

## **CHAPTER 5      Agricultural, Natural and Cultural Resources Element**

66.1001 (2)(e) Wisconsin Statutes:

**Agricultural, Natural and Cultural Resources Element.** A compilation of objectives, polices, goals, maps, and programs of the conservation, and promotion of the effective management, of natural resources such as groundwater, forests, productive agricultural area, environmentally sensitive areas, threatened and endangered species, stream corridors, surface water, floodplains, wetlands, wildlife habitat, metallic and nonmetallic mineral resources, parks, open spaces, historical and cultural resources, community design, recreational resources and other natural resources.

### **Section 5.1      Introduction**

The agricultural, natural and cultural resources of the Town of Grant play important roles in why most people choose to live here. Substantial natural woodlands and wetlands, varied abundant wildlife, and flat topography that makes for productive farms and farmland all come together to create a landscape rare in Wisconsin.

The residents of the Town of Grant recognize the value of their unique landscape and understand that it supports and sustains a way of life they are proud of. For those who choose to farm the land here, the community supports their efforts and works to minimize barriers that impede this economically viable industry. The residents also understand that the identification and protection of the natural resources of the community will help sustain a rich quality of life that is enjoyed by all who settle here.

### **Section 5.2      Agricultural Resources**

Before settlers arrived, the Town of Grant was an expansive sedge meadow surrounded by spruce-tamarack bogs and islands of sand which supported White Pine. As settlers moved into Wisconsin and expanded north the logging industry in the state grew. By the early 1900s most of the timber was logged off this land and frequent wildfires were common. This combination of factors created ideal conditions for grasslands to flourish. Also at this time, large scale drainage projects began with the goal of making the area suitable for farming. Most of the early attempts at farming were unsuccessful however due to the poor soil conditions and the harsh, windy and cold environment here.

Soon after, local residents began to use this land to grow bluegrass for seed harvest. During harvest, grass stems were left standing, resulting in excellent nesting cover for Greater Prairie - chickens. This agricultural practice continued until the early 1950's when competition from foreign markets resulted in the fall of the grass seed production industry. Fortunately, the fields of grass were easily converted to good pastures for cattle grazing. Populations of grassland species remained stable during these times. Since the 1960's, advances in farming technologies have resulted in some of the Town being converted into crops such as irrigated vegetables and upland cranberries. (Source: Wisconsin Department of Natural Resource Buena Vista Kiosk)

#### **A. Productive Agricultural Soils**

Productive agricultural soils in the Town of Grant have been identified, with the assistance of the County Conservationist, utilizing information from the Soil Survey of Portage County, published by the United States Department of Agriculture (Map 5.1). Friendship Loamy Sand, with 0 to 3% slopes, has been identified as having the highest productivity in the Town. The Friendship

series, however, requires irrigation to maintain productivity and are highly susceptible to pesticide and nitrate leaching.

While by Soil Survey definition, the Town has very little soil listed as productive, many other soils are made productive through the use of advanced technologies and contemporary farming practices (including drainage, irrigation, fertilizing, and best management practices). This is evidenced by the presence of irrigated lands and cranberry bogs throughout the Town (Map 5.1).

#### B. Farming Systems, Demographics, and Land Tenure

The Town is located in one of the two major farm regions in Wisconsin. The first and most prominent is the dairy region. In Wisconsin, dairying is most concentrated in a belt that begins near Hudson (St. Croix County), heads east to Wausau and Green Bay (Brown County), then turns southwest through Fond du Lac, Madison and ends near Dubuque (Iowa County). As of April 2016, Wisconsin Department of Agriculture permit information showed no active grade-A dairy farms operating in the Town of Grant. To the north and west in Plover there are four (4) farms; to the east in Pine Grove there are two (2), and in Buena Vista there are five (5) farms.

The second farming region in Portage County, which includes Grant, is that of fresh vegetable production. The irrigated sands of the “golden sands” region of Wisconsin lay between the Amherst and Stevens Point area, and south into Waushara and Adams Counties. There were a number of producers who had vegetable operations within the Town, as evidenced by approximately 128 irrigation pivots identified from year 2015 aerial photography. The Town of Grant/southern Portage County area is also home to several cranberry growing operations. Refer to Map 5.1 for locations of irrigated land and cranberry bogs.

The amount of land dedicated to agricultural production does change regularly from year to year. In 2000, the Portage County Planning and Zoning Office analyzed aerial photography for the Town of Grant to identify active farmland within the Community. The land in farms was broken down by presence of irrigation, 9,531 acres; use for row crops or hay, 4,445 acres; and permanent pasture, 1,246 acres. Total agricultural acres identified for 2000 were 15,222. An aerial photography analysis of this kind has not been completed by the Planning and Zoning Department since 2000.

There were 35 persons employed in an agriculturally related field in the Town of Grant between 2010-2014. This represented 3.2% of employment for the Town (Figure 1.3, Issues and Opportunities section). This is down slightly from the 1980 figure of 39 persons (6.2%). Decreasing farm employment is not a unique trend by any means. Farm numbers are generally down, while acreage per farm is up. Farm consolidation is a common practice in this industry.

#### C. Farm Economy and Infrastructure

Because of the lack of farm economy information available at the town level, a detailed discussion of the farm economy at the town level is not practical. Please see the complete discussion of the Portage County farm economy in the Agriculture, Natural and Cultural Resources Element of the Portage County Comprehensive Plan, and in the Portage County Farmland Preservation Plan.

**Map 5.1: Productive Agricultural Soils & Agricultural Practices**

**Map 5.2: Drainage District**

## D. Legislative Influences on Agriculture

### 1. Wisconsin Right-to-Farm Law (State Statute 823.08)

Dating back to the early 1980's, the State of Wisconsin saw the need to protect farmers from lawsuits pertaining to everyday operations and created State Statute 823.08, commonly referred to as the "Right-to-Farm" law. The Right-to-Farm law was substantially revised in 1995 in an effort to thwart lawsuits against farmers dealing with standard farming operations and consequences such as odor, noise, dust, flies and slow-moving vehicles. As part of the law, the Legislature notes that local units of government are in the best position to handle possible farm and non-farm conflicts through zoning and other land use controls.

### 2. Wisconsin Act 377 – Implements of Husbandry (Wisconsin Act 277)

As the size of modern agricultural equipment continues to grow, so has the misconception within the agricultural community that implements of husbandry are exempt from State size and weight regulations. In short, Act 377 clarified the definition of what qualifies as an Implement of Husbandry (IoH), created a new definition for Agricultural Commercial Motor Vehicles (Ag-CMV), set weight and length limitations for IoH and Ag-CMV's, and detailed a new 'no-fee permit' that can be issued by the Wisconsin Department of Transportation and local units of government.

## E. Other Local Influences on Agriculture

### 1. Portage County Drainage District (Map 5.2)

The Portage County Drainage District was organized in 1903 to develop and maintain a series of drainage ditches that would make agriculture on and near the Buena Vista Marsh possible. Construction began in 1907 and was completed in 1915. Due to such adverse conditions as acid soil, fire, frost, and the high cost of re-dredging, farming became unprofitable. Increased interest in irrigated agriculture for mint, potatoes, hay and pasture led to the re-dredging of the ditches in the late 1960's. Currently, the District is the largest active district in the State. (Department of Agriculture, Trade and Consumer Protection (DATCP), Division of Agricultural Resource Management, 2016)

The District is approximately 87 square miles in size and contains approximately 93 miles of District operated ditches, 41.5 miles of "private drains" and five miles of perennial streams. The construction and maintenance of District operated ditches is regulated by a Wisconsin Department of Natural Resource (DNR) "Maintenance Dredging Agreement" and ATCP 48 of the Wisconsin Administrative Code under DATCP. (Prototype Management Plan for the Portage County Drainage District, 1994).

The District oversees the maintenance of these ditches through statutory authority. A tax is levied against land in the district receiving benefits from the ditches. The taxes are used for maintenance of the ditches. In recent years, the District has recognized a need for extensive dredging of the ditches, which requires a permit from the DNR. While the permitting process has been streamlined, ditches cannot be dredged any deeper than the formally established grade profile. There have been conflicts between the District and the DNR concerning authority and jurisdiction over the ditches. The presence of and continued maintenance of the ditches will be necessary to sustain agricultural production. A District Corridor measuring 100 feet on each side of all District ditches is intended to provide vehicle and/or equipment access to ditches for routine maintenance and provide a buffer against land uses which may adversely affect water quality in the district ditches.

## 2. Adams County Drainage Board, Leola Drainage District

The Leola Drainage District was also created in the early 1900's, similar to when the Portage County Drainage District was created. Approximately 800 acres of this district are located in the southern portion of the Town of Grant (Map 5.2). This district is under the jurisdiction of the Adams County Drainage Board since the majority of the acreage of the district is located in Adams County.

## 3. Location

The Grant area is experiencing increased pressure for the development of rural residential properties, especially in the Kellner area. This increased interest in Grant has brought more homes near the agricultural landscape, increasing the potential for conflict, increasing the assessed value of non-farm lands, and potentially increasing the sale price per acre of land. The fact that the Town of Grant is centrally located between Wisconsin Rapids and the Stevens Point/Plover area may continue to make the Town a desirable destination for households whose members work in the different urban centers.

The Town is also experiencing increased development of more intensive agriculture on land that is zoned for general agriculture. The Town Plan Commission and Board remain receptive to creative approaches to minimizing farm/non-farm conflicts. See Section 5.5.F below for a discussion of the Open Space Design Option.

## F. Agricultural Programs

The United States Department of Agriculture Farm Service Agency (FSA), Natural Resources Conservation Service (NRCS), and Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) oversee a number of voluntary conservation-related programs. The following is a partial list of the programs that work to address a large number of farming and ranching related conservation issues ranging from minimizing soil erosion to enhancing wildlife habitat. For more information about these and other programs contact the local FSA or NRCS office at 715-346-1313, and DATCP at 608-224-4621.

- Agricultural Conservation Easement Program (ACEP)

The Agricultural Act of 2014, enacted on February 7, 2014, established the Agricultural Conservation Easement Program. It repealed the Farm and Ranch Lands Protection Program (FRPP), Grassland Reserve Program (GRP), and Wetlands Reserve Program (WRP), but does not affect the validity or terms of any FRPP, GRP, or WRP contract, agreement or easement entered into prior to the date of enactment, or any associated payments required to be made in connection with an existing contract, agreement or easement.

ACEP provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. An Agricultural Land Easements component combines the purposes of the former FRPP and GRP, for which NRCS helps American Indian tribes, state and local governments and non-governmental organizations protect working agricultural lands and limit non-agricultural uses of the land. Under the Wetlands Reserve Easements component, NRCS helps to restore, protect and enhance enrolled wetlands.

- Wetlands Reserve Program (WRP)

The Wetlands Reserve Program was a voluntary program to restore and protect wetlands on private property. It offered landowners an opportunity to receive financial incentives to restore wetlands that had been drained for agriculture. Under the former enrollment options, Landowners could sell a conservation easement or enter into a cost-share restoration agreement with USDA to restore and protect wetlands. The landowner voluntarily limited future use of the land, yet retained private ownership. The landowner and NRCS developed a plan for the restoration and maintenance of the wetland. The program offered landowners three options: permanent easements, 30-year easements, and restoration cost-share agreements for a minimum 10 year duration.

- Grassland Reserve Program (GRP)

The Grassland Reserve Program was a voluntary program to protect grassland from conversion to other uses. Participants limited future development and cropping uses of the land and retained the right to conduct common grazing practices and operations related to the production of forage and seeding, but were subject to certain restrictions during nesting seasons of bird species that were in significant decline or were protected under Federal or State law. A grazing management plan was required.

- Conservation Reserve Enhancement Program (CREP)

The Conservation Reserve Enhancement Program, also administered through the Farm Service Agency FSA, is a voluntary program that targets high-priority conservation issues identified by local, state, or tribal governments or non-governmental organizations. Through CREP, farmers, ranchers, and agricultural land owners can receive annual rental payments and cost-share assistance for removing environmentally sensitive land from production and introducing conservation practices. Participants enroll in CREP for 10 to 15 years.

- Conservation Reserve Program (CRP)

The Conservation Reserve Program, administered by FSA, is a voluntary program for agricultural landowners. Through CRP, one can receive annual rental payments and cost-share assistance for removing environmentally sensitive land from agricultural production and planting species that will improve water quality, prevent soil erosion, and reduce loss of wildlife habitat. Participants enroll in CRP for 10 to 15 years.

- State Acres for Wildlife Enhancement (SAFE) Initiative

The State Acres for Wildlife Enhancement initiative is one of ten CRP initiatives to help farmers and landowners achieve farming and conservation goals. SAFE is an initiative to specifically improve wildlife habitat. By re-establishing wetlands, grasses, and trees, landowners are able to create critical habitat and provide food sources on their land that will enhance populations of important wildlife species.

- Conservation Stewardship Program (CSP)

The Conservation Stewardship Program, under the administrative authority of NRCS, encourages producers to address resource concerns by undertaking additional conservation activities, and by improving, maintaining, and managing existing

conservation activities on agricultural land and nonindustrial private forest land. CSP offers participants two possible types of payments: an annual payment for installing and adopting additional activities, and improving, maintaining, and managing existing activities or a supplemental payment for the adoption of resource-conserving crop rotations.

- Environmental Quality Incentives Programs (EQIP)

The Environmental Quality Incentives Program, administered by NRCS, is a voluntary program for agricultural producers and owners of non-industrial private forestland who want to address natural resource concerns on their land and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat. It provides both technical and financial assistance to implement conservation practices, or activities like conservation planning, that address natural resource concerns. Contracts can last up to 10 years.

- Farmland Preservation Program (FPP)

The Farmland Preservation Program is administered by DATCP, and is made up of four components, which can be used together and serve as a set of tools that agricultural landowners and local governments can use to prevent land use conflicts, encourage conservation practices, boost agro-economic development, and preserve farmland. The four main pieces are Planning, Zoning, Agricultural Enterprise Areas (AEA), and the Purchase of Agricultural Conservation Easement Program (PACE). The foundation of the FPP is a County Farmland Preservation Plan, which identifies the state of agriculture in a County, anticipates future trends, and maps land that a County projects will stay in agricultural use for the next 10 to 15 years. Once a Farmland Preservation Plan is certified by DATCP it allows Counties and Towns the opportunity to designate an AEA and/or certify a farmland preservation specific Zoning District. Landowners within the certified district are then eligible to claim farmland preservation tax credits. In the Town of Grant, this program is implemented through use of the A1-a Farmland Preservation Overlay Zoning District.

- Wildlife Habitat Incentives Program (WHIP)

The Agricultural Act of 2014 repealed the Wildlife Habitat Incentive Program. NRCS will continue to support existing active WHIP contracts entered into prior to passage of the Agricultural Act of 2014, using the rules and policy in effect at the time of contract obligations. Portions of the WHIP Statute were rolled into the Environmental Quality Incentives Program (EQIP).

The Wildlife Habitat Incentives Program was a voluntary program for people who wanted to develop or improve wildlife habitat on private lands. It provided both technical assistance and cost sharing to help establish and improve fish and wildlife habitat. Landowners agreed to prepare and implement a wildlife habitat development plan. NRCS provided technical and financial assistance to implement the wildlife habitat restoration practices.



### **Section 5.3 Agricultural Issues and Conclusions**

The following agricultural issues have been identified throughout the planning process:

- The Town has significant potential for the expansion of intensive agriculture. There has been a significant conversion of lands to vegetables, cranberries, and field crops since about 1970. Most of the intensive agriculture practices rely upon drainage and irrigation.
- The presence of highly permeable soils could result in high concentrations of pollutants in groundwater due to rapid percolation.
- Highly valuable farmland could be threatened by urban development in the area. The preservation of this productive resource and the avoidance of land use conflicts constitute an important justification for Town growth management plans and development controls.
- The real or perceived threat caused by concentrated animal feeding operations (CAFO) in neighboring communities is an issue for some Town residents.
- There are a number of areas in the Town that have serious flooding problems related to ditches that have overgrown plants, fallen trees or siltation.

### **Section 5.4 Agricultural Goals, Objectives, and Policies**

#### A. Goals:

1. Preserve productive agricultural land.
2. Protect people, air, soil, water, and wildlife resources using USDA's guidelines for Good Agricultural Practices (GAP) and Best Management Practices (BMP).

#### B. Objectives:

1. Discourage development on productive agricultural land by identifying lands which present the best opportunity for sustainable production based on type of agricultural activity, landscape (soils, groundwater, slope, etc) and relationship to existing uses.
2. Protect the principle use and purpose of the drainage ditches, which is Agriculture.
3. Promote an economically viable agricultural community.
4. Educate the public about the operations and activities of the agriculture community.
5. Encourage "open space" and "lot averaging" residential development designs as a way of preserving agricultural land.
6. Encourage the use of GAPs and BMPs.

#### C. Policies:

1. Use the A1 Exclusive Agricultural Zoning District and the A1-a Farmland Preservation Overlay Zoning District to protect productive farmland.
2. Continue a cooperative working relationship with Portage County and Leola Drainage Districts.

3. Develop a cooperative relationship with surrounding Towns with regards to drainage system management.
4. Identify the Town's responsibility for educating and informing developers, land owners and purchasers on the impacts and importance of agriculture in the community.
5. Promote opportunities to educate the public through signage, farm days and other public relations occasions.
6. Require new development to provide appropriate buffers from incompatible uses.
7. Recognize that conditions resulting from normal agricultural operations, such as dust, noise, odor, spraying, ag equipment traveling on roads, etc. shall not be considered a nuisance as long as they do not harm public health or safety.
8. Work with NRCS, FSA, UW-Extension, the Land Conservation Department, and other agencies to provide information regarding best management practices for agriculture.
9. Periodically review the Town of Grant Implements of Husbandry (IoH) Ordinance and accompanying maps that designate specific roads for IoH travel.

## **Section 5.5 Natural Resources**

Natural resources in the Town serve as the foundation for residents' physical and economic wellbeing – from ground and surface water quality, to land suitability for agricultural, residential, or commercial development, and conservation. According to the results of the 2001 Comprehensive Planning and Zoning Survey, Town residents favored managing the natural resources that support and sustain them.

This section will describe the existing natural resources inventory and state the issues, goals, objectives, and policies that were identified and adopted by the Town of Grant Plan Commission and Town Board.

### **A. Geomorphology**

The physical environment and geology of the area traces its origin to the effects of the melting glaciers over 10,000 years ago. The surface geology of the Town was formed when the glacial ice sheets started melting and receding, and in the process depositing great depths of out-wash deposits, mostly sand, from the melt-water flowing from the glacier westward to what is now the Wisconsin River Valley. There are no lakes in this area and the few streams present have mostly been converted into a series of inter-connected ditches flowing to the west toward the Wisconsin River. Portions of this plain have a characteristic sand dune topography - small rolling sand mounds and sand blowouts.

These sand deposits extend in excess of 100 feet deep down to bedrock. The Town lies close to or directly over a major bedrock transition zone in the center of the State where deposits of sandstone extending from the south terminates. From this transition point northward, the uppermost bedrock is granite, which also underlies the sandstone to the south. The bedrock slopes from north to south across the County resulting in greater depths of sand in the southern part of Grant than in the northern part.

These deep sand deposits function as an extensive aquifer, which provides a ready supply of good quality water to a large Central Wisconsin region known as the "Golden Sands" area. This aquifer has made possible vast land use and economic changes from idle, non-productive lands

to highly productive and valuable farmland by way of high capacity irrigation, which provides moisture to the droughty sandy soils. The groundwater is so plentiful that much of the sand plain region, including much of Grant, has a high water table which limits development. This high water was a historical limitation to crop production until much of the area had its water table lowered by drainage ditches. This wet soils zone extends across many towns in Portage County and has been known as the Buena Vista Marsh or Meadow. The moist zone has diversified potential as a wildlife habitat, livestock production and specialty field crops.

The topography of the Town is generally flat and includes many lowland wet areas. The land slopes slightly downward in an east to west orientation with elevation ranging from 1,075 feet to 1,020 feet above sea level (Map 5.3).

## B. Soils

Soils in the Town (see Map 5.4) can be grouped into three soil associations, as follows:

- Plainfield-Friendship association: Excessively drained and moderately well drained, nearly level to sloping soils that formed in deep sandy deposits. These soils are found in the southwest corner and along the northern western edge of the Town and are used primarily for crops, pasture, or woodland. Soils are saturated with water at a depth of three to five feet during periods of wetness.
- Leola-Pearl association: Moderately well drained and somewhat poorly drained, nearly level soils that formed in outwash sand. These soils are found in the southeast corner of the Town and are used primarily for crops, pasture, or woodland. Soils are saturated with water at a depth of less than three to five feet during periods of wetness.
- Roscommon-Meehan-Markey association: Somewhat poorly drained to very poorly drained, nearly level soils that formed in deep sandy deposits or, in places, in organic deposits that overlie the sand. These soils are found throughout most of the Town and are used primarily as pasture or woodland. Ponding is common in undrained areas and saturation occurs at a depth of less than three feet during periods of wetness.

Soils vary widely from parcel to parcel across the Town. For more detailed information, consult the Portage County Soil Survey. Soil testing by a certified soil tester is strongly recommended for site specific information.

## C. Surface Water, Watersheds, and Wetlands (Map 5.5)

The major surface water bodies present in the Town of Grant are: streams consisting of Bloody Run, Buena Vista Creek, Fourmile Creek, Fivemile Creek, Sevenmile Creek, Tenmile Creek, Twomile Creek, Fourteenmile Creek, Quinnell Creek, and approximately 31 miles of drainage ditches. The largest navigable surface water body in the Town is Lake Wazeecha, which is a flowage of the Fourmile and Buena Vista Creeks. Part of the Town is within the Portage County Drainage District (Map 5.2). Many of the Town's ditches were built in the early 1900's for the purpose of lowering the water table of an extensive marshland to accommodate agricultural production. Several of the ditches and waterbodies are classified as a Class I or Class II trout stream.

There are number of areas in the Town that have serious flooding problems related to ditches that have overgrown plants, fallen trees or siltation problems during heavy rain events. During years of high precipitation, lands adjacent to Buena Vista, Twomile, Fivemile, and Quinnell Creeks, and other low lying areas, are susceptible to high water tables or flooding. Cooperation with

landowners, local, State and Federal governmental authorities may be necessary to resolve the problem. According to Federal Emergency Management Agency maps, none of the areas surrounding waters in the Town of Grant are designated as floodplains.

The Town of Grant is situated within three watersheds: the Fourteenmile Creek; the Sevenmile and Tenmile Creeks; and the Fourmile and Fivemile Creeks. A watershed can be defined as interconnected areas of land draining from surrounding ridge tops to a common point such as a lake or stream junction with a neighboring land area. Land use practices within a watershed can affect the water quality and habitat of a water body. The Portage County Shoreland Zoning Ordinance is designed to help reduce the impact of development to adjacent lakes and rivers. In the Town of Grant, shoreland regulation applies to land within 1,000 feet from a lake, pond or flowage, and land within 300 feet from a river or stream or to the landward side of the floodplain, whichever distance is greater (Map 5.6).

Wetlands are an important part of the watershed, as they act as a filter system for pollutants, nutrients, and sediments, along with serving as buffers for shorelands and providing essential wildlife habitat, flood control and groundwater recharge. Wetlands within the Town of Grant include three general types: forested, scrub or shrub, emergent/wet meadow, and drained or filled.

- Forested wetlands are the predominant type – including bogs and forested floodplain complexes that are characterized by trees 20 feet or more in height such as, tamarack, white cedar, black spruce, elm, black ash, and silver maple. These wetlands are located primarily along the edges of all the creeks and drainage ditches in the Town.
- Emergent/wet meadow, the second most numerous type of wetland within Grant, consists of areas that may have saturated soils more often than having standing water. Vegetation includes sedges, grasses and rushes as dominant plants, but may also include blue flag iris, milkweed, mint and several species of goldenrod and aster. These types of wetlands are found throughout the Town, primarily along in the part of the Town within the Portage County Drainage District.
- Scrub/shrub wetlands are the third most abundant type. These wetlands, which include bogs and alder thickets, are characterized by wood shrubs and small trees such as tag alder, river birch, willow and dogwood. These are found primarily in the part of the Town within the Portage County Drainage District.
- Drained is the fourth type of wetland in the Town of Grant and consists of areas that were formerly wetland but have been drained of water mainly for farming purposes. This type of wetland is sporadic throughout the Town, but is mainly in the northern part of the Portage County drainage district area in the Town, and just west of this district.

**Map 5.3: Topography**

**Map 5.4: General Soil Associations**

**Map 5.5: Surface Water, Watersheds, and Wetlands**

**Map 5.6: Shoreland Zoning**



## D. Groundwater

The Town of Grant is located in a geologic province known as the sand-plain province. The sand-plain province is considerably different from the rest of the County in that the basement sandstone bedrock is far from the surface, and the unconsolidated aquifers above it are not very limited. The depth to bedrock generally ranges from 50 - 100 feet with a few isolated areas less than 50 feet, and the depth to groundwater ranges from 5 - 15 feet. Seasonally, depths to groundwater can decrease to less than one foot. Water table elevation can help determine the approximate depth to groundwater in a given area by subtracting the water table elevation from land surface elevation (see map 5.7) It can also be used to determine the direction in which groundwater flows, which is generally from higher to lower elevations.

Potential pumping yield rates for groundwater generally ranges from 500-1,000+ gallons per minute throughout the Town. This rate is high when compared to areas west of the Wisconsin River where rates rarely exceed 50 gallons per minute. Water pumping volume data collected from selected private wells varies greatly across the Town (see Map 5.8). Pumping rates recorded in the Kellner area were as low as 10 gallons per minute. Water availability and potential pumping rates should be taken into consideration as higher density development takes place utilizing private wells.

The relatively high yield rate for groundwater is favorable for operation of a high capacity well system, which is defined as one or more wells, drill holes or mine shafts on a property that have a combined approved pump capacity of 70 or more gallons per minute. Any construction, reconstruction, or operation of a high capacity well system is subject to the approval of the DNR, in accordance with NR 812.09(4)(a) and (b) of the Wisconsin Administrative Code. Currently, there are 134 active high capacity wells, used for various purposes within the Town (Wisconsin DNR Water Withdrawal and High Capacity Well Viewer).

All Town residential water comes from groundwater, therefore, protection of this resource is vital. There is generally a thick unsaturated zone, however, given the sandy soil type, there exists little second line defense against pollutants regardless of the nature of the subsurface materials. Possible sources of pollution can include septic systems, underground storage tanks, manure, fertilizers, pesticides, improperly abandoned wells, and landfills. Although some of the soils ranked moderate to good in pollution attenuation, this area of the County should be considered vulnerable given the sandy soil type.

Landfills (also formerly known as dumps) have been around as long as people have lived in Portage County, however, the locations of many of the smaller, private dumps are unknown. The amount of materials deposited in these was small, and the toxicities of the materials were likely fairly low as compared to current solid waste. All known landfills, including the former Town landfill located on Griffith Avenue, have been closed. According to Department of Natural Resources Administrative Code, there must be 1,200 foot separation between a private well or reservoir and the nearest edge of an existing, proposed, or abandoned landfill. However, modifications to this requirement may be granted by the DNR, particularly where a proposed development is upgradient from the landfill site, in terms of direction of groundwater flow. Map 4.1 includes the location of the former Grant landfill and 1,200 foot restricted area.

### 1. Atrazine Prohibition Areas

Atrazine is an herbicide that has been used on corn and other crops since the 1960's. Widespread application on farm fields, as well as spills and improper disposal, has caused atrazine contamination in groundwater. Drinking water that contains low levels of atrazine

will not cause an immediate sickness or health problems (acute toxicity). However, if people drink water for many years that contains more than the state and federal enforcement standard, which is three parts per billion (ppb) for atrazine, they may develop cardiovascular, reproductive, or other health problems. The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) has taken action to reduce atrazine use and even prohibit it in some areas. Atrazine has not been detected above the enforcement standard in wells within the Town of Grant and because of this, no prohibition area has been defined.

## 2. Nitrate-nitrogen

Water quality in private wells is generally considered to be good, although the nitrate-N concentration can be high and does fluctuate seasonally. Nitrate-N is commonly found in nitrogen fertilizers, manure, septic systems, and sewage treatment practices. Nitrate-N dissolves easily in water and does not attach to soil particles, which allows it to travel easily into groundwater. State and Federal regulations advise that nitrate-N levels in drinking water not exceed 10 parts per million (ppm) for health reasons. According to the Wisconsin Well Water Viewer, a total of 394 water samples from wells in the Town of Grant have been tested for nitrates over the past 25 years (1991-2016). The Nitrate-N concentration in those samples ranged from 0 to 76 ppm, with 27 (or 7%) of the samples exceeding the 10 ppm drinking water standard.

## 3. Iron

The presence of iron in groundwater is a direct result of its natural existence in minerals, rocks, and soil. Under State and Federal rules, iron is considered a secondary or “aesthetic contaminant. The present recommended limit for iron in water, 0.3 ppm, is established only as a guideline to assist public water systems in managing their drinking water for aesthetic considerations. Although there are no detrimental health effects associated with this level of iron, high levels can be problematic for household appliances and/or cause staining of clothing. According to data from the Wisconsin Well Water Viewer, elevated levels of iron have shown up in Town wells dating back to 1991. In fact, 12 of 17 (or 70%) of the samples tested for iron exceeded the 0.3 ppm aesthetic standard. The iron levels in those samples ranged from 0.029 to 12.032 ppm. Iron removal systems may be required if deemed a problem on a case-by-case basis.

## 4. Corrosivity/Saturation Index

The saturation index is an overall water quality test that calculates corrosivity of the water or the ability of the water to form scale. Corrosive water may have a greater ability to dissolve copper and lead from plumbing systems, which can be a potential health risk. The saturation index is calculated using pH, total hardness and alkalinity. Values in the saturation index range from 3 to -3. A value of 0-1 is ideal because it won't cause many issues with scaling and shouldn't cause corrosion issues. Negative values are more corrosive and positive values are more likely to form scale. According to the Wisconsin Well Water Viewer, there have been 251 samples analyzed for saturation index in the Town of Grant since 1991. The values were as follows:

1.1 or higher = 0	Slight to severe risk of scaling
0.1 to 1 = 11	Ideal
-0.9 to 0 = 15	Slightly corrosive
-1 to -1.9 = 44	Mildly corrosive
-2 to -2.9 = 79	Severely corrosive
-3 = 102	Severely corrosive

**Map 5.7: Water Table Elevation**

**Map 5.8: Historic Aquifer Yield Rate**

## 5. Tannins

Tannins are natural organic matter that can result from nature's fermentation process as water passes through peaty soil and decaying vegetation. This can cause water to have a faint yellow to tea-like color, and can cause yellow staining on household fixtures, dishes and clothing. Tannins are considered an aesthetic problem and pose no risk to health.

### E. Wildlife Habitat and Forested Areas

The Town of Grant is home to the Buena Vista Wildlife Area, the largest grassland complex east of the Mississippi River. Nearly 12,700 acres of this complex provide important wildlife habitat. Approximately 4,500 acres of the land is owned by the Dane County Conservation League and 60 acres by the Wisconsin Society for Ornithology (WSO). The remaining acreage is owned by the DNR.

The DNR provides management of this property, which consists of developing, enhancing and maintaining grassland habitat. Common management tools include: mowing, managed grazing application of herbicides, and prescribed burning. Emphasis has also been placed on ensuring a winter food source for wildlife through sharecrop arrangements with local farmers. Forestry/wildlife management practices to encourage aspen growth for ruffed grouse and woodcock habitat have been implemented on some parcels.

This area is used extensively for by the public for hunting, trapping, fishing, berry picking, bird watching, nature study, photography, hiking, cross country skiing, and dog trialing. Most of the hunting pressure comes during the gun-deer season; however the area is also popular with bow hunters. Forest cover is used by grouse and woodcock hunters. Trapping and hunting of coyote and fox is common on the uplands, whereas trapping for muskrat and mink in the drainage ditches also occurs.

Dozens of people from throughout the world are guided to observation blinds each year to witness the courtship behavior of the Greater Prairie-chicken (*Tympanuchus cupido pinnatus*), a state threatened species. The grassland habitat also hosts important grassland-dependent songbirds and birds of prey, especially the marsh hawk and short-eared owl. A field trial for the National Prairie Chicken Shooting Dog Championship is held each September, bringing hundreds of additional visitors from throughout the United States and Canada.

At least 25 mammalian species are year-round residents in the Town. Game species include: white-tailed deer, red fox, coyote, cottontail, rabbit, raccoon, muskrat, mink, Eastern gray squirrel, and fox squirrel. Nongame species include: woodchuck, masked shrew, star-nosed mole, red squirrel, striped skunk, eastern chipmunk, white-footed mouse, and gray wolf.

More than 200 species of birds are known to the Town. Common species include: greater sandhill crane, mallard, bluebird, red-tailed hawk, woodcock, mourning dove, tree swallow, Eastern wood peewee, killdeer, kestrel, Eastern and Western meadowlarks, and various woodpecker and sparrow species. Additional species of birds have been sighted in the area during the fall and spring migration including: whistling swans, common loon, Canada and snow geese, whooping crane, and various duck and shorebird species. Winter residents include the horned lark, northern shrike, snow bunting and occasionally, a snowy owl, great gray owl, and gyrfalcon.

Fish species common within the Town waters include: Eastern brook trout, brown trout, white sucker, mottled sculpin, pearl dace and blacknose dace. Less common species include: northern

pike, hornyhead chub, creek chub, central mudminnow, brook stickleback, northern redbelly dace, and Johnny darter.

Common reptiles and amphibians include: garter snake, hog-nose snake, red-bellied snake, painted turtle, snapping turtle, American toad, spring peeper, Eastern gray tree frog, wood frog, green frog, and leopard frog.

The biggest threats to wildlife are loss of habitat quality and quantity. These threats can be attributed to fragmentation and invasive species. Fragmentation refers to the loss of large, contiguous sections of land through subdivision into smaller parts. These subdivisions can lead to an alteration and degradation of the native plant and animal communities. Invasive species, both plant and animal, tend to outcompete or prey on native species also altering the ecosystem. Habitat areas are important for providing food and cover for nesting, brooding, and sheltering. Farmland is one type of habitat that also provides food, as well as, travel corridors between wetlands and woodlands.

There are two designated State Natural Areas in Grant: the 40-acre Buena Vista Quarry Prairie, a high, dry sand island dominated by native grasses big and little bluestem with scattered Hill's oak, and the 80-acre Buena Vista Prairie Chicken Meadow, dominated by introduced grasses with a mixture of sedges and willows. Both are managed by mowing, grazing, and prescribed burning.

Woodlands or forested lands comprise 39% of the land area in Grant (Map 5.9), while wetlands make up 18%. According to 2001 County survey data, 75% of respondents felt that an effort should be made to identify and protect woodlands, and 67% felt the same about wetlands and floodplains. Woodlands that exist in the Town are primarily due to an inability to sustain successful agricultural practices. Loss of these habitat types can threaten the viability of certain species.

#### 1. Threatened and Endangered Species

Through the Wisconsin Natural Heritage Inventory (NHI), the DNR tracks the location and protection status of species known or suspected to be rare in the State of Wisconsin. Natural communities native to Wisconsin are also tracked, but are not protected.

The NHI includes species legally designated as "endangered" or "threatened" as well as species in the advisory "special concern" category. An endangered species is one whose continued existence is in jeopardy. A threatened species is one that is likely, within the foreseeable future, to become endangered. A special concern species is one about which some problem of abundance or distribution is suspected but not yet proven. The main purpose of the special concern category is to focus attention on certain species before they become endangered or threatened.

According to the NHI database and listed in Table 5.1 below, 18 species have been identified in the Town of Grant. These species should be taken into consideration when development and protection measures are considered. A more detailed description of each species can be obtained by contacting the DNR.

**Map 5.9: Grassland & Forested Areas**

**Table 5.1: Threatened and Endangered Species**

Group	Scientific Name	Common Name	State Status	Federal Status
Bird	<i>Ammodramus henslowii</i>	Henslow's Sparrow	THR	
Bird	<i>Asio flammeus</i>	Short-eared Owl	SC/M	
Bird	<i>Bartramia longicauda</i>	Upland Sandpiper	THR	
Bird	<i>Botaurus lentiginosus</i>	American Bittern	SC/M	
Bird	<i>Buteo lineatus</i>	Red-shouldered Hawk	THR	
Bird	<i>Sturnella neglecta</i>	Western Meadowlark	SC/M	
Bird	<i>Tympanuchus cupido</i>	Greater Prairie-Chicken	THR	
Butterfly	<i>Lycaeides melissa samuelis</i>	Karner Blue	SC/FL	LE
Butterfly	<i>Lycaena dione`</i>	Gray Copper	SC/N	
Butterfly	<i>Speyeria idalia</i>	Regal Fritillary	END	
Other	<i>Karner Blue Federal High Potential Range</i>	Karner Blue Federal High Potential Range	NA	HPR
Plant	<i>Boechera missouriensis</i>	Missouri Rock-cress	SC	
Plant	<i>Calamagrostis stricta</i>	Slim-stem Small Reed Grass	SC	
Plant	<i>Carex gracilescens</i>	Slender Sedge	SC	
Plant	<i>Carex merritt-fernaldii</i>	Fernald's Sedge	SC	
Plant	<i>Symphyotrichum robynsonianum</i>	Long-leaved Aster	SC	
Turtle	<i>Emydoidea blandingii</i>	Blanding's Turtle	SC/P	
Turtle	<i>Glyptemys insculpta</i>	Wood Turtle	THR	

Source: Natural Heritage Inventory, July 2015 - Wisconsin DNR

Note: The current State and Federal protection categories and their level of protection are: END = Endangered; THR = Threatened; SC = Special Concern; SC/P = Special Concern – Fully Protected; SC/N = Special Concern – No laws regulating use, possession, or harvesting; SC/FL = Special Concern – Federally protected as endangered or threatened, but not so designated by DNR; SC/M = Fully protected by federal and state laws under the Migratory Bird Act; NA = Not Applicable; LE = Listed Endangered (Federal status); HPR = High Potential Range (Federal status).

## F. Open-Space Option

The intent of the Open Space Design Option is to support a sustainable rural environment, while permitting limited residential development. Increasing development pressure in rural areas has led to this subdivision design process which would encourage single family development that is more environmentally sensitive and less intrusive upon the existing rural landscape. The Open Space Design Option allows dwelling units to be grouped onto part of the parcel so the remaining acreage can be preserved as open lands and appropriate separations from agricultural practices and other non-residential uses can be observed. The overall density remains the same as would be found in a traditional development in the existing zoning district.

The open space subdivision design process emphasizes the preservation of agriculture and the natural environment as a basis for the grouping of dwellings. Homes are separated from adjacent property or other groupings of dwellings by the open space that is protected from development.

Figure A shows a finished subdivision using the Open Space Design, while Figure B depicts a conventionally designed subdivision, splitting the entire parcel into individual lots. The Town may want to consider using this design concept as another option available to rural landowners.

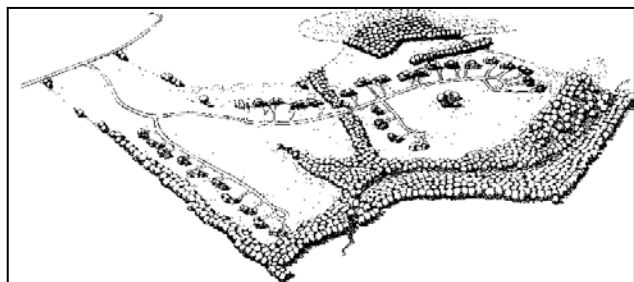


Figure A: Open Space Designed Subdivision

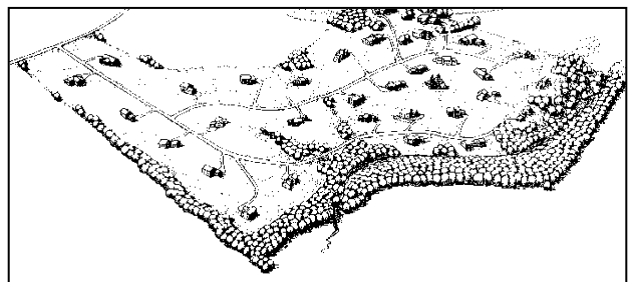


Figure B: Conventional Design Subdivision



## G. Air Quality

The following information comes from the DNR and the Environmental Protection Agency:

“A few common air pollutants are found all over the United States. These pollutants can injure health, harm the environment and cause property damage. The Environmental Protection Agency calls these pollutants **criteria air pollutants** because the agency has regulated them by first developing health-based **criteria** (science-based guidelines) as the basis for setting permissible levels. These pollutants include: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter, and lead.

One set of limits (**primary standard**) is designed to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly; another set of limits (**secondary standard**) is intended to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. A geographic area that meets or does better than the primary standard is called an **attainment area**; areas that don't meet the primary standard are called **non-attainment areas**.” All of Portage County, including the Town of Grant, is listed as an attainment area by the DNR.

### 1. Open Burning

Open burning is defined as burning any combustible material outdoors without any air pollution controls in place. Burning in an unconfined area, a container, or a pile are all considered to be open burning. The DNR's air quality rules generally ban all open burning except for the burning of clean, unpainted, untreated wood; clean, unrecyclable paper; outdoor fires for cooking or recreation; and yard materials such as leaves, brush and grass clippings. However, the DNR discourages the burning of leaves and grass clippings because of the adverse environmental impact of pollutants in smoke. Under state law, the burning of solid waste materials such as treated wood, plastic, rubber or asphalt products, oily substances, household garbage, wet rubbish and most all other trash is prohibited.

Burning permits are required by the DNR to conduct safe and legal outdoor burning. Intended for burning on the ground and in barrels, DNR burning permits are issued at no-cost to landowners for the calendar year. The citizen is responsible for being aware of the current fire restrictions in effect on any given day (i.e. if burning is allowed, the hours of burning, any size limitations, or if burning has been suspended for the day due to critical forest fire danger). Permits can be obtained online at <http://dnr.wi.gov/burnpermits/>, or by calling 1-888-WIS-BURN. You can also visit an emergency fire warden or DNR office to get a permit in-person (go to <http://dnr.wi.gov/topic/forestfire/emergFireWardens.asp> for a complete list of businesses who serve as emergency fire wardens). Any questions about burning permits should be directed to the DNR by calling 1-888-WIS-BURN.

Air quality complaints as a result of open burning shall also be directed to the DNR. However, the legal procedures for enforcing the state's open burn regulations are very cumbersome and the DNR is limited in its ability to respond. Therefore, complaints should be reserved for instances where the burning of solid waste materials is suspected. Complaints shall be made by calling the DNR's violation hotline number at 1-800-847-9367 or by filing a solid waste & hazardous waste complaint form (available at <http://dnr.wi.gov/topic/waste/SHWCF/>).

## 2. Wind Erosion

Wind erosion occurs on soil unprotected or only partially covered by vegetation. Soil blowing typically occurs in the Town during periods when land is being fitted for planting, before a young crop has reached sufficient size to protect the soil, and when land is being fallowed. Wind erosion also occurs on land which has been overgrazed.

Soils in the Town composed largely of the partially decayed remains of plants, variously called muck or peat, have very low specific gravities. As a result, these soils blow readily during periods of dry weather when the surface is not protected by a vegetative cover. The fact that such soils constitute level areas adds to the likelihood of wind erosion. (Source: Fundamentals of Soil Science by H.D. Foth and L.M. Turk)

## 3. Aerial Spraying of Manure

The application of liquid dairy manure by traveling gun or center pivot irrigation systems is becoming more common because it offers several potential benefits: reduced road impacts from hauling, optimal timing for crop nutrient uptake, and reduced risks of manure runoff and groundwater contamination.

However, irrigation could also increase the risk of airborne pathogen transmission from manure to humans and livestock compared to other application methods. A recent USDA study reported that airborne microbial concentrations, some of which may be pathogenic, decline with distance but can still be measurable at 700 feet downwind from irrigation depending on wind velocity and the initial concentration of the microorganism in manure.

The following actions provide the biggest payoff in reducing the risk of airborne disease transmission from dairy manure irrigation:

- Improve herd health and prevent pathogens from being present in manure in the first place
- If pathogens are present, use practices, such as anaerobic digestion of manure storage greater than three months to reduce their concentrations
- Irrigate under low wind speed conditions
- Maximize the distance between irrigated manure and people living downwind.

(Source: Airborne pathogens from dairy manure aerial irrigation and the human health risk by Mark A. Borchardt and Tucker R. Burch. USDA Integrated Dairy Systems U.S. Dairy Forage Research Center.)

## H. Non-Metallic Mining

The glacial and geologic history of Portage County has made conditions suitable for certain types of non-metallic mining. The eastern portion of the county, along the moraines, has more glacial deposits, resulting in some lands that are desirable for gravel and aggregate extraction. This is in contrast with lands west of the Wisconsin River, where soils are heavier and have higher clay contents. There are significant sand or gravel deposits in Grant, resulting in some extraction pits located in the Town.

Quarrying is regulated in Section X of the Town's Zoning Ordinance, the purpose of which is to control quarrying activity through the permit process and in a manner that assures maximum

protection to surrounding properties. As such, quarrying is not allowed in the High Density Residential zoning district. The activity is permitted up to 20,000 square feet in both the General Agricultural and Exclusive Agricultural districts. It is also permitted within the Exclusive Agricultural and Conservancy districts with a one acre limit. If exceeding these limits Quarrying requires a Conditional Use Permit, plus a permit is necessary from Portage County when the size exceeds one acre. In all other zoning districts a Conditional Use Permit must be granted by the Town Board before the siting of new or the expansion or enlargement of an existing pond or quarry may occur.

### **Section 5.6 Natural Resources Issues**

- Water quality and quantity should be protected for use by residents in the Town of Grant. This includes both ground and surface water resources.
- Conservation lands should be protected for their aesthetic habitat and recreational values.

### **Section 5.7 Natural Resources Goals, Objectives and Policies**

#### A. Goal:

1. Utilize practices that are environmentally sensitive and protect air, soil, water and wildlife resources.
2. Seek solutions to reduce flooding and preserve property values in low lying areas along various problematic streams.

#### B. Objectives:

1. Protect the quality and quantity of the groundwater aquifer which supplies all domestic and agricultural water needs of the Town.
2. Development takes into consideration the protection of our natural resources.
3. Encourage the DNR to evaluate and improve management practices of the Buena Vista Wildlife Area.
4. Encourage landowners to work together to reduce or minimize flooding issues.

#### C. Policies:

1. Support an educational program for municipal boards and the public related to natural resources issues, and the value it brings to the Town.
2. Support partnership efforts that result in the preservation, maintenance, enhancement, and restoration of natural resources.
3. Utilize Conservancy Zoning, as deemed appropriate by the Town Board.
4. Plan and regulate the location and density of residential and non-residential uses in a fashion necessary to avoid groundwater and surface water degradation from septic systems (see Map 5.10 below).

**Map 5.10: Land Capability for On-Site Waste Systems**

## **Section 5.8 Cultural Resources**

Cultural and historic resources often help link the past with the present and can give a community a sense of place or identity. These resources can include historic buildings and structures along with ancient and archeological sites.

Burial sites are one example of a resource that can add to a community's sense of history as well as provide a great deal of genealogical information. Formally catalogued burial sites are protected from disturbance in Wisconsin and are given tax treatment equal to that of operating cemeteries.

Information regarding cultural and historic resources in the Town of Grant is constrained by limited financial and human resources. This section will provide goals and policies that promote the effective management of historic and cultural resources.

### **A. Cultural and Historic Resources Inventory**

A wide range of historic properties have been documented that help create Wisconsin's distinct cultural landscape. Descriptions of existing locations are identified on the list of historic places by the Wisconsin Historical Society through the Wisconsin Architecture and History Inventory (AHI). Keep in mind many of the properties included in this inventory are privately owned and not necessarily open to the public, so please respect the rights of private property owners. At this time, there are 14 listings in Grant, which include houses, buildings, barns, a town hall, and a church. Among the more conspicuous sites are:

1. Grant Town Hall – a Gabled Ell clapboard style town hall, constructed in 1904, located on the northeast corner of Kellner Road, on County Road WW and 90<sup>th</sup> Street.
2. Moravian Church – a gothic revival style clapboard church constructed in 1909, located on the northeast corner of County Road FF and County Road U.

There is one cemetery located in the Town of Grant: St. John's Lutheran Cemetery, located on Park Road South. There is a known Native American Burial Mound located on private property within the Town.

Another source of information comes from the National and State Register of Historic Places. There are currently eighteen sites listed throughout Portage County, however, none of them are located in the Town of Grant.

The Town's history is well documented in a book that was written in 2014, and updated in 2016, by longtime resident Dorothy Raasch. The book, entitled "From Where They Came to Where We Are", describes 150 years of life in the Town of Grant.

### **B. Cultural Resource Programs**

At the state level, the Wisconsin Historical Records Advisory Board (WHRAB) works in association with the Wisconsin Historical Society. The Board's activity falls primarily into three areas: it provides guidance and assistance to archives and records management programs in Wisconsin, promotes the value of historical records as keys to our cultural heritage and brings federal grant funds to Wisconsin for improving access and preservation of historical records.

### **Section 5.9 Cultural Resource Issues**

There were no issues or concerns identified by the Town of Grant Plan Commission.

### **Section 5.10 Cultural Resource Goals, Objectives and Policies**

A. Goal: Make the general public more aware of cultural resources.