Source: http://www.rachalpacafarm.com

Contents

S. 66.1001(2)(e) Wisconsin Statutes

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

An Overview

Why Planning for Natural Resources is Important

A simple answer is that environmental health, measured by the quality and quantity of natural resources, is a cornerstone to the quality of life. People depend on natural resources in many ways to provide a clean and abundant supply of groundwater and surface water, ensure safe air to breathe, and to provide a natural landscape of terrestrial and aquatic habitats, such as forests, prairies and wetlands that are fundamental to a healthy and diverse biological community. Natural resources include the parks, trails, scenic areas, and other outdoor places we rely on for recreation. Also, natural resources are essential to a vibrant economy – measured in tourism revenues, enhanced property values, sustainable agriculture and wood products, low cost raw materials (such as sand, gravel, and stone), available water for manufacturing processes, etc.

Natural resources are a defining feature for the Kinnickinnic community and are facing significant threats due to increasing human demands by the growing population of the Twin Cities. Conversely, our natural resources generally do not increase to meet the extra demand. Developments in the last several decades, coinciding with population growth, have increased demands for water, land, and raw materials. Rural landscapes are being transformed by a demand for "healthy country living", sometimes in the form of expansion of the urban fringe, forcing local governments to consider expanding their services to meet the demands – sometimes costing more than will be recovered in new tax base revenues.

Land use conflicts are common in Wisconsin communities such conflicts include annexation battles, loss of farmland and family–owned farm operations, water rights debates, construction of new highways, growing energy demands, private property rights, and government regulation. Direct impacts of current and projected development patterns include habitat loss and fragmentation. The changing of the landscape from undeveloped to developed areas adds to the amount of impervious surfaces, such as roads and rooftops. This increase in the amount of impervious surfaces can lead to potentially negative changes in watershed hydrology, water quality, stream flows groundwater recharge areas, and sedimentation of water bodies

There are many state and federal regulations designed to protect Wisconsin's natural resources. Some state laws, including those for floodplains, shorelands, and wetlands, establish minimum use

and protection standards that must be adopted and administered by local government zoning ordinances. But not all natural resources are protected by state law. Local governments throughout the state have the flexibility to plan for and develop their own local ordinances to deal with the unique land use issues/conflicts in their community and to protect the natural resources that they value most. Examples might include the protection of steep slopes from development, protection of native prairie grasslands, and tree conservation ordinances. Local governments, empowered with land use planning authority are also in a strong position to influence the direct and indirect environmental effects of current and future development and practices.

Characteristics of the Natural Resources

A generalization of natural resources include parks and recreational areas, open spaces, navigable waters, wetlands, ponds, streams, and floodplains, environmentally sensitive areas, endangered/threatened species, natural areas, aquifers and their recharge areas, soils, topography, drainage patterns, storm water management, agricultural lands (prime agricultural soils, unique agricultural lands), forests, woodlands, prairies, and other vegetation cover types, historic and archeological sites, landfills and brownfields, aggregate resources (such as sand and gravel deposits), natural geologic features and scenic areas, ridgetops, blufflands, and areas with steep slopes, air quality, and local energy resources.

Natural Resources Assessment

General Setting

Natural resources relate to most, if not all, of the comprehensive plan elements.
The major focus on natural resources however, is in the Agricultural, Natural and Cultural Resources Element. Wisconsin's Comprehensive Planning legislation does not prescribe a specific format for the plan document. The Kinnickinnic Community can create separate elements to address these issues for better planning for state, regional, and county agency staffs. Knowledge about existing natural resource conditions, trends, and opportunities is fundamental to a successful planning process.

Environmentally Sensitive Areas

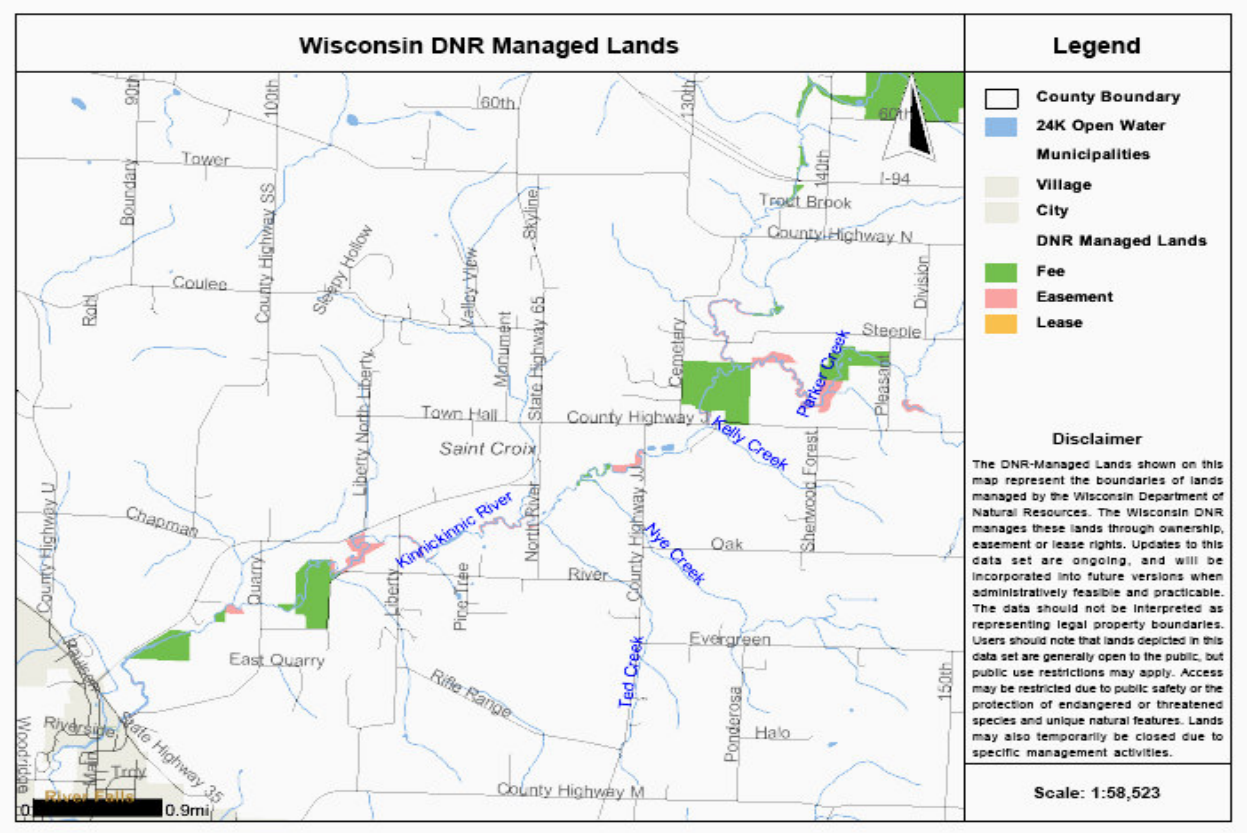
The Kinnickinnic Township is located in an area of the state that is characterized by wetlands, habitat for threatened or endangered species, surface water, and floodplains. Areas of these types are sensitive to development activity, and may be damaged by development that is too close or inappropriate for the individual location. The ecological services provided by these areas are important and may be difficult or costly to replicate.

Oak savanna was originally present in the Kinnickinnic Township. Wildfire and possibly bison and elk maintained these as grasslands with scattered oaks. Only scant remnants of the ecosystem exist today. Oak savannas were home to an abundant variety of plants and animals, and were probably optimum habitat for many game species and songbirds. However, oak savanna is presently one of the most threatened plant communities in the world. Less than 500 acres of oak savanna are listed

in Wisconsin's Natural Heritage Inventory. There is no inventory of oak savanna remaining in the Kinnickinnic Township. However, some of the identified grasslands have the potential for savanna restoration.

Shown in *Figure 1.* are the Wisconsin Department of Natural Resources (WDNR) Managed Lands within the Kinnickinnic Township.

Figure 1. Focused in on Kinnickinnic Township



Source: Wisconsin DNR Managed Lands, Web View.

Threatened or Endangered Species

The WDNR Bureau of Endangered Resources maintains databases of endangered plants and animals. The Bureau urges that special notice be taken to protect any and all endangered resources from development. Rare or endangered species and communities are generally very sensitive to encroachment of development and changes in their surroundings. Development on or near the locations of rare or endangered species can threaten their survival. *Figure 2*. entails a list of rare, threatened and endangered species in the Kinnickinnic River Watershed. The Wisconsin Department of Natural Resources may have lists that entail species that dwell in the Kinnickinnic Township.

Figure 2. Kinnickinnic River Watershed Rare Species

Wisconsin Endangered Species
Birds
Falco peregrinus anatum, American peregirine falcon*
Lanius ludovicianus, loggerhead shrike***
Podiceps grisegena, red-necked grebe
Fish
Hiodon alosoides, goldeye
Notropis amnis, pallid shiner
Mussels
Lampsilis higginsi, Higgin's pearly eye mussel*
Cyclonaias tuberculata, purple wartyback
Fusconaia ebena, ebony shell
Plants
Liatris punctata var. nebraskana, dotted blazing star
Astragalus crassicarpus, prairie plum
Scutellaria parvula var. parvula, small skullcap
Catabrosa aquatica, brook grass
Lespedeza lepstostachya, prairie bush clover**
Anemone caroliniana, Carolina anemone
Prenanthes aspera, rough white lettuce
Wisconsin Threatened Species
Birds
Casmerodius albus, great egret
Buteo lineatus, red-shouldered hawk
Fish
Macrhybopsis aestivalis, speckled chub
Moxostoma carinatum, river redhorse
Plants
Cirsium hillii, prairie thistle***
Besseya bullii, kitten tails
Trillium nivale, snow trillium
* Federally endangered * * Federally threatened * * * Federally special concern

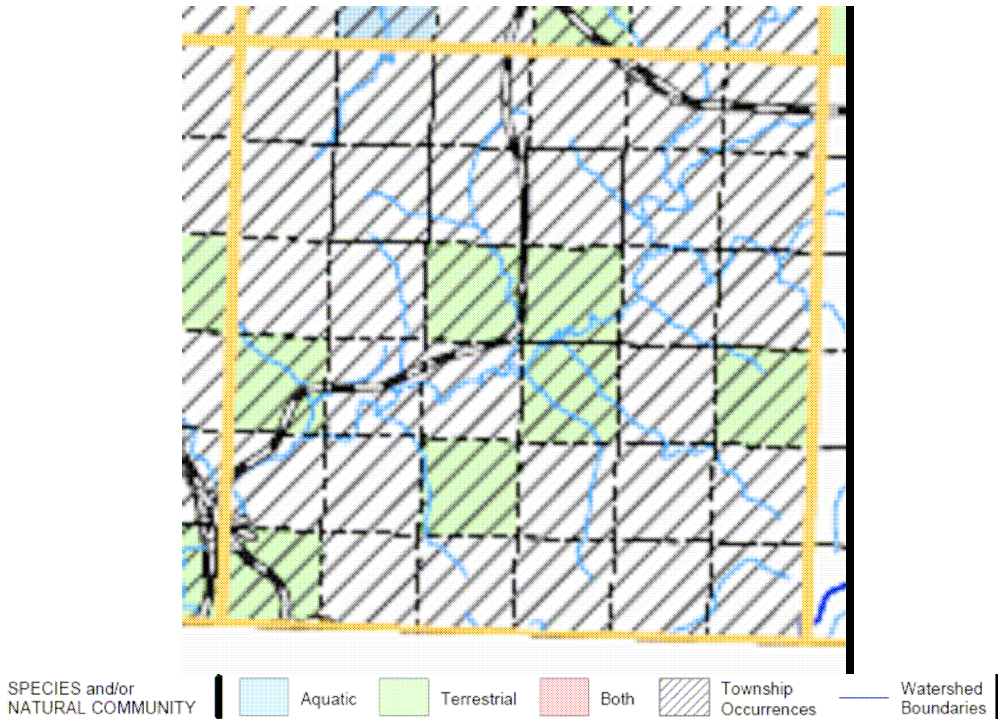
Source: The Kinnickinnic River Land Trust (http://kinniriver.org/RareSpecies.htm)

Figure 3. Aquatic and Terrestrial Communities Related to Watershed Boundaries

Special Concern: species for which some problem of abundance or distribution is suspected but not yet proven.

- = Candidate for federal listing. ** = Federally Endangered or Threatened. Last Revised: July 2001

AQUATIC AND TERRESTRIAL COMMUNITIES RELATED TO WATERSHED BOUNDARIES



Source: Wisconsin DNR Official Website (http://dnr.wi.gov/org/land/er/workinglists/countymaps/St Croix.pdf)

In reference to Figure 3.

AQUATIC OCCURRENCES

Animal

Elktoe, Alasmidonta marginata, 1996
Goldeye, Hiodon alosoides, 1967
Buckhorn, Tritogonia verrucosa, 2003
Snuffbox, Epioblasma triquetra, 1997
Butterfly, Ellipsaria lineolata, 2003
Washboard, Megalonaias nervosa, 1996
Bald Eagle, Haliaeetus leucocephalus, 1992
Monkeyface, Quadrula metanevra, 1997
Mud Darter, Etheostoma asprigene, 1928
Shoal Chub, Macrhybopsis aestivalis, 1978
Blue Sucker, Cycleptus elongatus, 1989
Ebony Shell, Fusconaia ebena, 1988
Gilt Darter, Percina evides, 1982
Great Egret, Ardea alba, 1986
Weed Shiner, Notropis texanus, 1928
Wood Turtle, Clemmys insculpta, 1994
American Eel, Anguilla rostrata, 1983
Elephant Ear, Elliptio crassidens, 1995
Higgins' Eye, Lampsilis higginsii, 1997
Redside Dace, Clinostomus elongatus, 1989
Round Pigtoe, Pleurobema sintoxia, 1997
Crystal Darter, Crystallaria asprella, 1982
Pugnose Minnow, Opsopoeodus emiliae, 1978
River Redhorse, Moxostoma carinatum, 1982
Sand Snaketail, Ophiogomphus sp. 1 nr. aspersus, 1999
Spectacle Case, Cumberlandia monodonta, 2003
Smoky Shadowfly, Neurocordulia molesta, 1998
Banded Killifish, Fundulus diaphanus, 1979
Eastern Elliptio, Elliptio complanata, 1995
Elusive Clubtail, Stylurus notatus, 1989
Greater Redhorse, Moxostoma valenciennesi, 1989
Purple Wartyback, Cyclonaias tuberculata, 1998
Red-necked Grebe, Podiceps grisegena, 1988
Skipjack Herring, Alosa chrysochloris, 1928
Winged Mapleleaf, Quadrula fragosa, 1998
Salamander Mussel, Simpsonaias ambigua, 1989
Stygian Shadowfly, Neurocordulia yamaskanensis, 1998
Western Sand Darter, Etheostoma clarum, 1992
Amber-winged Spreadwing, Lestes eurinus, 1910
Black-crowned Night-heron, Nycticorax nycticorax, 1976

Plants

Brook Grass, Catabrosa aquatica, 1934
Wild Licorice, Glycyrrhiza lepidota, 1937

Natural Communities

Spring Pond, Spring pond, 1986
Wet Prairie, Wet prairie, 1984
Alder Thicket, Alder thicket, 1986
Emergent Marsh, Emergent marsh, 1986
Floodplain Forest, Floodplain forest, 1984
Northern Wet Forest, Northern wet forest, 1976

TERRESTRIAL OCCURRENCES

Animal

Bird Rookery, Bird rookery, 1986
Melissa Blue, Lycaeides melissa melissa, 2003
Spotted Skunk, Spilogale putorius, 1946
A Tiger Beetle, Cicindela patruela patruela, 1909
Regal Fritillary, Speyeria idalia, 1998
Henslow's Sparrow, Ammodramus henslowii, 1999
Loggerhead Shrike, Lanius ludovicianus, 2003
Timber Rattlesnake, Crotalus horridus, 1983

Plants

Ground-plum, Astragalus crassicarpus, 1990
Kitten Tails, Besseya bullii, 1993
Torrey Sedge, Carex torreyi, 1945
Hooker Orchis, Platanthera hookeri, 1930
Snow Trillium, Trillium nivale, 1921
Hill's Thistle, Cirsium hillii, 1995
Prairie Turnip, Pediomelum esculentum, 1995
Small Skullcap, Scutellaria parvula var. parvula, 1935
Yellow Gentian, Gentiana alba, 1997
Rock Stitchwort, Minuartia dawsonensis, 1993
Uniform Bramble, Rubus uniformis, 1948
Carolina Anemone, Anemone caroliniana, 1974
Northern Sedge Meadow, Northern sedge meadow, 1986
Southern Sedge Meadow, Southern sedge meadow, 1976
Southern Hardwood Swamp, Southern hardwood swamp, 1986
Lake--Shallow, Hard, Seepage, Lake--shallow, hard, seepage, 1989
Lake--Shallow, Soft, Seepage, Lake--shallow, soft, seepage, 1976
Springs and Spring Runs, Hard, Springs and spring runs, hard, 1986
James Cristatella, Polanisia jamesii, 1940
Short's Rock-cress, Arabis shortii, 1960
Bird's-eye Primrose, Primula mistassinica, 1993
Dotted Blazing Star, Liatris punctata var. nebraskana, 1999
Prairie Fame-flower, Talinum rugospermum, 2001
Silky Prairie-clover, Dalea villosa, 1984
Large Roundleaf Orchid, Platanthera orbiculata, 1930
Rough Rattlesnake-root, Prenanthes aspera, 1986
Arrow-headed Rattle-box, Crotalaria sagittalis, 1964
Yellow Evening Primrose, Calylophus serrulatus, 1995
Small-flowered Woolly Bean, Strophostyles leiosperma, 1989

Natural Communities

Dry Cliff, Dry cliff, 1986
Dry Prairie, Dry prairie, 1986
Moist Cliff, Moist cliff, 1986
Oak Opening, Oak opening, 1984
Sand Prairie, Sand prairie, 1986
Mesic Prairie, Mesic prairie, 1996
Dry-mesic Prairie, Dry-mesic prairie, 1997
Southern Dry Forest, Southern dry forest, 1986
Southern Mesic Forest, Southern mesic forest, 1976
Northern Dry-mesic Forest, Northern dry-mesic forest, 1986
Southern Dry-mesic Forest, Southern dry-mesic forest, 1997

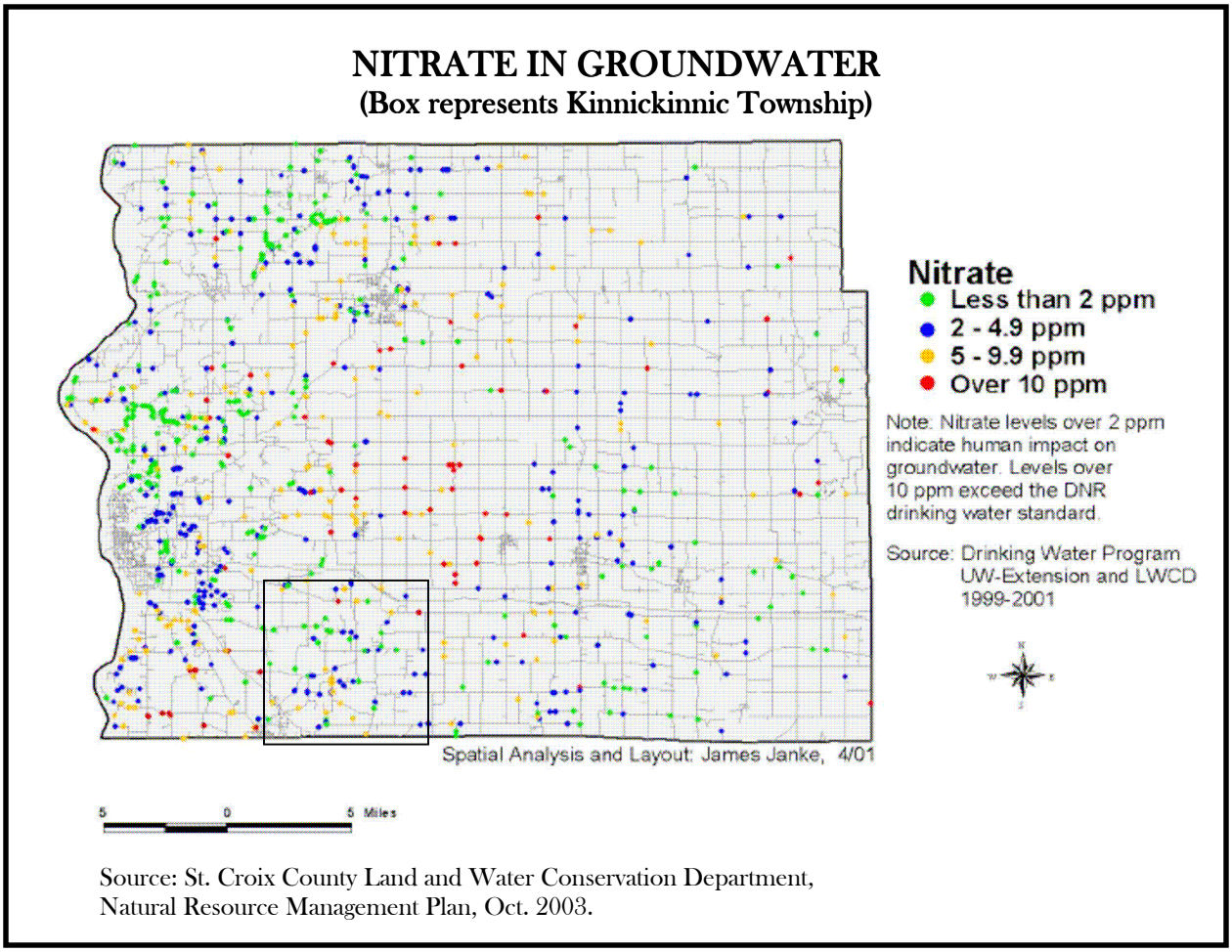
Note: These occurrences may not only be in the Kinnickinnic Township but also in St. Croix County

Groundwater

A Wisconsin Geological and Natural History Survey map delineates groundwater susceptibility to contamination based on five physical resource characteristics. These characteristics are the type of bedrock, depth to bedrock, depth to water table, soil characteristics, and surficial deposits. According to the State of the Basin reports, the Kinnickinnic River watershed has the highest contamination potential in the St. Croix Basin, with numerous wells having pesticides detected, and high levels of nitrates.

Following is a map of St. Croix County with a box representing the Kinnickinnic Township. The map denotes points of nitrates in the groundwater. It also shows the relation between the town and the rest of St. Croix County.

Figure 4. Nitrate in Groundwater



Source: St. Croix County Land and Water Conservation Department, Natural Resource Management Plan, Oct. 2003.

Groundwater contamination potential for each watershed was ranked based on land coverage and groundwater sample analytical results in the WDNR Groundwater Database. The table below lists the Kinnickinnic River watershed score and comments on what influenced the score. Higher scores represents a higher potential for groundwater contamination. All watersheds in St. Croix County ranked high for groundwater contamination potential with scores higher than 30. The Kinnickinnic River Watershed scored 81.7 out of 100. High concentrations of septic systems can pollute groundwater with nitrates. As well as poor agricultural practices that runoff or leach into groundwater tables. (*See Figure 5.*)

Figure 5. Groundwater Contamination Potential Ranking by Watershed[3]

Watershed	Score	Comments	Urban Cover	Agricultural Cover
Kinnickinnic River	81.7	172 wells tested for nitrate, 25% exceeded the ES[4] and 60% exceeded the PAL[5].	12%	49%
Lower Willow River	61.2	44 wells tested for nitrate, 20 % exceeded the ES and 52% exceeded the PAL	3 %	38%
Upper Willow River	51.0		47%	NA[6]
Lower Apple River	45.2	87 wells tested for nitrate, 32% exceeded the ES and 47% exceeded the PAL	NA	NA

3 These values are taking from the Department of Natural Resources State of the St. Croix River Basin (March 2002) and State of the Lower Chippewa Basin (2001).
4 ES: Groundwater enforcement standard per NR 140 Wis. Admin. Code. For nitrate the ES is 10 ppm
5 PAL: Groundwater Preventive Action Limit per NR 140 Wis. Admin. Code. For nitrate the PAL is 2 ppm.
6 Not available in basin plan

Water Quality Monitoring Efforts

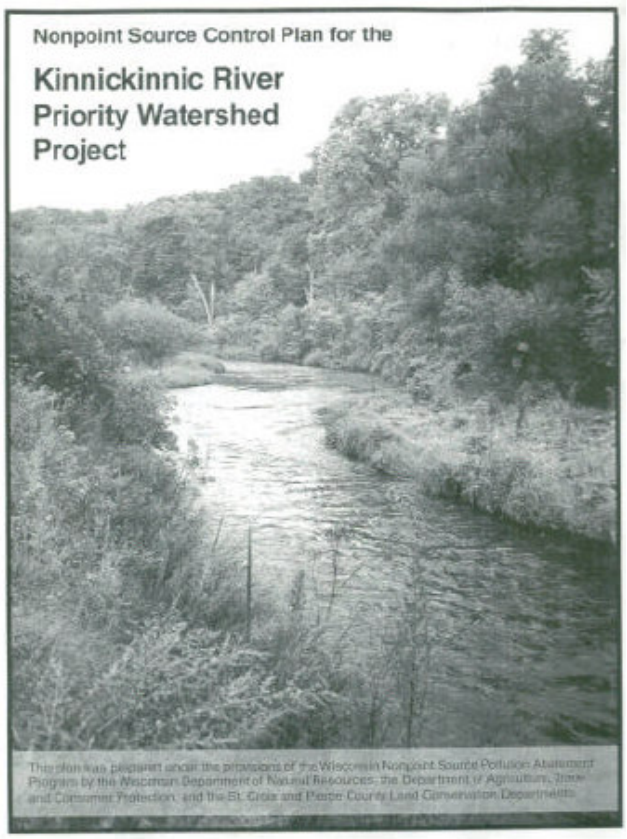
One way to minimize nitrate levels may be to use safer agricultural pesticides near the Kinnickinnic River Watershed and in soils that have lower tolerances to fertilizers and pesticide leaching. Soils in the Kinnickinnic Township are moderately to well-drained that lead to higher potential nitrate scores. Newer septic systems and septic fields may be used to replace potentially bad or leaking ones. Listed below are some programs that monitor water quality.

Program	Resource	Responsible Agency
Water Quality Appraisals	Lakes/Streams	DNR
Chemical Measurements	Lakes/Streams	DNR, USGS
Habitat Assessments	Streams	DNR, USGS
Biological Assessments	Lakes/Streams	DNR
Nitrate Testing	Groundwater	LWCD, County Health Dept.

Storm Water Management

The Benefits of Effective Storm Water Management:

According to the *St. Croix County Land and Water Conservation Department,* trout are an important indicator species of environmental quality, especially in an urbanizing area. As such, protection of the Kinnickinnic River is critical to help ensure the environmental, cultural, and economic future of the Kinnickinnic Township and surrounding communities. With nearly 200 members, the Kiap-TU-Wish Chapter of Trout Unlimited has been instrumental in protecting the Kinnickinnic River during the past decade. The chapter has raised the awareness of planners, policy-makers, and residents with regard to storm water issues, and has helped to change the way River Falls manages an outstanding cold-water resource in Wisconsin, thereby ensuring that the Kinnickinnic River will be available for the enjoyment of future generations.



Source: WDNR Official Website

Figure 6. Kinnickinnic River Priority Watershed Project

Best Management Practices

Kinnickinnic River Priority Watershed Project

In 1995, efforts to protect the Kinnickinnic River expanded watershed-wide when the WDNR selected the Kinnickinnic River as a part of the state's Priority Watershed Project (*Figure 6.*). The Priority Watershed Program provides annual funding, over a ten-year period, for cost-shared projects in both agricultural and urban areas of the watershed that protect and enhance the quality of the Kinnickinnic River. Prior to receiving state funding, however, a watershed plan had to be developed so that the state and local cost share funding could be appropriately directed to areas of the watershed in greatest need.

The WDNR worked in partnership with Kiap-TU-Wish, two counties, six townships, three cities (including River Falls), the University of Wisconsin-River Falls, the Kinnickinnic River Land Trust, and SEH to develop the "Nonpoint Source Control Plan for the Kinnickinnic River Priority Watershed Project", which was approved by the WDNR Board in April 1999. The plan is unique in that it is the first priority watershed plan in the state to incorporate an urban storm water management component, applying the approach used in the City of River Falls storm water management plan to other cities and townships across the watershed. A list of eligible agricultural and urban best management practices (BMP's) and associated cost-share rates are presented in *Figure 7.*

Figure 7. Eligible Cost-Shared Agricultural and Urban BMP's

Maximum State Cost-Share Rates for Agricultural BMP's

BEST MANAGEMENT PRACTICE STATE COST-SHARE RATE

Nutrient and Pesticide Management	50%
Pesticide Handling Spill Control Basins	70%
Livestock Exclusion from Woodlots	50%
Intensive Grazing Management	50%
Manure Storage Facilities	70%, 50%
Manure Storage Facility Abandonment	70%
Field Diversions and Terraces	70%
Grassed Waterways	70%
Critical Area Stabilization	70%
Grade Stabilization Structures	70%
Agricultural Sediment Basins	70%
Shoreline and Streambank Stabilization	70%
Shoreline Buffers	70%
Wetland Restoration	70%
Barnyard Runoff Management	70%
Barnyard Abandonment or Relocation	70%
Roofs for Barnyard Runoff Management and Manure Storage Facilities	70%
Milking Center Waste Control	70%
Cattle Mounds	70%
Land Acquisition	70%
Lake Sediment Treatment	70%
Well Abandonment	70%

Maximum State Cost-Share Rates for Urban BMP's

BEST MANAGEMENT PRACTICE STATE COST-SHARE RATE

Critical Area Stabilization	70%
Grade Stabilization Structures	70%
Streambank Stabilization	70%
Shoreline Buffers	70%
Wetland Restoration	70%
Structural Urban Practices	70%
High Efficiency Street Sweeping	50%, 5 years only

Source: Managing Storm Water in Wisconsin: A Local Partnership Protects the Kinnickinnic River, 2002.

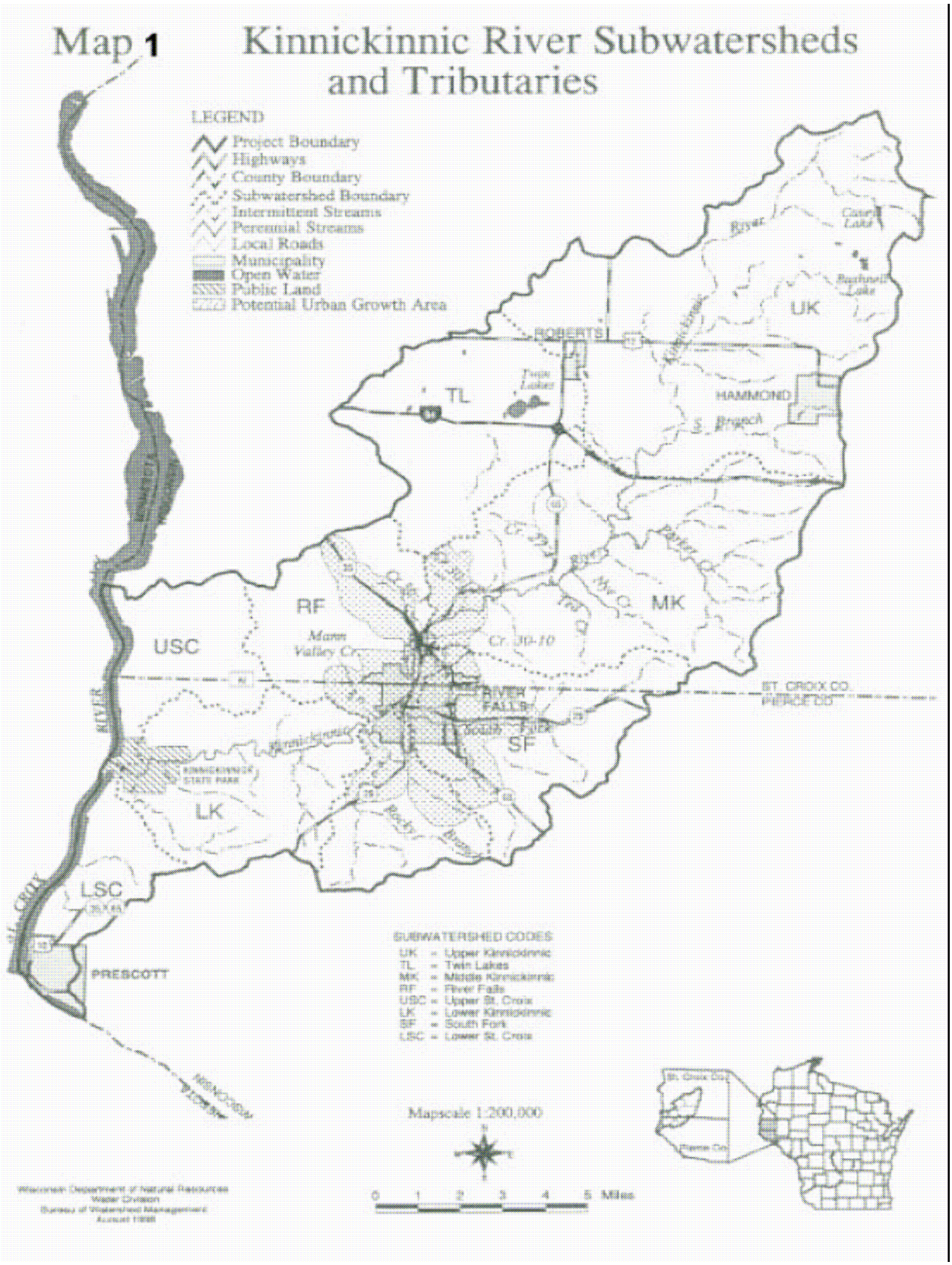
Surface Water

Lakes, ponds, rivers, streams, and intermittent waterways make up the surface waters of St. Croix County. There are also many artificial drainageways where the natural water flow has been altered by human activity. Sediment, nutrients, and other pollutants are carried in runoff water from watersheds that drain to these surface water features. In 1999, the Kinnickinnic River Watershed Project found that the Middle Kinnickinnic Subwatershed was providing more than half of the sediment load to the Kinnickinnic River (*Map 1*).

The St. Croix Basin covers the western two-thirds of St. Croix County. The Kinnickinnic River watershed is located within the St. Croix River basin. In the Kinnickinnic Watershed, there are numerous intermittent streams or dry washes and other surface drainage features that carry water only during spring runoff or extreme storm events. The Town of Kinnickinnic exists entirely within the Kinnickinnic River Watershed; the greater land area drains into the Kinnickinnic River.

The National Park Service and the WDNR are responsible for working with local jurisdictions to manage the riverway in a manner consistent with the National Wild and Scenic River Act and the Federal Lower St. Croix River Act. St. Croix County enforces zoning provisions in the riverway district consistent with federal and state laws and regulations.

The Kinnickinnic River is designated as Outstanding Resource Waters by the WDNR and Parker Creek is designated as Exceptional Resource Waters. Outstanding and Exceptional Resource Waters are protected through WDNR regulation. These waters may not be lowered in quality due to WDNR permitted activities, such as wastewater treatment plants (NR 102.10 and 102.11).



Source: Managing Storm Water in Wisconsin: A Local Partnership Protects the Kinnickinnic River, 2002.

Shorelands

Lands within 1,000 feet of the ordinary high water mark of a lake or pond and within 300 feet of the ordinary high water mark or landward edge of the floodplain (which ever is greater) of a river or stream are designated shorelands.

Vegetation in the shorelands can provide a natural buffer which helps protect surface waters from overland runoff and contaminants. If shorelands are disturbed, their ability to slow runoff and filter contaminants is reduced. Shorelands also provide critical habitat for a variety of plants and animals and enhance the aesthetic quality of water bodies.

Wisconsin requires counties to protect and prevent the loss and erosion of these valuable resources by adopting and enforcing a shoreland ordinance. The authority to enact and enforce this provision comes from Chapter 59.69 of the Wisconsin Statutes. Wisconsin Administrative Code NR115 dictates the shoreland management program. County ordinances can be more, but not less, stringent than NR115.

Wildlife Habitat

Wetlands

According to the *St. Croix County Land and Water Conservation Department*, a wetland is defined by state statute as "an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic (water-loving) vegetation and which has soils indicative of wet conditions." Wetlands may be seasonal or permanent and include swamps, marshes, and bogs.

Wetlands can make lakes, rivers, and streams cleaner and drinking water safer. They provide valuable habitat for both aquatic and terrestrial animals and vegetation. In addition, some wetlands replenish groundwater supplies. Groundwater is also commonly discharged from wetlands and this water can be important in maintaining stream flows, especially during dry months. Groundwater discharged through wetlands can contribute to high quality water in lakes and streams. Draining and filling of wetlands, or development near wetlands can remove these natural functions and values.

All construction projects involving wetlands should be reviewed according to local, state, and federal regulations before they begin. Particular attention must be given to wetlands within shorelands to ensure protection from development. The St. Croix County shoreland zoning ordinance restricts development of wetlands five acres and greater within the shoreland zone. The federal government and the WDNR restrict development in wetlands through Section 404 of the Clean Water Act and NR103, respectively. WDNR has an inventory of wetlands of two acres and larger. However, all wetlands meeting the state definition are subject to WDNR regulations. Federal regulations may apply in addition to, or instead of, state regulations.

Woodlands

Woodlands provide habitat for a variety of plants and animals, as well as adding scenic beauty to the landscape. Large continuous blocks of forested land are important habitat for a variety of plants and animals. Woodlands managed according to approved forest management practices can support varying and sometimes complementary objectives, such as timber production and wildlife habitat.

Development can destroy the capacity of woodlands to provide wood products, habitat, and scenic beauty. The value of woodlands for habitat, production, and scenery should be considered before woodlands are converted to other uses. Cluster development or conservation design can be used to protect woodland open space.

WDNR manages three forestry tax law programs that provide tax incentives to encourage managing private forestlands for forest crop production while recognizing a variety of other objectives. St. Croix County has 12,041 acres enrolled in Managed Forest Law programs with 1,543 acres in Forest Crop Law as of February 2003.

Prairie and Grasslands

Much of St. Croix County was originally covered by prairie. However, little native prairie remains today. Prairies vary due to soils and climates, but all are dominated by grasses and sedges. Prairies are home to a rich diversity of plants and animals. Native prairies are a threatened plant community in Wisconsin. Only about 13,000 acres (0.5%) of the original 3.1 million acres remain.

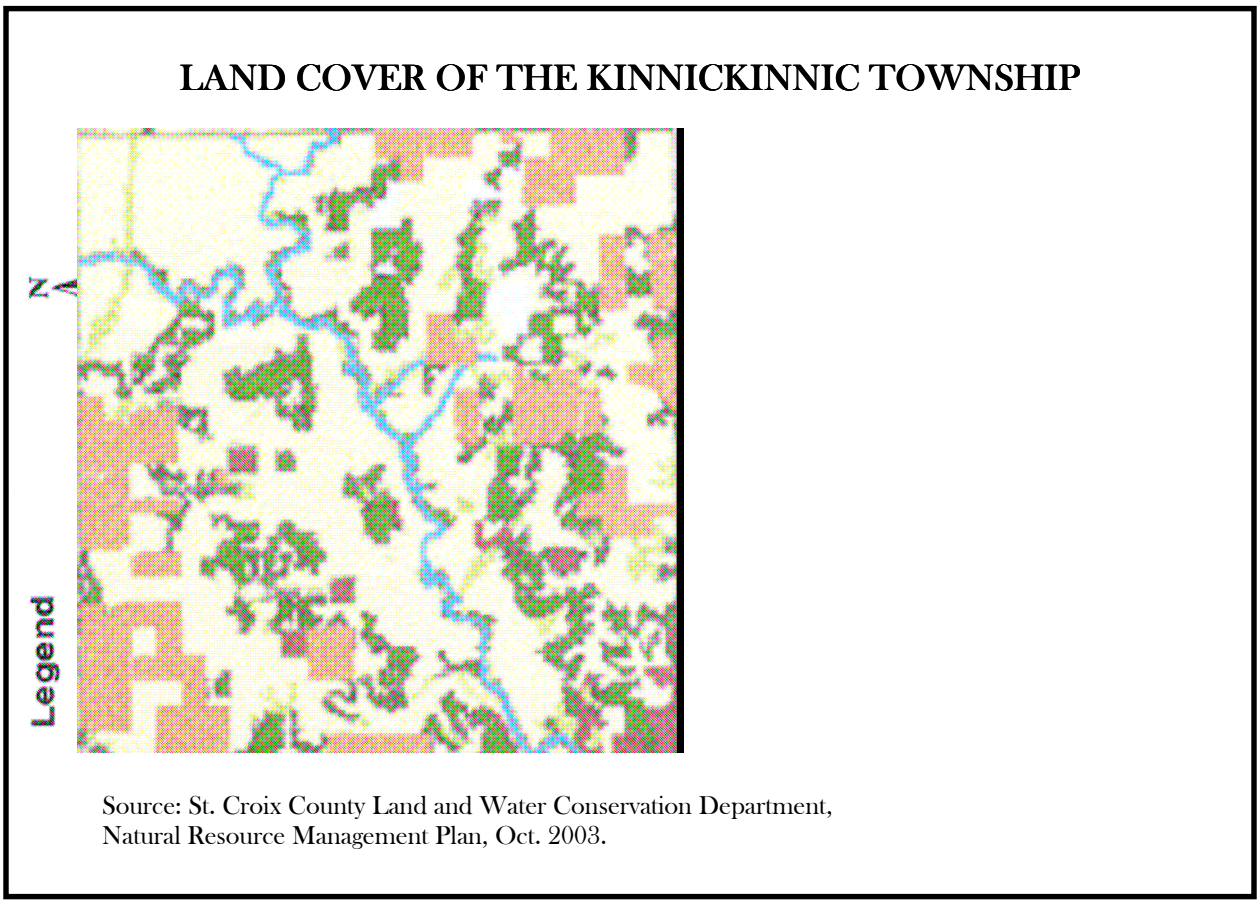
The drastic changes in prairie habitat over the past 150 years have had negative impacts on many plants and animals. Many species of plants associated with Wisconsin prairies are endangered, threatened, or of special concern. Two species are known to no longer exist in the state. Many grassland birds face similar circumstances. The list of special concern species is growing, and birds once considered common in the state, such as several species of sparrows and the meadowlark, are declining drastically.

Although the majority of prairie mammals have been able to adapt to the loss of prairie habitat, some are threatened by agricultural practices and development. Prairie-associated reptiles and amphibians have been affected as well. About half have apparently adapted to the loss of prairie. Three reptiles found in prairies are on the state's endangered species list, one is listed as threatened, and two are of special concern. Little is known about the invertebrates of Wisconsin's native prairies with the exception of a few well-recognized and studied species such as the Karner blue butterfly.

There are few high quality prairie remnants remaining. However, it will take more than the preservation of these remnants to recover or retain the biodiversity this ecosystem can offer. Degraded areas that were once prairie can often be restored with moderate effort to yield a habitat suitable for most of the associated plant and animal species. Even certain managed agricultural and livestock practices can accommodate the maintenance of the open habitats needed by many grassland species.

In *Figure 8.* has the generalized land covers of the Kinnickinnic Township.

Figure 8. Land Cover of the Kinnickinnic Township

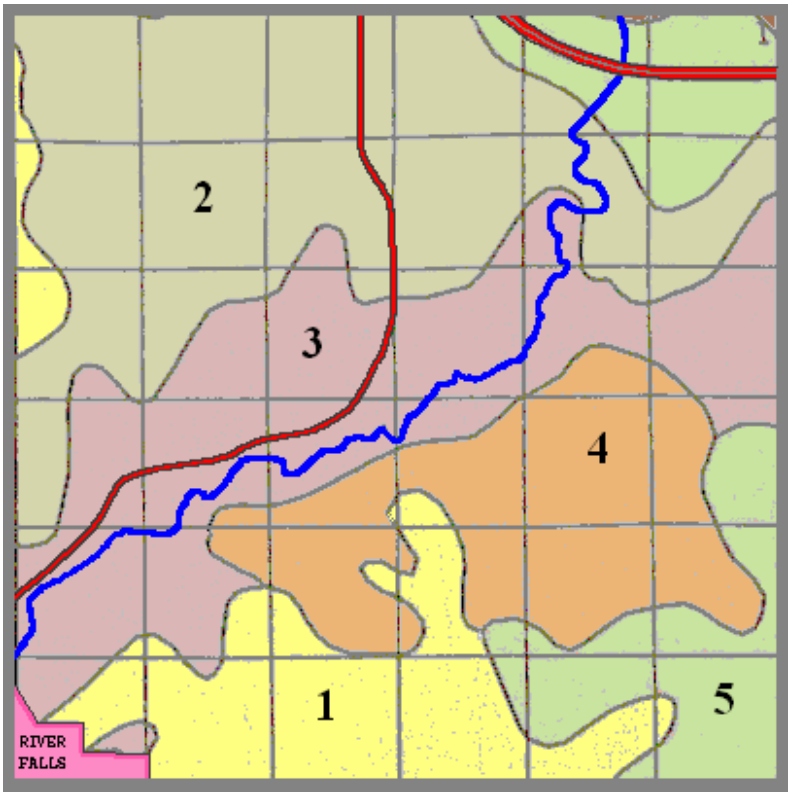


Soils

Excessively drained and well-drained soils are generally found in the Kinnickinnic Township. Widely varying soil types and complex slopes make the application of some best management practices troublesome. The General Soils Map (*Figure 9*) shows the soil associations in the county. Soil associations are landscapes with distinctive patterns of soils in defined proportions. They typically consist of one or more major soils and at least one minor soil, and are named for the major soils. The county has a detailed digital soil survey available for planning or management purposes.

The soil series mainly found in the Kinnickinnic Township are as follows; Rithchey-Derinda-Whalan, Santiago-Otterholt-Arland, Sattre-Pillot-Antigo, Plainfield-Boone, and Vlasaty-Skyberg. These are primarily silt loams soils with a drainage classes ranging from moderately drained to well-drained. Many of them are suitable for agricultural production as well as physically sound for buildings, roads, and septic systems. Following is a map of the common soils series in the Kinnickinnic Township.

Figure 9. General Soils Map



Source: Soil Survey of St. Croix County, 1978.

General Soil Associations in the Town of Kinnickinnic

1. RITCHEY-DERINDA-WHALAN: Well drained and moderately well drained, gently sloping to very steep, medium-textured soils. Soils underlain by limestone or shale at relatively shallow depths.

2. SANTIAGO-OTTERHOLT-ARLAND: Well drained, gently sloping to steep, medium-textured soils on till plains. Soils underlain by sandstone at a relatively shallow depth, or soils that have a thick mantle of windblown silt.

3. SATTRE-PILLOT-ANTIGO: Well drained, level to sloping, medium-textured soils on outwash plains and stream terraces.

4. PLAINFIELD-BOONE: Excessively drained, gently sloping to moderately steep, coarse-textured soils on outwash plains and stream terraces. Soils underlain by sandstone at a relatively shallow depth.

5. VLASATY-SKYBERG: Moderately well drained and somewhat poorly drained, level to sloping, medium-textured soils on till plains.

Air Quality

National Ambient Air Quality Standards (NAAQS) have been established by the U.S. Environmental Protection Agency, under Section 109 of the Clean Air Act, to protect public health and the environment. The pollutants regulated by these NAAQS include suspended particulate matter, carbon monoxide, ozone, oxides of sulfur, and lead. Some counties in southeastern Wisconsin have been designated as non-attainment areas for one or more NAAQS. St. Croix County is considered an attainment area for all pollutants. Below is a table of an Air Quality Index of the Kinnickinnic Township with percentages in the Moderate Range.

Air Quality Index:

Percentage of days with good air quality:	90
Percentage of days with moderate air quality:	10
Percentage of days with unhealthful air quality for sensitive populations:	0
Percentage of days with unhealthful air quality:	0
Maximum AQI level in 2003	92
Median AQI level in 2003	37
90th Percentile AQI level in 2003	49

Air Quality Index	
0 - 50	Good
50 - 100	Moderate
100 - 200	Unhealthful
200 - 300	Very Unhealthful
300 - 500	Hazardous

Source: Scorecard: The Pollution Information Site, 2004.

2003 Summary of Pollutant Concentrations:

Pollutant	NAAQS Standard	Highest Recorded Concentration	Second Highest Recorded Concentration	Number of NAAQS Exceedances	Stations Monitoring Pollutant
Ozone					
1-hour average	0.12 ppm	.1 ppm	.09 ppm	0	1
8-hour average	0.08 ppm	.08 ppm	.07 ppm	0	1
PM-25					
24-hour average	65 ug/m3	26 ug/m3	23 ug/m3	0	1
Annual arithmetic mean	15 ug/m3	10.4 ug/m3	0 ug/m3	0	1

1999 Emissions Summary of Criteria Air Pollutants

(Expressed in tons of pollutant emitted)

	Carbon monoxide	Nitrogen oxides	PM-2.5	PM-10	Sulfur dioxide	Volatile organic compounds
Mobile Sources	23,412	5,093	649	2,363	345	3,465
Area Sources	2,776	558	1,126	4,053	344	2,153
Point Sources	2	7	0	0	1	206
All sources	26,190	5,658	1,775	6,416	690	5,824

Source: Scorecard: The Pollution Information Site, 2004.

Public Involvement

S.W.O.T. Analysis

In the spring of 2005 a Strengths, Weakness, Opportunities, and Threats (S.W.O.T.) analysis was conducted with the Kinnickinnic Town Board and community citizens. The nature of the S.W.O.T. Analysis is not only to understand the apparent reason for concern but also, in this case, to integrate the Natural Resource Element into the equation, which can help in the development of an adequate Comprehensive Plan. The top ten results are given below starting with the strengths identified with respect to all elements of the Comprehensive Plan.

Strengths identified included:

1. Location
2. Agriculture
3. Kinnickinnic River
4. Close to Metro
5. Rural/Residential
6. Good Schools
7. Growing Community
8. Property Values
9. Low Density
10. Property Values

Opportunities identified included:

1. Well Planned Development
2. Cluster Development
3. Controlled Growth
4. Kinnickinnic River/Nature Center
5. Lower Taxes
6. Transfer Development Rights Program
7. New Business
8. All Purpose Trails
9. Protect River/Land/Topography
10. No Planning Vision

Weaknesses identified included:

1. Poorly Planned Development
2. High Taxes
3. Differing Growth Opinions
4. No Land Use Plan
5. Annexation Theft
6. Rural/City Conflicts
7. River Quality Treats
8. Losing Rural Setting
9. Landowners in Conflict
10. Increasing Land Values

Treats identified included:

1. Unchecked Development
2. Taxes
3. Respect for Landowners Rights
4. Loss of Personal Freedoms
5. Water/River Pollution
6. Moratorium
7. Large Developments
8. Traffic
9. Annexation
10. Acreage Requirements

Many of these issues identified deal with Natural Resources, which in fact have been noted in the Vision Statement and in the Goals, Objectives, and Policies segment.

Vision Statement

Vision Statement

We, the Town of Kinnickinnic, seek a well-planned development which respects the rural historic character of the township. The Kinnickinnic River is a natural hallmark of the township and we will continue to protect the integrity of the river and environmentally sensitive areas while allowing for a variety of residential and commercial development. Well-planned growth must protect economic interests, property owner's rights and strives to maintain acceptable tax and fee structure for the residents. The planning process for the Township will be open and consistent at all times. So with respect to the S.W.O.T. Analysis an outcome of Goals, Objectives, and Policies can be developed for the Kinnickinnic Township.

Goals, Objectives and Policies

Goal 1: Promote, as well as maintain, Conservation, Environmental and Ecological Programs.

Objectives:

- Request rezoning of important wetlands and lands unsuitable for development and appropriate buffer areas for conservation and protection.
- Discourage filling or developing of floodplain and wetland areas within 300 ft. of them for new development.
- Following St. Croix County mineral extraction ordinances plans.

Policies:

- Environmental Protection Agency
- Wisconsin Department of Natural Resources: Land Management
- Best Management Practices
- Refer to Appendix A

Goal 2: Preserve and Promote the Natural, Scenic, and Conservation Areas.

Objectives:

- Increase the amount of protected open space in Kinnickinnic Township by preserving large ecologically significant tracts of wooded areas, wetlands, habitat corridors and water resources.
- Encourage the preservation and management of areas needed to support local wildlife.
- Effectively use lands dedicated for open spaces or even parks and recreational purposes.

Policies: Land Conservation Programs to Acquire Land or Development Rights such as easements, TDR's, and PDR's. (Refer to the General Policies Techniques.)

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Goal 3: Provide Protection Against Concentrated Animal Feeding Operations (CAFO) Areas.

Objectives:

- Educate the general public on how CAFO's operate and how waste is laced with a variety of compounds that may adversely affect human health.
- Effects range from water pollution due to excess nitrogen and phosphorus, to breathing difficulties from ammonia and hydrogen sulfide gases.
- Numerous nuisance lawsuits have arisen as citizens either fight to prevent or to abate these adverse health affects resulting from a CAFO.
- Government at the federal, state and local level has responded to the environmental impacts of CAFO's with a variety of regulatory initiatives.

Policies: The federal Environmental Protection Agency (EPA) has regulated CAFO's through the National Pollutant Discharge Elimination System (NPDES) program.

Goal 4: Protect and Enhance Surface Water Resources.

Objectives:

- Eliminate or minimize degradation of all wetlands, surface, and groundwater systems.
- Minimize the impact of hazardous spills on all water resources.
- Consideration of all new site plans and construction permits will include assessment of the potential impact of such on all water resources, including erosion control, storm water runoff, and sediment and pollutant reduction.
- All development of Town ordinances for protection of water resources will be based not only on a local, but also a regional, perspective especially in regard to the Kinnickinnic watershed.

Policies:

- Department of Agriculture, Trade, and Consumer Protection: Priority Watershed Program, Land and Water Resource Management Plan Funds
- Department of Natural Resources: Targeted Runoff Management

Goal 5: Protect and Enhance Groundwater Resources.

Objectives:

- The town could establish a wellhead protection ordinance.
- Educate the general public on the protection of public and private wellheads.
- Minimize the impact of hazardous spills on all water resources.

- All development of Town ordinances for protection of water resources will be based not only on a local, but also a regional perspective, especially in regard to the Kinnickinnic watershed.

Policies: Department of Agriculture, Trade, and Consumer Protection: Priority Watershed Program Land and Water Resource Management Plan Funds

Goal 6: Ensure Commercial and Residential Development in Harmony with the Natural Environment.

Objectives:

- Provide planned and guided development.
- Preserve the natural environment as much as possible.
- Encourage the wise management of woodlands for erosion control.
- Maintain private ownership rights so the development controls do not remove the incentive to buy sell and own land.
- Cluster development with smaller lot sizes will be considered to help maintain the efficiency of farming operations and to maintain wildlife habitat.
- Habitats of wildlife will be considered in all landuse planning including edge habitats and avoiding the dividing of large areas of habitat.

Policies:

- The use of conservancy areas.
- The use of cluster development.

Goal 7: Considering and Protecting Threatened and Endangered Species.

Objectives:

- The DNR Bureau of Endangered Resources urges that special notice be taken to protect any and all endangered resources from development.
- Be aware of rare or endangered species and their communities for they are generally very sensitive to encroachment of development and changes in their surroundings.
- Discourage development on or near the locations of rare or endangered species can threaten their survival.

Policies:

- Wisconsin Department of Natural Resources: Endangered and Threatened Species Factsheets.
- Encourage the consideration for the need of a new species inventory listing in the Kinnickinnic Township.

General Policies Techniques

Zoning

There are many ways in which zoning decisions affect how areas are developed. Some communities, such as the town of River Falls, have preserved farmlands by zoning large areas for agricultural use only and restricting housing to marginal lands. Particularly within existing towns, allowing a mix of residential and business development can decrease reliance on cars, prevent suburban-style sprawl, and enhance a sense of community.

Land Conservation Programs to Acquire Land or Development Rights

Land acquisition and Purchase of Development Rights (PDR) and Transfer of Development Rights (TDR) programs are ways for government and/or private organizations to conserve land in danger of development.

PDR and TDR programs have been used successfully in many areas around the nation. Particularly on the East Coast, these strategies have been in use for nearly two decades — much longer than in Wisconsin and Minnesota, where legislation allowing PDR programs was passed in 1997. For example, the Agriculture Preserve Board of Lancaster County, Pennsylvania has preserved some 23,500 acres of farmland since 1981. Using a TDR program, Montgomery County, Maryland has been able to slow the rapid loss of open space and save the escalating costs of infrastructure related to sprawl. Prior to 1980, when the county established its TDR program, farmland was being lost to development at a rate of 3,500 acres per year. Between 1980 and 1990, only 3,000 acres were converted to non-farm uses — a drop of approximately 92 percent.

Locally, the towns of Clifton, River Falls and Troy have active farmland preservation committees and Lake Elmo is currently in the process of implementing a TDR program. This program will create denser developments near the town center; while outlying natural areas and farmland will be remain in its current state. Chisago and Washington Counties are also moving closer to starting PDR and TDR programs.

The established PDR program closest to the watershed is in Wisconsin's Town of Dunn. Located just 10 minutes away from downtown Madison, Dunn Township is a prime site for urban sprawl. Local officials used zoning as a way to prevent growth but as new developments managed to creep in, they realized they needed something more permanent. In September 1996, the township residents voted 531 to 412 to establish a PDR program. As of early 1999, the township had protected 174 acres and spent $260,000. The program is funded by a property tax increase of 50 cents per $1,000 of estimated market value.

While there are costs associated with land conservation, there is a growing body of data confirming that conserving open space saves money for communities in the long run, and makes adjacent land more valuable. According to a study of the Salem, Oregon metropolitan area, urban land adjacent to protected rural farmland is worth approximately $1,200 more per acre than urban land more than 1000 feet away from the greenbelt boundary.

In addition to making adjacent land more valuable, preservation of open space has also been known to lower property taxes. For example, studies of the relationship between land conservation and property taxes in Massachusetts found short term increases in property taxes after land conservation projects. However, in the long term, Massachusetts towns that had protected the most land enjoyed, on average, the lowest property tax rates in the state — perhaps because they had less development, which requires roads, schools, sewer and water infrastructure and other services.

Conservancy Area

Conservancy areas are established to protect, promote and conserve environmentally sensitive lands such as floodplains, wetlands, shorelands, slopes, bluffs, woodlands and areas of aesthetic value which, because of their unique physical and ecological features, are deemed desirable to be retained for the benefit of this and future generations. Protection and conservation of these areas not only manages their environmental values, but also protects the Town and County from the costs and consequences that may be incurred when unsuitable development occurs in such areas.

Conservancy areas should be included in appropriate zoning districts under Town, County, and extraterritorial zoning. The Kinnickinnic Township could work with the County and adjoining municipalities to prepare more detailed inventories or environmental features to be designated as conservancy. Ultimately preserving natural resource's such as wetlands, streams, rivers, and native wildlife. As well as preserving, as much as possible, the rural character and where lands designated as conservancy are faced with use conversion, the Town could explore all possible avenues and policies for maintaining and protecting affected environmental features.

Appendix A – Government Funding Programs

Land Trusts and Conservation and Restoration Organizations

Friends of the Mississippi River – a nonprofit organization, will be coordinating work between landowners and various conservation projects in Washington County.

Gathering Waters – is a nonprofit information clearinghouse and technical assistance center to help individuals and nonprofit conservation organizations to preserve, protect, maintain and enhance the beauty and ecological integrity of the lands and waters in the state of Wisconsin.

Kinnickinnic River Land Trust – is a nonprofit organization that works with the community to conserve the natural resources and scenic beauty of the Kinnickinnic watershed.

Land Stewardship Project – is an Upper Midwest nonprofit organization working to foster an ethic of stewardship for farmland, to promote sustainable agriculture, and to develop sustainable communities.

Land Trust Alliance – is a national organization that provides services and programs for local and regional land trusts to increase their skills and competence, and fosters public policies that further land trusts' goals.

The Nature Conservancy – is an international private nonprofit organization. Its mission is to preserve the plants, animals, and natural communities that represent the diversity of life on earth by protecting the land and waters they need to survive. The Nature Conservancy protects land through acquisitions, management agreements, conservation easements, assistance to citizen groups, and cooperation with state and local units of government.

Standing Cedars Community Land Conservancy – is a land trust aimed at protecting and restoring field and forest along the Lower St. Croix River in the Osceola and Farmington areas of Polk County, Wisconsin. They also support rural community life in these areas.

Trust for Public Land – is a national organization that plays a number of roles in land transactions, including acting as an interim title holder while public agencies procure the funds and authorizations needed for land purchases. It also helps community groups implement campaigns to mobilize support for parks and open space projects. The organization's Midwest Headquarters is located in Minneapolis, Minnesota.

Western Prairie Habitat Restoration Area – is a long-term partnership spearheaded by the Wisconsin DNR to protect 20,000 acres of grasslands, oak savanna and wetlands in Polk and St. Croix Counties. Key to the success of this project is Citizens for Protecting & Restoring Prairies (CPRP) whose mission is to promote stewardship and assist interested parties in preserving and restoring lands.

Wisconsin Farmland Conservancy – is a private, nonprofit land trust organization dedicated to empowering rural communities to protect their agricultural, natural, and economic resources; to assisting in the transfer of farms to a new generation of family farmers; to promoting sustainable land use and land conservation practices; and to encouraging locally-based economic development.

Appendix B – References

1. D. Kent Johnson and Andy Lamberson Trout Unlimited, Kiap-TU-Wish Chapter (Approved April 9, 2002). *Managing Storm Water in Wisconsin: A Local Partnership Protects the Kinnickinnic River.* Retrieved November 30, 2005, from http://www.epa.gov/ORD/NRMRL/pubs/625r03003/JohnsonLamberson.pdf

2. Saint Croix County, WI (Last Updated December 9, 2005). *St. Croix County * Wisconsin: Forms and Documents*. Retrieved November 30, 2005, from http://www.co.saint-croix.wi.us/forms.htm.

3. Scorecard (2004). *The Pollution Information Site*. Retrieved November 30, 2005, from http://www.scorecard.org/env-releases/cap/county.tcl?fips_county_code=55109.

4. Town of Dunn. *The Comprehensive Plan, Town of Dunn*. Drafted Summer 2005.

5. Vierbicher Associates, Inc. *Town of River Falls: Agricultural, Natural and Cultural Resources Element.* Drafted October, 2004.

6. Wisconsin Department of Natural Resources (Last Revised October 4, 2004). *The Official Internet site for the Wisconsin Department of Natural Resources: Natural Resources.* Retrieved November 30, 2005, from http://www.dnr.state.wi.us/NaturalResources.html.