use, the possible contaminant sources, their duration and volume, and the sensitivity of the area to the contamination. In areas such as the town of Three Lakes, where soils are sandy and provide limited attenuation of contamination before it reaches the groundwater, particular care must be taken to protect the resource.

What is an aquifer?

An aquifer is a layer of gravel, sand or porous, fractured rock capable of holding or conducting water. When fully charged, an aquifer is saturated with water. Most, if not all, private wells in Three Lakes draw water from an aquifer made up of glacial outwash very near the surface.

The ground beneath Three Lakes is comprised of glacial outwash and till. These deposits rest upon a layer of granite. It is from the aquifer formed by these glacial deposits that the majority of Three Lakes residents draw their potable water.

Aquifers are strata, or layers, of gravel; sand; or porous, fractured or cavernous rock capable of holding and/or conducting water. When fully charged, an aquifer is saturated with water. Water collects in the recharge area and flows, or percolates, to the lowest point of the aquifer. Recharge areas serve a function similar to that of headwaters for a river. They are the entry point for rainwater and snowmelt into the aquifer. As the entry point, recharge areas are one of the most likely venues for contamination of groundwater.

The Wisconsin Geological and Natural History Survey have compiled data for the various counties in the state into a groundwater contamination susceptibility analysis map. Because of the high groundwater table, the multitude of wetland areas and the sandy character of the soils in the town of Three Lakes, the majority of land in the town is more susceptible than average areas in Wisconsin to groundwater contamination.

Three Lakes 2030

Agricultural, Natural, & Cultural Resources

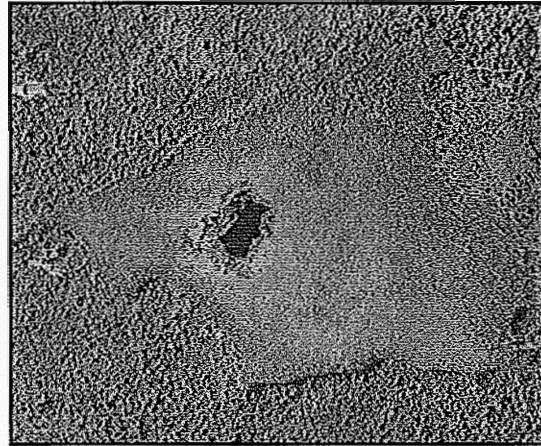
Chapter 7:

The Three Lakes Sanitary District 1 was formed to provide a safe source of potable water, and to provide wastewater treatment services to protect the water resources in the area. An additional tool to protect groundwater often used by municipal water utilities is the establishment of a wellhead protection plan and ordinance, which restricts use within the supply well's recharge zone.

WETLANDS AND FLOODPLAINS

Wetlands and floodplains act as a natural filtering system for sediment and nutrients such as phosphorus and nitrates. They also serve as a natural buffer, protecting shorelines and stream banks from erosion. They are essential in providing wildlife habitat, flood control and groundwater recharge.

Wetlands make up a significant portion of the land area in the town of Three Lakes. Some are used in cranberry production, while the majority remains undeveloped. Development is restricted in wetland areas to assure continued functional value and assure there is no net loss of wetlands in the state. Large wetland tracts in the town are vegetated primarily with leatherleaf.



Typical wetland area in town of Three Lakes

Wisconsin counties regulate development activities within shoreland areas. Shorelines are often thought of as a boundary between the land and water, but shorelines are also a transition area within which the health of land and water ecosystems can be positively or negatively affected. Shoreland vegetation traps and filters sediment and debris from rainfall and snowmelt, buffering surface waters.

Shoreland zoning regulations are designed for efficient use, conservation, development and protection of water resources. They are intended to:

- Prevent and control water pollution;
- Protect spawning ground for fish and aquatic life;
- Control building sites, placement of structures, and land use; and,
- Preserve shore cover and natural beauty.

Three Lakes ²⁰³⁰

Agricultural, Natural, & Cultural Resources

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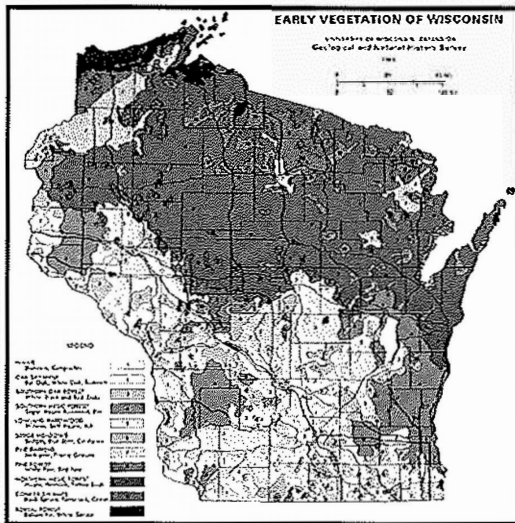
STATE NATURAL AREAS

The Rice Lake State Natural Area is located on the border of the towns of Three Lakes and Sugar Camp. Rice Lake is a large, shallow lake, with outstanding wild rice production. Sedge meadows and alder thickets surround the lake. A fen with black spruce islands is located north of Rice Lake, while black spruce, tamarack, black ash and alders are present to the south and west. A 50-acre upland island south of the lake contains red maple, white birch, balsam fir, hemlock and white pine. The site provides breeding and migratory habitat for waterfowl. Bald eagle and osprey nest and feed in the area.

A small portion of the Spur Lake State Natural Area is located in the town of Three Lakes. Spur Lake also produces wild rice, and is used heavily by waterfowl. Along the northeast corner is a small stand of old-growth hemlock-hardwoods and a floating bog mat. Native Americans used the Spur Lake area for centuries, and there is an old campsite on the lakeshore.

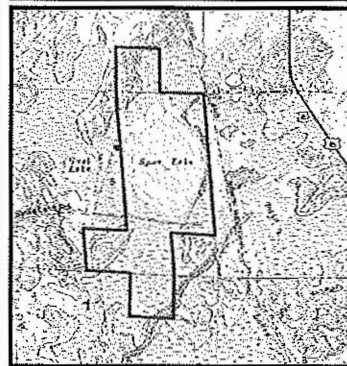
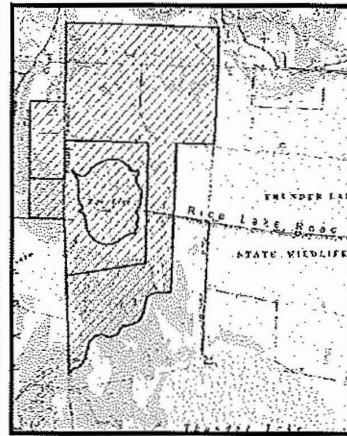
The Rice Lake State Natural Area is owned by the DNR and was designated a State Natural Area in 1965. The Spur Lake State Natural Area is owned by the DNR and was designated a State Natural Area in 2007.

WOODLANDS AND VEGETATION



Source: Wisconsin Geological and Natural History Survey, 1976.

natural as well as established plantations. During the CCC era, much of the area was planted to



Rice Lake (top) and Spur Lake (bottom) State Natural Areas. Source: WDNR website.

The majority of land in the town of Three Lakes was dominated by pine timber types prior to the construction of the railroad in 1881.

After the railroad arrived, logging of vast tracts of pine and hardwoods took place over the next 50 years. By 1930, much of the original timber had been cut and shipped out. Historically, the land was dominated by white and red pine forest, with smaller pockets of jack pine. Hemlock-hardwood and hardwood forests were common on the more mesic soils. Aspen-birch forests occurred in openings formed by natural and human-caused disturbance. The large areas of pine changed due to events such as wind, fire and clearing for agricultural purposes. The current forest vegetation is primarily mixed hardwood, aspen, with some white, red and jack pine. White and red pine is

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pinus in an attempt to restore pine to the landscape. Other open spaces were gradually covered by faster-growing northern hardwood forests and faster-growing early successional timber species such as aspen. Lowland conifer occupies the many high water table (peatlands and wetlands) areas. These contain cedar and tamarack as well as different ground vegetation. These areas provide valuable habitat for a diverse species of both plant and animals. Over time, the forest gradually changes to more shade-tolerant species unless there is a natural or human-caused event which opens them back up to more sunlight. Current management goals are attempting to restore pine to more of the landscape on appropriate sites.

The Bordner Survey was a vegetative assessment of the entire state of Wisconsin, conducted by the University of Wisconsin between 1933 and 1945. The town of Three Lakes was surveyed in 1938 and 1939. That survey found that the majority of land within the town had reverted to second-growth woodland, with only a small percentage of land in the town being cropped. Pockets of cottages were present along the shores of the Chain of Lakes.

Reforestation efforts have taken place in the town as early as the 1930s and recently in the 1990s. A portion of the Chequamegon-Nicolet National Forest occupies 12 sections and six half-sections along the eastern side of the town of Three Lakes. The national forest consists primarily of second-growth trees left when landowners abandoned their land during the Depression, and pine forest planted in the 1930s by the Civilian Conservation Corps. The national forest is a mosaic of even-age and uneven-age stands. The management plan for the Chequamegon-Nicolet National Forest provides for a mix of tree species and ages.

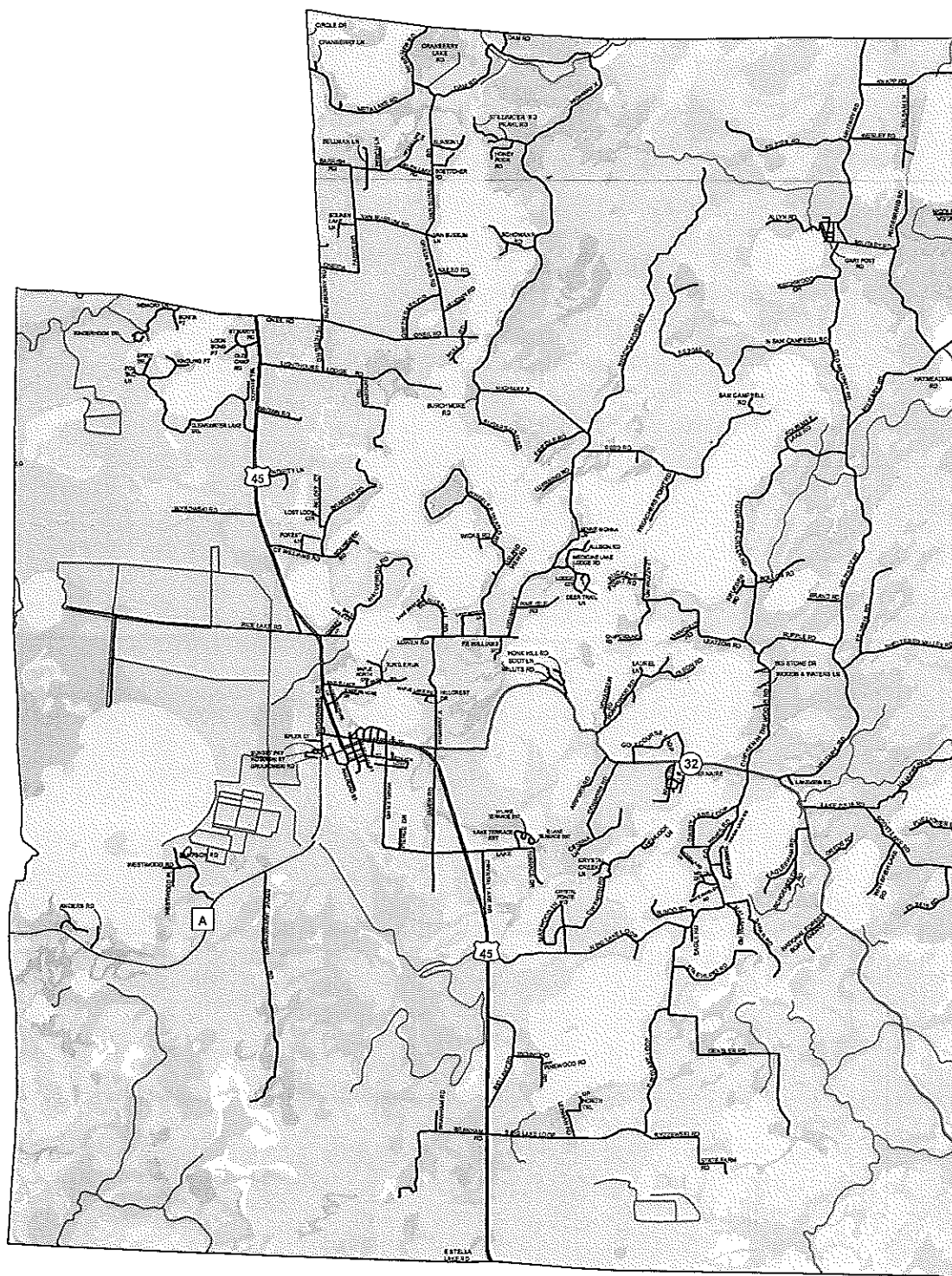
The wood products industry plays a vital role in the local, as well as the state's economy. In 2005, a study determined the forest industry was the second-largest industry sector in the state with annual shipments valued at \$28 billion, which is 2.5 times as much as either Michigan or Minnesota. According to the Wisconsin Department of Commerce, four out of the top 10 industrial producers are related to the forest products industry. Wisconsin's forest products industry employs one in every eight workers in manufacturing jobs. The management of private, industrial and agency lands for wood products contributes directly to the Three Lakes economy. The average Wisconsin logger produces 1.6 million board feet of timber annually, which provides enough raw materials to create 207 jobs in the forest industry and secondary supporting industries. With approximately 27% of the total land base in Three Lakes being productive forestlands and 11% being managed for forest crops, it can easily be seen how forest management for timber products plays a key role in the present and future vitality of Three Lakes.²

The *Town of Three Lakes Natural Features Map*, as well as the *Current Land Use Map* (presented in the Current Land Use chapter) delineates the location of woodland areas. To protect woodlands, the DNR's Managed Forest Program is available to landowners who own more than 10 acres of contiguous forestland. Through the program, landowners agree to manage their forestland for hunting, fishing, wildlife and recreation purposes and not permit development in exchange for tax credits. Additional information about this program is available on the Internet at www.dnr.state.wi.us/org/land/forestry.

² Timber Producers Association for the State of Wisconsin, March 2005.

Soil Survey

Town of Three Lakes Oneida County, Wisconsin



Legend

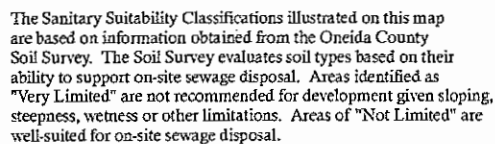
— Roads	Soils	Ob	Fh	KaB	KnC	MoB	PbC	PyB	SaB	VsC
— County	AcB	CaA	GoB	KeB	KrD	PaB	PbD	Pt	SaC	VsD
— State	AcC	CaA	GoC	KeC	Ks	PaC	PeB	PvA	SaD	W
— Federal	Au	DAM	GoD	KeD	MaB	PaD	PeC	R3B	UdB	WoA
— Rivers & Streams	CaA	EmE	Gr	KnB	Mc	PbB	PeD	R5C	VsB	



0 0.375 0.75 1.5 Miles

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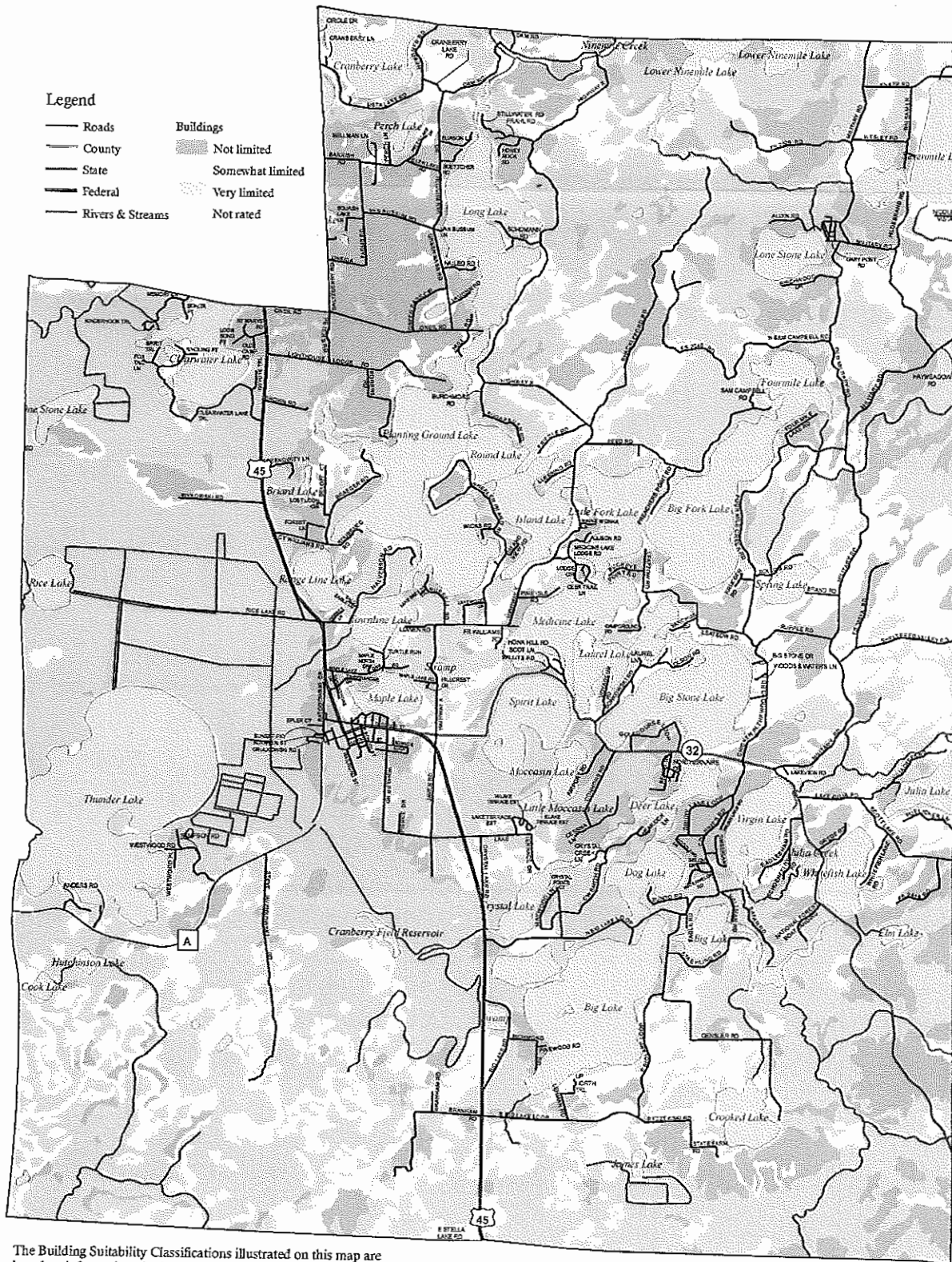
Town of Three Lakes Oneida County, Wisconsin



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Building Suitability

Town of Three Lakes Oneida County, Wisconsin



The Building Suitability Classifications illustrated on this map are based on information obtained from the Oneida County Soil Survey. The soil survey evaluates soil types based on their ability to support buildings with basements. Areas identified as "Very Limited" are not recommended for development given sloping, steepness, wetness or other limitations. "Somewhat Limited" areas may be suited for development if certain precautions or mitigation techniques are used.



0 0.375 0.75 1.5 Miles

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