Introduction

This chapter provides an inventory of existing agricultural, natural, and cultural resources in the Town of Bradford. Issues associated with these resources are discussed and a vision, with supporting goals and objectives, is presented.

Wisconsin’s Smart Growth Law includes 14 goals for local comprehensive planning. The goals listed below specifically relate to planning for agricultural and natural resources:

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

Agricultural, Natural, & Cultural Resources Vision

In 2025, prime agricultural lands, woodlands, wetlands, and streams remain the dominant landscape features in the Town of Bradford. Natural areas and open spaces provide recreational opportunities for people and habitat for wildlife. Farming continues to be productive and economically viable sources of income for individual families and the community as a whole. Residential and 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, particularly the Turtle Creek and Spring Brook bottomlands.

The Town’s natural environment provides abundant opportunities for outdoor enthusiasts including hunting, fishing, hiking, bicycling, canoeing, kayaking, Nordic skiing, snowmobiling, and ATVing, among others.

Agricultural Resources

With the exception of the Turtle Creek and Spring Brook bottomlands, the majority of the land in the Town of Bradford originally consisted of prairie. By 1873, most of the prairie grasslands had been converted to agricultural production. Presently, grain farming occupies most of the land in the township.

The soils, topography, and climate provide ideal growing conditions in the Town of Bradford. In Rock County, the winters are cold and the summers are fairly warm. The total annual precipitation is 33.7 inches per year with the majority falling in the summer. The average winter snowfall is 33.5 inches. The average high temperature in July is 83.5 degrees Fahrenheit and the average low temperature in January is 10.8 degrees Fahrenheit.
Agricultural land is a threatened component of Bradford’s landscape. Residential and commercial growth in rural communities typically occurs through “green field” development; that is, it takes place on land not previously developed. Green fields include woodlands, wetlands, grasslands, fallow areas, and agricultural lands. In the Town of Bradford, a substantial portion of land is agricultural. Therefore, anticipated future development in the community will result in a significant decrease in available agricultural acreage unless steps are taken to preserve farming as both a viable land use and as an income producer for farm families.

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

Long-term Sustainability of Farming

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

- Permitting value-added operations such as on- and off-farm direct retailing (roadside farm stands);
- Encouraging local schools to provide education to students about careers in farming;
- Transitioning from conventional to organic farming techniques; and,
- Reevaluating current livestock and crop selection.

Conservation-Based Development

Conservation-based development techniques may involve the establishment of a conservation easement. In a conservation subdivision, homes are “clustered” together so that a greater proportion of the land is protected from development.
A typical conservation subdivision will require that 40% of a site be set aside and preserved as undevelopable open space.

Protection and maintenance of the conserved area can be accomplished through a conservation easement with an appropriate conservation organization, land trust, homeowners association, government body, or through deed covenants.

The areas to be conserved must be protected indefinitely.

The land designated for protection will be preserved as natural habitat, open space, or farmland. If it is farmland, special consideration should be given to where residential development is located (e.g. prevailing winds, buffers, etc) to allow farm uses to coexist harmoniously with residential uses.

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

**Land Trusts and Conservation Easements**

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

**Specialty Farming**

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

- Organic milk and cheese from small dairy operations
- Organic grains (sold locally at a collective farmers’ market in the Cities of Janesville or Beloit or in other nearby cities)
- Horse farms (offering boarding and potential future trail access)

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

Natural Resources

The condition of the natural environment is a key ingredient in Bradford’s “quality of life” and the strong sense of resident community pride. A correlation exists between the presence and prevalence of open space and clean water and the positive feelings people have about their community. The large areas of agricultural cropland, bisected by the environmental corridors formed by Turtle Creek, Spring Brook, Blackhawk Creek, and fence lines throughout the Town, provide important wildlife habitat and recreational opportunities for residents. They improve the visual appeal of the Town and function as development buffers.

In many respects, the natural landscape also determines where development can and cannot happen. Development requires stable soils and the availability of water. The floodplain areas and bluffs associated with Turtle Creek and Spring Brook are unavailable for development purposes outside of certain passive recreational activities. The balance of land in Bradford is presently used for agricultural purposes, and is available to most types of land development.

Agriculture has provided a major economic stimulus to the area. The abundance of prime farmland in the Town of Bradford carries with it the responsibility to care for and preserve this resource in the township. Development must be balanced with conservation.

Based on resident input provided at the Kick-Off Meeting, preservation of natural resources (farmland, environmental corridors, limestone bluffs, wetlands, and woodlands) is an important priority in Bradford. Local residents value the benefits (e.g. stormwater control, water quality, air quality, wildlife habitat, aesthetics, recreation, etc.) provided by a healthy and diverse natural environment.

This section of the chapter provides an assessment of the different natural resources in Bradford. The information is graphically represented on the Natural Resources Map (on page 7-13). This natural resources information serves as the basis for a land suitability analysis used to determined appropriate (e.g. environmentally sustainable) areas for development on Future Land Use Maps.
GEOLOGY AND TOPOGRAPHY

The Town of Bradford is located in the Eastern Ridges and Lowlands geographic province of Wisconsin. The area has undergone multiple periods of glacialiation. Thick continental ice sheets have moved from Canada southward in various lobes at various times, leveling high areas of the landscape, and laying down glacial drift.

The last glacial advance in Wisconsin terminated in Rock County to the north of the Town of Bradford. Sand and gravel outwash formed from melt water from that glacier, covering the northern border area of the Town, and an area along the eastern border of the Town down to Turtle Creek. The areas in the Town containing outwash are flat, with very little stream development. The sandy nature of the soils allows precipitation to infiltrate quickly, rather than running off the surface.

The rest of Bradford is underlain by glacial till laid down by an earlier glacier. Since the landscape is older, a more mature drainage network has developed. These areas are somewhat hilly, especially to the south of Turtle Creek.

The elevation of the land surface in the Town of Bradford ranges from 990 feet above mean sea level at a number of locations, to 820 feet above mean sea level in the Turtle Creek floodplain where it leaves the Town near its southwest corner.

The glacial till is generally less than 50 feet thick, and overlies limestone. Drinking water is usually obtained from wells in the limestone.

The topography of the Town of Bradford dictates land use. Floodplains and bluffs associated with Turtle Creek and Spring Brook are unavailable for development, while the balance of the land within the Town will support development.
LAKES AND STREAMS

Nearly all the lakes and ponds in Rock County are in the northern one-third of the county, the area of the most recent glaciation. The Town of Bradford itself has few ponds.

Streams are an important component to a region’s quality of life, providing opportunities for canoeing, fishing, hunting, and bird watching.

The main stream in the Town of Bradford is Turtle Creek, which flows through the south half of the Town, discharging into the Rock River in Beloit. Turtle Creek flows on bedrock within the Town, and is recharged by groundwater from neighboring soils. It is a meandering creek, with significant bottomland areas bordered in many areas by steep valley walls.

Turtle Creek--Rock-Walworth Co. Line to the WI/IL Border This 20-mile segment runs from the Rock-Walworth county line southwest to where it empties into the Rock River at Beloit. A high quality resource, it is designated an Exceptional Resource Water. This segment has a higher gradient than the first two segments, but is still affected by urban polluted runoff in the Beloit area and by sediment from adjacent corn fields and severely eroding streambanks upstream of the city.

The Shopiere Dam was removed in 2000. Walleye, catfish, northern pike, and panfish now have access to the upper reaches of the stream. Formerly, Turtle Creek supported an excellent smallmouth bass fishery below the dam and a marginal smallmouth bass fishery above the dam. The removal of the Shopiere Dam has enabled fish migration and the smallmouth bass fishery is expected to improve.

Spring Brook (T2N R14E S22) This four-mile-long spring and seepage creek rises in eastern Rock County 1.5 miles west of the Rock-Walworth county line and flows southerly and at a medium gradient through the Carver-Roehl County Park to its confluence with Turtle Creek. High fecal Streptococcus bacteria counts have been detected in the stream, probably due to the obvious streambank pasturing upstream in the flat terrain of the creek’s headwaters adjacent to dairy farm operations. A habitat evaluation in 1996 at the Carver-Roehl Park characterized the stream as having “good” habitat quality at that site. The fishery has an outstanding diversity of minnow species. The stream serves as a nursery area for Turtle Creek game and forage fish species. Spring Brook is designated an Exceptional Resource Water in its lower reach (T2N R14E S27) due to the presence of the Ozark minnow and because its lower reach supports outstanding ecological diversity compared to other streams in the region.

Little Turtle Creek Most of Little Turtle Creek’s 12 miles have been ditched for drainage of the surrounding farm lands, resulting in habitat deterioration, increased water temperatures, high turbidity, sedimentation, infilling of deep pool habitat, and excessive nutrient and fecal bacteria concentrations.

This stream is managed as a warm water forage fishery. The Rock County portion of this stream is an Exceptional Resource Water. The stream supports the gravel chub and slender madtom, two species on the state threatened and endangered species list. Little Turtle Creek
is too shallow to provide habitat for game fish.

**ROCK RIVER WATERSHED**

Bradford lies in the Rock River watershed. In 2002, the Wisconsin Department of Natural Resources performed a study on the Rock River watershed, resulting in the report “The State of the Rock River Basin, 2002”. That report identified a number of important sensitive natural resource lands within the basin, which require coordinated efforts for protection. One area is the lower Rock River corridor, which includes the Turtle Creek tributary. According to the report, the lower Rock River corridor “includes 40 miles of the Lower Rock River and tributary corridors including the lower Yahara River, Bass Marsh, and Turtle Creek. The riverine shorelines remain relatively undeveloped and the waters support an excellent smallmouth bass fishery. In several places rich and diverse mussel populations occur... The corridor offers excellent short and long distance canoeing potential and opportunities for wetland protections.”

The Wisconsin Department of Natural Resources has established a “designated waters” program, which classifies the most pristine waters in the state as either “outstanding” or “exceptional”. Exceptional waters are defined as having excellent water quality, high recreational and aesthetic value, and high quality fishing, but that may be impacted by point source pollution or that may have the potential for future discharge from a small sewer community. Three exceptional waters are located in the Town of Bradford, including Turtle Creek, Spring Brook, and Little Turtle Creek. There are no trout streams in Bradford.

Since the primary land use in the Town of Bradford is agricultural, the main source of pollution to the streams is siltation due to runoff caused by cropping. The best way to prevent siltation is to vegetate stream shorelines and swales as they move through farm fields.

The Rock River Coalition is a non-profit group set up in 1994, dedicated “to educate and provide opportunities for people of diverse interests to work together to improve the environmental, recreational, cultural and economic resources of the Rock River Basin”. The Coalition actively works to promote the use of shoreline buffers, judicious use of road salt and field and lawn fertilizers, and other methods to promote the health of the basin’s waters.

The Rock County Comprehensive Development Plan includes a River Trails Plan for the county, which proposes a 4 – 5 hour canoe route on Turtle Creek between Fairfield in Walworth County and STH 140 or Sweet-Allyn Park in the Town of Turtle.

**ROCK PRAIRIE**

The Rock Prairie is considered an invaluable, irreplaceably resource due to its prime agricultural soils and remnant native ecosystem. The prairie originally occupied nearly half of Rock County, extending eastward from the Rock River. It encompassed over 90% of the Town of Bradford, and formed on outwash plains left by the last glacier. A natural tall grass prairie, the largest in the state, the Rock Prairie grew on thick loess deposits. The early inhabitants found the area fertile for farming,
but had to go great distances to find lumber for building and heating purposes.

**ENVIRONMENTAL CORRIDORS**

Environmental corridors connect natural areas and open spaces. They link fragmented habitat areas and, as such, provide animals and insects a means of travel to and from feeding and breeding places. Fish and wildlife populations, native plant distribution, and even clean water all depend upon movement through environmental corridors. Most native species decline when habitat areas are fragmented due to agricultural operations or residential and commercial development. Wildlife populations isolated in one location, like a stand of trees or a secluded wetland can overpopulate or die out without adequate environmental corridors allowing unimpeded movement.

The functional effectiveness of an environmental corridor depends on the type of species that use it, its size and shape, and the amount of edge habitat. The greater the amount of edge habitat present, the greater the impact of wind, light, sound, and visibility into and out of the habitat. Larger corridors with greater core area and less edge habitat offer greater habitat diversity.

Linear corridors high in edge habitat tend to be less diverse but offer important migration routes. In suburban environments, corridors often lie along stream and riverbanks. More than 70% of all terrestrial wildlife species use riparian corridors. In farming areas, fencerows provide important habitat links for songbirds and other wildlife. Historically, fencerows were used to mark-off ownership of farm fields. Stones and stumps cleared from cultivated areas were laid along property lines or to separate “forties.” During the 1920s the federal government advocated tree-lined fencerows as a means of reducing topsoil loss. Nation-wide, farmers began planting trees along fence lines to reduce wind erosion. Over time, these fence lines became more complex, providing habitat for a variety of plant and animal species. As more of Wisconsin’s farms are converted to subdivisions, these important areas for wildlife habitat are lost.

Stream corridors are classified under Rock County’s Comprehensive Development Plan as “environmentally significant” natural features, which should be protected for the benefits they provide.
GROUNDBWATER

Groundwater is the source of potable water in the Town of Bradford, as well as a critical component to the agriculture sector in the town. The quality of life in the township is directly related to the quality of its groundwater.

Whether an area will have groundwater contamination depends on the type and intensity of land use, the possible contaminant sources, and the sensitivity of the area to the contamination. In areas such as the Town of Bradford, where the groundwater table is near the surface, and recharge to the water table comes almost exclusively from locally occurring precipitation, particular care must be taken to protect the resource.

The Wisconsin Geological and Natural History Survey have compiled data for the various counties in the state into a groundwater contamination susceptibility analysis map. In the Town of Bradford, because of the high groundwater table and the use of fertilizers, herbicides, pesticides, and manure in agricultural production, the majority of land in the town is more susceptible than average areas in Wisconsin to groundwater contamination.

Over 25% of private wells tested in Rock County exceed the health enforcement level of 10 mg/l for nitrate-nitrogen. Every year 15% to 30% of private wells in Rock County test positive for bacteria. These impacts can be reduced by the use of nutrient management planning, improved septic system design and maintenance, and maintaining wellheads properly.

WETLANDS AND FLOODPLAINS

Wetlands and floodplains act as a natural filtering system for sediment and nutrients such as phosphorus and nitrates. They also serve as a natural buffer, protecting shorelines and stream banks from erosion. They are essential in providing wildlife habitat, flood control, and groundwater recharge.
Wetlands occur primarily along stream banks in the Town of Bradford. The majority occurs in floodplains and remains undeveloped. Development is restricted in floodplain areas to prevent damage to life and property, and to assure continued functional value of the wetlands.

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

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

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

WOODLANDS

The majority of land in the Town of Bradford was historically prairie. Woodlands were found primarily along stream banks.

A vegetative assessment was made of the Town of Bradford by the University of Wisconsin in 1939, as part of the state-wide Bordner Survey. The survey found that the majority of land within the township was being cropped, with small areas of grassland being used as pasture land. Wooded areas were located primarily along Turtle Creek and Spring Brook.

Agricultural land use still dominates in Bradford, so woodlands continue to be sparse and associated primarily with creek corridors.

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

Other landmark features, such as the limestone outcroppings overlooking Turtle Creek and Spring Brook, may be identified as significantly contributing to the scenic diversity and attractiveness of the township. A number of methods exist to help preserve and protect these natural features. One method is to develop an overlay district to encompass and protect these areas. Another method is to include the natural feature in the definition of “environmentally sensitive area”, and protect it with setback provisions. A third approach is to require deeper structure setbacks in bluff areas.

THREATENED AND ENDANGERED SPECIES

There are a number of threatened and endangered plant and animal species in the Town of Bradford. They include the gravel chub, a fish found in the lower Rock River drainage, including lower Turtle Creek; the eastern Massasauga rattlesnake, found in wetland areas; and a number of plants. The WDNR does not release precise locations for these species. The WDNR does not want people to visit or otherwise intrude on the habitats of endangered and threatened species. The WDNR is attempting to identify and catalog endangered plant and animal species across the state. For a complete, up-to-date list, refer to: www.dnr.state.wi.us. The state and federal government have programs and laws in effect to protect threatened and endangered plant and animal species in the Town of Bradford and beyond.

EXOTIC AND INVASIVE SPECIES

Non-native invasive 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, etc.). The WDNR requires that any person seeking to bring a non-native fish or wild animal for introduction in Wisconsin obtain a permit. The Town of Bradford can help combat invasive species by educating residents about non-native species (using the Internet or a Town newsletter as primary tools in this effort) and by encouraging residents to use native plants in landscaping.

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

NON-METALLIC MINING RESOURCES

As part of NR 135, Wisconsin Administrative Code, adopted in December 2000, any community in Wisconsin may adopt an ordinance to establish requirements for reclamation of non-metallic mines, such as gravel pits and rock quarries. If a community decides not to develop its own ordinance, a county may develop an ordinance for the area instead. Likewise, a regional planning agency may develop ordinances for the counties within its region. The ordinance must establish reclamation requirements to prevent owners and operators of quarries and gravel pits from abandoning their operations without proper reclamation of the mine or quarry.
The process of siting a mine continues to be a local matter governed under existing zoning procedures by local authorities. The reclamation requirements through NR 135 add to the status quo, but do not replace or remove any other means of regulation. The requirements neither regulate active mining processes nor have any effect upon local zoning decisions, like those related to the approval of new mine sites.

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

The Town of Bradford Code of Ordinances contains Chapter 11 which provides for the regulation of mines, pits, and quarries which include the excavation, stripping, and removal of top soil and limestone as well as the crushing and processing of minerals and materials on property located within the Town.

**AIR QUALITY**

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

Rock County is an attainment area.

**SOILS**

Soils are the physical base for development and agriculture. Knowledge of their limitations and potential difficulties is important in evaluating crop production capabilities and other land use alternatives, such as residential development.
Natural features map will be here
soils map will be here
productive agricultural soils map will be here
building suitability map will be here
sanitary suitability map will be here
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The Town of Bradford is in the Eastern Ridges and Lowlands geographic province of Wisconsin. The sections of Bradford along the north border and along the east border north of Turtle Creek are covered in outwash. The primary soils found in the outwash areas are Plano silt loams underlain by a gravelly substratum. These soils are well drained and moderately well drained, and appropriate for agriculture and other development purposes.

The bottomlands along Turtle Creek and Spring Brook contain the Millington and Mahalasville silt loams, which are poorly drained. Subject to frequent flooding, agriculture and other development are restricted in these areas. The balance of land in the Town of Bradford contains the Plano, Durand, and Ogle silt loam soils, and Griswold loam soils. These soils are well drained or moderately well drained, suitable for agriculture.

Cultural and Historical Resources

Cultural and historical resources, like natural resources, are valuable community assets warranting preservation.

Cultural Resources

As discussed in the Introduction chapter, what is now the Town of Bradford was long occupied by native people. Reminders of the pre-settler cultures can still be found today in the arrowheads, spear points, and campsites that turn up on occasion.

Modern cultural assets in the Town of Bradford include historic church and school sites, nineteenth- and early twentieth-century structures, and farmsteads scattered throughout the community. These facilities offer spiritual enrichment, education, and gathering spaces that contribute to the local culture.

Historical Resources

Town governments, like other governments in Wisconsin, have the authority to preserve their historical heritage (Wisconsin Statutes §60.64). One of the most effective ways to do so is through a local historic preservation ordinance. The historic preservation ordinance can establish procedures to designate historically and culturally sensitive properties and places and to review projects that have the potential to negatively affect these important places.

The Wisconsin Historical Society has created the Architecture and History Inventory (AHI), an internet-based search engine that provides architectural and historical information on approximately 120,000 properties in Wisconsin. The AHI contains information on buildings, structures, and objects that illustrate Wisconsin’s unique history. The AHI documents a wide range of historic properties such as centennial farms, historic churches and schools, cast iron bridges, small town commercial buildings, and Queen Anne houses, among others.
CERTIFIED LOCAL GOVERNMENT PROGRAM

Local units of government that have enacted historic preservation ordinances may consider being certified to participate in the state and federal Certified Local Government (CLG) program. The CLG program provides special grants to fund planning and educational activities. The Division of Historic Preservation at the Wisconsin Historical Society administers the CLG program. Wisconsin has 44 Certified Local Governments.

Local governments strengthen their local historic preservation efforts by achieving Certified Local Government (CLG) status from the National Park Service (NPS). NPS and State governments, through their State Historic Preservation Offices (SHPOs), provide valuable technical assistance and small matching grants to hundreds of diverse communities whose local governments are striving to keep for future generations what is significant from their community's past. In turn, NPS and States gain the benefit of local government partnership in the national historic preservation program. Another incentive for participating in the CLG program is the pool of matching grant funds SHPOs set aside to fund CLG historic preservation subgrant projects--at least 10% of the State's annual Historic Preservation Fund (HPF) grant allocation. Grant funds are distributed through the HPF grant program, administered by NPS and SHPOs.

Jointly administered by NPS in partnership with SHPOs, the CLG Program is a cost-effective local, State, and federal partnership that promote historic preservation at the grassroots level across the nation. Working closely with such national organizations as the National Association of Preservation Commissions, the CLG program seeks:

- To develop and maintain local historic preservation programs that will influence the zoning and permitting decisions critical to preserving historic properties, and
- To ensure the broadest possible participation of local governments in the national historic preservation program while maintaining preservation standards established by the Secretary of the Interior.
- Since 1985, more than $40 million in HPF grants has been allocated to the Certified Local Government program; and 1,228 local governments currently participate in the program nationwide.

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Agricultural, Natural & Cultural Resources Issues and Concerns

This section describes the major concerns expressed during the planning process and those revealed in the inventory portion of this chapter. Strategies to address these concerns are included in the Goals, Objectives, and Policies section at the end of this chapter.

SUSTAINING FARMLANDS AND NATURAL AREAS IN A GROWING COMMUNITY

Given the projected growth rate in the Town and surrounding area, there is a real concern about the impact development will have on natural areas and farmland. Preservation of natural resources and farmland is important to preserving the rural character of the area, maintaining wildlife habitat, and providing green infrastructure (e.g. wetlands and floodplains for storm water management, scenic areas, etc.) needed to sustain the Town of Bradford’s high quality of living.

In addition to the Conservation Subdivisions discussed earlier in this chapter, another means of preserving important landscapes, natural and agricultural, is to establish a purchase and/or transfer of development rights (PDR/TDR) program. A PDR or TDR program would allow the Town to “send” development from farmland and natural resource areas to designated “receiving” areas. Advantages of these approaches include the fact that landowners are compensated and farmland and natural resource preservation is permanent. PDR is a voluntary program, where a land trust, local government, or some other agency usually linked to local government makes an offer to a landowner to buy the development rights on the parcel. The landowner is free to turn down the offer, or to try to negotiate a higher price. When the development rights to a farm are sold, the farmer receives payment equal to the difference between the fair market value of the land a developer would pay if it could be developed and the price the land would command for agricultural use. In return for this payment, a conservation easement is recorded on the deed to the property. The easement stays with the land in perpetuity. The private landowner still retains the right to occupy and make economic use of the land for agricultural purposes. The landowner gives up the right to develop the property for some other use in the future. Farmers are not compelled to sell their development rights. Participation in PDR programs is entirely voluntary.

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

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 Town that is planned for development. That landowner has the right to develop his/her property and also use the transferred rights they purchased from the other landowner to develop at a greater density or intensity (e.g. smaller lot sizes to locate more homes in a single area). This approach results in the preservation of farmland and natural areas in designated “sending” zones and more intensive development in the designated “receiving” zones.
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ATCP 51 – LIVESTOCK SITING RULE

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

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

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

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

LOSS OF HABITAT FOR UNIQUE SPECIES

The Town of Bradford has an abundance of important natural resources. As discussed earlier in this chapter, the Town’s natural areas provide important wildlife habitat for a number of rare, threatened, and endangered species. Public meetings held at the beginning of this plan process demonstrated the importance of the natural environment in the eyes of the residents of the community. Habitat loss and fragmentation are often the results of poorly planned development. In a community that values its natural environment as much as the Town of Bradford does, it will be important for the Town to guide development away from the most sensitive habitat areas to insure the long-term viability of a healthy local ecosystem.
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PRESERVATION OF SURFACE WATER QUALITY

In many ways, creeks and streams serve as the backbone of the Town of Bradford. However, with each new home, additional strains are placed upon the aquatic ecosystem. Development in a watershed has direct and predictable effects on the lakes, streams, and wetlands within the watershed. Historically, water quality was degraded by point sources, or direct discharges to lakes and rivers from industry, municipal sewerage districts, and the like. Since the passage of the Federal Water Pollution Control Act of 1972 (the Clean Water Act), the United States had taken dramatic steps to improve the quality of our water resources. No longer are industries allowed to discharge untreated waste directly to surface waters.

Today, the greatest threat from a cumulative standpoint to our streams and lakes comes through nonpoint source water pollution. Nonpoint source water pollution, or runoff, cannot easily be traced to a single point of origin. It occurs when rainwater or snowmelt flows across the land and picks up soil particles, organic wastes, fertilizers, and other contaminants that become pollution when carried to surface and/or groundwater. Nonpoint pollution, in the form of nitrogen, phosphorus, and total suspended solids (soil particles), contaminates streams and lakes, increases the growth of algae and harmful aquatic weeds, covers spawning beds and feeding areas, and turns clear rivers into conveyances of stormwater. The sources of nonpoint pollution include:

- **Impervious Surface.** A positive correlation exists between the percentage of impervious surface in a watershed and surface water quality (see graph at right). Stormwater runoff from impervious surfaces such as roads and roofs has an adverse effect on surface waters. As the percentage of impervious surfaces increases in a watershed, lakes and streams experience greater degradation from stormwater runoff. According to the Center for Watershed Protection (CWP) in Ellicott City, Maryland, “More than 30 different scientific studies have documented that stream, lake, and wetland quality declines sharply when impervious cover in upstream watersheds exceeds 10%.” In 1999, CWP developed criteria that allowed local governments and watershed organizations to predict the effects upon surface water quality resulting from increases in impervious surfaces within a watershed. CWP classified watersheds into three groups, each defined by the percentage of impervious surface within the watershed.

- **Agricultural Fields.** Plowed fields, row crops, winter manure spreading, lack of riparian buffers, wetland conversion, and the overuse of commercial pesticides and fertilizers all intensify nonpoint source pollution loading to surface waters. By utilizing techniques...
such as conservation tillage, nutrient management planning, wetland restoration, grazing management, cover crops, manure confinement, and agricultural buffers, farmers can dramatically reduce nonpoint source pollution as well as the cost of farming.

- **Lawn Fertilizers, Herbicides, and Pesticides.** Wisconsin and Minnesota residents use more fertilizers and pesticides on their lawns per capita than those of any other state. Upwards of 95% of the chemicals applied to residential lawns are washed into storm drains and then into nearby creeks and streams following rain events. In northern climates, turf grass is only capable of ingesting fertilizer during the fall. Fertilizers applied during spring and summer months contribute to algae blooms and eutrophication of lakes and streams. Most herbicides, even those that claim to be focused on specific “weeds” or “pests”, kill healthy aquatic and terrestrial organisms and are suspected causal factors in many autoimmune and endocrine illnesses in humans and pets.

*Chapter 12: Implementation* will discuss a variety of tools, best management practices, and funding courses to aid in the reduction of nonpoint source water pollution in the Town of Bradford.

**PROTECTION OF GROUNDWATER**

With most of the Town of Bradford’s supply of potable water provided by private wells, susceptibility to contamination remains a concern. As discussed in *Chapter 6: Utilities and Community Facilities*, sources of groundwater contamination include leaking fuel tanks, surface discharges, and natural substances present in the subsurface geology.

Homeowners can protect groundwater by properly sealing abandoned wells. Always use "best management practices" on lawns and farm fields. These practices include properly treating sewage, improving roadway and property drainage, minimizing pesticide and fertilizer use, and following application guidelines when pesticides or fertilizers are necessary. Recycling programs that reduce the solid waste stream and proper disposal of hazardous household waste will also reduce the risks of contamination to nearby residential wells.

**PRESERVATION TAX INCENTIVES**

The Federal government encourages the preservation of historic buildings through various means. One of these is the program of Federal tax incentives to support the rehabilitation of historic and older buildings. The Federal Historic Preservation Tax Incentives program is one of the Federal governments most successful and cost-effective community revitalization programs. The Preservation Tax Incentives reward private investment in rehabilitating historic properties such as offices, rental housing, and retail stores. Current tax incentives for preservation, established by the Tax Reform Act of 1986 (PL 99-514: Internal Revenue Code section 47 [formerly Section 48(g)]) include:

- A 20% tax credit for the certified rehabilitation of certified historic structures; and,
- A 10% tax credit for the rehabilitation of non-historic, non-residential buildings constructed before 1936.
Chapter 7: Agricultural, Natural, and Cultural Resources

For more information on this and other programs to protect and restore historic structures, contact the Wisconsin State Historical Preservation Officer.

Coordination with Other Comprehensive Plan Chapters

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

LAND USE

Residents of the Town have clearly indicated that the preservation of natural resources is a priority. As a result, when the Future Land Use Map was developed, special consideration was given to this desire. The goals, objectives, and policies in this chapter include provisions to protect the natural environment of Bradford.

HOUSING

Housing if not carefully located and planned for, can result in negative effects upon farming and the natural environment. Housing development can fragment farming operations and wildlife habitat areas. The additional traffic, people, and services associated with residential development can quickly impact rural character. Directing development in the Town will help to protect natural resources and farmlands in surrounding communities. This strategy for housing development is reflected in the Future Land Use Maps.

Agricultural, Natural, and Cultural Resources Goals, Objectives, and Policies

The goals, objectives, and policies related to agricultural, natural, and cultural resources in the Town of Bradford can be found in Chapter 12: Implementation.