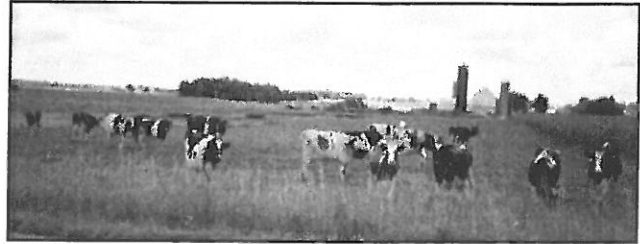


## CHAPTER 7: AGRICULTURAL, NATURAL, & CULTURAL RESOURCES

### INTRODUCTION

Residential, commercial, and industrial development is changing the face of communities throughout Wisconsin. Most new construction outside of urban environments occurs on agricultural lands and open spaces. Without the need to demolish or rebuild existing structures, development costs are much lower in these areas. As the Town and Village of Black Creek grow over the next two decades each will need to consider how to preserve the agricultural, natural, and cultural resources most valued by residents to ensure that they remain available for the benefit and enjoyment of future generations.



The purpose of the Agricultural, Natural, and Cultural Resources chapter is to describe the resources present in the community and prepare a plan for their long-term preservation.

#### AGRICULTURAL, NATURAL, & CULTURAL RESOURCES VISION

In 2035, woodlands, wetlands, streams, and productive agricultural lands remain the dominant landscape features in the Town of Black Creek. Natural areas and open spaces provide recreational opportunities for residents and habitat for wildlife. Farming continues to be a productive and economically viable source of income for residents. Residential and limited commercial areas have been developed with protected open spaces, preserving the scenery and panoramic views that define the community. Residents and visitors enjoy access to the natural environment via a network of local and county trails.

The Village of Black Creek has expanded its park system to meet growing needs and includes permanently preserved open spaces as part of all residential development projects. The community embraces its history and culture through a variety of community events held throughout the year. Residents have access to a number of local and regional trail systems connecting them to the natural landscapes available in nearby communities.

### AGRICULTURAL RESOURCES

Agricultural land remains the dominant landscape feature of the Town of Black Creek. As development pressure grows it becomes the most threatened, since farm land is highly sought after for residential and commercial uses. Poorly planned and unguided development can result in significant decreases in available agricultural acreage. This chapter identifies the available tools that can be used to preserve farming as both a viable land use and as an income producer for farm families.

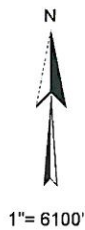
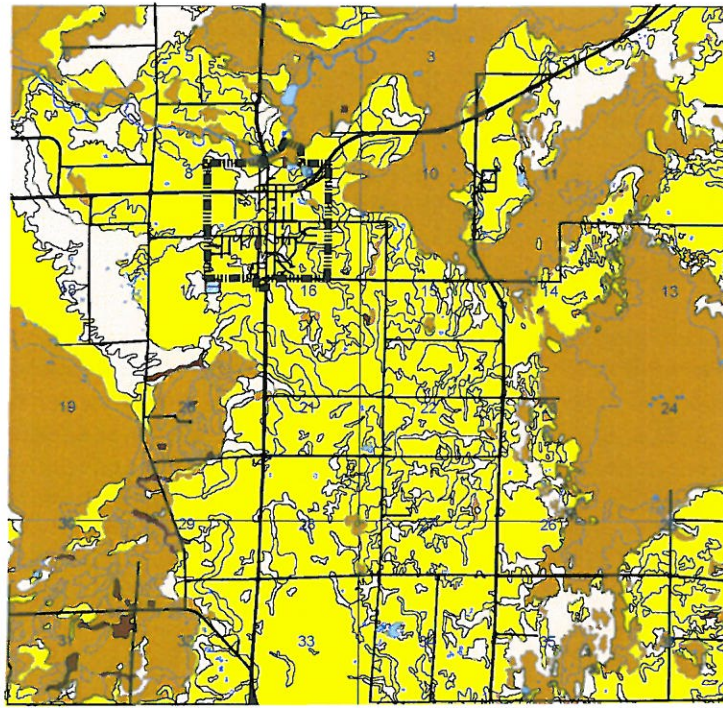
However, the removal of land from agricultural use is not always avoidable. Roads need to be built and people need places to live and work. Considering that agriculture requires land in order to operate, and that land is one commodity that cannot be manufactured, it seems logical to make some effort to assure that there will be sufficient farmland available in the future. Development in the Town should occur in a manner that preserves, to the greatest extent practicable, prime agricultural soils and established farm operations.



# AGRICULTURAL PRODUCTIVITY AREAS

## BLACK CREEK

CICERO



Legend	
	ROADS
	HIGH
	MODERATE
	LOW
	UNPRODUCTIVE
	WATER
	VILLAGE BOUNDARY

Areas in yellow indicate soil types which are capable of producing high yields of crops typically grown in the county under a high level of management. Productive soils are considered to be those which 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 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.



## CHAPTER 7: AGRICULTURAL, NATURAL, & CULTURAL RESOURCES

### PRODUCTIVE AGRICULTURAL AREAS

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 illustrated on the *Agricultural Productivity Areas Map*. The soils in the Town of Black Creek are considered highly productive and have an estimated crop yield of 110 bushels per acre of corn.



### CONCENTRATED ANIMAL FEEDING OPERATIONS

Concentrated Animal Feeding Operations (CAFOs) or “mega farms” are increasing in number in Wisconsin. CAFOs are farms with over 1,000 animal units. An “animal unit” is equivalent to 1,000 pounds. In 1985, there was one such operation in the state. By 1990, 24 operations and by 2000 there were 77 mega farms in Wisconsin. Generally, CAFOs locate in rural areas where conflicts with neighboring property owners can be minimized. Based upon current land use and land availability, it is unlikely that the Town of Black Creek would provide a desirable location for such a facility.

Recent changes to Wisconsin State and local (county) regulations mean more livestock and cash grain producers are following nutrient management plans (NMP). In addition, the USDA and EPA are proposing changes that will reduce the number of animal units that a farm may have before a WPDES permit is required. Those farms currently required to have a nutrient management plan include:

- Farms with more than 1,000 animal units;
- Farms under county conditional use permits;
- Farms that have taken cost sharing money for a manure system since 1990; and
- Farms that have had a DNR notice of discharge (NOD).

A CAFO WPDES permit requires a field-specific, phosphorus-based nutrient management plan (NMP) that outlines the amounts, timing, locations, methods and other aspects related to land application of manure and process wastewater. Implementation of a NMP helps prevent or minimize manure or other wastewater runoff from fields to surface waters or groundwater. Nutrient management planning also ensures applied nutrients meet crop needs.<sup>1</sup>

Nutrient management planning can be complicated and take a considerable amount of time and effort. One NMP may cover thousands of acres and contain over 100 fields. Planning may be for areas with

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<sup>1</sup> Excerpted from WDNR Nutrient Management Plannings website, August 2015.

## CHAPTER 7: AGRICULTURAL, NATURAL, & CULTURAL RESOURCES

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multiple crops and different soils with different nutrient requirements and limitations. Nutrient management plans require:

- Field soil testing reports;
- Planned or actual application rates, methods and timing for manure and process wastewater;
- Field soil erosion and phosphorus delivery to surface waters calculations;
- Nutrient crediting;
- Maps showing field-specific spreading restrictions and soils;
- Manure spreading field-specific reports and procedures; and
- Detailed plan narratives.

An ATCP 50.48 qualified nutrient management planner must develop or review and sign a CAFO's NMP. DNR approval of a CAFO NMP requires submitting a plan that is consistent with all NR 243.14, Wis. Adm. Code requirements.

### THE CHANGING FARMING DYNAMIC

The loss of farms and farmland is a problem that affects all Wisconsin communities. However, the pace and severity of agricultural decline varies considerably across the state. The major livestock sectors – poultry, hogs, dairy and beef – have been at the leading edge of change in U.S. agriculture. In recent decades, four trends in the national livestock industry have been particularly striking:

- Dramatic rates of decline in the numbers of all types of livestock producers.
- The emergence of “industrial-type” confinement systems that permit extremely large scales of production.
- Increased reliance on hired labor rather than family labor.
- A new emphasis on contractual relationships among producers, suppliers and buyers.

Reflecting nationwide trends, Wisconsin has lost substantial numbers of livestock farms over the past two decades. Overall livestock numbers and sales in Wisconsin have also declined. While modest-scale family farms continue to be the mainstay of Wisconsin agriculture, there has been growing debate about the desirability of expanding existing farms or creating new larger scale enterprises to restore or boost livestock production levels.

The Black Creek community understands the challenges associated with modern farming operations. To support a strong local farm economy, the Black Creek community will:

- Support the local farmers “Right to Farm”.
- Consider applications for properly permitted CAFOs.

### AGRICULTURAL PLAN

The primary concern with farmland preservation in Black Creek is that individual farmers faced with development pressures, retirement needs, and a fluctuating farm economy, may view the sale of their land



## CHAPTER 7: AGRICULTURAL, NATURAL, & CULTURAL RESOURCES

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for development, as an attractive financial opportunity. Moreover, there seems to be an endless supply of urban dwellers that want to fulfill their dream of living in the “country.”

A variety of tools are available to local governments and farmers to preserve prime agricultural lands. These include Wisconsin’s Farmland Preservation Program (Chapter 91, Wis. Stats.), various Natural Resource Conservation Service and WDNR programs, and the purchase or transfer of development rights, among others. These tools are most effective in communities where farming will remain a primary land use over time. Successful farmland preservation efforts are dependent upon the support of local farmers and their ability to pursue new markets to sustain operations over time.

### SUSTAINING FARMLAND AND NATURAL AREAS IN A GROWING COMMUNITY

Given the projected rate of population growth in the Town, there is a moderate concern about the impact the future development may have on open space and agriculture. Preservation of natural resources and farmland is important to sustaining the local economy, maintaining wildlife habitat, and providing the ‘green infrastructure’ (e.g., wetlands and floodplains for stormwater management, scenic areas, etc.) necessary in recharging groundwater and reducing the impact of flood events. They are also important landscape features contributing to the area’s high quality of living.

### FARMLAND PRESERVATION ZONING<sup>2</sup>

Under the Farmland Preservation Program (Chapter 91, Wis. Stats.) administered by the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP), local governments may choose to adopt and have certified a farmland preservation zoning ordinance to ensure that landowners covered by the ordinance are eligible to claim farmland preservation tax credits. The credits are applied against tax liability on an annual basis. Tax credit amounts are as follows:

- \$5.00 per eligible acre for farmers with a farmland preservation agreement signed after July 1, 2009 and located in an agricultural enterprise area.
- \$7.50 per eligible for farmers in an area zoned for farmland preservation.
- \$10.00 per eligible for farmers in an area zoned and certified for farmland preservation and in an agricultural enterprise area, with a farmland preservation agreement signed after July 1, 2009.

Certification of a zoning ordinance must be obtained through application to DATCP. Landowners must be residents of Wisconsin and their agricultural operations must meet the following criteria:

1. Acres claimed must be located in a farmland preservation area identified in a certified county farmland preservation plan. Eligible land includes agricultural land or permanent undeveloped natural resource areas or open space land that is in an area certified for farmland preservation zoning, and/or is located in a designated agricultural enterprise area and under a farmland preservation agreement.
2. Claimants must have \$6,000 in gross farm revenue in the past year or \$18,000 in the past three years. Income from rental receipts of farm acres does not count toward gross farm revenue.

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<sup>2</sup> Source: Wisconsin Department of Agriculture, Trade, and Consumer Protection, Farmland Preservation website, 2015.

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However, gross farm revenue produced by the renter on the landowner's farmland can be used to meet this eligibility requirement.

3. Claimants must be able to certify that all property taxes owed from the previous year have been paid.
4. Farmers claiming farmland preservation tax credits must certify on their tax form that they comply with state soil and water conservation standards. New claimants must also submit a certification of compliance with soil and water conservation standards that has been issued by the county land conservation committee.

The Town of Black Creek participates in the Farmland Preservation program. The Town's zoning ordinance was certified By DATCP under Chapter 91 in April of 2014 and adopted by the Town Board.

### LAND TRUSTS

Another option available to landowners seeking to protect natural areas and farmland is through the activities of land trusts. Land trusts provide landowners with advice on protection strategies that best meet the landowner's conservation and financial needs. Land trusts accept lands donated by landowners for conservation purposes. Land trusts can also work with landowners to establish *conservation easements* (see below). The Northeast Wisconsin Land Trust is an example of a local land trust serving the area.

### CONSERVATION EASEMENTS

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 a land trust or similar organization assumes 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 since their land will be taxed as undevelopable land, which is a much lower rate than developable land. Qualified easements may also generate charitable contribution deductions for income and transfer tax purposes.

### SPECIALTY FARMING

On average, close to 3,000 acres of productive farmland are lost to development in the U.S. each day. Adapting to survive, many farmers have embraced a new paradigm that focuses on agricultural models custom-fit to changing markets and filling local niche markets with specialty produce and value-added products. Specialty (or niche) farming provides an alternative to conventional agricultural practices, particularly for smaller farmers attempting to compete with larger operations. The movement seems to be working.

According to Agricultural Census data nearly 300,000 new farms have begun operations during the past decade. Compared with all farms nationwide, these new arrivals tend to have more diversified production,



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fewer acres, lower total-dollar sales, and operators who also work off-farm. Interestingly, many of these operations are located in decidedly urban and suburban areas. Black Creek's proximity to the Fox Cities and Green Bay provides opportunities for directly marketing specialty agricultural products to local consumers.

Examples of specialty agricultural products include:

- Agroforestry
- Aquaculture products
- Alternative Grains and Field Crops
- Industrial, Energy and Non-food Crops
- Native Plants and Ecofriendly Landscaping
- Organic milk and cheese
- Organic produce
- Ornamental and Nursery Crops
- Post-harvest Handling and Processing
- Medicinal and Culinary Herbs
- Raising of non-traditional farm animals (llama, ostrich, bison, etc.)
- Seeds and Plant Breeding
- Specialty, Heirloom, and Ethnic Fruits and Vegetables

### ORGANIC AGRICULTURE

Organic farming is a particularly attractive specialty farm option given that organic food is the fastest growing segment of the agricultural industry. 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.

### COMMUNITY SUPPORTED AGRICULTURE<sup>3</sup>

Community Supported Agriculture (CSA) is a system in which a farm operation is supported by shareholders who share both the benefits and risks of food production. CSAs consist of a community of individuals who pledge support to a farm operation so that the farmland becomes the 'community's farm', with the growers and consumers providing mutual support and sharing the risks and benefits of food production. Typically, members pledge in advance to cover the anticipated costs of the farm operation and farmer's salary. In return, they receive shares in the farm's bounty throughout the growing season, as well as satisfaction gained from reconnecting to the land and participating directly in food production. Members also share in the risks of farming, including poor harvests due to unfavorable weather or pests. By direct sales to community members, who have provided the farmer with



Courtesy Kellner Back Acre Garden CSA,  
Denmark, WI

<sup>3</sup> Excerpted from United States Department of Agriculture, Alternative Farming Systems Information Center, 2015.



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working capital in advance, growers receive better prices for their crops, gain some financial security, and are relieved of much of the burden of marketing.

### NO-TILL FARMING

In conventional tillage, soil is turned to a depth of eight to twelve inches with a plow. Subsequently, the plot is disked at least twice more to prepare the seedbed before planting takes place. In no-till, the first three steps in conventional cultivation are dispensed with. Planting is done right *through* the residues of previous plantings and weeds with a device (usually a coultter) that cuts a slot a few inches wide, followed by equipment that places the seeds and closes the trench.



Courtesy University of Wisconsin-Extension

Extensive field-scale research and more than five hundred farm operations in the U.S. have demonstrated how diverse crop rotations can make no-till profitable. Crop diversity keeps pests such as weeds, insects and diseases in check, and techniques such as precise nutrient placement, accurate seeding, and proper variety selection enhance crop competitiveness. No-till farming also conserves soil moisture allowing for enhanced crop production. A properly implemented no-till saves water, uses little or no fertilizers and pesticides, increases yield, and is more profitable than conventional techniques.

### PURCHASE AND TRANSFER OF DEVELOPMENT RIGHTS

Another means of preserving agricultural (and natural) land is through the establishment of a purchase of development rights (PDR) or transfer of development rights (TDR) program. Such programs 'send' development from farmland and natural resource areas to designated 'receiving' areas within a community. Advantages of these approaches include just and fair compensation for landowners, permanent protection of farmland and natural resources, and voluntary participation.

#### Purchase of Development Rights

In a PDR program, a land trust, local government, or other organization offers to purchase the development rights on a parcel. The landowner is free to decline the offer or negotiate a higher price. When the development rights to a farm are sold, the landowner typically receives payment equal to the difference between the fair market value of the land and the price the land would command for agricultural use. Upon payment, a conservation easement is recorded on the property deed. The easement stays with the land in perpetuity.

The landowner retains the right to occupy and make economic use of the land for agricultural purposes, but gives up the right to develop the property in the future. Farmers are not compelled to sell their development rights. The main disadvantage of PDR is cost. Development rights can be expensive, so funding for a PDR program must to be selectively targeted in order to protect the agricultural land that is most worthy of preservation. As a result, not every farmer who wants to sell his or her development rights will be able to do so.

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Table 7.1: Purchase of Development Rights	
Strengths	Limitations
<ul style="list-style-type: none"> <li>▪ Permanently protects land from development</li> <li>▪ Landowner is paid to protect land</li> <li>▪ Local governments can target locations effectively</li> <li>▪ Land remains in private ownership and on the tax rolls</li> <li>▪ Program is voluntary</li> </ul>	<ul style="list-style-type: none"> <li>▪ Can be costly for local unit of government, therefore land is protected at a slower rate</li> <li>▪ Land remains in private ownership – typically no public access</li> <li>▪ Since program is voluntary, it may be difficult to preserve large tracts of contiguous land</li> </ul>

### Transfer of Development Rights

TDR involves transferring development rights from one piece of property to another. In this approach, a landowner is compensated for selling his/her development rights. However, rather than simply eliminating these rights, they are transferred to another property in the community that is targeted for development. That landowner of the ‘targeted property’ is free to develop the land and may use the transferred rights to develop at a greater density or intensity (e.g., smaller lot sizes to locate more homes in a single area). This approach preserves farmland and natural areas in designated sending zones while allowing for more intensive development to occur in the receiving zones.

Table 7.2: Transfer of Development Rights	
Strengths	Limitations
<ul style="list-style-type: none"> <li>▪ Permanently protects land from development</li> <li>▪ Landowner is paid to protect their land</li> <li>▪ Local governments can target locations effectively</li> <li>▪ Low cost to local unit of government</li> <li>▪ Utilizes free market mechanisms</li> <li>▪ Land remains in private ownership and on tax roll</li> </ul>	<ul style="list-style-type: none"> <li>▪ Can be complex to manage</li> <li>▪ Receiving area must be willing to accept higher densities</li> <li>▪ Difficult program to establish</li> <li>▪ Program will not work in areas where there is little to no development pressure on the area to be preserved</li> </ul>

### SHORELAND AND WETLAND ZONING

Shorelands and wetlands are often viewed as valuable recreational and environmental resources. These areas provide for storm water 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 storm water 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 and sewers.

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*



## CHAPTER 7: AGRICULTURAL, NATURAL, & CULTURAL RESOURCES

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*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 Wisconsin Statutes and Wisconsin Administrative Codes NR115.116 and NR 117, and is established in the Outagamie County Zoning Ordinance.

Outagamie County administers its Shoreland/Wetland Ordinance in unincorporated areas of the County. These areas would include those areas along Black Creek, Duck Creek and the Burma Swamp that are within the Town Black Creek. Moreover, the Town's *Future Land Use Map* seeks to preserve these valuable resources and wildlife habitats by directing development elsewhere.

### NATURAL RESOURCES

The variety and abundance of natural resources within a community play a significant role in attracting development, providing recreational opportunities, and maintaining a high quality of life among residents. A correlation exists between the presence and prevalence of open space and the positive feelings people have about their community. The Town and Village of Black Creek benefits from a rich mosaic of landscapes, with a greater diversity of ecosystems than most communities in the region. Its natural environment includes upland hardwood forests, riparian systems, wetlands, glacial features, mineral deposits, and large expanses of prime agricultural soils, among others.

The purpose of this section of the chapter is to describe the natural resources present within the two communities, identify those at greatest risk of loss due to development pressure, develop a plan for their sustainable use, and identify a means by which to preserve them for the future.

### ECOLOGICAL LANDSCAPE

The state has been divided into sixteen ecological landscapes. Ecological landscapes have unique combinations of physical and biological characteristics that make up the ecosystem, such as climate, geology, soils, water, vegetation. These landscapes differ in the levels of biological productivity, habitat suitable for wildlife, and the presence of rare species and natural communities. The characteristics of the ecological landscape should be considered in land use and management.

The Black Creek community is primarily located in the Central Lake Michigan Coastal ecological landscape; however, a portion of the northwest corner of the community lies in the Northern Lake Michigan Coastal ecological landscape.

For more information on Black Creek's unique ecological landscape and how ecological landscapes affect land use and management, visit: <http://dnr.wi.gov/landscapes/>.

### GEOLOGY AND TOPOGRAPHY

Outagamie County is located in the Eastern Ridges and Lowlands geographic province of Wisconsin. The topography is characterized as flat to gently rolling with several northeasterly trending escarpments as the dominant landscape features. The topography of Black Creek can be characterized as flat to gently rolling uplands interrupted by broad depressions. Elevation in the Village is approximately 800 feet above mean sea level. Elevations in the Town range from about 850 feet above mean sea level to about 780 feet along Duck Creek and about 765 feet above mean sea level along Black Creek.

Sedimentary rocks underlie the land surface in Outagamie County. The Black Creek community and surrounding area has dolomitic limestone and sandstone as the uppermost layers below the land surface.



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### WATER FEATURES AND WATERSHEDS

The state is divided into three major river basins each identified by the primary water body into which the basin drains. These three basins are the Lake Superior Basin, Mississippi River Basin, and the Lake Michigan Basin. Black Creek is located in the Lake Michigan Basin. There are 24 hydrological based subdivisions of the larger major basins of the state. These subdivisions are classified as *water management units*. The Black Creek community is located in two of these *water management units*, the Wolf River and the Lower Fox. The *water management units* are further subdivided into watersheds. Black Creek is located in three watersheds, Shioc River, Duck Creek, and Wolf River/New London and Bear Creek.

The Wolf River/New London/Bear Creek watershed spans over west central Outagamie County and covers 145 square miles. This watershed includes the mainstream of the Wolf River from the confluence of the Shioc River to the City of New London.

The Shioc River watershed holds the east, west and mainstream Shioc River and is approximately 53 miles in its entirety. The Shioc River is a tributary to the Wolf River, having its headwaters in Shawano County and flowing south and west to meet the Wolf River in Outagamie County, north of Shiocton.

The watershed is 152 square miles in size; approximately 62 percent lies within Outagamie County and 38 percent is located in Brown County. The Duck Creek watershed was selected as a Priority Watershed Project in 1994 and a Priority Watershed Plan was completed in 1997. This watershed includes Beaver Dam Creek, Duck Creek, Lancaster Creek, Trout Creek, and an unnamed creek, locally known as Thornberry Creek.

Duck Creek originates in Burma Swamp, a large wetland (approximately 2000 acres) located in central Outagamie County, significant portions of which are in the Black Creek Community. Approximately 64 miles of named and unnamed streams are located in the watershed and all enter Green Bay at or near the mouth of Duck Creek.

### SHORELINES

Shoreland areas in the Black Creek community are limited. The *Shoreland/Wetland Ordinance* adopted by Outagamie County regulates shoreland uses and development by requiring a permit for any filling or grading activity within 300' of any navigable stream as a minimum to protect the stream from harmful impacts. Black Creek supports the county's efforts to protect shorelands.

### GROUNDWATER AND AQUIFERS

Groundwater resources in Black Creek are generally plentiful. The groundwater is linked directly to the surficial glacial deposits and underlying bedrock structure. The Black Creek area contains two groundwater aquifers: the water table aquifer and the Cambrian sandstone aquifer. The water table aquifer is present in all areas of the Town and consists of glacial sediments deposited by several glacial advances that covered portions of Outagamie County. The thickness of this aquifer is variable, being greatest in pre-glacial bedrock valleys and least over topographic highs in the bedrock surface. Ancient glacially deposited sand and gravel streambeds typically can transmit adequate amounts of water for private well systems.

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The sandstone aquifer is present below the water table aquifer, and consists of sandstone bedrock overlain by Prairie du Chien dolomite bedrock. The dolomite acts as a leaky confining layer over the sandstone aquifer. The Cambrian sandstone aquifer is the thickest and most widely used aquifer in the Township.

Along the Town's east border outcrops the St. Peter sandstone, which is present in townships east and south of the Town of Black Creek. The St. Peter sandstone is a major drinking water aquifer in those townships. The water level in both the Cambrian and the St. Peter sandstone aquifers in northeast Wisconsin has been lowered significantly, as population pressures have resulted in increased pumping of these aquifers. The drawdown created by the high capacity wells in the lower Fox River Valley almost approaches the Black Creek area.

Water levels in the aquifer in the Green Bay area will rise in the future, as a number of the suburbs are planning to change over to surface water sources. Increased groundwater pumping, however, in the Kaukauna to Neenah area could eventually affect water levels in the sandstone aquifer in the Black Creek area.

### Arsenic

Elevated arsenic levels are associated with wells near the western outcroppings of the St. Peter sandstone. The Black Creek Community is located within a WDNR defined "Arsenic Advisory Area," which coincides with the western edge of the St. Peter Sandstone formation. Numerous residents within the Town have had high levels of naturally occurring arsenic show up in their wells. In fact, the testing demonstrates that the concentration of arsenic in residential wells in Black Creek is quite significant. The 2000-2003 sample testing results are presented in the table below.

The arsenic problem has been caused by high capacity wells drawing down the St. Peter sandstone aquifer's water level so that the top of the St. Peter sandstone is exposed to oxygen. This frees arsenic to move through the water table into private local wells. The decision by the Green Bay suburbs to change over to surface water sources will result in a rebound of the water level in the sandstone aquifer, which will improve the arsenic situation in some wells.

The Wisconsin Geological and Natural History Survey prepared a statewide map of groundwater susceptibility for contamination. This map is intended to illustrate the ease with which a contaminant can enter the groundwater based on depth to bedrock, bedrock type, depth to water table, soil characteristics and surface deposits. Although the map is not intended for site-specific use, it indicates that area groundwater is not readily susceptible to contamination. This does not mean that groundwater cannot be polluted, only that the likelihood of it being polluted from within the Town is not highly probable. It is possible groundwater could be contaminated by a pollutant entering the groundwater in an area of recharge beyond the Town limits

### Raingardens

Residential development can have many impacts on both the quality of local groundwater and the amount of water needed by a community. Good planning can balance the need for residential development with



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protection of both the health and well being of residents and the quality and quantity of water resources. Techniques to minimize the effects of development on groundwater resources include:<sup>4</sup>

- Using raingardens to encourage infiltration of stormwater and recharge to groundwater.
- Minimizing paved surfaces such as driveways. This can be achieved with driveway maximum length standards that have the added benefit of providing better access to residences for fire and police protection.
- Requiring the use of advanced wastewater treatment systems, such as nitrate removal systems, in vulnerable groundwater areas.
- Educating homeowners on the need for proper maintenance of private well and onsite wastewater treatment systems, periodic testing of private well water, and planning for eventual well, pump or drain field replacements.
- Placing private wells upgradient from onsite wastewater treatment system on the same or neighboring property to prevent recycling of wastewater into private wells.
- Strongly encouraging or require water conservation and use of water saving devices such as low-flow showerheads and toilets within homes.
- Strongly encouraging conservation or cluster subdivisions due to their groundwater benefit associated with less developed and that requires less fertilized lawns and landscaping.
- Providing education on natural landscaping and other low water demand vegetation.
- Providing opportunities, such as Clean Sweep Programs, for residents to properly dispose of hazardous household products.
- Requiring periodic maintenance of onsite wastewater treatment systems if they are used.

### WHAT IS A RAINGARDEN?

A raingarden is an attractive native plant garden with a special purpose; to reduce the amount of stormwater entering our beautiful Wisconsin waters. It is constructed as a place to direct stormwater from your roof, and landscaped with beautiful native Wisconsin plant species.

By creating a raingarden on your property, you can help reduce the amount of stormwater that enters local streams, rivers and lakes. You can use rain the way nature intended, instead of throwing this resource away. A raingarden is a natural way for you to help solve our stormwater pollution problems.

Given the relatively low density of development in the Town, it is not feasible to establish a municipal water system. Monitoring and education will be critical to addressing arsenic issues. Additional information about this issue is presented in the “Issues and Concerns” section of this chapter.

### WETLANDS

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 also essential in providing wildlife habitat, flood control, and groundwater recharge. Due to these

<sup>4</sup> Groundwater and its Role in Comprehensive Planning, Comprehensive Planning and Groundwater Fact Sheet 3, Wisconsin Groundwater Coordinating Council, July 2002.



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benefits, county and state regulations place limitations on the development and use of wetlands and shorelands. Wetland areas in Black Creek are shown on the *Natural Features Map*.

The *Shoreland/Wetland Ordinance* adopted by Outagamie County regulates shoreland uses and development within 1,000 feet from the ordinary high water mark of a lake, pond or flowage, and within 300 feet from the ordinary high water mark of a navigable river or stream.

For almost three decades, the U.S. Army Corps of Engineers has had the authority over the placement of fill materials in virtually all wetlands of five acres or greater. However, on January 9, 2001, the U.S. Supreme Court limited federal jurisdiction over isolated wetlands under the Clean Water Act of 1972. This Court decision now limits the jurisdiction of the U.S. Army Corps of Engineers to cover only wetlands that are directly associated with navigable waterways-lakes, streams and rivers. Since the State of Wisconsin's jurisdiction over wetlands is tied to federal statutes, as many as 4 million acres of wetland were affected by this decision, including some wetland areas in the Black Creek community.

In response to this U.S. Supreme Court decision the State of Wisconsin passed legislation giving the Wisconsin Department of Natural Resources (DNR) authority to regulate those wetlands that were formerly tied to federal legislation. As in the past, anyone interested in filling a wetland is required to obtain a permit.

Wetlands in the Town and Village of Black Creek principally occupy stream bottoms. Those mapped by the WDNR on its *Wisconsin Wetland Inventory Maps* are primarily found along Duck Creek and Black Creek. Other isolated wetlands are found in depressions or along drainageways, and typically occupy less than 100 acres. These wetlands exhibit diversity in hydrologic and vegetative characteristics. The most extensive wetlands are forested areas with wet soils. These lowland areas support mixed hardwood deciduous plant communities.

As part of the Outagamie County Stormwater Management Ordinance developed to address the additional EPA Phase II requirements, the County proposed that wetland delineation be required on all new development projects.

### FLOODPLAINS

Floodplains 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 Federal Emergency Management Agency (FEMA) updated flood maps in Outagamie County in 2012-13. FEMA maps are available online or from the Outagamie County land and Water Conservation Department.

Outagamie County has adopted a floodplain zoning ordinance requiring certain land use controls in designated flood hazard areas. The existence of this ordinance makes residents of the Town eligible to participate in the Federal Flood Insurance Administration's Insurance Program. The flood insurance program requires all structures constructed or purchased in a designated flood hazard area, with loans from federally insured banks, to be covered by a flood insurance policy. Generally, areas susceptible to flooding are considered unsuitable for development due to potential health risks and property damage.

## CHAPTER 7: AGRICULTURAL, NATURAL, & CULTURAL RESOURCES

### WOODLANDS

Prior to settlement, the vegetation of Outagamie County was entirely forested with areas of mixed conifer-northern hardwood forest. As people moved to the area, much of the forests were cleared for agricultural crops. This pattern is also true for the Black Creek area. In the Town, the extensively farmed uplands are interspersed with woodlots. Areas of depression in the Town include several significant wetlands that are covered by forest and shrub-scrub vegetation.

The *Natural Features Map* delineates the location of these areas. Because woodlands are an important natural feature to residents, woodland areas should be protected from future encroachment through the use of easements, conservation subdivisions and other preservation techniques.

### WILDLIFE HABITATS

Unfortunately there is not a source of comprehensive habitat information for the Town and Village of Black Creek. Resident observation is the best available local resource about wildlife habitat areas. Primary wildlife habitat areas correspond to the forested areas and wetland areas shown on the *Natural Features Map*, including the Black Creek and Duck Creek corridors. These areas provide food and cover for deer, raccoons, skunk and other small creatures common in the area. The local farm fields also serve as a food source for deer in the area. The remaining areas (i.e. residential areas, road corridors, and other developed areas) are not classified as primary wildlife habitat areas - though certainly animals do wander into these areas.

Some information about wildlife habitats is also available from the WDNR. Much of the available information about rare plant and animal species is based on watershed areas. For example, in the Wolf River Basin (a small portion of which is in Black Creek), there are over 143 rare animal species and 57 rare plant species. Similarly, numerous endangered, threatened and otherwise rare species live in the Lower Fox Basin (a small portion of which is in Black Creek), including the endangered Barn Owl and the threatened Small White Lady's Slipper. It is important to understand that not all of these plants and animals are found in the Town and Village of Black Creek. However, given the environmentally sensitive areas in the community, consideration must be given to wildlife habitats and rare/endangered species when development projects (e.g. subdivisions, road construction, etc.) occur in the community.

The WDNR is concerned about loss of wetlands, aquatic habitat and open land to development, as well as, pollution to surface and groundwater. Moreover, simplification of diverse habitat and loss of special places that support rare species are also major concerns of the WDNR.

### THREATENED AND ENDANGERED SPECIES

Based on information contained in Wisconsin's Natural Heritage Inventory, there are 24 aquatic animal and six aquatic plant species that are threatened, endangered or a species of special concern in Outagamie County. There are an additional 13 terrestrial (land based) animals and seven terrestrial plant species that are threatened, endangered or a species of special concern in Outagamie County.

#### WILDLIFE HABITAT FRAGMENTATION

A primary threat to wildlife is fragmentation – the breaking up of larger habitat areas into smaller sections. Fragmentation decreases wildlife population sizes, isolates habitat areas and creates more edges – where two dissimilar habitats meet (i.e. grassland and residential subdivisions). The Town and Village of Black Creek support rural development patterns that maintain contiguous wildlife corridors.



## CHAPTER 7: AGRICULTURAL, NATURAL, & CULTURAL RESOURCES

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### 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 and Village of Black Creek can help combat exotic species by educating residents about non-native species and encouraging residents to use native plants in landscaping.

### METALLIC AND NON-METALLIC MINING RESOURCES

The geologic and glacial history of Outagamie County is reflected in its mineral resources that provide a substantial volume of total aggregate material used in construction activities throughout the county and the region. Many of the larger quarries in the county are located to the south of Black Creek, in the Town of Center. Currently, there are no pits or quarries in the Village and two sand and gravel pits in the Town as described below:

- Reihl Pit, Section 31, owned by Jule & Joan Vanhandel. 7 Acres Active. 71 Acres in Reserve. Reclamation plan approved by East Central Wisconsin Regional Plan Commission (ECWRPC) Closed.
- Ott Road Pit, Section 20, owned by MCC. 6 Acres Active. 22 Acres in Reserve. Reclamation plan approved by ECWRPC. Active.

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

ECWRPC, under an agreement approved in July 2001 is the regulatory authority for administering five individual, county-adopted, Non-Metallic Mining Reclamation Ordinances for Winnebago, Calumet, Outagamie, Waupaca and Shawano Counties. This agreement transfers permit issuance and reclamation plan review/approval authority to the ECWRPC for the program, however, the individual counties are responsible for the actual enforcement of the ordinance requirements should any problems arise with a site/operator/landowner. It is important to understand that the ECWRPC only oversees the reclamation aspect of active sites in these counties as it relates to the NR135 requirements. Zoning or other operational issues of sites are still handled by the counties, cities, villages and towns under their existing zoning regulations. The four quarries/pits in Black Creek do not have reclamation permits with the ECWRPC at this time.

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 current means of regulation. The requirements neither regulate active mining process nor have any effect upon local zoning decisions like those related to the approval of new mine sites.