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7.0 AGRICULTURAL, NATURAL & CULTURAL RESOURCES

Introduction

This chapter provides an inventory of existing agricultural, natural, and cultural resources in the Town of Empire. In addition, a vision is provided as well as a discussion of issues associated with these resources. Goals and objectives for protecting and preserving the resources are found in Chapter 12: Implementation.

Wisconsin's Comprehensive Planning Law includes 14 goals for local comprehensive planning. Of those goals, the residents of the Town of Empire believe that those listed below specifically relate to local planning for agricultural and natural resources:

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

During the Kick-Off Meeting, residents identified the following Town values related to this Chapter:

- We value the preservation of the Niagara Escarpment.
- We value our peaceful, rural agricultural setting.
- We value the spacious open spaces in the Town.

To learn more about agricultural, natural and cultural resources, also see these chapters...

- Information about **conservation subdivisions** is provided in the Housing Chapter.
- Information about **preserving the dark sky** is provided in the Future Land Use Chapter.
- Information about **cemeteries and groundwater** is provided in the Utilities and Community Facilities Chapter.



Portion of the Wall Graphic created March 31, 2005 at the Town of Empire Vision Meeting.

Agricultural, Natural & Cultural Resources Vision

In 2025, the agrarian character of the Town has been preserved. Farming remains an important and economically viable component of the Town's landscape. Woodlands, panoramic views, the Ledge and other natural and cultural resources continue to enhance the rural environment of the community.

Agricultural Resources

Agriculture has an important impact on land use in the Town - accounting for 54% of the total land cover. The majority of agriculture activity occurs east of CTH UU. Residents value local farming operations and the history of the Town is closely connected to agriculture. However, farm activity has been decreasing in Empire as residential development has occurred.

Productive farm soils are illustrated on the *Agricultural Suitability Map*. Prime farmlands (productive agricultural areas) are determined by soil types that are capable of producing high yields of crops under a high level of management. Productive soils are considered to be those soils that are capable of producing an average of 4 tons per acre per year of grass-legume hay, or 100 bushels per acre of corn. The United States Department of Agriculture Soil Conservation Service considers a “high level of management” to include provisions for adequate drainage, appropriate tillage, planting and seeding with high yielding varieties, control of weeds, diseases, insects, optimum fertilizer application and timely, efficient harvesting techniques. Productive agricultural soils are found across Empire. While farming is encouraged across the Town, a variety of factors combine to make Empire a target for future non-farm development:

- A projected Town population of almost 3,000 by the year 2025 (This corresponds to a projected increase of 156 new homes through 2025)¹;
- Much of the western half of the Town is included within the “City Growth Area” and “Town Growth Area” as defined in the 1995 boundary agreement between Empire and Fond du Lac;
- A desire by some for large-lot, rural residential development;
- The increasing average age of local farm operators combined with fewer young people interested in farming leading to sale of farmland for development²; and,
- Elevated property values around the Niagara Escarpment.

To help ensure that farming remains a viable land use in Empire, this Comprehensive Plan identifies primary areas for continued agricultural use (refer to Chapter 10). It is anticipated that these areas may also accommodate some residential subdivision development that utilizes conservation subdivision techniques.

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

¹ These 2025 figures are official population projections from the Wisconsin Department of Administration (refer to Table 2 in Chapter 3). It is important to note here that the official 2005 population estimate for the Town of Empire is actually higher than the projected population for 2005 (a difference of 68 persons). This indicates a more rapid growth rate than anticipated by the State has been experienced in Empire between 2000 and 2005.

² This is based on information contained in the 1990 and 2000 U.S. Census and the 2002 Agricultural Census. It must be stated that “fewer young people” does not mean there are no young farmers in Empire.



Given the relatively high cost of land in Empire and the unique rolling landscape, the community is not highly desirable for large-scale farming operations (i.e. Concentrated Animal Feeding Operations or CAFOs). In fact, the topography can be a challenging environment for traditional, smaller family farms. Moreover, the scattered rural residential development in Empire is largely incompatible with CAFOs due to conflicts over odors, traffic and potential threats to groundwater quality.

State regulations for siting CAFOs are provided in the Wisconsin Livestock Siting Law. A summary of the law is provided later in this chapter.

service programs, and the purchase or transfer of development rights, among others. Successful farmland preservation efforts are dependant upon the support of local farmers and their ability to pursue new markets to sustain operations over time. More information about various strategies and programs to sustain farming in Empire are provided later in this chapter.

**...COMMUNITY SURVEY SPOTLIGHT...
How Should Farmland Be Used?**

In the Town of Empire Community Survey, a question was included that asked for resident opinion about the use of farmland in the community.

Q6: Prime and marginal agricultural land should be allowed to be divided/subdivided for what kinds of development?

PRIME FARMLAND

Residential Only:	9.2%
Commercial Only	1.8%
Both Residential and Commercial:	8.7%
Divide Into 35 Acre Lots:	27.0%
Divide Into 1 Acre Lots:	8.6%
Cluster Subdivisions:	13.7%
No Land Divisions Allowed:	37.8%
Other:	2.3%

MARGINAL FARMLAND

Residential Only:	25.6%
Commercial Only	6.6%
Both Residential and Commercial:	30.2%
Divide Into 35 Acre Lots:	27.3%
Divide Into 1 Acre Lots:	21.2%
Cluster Subdivisions:	36.9%
No Land Divisions Allowed:	6.4%
Other:	4.1%

Natural Resources and Environmental Concerns³

The condition of the natural environment is a key ingredient in Empire's "quality of life" and the strong sense of resident community pride. A correlation exists between the presence and prevalence of open space and the positive feelings people have about their community. Woodlands, wetlands, grasslands, and surface waters provide important wildlife habitat and recreational opportunities for residents. They improve the visual appeal of the Town and function as development buffers, both within the Town and neighboring communities.

In many respects, the natural landscape also determines where development can and cannot happen. For example, topography limits the type and density of development that can occur. Certain soils types have limitations that restrict development opportunities and shallow soils (on the escarpment) limit agricultural production. Construction activities within wetlands and floodplains are regulated by local, state, and federal agencies.

Woodlands and grasslands, however, are afforded little state or federal protection. They, along with agricultural lands, tend to experience the greatest amount of development pressure and, therefore, require a greater level of local protection...at least for those communities intent upon preserving them. Based on resident input provided at the Kick-Off and Vision Meetings, preservation of natural resources (wetlands, surface and groundwater, woodlands, shorelines, Niagara Escarpment) is an important priority in Empire. Local residents value the benefits (i.e. stormwater control, water quality, air quality, wildlife habitat, aesthetics, recreation, etc.) provided by a healthy and diverse natural environment.

GEOLOGY AND TOPOGRAPHY⁴

Empire, like most of Wisconsin, owes its unique landscape to the cumulative affects of past ice ages. More than 95% of Wisconsin's natural lakes and many of its major rivers were formed during the last glacial recession. The Wisconsin Glacial stage began approximately 65,000 years ago and lasted about 54,000 years. The ice that covered most of Wisconsin was up to one mile thick and extended in five sections (i.e. lobes): the Superior, Chippewa, Wisconsin Valley, Green Bay, and Lake Michigan. The Green Bay lobe extended along the eastern part of the state carving out Green Bay, the Fox River, and Lake Winnebago and reaching as far south as Madison. As these lobes receded, they left glacial lakes in their path. The last glacier in Wisconsin began receding about 11,000 years ago.

The Town of Empire is located in the Eastern Ridges and Lowlands of Wisconsin, with underlying bedrock influencing the topography of Fond du Lac County. The county is divided into two physiographic regions. East of the Niagara Escarpment (which extends from the unincorporated community of Pipe to the Horicon Marsh) is the region known as the Eastern Ridges of Wisconsin. This area of Wisconsin contains the Kettle Moraine⁵, drumlins, and kames.

What is a Kettle? Moraine? Drumlin?

The kettles and moraines found in Fond du Lac County are remnants of the last ice age. Glaciers moving south from Canada some 10-12,000 years ago scoured the landscape and, once they receded, left behind a variety of unique land features.

Kettle – A closed depression or hollow in glacial drift that has resulted from the melting of a buried or partly buried mass of glacier ice.

Moraine – A landform that consists of unstratified glacial drift exhibiting a variety of shapes including plains, mounds, and ridges independent of the underlying bedrock.

Drumlin - An elongated hill or ridge of glacial drift. Drumlins are one type of landform that indicate continental ice sheet glaciations.

Drumlin Field - a cluster of dozens to hundreds of similarly shaped, sized and oriented drumlins.

³ Parts excerpted from *The Town of Empire Comprehensive Plan*, March 1998.

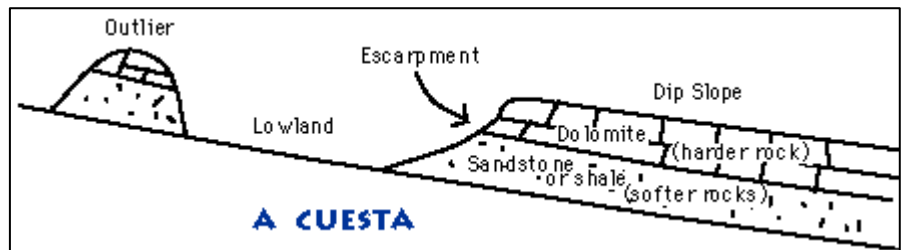
⁴ Portions excerpted from *The Town of Empire Drumlin and Remnant Forest Survey*, Herman E. Bender

West of the Niagara Escarpment, the topography is nearly level to sloping and includes some of the best farming soils in Fond du Lac County.

There are two major drumlin fields in Empire. One is located in the northern-most part of the Town trending south toward the other in the extreme southeastern corner of the Town. Drumlins located in Empire are generally aligned in a parallel fashion with their major (or long axis) oriented north-south. The drumlins vary in elevations, but are generally between 60 to 120 feet above the surrounding countryside.

NIAGARA ESCARPMENT⁶

The Niagara Escarpment is a unique natural feature. The escarpment is part of a larger formation referred to as the Niagara Cuesta.⁷ The escarpment reaches far beyond Wisconsin and when viewed in its entirety appears to encompass the lower Great Lakes.



SOURCE: <http://www.wisconsin.com/wisconsin/geoprovinces/easternridges.html>

In Empire, the Niagara Escarpment is a nearly vertical wall of rock known locally as the “ledge.” The top of the ledge dips eastward toward Lake Michigan. The escarpment runs continuously from Section 6 in the northern portion of the Town of Empire to Section 31 with a vertical relief of approximately 60 to 100 feet.

The Niagara Escarpment’s bedrock ridge extends approximately 650 miles. Starting in the east, the escarpment runs along the southern edge of Lake Ontario’s basin and extends across New York State into the Canadian Niagara Falls. At Niagara Falls, the formation continues east to Lake Huron, hooks around northern Lake Michigan, and runs down through eastern Wisconsin. The escarpment continues through the Chicago region into northern Indiana and finally diminishes in the northwest corner of Ohio. An outlying portion can also be found in northeast Iowa. There is considerable evidence that suggests the portion of the escarpment in Wisconsin was formed as a result of the last glaciation.



Escarpment Location in relation to United States and Canada
SOURCE: www.dnr.state.wi.us/org/land/er/publications/niagara/studyarea.asp

⁵ The Kettle Moraine is in the extreme southeast corner of Fond du Lac County and consists of a series of steep glacial deposits and potholes that formed as part of the glacial system in Wisconsin.

⁶ Portions excerpted from WIDNR *The Niagara Escarpment Study*
Source: <http://www.dnr.state.wi.us/org/land/er/publications/niagara/#Intro>

⁷ A cuesta is a persistent ridge, reflecting erosion resistance, with a gentle slope on one side and a steep slope (the escarpment) on the other. The escarpment reaches far beyond Wisconsin and when viewed in its entirety appears to encompass the lower Great Lakes.

Composition of the Escarpment: The escarpment consists primarily of dolomitic limestone, which is called Silurian Dolomite. The dolomite rock of the Niagara Cuesta does not solely exist in the escarpment cliffs above ground. In fact, most of the dolomite lies underneath layers of sand gravel left by the last glaciation. The base of the escarpment in the extreme western sections of the Town of Empire is composed of Maquoketa Shale, a highly impermeable shale bed overlain by glacial drift consisting mainly of lacustrine (old lakebed) and red clays. Surface water from the top of the escarpment flowing down through the fractured system of joints to the impermeable clays at the base form the numerous springs found at the base of the escarpment.

Underlying these glacial deposits is the Silurian Dolomite aquifer, which is an important regional aquifer along the western side of Lake Michigan. It consists of water stored in cracks and fractures located randomly throughout the rock. Fractured rock aquifers are particularly susceptible to dissolved and suspended contaminants. Any kind of residential, commercial, or industrial land uses that exist within close proximity of the aquifer recharge areas must be monitored as they are potential sources of groundwater pollution.

Unique Plant and Animal Life: During the last decade it was discovered that the oldest living trees in Canada are found along the Niagara Escarpment. Ancient White Cedar trees up to 1,800 years old can be found in the escarpment cliffs of Southern Ontario. More recently, similar types of trees have been found growing on cliffs in Door County, and a 1,200 year old Red Cedar, the oldest in the world, was discovered in Brown County. These trees are reportedly the slowest growing organisms in scientific literature, taking hundreds of years to grow inches. At this time, the Niagara Escarpment is a priority study area for the Bureau of Endangered Resources and the WDNR.

Fond du Lac County was surveyed for plants and animals along the escarpment during the WDNR Niagara Escarpment Study. The results indicate that certain species of land snails live and depend on the escarpment for the microclimate that it creates. At least two of these snail species are considered globally endangered. Rock Whitlow-Grass also grows on the cliffs and is found nowhere else in the world. The WDNR found nineteen other high quality examples of natural communities and rare species, including five species listed as threatened in Wisconsin living in Fond du Lac County along the escarpment. The escarpment serves as an important corridor for both animals and birds and contains certain algae, fungus, and bacteria living in the rocks that otherwise can only be found at two other locations in the world.

Cultural and Archaeological Resource: The Niagara Escarpment has received a great deal of attention in Canada. In June of 1985 the escarpment became the focal point of Canada's first large-scale environmental land use plan. The intent of the plan was to balance protection and conservation of the escarpment with sustainable development.

In 1990, the United Nations Educational Scientific, and Cultural Organization (UNESCO) named Ontario's Niagara Escarpment a World Biosphere Reserve which makes it a member of a network of the world's main ecological systems. Biosphere reserves, like the environmental land use plan, attempt to balance conservation and development and focus on continual monitoring activities to assess changes to the ecosystem.

In the United States, particularly in Wisconsin, local land use plans are the primary tool available to strike this balance and protect the escarpment and other significant land formations. For the Town of Empire implementation of this Comprehensive Plan will fill this role.

RIVERS, STREAMS AND DRAINAGE AREAS

Three river drainage basins are located in the Town of Empire. The western sections of the Town are in the Taycheedah Creek and de Neveu Creek drainage areas. Both drainage areas flow northwesterly into Lake Winnebago and eventually into Green Bay. A small area in the southeastern part of the Town drains southerly and is part of the Milwaukee River drainage basin. The eastern sections of the Town are part of the Sheboygan River water system, which drains directly into Lake Michigan. Taycheedah Creek and Pipe Creek (located in Section 27, approximately two miles in length, draining to Lake Winnebago) are the only named waterways in the Town, but there are many other smaller, unnamed creeks and streams that are tributaries of the Sheboygan River.

LAKES

There are a total of 31 named lakes in Fond du Lac County. Two of these, de Neveu and Devils, are in Empire.

- **Lake de Neveu:** Located in the western part of the Town, Lake de Neveu covers 79 square acres. The maximum depth of the lake is 67 feet. The lake has no public access. It is classified as a seepage (see box) lake containing northern pike, walleye, large mouth bass and panfish. The lake was named after G. de Neveu, who first purchased the land from the government. As is discussed in the Utilities and Community Facilities Chapter, lands surrounding Lake de Neveu are within a sanitary district designed to protect the quality of the lake from the dangers of failing septic systems.

What is a Seepage Lake?

- Seepage lakes have no inlet or outlet.
- The primary source of water is from precipitation runoff, supplemented by groundwater from the immediate drainage area.
- Water levels fluctuate seasonally since they are dependent on precipitation and runoff.
- Seepage lakes are the most common type of lake in Wisconsin.

- **Devils Lake:** Devils Lake covers 2 square acres. The maximum depth of this seepage lake is 5 feet. It contains no known fish. It is located east of the CTH K and USH 45 intersection.

SHORELINES

As this chapter indicates, Empire has a wide variety of water resources, including lakes, streams, and wetlands. The natural qualities of Empire's water resources are important for environmental, economic, and cultural reasons. These resources provide habitat for fish and wildlife, natural beauty and serenity, and opportunities for outdoor recreation.

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 snow melt.

Shorelines, riverbanks, and floodplains in Empire are protected and regulated by the WDNR and Fond du Lac County. Shoreland zoning regulations are enforced by Fond du Lac County and 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.

GROUNDWATER & WATERSHEDS

There are three watersheds in the Town of Empire. These watersheds are mapped on the *Natural Features Map* later in this chapter. A groundwater divide exists in the Town that runs approximately parallel to the Niagara Escarpment. This divide varies seasonally due to precipitation. East of the divide the groundwater flows toward the escarpment where it discharges at the base in springs.

The escarpment bedrock, composed of Silurian Dolomite, is the prime source of groundwater for much of the Town of Empire. It is approximately 100 feet thick in the western part of the Town and thickens eastward where it can be up to 300 feet or more. Groundwater in the dolomite flows through a fracture system and shallow wells are common if drilled near one of these surface, water-bearing fractures. The existence of shallow wells, the groundwater divide mentioned above, and the rapid movement of water through the dolomite fracture system presents a great potential for groundwater contamination (Bender, 1997).

Another source of groundwater for the Town is the unconsolidated deposits of glacial drift, which overlie most of the Town of Empire. These deposits consist of stratified clay, sand, gravel and a mixture of glacial sediments. In places where sand and gravel deposits are confined between silt or clay layers, artesian wells occur. Many of these wells in glacial deposits are of shallow depths. Deeper wells are necessary when located on higher drumlins or in sediment-filled valleys. Groundwater located around the escarpment is closer to the surface than any other groundwater in Empire.

WETLANDS & FLOODPLAINS

Wetlands 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. Wetlands are essential in providing wildlife habitat, flood control, and groundwater recharge.

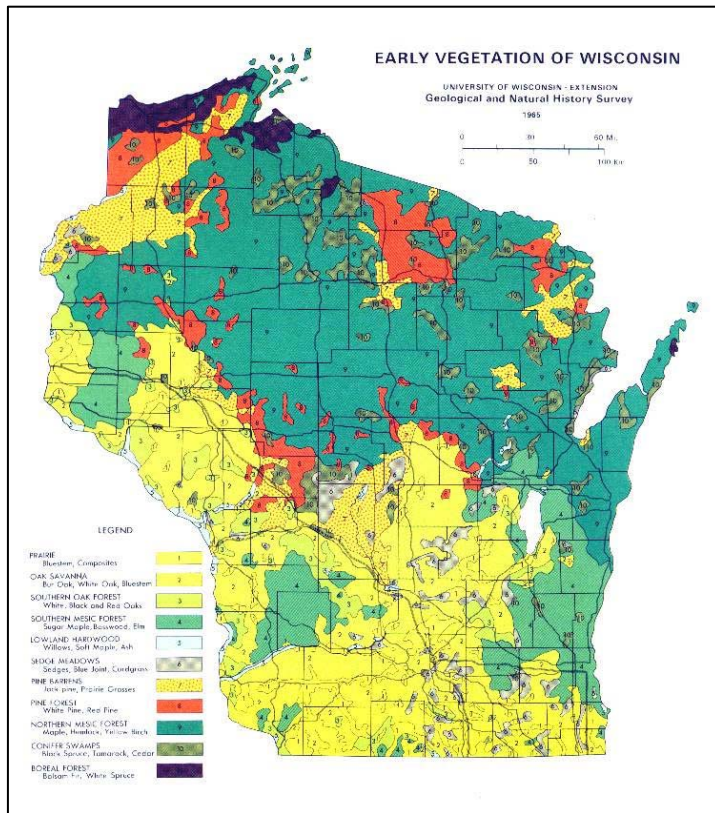


Wetland and Pond in Overland Heights Subdivision

At the state level, the WDNR regulates the placement of structures and other alterations below the ordinary high water mark of any navigable lake or stream. The Army Corps of Engineers has federal authority when fill is placed in any wetland 5 acres or greater in size.

In the Town of Empire, wetlands are found along portions of Taycheedah Creek, tributaries to the Sheboygan River, Pipe Creek, and the southern end of Lake de Neveu. The Owen Gromme wetland is also important to mention here as it is a 15-acre wetland owned by a subdivision association. In total, approximately 1,525 acres (8%) of the Town are classified as wetlands, not including wetlands less than 5 acres.

Floodplains, like wetlands, serve many important functions related to flood and erosion control, water quality, groundwater recharge and fish and wildlife habitats. Areas susceptible to flooding are considered unsuitable for development because of risks to lives and property. The Flood Insurance Rate Map identifies Taycheedah Creek, Pipe Creek and tributaries of the Sheboygan River as areas subject to



SOURCE: <http://www.uwex.edu/wgnhs/earlyv.htm>



Woodlands in the Town of Empire

WOODLANDS

The first record of vegetation in Wisconsin occurred in the 1800's, when the U.S. General Land Office completed a land survey of the entire state. In the Town of Empire, the native vegetation was composed primarily of deciduous forest (oaks, maples, ashes, basswood), oak savanna, prairies and wetlands. During the last half of the nineteenth century much pre-settlement forestland was cut and cleared for agriculture. The dolomite bedrock along the escarpment was available for foundation material or to be burned to produce lime.

flooding. An unnamed, marshy pond in the southern section of the Town drains into de Neveu Creek and is identified as being subject to flooding.

Fond du Lac County enforces a floodplain ordinance requiring certain land use controls in designated flood hazard areas, which makes residents eligible to participate in the Federal Flood Insurance Administrative Flood Insurance Program. This program requires all structures, which area to be constructed or purchased in designated flood hazard areas utilizing loans from federally ensured banks to be ensured by a flood insurance policy. The Town of Empire has approximately 1,300 acres of land classified as floodplain/floodway, which are largely unsuitable for development.

Regulations place limitations on the development and use of wetlands and floodplains. Under sections 87.3 and 144.26 of the Wisconsin Statutes, a municipality has the authority to give greater protection to wetlands, shoreland and floodplain areas. Empire does this through enforcement of its *Critical Overlay Zoning District*.

Town of Empire Drumlin and Remnant Forest Survey

Herman E. Bender of the American Septen History Company (ASHCO) completed this town-wide study on February 4, 1998. The survey documents remnant pre-settlement hardwood forest areas in Empire. The report estimates that the Town once had more than 12,000 acres of hardwood forests, of which about 350 acres (or 3%) remain. Most of the hardwood forests were lost in the conversion of forest land to farmland in the 1800s. However, the report notes that fully one-third of the original forest remnants remaining as little as twenty-five years ago had been developed since the 1970s for residential uses. The report recommends conservation easements, land purchase and land trust actions to preserve remaining hardwood forests in Empire.

The *Town of Empire Natural Features Map*, as well as the *Current Land Use Map* (Chapter 9) delineate the location of woodland areas, including wooded wetlands. To protect woodlands, the **WDNR 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.

Local efforts to protect woodlands are contained in the *Empire Zoning Ordinance*. The Critical Areas Overlay District identifies woodlands as a protected critical habitat area. However, the ordinance allow for the clearing of trees for building footprints, driveways and onsite sewage disposal systems, as well as clear cutting of up to thirty percent (or 10 acres, whichever is less) in any ten-year period. The *Empire Zoning Ordinance* could be revised to establish more restrictive requirements, such as:

- Prohibiting clear-cutting or requiring a conditional use permit for such action.
- Requiring homes and driveways be located adjacent, but not within, woodlands if a viable alternative exists on a lot to accommodate a home site.

WILDLIFE HABITATS

Primary wildlife habitat areas correspond to the woodlands and other undeveloped natural areas shown on the *Natural Features Map*. These areas provide food and cover for deer, raccoons, skunk and other small animals common in the area. Nearby farm fields also serve as a food source for deer, sandhill cranes, turkeys and waterfowl.

Farmland is also very important to wildlife because it provides travel corridors between waterways and woodlands. Farmland also provides cover opportunities and large contiguous open spaces needed by wildlife.

Aquatic habitats in Empire include Lake de Neveu, Devils Lake and area streams. The quality of these water resources as aquatic habitats was discussed in earlier sections of this chapter. The Niagara Escarpment is also an important and unique wildlife habitat area.

ENVIRONMENTAL CORRIDORS

Environmental corridors connect natural areas and open spaces. They provide physical linkages between fragmented habitat areas and, as such, provide animals and insects a means of travel to and from feeding and breeding places. Fish and wildlife populations, native plant distribution, and even clean water all depend upon movement through environmental corridors. Most native species decline when habitat areas are fragmented due to agricultural operations or residential and commercial development. Wildlife

Habitat Fragmentation

A primary threat to wildlife is **fragmentation** -- the breaking up of larger habitat areas into smaller sections. This results from modification or conversion of the landscape due to development or agricultural operations.

Fragmentation decreases wildlife population sizes, isolates habitat areas and creates more edges – where two dissimilar habitats meet (i.e. grassland and residential subdivisions).

Carefully planned environmental corridors provide opportunities to reconnect fragmented natural areas and improve habitat for important plant, animal and insect species.



Natural Wildlife Pond South of Fourth Street Road East of CTH UU

populations isolated in one location, like a stand of trees or a secluded wetland, can overpopulate or die out without adequate environmental corridors allowing unimpeded movement.

The functional effectiveness of an environmental corridor depends on the type of species that use it, its size and shape, and its edge effects.⁸ Larger corridors offer greater habitat diversity. Linear corridors tend to be less diverse but offer important migration routes. In suburban environments, corridors often lie along stream and riverbanks. More than seventy-percent of all terrestrial wildlife species use riparian corridors. In farming areas, fencerows provide important habitat links for songbirds and other wildlife. Historically, fencerows were used to mark-off ownership of farm fields. Stones and stumps cleared from cultivated areas were laid along property lines or to separate “forties.” During the 1920’s the federal government advocated tree-lined fencerows as a means of reducing topsoil loss. Nation-wide, farmers began planting trees along fence lines to reduce wind erosion. Over time, these fence lines became more complex, providing habitat for a variety of plant and animal species. As more of Wisconsin’s farms are converted to subdivisions, these important areas for wildlife habitat are lost.

Environmental Corridors: Nature’s Hallways

One way to think of environmental corridors is to compare them to hallways. A building contains hallways, which are places of concentrated movement back and forth; and rooms, which are destination points where people eat, work, play, and sleep. The hallways serve to link places of activity. Just as hallways enhance the operation of a building, environmental corridors increase the value of natural resource areas. Areas of concentrated natural resource activity (“rooms”), such as wetlands, woodlands, prairies, lakes, and other features, become more functional when linked by environmental corridors (“hallways”).

SOURCE: *Environmental Corridors: Lifelines for Living*;
University of Illinois Extension; Fact Sheet Series, 2001-013.

In Empire, important environmental corridors include the Niagara Escarpment, farm fencerows, and areas along local creeks and streams. Protection of the latter is addressed through the *Fond du Lac County Shoreland / Wetland Zoning Ordinance*. Some protection of the Niagara Escarpment is provided through the *Empire Zoning Ordinance*. Farm fencerow protection is not regulated at this time. Protection of these areas is at the discretion of local landowners. The Town of Empire can continue to supplement Fond du Lac County and WDNR efforts to protect environmental corridors through effective zoning and subdivision regulations that protect natural resources with specialty zones and conservation subdivision techniques.

THREATENED AND ENDANGERED SPECIES

There are many threatened and endangered plant and animal species in Fond du Lac County. Unfortunately, there is not a list or map available specific to Empire. The WDNR has county-level maps of threatened and endangered species. These maps do not precisely identify habitat areas within each county. The reason for this is because the WDNR does not want people to visit or otherwise intrude on the habitats of endangered and threatened species. The WDNR is attempting to identify and catalog endangered plant and animal species across the state. For a complete, up-to-date list, refer to www.dnr.state.wi.us. The state and federal government have programs and laws in effect to protect threatened and endangered plant and animal species in the Town of Empire and beyond.



Henslow's Sparrow

⁸ Edge effects include the penetration of wind, light, and sound, as well as visibility beyond and into surrounding areas. They are crucial in determining the type of habitat a corridor will provide.

EXOTIC AND INVASIVE SPECIES

Non-native, or exotic, plant and animal species have been recognized in recent years as a major threat to the integrity of native habitats and species, as well as a potential economic threat (damage to crops, tourist economy, etc). The WDNR requires that any person seeking to bring a non-native fish or wild animal for introduction in Wisconsin obtain a permit. The Town of Empire can help combat exotic species by educating residents about non-native species (using the Internet or a Town newsletter as primary tools in this effort) and by encouraging (or even require using the *Empire Zoning Ordinance*) residents to use native plants in landscaping.

For a complete listing of invasive plants and animals, visit: www.dnr.state.wi.us/invasives/.



Spotted Knapweed

Source: <http://dnr.wi.gov/invasives/fact/knapweed.htm>
An invasive specie found in Empire, WI.

METALLIC AND NON-METALLIC MINING RESOURCES

As part of NR 135, Wisconsin Administrative Code, adopted in December 2000, any community in Wisconsin may adopt an ordinance to establish requirements for reclamation of non-metallic mines, such as gravel pits and rock quarries. If a community decides not to develop its own ordinance, a county may develop an ordinance for the area instead. Likewise, a regional planning agency may develop ordinances for the counties within their region. The ordinance must establish reclamation requirements to prevent owners and operators of quarries and gravel pits from abandoning their operations without proper reclamation of the mine or quarry.

The process of siting a mine continues to be a local matter governed under existing zoning procedures by local authorities. The reclamation requirements through NR 135 add to the status quo, but do not replace or remove any other means of regulation. The requirements neither regulate active mining processes nor have any effect upon local zoning decisions like those related to the approval of new mine sites.

Under NR135, any landowner of a demonstrated “marketable non-metallic deposit” may register the site for mining. The local zoning authority may object to the application if the zone does not permit non-metallic mining as a use. Registration expires after a 10-year period and may be extended for a single 10-year period if it is demonstrated that commercially feasible quantities continue to exist at the property. Otherwise, remediation action is required. Towns rezoning property in a manner consistent with their Comprehensive Plan are not required to permit non-metallic mining operations that are inconsistent with their adopted plan.



Site of Future Gravel Pit
7 Hills Road, Town of Empire, WI

The location of existing quarries is shown on the *Current Land Use Map* presented in the Current Land Use Chapter (9). The *Empire Zoning Ordinance* requires a conditional use permit to establish any new

non-metallic mine in the Town. To get a conditional use permit, a quarry is required to prepare a reclamation plan to be approved by Fond du Lac County.

AIR QUALITY

Air pollutants can impair human health, harm the environment and cause property damage. The United States Environmental Protection Agency (USEPA) evaluates air quality using health-based criteria (science-based guidelines) as the basis for setting permissible air quality levels. One set of limits (*primary standard*) protects health; another set of limits (*secondary standard*) is intended to prevent environmental and property damage. A geographic area that meets or exceeds the primary standard is called an *attainment area*; areas that don't meet the primary standard are called non-attainment areas.

Fond du Lac County is an attainment area. The closest non-attainment areas to Fond du Lac County include portions of Washington, Sheboygan, and Manitowoc Counties. These communities are classified as having seasonally unhealthy conditions for sensitive groups of people (i.e. elderly, children, asthmatics). The nearest air quality monitoring station to Empire is located in the City of Fond du Lac. More information on air quality is available at www.dnr.state.wi.us/org/aw/air/.



Scenic View along Grandview Drive in Empire

The primary contributors to diminished air quality in Empire include emissions from automobiles, trucks, farm equipment and industry. Providing access to mass transit, encouraging carpooling, and providing a trail system are some of the methods often discussed as means of reducing the amount of air pollution caused by motor vehicles. As fuel costs rise, automobile and truck manufacturers continue to expand choices in fuel-efficient, hybrid, and alternative fuel vehicles that generate less pollution. Pollution generated by industry activity in the City of Fond du Lac is regulated by the *City of Fond du Lac Zoning Ordinance*, as well as, the WDNR and Federal Clean Air Act requirements. Similarly any industry located in the Town of Empire is regulated by the *Town of Empire Zoning Ordinance* and the same WDNR and Federal requirements.

SOILS⁹

There are four general associations of soils found in and around Empire. The most common is the **Theresa-Pella-Lamartine Association**. It is the largest continuous block in the eastern third of the County and encompasses significant portions of Empire. This association is easy to farm and is largely used for crop production. The two main limitations of these soils are erosion and wetness. The well-drained areas with these soils support oak, sugar maple and basswood forests, and the poorly drained areas support white cedar, black spruce, elm and willow forests.

The **Kewanee-Manawa-Poygan Association** is one of three minor soil associations found within the Town of Empire. These soils are well to poorly drained and moderately permeable. Most of this association is used for crop production. Sugar maples, basswoods and oak trees are common to these soils.

⁹ Parts excerpted from *The Town of Empire Comprehensive Plan*, March 1998.

The **Beecher-Elliott Association** is somewhat poorly drained and moderately permeable due to its clay content. Like the other associations in the Town, most of the Beecher-Elliott soils are used for cropland and some areas are used as pasture or woodlots. Prairie grasses and sparse stands of oak and hickory can be found on these soils, as well as marsh grasses and other water-tolerant plants.

The **Houghton-Palms Association** occupies large, nearly level depressions and wetland areas of Fond du Lac County and can be found in some areas of Empire. These soils are poorly drained and are subject to ponding. Native vegetation includes marsh grasses, white cedar, black spruce, elm and willow trees. These soils are illustrated on the *Soil Association Map* within the mucky peat category.

The maps provided on the next several pages are based on the soil data available from Fond du Lac County and the ECWRPC. They were developed to identify approximate locations of soil limitations based on data mapped by Fond du Lac County. Specific use of a parcel would depend on further tests of the soils involved.

The *Building Suitability Map* illustrates areas within Empire with severe engineering limitations based on the attributes of identified soil types. Soils with “severe risk” from a building suitability standpoint are poorly or somewhat poorly drained and which would require special engineering to be built upon. Engineering problems due to the soils may include:

- A high shrink-swell potential (the difference in volume of a given weight of particular soil when dry and when moist);
- A high water table that can cause problems such as flotation of pipes and frost-heave
- The soil may have a low bearing capacity and not be suitable to support the weight of construction; and/or,
- Bedrock near the surface makes digging basements and location of sewage and water mains difficult.

The *Sanitary Suitability Map* was derived by Fond du Lac County. It is based on assessment of soils with respect to their ability to support conventional on-site individual sanitary systems. Much of the Town is classified as having severe risk. As a result, most new development is occurring within sanitary districts. It is important to note here that the innovative systems profiled in the Utilities and Community Facilities Chapter are likely an option for some of the areas shown as having severe soil limitations for sanitary systems. Moreover, it is also important to understand that any sanitary system requires an on-site investigation to determine specifically what soils are on a property. The planning maps in this section are a general guide, but do not replace individual site soil investigations.

Historical Resources

The Wisconsin Historical Society has created the *Architecture and History Inventory* (AHI) - an Internet-based search engine that provides architectural and historical information on approximately 120,000 properties in Wisconsin. The AHI has information on buildings, structures, and objects that contribute to Wisconsin's unique history. The AHI documents a wide range of historic properties such as round barns, log houses, cast iron bridges, small town commercial buildings, homes houses, among others. The Wisconsin Historical Society identifies 35 historical sites in the Town of Empire. The following are a few from the AHI list. The complete list is available on-line at: www.wisconsinhistory.org/ahi

For more Information....

The Introduction Chapter provides a summary of Empire's early history, including information about the town's initial settlement in the mid 1800's. Reminders of the Town's early history can still be found today in historical sites scattered throughout the Town and by site names (i.e. Lake de Neveu). To learn more about area history, contact the Fond du Lac County Historical Society.

- **John B. Macy House.** Located at N5620 USH 45, the John B. Macy House is a brick Italianate style home constructed in 1850. On the same property, the AHI identifies the Macy Library (an octagon style building built between 1850 and 1865), three barns, tool shed, stagecoach house and summer kitchen as historical features.
- **Phillips, L.H. House.** Constructed in 1873, the Phillips, L.H. House is located on the eastside of CTH K, 0.4 miles south of STH 23. The Queen Anne style house was pictured in the *1874 Atlas of Fond du Lac County*. The two-story home features clapboard siding, a gabled roof and odd shaped windows.
- **G.N. Shoemaker Farmstead.** Located at W4182 Highway 23 this two story, Italianate Style home has a hipped roof, red brick foundation and brackets under the eaves. The Fond du Lac County Plat Books suggest it was built for G. N. Shoemaker (it was in place as of 1874).
- **Rosenbaum Farmstead.** This farmstead is located at N6601 Tower Road. The two-story farmhouse is characterized by its gable roof, fieldstone foundation and segmental arch windows. This house is of unusual design and, if historically intact, may be eligible for National Historic Property listing.

In addition to the buildings profiled in the AHI, cemeteries are also important historical resources in a community. The cemeteries located in Empire are profiled in the Utilities and Community Facilities Chapter.

Historical resources, like natural resources, are valuable community assets warranting preservation. Town governments, like other governments in Wisconsin, have the authority to preserve their historical heritage (Wisconsin Statutes §60.64) through a local historic preservation ordinance. A historic preservation ordinance can establish procedures to designate historically and culturally sensitive properties and places and to review projects that have the potential to negatively affect these important places. The Town of Empire does not currently have such an ordinance. The goals and objectives in this plan outline some steps to preserve historic structures and areas in Empire.

Cultural Resources

Residents of the Town of Empire find many cultural resources in the City of Fond du Lac (i.e. theaters, museums, clubs, churches, etc.). In addition, easy access via area highways to the Fox Cities, Milwaukee and Madison further expands cultural offerings available to Town residents. Within the Town of Empire, area churches are the primary cultural resource for residents.

Current Policies & Programs

This section highlights the primary programs available to protect Empire’s natural and farmland areas.

COUNTY SHORELAND/WETLAND ZONING

Shorelands and wetlands are often viewed as valuable recreational and environmental resources. These areas provide for stormwater retention and habitat for various types of fish and wildlife. Development in these areas may have an adverse effect on water quality, wildlife habitat and stormwater drainage. In addition, it may also result in increased development and maintenance costs to protect from the occurrence of flooding and high water, increased flood insurance premiums, extensive site preparation, and maintenance and repairs of roads.

The State of Wisconsin requires that every county adopt a Shoreland/Wetland Ordinance to address the problem associated with development in these areas. Development in shoreland areas is generally permitted, but specific design techniques must be considered. Development in floodplain areas is strictly regulated and in some instances, not permitted. The authority to enact and enforce these types of zoning provisions is set forth in Ch. 59.97 Wis. Stats. and Wisconsin Administrative Codes NR115.116 and 117, and is established in the Fond du Lac County Zoning Ordinance.

Fond du Lac County is currently administering its Shoreland/Wetland Ordinance in unincorporated areas of the county including the Town of Empire.

FARMLAND PRESERVATION PLAN/EXCLUSIVE AGRICULTURAL ZONING

Maintaining productive land for agricultural uses has been a long-time goal of Wisconsin. To achieve this goal, the state has enacted several types of legislation that provide monetary incentives to eligible landowners to keep their land in a productive state.

Fond du Lac County has adopted a Farmland Preservation Plan so that local farmers are eligible for tax credits through the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) Farmland Preservation Program. Farmers interested in this program can sign-up with DATCP.

Unfortunately, the Farmland Preservation Program is not working as well as it was intended. Not only has the amount of tax credits been reduced significantly over the last several years, but the paperwork required has also deterred many. As a result, farmland is being lost in Fond du Lac County as more and more people seek to develop rural residences. Fond du Lac County may address this farmland preservation and protection issue through a county comprehensive plan.



Farm field as seen from Fourth Street Road

WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMITS (WPDES)

Any CAFO with over 1,000 animal units, or more than 300 animal units that meet discharge criteria, is required to obtain a WPDES Permit. This same permit is also issued to all businesses and industries in the State of Wisconsin that discharge water or wastewater to surface water, groundwater and/or wetlands. The permits require applicants to provide a plan for runoff management for outdoor lots and feed storage areas, a manure storage facility plan/diagram, a comprehensive manure management plan to be updated annually, willingness to submit to monitoring and reporting requirements and a daily record keeping log system. The permit essentially regulates land application, manure storage and runoff management – all of which have the potential to be a discharge to waters of the state.

The WPDES Permit process provides the opportunity for public comment, which may result in changes to the environmental assessment completed by WDNR. The WPDES does not address noise, land value, traffic or other types of similar issues because there is no statutory authority for the permits to address these types impacts. These types of concerns can only be regulated by county and local ordinances.

CONSERVATION RESERVE ENHANCEMENT PROGRAM (CRP)

For More Information...

www.fsa.usda.gov/dafp/cepd/crp.htm

CRP is a USDA program which enhances the successful Conservation Reserve Program that has run in the U.S. since 1985. In Wisconsin 600,000 acres have been taken out of agriculture production to decrease erosion, enhance water quality, and establish wildlife habitat in the 13 years since its inception. Under the program, a farmer volunteers to take land out of production for a period of 10 or 15 years and is paid annual rental payments and cost-share assistance to establish long-term, resource-conserving covers on eligible farmland.

The Commodity Credit Corporation (CCC) makes annual rental payments based on the agriculture rental value of the land and it provides cost-share assistance for up to 50 percent of the participant's costs in establishing approved conservation practices. Participants enroll in CRP contracts for 10 to 15 years.

The CCC through the Farm Service Agency (FSA) administers the program, and program support is provided by Natural Resources Conservation Service, Cooperative State Research and Education Extension Service, state forestry agencies, and local Soil and Water Conservation Districts. At the end of the contract period the farmer can sell the land or put it back into production.

THE RIGHT TO FARM ACT

Wisconsin has a right-to-farm law protecting farmers from nuisance lawsuits related to typical farm noise and odors. As residential development expands into farmland areas, it is inevitable that odor issues develop. Often the issues relate to manure spreading and storage. Another common farm practice is plowing and harvesting at night, which also creates some concerns for residents living nearby. People who move to rural areas near farmland are not aware of these and other potential nuisances. As more people move to rural farmland areas conflicts are inevitable. To minimize conflicts, education is strongly recommended. By educating new landowners about potential conflicts, "surprise" nuisances can be avoided.

The Town of Freedom in Outagamie County has an Agricultural Committee to respond to concerns and or complaints of rural residents pertaining to farming operations. As a policy, if a farm operation is adhering to required ordinances and standard operating procedures, the Agricultural Committee will not interfere with said farming operation. The Town of Empire may consider establishing a similar committee. This may become particularly important as development pressures mount in the future.

2002 FARM SECURITY AND RURAL INVESTMENT ACT

The Farm Security and Rural Investment Act of 2002, which governs Federal farm programs for six years, was signed into law on May 13, 2002. Its provisions support the production of a reliable, safe, and affordable supply of food and fiber; promote stewardship of agricultural land and water resources; facilitate access to American farm products at home and abroad; encourage continued economic and infrastructure development in rural America; and ensure continued research to maintain an efficient and innovative agricultural and food sector.

Under the 2002 Farm Act, the milk support purchase program, which had been operating year-to-year, became a multiyear program. The Commodity Credit Corporation (CCC) will buy, at support purchase prices, any butter, cheddar cheese, or nonfat dry milk that is offered to it and meets specifications. The support purchase prices are set to ensure that the price of manufacturing milk averages at least the milk support price. The Secretary has authority to adjust the support purchase price if deemed necessary.

The Dairy Export Incentive Program (DEIP) pays cash bonuses that allow dairy product exporters to buy U.S. products and sell them abroad when international prices are below domestic prices. DEIP removes products from the domestic market, helps develop export markets, and plays an important role in milk price support. The DEIP quantities and dollar amounts are subject to World Trade Organization restrictions under the Uruguay Round Agreement on Agriculture.

The 2002 Farm Act established a national Dairy Market Loss Payments (DMLP) Program to provide a price safety net for dairy producers. A monthly direct payment is to be made to dairy farm operators if the monthly federal prices fall below a certain level.

ENVIRONMENTAL QUALITY INCENTIVES PROGRAM (EQIP)

The EQIP was reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill) to provide a voluntary conservation program for farmers and ranchers that promotes agricultural production and environmental quality as compatible national goals. EQIP offers financial and technical help to assist eligible participants install or implement structural and management practices on eligible agricultural land.

For Additional Information...
www.nrcs.usda.gov/programs/eqip/

The EQIP offers contracts with a minimum term that ends one year after the implementation of the last scheduled practices and a maximum term of ten years. These contracts provide incentive payments and cost-shares to implement conservation practices. Persons who are engaged in livestock or agricultural production on eligible land may participate in the EQIP program. The EQIP activities are carried out according to a plan of operations developed in conjunction with the producer that identifies the appropriate conservation practice or practices to address the resource concerns. The practices are subject to NRCS technical standards adapted for local conditions. The local conservation district approves the plan.

The EQIP may cost-share up to 75 percent of the costs of certain conservation practices. Incentive payments may be provided for up to three years to encourage producers to carry out management practices they may not otherwise use without the incentive.

ATCP 51 - LIVESTOCK SITING RULE

On September 16, 2005, the Wisconsin Department of Agriculture's Board gave final approval of ATCP 51. This rule establishes standards for the siting of livestock operations. In its approval, the Board added an amendment to have the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) annually review ATCP 51 to see if any modifications are needed.

ATCP 51, implements Wisconsin's Livestock Facility Siting Law (s. 93.90, Stats.). The law does not require local approval of new and expanding livestock operations, but if local approval is required by the community, the local government must grant or deny approval according to this rule. A local government may not consider other siting criteria, or apply standards that differ from this rule, except as specifically authorized in the law. This rule applies to new or expanded facilities that keep cattle, swine, poultry, sheep or goats.

Under the law, a local government may not deny or prohibit the siting or expansion of a livestock facility of any size unless one of the following applies:

- The site is located in a non-agricultural zoning district.
- The site is located in an agricultural zoning district where the livestock facility is prohibited. The zoning prohibition, if any, must be clearly justified on the basis of public health or safety. The law limits exclusionary local zoning based solely on livestock facility size.
- The proposed livestock facility violates a valid local ordinance adopted under certain state laws related to shoreland zoning, floodplain zoning, and construction site erosion control or stormwater management.
- The proposed livestock facility violates a state building, electrical or plumbing code for that type of facility.
- The proposed livestock facility will have 500 or more "animal units" (or will exceed a lower threshold incorporated in a local zoning ordinance prior to July 19, 2003), and the proposed livestock facility violates either 1) the standards in the rule or, 2) a stricter local standard by ordinance. Those standards must be based on scientifically defensible findings of fact that clearly show the standards are necessary to protect public health or safety.

With respect to future applications for new livestock facilities and the expansion of existing operations to include more than 500 animal units, the Town of Empire will deny applications in areas with non-agricultural zoning (i.e. residential, commercial, etc.). Applications will also be denied in areas zoned agricultural-transition if located within an approved Town or City Growth Area because these areas are expected to transition to a non-agricultural use. Applications for new livestock facilities or expansion of existing farm operations to include more than 500 animal units in other areas of the Town will be subject to state requirements included in ATCP 51.

Agricultural, Natural & Cultural Resources Issues & Concerns

What follows is a description of the major issues and concerns expressed during the planning process. Strategies to address these issues and concerns are included in the Agricultural, Natural and Cultural Resources section of the goals, objectives, and policies found in the Implementation Chapter.

LONG-TERM SUSTAINABILITY OF FARMING IN EMPIRE

A depressed farm economy and growing pressure from nonfarm development has led to increasing conflicts over the use of agricultural land. Central to these conflicts is the demand for rural housing and recreational land development, which has resulted in dramatic acceleration in the rate of farmland conversion to nonfarm uses. In fact, nonfarm growth pressures lead to Wisconsin passing the Comprehensive Planning Law in 1999 to encourage communities to write and use comprehensive plans to guide land use decisions.

Fond du Lac County and the Town of Empire have not escaped from this residential development pressure. In 2005, *Progressive Farmer Magazine*, ranked Fond du Lac County among the top 20 best places for rural living in America. This rating would not surprise the many people who have moved into the towns around Fond du Lac over the last 15 years. However, this residential growth has impacted area farmland. Between 1990 and 1998, Fond du Lac County lost 50 farms totalling approximately 15,000 acres to development. These figures translate into a 2.7% decrease in the overall number of farms in the County and a 4.0% decrease in the amount of land in farm uses over the same period.¹⁰

At several points in the Empire planning process residents expressed their desire to see farmland remain an important part of the landscape over the next twenty years. At the same time, local farmers and others expressed their concern about the long-term sustainability of farming. As local farmers age, they choose to sell their land or simply stop their farming activities. Unfortunately, there are relatively few young people that are becoming farmers in today's economy. Instead, young people seek jobs with vacations, 401K, and other benefits farming has not been able to traditionally provide. As a result, when local farmers retire, faced with a need for retirement income, they sell their property for development.

This section highlights options available to local farmers with respect to their farmland beyond simply subdividing it for residential development.



....COMMUNITY SURVEY SPOTLIGHT...

Q2: Family farms within the Town of Empire are declining in numbers. In your opinion, how should the town address this situation (select any)

Take no action	13.5%
Restrict the number of land divisions on prime farmland by requiring 35-acre parcels	34.0%
Allow for a limited number of small parcels (i.e. one acre) to be created on each farm	12.7%
Restrict the location of homes developed in prime farmlands to the edges of farm fields to maintain contiguous tracts of farmland.	31.2%
Cluster subdivisions	20.1%
Other	6.1%

¹⁰ Program on Agricultural Technology Studies, Wisconsin County Agricultural Trend Data, 1990 – 1998. This data represents the most recent complete comparative county assessment completed in WI. No data specific to Empire is available from this source.

Purchase of Development Rights (PDR)

One way of protecting farmland is through the purchasing of development rights (PDR). PDR is a voluntary program, where a land trust, local government, or some other agency usually linked to local government, makes an offer to a landowner to buy the development rights on the parcel. The landowner is free to turn down the offer, or to try to negotiate a higher price.

When the development rights to a farm are sold, the farmer receives payment equal to the difference between the fair market value of the land a developer would pay if it could be developed and the price the land would command for agricultural use. In return for this payment, a conservation easement is recorded on the deed to the property. This easement stays with the land so it is binding not only on the current owner, but future owners of the property as well.

When the development rights to a farm are sold, the farm remains in private ownership. The private landowner still retains the right to occupy and make economic use of the land for agricultural purposes. The landowner gives up the right to develop the property for some other use in the future. Farmers are not required to sell their development rights. Participation in PDR programs is entirely voluntary.

The main advantage of PDR over other approaches to farmland preservation is that it offers a permanent, long-lasting solution. PDR virtually assures that land will remain forever in agriculture because it extinguishes the right to develop agricultural land for non-agricultural uses. Farmland preservation tax credits and use value assessment of agricultural land encourage farmers to keep their land in agricultural use somewhat longer than otherwise might be the case, but do not assure that land will remain in agricultural use.

Another major advantage of PDR is that it is perceived as an equitable, fair, and voluntary way to preserve agricultural land. A third advantage is that it provides a way to correct a major shortcoming of the current Farmland Preservation Program by targeting limited financial resources to preserve and protect agricultural land most worthy of preservation.

The main disadvantage of PDR is cost. Development rights can be expensive to purchase, and so funding for PDR needs to be selectively targeted to preserve and protect agricultural land that is most worthy of preservation. As a result, not every farmer who wants to sell development rights will be able to do so.

How to Establish a PDR Program

There is not a PDR program in effect in the Town of Empire. The most successful PDR programs are county-wide programs. However, some individual towns have established their own PDR programs.

If the Town of Empire were to establish local PDR program, the Town would need to raise the capital needed to purchase local development rights. This may mean asking residents to consider a tax increase specifically dedicated to this program, or perhaps seeking foundation or grant funds to initiate the program.

Once a pool of funds has been established, the Plan Commission would review applications of landowners who wish to sell development rights. This process would require obtaining appraisals, prioritizing parcels and negotiating agreements with the assistance of the Town attorney.

Once development rights are purchased, the Town would be responsible for ensuring that deed restrictions are enforced and land remains undeveloped.

Land Trusts and Conservation Easements

Land trusts provide an option to landowners seeking to protect natural areas and farmland. Land trusts 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 box). Residents are encouraged to talk with local land trusts about what options are available to protect local farmland.

Specialty Farming

Specialty or niche farming provides an alternative to conventional agricultural production, particularly for smaller farmers attempting to compete with larger agricultural operations. Empire's location and highway access provide an opportunity to market directly to larger population centers in the Fox River Valley and Milwaukee. Marketable specialty agricultural products may include:

- Organic milk and cheese from local dairy operations
- Organic vegetables and produce (sold locally at a collective farmers market in Empire or in nearby cities)
- Aquaculture products
- Pumpkin patches, berry farms, and orchards that allow visitors to pick their own produce
- Walnuts, maple syrup, and pine trees (for landscaping or holidays) from local tree farms
- Horse farms (offering boarding and potential trail access)

Organic farming is a particularly attractive specialty farm option given that 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, family farmers. The Future Land Use Chapter identifies agricultural districts to target farm preservation and location options for a regional farmers market. To support specialty farming the Town can form an agricultural committee to coordinate with local farmers, provide education materials through the Town web page and newsletters, and encourage efforts of the Fond du Lac UW-Extension Agricultural Resource Agent.

Value Added Operations

Traditionally, farmers sell a parcel or two as a means to acquire additional cash flow. Instead, value added operations could be established in agricultural areas. These options include:

- Rural roadside stands to sell locally grown products.
- Sale or lease of small areas for wind turbines and cellular towers. These users provide rental fees in excess of \$7,000 per year per turbine/tower for farmers and the area around these uses can continue in farming without any noticeable conflict.

Local Land Trusts

Glacial Lakes Conservancy: Provides enduring solutions for the preservation of land, waters, and woodlands from Lake Michigan to Lake Winnebago.

Northeast Wisconsin Land Trust: Preserves and restores the natural heritage of Northeast Wisconsin land and waters through partnerships in land conservancy and resource management.

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.

To support value added operations, the Town of Empire could:

- Continue to support and promote a regional farmers market
- Support the establishment of an agricultural committee to coordinate roadside stand sales and develop a brochure/internet marketing tool/map to direct customers to local offerings
- Adopt minor amendments to the *Empire Zoning Ordinance* to more clearly permit accessory uses and structures in agricultural areas to support value added opportunities for local farmers (i.e. roadside stands, home occupations, corn mazes, bed and breakfasts, petting zoos, farmer-for-a-day camps, haunted barns and related seasonal activities, etc.)

Return of Young Workers to Farming

Nationally, only 3.3% of farmers are under the age of 34. The national median age of a farmer is 55. These facts are of great concern to the USDA, as well as, local farmers. Fortunately, there is some good news. A slow resurgence of younger workers are seeking a living from farming, particularly on smaller farms using traditional tools and practices.¹¹ Young entrepreneurs are discovering career opportunities in small-scale agricultural production, marketing, distribution, and related fields. This change is due to many different factors, including:

- A growing interest in developing and supporting local food economies. The food we consume in the U.S. travels an average of 1,400 miles from farm to table. Shipping food great distances requires the use of valuable fossil fuel resources and makes our food supply vulnerable to destruction or contamination. Local food economies, in which small farmers and market gardeners grow food for local consumers is enticing many young entrepreneurs to consider careers in farming. Between 1994 and 1998 the number of farmers markets in the U.S. doubled. In 2000, there were more than 3,000 farmers markets nationwide.
- Strong organic and specialty farm markets that are proving very profitable. Since 1990, the organic food industry has grown 20 percent or more *each year* and now constitutes an almost \$8 billion industry.
- A changing work ethic demonstrated by generation “X” who value quality of living over traditional corporate success indicators (i.e. vacation, corner office, significant paycheck).
- Efforts of the state and federal government to establish health care options for workers in a variety of jobs not otherwise covered by insurance.
- Federal government establishment of individual retirement account options (i.e. Roth IRA, etc.) that provide viable independent retirement savings options for workers.

To support youth farming initiatives in Empire, the Town could:

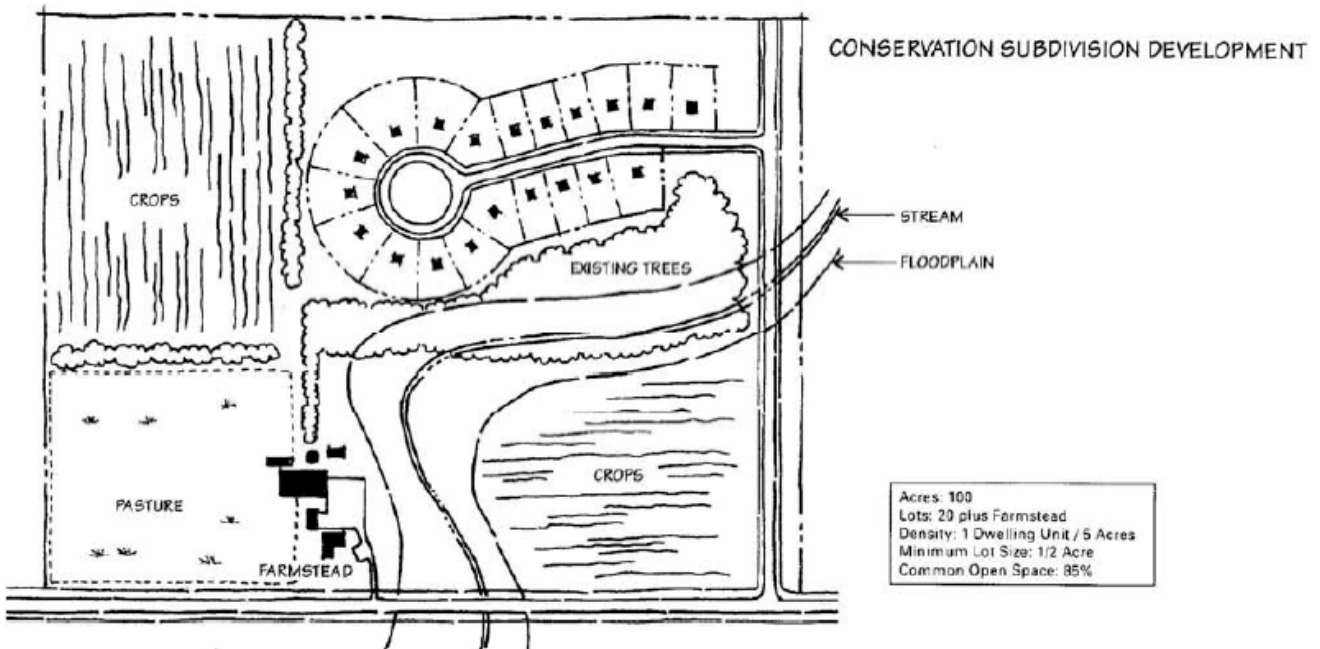
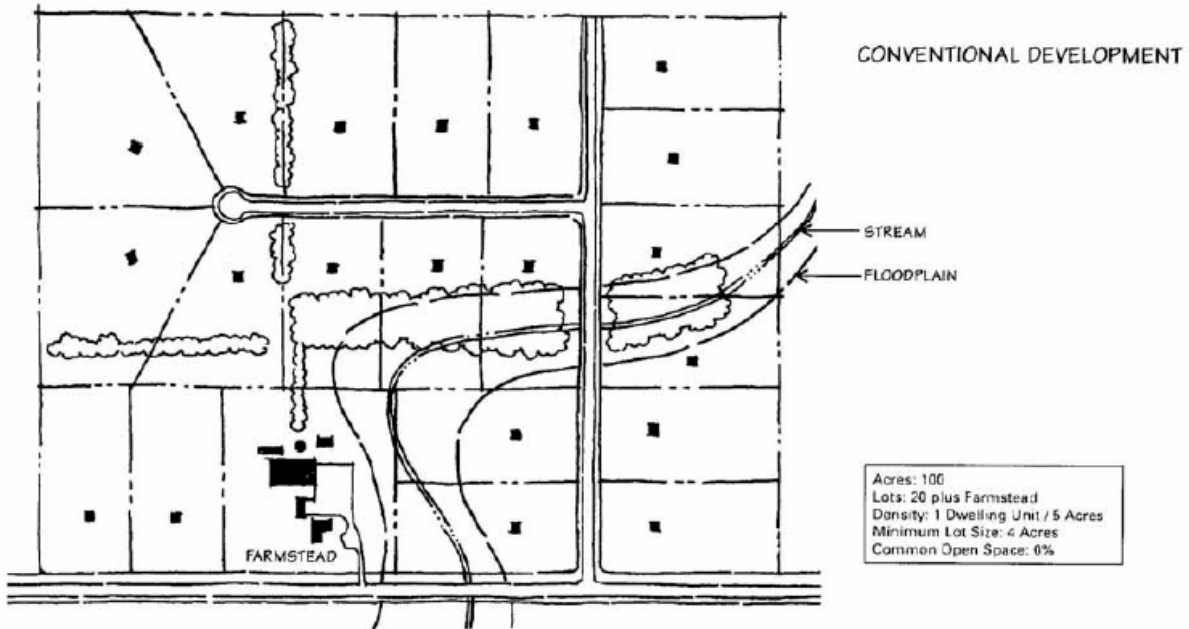
- Establish a local agriculture committee to offer area farmers (younger and others) a network for support, insight, and assistance.
- Encourage efforts of the Wisconsin Farm Bureau and area schools to educate youth about careers in farming.

¹¹ Data supporting this trend comes from a variety of sources including the National Young Farmers Educational Association, Sustainable Agriculture Research (www.sare.org), Minnesota Farm Guide (available www.minnesotafarmguide.com)

Conservation-Based Development Approaches

If a landowner still decides that the sale of their farmland for development is their best decision, conservation subdivision development approaches¹² provide an option that can be used to simultaneously accommodate new development and protect farmland. Using this approach, the finest farm soils should be identified on a site for preservation and cluster housing sites located in adjacent areas. For more information on conservation subdivisions, refer to the Housing Chapter. The illustration below shows how this approach can be used to accommodate development and retain farmland.

COMPARISON OF CONVENTIONAL & CONSERVATION DEVELOPMENTS



Conservation subdivision development can help preserve farming activities.

PROTECTION OF THE NIAGARA ESCARPMENT

From the onset of the planning process, the protection of the Niagara Escarpment was raised by many residents as a community concern. At the Kick-Off Meeting, a majority of residents indicated a desire to see the Niagara Escarpment protected and preserved so future generations can enjoy it. At this time, much of the ledge remains undeveloped - providing an opportunity to protect this natural resource. Probably the most effective means for preserving the Ledge is to direct future development away from it. Currently, The *Town Zoning Ordinance* defines the Niagara Escarpment as a critical overlay area. This designation provides the Town with the authority to deny development requests along the escarpment. The following is text from the *Town of Empire Zoning Ordinance* used to define the critical overlay area:

“Regulated Area. A buffer area extending six hundred (600) feet in each direction (total buffer width = 1,200 feet) from the ridgeline of the Niagara Escarpment as generally depicted in the Town of Empire Comprehensive Plan. The term ridgeline is defined as the ground line located at the highest elevation of the ridge, within the buffer area, and running parallel to the long axis of the ridge.”

To direct future development away from the escarpment, the Town should keep the current 600-foot buffer and even consider increasing it. By increasing the buffer, the Town will be able to greatly protect the escarpment and the surrounding wildlife habitat from future development. This will protect surrounding property values, preserve scenic views for the community and maintain an important environmental corridor.

Another option for the Town is to amend the *Empire Zoning Ordinance* to allow only conservation subdivisions in or immediately adjacent to critical areas like the Niagara Escarpment. This would accommodate property owners who want to pursue their right to develop, but would protect a greater quantity of land to increase the natural beauty of the escarpment and the natural buffers around it. In addition, the Town could work with area land trusts, conservancy groups, and the WDNR to purchase land or acquire development easements along the escarpment as an additional means to permanently preserve this resource.

In the WDNR Niagara Escarpment Study referenced earlier in this chapter, 10 threats to the biodiversity and sustainability were identified. Below is a summary of those threats along with some actions the Town can take to address each.

1. **Land use issues/conflicts/problems:** Land use issues occur for a variety of reasons. It is important for the Town to work with the surrounding communities to ensure the Niagara Escarpment is identified as a unique natural feature. The *Town of Empire Zoning Ordinance* prevents some land use issue conflicts from occurring by addressing the Niagara Escarpment as a critical overlay area.

...COMMUNITY SURVEY SPOTLIGHT...

Q16: Many residents have identified the Niagara Escarpment (the Ledge) as an important natural resource and feel it should be protected. In your opinion, what tools should be used to protect the Niagara Escarpment?

Zoning Overlay:	37.4%
Land Trust Acquisition:	49.2%
Cluster Subdivision:	16.8%
Other:	7.2%
Required Setbacks:	35.2%
Transfer of Development Rights:	12.3%

While in Q16, residents expressed the most support for acquisition by a Land Trust, residents were clear in saying they didn't want to see tax dollars used for this purpose in Q17.

Q17: Would you be willing to pay additional taxes to support Land Trust or Transfer of Development Rights?

Yes:	31.7%
No:	50.5%
No Opinion:	17.8%

2. **Development:** One of the greatest threats to the Niagara Escarpment is development. With an increasing population, more pressure is being placed on areas around the Niagara Escarpment. There are few options the Town can take to allow development around the escarpment, but still preserve the natural beauty of the area. One option involves the use of conservation subdivisions. As discussed in the Housing Chapter and mentioned earlier in this subsection, conservation subdivisions techniques could be pursued to preserve the Niagara Escarpment and lands adjacent to it.

Another option for the Town or a private individual would be to work with a land trust. As was mentioned earlier in this chapter, land trusts assist property owners with conservation easements and other conservation concepts. This allows the property to remain in a natural state with little or no development. The owner gains a tax advantage by having the conservation easement in place.

3. **Road Construction:** New and expanding roads disrupt and have the potential to destroy the biodiversity and natural features of the escarpment. In 2013, STH 23 is expected to be reconstructed from 2 to 4 lanes. This expansion will directly impact the Niagara Escarpment in the area of the construction. Fortunately, this is the only major road project anticipated for the future along the Niagara Escarpment in Empire. The Town should strongly discourage new road development within the “Escarpment Buffer Area” as identified on the *Future Land Use Maps*.
4. **Mining, quarrying:** Nonmetallic mining can have a significant impact on the environment. The escarpment has an abundant supply of gravel and crushed stone. However, negative impacts to the environment with increased habitat destruction and fragmentation. The Town should continue to prohibit nonmetallic activities in the “Escarpment Buffer Area” identified on the *Future Land Use Maps*.
5. **Tower Area:** The elevation of the Niagara Escarpment makes it a desirable location for wind generators, cellular towers, television and radio towers. Towers may have a detrimental impact on bird populations and scenic quality. The Town should continue to limit and or restrict construction in “Escarpment Buffer Area.”
6. **Recreation:** Regional awareness and pride in the escarpment has increased, creating a greater demand for recreational access to it. The increased popularity has resulted in the overuse of designated trails and the creation of unauthorized trails. All trails can serve as conduits for the introduction of invasive species. Currently, the Town has no public trails in the “Escarpment Buffer Area,” but a potential trail segment is illustrated on the *Utilities & Community Facilities Map and Plan* that would cross the escarpment in one area to complete a connected trail network in Empire. Such a trail may help to mitigate the use of other unofficial trails along the escarpment. The WDNR recommends trails be designed to lead to and from the escarpment rather than along its length to reduce some of the overuse problems. The proposed trail network respects this recommendation. As future trail construction near, across or within the escarpment occurs in Empire, the developer or Town should work with the WDNR to ensure that trail location and construction standards are met.
7. **Invasive/exotic species:** As more people visit the escarpment, the probability of a nonnative species being introduced increases. Invasive/exotic species displace or eliminate native species. The Town should encourage property owners along the Niagara Escarpment to work with the Fond du Lac County Land Conservation Department which seeks to prevent the spread of exotic species through educational campaigns.

8. **Hydrologic disruption:** New construction can seriously alter springs, sinkholes, caves and other karst features. Construction can affect water discharge rates from springs, by changing water infiltration rates. The Town should continue to limit land-altering activities within the “Escarpment Buffer Area” by encouraging subdivision designs that limit the environmental impact.

9. **Groundwater contamination:** Groundwater contamination has been an issue along the Niagara Escarpment for many years. The escarpment has many “pathways,” which lead directly to groundwater with little or no filtration. Surface activities such as agriculture, road salting, and other non-point pollution can contaminate water by moving directly into the groundwater. Leaky septic and storage tanks can also create potential contamination problems. The Town’s use of the Comprehensive Plan as a tool to direct development to areas served by sanitary districts, the use of efficient, innovative treatment systems, and enforcement of stormwater management practices each help to minimize the threat of groundwater contamination in Empire.

10. **Administrative inconsistency:** The escarpment runs for 650 miles across two countries, many states, and hundreds of municipalities. It is important to remember that the Niagara Escarpment is a unique natural feature that is not just found in the Town of Empire. Development that occurs along the ledge in Empire, may not only affect the Town, but it may have state and international implications. The Town should continue to coordinate with surrounding communities and organizations to help protect the escarpment.

WATER QUALITY PROTECTION

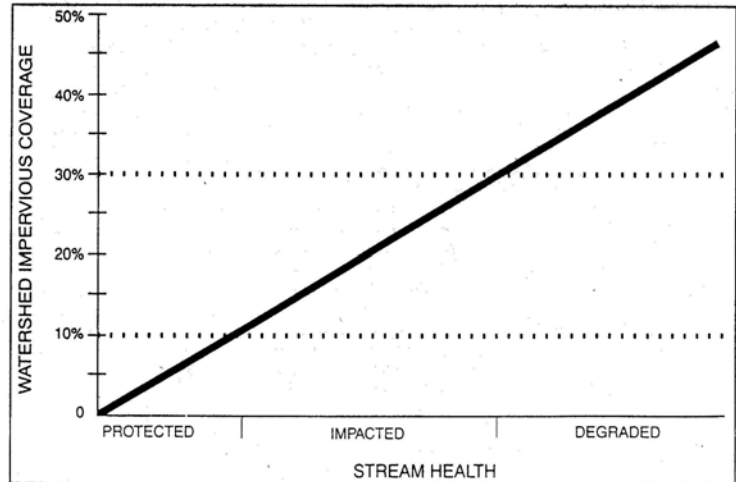
During the SWOT Exercise (Refer to Chapter 2 for more information), some participants expressed concern over the water quality in Empire. Residents expressed the following concerns:

- **Increased runoff from new developments:**¹³
As residential development occurs, the demands placed on the natural environment increases. Every new house, driveway and patio increases the impervious surface on the Town, thus limiting the places water can go. Normally, rainwater will be absorbed into the soils by trees or other vegetation, filtering the water as it makes its journey to lakes, streams, creeks, wetlands and the water table. When impervious surface is increased, the water is no longer being filtered, but rather is going directly into the water source at a more rapid rate. Streams fill more quickly and have a higher tendency for their banks to flood or worse. Steps can be taken to protect water quality in new developments:
 - Expand the critical areas overlay district of the *Empire Zoning Ordinance* to restrict new development or construction activities within all surface water riparian zones;
 - Utilize conservation subdivision techniques more to protect sensitive natural features from development; and,
 - Expand landscaping requirements for tree planning and landscaping standards for new and renovated parking lots, street right-of-way, and new subdivisions.

...COMMUNITY SURVEY SPOTLIGHT...	
Q19: What involvement should the Empire Town government have in the protection of groundwater quality and drinking water?	
No involvement:	4.7%
Provide information only:	16.0%
Regulate land uses that would adversely impact groundwater:	79.3%

¹³ Source: <http://www.uwsp.edu/cnr/landcenter/pdf/files/EnvironmentalIndicatorFactSheet.pdf>

A positive correlation exists between the percentage of impervious surface in a watershed and surface water quality (see graph). Stormwater runoff from impervious surfaces such as roads and roofs has an adverse effect on surface waters. As the percentage of impervious surfaces increases in a watershed, lakes and streams experience greater degradation from stormwater runoff. According to the *Center for Watershed Protection (CWP)* in Ellicott City, Maryland, “More than 30 different scientific studies have documented that stream, lake, and wetland quality declines sharply when impervious cover in upstream



SOURCE: Tom Schueler, Center for Watershed Protection, 1995.

watersheds exceeds 10%.” In 1999, CWP developed criteria that allowed local governments and watershed organizations to predict the effects upon surface water quality resulting from increases in impervious surfaces within a watershed. CWP classified watersheds into three groups, each defined by the percentage of impervious surface within the watershed.

- **Agriculture farming practices:** Livestock facilities located near shoreland areas and wetlands have the potential to create water quality problems. Existing farmers are encouraged to work with DATCP, UW–Extension, WDNR and the Fond Du Lac County Land & Water Conservation Department to protect groundwater resources. The Fond du Lac County Land & Water Conservation Department provides technical assistance to property with water resource problems and a animal waste storage facility closing program.
- **Fertilizers, Herbicides, and Pesticides:** Nitrate, most of it from fertilizers, is the most common chemical contaminant found in Wisconsin groundwater.¹⁴ Upwards of 95% of the chemicals applied to residential lawns are washed into storm drains/ditches and then into nearby creeks and streams following rain events. In northern climates, turf grass is only capable of ingesting fertilizer during the fall. Fertilizers applied during spring and summer months contribute to algae blooms and eutrophication of lakes and streams (the annual “greening” of Lake Winnebago is a result of the over use of commercial and residential fertilizers). Most herbicides, even those that claim to be focused on specific “weeds” or “pests”, kill healthy aquatic and terrestrial organisms and are suspected causal factors in many autoimmune and endocrine illnesses in humans and pets. By reducing or eliminating the amount of pesticides and herbicides applied to lawns, and fertilizing once per year during the month of September, Empire residents can greatly improve water quality and aquatic habitat in local lakes and streams.

The Implementation Chapter includes a variety of tools, best management practices, and funding courses to aid in the reduction of groundwater protection in the Town of Empire.

¹⁴ SOURCE: <http://www.aqua.wisc.edu/waterlibrary/facts.asp>

Coordination with Other Comprehensive Plan Chapters

The development of the Agricultural, Natural and Cultural Resources Chapter required coordination with all of the required plan chapters. For example, when considering economic development strategies the limitations presented by natural resources (i.e. wetlands, floodplains) is important to consider as are the benefits natural areas provide to the local quality of living. Below is a description of the critical issues addressed with respect to the Transportation, Land Use, Housing and Intergovernmental Cooperation Chapters. These chapters are profiled because their coordination with the Agricultural, Natural and Cultural Resources Chapter is critical to the success of the plan.

TRANSPORTATION

The Transportation Chapter discusses the need to provide trails through the community to provide access to natural areas and parks.

FUTURE LAND USE

Residents of the Town have clearly indicated the preservation of natural resources is a priority. As a result, when the *Future Land Use Maps* were developed special consideration was given to this priority and environmental corridors are provided. In addition, the Agricultural, Natural and Cultural Resource goals, objectives and policies in the Implementation Chapter include provisions to protect floodplains, wetlands, and other natural resources, including Lake de Neveu and the Niagara Escarpment.

HOUSING

Housing, if not carefully located and planned for, can have a severe impact on natural resources and farming operations. Housing development can fragment farming operations and wildlife habitat areas. If not carefully planned, additional traffic, people, and services associated with housing development can quickly destroy rural character. The Town of Empire would like to encourage development within its boundaries primarily where services are already available. This strategy for housing development is reflected in the *Future Land Use Maps*. Moreover, the Housing Chapter and this chapter discuss the opportunity conservation subdivision development techniques provide for integrating housing development with natural resource areas and farmlands.

INTERGOVERNMENTAL COOPERATION

As is discussed in the *Natural Resources and Environmental Concerns* portion of this chapter, to protect the Niagara Escarpment, the Town needs to take a direct and active role in preservation. To be successful, coordination with the WDNR, Fond du Lac County, and area landowners is needed to direct development to the away from the escarpment area.