

Ozaukee County

Land and Water Resource Management Plan



2011 - 2015

Mission Statement:

To protect, preserve and enhance natural resources, local ecology and the quality of life in Ozaukee County.

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The Land and Water Resource Management (LWRM) Plan Advisory Committee

The LWRM Plan Advisory Committee met on November 16th to assist in the update the Land and Water Resource Management Plan goals and objectives (LWRM Plan) with a design year of 2011 – 2015. The Local LWRM Plan Advisory Committee includes a diverse mix of interest groups including landowners, farmers, local government elected officials, nonprofit organizations, educators, local, regional, state, and federal agencies, basin partnership members, and citizens. The Local LWRM Plan Advisory Committee's purpose is:

- Help identify problem areas, conservation issues and concerns;
- Provide information and technical data for the LWRM Plan;
- Assist with preparation of LWRM Plan, including review of the inventory data and maps;
- Review and comment on the LWRM Plan as it develops;
- Advise the Environment and Land Use Committee on program options for the LWRM Plan;
- Coordinate agency programs with the implementation of the County LWRM Plan
- Discuss jurisdictional issues and cooperation needed with municipalities and drainage districts.

The Land and Water Resource Management Plan Advisory Committee

Jim Melichar, Farmer / Town of Port Washington Board Member / Co. Land Preservation Board
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OZAUKEE COUNTY LWRM PLAN SUMMARY

Chapter 1 Introduction:

Ozaukee County is the smallest County in Wisconsin by land area. There are three bordering counties; Milwaukee to the south, Washington to the west, Sheboygan to the north, and Lake Michigan borders to the east. The county has a surface area of about 235 square miles, which consists of approximately 150,458 acres of land and 2,062 acres of water. Ozaukee County currently has about 82,317 residents located in six townships and seven incorporated municipalities.

This LWRM Plan was designed by LWM Department staff and represents contributions from public officials, agency staff and private citizens. The LWRM Advisory Committee members are listed on page 2. The committee met November 16, 2010 to update the plans goals and objectives, before creating the final draft. As part of the plan process, every effort was made to incorporate all of the comments from the LWRM Advisory Committee. The results of the October 2010 public opinion survey, which were a result of the County's Natural Resources Survey, were also incorporated in the Plan. Supplemental information for the LWRM Plan was also obtained from: the WDNR Milwaukee and Sheboygan River Basin Plans; SEWRPC publications; and previous Priority Watershed Plans for Ozaukee County. Performance Standards and Prohibitions along with Priority Farms are also a significant portion of the LWRM Plan priorities, and are described in Chapters 3 and 4.

Chapter 2 Inventory of Agricultural, Natural, Cultural and Community Resources:

This chapter provides inventory information on existing agricultural, natural, cultural and community resources in Ozaukee County. Information regarding soil types, existing farmland, farming operations, topography and geology, water resources, forest resources, natural areas and critical species habitats, environmental corridors, park and open space sites, historical resources, archeological resources, and non-metallic mining resources are all included in this chapter. In addition, population and land use inventory information are presented as relevant to the management of land and water resources.

The base years for the inventory data presented in this chapter range from 1994 to 2010. Much of the inventory data has been collected through regional land use and natural area planning activities conducted by SEWRPC. Additional inventory data was collected by County, local units of government, and State & Federal agencies. Included in these agencies is the Wisconsin Department of Natural Resources; Wisconsin Department of Agriculture, Trade, and Consumer Protection; Wisconsin Historical Society; U.S. Census Bureau; U.S. Department of Agriculture – Farm Service Agency; and U.S. Department of Agriculture - Natural Resource Conservation Service.

Chapter 3: Goals, Objectives, Strategies, & Work Task

Ozaukee County established four goals after evaluating all the inventory data and incorporating comments from various members of the LWRM Advisory Committee. Below each goal (listed as Goal 1 thru Goal 4) are the objectives, strategies and work tasks to accomplish these goals. The “strategies” are listed after each objective, and the highest priority strategies are highlighted in yellow. The key work tasks targeted to complete the goals, objectives, and strategies, are listed in the plan directly under each strategy.

Goal 1. Improved Land and Water Resources

There are eight objectives under this goal:

- A) Habitat Protection and Restoration.** The strategies with high priority include: restore, protect, and enhance natural areas, critical species habitat, and open space. Protect riparian lands along the waterways to help provide habitat, reduce erosion, stabilize bank erosion, decrease stormwater runoff, and increase property values. Manage invasive species, both plant and animal. Restore and enhance grasslands and woodlands. Restore and enhance wetlands. EQIP, CREP, CRP, Buffer Water Courses, WRP, North Branch Milwaukee River Wildlife & Farming Heritage Project. Remove Fish passage barriers and improve habitat Enhance ecologic productivity of Milwaukee River estuary.
- B) Protect Public Recreation and Access.** The highest priority strategies include: provide, protect, and improve safety, public access and recreational opportunities; ensure the safe use of beach water and make beaches-more clean for patrons.
- C) Pollution Reduction and Control.** The highest priority strategies include: reduce cropland erosion, reduce nutrient loading to Water Resources. Conservation Planning, Compliance with NR 151 Performance Standards and Prohibitions. Protect groundwater and surface water from animal waste contamination. Remove contaminated sediments in 303(d) list waters. Improve and protect water quality and public safety by correcting failing septic systems and ensure property septic system maintenance. Monitoring to address 7 of 11 Beneficial use Impairments (BUIs) - Milwaukee Estuary Area of Concern (AOC).
- D) Protect Natural Systems.** The high priority strategies include: promoting infiltration and natural hydrology systems.
- E) Protecting Public Safety.** The highest priority strategies include: focus on water quality impacts to the health, safety, and welfare of people.
- F) Preserve and Protect Farmland and Working Lands.** The highest priority strategies include: implement farmland preservation program/Wisconsin Working Lands Initiative. Promote Farm and Ranch Lands Protection Program and other farmland incentive programs. Encourage county and town programming to protect farmland and to provide technical and financial assistance to the North Branch Milwaukee River Wildlife and Farming Heritage Area Project.
- G) Protect Lake Michigan and its Resources.** The specific high priority strategies include: the protection and enhancement of Lake Michigan water quality and control and monitor exotic and invasive species.
- H) Wildlife Management. The highest priority strategies include:** Wildlife Damage Abatement and Claims Program; promote working with all non-profit conservation organizations and promote opportunities involving state and federal programs.

Goal 2. Regional Leadership, Education and Collaboration

There are two objectives under this goal:

- A) Improved Stakeholder Education and Public Participation.** The highest priority strategies include: educate the public, decision makers, and media on issues and responsibilities pertaining to Land and Water Resources., and to identify and educate the public, municipal leaders, students and media on costs of providing different levels of services for water quality protection.
- B) Improved Collaborative Relationships and Partnerships.** The highest priority strategies include: encourage existing and future partnerships to improve land and water quality, promote collaboration among stakeholders at All levels; and creating programs and policies focusing on countywide land and water quality issues. And to work together with other governmental units to implement the Regional Water Quality Management Plan (RWQMP) and Regional Water Supply Plan to ensure a comprehensive regional approach.

Goal 3. Governmental Role in Environmental Protection

There are two objectives under this goal:

- A) **Improved Policy Regulations and Enforcement.** The highest priority strategies include: enforce existing government regulations consistently; promote policies and regulations that improve and protect water quality and promote policies and regulations that ensure adequate fish passage.
- B) **Improved Government Planning and Monitoring.** The highest priority strategies include: establish and improve coordinated planning, monitoring systems, and implementation throughout all levels of government.

Goal 4. Effective Planning and Design

There are five objectives associated with this goal:

- A) **Comprehensive Planning & Farmland Preservation.** The high priority strategies include: continuing implementation of the county multi-jurisdictional comprehensive plan for Ozaukee County. Implement county planning review of plat, per WI. Stats. Chapter 236 and County Shoreland Zoning Ordinance. Update and Implement the County Farmland Preservation Plan.
- B) **Implement Park and Open Space Plan.** The highest priority strategies include: natural areas, open space, and critical species habitat planning and to conduct on-going planning and comprehensive evaluations of water quality in the waterways.
- C) **Incorporate Regional Water Quality Management and Watershed Basin Planning adopted by County Board.** The high priority strategies include: implement watershed action plans and the areas water quality management plan prepared by SEWRPC. Implement Sheboygan River Basin Plan and protect direct drainage into Lake Michigan.
- D) **Integrated funding and implementation of plan.** The high priority strategies include: working on integrated plan goals and determine total costs and benefits, identifying funding sources for private strategies.
- E) **County Planning and Review.** There are no high priority strategies.

Priority Farms are also identified in this chapter. Chapter 2 of the plan describes the four areas (Impaired waters on 303(d) list, Sauk and Sucker Creek, waterways flowing directly into Lake Michigan, and any NOD in the County) where cost share assistance will be targeted. Cost share assistance will also be prioritized by the list included in Chapter 3. In all cost sharing activities the Prohibitions and Performance Standards will be met for each cost shared BMP practice installed. A farm checklist will be used for each Priority Farm (see example in Appendix 3.1). The checklist will be attached to the farmer's conservation plan by tax identification number and transferred with changes in land ownership. The County will utilize the GIS data layer for tracking conservation practice implementation.

Chapter 4. Planned Activities

This chapter breaks down the Goals, Objectives, and Strategies into a table, which shows the following:

- 1) Activities targeted to meet the strategies
- 2) Responsible agencies to perform the activity, with lead agency listed first
- 3) Total estimated needs to be completed within the five year plan
- 4) Amount of activity to be completed by year starting in 2011 and ending in 2015
- 5) Unit of measurement to report and track activity accomplishments

Once again the yellow highlighted activities are the priority areas to be accomplished. At the end of the spreadsheet on page 77 is the "Multiyear description of activities" to ensure compliance with state standards and prohibitions.

The estimated costs for implementing these activities are detailed in the “Multiyear Costs of Activities and Funding” chart, including future funding needs and funding sources. Furthermore, each Goal and Objective is listed along with “Estimated Staff Time”, “Estimated Cost Share Funds Needed”, and “Estimated Staff Cost”.

Chapter 5. Regulations for Plan Implementation

Ozaukee County will use State and local regulations to implement the LWRM Plan. These regulations will include: County Ordinances, Compliance Procedures, Notices, Hearings, Enforcement and Appeal of Agricultural Standards & Prohibitions. Priority Farms will comply with State Standards & Prohibitions for manure management and Ozaukee County’s current Manure Storage Ordinance will be updated to reflect the new NRCS 313 standard and incorporate the State’s “Manure Management Prohibitions”. This was accomplished September 2007.

Land use and development regulations affect the type of uses allowed, as well as the detailed design and site layout of proposed developments. The land use regulations adopted by Ozaukee County must correspond with zoning, subdivision, and official mapping regulations adopted by participating local governments. Zoning ordinances are public laws that regulate and restrict the use of private property and should promote the implementation of an adopted master or comprehensive plan. Each city, town, and village in Ozaukee County has also adopted a zoning ordinance. Each zoning ordinance typically consists of two parts: a text setting forth regulations that apply to each of the various zoning districts, together with related procedural and administrative requirements; and a map delineating the boundaries of zoning districts. The county currently administers three ordinances that influence future land use.

The *County Shoreland and Floodplain Zoning Ordinances* regulates the zoning of shoreland areas within unincorporated areas. This ordinance includes restrictions on uses in wetlands located in the shorelands, and limits the types of uses that can occur in the 100-year recurrence interval flood hazard area. The ordinance also includes restrictions on the removal of vegetation and other activities in the shoreland area, and requires that most structures be set back a minimum of 75 feet from navigable waters. These county regulations also remain as minimum land use regulations, for property annexed by cities and villages.

The land division policy is a public law that regulates the division of land into smaller parcels. In most areas, the county and town have concurrent jurisdiction over land divisions. The Ozaukee County shoreland and floodplain zoning ordinance includes land division regulations for areas located in the shoreland and also has review and approval authority for all subdivisions located in unincorporated portions of the County. All cities and villages in the county have adopted a land division ordinance, and most towns except for the Town of Belgium have adopted a land division ordinance.

The *County Nonmetallic Mining Reclamation Ordinance* was enacted to ensure the effective reclamation of nonmetallic mining sites in Ozaukee County. The requirements of this ordinance apply to all operators of nonmetallic mining sites within Ozaukee County operating or commencing operation after August 1, 2001, except for nonmetallic mining sites located in a city, village, or town that has adopted an ordinance that meets the standards set forth by the Ozaukee County nonmetallic mining reclamation ordinance and Chapter NR 135 of the Wisconsin Administrative Code.

The *County Construction Site Erosion Control and Post Construction Storm Water Management Ordinance* took effect April 30, 2009. This applies to unincorporated areas of Ozaukee County that are located in an “Urbanized Area” identified by the U.S. Bureau of Census, adjacent developing areas, and areas whose runoff will connect to a municipal separate storm sewer system regulated under subchapter I of NR 216 Wisconsin Administrator Code and where a town board has not adopted a similar ordinance. This ordinance is in effect for any construction site that has at least one acre of land disturbing activity. A post-construction storm water management plan for any site subject to regulation under NR 151.12 (2) of the Wisconsin Administration Code. The permitted area can be viewed in appendix 2 map 2.45.

Chapter 6. Information and Education

The Information and Education (I & E) strategy is critical to accomplishing each goal identified in the LWRM Plan, since the goals require many individuals in the county to make behavioral changes to protect land and water resources. Individuals will most likely not make these changes unless they understand the importance of land and water resources, how they are inter-connected, ways to protect these resources, and what instruments are available to assist them.

I & E Plan- Goal 1: Improve land and water resources by raising awareness of the financial assistance opportunities available through various funding sources.

I & E Plan Goal 2: Improve regional leadership, education and collaboration by informing citizens about the ecological, recreational and economic value of land and water conservation.

I & E Plan Goal 3: Strong governmental role in environmental protection by encouraging local municipalities to adopt management practices initiated at the county level.

I & E Plan Goal 4: Effective planning and design by encouraging landowners to adopt new management practices.

The educational objectives associated with these goals mainly involve public information activities, encouraging partnerships to improve land & water quality, promoting policies and regulations that improve and protect water quality. The ways to accomplish these objectives range from producing newsletters and presentations to developing ordinances that focus on conservation and funding BMPs on Priority Farms.

Chapter 7: Coordination

Coordination with federal, regional, state and local agencies is necessary to protect land and water resources in Ozaukee County. The Ozaukee County LWM Department Staff are responsible for the implementation, design and construction of the conservation practices identified in LWRM Plan. However, the county relies upon several Federal and State cost share programs to help fund these projects. These management programs include: Environmental Quality Incentive Program (EQIP) from USDA, Land and Water Resource Management Plan Funding from DATCP, Conservation Reserve Program (CRP), Wetland Reserve Program (WRP) and Conservation Reserve Enhancement Program (CREP) from USDA and DATCP.

Staffing assistance from the Joint WDNR and DATCP allocation process will also be key to the success of the LWRM Plan. Each agency has its own particular mission and leadership, but has a common goal to preserve and protect the environment for future generations. Cooperation is imperative to guarantee successful plan implementation. Many of these agencies are included in the LWRM Plan and will be relied upon for technical support, funding, cooperation and guidance.

Chapter 8. Monitoring and Evaluation

The LWM Department will continue to work closely with the participants of several local monitoring programs that are currently assessing the quality of land and water resources in Ozaukee County. The programs are not in-depth monitoring sites, but they should provide the department with information regarding general “trends” in the quality of the land and water. The LWM Department will provide educational assistance and also encourage expansion of their monitoring programs.

Evaluation of annual program achievements will be reported to the ELU Committee and County Board. Evaluation against goals, objectives, strategies and work tasks will also occur with annual reporting to various state agencies such as: DATCP, WDNR, WCMP, WDOA and others.

PREFACE

During 1996, Land and Water Conservation professionals throughout Wisconsin forged the County Land and Water Resource Management Plan concept. This was done partly in response to a state legislative call to “redesign” Wisconsin’s nonpoint pollution abatement programs. More importantly, the Land and Water Resource Management Plan concept evolved from a long-stated need to establish a process that ensured local decision making, increased program delivery mechanisms, and utilized local, state and federal funds with greater effectiveness toward the protection of land and water resources.

In 1997 the Land and Water Resource Management Plan concept became law as Chapter 92.10 of the Wisconsin Statutes was amended. This created a County Land and Water Resource Management Planning Program that is intended to:

- rely on a locally driven process for plan development and implementation;
- maximize flexibility in how program funds are used;
- foster comprehensive watershed-based efforts without excessive planning;
- support innovation and cost effectiveness toward achieving objectives;
- foster the “seamless” integration of programs and funding sources; and
- establish a credible means to measure the extent to which planned objectives are achieved.

Chapter 92 is the enabling legislation that provides counties, through their Land Conservation Committees, the formal authority to develop a County Land and Water Resource Management Plan. This plan provides structured means that will integrate and leverage available programs, funds, and other resources to:

- guide the process for resource management planning and decision making;
- compile information for evaluating land and water resource conditions;
- identify land and water related resource problems and priorities;
- develop a multi-year work plan to address land and water resource problems by watershed;
- strengthen partnerships with landowners, other agencies, municipalities, and organizations;
- integrate efforts with other county and basin level Natural Resource Management Plans;
- coordinate with Township and County comprehensive land use planning efforts;
- develop effective information and education strategies that will strengthen and maintain community support for the planned Land and Water Resource Management Plan goals and objectives; and
- track progress toward the achievement of the plan’s goals and objectives.

Ozaukee County has a long-standing record of leadership and participation in natural resource protection, preservation and improvement. These actions include prior plan development, program design, and project implementation which all emphasize partners, cooperation and integration to cost-effectively and efficiently protect, preserve and improve the County’s natural resources.

The driving force behind the development of the Ozaukee County Land and Water Resource Management Plan is the opportunity to establish a true locally driven process. That means individual citizens, units of government, and local, regional, state, and federal agency representatives working together to develop a framework which: 1) positively integrates natural resource management programs and funding sources; and 2) provides the necessary flexibility to allocate staff and financial resources where they will do the most toward accomplishing resource management objectives.

Chapter 1. INTRODUCTION – LWRM PLAN BACKGROUND, DEVELOPMENT, AND PUBLIC PARTICIPATION

Locally led conservation is based on the principle that local / regional leaders are best suited to identify and resolve local natural resource problems. It challenges local, regional, state, and federal agency representatives and urban and rural neighbors to work together and take responsibility for addressing natural resource needs. Locally led conservation creates new opportunities, but also poses significant challenges to County Committees to take a more active role as conservation leaders in their communities.

Counties have the primary responsibility for implementing the new runoff standards as detailed in NR 151 and ATCP 50. DATCP expects that counties will implement the new rules using their Land and Water Resource Management (LWRM) plans. These plans identify local conservation needs and set forth priorities in a county.

Plan Development and Public Participation

This Land and Water Resource Management (LWRM) Plan was designed by numerous partners and citizens for the citizens of Ozaukee County. The Land and Water Management Department (LWM) enlisted the LWRM Advisory Committee, to list and rank concerns that affect natural resources in Ozaukee County. The LWM Department used this group of citizens, organizations, agency staff, and elected officials with diverse backgrounds, expertise, and geography to try and obtain various land and water resource issues in the County. The product is intended to be comprehensive and provide adequate direction of the LWM Department for the next five-year period (2011-2015). The LWRM Plan Advisory Committee also developed a variety of work tasks and activities they would like to see the County undertake. The activities are in-line with County goals and mission, and LWM Department will work towards accomplishing these activities to uphold the quality of life in Ozaukee County for today's citizens and future generations.

The Land and Water Resource Management (LWRM) Plan is not intended to contain an exhaustive inventory of land and water resources in Ozaukee County; however, the Land and Water Management (LWM) Department drew upon the recently updated (2010) natural and agricultural resource inventories compiled as part of the Multi-jurisdictional Comprehensive Plan for Ozaukee County to provide a thorough land and water resource inventory. Additionally, the LWRM Plan draws upon other existing inventory information from previously prepared plan documents (see References Section). Recent development trends and land use data were also drawn from the recently compiled inventory data (2005) from the Multi-jurisdictional Comprehensive Plan for Ozaukee County. Desirable natural resources and agricultural inventory data that were not compiled as part of the Multi-jurisdictional Comprehensive Plan for Ozaukee County were compiled independently from a number of sources by the LWM Department specifically for use in the LWRM plan. Additionally, inventory data was compiled from LWM-maintained databases and geographic information system (GIS) data layers. Pollution control plans for the five Milwaukee River Priority Watersheds, Milwaukee and Sheboygan River Basin Plans and computer databases were used in the preparation of inventory data. Finally, plan documents listed in the Appendices were also utilized to support and provide inventory data for the LWRM plan. These plan documents are available at the LWM Department to provide additional detailed information on particular items discussed in the LWRM Plan.

Public Opinion Survey of Ozaukee County Residents

The LWM Department, in conjunction with its Multi-jurisdictional Comprehensive Planning process, conducted a countywide public opinion survey of Ozaukee County residents in October 2010. Residents from 14 cities, villages, and towns assisted in identifying and prioritizing some of the major land and water resource issues of concern as well as other issues related to the nine elements of a comprehensive plan. The survey included a wide range of questions from planning and development topics such as housing, transportation, agricultural and natural resources, land use, and economic development. The survey was statistically significant for Ozaukee County at the 95% confidence level with a margin of error of +/- 4.83% (406 respondents). The full report of the countywide Natural Resources Survey of Ozaukee County Residents is provided in Appendix 1.1.

Local Land and Water Resource Management Plan Advisory Committee

A local Land and Water Resource Management Plan Advisory Committee was established to assist in identifying and prioritizing issues of concern, to assist in identifying goals, objectives, strategies and work tasks, and to provide input into the development of the Land and Water Resource Management Plan for Ozaukee County. The Land and Water Resource Management Plan Advisory Committee met on November 16, 2010. The meeting consisted of a LWM program overview and assistance from committee members to update the LWRM objectives and goals.

Milwaukee and Sheboygan River Basin Partnership Coordination

Ozaukee County has established ongoing communications with all of the WDNR / UWEX Land and Water Basin Team Leaders in the Sheboygan and Milwaukee River Basins. LWM Department staff is represented on both the Southeast Wisconsin Watersheds Trust (Sweet Water) and the Sheboygan River Basin Partnership and various supporting committees including the executive committees. Sweet Water and Sheboygan River Basin Partnership goals are listed in Appendix 1.6. In addition, the State of the Basin Report for both the Sheboygan River Basin Sweet Water was used in developing the inventory data, goals, objectives and priorities for the Ozaukee County LWRM Plan. Most of the goals, objectives and priorities by Sweet Water and Sheboygan River Basin Partnerships are addressed as part of the Ozaukee County LWRM Plan.

Plan Requirements

The statutory requirements of this plan are administered by Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP). A County Land and Water Resource Management Planning Program was created through amendments to Chapter 92.10 of the Wisconsin Statutes in Wisconsin Act 27 (the 1997-1999 Biennial Budget Bill). The goal of the amendment was to create a planning process that would be locally led, flexible, and watershed-based with efficient leverage of economic resources. The first plans were approved in 1998. These plans are meant to guide the direction of the county government in assessing their resource conditions and needs, deciding how to best meet water quality goals and conservation objectives, and measuring progress towards meeting those goals. To be approved, the LWRM plan shall meet the requirements of ATCP 50 and Wisconsin Administrative Code as described in Chapter 92 of the State Statutes.

To receive DATCP approval, a LWRM plan must:

- Describe water quality (WQ) and soil erosion condition in the county
- Identify state and local regulations used to implement the plan (DATCP may ask for copies of local regulations and make comments)
- Identify WQ objectives working with WDNR
- Identify key WQ and soil erosion problems, and practices to address those problems
- Plan to identify priority farms based on WQ needs, manure management problems, nutrient applications and other criteria
- Develop strategies to promote voluntary compliance, including information and education, cost sharing and technical assistance
- Identify compliance procedures, including notices and appeals.
- Develop a multi-year work plan to implement farm conservation practices, and achieve compliance with WDNR performance standards (NR 151) – include priorities and expected costs
- Explain how local conservation efforts will be coordinated with state and federal agencies
- Meet plan development requirements, including a separately-appointed advisory committee, public hearing, and county board approval

After the LWRM plan is developed, it is submitted to the Department of Agriculture, Trade, and Consumer Protection for review and approval. The plan must also receive approval from the Wisconsin Land and Water Conservation Board.

Performance Standards and Prohibitions

Performance standards and prohibitions are a vital component of County Land and Water Resource Management Plans. The WDNR and DATCP have developed performance standards for agriculture and non-agriculture nonpoint pollution sources. In October 2002 after long deliberation and many public hearings new state runoff rules took effect. WDNR rule (NR 151) sets performance standards for runoff and to protect water quality. The DATCP rule (ATCP 50) identifies conservation practices available to maintain compliance with the WDNR standards. Specifically the DATCP rule sets the requirements that a nutrient management plan (NMP) must meet to comply with state law. The prohibitions listed in § 281.16(3) Wisconsin Statute are:

- No direct runoff from feedlots or stored manure into waters of the state
- No unlimited livestock access to Shoreland areas where high concentrations of animals prevent the maintenance of adequate or self-sustaining sod cover
- No overflow of manure storage structures
- No manure stacking in confined piles within a water quality management area (WQMA)

Other standards outlined in the newest rules are:

- If you grow agricultural crops you must meet (T) on cropped fields and follow a nutrient management plan by 2005 (for high priority areas – e.g. impaired water, or outstanding (ORW) and exceptional waters (ERW) and by 2008 for all others
- If you raise, feed or house livestock starting in 2005 (for high priority areas) and 2008 (for all others) you must follow a NMP when applying or contracting to apply manure to limit entry of nutrients into waters of the state
- If you have a plan to build, or want to repair (or upgrade) a failing or leaking manure storage structure, that poses an imminent health threat to the public, or violates groundwater standards, the manure storage structure must comply with current NRCS Manure Structure Standards.
- Abandoned manure storage structures shall be closed according to accepted standards
- Meet technical standards for a newly constructed or substantially-altered manure storage structure
- If you have land in a WQMA, you must divert clean water away from feedlots, manure storage areas and barnyards located within this area
- Tillage Setback Performance Standard - NR 151.03
- Phosphorus Index Performance Standard - NR 151.04
- Process Wastewater Handling Performance Standard – NR151.055

How these performance standards are to be implemented and enforced will be detailed in subsequent chapters of this plan.

Performance Standards and Prohibitions Incorporated into County Ordinances

Several of the Performance Standards and Prohibitions are currently not incorporated into Ozaukee County Ordinances. However, this LWRM Plan includes a framework / time frame for incorporating non-agricultural and agricultural standards and prohibitions into the following current and proposed ordinances:

- Nonmetallic Mining (NR 235 / non-agricultural standards)
- Shoreland and Floodplain Zoning (NR 115, NR 116, NR 216, NR 151, ATCP 50)
- Construction Site Erosion Control (NR 216 / non-agricultural standards)
- Stormwater Management (NR 216 / non-agricultural standards)
- Manure Storage (NR 151, ATCP 50 / agricultural prohibitions and standards)

Working together with other county departments, future ordinances will need to be enacted to strengthen the implementation of other performance standards and prohibitions. The Ozaukee County Environment and Land Use Committee has approved a joint approach with the WDNR to enforcement of the Performance Standards and Prohibitions. The County will work with the WDNR for enforcement of NR 243 upon landowner request. Other than the above-mentioned County ordinances, the County will rely upon WDNR enforcement for other state standards.

Plan Implementation

The Ozaukee County Board of Supervisors approved the Ozaukee County LWRM Plan at their _____ meeting. Based on the approved LWRM Plan, the LWM Department will partner with local, state, and federal agencies and organizations to conserve Ozaukee's land and water resources, reduce soil erosion, prevent nonpoint source pollution and enhance water quality. The LWM Department will assist those agencies with primary responsibility for enforcement of ordinances including the WDNR. Enforcement of county ordinances depends on the involvement with other departments. Recent consolidation of the Environmental Health and Land and Water Conservation Departments can streamline priorities and make enforcement more effective. The LWM Department will also assist other agencies with implementation of financial assistance programs.

Education and outreach activities are critical to reaching each resource protection goal and objective. These activities must reach and involve a variety of audiences including citizens, decision-makers, interest groups, non-resident landowners, and landowner groups. Communication is key to ensure an accepted plan and buy-in from local residents. Responsible stewardship shall include all residents: citizens, decision-makers, interest groups, and landowner and user groups.

Chapter 2. INVENTORY OF AGRICULTURAL, NATURAL, CULTURAL AND COMMUNITY RESOURCES

Introduction

The conservation and wise use of agricultural and natural resources and the preservation of cultural resources are fundamental to achieving strong and stable physical and economic development as well as maintaining community identity. The Ozaukee County Land and Water Resource Management (LWRM) plan recognizes that agricultural, natural, and cultural resources are limited and very difficult or impossible to replace if damaged or destroyed. Information on the characteristics and location of agricultural, natural, and cultural resources in the County is needed to help properly locate future urban and rural land uses to avoid serious environmental problems and to ensure protection of natural resources.

This chapter provides inventory information on existing agricultural, natural, and cultural resources in the Ozaukee County planning area. Information regarding soil types, existing farmland, farming operations, topography and geology, water resources, forest resources, natural areas and critical species habitats, environmental corridors, park and open space sites, historical resources, archeological resources, and non-metallic mining resources is included in this chapter. The planning goals, objectives, strategies and work tasks set forth in Chapter 3 of this report are directly related to the inventory of the resources listed above.

The base year for inventory data presented in this chapter range from 1994 to 2005. Much of the inventory data has been collected through regional land use and natural area planning activities conducted by SEWRPC. Additional inventory data has been collected from the County, local units of government, and State and Federal agencies including the Wisconsin Department of Natural Resources; Wisconsin Department of Agriculture, Trade, and Consumer Protection; State Historical Society of Wisconsin; U.S. Census Bureau; and U.S. Department of Agriculture. The maps, figures and tables described in this chapter are included in Appendix 2.

AGRICULTURAL RESOURCES

Soil Suitability for Agricultural Production

The U.S. Department of Agricultural Soil Conservation Service, now the Natural Resources Conservation Service (NRCS), issued a soil survey for Ozaukee County in 1970. The information can be applied in managing farms and woodlands; in selecting sites for roads, buildings, and other structures; identifying mineral resources; and judging the suitability of land for agricultural, industrial, or recreational uses. The soil survey plays an important role in land use decisions. It is possible to determine which areas of the County are suitable for agricultural use, areas vulnerable to erosion, and areas where marketable nonmetallic mineral deposits may be present, as documented later in this chapter through a variety of soil analysis methods.

The NRCS has classified the agricultural capability of soils based on their general suitability for most kinds of farming. These groupings are based on the limitations of the soils, the risk of damage when used, and the way in which the soils respond to treatment. Class I soils have few limitations, the widest range of use, and the least risk of damage when used. Class II soils have some limitations that reduce the choice of plants that can be grown, or require moderate conservation practices to reduce the risk of damage when used. The soils in the other classes have progressively

greater natural limitations. Class VIII soils are so rough, shallow, or otherwise limited that they do not produce economically worthwhile yields of crops, forage, or wood products. Generally, lands with Class I and II soils are considered “National Prime Farmlands” and lands with Class III soils are considered “Farmlands of Statewide Significance”. This classification system also indicates the potential for both water and wind erosion. The erosion potential for soil covering agricultural fields in Ozaukee County is shown in Map 2.1.

The location and amount of Class I, II, and III soils were critical in identifying farmland preservation areas in the existing County farmland preservation plan (adopted in 1983) and existing town land use and master plans. Areas recommended in those plans to be preserved for agricultural use were typically parcels of 35 acres or more covered by at least 50 percent Class I, II, and III soils and located in blocks of existing farmland at least 100 acres in size.

Following preparation of the County farmland preservation plan, the NRCS developed an alternative method for identifying areas to be preserved as farmland. This method is known as the Land Evaluation and Site Assessment (LESA) system. LESA is a numeric system for rating potential farmland preservation areas by evaluating soil quality (LE or land evaluation) and geographic variables (SA or site assessment). The LESA system was used to identify the farmland preservation areas recommended by this plan.

The land evaluation component of the LESA rating system is based on the NRCS Soil Survey Geographic Database (SSURGO), which includes the County soil surveys and the attributes of each soil type. The NRCS rated each soil type in Ozaukee County and placed the soil ratings into groups ranging from the best to the worst suited for cropland. The best group is assigned a value of 100 and all other groups are assigned lower values. In addition to soil type, the land evaluation component considers slope, the agricultural capability class, and soil productivity. Map 2.2 depicts the land evaluation ratings for agricultural soils in the planning area, grouped by various ranges. Acres within each range are listed in Table 2.1.

The site assessment component of the LESA rating system is based on geographic variables, which have been determined specifically for the Ozaukee County planning area and each town.

Cropland Erosion (Transect Survey)

It should be emphasized that the previously mentioned classification and rating systems are based solely on soil characteristics and how a soil typically responds to management and treatment. Farming practices, which have a direct bearing on the rates of erosion, are not taken into account. To incorporate farming practices into soil erosion rates and provide a scientifically measurable assessment of soil loss in Ozaukee County, the LWM Department (formerly the Planning, Resources and Land Management) initiated a transect survey in 1999. A transect survey is an annual survey of cropland to determine the soil erosion rates, by consistently sampling crop fields throughout the county. A traveling route was established for the entire county, which consists of a ½ mile grid-sampling pattern, and the LWM Department continues to revisit these same data sites (~700 total) every year. Information collected on each site includes present and previous crop history; type of tillage system, amount of residue left after planting; slope length and slope percentage; if any ongoing erosion is noticed; soil type and soil series name and the watershed location. Occasionally a site will need to be eliminated from the survey because it is no longer applicable to monitoring. The most common reason for removing a site from the survey is due to the construction of a building and/or subdivision. Ozaukee County’s Transect Survey which now has six years worth of data shows that we have approximately 20% of crop fields above “T”. The trend in data shows a steady decrease in soil loss, but still approximately 20% above “T”.

Ozaukee County has and will continue to stress soil loss in FPP (Farmland Preservation Program under the Working Lands Initiative) Plans.

Existing Farmland

Agricultural lands in 2000 were identified in the SEWRPC land use inventory and include all croplands, pasture lands, orchards, nurseries, and non-residential farm buildings. Farm residences, together with a 20,000 square foot dwelling site, are classified as single-family residential land uses. Table 2.2 sets forth the number of acres occupied by farmland in the City of Mequon and each town in the planning area in 2000. Farmlands occupied 86,285 acres, or about 35 square miles, representing almost 55 percent of the planning area.

Map 2.3 shows the area devoted to farmland use in 2000, categorized as follows:

- Cultivated Lands, which includes lands used for the cultivation of crops including row crops, grain crops, vegetable crops, and hay.
- Pasture Land and Unused Agricultural Lands, which includes lands used as pasture, or lands which were formerly cultivated or used for pasture which have not yet succeeded to a wetland or woodland plant community.
- Orchards and Nurseries. This category does not include greenhouses, which are shown as commercial on the land use map.
- Other Agricultural, which includes lands used for sod farms and specialized, crops such as mint, ginseng, and berry fields.

As shown on Map 2.3 and Table 2.2, cultivated lands are the predominant type of agricultural use in the planning area, accounting for about 83 percent of all land used for agricultural purposes in 2005. Graph 2.1 also shows that the two northern Townships (Belgium and Fredonia) have the most acreage in the planning area that is utilized for agricultural purposes.

Farm Production and Revenue

In addition to inventory data regarding the suitability of lands and soils in the planning area for agricultural uses, it is also important to collect farm production and revenue data. Farm production and revenue inventory data are useful in determining the economic impact of agricultural operations on Ozaukee County and how much of the land suitable for agricultural uses should be preserved.

Ozaukee County farms produce a varied array of agricultural products including many varieties of crops and livestock. Among the most prominent of these agricultural products are corn, forage (hay, grass silage, and greenchop), soybeans, small grains, and dairy products. Table 2.3 sets forth 2002 crop production and changes in production between 1999 and 2002 and between 1990 and 1999 in the County and the State.

In 2002, 19,900 acres were devoted to corn production in Ozaukee County. This represents an increase of 3,200 acres, or 19 percent, from 1999; however, from 1990 to 1999 the County lost 5,500 acres of corn production, which was a 25 percent loss. From 1990 to 1999 the State saw a 3 percent loss in land devoted to producing corn, but saw a 5 percent gain from 1999 to 2002. In addition, 15,200 acres were devoted to forage crops in the County in 2002. This represents a loss of 2,600 acres, or 15 percent, from 1999. The County lost 3,600 acres of forage between 1990 and 1999, which was a 17 percent loss. The State saw a loss of 11 percent of its forage land between 1990 and 1999 and a loss of 17 percent between 1999 and 2002.

Vegetable Crop Inventory

Also in 2009, 10400 acres were devoted to soybean production in the County. This represents a 12 1/2 percent increase from 2002. Acres devoted to small grains such as oats and winter wheat were 6200 acres.

Livestock Inventory

There is also significant livestock agricultural activity in Ozaukee County, in addition to crop agricultural activity. The most prevalent livestock activity in the County is dairy farming. In 2009 there were 8600 dairy cows in the County. The dairy cows produced 192,640,000 pounds of dairy products or 22,400 pounds per cow. Total dairy production increased 15 percent in the County from 2002 – 2009.

Agricultural Products Inventory

Individual farms in the County have diversified crops and livestock.

Ozaukee County farms combined to produce agricultural products with a market value of \$59,056,000 in 2007 consisting of \$20,898,000 in crops and \$38,159,000 in livestock, poultry, and associated products.

Number and Size of Farms

There were 533 farms in Ozaukee County in 2002. Of the 533 farms located in the County, 81 were dairy farms. Table 2.6 sets forth the number of farms by size category in Ozaukee County and the State of Wisconsin. The average farm size in the County was 142 acres in 2002, while the median farm size was 79 acres. This compares to 204 acres and 140 acres, respectively, for farms in the State. Table 2.6 shows that 287 farms in Ozaukee County, or almost 54 percent, were between 50 acres and 499 acres in size. There were 223 farms, or about 42 percent, less than 50 acres, and 23 farms, or about 4 percent, were 500 acres or greater in size. In the State, about 64 percent of farms were between 50 and 499 acres. Almost 28 percent of farms were under 50 acres, and about 8 percent were 500 acres or greater in size. As indicated in the table below, the total number of farms in Ozaukee County has steadily decreased over the past 30 years while the number of dairy cows and cattle has remained almost the same. This trend indicates that each farm site has had to increase the number and/or size of buildings, to accommodate for the larger herd sizes. The loss of agricultural land to increasing land development is also indicated by the significant increase in the average sale price/acre of agricultural land in the county over the past 30 years.

AGRICULTURAL TRENDS – OZAUKEE COUNTY

	1986	1996	1998	2002	2005
Total # of farms	540	550	560	533	*
# of dairy farms	190	110	98	81	77
# of dairy cows	11,200	9,300	9,100	9,000	8,800
Land in farms (acres)	88,000	86,000	85,000	75,467	71,755
Price / Acre (average land sale)	1,774	2,215	2,288	6,602	14,415
Total # of cattle	*	20,000	19,000	19,000	20,000

* Statistic not recorded

Farms Enrolled in State and Federal Preservation Programs

There are a number of State and Federal conservation programs that have been created to help protect farmland and related rural land. These programs include the Wisconsin Farmland Preservation Program, Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP), and the Wetland Reserve Program (WRP).

Wisconsin’s Working Land Initiative – Farmland Preservation and Agricultural Enterprise Areas

The Wisconsin Farmland Preservation Program allows farmers who agree to maintain farmland in agricultural use to receive annual State income tax credits. The farm must produce a minimum of \$6,000 in gross farm receipts in the previous year or \$18,000 in the previous three years. The farm must be zoned for exclusive agricultural use and the town-zoning ordinance must be certified by the Department of Agriculture, Trade, and Consumer Protection (DATCP) in order for a farm to be enrolled in the program or an area maybe designated as an Agricultural Enterprise Area.

The Town of Belgium and Town of Cedarburg master plans, and the Town of Fredonia, Town of Port Washington, and Town of Saukville land use plans each designate farmland preservation areas within their jurisdictional areas. Farmland preservation areas typically include prime agricultural lands. Prime agricultural lands are generally defined in the local plans in terms of farm size, soil

characteristics, and the aggregate area being farmed. Farmland preservation areas designated in local plans adopted prior to 2005 are shown on Map 2.5.

The Town of Fredonia, Town of Belgium, and Town of Saukville plans designate prime agricultural lands as farmland preservation areas. Prime agricultural lands are defined as parcels of 35 acres or larger that are at least 50 percent covered by soils that meet NRCS standards for national prime farmland or farmland of Statewide importance (class I, II, or III soils), and which occur in aggregate blocks of farmland or conservancy lands of 100 acres or more in extent.

The Town of Port Washington plan designates exclusive agricultural areas as farmland preservation areas, but the plan does not define the criteria used to identify exclusive agricultural areas. The Town of Cedarburg plan designates agricultural lands as farmland preservation areas. Agricultural lands are defined as those lands actively being farmed with a minimum parcel size of 35 acres. Land designated for agricultural use is not based on the amount of class I, II, or III soil types covering the land.

The zoning ordinances for all six townships in Ozaukee County have been certified. The county is presently updating the Farmland Preservation Plan scheduled for completion December 31, 2011.

The Wisconsin Department of Natural Resources is implementing the North Branch Milwaukee River Wildlife and Farming Heritage Area. This project area is within 20 miles of the Milwaukee metropolitan area and lies within the Milwaukee River Basin in northwestern Ozaukee County, southwestern Sheboygan and northeastern Washington counties. The area of interest can be found on Map 2.55.

This is a new and active acquisition project that has the potential for preserving farmland or “stabilizing the rural landscape” while providing low impact, nature based, outdoor recreational opportunities. The property is located within the “Southeast Glacial Plains” ecological landscape, which is characterized as one of the landscapes with the highest wetland and river productivity for plants, insects, and invertebrates in the state. This unique project seeks to preserve the strong agricultural farming tradition of the area while maintaining wildlife habitat, restoring plant communities and wetlands, and providing recreational opportunities.

USDA Programs

The U.S. Department of Agriculture (USDA) administers a variety of incentive programs to provide water quality protection, erosion control, and wildlife habitat in agricultural areas. Under the Conservation Reserve Program (CRP) and the Conservation Reserve Enhancement Program (CREP), the landowner enters into an agreement to restore or protect lands for a 10-year or longer period in return for cash payments or assistance in making conservation improvements. In 2010, there were 121 CRP contracts and 28 CREP contracts in Ozaukee County. CRP lands encompassed about 1611 acres and CREP lands encompassed about 181 acres.

Another conservation program administered by the USDA is the Wetland Reserve Program (WRP). The WRP is a program aimed at protecting wetlands on private property. This is typically done by providing a financial incentive to landowners to restore wetlands that have been drained or filled for agricultural use. Landowners who choose to participate in the program may sell a conservation easement to the USDA or enter into a cost-share restoration agreement with the USDA to restore wetlands. The landowner retains private ownership of the wetland area but limits future uses. In 2005, there were four WRP agreements encompassing about 101 acres of land in Ozaukee County.

NATURAL RESOURCES

Geomorphology

The landforms and physical features of the Ozaukee County planning area, such as the topography and geology, are important determinants of regional growth and development. The physical geography of an area must be considered in land use, transportation, and utility and community facility planning and development, and for its contribution to the natural beauty and overall quality of life in an area. The Ozaukee County planning area lies on the western shore of Lake Michigan and directly east of a major sub continental divide between the Mississippi River and the Great Lakes – St. Lawrence River drainage basins (see Figure 2.8, page 41).

Ozaukee County Soils and Soil Associations

The USDA-NRCS soil survey identifies and maps each of the various soil types found in the County. Soils have been mapped and are organized by soil association, soil series, and soil type. Soil associations are general areas with broad patterns of soils. Soil associations in the planning area are shown on Map 2.6. There are five soil associations in Ozaukee County: the Kewanee-Manawa association, Ozaukee-Mequon association, Hochheim-Sisson-Casco association, Houghton-Adrian association, and the Casco-Fabius association.

The Kewaukee-Manawa association contains well-drained to somewhat poorly drained soils that have a subsoil of clay to silty clay loam formed in thin loess and silty clay loam glacial till on uplands. Most of this association is cultivated. Erosion control and tile drainage are the main concerns in managing these soils.

The Ozaukee-Mequon association contains well-drained to somewhat poorly drained soils that have a subsoil of silty clay loam and silty clay formed in thin loess and silty clay loam glacial till on uplands. Most of this association is cultivated with erosion control and drainage of low wet areas being the chief management concerns.

The Hochheim-Sisson-Casco association contains well-drained soils that have a subsoil of loam to clay loam underlain mainly by loamy till, outwash, and lake-laid deposits on uplands, terraces, and in lakebeds. Most areas suitable for cultivation have been cleared and are cultivated. This association also contains more woodlands than other associations found in the County.

The Houghton-Adrian association contains very poorly drained organic soils in basins and depressions. Most areas of this association are wooded and provide habitat for wildlife. Crops grow well on areas that are adequately drained and are protected from soil blowing. Throughout most of the year the water table is high and the soils are highly compressible under heavy loads. Use of the soils for residential and industrial development and for highways is severely limited.

The Casco-Fabius association contains well drained and somewhat poorly drained soils that have a subsoil of clay loam and sandy clay loam; shallow over gravel and sand and on stream terraces. Most of the soils in this association are cultivated. The soils are easy to cultivate and erosion is generally not a serious hazard. These soils are a good source of sand and gravel.

Topographic Features

Glaciation has largely determined the topography and soils of the planning area. Generalized areas of physiographic features and generalized topographic characteristics in 100-foot interval contours are shown on Map 2.7. Surface elevations in the planning area range from a low of 580 feet above

sea level in the Town of Belgium along Lake Michigan to a high of 988 feet above sea level in the southwestern portion of the Town of Cedarburg. In general, the topography of the planning area is relatively level to gently rolling in some areas, with low lying areas associated with streams and wetlands. The nature of the Lake Michigan shoreline in the County is generally characterized by areas of steep slopes, including bluffs and several ravines.

There is evidence of four major stages of glaciation in the planning area. The last and most influential in terms of present topography was the Wisconsin stage, which ended in the State about 11,000 years ago. Except for a few isolated spots where dolomite bedrock is exposed at the surface, the entire planning area is covered with glacial deposits ranging from large boulders to fine grain clays such as silty clay loam till, loam to clay loam, and organic mucky peat. Glacial deposits may be economically significant because some are prime sources of limestone, which has historically been quarried in the planning area.

Geology Sites

Knowledge of bedrock and the surface deposits overlaying the bedrock is important to land use, transportation, and other utility and community facility planning. Bedrock conditions and the overlaying surface deposits directly affect the construction costs of urban development such as streets, highways, and utilities, particularly those that involve extensive trenching or tunneling, and also affect the location of onsite waste treatment systems. The bedrock formations underlying the planning area consist of the Milwaukee Formation and Niagara Dolomite. The Milwaukee Formation includes shale and shale limestone and dolomite in the bottom third. It is approximately 130 feet thick and is found in a 23,276 acre area, or about 36 square miles, in the eastern portion of the planning area along Lake Michigan. Niagara Dolomite is approximately 100 feet thick and is found in a 135,520 acre area, or almost 212 square miles in the central and western portions of the planning area. Map 2.8 depicts the depth to bedrock found in the planning area.

A total of 16 sites of geological importance, including one glacial feature and 15 bedrock geology sites, were identified in the County in 1994 as part of the regional natural areas study. The geological sites included in the inventory were selected on the basis of scientific importance, significance in industrial history, natural aesthetics, ecological qualities, educational value, and public access potential. The 16 sites selected in Ozaukee County include five sites of statewide significance (GA-1), six sites of countywide or regional significance (GA-2), and five sites of local significance (GA-3). Together, these sites encompass about 274 acres in Ozaukee County. Map 2.9 shows the locations of the sites of geological importance. Table 2.7 sets forth a description of each site.

Lake Michigan Bluff and Ravine Areas

Shoreline erosion and bluff stability conditions are important considerations in planning for the protection and sound development and redevelopment of lands located along Lake Michigan. These conditions can change over time because they are related to changes in climate, water level, the geometry of the near shore areas, the extent and condition of shore protection measures, the type and extent of vegetation, and the type of land uses in shoreland areas. Additional information regarding these conditions is available at the University of Wisconsin Sea Grant website: <http://www.seagrant.wisc.edu/communications/LakeLevels/index.html> . In 1995 SEWRPC completed a study of shoreline erosion and bluff stability conditions along Lake Michigan for its entire length in the Southeastern Wisconsin Region. The findings for Ozaukee County are summarized in Table 2.8 and depicted on Map 2.10. The findings shown in Table 2.8 are from multiple research points along several shoreline “reaches” which begin in Milwaukee County and

progress northward along the shoreline to the Ozaukee – Sheboygan County border. The linear expanse of each reach was determined by the presence of similar shoreline characteristics.

There are approximately 25 linear miles of Lake Michigan shoreline in the Ozaukee County planning area. The shoreline contains areas of substantial bluffs with heights of up to 140 feet, ravines, areas of gently rolling beaches with widths of up to 150 feet, and areas of low sand dune ridges and swales.

Nonmetallic Mineral Resources

Nonmetallic minerals include crushed stone (gravel), dimension stone, and sand. Nonmetallic mines (quarries) provide sand and stone for transportation facilities and buildings. Nonmetallic minerals are important economic resources that should be taken into careful consideration whenever land is being considered for development. Mineral resources, like other natural resources, occur where nature put them, which is not always convenient or locally desirable. If an adequate supply of stone and sand is desired for the future, wise management of nonmetallic mineral resources is important. Non-metallic mining activities are managed under the Ozaukee County Nonmetallic Mining Reclamation enacted April 17, 2007.

Areas Suitable for Sand and Gravel Extraction

Map 2.11 shows the location of potential commercially workable sand deposits and the location of potential commercially workable gravel deposits in the planning area. Soil mapping units are rated as probable and improbable sources of sand or gravel. The rating is intended only to show the probability of the presence of material of suitable quality in workable quantities. As shown in Map 2.11, about 39 square miles, or 15 percent of the planning area, are covered by soil mapping units which have been identified as probable sources of sand and about 10 square miles, or 10 percent of the planning area, are covered by soil mapping units which have been identified as probable sources of gravel. Areas possibly containing commercially workable amounts of sand and gravel occur throughout the planning area with the largest concentrations in the western portion of the planning area and along the Milwaukee River. Table 2.9 sets forth the amount of area covered by soil mapping units which have been identified as probable sources of sand or gravel in each participating local government.

Existing Quarries and Registered Sites

In 2000, there were 23 sites encompassing almost 544 acres in the planning area being used for non-metallic mining based on the SEWRPC land use inventory. The location of these sites is shown on Map 2.12. There are no sites in Ozaukee County which are currently registered as sites with marketable nonmetallic mineral deposits that are in operation. Chapter NR 135 of the *Wisconsin Administrative Code* establishes a procedure for landowners to register marketable nonmetallic mineral deposits in order to preserve these resources.

NR 135 subchapter VI defines a marketable mineral deposit as one which can be or is reasonably anticipated to be commercially feasible to mine and which has significant economic or strategic value. Only the owner of the land (as opposed to the owner of the mineral rights or other partial rights) can register a marketable nonmetallic mineral deposit. The registration must include a legal description of the land and certification and delineation by a registered professional geologist or a registered professional engineer. In making this certification, the geologist or engineer must describe the type and quality of the nonmetallic mineral deposit, the areal extent and depth of the deposit, how the deposit's quality, extent, location, and accessibility contribute to its marketability, and the quality of the deposit in relation to current and anticipated standards and specifications for the type of material concerned.

A person wishing to register land pursuant to NR 135 subchapter VI must provide evidence that nonmetallic mining is a permitted or conditional use of the land under zoning in effect on the day notice is provided by the owner to government authorities. A copy of the proposed registration and supporting information must be provided to each applicable zoning authority (city, village, or town), the County, and the WDNR at least 120 days prior to filing the registration. The registration must include a certification by the landowner, which is binding on the landowner and his or her successors in interest, that the landowner will not undertake any action that would permanently interfere with present or future extraction of nonmetallic materials for the duration of the registration.

Section 66.1001(4) of the *Wisconsin Statutes* requires any unit of government that prepares and adopts a comprehensive plan to prepare and adopt written procedures to foster public participation. These written procedures must describe the methods the local government will use to distribute proposed elements of a comprehensive plan to owners, or to persons who have a leasehold interest in property pursuant to which the persons may extract nonmetallic mineral resources in or on property, in which the allowable use or intensity of use of the property is proposed to be changed by the comprehensive plan. All registered owners and leaseholders will be provided with copies of the proposed Agricultural, Natural, and Cultural Resources and Land Use elements of the comprehensive plan and offered an opportunity to submit comments.

Water Resources

Water resources such as lakes, streams and their associated floodplains, and groundwater form an important element of the natural resource base of the Ozaukee County planning area. The contribution of these resources is immeasurable to economic development, recreational activity, and aesthetic quality of the planning area. SEWRPC has completed the Regional Water Quality Management Plan and Regional Water Supply Plan. Both of these documents will help to facilitate conservation practice installation by utilizing existing water quality conditions and its impacts on local streams and rivers.

Basins, Watersheds and Subwatersheds

Map 2.13 identifies the portions of the Milwaukee and Sheboygan River Basins that are within the planning area. The Basins drain directly into Lake Michigan and are part of the overall Great Lakes-St. Lawrence River drainage system. Collectively the six watersheds in the Milwaukee River Basin contain about 500 miles of perennial streams, over 400 miles of intermittent streams, and 35 miles of Lake Michigan shoreline. Collectively the six watersheds in the Sheboygan River Basin contain about 400 miles of perennial streams, 400 miles of intermittent streams, and 35 miles of Lake Michigan shoreline. For stormwater management planning purposes, the basins are further subdivided into watersheds and subwatersheds. There are seven WDNR designated watersheds within the planning area, including portions of the Milwaukee River North, Milwaukee River East-West watershed, Milwaukee River South watershed, Cedar Creek watershed, Menominee River watershed, Sauk/Sucker Creeks watershed, and Onion River watershed. The majority of the planning area is located in the Milwaukee River South watershed, which covers 164 square miles, or 66 percent of the planning area. The watersheds and subwatersheds are shown on Map 2.14 and Map 2.15.

Milwaukee River North Watershed

The Milwaukee River North Watershed is located in portions of Sheboygan, Ozaukee and Washington counties (Figure 2.1). The North Branch Milwaukee River begins in the Nichols Creek

State Wildlife Area in Sheboygan County and runs in a southerly direction for 28 miles to its junction with the Milwaukee River in Ozaukee County.

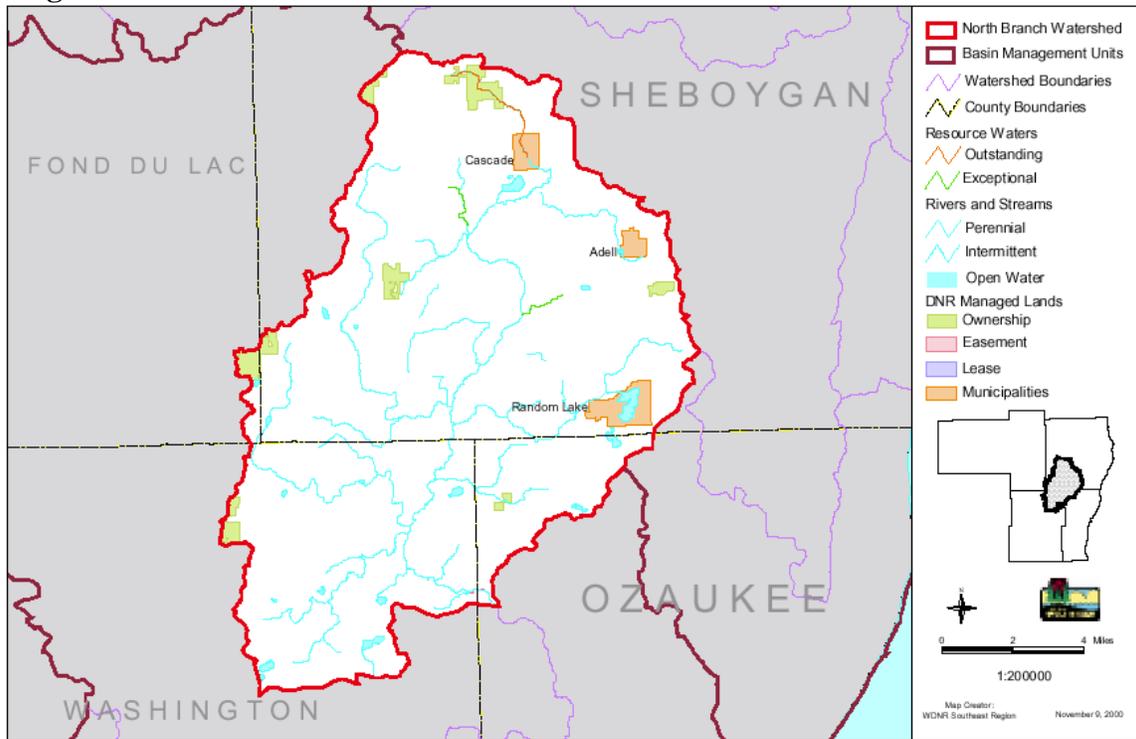
Land cover is primarily rural, with agriculture dominant (57%). Wetlands cover over 14 percent of the land area while grasslands (12%) and forests (11%) represent the other major rural uses. Urban lands cover less than one half of one percent of the land area. The Villages of Adell, Cascade and Random Lake are the only incorporated municipalities.

The quality of rivers and streams in the North Branch Watershed ranges from severely degraded to nearly pristine. Eighty-five miles of perennial streams (86%) partially meet their potential biological uses, and 12 miles (12%) do not meet their potential biological uses. An unnamed tributary to the Milwaukee River North Branch (Adell tributary) is listed on the state's impaired waters (303(d)) list. For additional information, refer to the WDNR *Milwaukee River Basin – State of the Basin Environmental Report*.

The upper four miles of the North Branch Milwaukee River were formerly known as Nichols Creek, a Class I trout stream. The stretch that runs through the Nichols Creek State Wildlife Area is designated as an Outstanding Resource Water. Outstanding and Exceptional Resource Waters are those that are of such high quality that discharges from municipal and industrial wastewater treatment plants must be of the same or better quality as the receiving water. This designation is based on the quality of the fisheries, protection of recreational uses, water quality and pollution sources. In addition, 8.1 miles of other trout streams (including Mink Creek, Gooseville Creek and Melius Creek) are found in this watershed. Additional streams may support, or have the potential to support cold water fish and aquatic life communities

Fish species found in streams range from highly tolerant to intolerant. Tolerant fish species like common carp, fathead minnow and creek chub are more abundant in degraded streams. Sport fish species found in the watershed include brook trout, brown trout, rainbow trout, smallmouth bass, northern pike, largemouth bass and a variety of panfish. Other fish species found include common shiner, bluntnose minnow, blacknose dace, common shiner, golden redhorse, greater redhorse, black bullhead, fantail darter, johnny darter and blackside darter. The greater redhorse is listed as a state Threatened and Endangered species. Thirteen named lakes are found in this watershed ranging in size from 212 acres (Random Lake) to six acres (Lake Twelve). With the exception of Huiras Lake and Erler Lake, much of the shoreline of lakes in the watershed is developed. For more detailed information about the watershed, please refer to the WDNR web site [*The Milwaukee River Basin*](#).

Figure 2.1



Milwaukee River East-West Watershed

The Milwaukee River East-West Watershed covers 266 square miles and is located in portions of Dodge, Fond du Lac, Ozaukee, Sheboygan, and Washington counties (Figure 2.2). The East and West Branches of the Milwaukee River meet the Milwaukee River mainstem near the Village of Kewaskum in Washington County. The Milwaukee River then runs south and east to western Ozaukee County where this watershed meets the Milwaukee River South Watershed.

Rural uses cover most of the land area in this watershed. Agriculture is dominant, covering about 47 percent of the land area, followed by wetlands (19%), grasslands (16%) and forests (12%). Urban uses cover about three percent of the land area. The City of West Bend and the Villages of Campbellsport, Kewaskum and Newburg are the only incorporated areas in the watershed.

The Milwaukee River East-West Watershed contains about 196 miles of perennial streams. Nearly all the stream miles in this watershed (98%) are partially meeting their biological uses, while two percent of the streams have not been evaluated. Even though general evaluations have been conducted on many of the streams in the watershed, thorough assessments have been conducted on just five percent of total stream miles within the last five years. No streams in this watershed are listed as impaired waters on the state's 303(d) list. Portions of two rivers (Auburn Lake Creek and East Branch Milwaukee River) totaling six miles in length are considered exceptional resource waters.

The Milwaukee River mainstem is the longest river in this watershed (53 miles). The Milwaukee River begins in wetlands in Fond du Lac County, and flows in a southeasterly direction until meeting the North Branch Milwaukee River near Waubeka. Upstream of Kewaskum, wetland drainage, river straightening, especially the smaller headwaters streams, dams and agricultural runoff are the major factors keeping the rivers from fully meeting their potential. Downstream of Kewaskum, the river is increasingly affected by urban land uses and five major dams, leading to degraded habitat and water quality from nutrient and sediment inputs.

The headwaters for the Milwaukee River East Branch begin with Watercress Creek, a trout stream, in Sheboygan County. The Milwaukee River East Branch then flows south through Long Lake, Mauthe Lake and the New Fane Millpond until it reaches the Milwaukee River mainstem. Unlike the Milwaukee River mainstem, most of East Branch remains in a relatively natural, unchannelized condition. Agricultural runoff contributing nutrients and sediment are the major sources of water quality degradation in the East Branch.

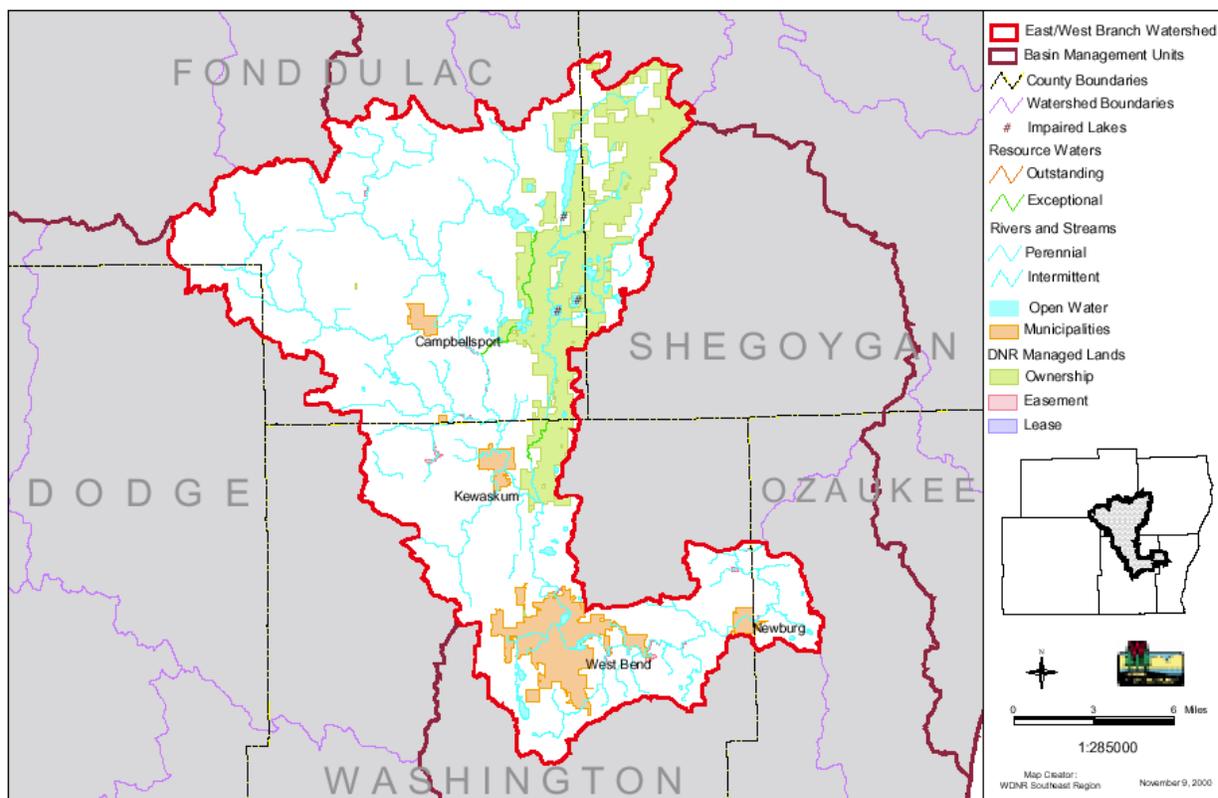
The West Branch Milwaukee River is located in the rolling glacial topography of Fond du Lac County. The river begins with wetlands and flows southeast through wetlands and Lake Bernice before reaching the Milwaukee River mainstem. This river has been greatly affected by channelization for agricultural purposes, especially in the headwaters. Nutrients and sediment from agricultural runoff and stream modification (channelization and dams) contribute to reduced water quality in the West Branch Milwaukee River.

Fish species found in this watershed range from intolerant species such as brook trout, mottled sculpin, blackchin shiner, Iowa darter, pearl dace and northern redbelly dace in the cool and cold water streams, to more tolerant species such as creek chub, central mudminnow, common shiner and white sucker in the more degraded streams. Other than brook trout, sport fish species found in the watershed include smallmouth bass, black bullhead, northern pike, pumpkinseed and bluegill. The state threatened pugnose shiner, greater redhorse and longear sunfish have also been

documented in this watershed. The longear sunfish is listed as a state Threatened and Endangered species.

The East-West Branch Milwaukee River Watershed contains over 30 named lakes ranging in size from 427 acres (Long Lake) to two acres (Mallard Hole Lake), providing many recreational opportunities. Six lakes have active lake associations or districts. For more detailed information about the watershed, please refer to the WDNR web site [The Milwaukee River Basin](#).

Figure 2.2



Milwaukee River South Watershed

The Milwaukee River South Watershed covers about 168 square miles and is located in portions of Ozaukee and Milwaukee Counties (Figure 2.3). The Milwaukee River mainstem enters the watershed west of the Village of Fredonia and flows for about 48 miles before entering the Milwaukee Harbor.

Land cover in the watershed is a mix of rural and urban uses. Overall, the watershed is about 33 percent urban, with agriculture (25%), grasslands (21%), forests (12%) and wetlands (6%) making up the rest of the major land cover types. Fourteen cities and villages are found in this watershed.

As with the other watersheds in the basin, the streams in the Milwaukee River South Watershed exhibit a wide range of quality. Over 35 stream miles within the Milwaukee South Watershed are listed on the 303(d) list, including the Milwaukee Estuary, a Great Lakes Area of Concern. The Milwaukee Estuary area of concern encompasses the Milwaukee Harbor, the Milwaukee River downstream from the abandoned North Avenue Dam, the Menomonee River downstream from 25th street and the Kinnickinnic River downstream from Chase Avenue. The International Joint

Commission (IJC) and U.S. EPA designated the Milwaukee Estuary in 1987 through the Great Lakes Water Quality Agreement as one of 43 Great Lakes Areas of Concern. These areas are usually industrial in nature, with a history of pollution. In the Milwaukee Estuary, sediments contaminated with polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and heavy metals are linked to degraded water quality, impaired fish and wildlife populations, and restrictions on dredging. A remedial action plan defining the problems with the estuary was published in 1989 by WDNR. A follow up plan further refining impairments and outlining a plan for restoring the estuary was published by WDNR in 1995. *For more information about Great Lakes Areas of Concern, please visit the USEPA web site at the following address:* <http://www.epa.gov/grtlakes/aoc/>.

Over 30-species of warm and cool water native fish species have been identified in this watershed. Recreational game fish species include northern pike, smallmouth and large mouth bass, and a variety of panfish such as bluegill and rock bass. The greater redhorse and striped shiner are reported as present and are listed as state Threatened and Endangered species, respectively. Following removal of the North Avenue Dam in 1997 by the City of Milwaukee, anadromous (e.g. trout and salmon) and potadromous (e.g. northern pike and walleye) fish from Lake Michigan and the Milwaukee River Estuary are able to migrate upstream of the barrier for the first time in over 150-years. Following the removal of the fish barrier and considerable water quality improvements associated with the Milwaukee Metropolitan Sewerage District's sewer overflow abatement program, the WDNR in cooperation with other agencies and non-profit conservation groups have implemented a walleye and lake sturgeon restoration plan for the Milwaukee River South Watershed, including Milwaukee and Ozaukee Counties. Stocking of these species has been ongoing for years, and the WDNR is working with the Riveredge Nature Center outside of Newburg to construct and operate a lake sturgeon streamside rearing facility.

Nearly 15 percent of all perennial stream miles in this watershed are significantly modified to the extent they have limited ability to sustain diverse biological communities. Many of these streams were straightened, enclosed or lined with concrete to facilitate water movement downstream to alleviate flooding concerns. This method to control flooding, while popular 35 years ago is now considered somewhat ineffective. From a water quality and biological standpoint this type of river modification causes wide fluctuations in water levels over short periods of time, increases channel scour, and provides little to no habitat for aquatic life. Establishing a meandering stream helps create more diverse habitat for biological activities. The Milwaukee Metropolitan Sewerage District (MMSD) is implementing major flood water storage and where possible, river restoration activities in Lincoln Creek, Southbranch Creek and Indian Creek and other area watersheds. *For more information on the Lincoln Creek flood control project and other MMSD watercourse activities, please visit the MMSD web site at:* http://www.mmsd.com/lcreek/news_lcreek.html . Recent dam removals along the Milwaukee River, including the Chair Factory Dam near Grafton and the Waubeka Mill Dam, have also eliminated long-term liability to the dam owners and resulted in improved fish and aquatic life habitat.

Ozaukee County received a \$4.7 million grant from the National Oceanic and Atmospheric Administration (NOAA) as part of the American Recovery and Reinvestment Act. Ozaukee County was the only project selected in Wisconsin to help better the local river and stream ecology encompassing 158 miles. Together, the county, WDNR, municipalities, consultants, conservation corps, non-profit organizations, private companies and volunteers will work to remove fish passage barriers throughout the life of the project. Additional funding includes \$1.4 million grant to continue existing efforts to reduce fish passage barriers and \$.5 million grant to monitor fish

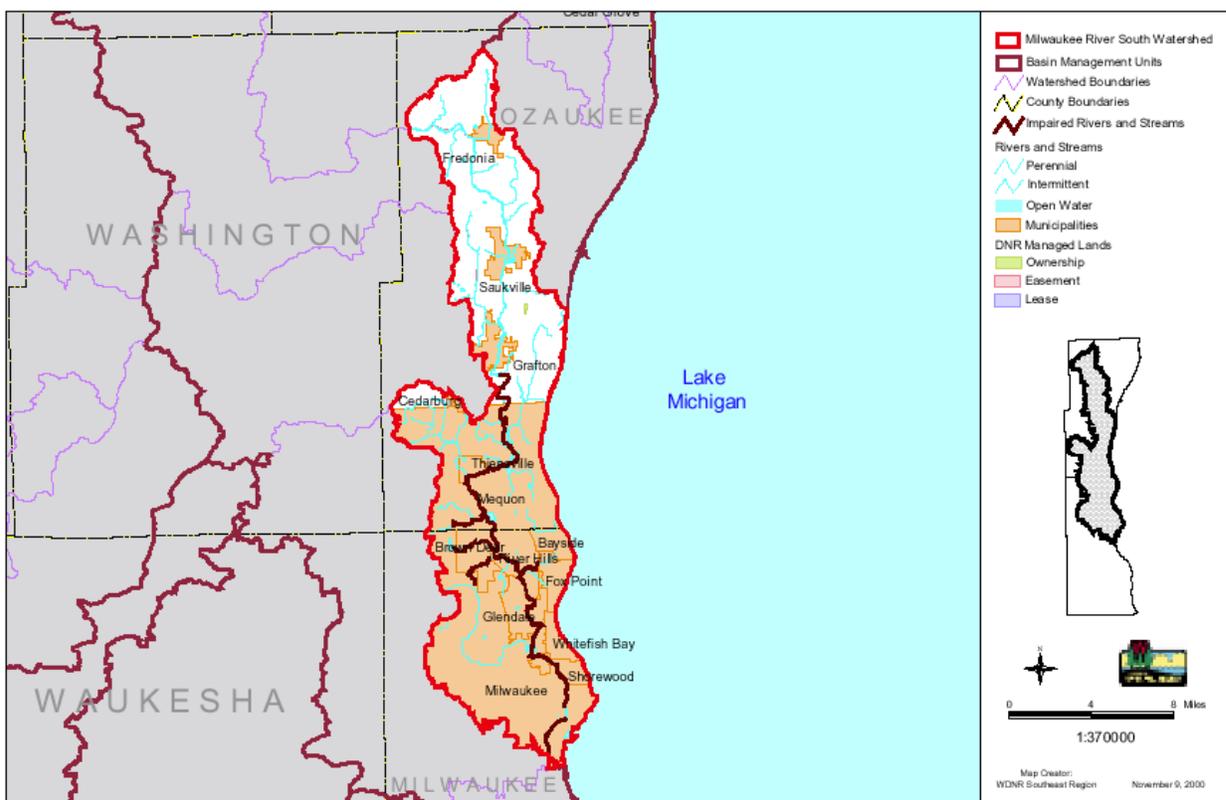
populations and other components of the project to maximize scientific data to justify the current fish passage project.

Although not officially listed as a cold water stream, Mole Creek in Ozaukee County is the only river in the Milwaukee South Watershed with the ability to sustain cool and cold water fish species. Extensive surveys on Mole Creek during the 2000 Baseline Monitoring Program found a wide variety of fish species including species such as mottled sculpin, Iowa darter and brook stickleback that rely on cool water. Temperature and habitat surveys conducted on Mole Creek found that the creek is capable in places, of supporting a diverse cool and cold water fishery. The WDNR has obtained almost 1-mile of easements along Mole Creek in an effort to restore stream and wetland habitat along channelized reaches of stream and converted wetlands. Efforts are continuing to obtain additional easements. The WDNR in cooperation with Ozaukee County and the NRCS are in the process of constructing the first reach of restored stream and wetland corridor. Additional efforts will be needed to encourage (require) infiltration for stormwater since the stream needs clean and ample groundwater supplies to maintain cool and cold water fish and wildlife communities.

Most of the tributary streams in the Milwaukee County portion of this watershed are only capable of supporting populations of more tolerant fish species like common carp. Non-native species such as rainbow trout, coho and chinook salmon migrate from Lake Michigan into the Milwaukee River during their seasonal spawning runs. Habitat and water quality are not sufficient to allow for successful reproduction of these species in the rivers where they spawn so annual stocking of these species is needed to maintain recreational fishing opportunities. *For more information about Lake Michigan Fisheries, please visit the WDNR web page at: <http://dnr.wi.gov/fish/lakemich/>.* See Fish Consumption Advisory for Milwaukee River South Watershed in Table 2.10.

There are three small named lakes, several unnamed lakes and many park ponds within the Milwaukee River South Watershed. For more detailed information about the watershed, please refer to the WDNR web site [The Milwaukee River Basin](#).

Figure 2.3



Cedar Creek Watershed

The Cedar Creek Watershed is the most central of the Milwaukee River Basin watersheds, encompassing portions of central Washington and Ozaukee Counties (Figure 2.4). Cedar Creek is 28 miles long, beginning its journey from the headwaters downstream from Little Cedar Lake to its confluence with the Milwaukee River near the City of Cedarburg.

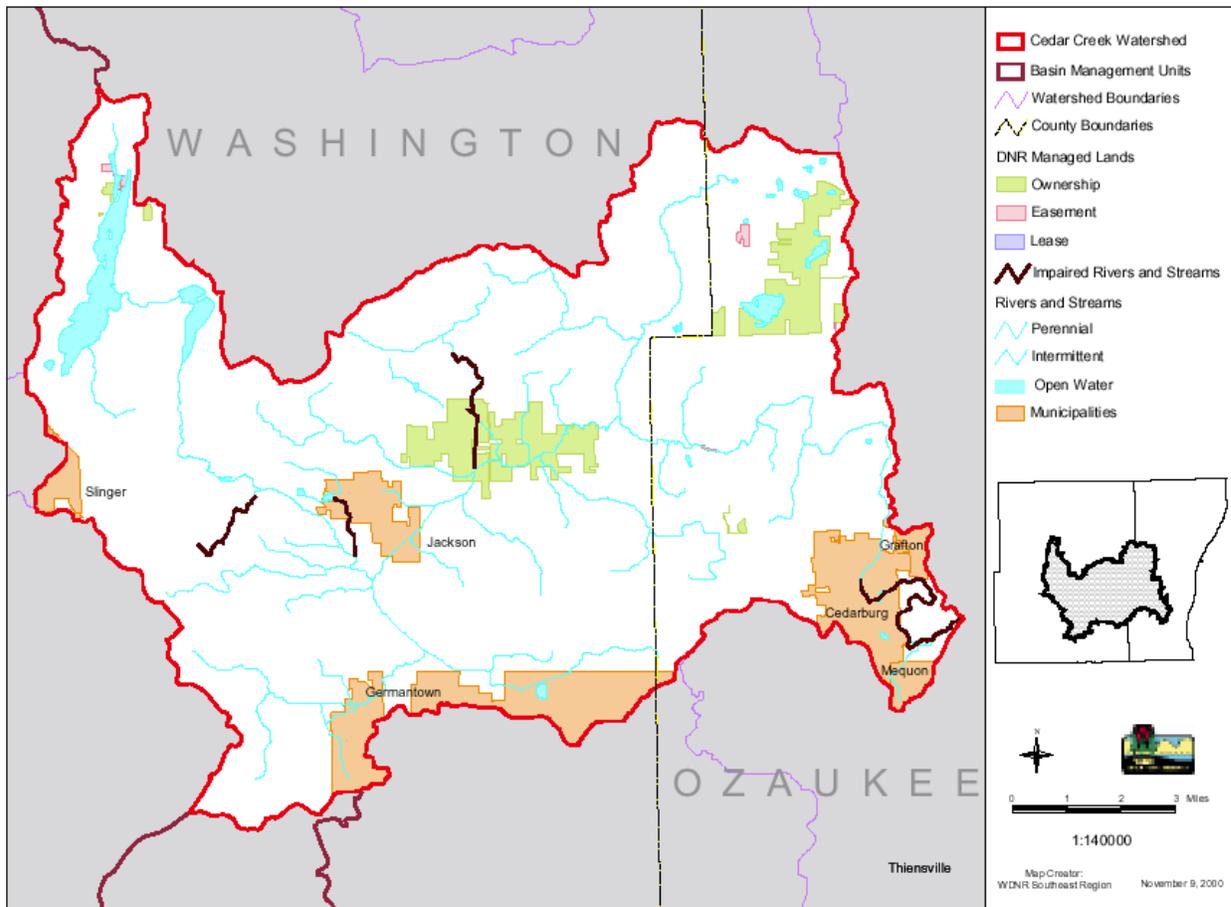
Land cover in the Cedar Creek Watershed is primarily rural, with agriculture dominant (49%). Other rural uses include wetlands (16%), grasslands (15%) and forest (11%). Two major wetland complexes, the Jackson Marsh State Wildlife Area and Cedarburg Bog State Natural Area, are located within the Cedar Creek Watershed, providing important habitat for fish and wildlife. Urban areas comprise about 3.5 percent of land cover in the watershed. Portions of the Villages of Germantown and Slinger, the City of Cedarburg, and the entire Village of Jackson are the incorporated municipalities in the watershed.

Most of the stream miles in this watershed are capable of supporting a full range of aquatic life if stressors were reduced or eliminated. The stressors; such as the lack of cover, sedimentation, bacterial contamination, nutrient enrichment and temperature fluctuations; are usually associated with urban/rural storm water runoff and other unspecified nonpoint sources. No outstanding or exceptional resource waters are located within the Cedar Creek Watershed. However, several streams have the potential in certain areas of supporting cold and cool water fish species if stream banks and in stream habitat were restored.

Nearly 100 stream miles are listed on the state 303(d) list as impaired waters needing attention. Approximately five miles of Cedar Creek are listed because of PCB contaminated sediments. Some of the PCB concentrations in Cedar Creek are the highest ever recorded in the state of Wisconsin. The extent of the problem was initially identified in the mid-1980's and continues to be **one of the most serious threats to human health and the environment in all of Ozaukee County**, and once the extent of the contamination is understood, it could have a major impact on the value of properties directly impacted by the contamination. This stretch of Cedar Creek runs through the City of Cedarburg, where several dams slow water velocity, allowing contaminated sediments to settle out. Mercury Marine Corporation (formerly the Kiekhaefer Corporation) and the Amcast Corporation (formerly MetaMold Corporation) are the source of PCB impacts and are currently the parties responsible for cleaning up these discharges. PCB mixtures in bottom sediments are dominated by Aroclor 1260. These mixtures are more toxic and resist degradation more than other PCB mixtures. ALL fish species and geese from this stretch of Cedar Creek are contained in the "DO NOT EAT" category of the states Fish and Wildlife Consumption Advisory, the most stringent level of protection afforded by the advisory. In 1994, the WDNR directed some sediment clean up activities at Ruck Pond and a partial cleanup of Hamilton Pond. No active clean up has occurred since the USEPA Superfund program took over sight of the investigation. in the upstream most portion of the contaminated section of Cedar Creek. See Fish Consumption Advisory for Cedar Creek Watershed located in Table 2.10.

Big Cedar Lake (932 acres) and Little Cedar Lake (246 acres) are the largest of the 16 named lakes in the watershed. Both lakes have active lake associations and have participants in the Self Help Lake Monitoring Program. For more detailed information about the watershed, please refer to the WDNR web site [*The Milwaukee River Basin*](#).

Figure 2.4



Menomonee River Watershed

The Menomonee River Watershed covers 136 square miles in portions of Washington, Waukesha and Milwaukee counties (Figure 2.5). The Menomonee River originates in wetlands in the near the Village of Germantown and the City of Mequon and runs south, south east for about 32 miles where it meets the Milwaukee and Kinnickinnic Rivers in the Milwaukee Harbor.

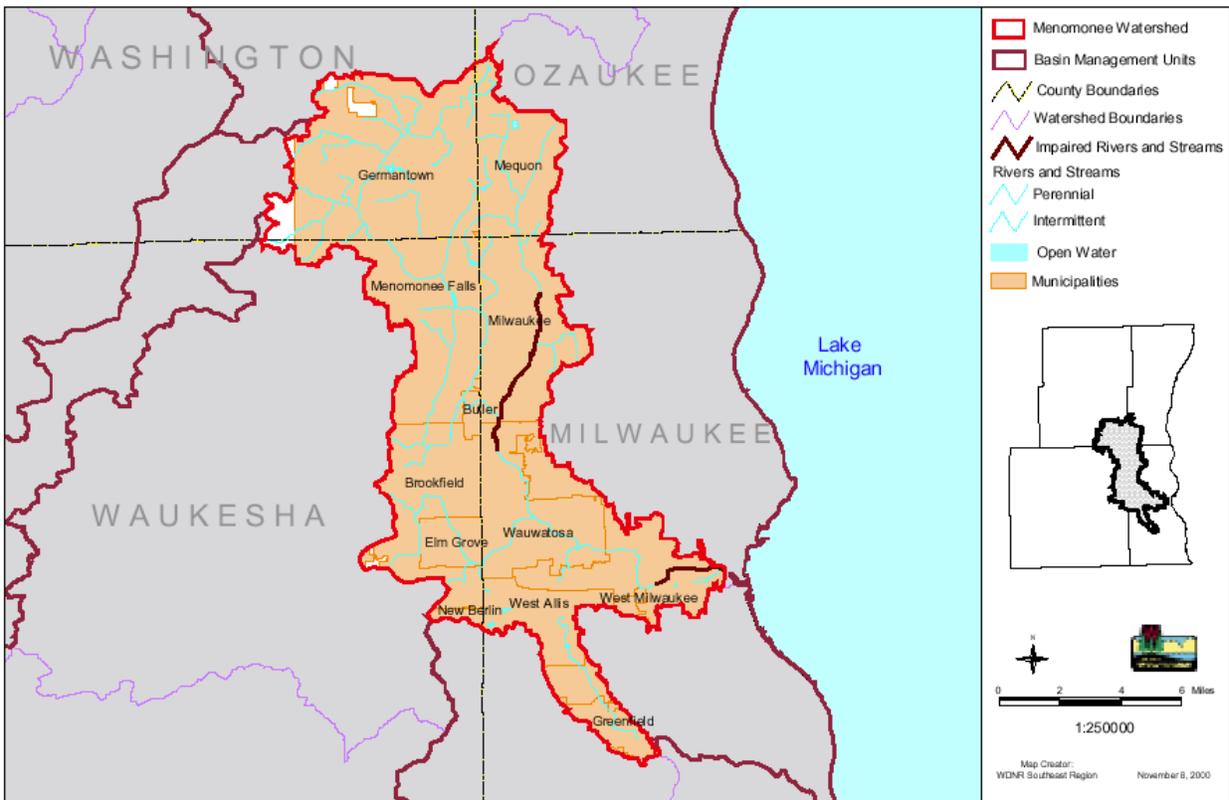
Nearly all of the land area in this watershed is within incorporated municipalities. Forty-two percent of the land is covered by urban uses. Grasslands (22%), agriculture (17%) forests (8%) and wetlands (7%) make up most of the remaining land use.

Stream and wetland modification, urban and rural runoff, construction site erosion and industrial point sources of pollution are the major contributors to degraded water and habitat quality within this watershed. Over eight miles of stream are listed on the 303(d) list as impaired. Many streams in this watershed have been concrete-lined, or straightened to convey floodwaters off the land faster. Flooding continues to be a major concern in this watershed. The Milwaukee Metropolitan Sewerage District is implementing several flood control projects in this watershed. Over five miles of the Little Menomonee River has been designated as the Moss American Superfund Site. Creosote contaminated sediments within the river have caused extensive environmental damage, and the U.S. EPA has recently completed negotiations with the responsible party for implementing a clean up remedy. By the end of 2005, three of the five miles of creosote contaminated river will have gone through remediation. *For more information about the Moss American Superfund Site, please see the following:* <http://www.epa.gov/region5superfund/npl/wisconsin/WID039052626.htm>

Following the recent removal of the Falk Corporation Dam and concrete drop structure on the Menomonee River, seasonal runs of Lake Michigan trout and salmon create fishing opportunities in publicly accessible areas up to the Lepper Dam in the Village of Menomonee Falls. Most fish species resident in the streams of this watershed are tolerant of pollution and habitat degradation. Some streams within this watershed are enclosed or diverted under roads for some of their length which further restricts habitat for aquatic life.

There are no named lakes within this watershed. Some park ponds provide for some recreational opportunities for urban fishing. For more detailed information about the watershed, please refer to the WDNR web site [The Milwaukee River Basin](#).

Figure 2.5



Sauk and Sucker Creeks Watershed

The Sauk and Sucker Creeks Watershed is the southern most watershed in the Sheboygan River Basin. Most of the watershed is located in Ozaukee County, with a small northern portion located in Sheboygan County. Sauk Creek enters Lake Michigan in the City of Port Washington, while Sucker Creek enters the Lake north of the City of Port Washington (Figure 2.6).

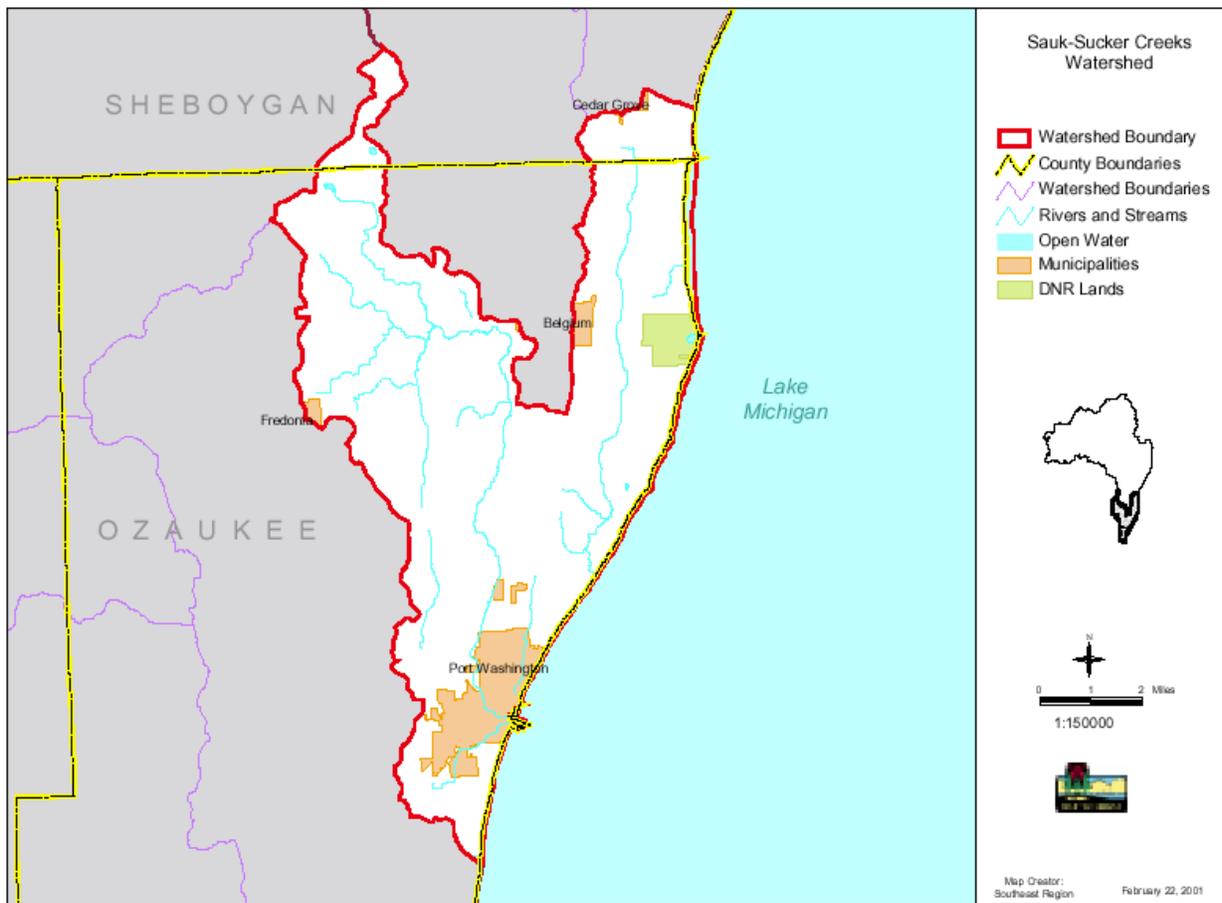
The watershed is primarily agricultural, but urbanization is proceeding rather rapidly. The entire City of Port Washington and portions of the Villages of Cedar Grove, Belgium and Fredonia are located within this watershed.

Water quality is fair to poor in both Sauk and Sucker Creeks. Nonpoint sources of pollution and stream channelization are the primary causes of degraded water and habitat quality throughout the watershed. Construction site erosion and impervious surfaces (such as roads, roofs, and parking lots) are increasingly threatening water quality as urbanization proceeds. Runoff from farm fields and barnyards also contribute to degraded water quality in the watershed. These pollution sources and habitat modifications are contributing to the high concentrations of nutrients and suspended solids and sediment observed in the watershed. Large sediment plumes are frequently observed entering Lake Michigan at the mouths of Sauk and Sucker Creeks during spring melt and heavy rains.

Fish surveys conducted in the headwaters of Sauk Creek in 1999 identified a diverse fish community consisting of twelve forage and four sport fish species. Sauk and Sucker Creeks also support seasonal runs of trout and salmon from Lake Michigan, providing good fishing opportunities for anglers. From 1995 through 1998, the Department of Natural Resources cooperated with local sports clubs, city government and others to improve fish habitat, water quality and stream banks in some downstream portions of Sauk Creek. In stream structures, stream bank shaping and erosion control measures were implemented with the objectives of increasing the carrying capacity of Sauk Creek, improving the return of migratory trout and salmon to the creek and increasing fishing opportunities. This project would not have been possible without the help from donations by the Great Lakes Sport Fishing Club of Ozaukee County, cooperation from Wisconsin Electric Power Company, the City of Port Washington, WCMP and countless volunteers. Repair to structures and additional stream bank shaping was done in 1999.

In July 2010 Ozaukee County received a Coastal Management Grant and Wisconsin DNR River Protection Grant to do in stream monitoring and water testing of Sucker Brook. The WI DNR is also targeting this area for water quality monitoring efforts. The monitoring done by the county includes water sampling at drain tile outfalls discovered during in stream physical and biological monitoring.

Figure 2.6



Onion River Watershed

The Onion River Watershed covers 98 square miles (Figure 2.7). The Onion River flows southerly for about half its length before turning northward, entering the Sheboygan River in Rochester Park in the City of Sheboygan Falls. Belgium Creek is the only major tributary to the Onion River. There are two dams on the Onion River, which form the Waldo and Hingham impoundments.

Land use in the watershed is primarily agricultural. The entire Village of Waldo, most of the Village of Belgium, and small portions of the Village of Cedar Grove and the City of Sheboygan Falls comprise the urban areas of the watershed.

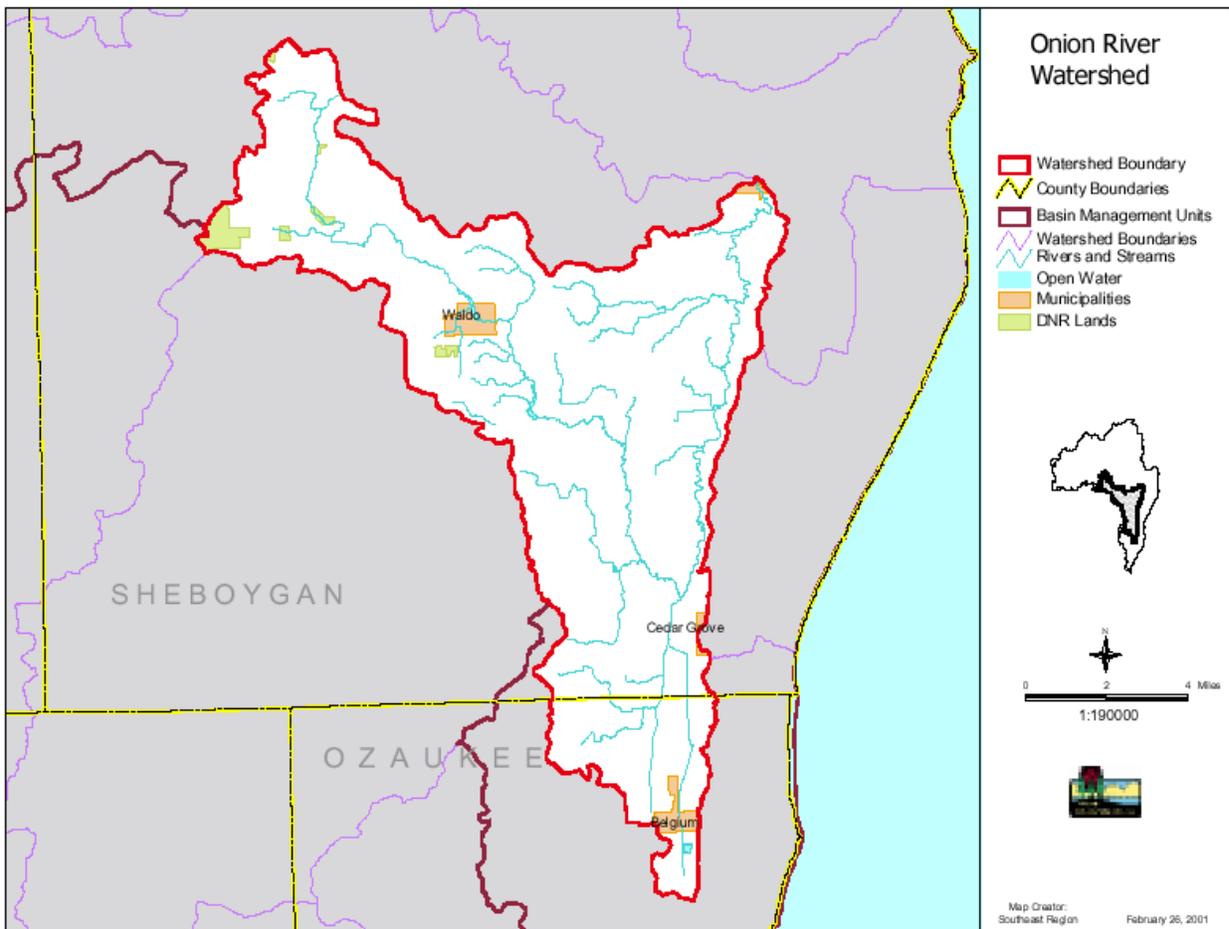
Water quality in the Onion River Watershed ranges from excellent to good in the headwater areas to fair to poor in the lower sections. Sources of pollution degrading stream water quality are primarily agricultural with some urban runoff, and point source discharges. Excessive sedimentation and channelization limit stream habitat quality. Heavy metal and polycyclic aromatic hydrocarbon (PAHs) contamination is found in the sediments in the East Branch of Belgium Creek. Impoundment of headwater areas for fish hatcheries negatively impacts water quality, trout and other aquatic life.

The Onion River Watershed was one of the very first watersheds targeted under the Nonpoint Source Water Pollution Abatement (Priority Watershed) Program. A follow up report found that the watershed continues to be affected by nonpoint pollution sources. The upstream reaches (above the Village of Waldo) continue to exhibit excellent to good water quality, while the downstream reaches continue to be heavily affected by agricultural runoff.

The headwaters of the Onion River are a trout stream downstream to the top of the pool formed by the Waldo dam. Private fishponds on major spring sources have adversely impacted the headwaters, including Ben Nutt Creek and Mill Creek. WDNR recently purchased property in the headwaters of Ben Nutt Creek upstream of County Highway ZZ in the Town of Plymouth. This was the site of an old fish farm and the stream had been diverted into a pond and then impounded. This cold water reach is being restored and is expected to provide important spawning and rearing habitat for brook trout.

A summary table with general information about the Onion River Watershed follows. For more detailed information about the watershed, please refer to the WDNR web site [The Sheboygan River Basin](#).

Figure 2.7



Surface Water Resources

Surface water resources consist of streams, rivers, lakes, and associated floodplains and shorelands. Lakes, rivers, and streams constitute a focal point for water-related recreational activities and greatly enhance the aesthetic quality of the environment. However, lakes, rivers, and streams are readily susceptible to degradation through improper land development and management. Water quality can be degraded by excessive pollutant loads, including nutrient loads, from manufacturing and improperly located onsite waste treatment systems; sanitary sewer overflows; urban runoff, including runoff from construction sites; and careless agricultural practices. The excessive development of riparian areas and inappropriate filling of peripheral wetlands may also adversely affect the water quality of surface waters. This adds new sources of undesirable nutrients and sediment, while removing needed areas for trapping nutrients and sediments. Surface waters, shown on Map 2.18, cover an area of about 2,280 acres and 94 miles of streams, or about 1 percent, of the planning area. Table 2.13 sets forth the acres of surface water, floodplain, and wetlands in each participating local government.

Lakes

Lakes have been classified by SEWRPC as being either major or minor. Major lakes have 50 acres or more of surface water area, and minor lakes have less than 50 acres of surface water area. There are three major inland lakes located entirely within the planning area, the 57 acre Lac du Cours in the City of Mequon, 245.4 acre Mud Lake in the Town of Saukville, and 66.4 acre Spring Lake in the Town of Fredonia. The major lakes are all located in the Milwaukee River Basin. In addition to the major lakes there are 546 minor lakes and ponds distributed throughout the planning area. The total surface area of major and minor lakes in the planning area is approximately 986 acres. The entire eastern side of the planning area is bounded by Lake Michigan with approximately 26 miles of shoreline. The following is a list of major lakes and other lakes/ponds that are noted on most municipal maps in Ozaukee County:

LAKES AND PONDS IN OZAUKEE COUNTY

Lakes and Ponds	U.S. Public Land Survey Section, Town, and Range	Surface Area (acres)
Major Lakes		
Mud Lake	32-11-21	245.4
Spring Lake	2, 3-12-21	66.4
Lac du Cours	36-9-21	57.0
Subtotal		368.8
Other Lakes and Ponds		
Big Bienborn Lake	20-11-21	12.2
Cedarburg Pond	26-10-21	14.8
Cedarburg Stone Quarry	35-10-21	6.2
Daly Lake	9, 16-11-21	13.2
Donut Lake	29-11-21	3.6
Fromm Pit	10-9-21	3.6
Grafton Mill Pond	24-10-21	24.9
Hanneman Lake	3-10-21	6
Hansen Lake	4-1-21	6
Harrington Quarry Lake	19-12-23	18.6

Lakes and Ponds	U.S. Public Land Survey Section, Town, and Range	Surface Area (acres)
Huiras Lake	15, 16-10-21	25.6
Lime Kiln Mill Pond	25-10-21	4
Little Bienborn Lake	20-11-21	4.8
Long Lake	28, 29-11-21	34.4
Ludowissi Lake	1-12-21	10.7
Moldenhauer Lake	11-10-21	2.6
Pickets Pond	24-12-22	1.8
Pit Lake	7-9-22	35.4
Roeckl Lake	19-11-21	3.2
Thiensville Mill Pond	23-9-21	45.1
Other misc. lakes/ponds		353.4
Subtotal		632.1
Total		986

Streams

Rivers and streams are classified as either perennial or intermittent. Perennial streams are defined as watercourses that maintain a continuous flow throughout the year. Intermittent streams are defined as watercourses that do not maintain a continuous flow throughout the year. There are approximately 94 miles of perennial streams in Ozaukee County. Watersheds within the Milwaukee River and Sheboygan River Basins are generally subdivided and named according to the major streams flowing through them. Major streams in the Menomonee River Watershed, which generally includes the area in the southwestern corner of the planning area, include the Little Menomonee Creek and Little Menomonee River. Major streams in the Milwaukee River North watershed, which generally includes the northwestern corner of the planning area are only unnamed tributaries that eventually drain into the North Branch Milwaukee River. The only major stream in the Milwaukee River East-West watershed, which includes only a small northwestern corner of the planning area, is Riveredge Creek, which eventually drains into the main branch of the Milwaukee River. Major streams in the Milwaukee River South watershed, which includes more than one half of the central and southern portions of the planning area, include Mole Creek, Ulao Creek, and the main branch of the Milwaukee River. Cedar Creek is the major stream of the Cedar Creek watershed, which includes a small area in the south central portion of the planning area. Sauk and Sucker Creek are the major streams in the Sauk and Sucker Creek watershed, which generally includes the area in the northeastern corner of the planning area, and is the only portion of the Sheboygan River Basin that does not eventually flow into the Sheboygan River before draining into Lake Michigan. Belgium Creek is the only major stream in the Onion River Watershed, which generally includes a small area in the northeastern corner of the planning area, which eventually drains north into Onion Creek in Sheboygan County. An analysis of the maximum potential for stream buffers along streams adjacent to agricultural lands in each survey township is provided in Tables 2.11, 2.12, Graph 2.2, and Maps 2.16, 2.17. This analysis will provide for targeted implementation of CREP and SWRM funds for installing riparian buffers.

Floodplains and Shorelands

The floodplains of a river are the wide, gently sloping areas usually lying on both sides of a river or stream channel. The flow of a river onto its floodplain is a normal phenomenon and, in the absence

of flood control works, can be expected to occur periodically. For planning and regulatory purposes, floodplains are defined as those areas subject to inundation by the 100-year recurrence interval flood event. This event has a 1 percent chance of being equaled or exceeded in any given year. Floodplains are generally not well suited for urban development because of the flood hazard, the presence of high water tables, and soils poorly suited to urban uses.

Floodplains in Ozaukee County for which floodplain elevations have been determined through detailed studies were delineated by SEWRPC on large-scale topographic maps as part of an update to the Ozaukee County shoreland and floodplain zoning maps. Those delineations will also be used for the Floodplain Map Modernization Program being conducted by the Federal Emergency Management Agency (FEMA) in cooperation with the DNR. The Map Modernization Program includes floodplain delineations in both unincorporated (town) areas and in all of the cities and villages in Ozaukee County. Detailed studies and 100-year flood profiles are available for the Milwaukee River and several of its tributaries, including Cedar Creek and a portion of Ulao Creek. The floodplain delineations were mapped on orthophotos at a scale of one-inch equals 400 feet as part of the update to the Ozaukee County shoreland and floodplain zoning maps for all cities, towns, and villages in Ozaukee County except the City of Mequon. Where flood elevations are not available, approximate floodplain delineations from the FEMA Flood Insurance Rate Maps were mapped on the orthophotos as part of the update to the shoreland and floodplain zoning maps. The floodplains identified as part of the shoreland and floodplain zoning map update for Ozaukee County, completed in 2005, are shown on Map 2.18. Floodplains shown in the City of Mequon on Map 2.19 reflect floodplains mapped on the FEMA Flood Insurance Rate Map (FIRM) for Ozaukee County. The floodplains shown on Map 2.18 encompass an area of approximately 15 square miles, or 6 percent of the planning area.

Under the Map Modernization Program for Ozaukee County, additional detailed and “limited detailed” floodplain studies are being conducted along priority streams and stream reaches. In some cases, the WDNR will also adjust approximate floodplain delineations where no detailed studies are proposed to be conducted to better reflect existing stream locations and topographic mapping. It is anticipated that Ozaukee County will amend its shoreland and floodplain zoning maps to incorporate the floodplain delineations established through the Map Modernization Program when that project is completed in 2006.

Shorelands are defined by the *Wisconsin Statutes* as lands within the following distances from the ordinary high water mark of navigable waters: one thousand feet from a lake, pond, or flowage; and three hundred feet from a river or stream, or to the landward side of the floodplain, whichever distance is greater. In accordance with the requirements set forth in Chapters NR 115 (shoreland regulations) and NR 116 (floodplain regulations) of the *Wisconsin Administrative Code*, both the Ozaukee and Washington County shoreland and floodplain zoning ordinances restrict uses in wetlands located in the shorelands, and limit the uses allowed in the 100-year floodplain to prevent damage to structures and property and to protect floodwater conveyance and storage capacity of floodplains. The ordinances also restrict removal of vegetation and other activities in shoreland areas and require most structures to be set back a minimum of 75 feet from navigable waters. State law requires that counties administer shoreland and floodplain regulations in unincorporated areas. Shorelands in unincorporated portions of the planning area are shown on Map 2.19 in Appendix 2.

Under Chapter NR 117 of the *Administrative Code*, cities and villages are required to restrict uses in wetlands located in the shoreland area. The provisions of NR 115, which regulate uses in unincorporated portions of the shoreland, apply in cities and villages only in shoreland areas annexed to a city or village after May 7, 1982. The same floodplain regulations set forth in NR

116 for unincorporated areas also apply to cities and villages. Each city and village administers the floodplain regulations within its corporate limits.

Wetlands

Wetlands are defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration that is sufficient to support a prevalence of vegetation typically adopted for life in saturated soil conditions. As shown on Map 2.18, wetlands occur in depressions, near the bottom of slopes, along lakeshores and stream banks, and on land areas that are poorly drained.

Wetlands are generally unsuited or poorly suited for most agricultural or urban development purposes. Wetlands do have important recreational and ecological values. Wetlands contribute to flood control and water quality enhancement, since such areas naturally serve to store excess runoff temporarily, thereby tending to reduce peak flows and to trap sediments, undesirable nutrients, and other water pollutants. Wetlands may also serve as groundwater recharge and discharge areas. Wetlands also provide breeding, nesting, resting, and feeding grounds for many forms of wildlife. As indicated in Table 2.13, wetlands encompass approximately 29 square miles, or about 11 percent of the planning area. In 2005 the Wisconsin Wetland Inventory was jointly prepared by SEWRPC and the WI DNR was included on the shoreland and floodplain zoning map approved the Ozaukee county board 2010. According to this inventory there are 21,205 acres of wetland in the county.

Restored Wetlands

Over the past 20 years, federal, state, and local government agencies have constructed 326 wetland restorations covering more than 350 acres on private land in Ozaukee County. Their efforts are continuing, with several additional wetlands appearing on the landscape each year through incentives such as those provided by the Natural Resources Conservation Service (NRCS), United States Fish & Wildlife Service (USFWS), Wisconsin Department of Natural Resources (WDNR), and County Programs. These programs encourage landowners to remove highly erodible land from agricultural use and restore natural plant communities. Not intended to restore the pre-settlement (primarily forested) wetland communities of the area, the restoration program goals are to: increase wildlife habitat and plant diversity, reduce soil erosion, improve water quality by filtering pollutants and sediments, and provide storm water storage to reduce flooding. By the end of 2010 several wetlands have since been put back into agricultural production.

Ozaukee County LWM Department received funding from the Wisconsin Coastal Management Program in 2001 to initially complete a Geographic Information System (GIS) inventory of these wetlands (Map 2.20). A subsequent grant from the U.S. Environmental Protection Agency in 2003 allowed the Department to determine if wetlands restored on private lands are providing the intended landscape functions. This was measured on an individual site scale as well as collectively on a County landscape scale. The resulting information, allowed us to determine how future County wetland restoration funds should be utilized to achieve effective restorations. An assessment of existing relative wetland restoration function enables adaptive decisions for improving the local County wetland restoration program such as establishing guidelines for repairing existing and restoring future wetlands that will develop and provide a high degree of function.

In addition, a landowner survey was developed and utilized to aid in the identification of the most common and immediate management concerns. Survey respondents represented 2/3 of all the county's privately owned restored wetland basins in the county. Half of the landowners reported no management concerns for the wetlands, while the other half expressed concerns about: weedy

plant species, inadequate water levels, berm/dike failure, and troublesome wildlife. Recreational uses described for the wetlands included: bird watching, hunting, plant identification, fishing, ice-skating and ecological education. A majority of the owners reported waterfowl use in the restored wetland basins and other wildlife commonly observed included: deer, songbirds, frogs/salamanders, pheasants, and muskrat/beaver. The relatively large proportion of landowners requesting additional contact and/or additional land evaluation for conservation practices indicates that the majority of landowners are generally satisfied with the wetland restorations, and that the conservation practices may be long-term. This information, along with the functional assessment results, was used to develop a county wetland restoration-monitoring plan that can be utilized by all participating agencies.

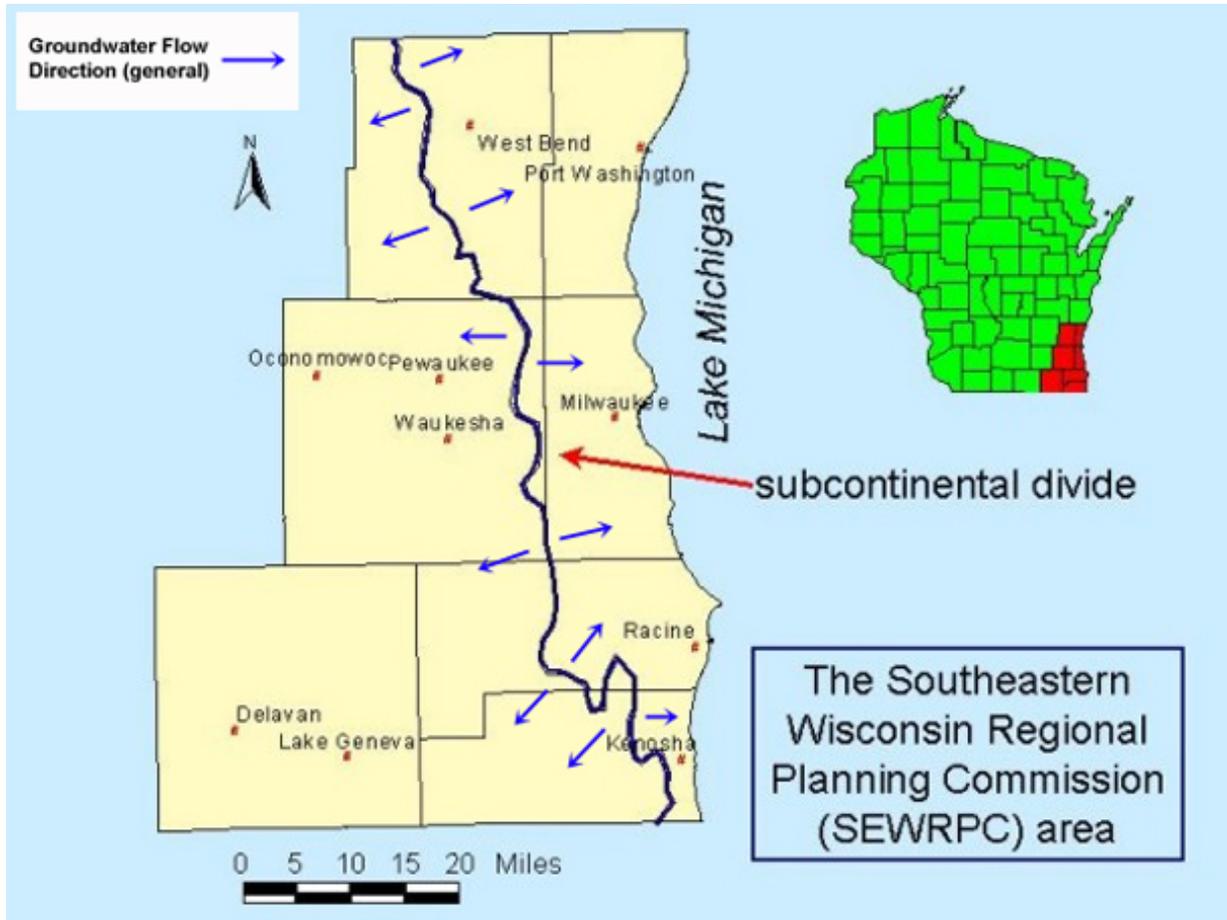
Groundwater Resources

An adequate supply of high quality groundwater is essential if used for domestic consumption. Like surface water, groundwater is susceptible to depletion and deterioration. The quality of groundwater can be reduced by the loss of recharge areas, excessive or overly concentrated pumping, and changes in ground cover. In addition, groundwater quality is subject to degradation from onsite waste treatment systems, surface water pollution, improper agricultural practices, and other soil and water pollutants. Identifying sources of groundwater and areas susceptible to groundwater contamination is important in proper land use planning to prevent adversely affecting the availability and quality of groundwater.

Ozaukee County has seen an increase in overall water consumption and groundwater consumption in recent decades. Total water consumption (surface water and groundwater) increased from 7,850,000 gallons per day to 9,040,000 gallons per day, a 15 percent increase, between 1979 and 1995. Groundwater consumption in the County has increased from 6,660,000 gallons per day to 7,620,000 gallons per day, a 14 percent increase, between 1979 and 1995. Over 84 percent of the total water used per day in Ozaukee County was groundwater in 1995. The regional groundwater resources report prepared by SEWRPC indicates that there is an adequate supply of ground water in the shallow aquifer for Ozaukee County and the Region as a whole. The shallow aquifer is the source of water for most wells in the County. The regional groundwater resources report also suggests that there is an imbalance in supply and demand in some parts of the Region in the deep aquifer, which is an additional source of water for municipal wells in the Region. This imbalance occurs in Waukesha County. This imbalance demonstrates the importance of both the future shallow aquifer water supply and deep aquifer water supply in Ozaukee County, as groundwater is currently the main source of water for daily use in Ozaukee County.

Groundwater levels are replenished through water infiltration in surface areas called groundwater recharge areas. Groundwater recharge areas are those areas where the groundwater flow is downward. As shown on Map 2.27, the local groundwater table for most areas in the County is generally shallow, at depths of less than 25 and 50 feet. On a regional level, groundwater recharge areas tend to be in upland areas or areas of topographic highpoints from which flow paths originate and diverge. These locations are groundwater divides, across which there is no horizontal flow of groundwater. The major groundwater divide in the Region affecting Ozaukee County runs through western and central Washington County, approximately along the surface water sub-continental divide (see Figure 2.8). In Ozaukee County groundwater generally flows to the east and southeast towards the Milwaukee River and Lake Michigan. Locally, the recharge potential of an area is dependent on a number of factors, including soil permeability and percolation rates, slope, the direction of groundwater flow, land use, and, the permeability of the subsurface materials above the water table. Groundwater recharge areas have been identified in the regional water supply study, which was completed in 2010.

Figure 2.8



The deeper sandstone aquifer, previously referred to as the deep aquifer, is separated from the shallow aquifer by a relatively impervious barrier, the Maquoketa shale formation. The primary recharge area for the deep aquifer is located in western Waukesha, Walworth, and Washington Counties. While the primary recharge area lies in the southwestern portion of the Southeastern Wisconsin Region, it does appear that the shallow aquifer and deep aquifer are hydraulically connected, highlighting the importance of regional groundwater flow.

Another factor that is critical to maintaining a high quality groundwater supply is determining which areas of the County are most vulnerable to groundwater contamination. Land use planning can be used to steer incompatible uses away from these areas once they have been identified.

The most commonly used methods used to evaluate groundwater contamination potential are overlay methods combining several major physical factors. The system for evaluation of contamination potential used by SEWRPC in its study of groundwater resources in Southeastern Wisconsin was based on five parameters: soil characteristics, unsaturated zone thickness, permeability of vertical sequences in the unsaturated zone, recharge to groundwater, represented by soil percolation, and aquifer characteristics. SEWRPC has evaluated the contamination potential of shallow groundwater, which is shown on Map 2.28. An evaluation of the contamination potential of deep aquifers is not yet available due to data limitations. Table 2.14 sets for the combination of parameters for contamination potential and the number of acres encompassed by each final contamination potential ranking in the planning area.

Forest Resources

Woodlands

With sound management, woodlands can serve a variety of beneficial functions. In addition to contributing to clean air and water and regulating surface water runoff, woodlands help maintain a diversity of plant and animal life. The destruction of woodlands, particularly on hillsides, can contribute to excessive stormwater runoff, siltation of lakes and streams, and loss of wildlife habitat. For the purposes of this report, woodlands are defined as upland areas of one acre or more in area, having 17 or more trees per acre, each deciduous tree measuring at least four inches in diameter 4.5 feet above the ground, and having canopy coverage of 50 percent or greater. Coniferous tree plantations and reforestation projects are also classified as woodlands. As shown on Map 2.29, woodlands encompassed 12 square miles, or about 5 percent of the Ozaukee County planning area, in 2000.

Managed Forest Lands

The Managed Forest Law (MFL) is a tax incentive program intended to encourage sustainable forestry on private woodlands in Wisconsin with the primary focus on timber production. The MFL offers private woodland owners a reduced property tax rate as an incentive to participate. All Wisconsin private woodland owners with at least 10 acres of contiguous forestland in the same city, civil town or village are eligible to apply provided the lands meet the other criteria: 1) have a minimum of 80% of the land in forest; 2) the primarily use the land for growing forest products (croplands, pastures, orchards, etc. are not eligible); 3) not have recreational uses that interfere with forest management. Participants enter into a 25 or 50 year agreement. If the agreement is terminated before its end, a withdraw penalty and fee will be assessed. Starting with the 2008 entries, applications must have an approvable management plan, written by a Certified Plan Writer that the applicant hires, accompany the application. The application fee will be \$20. If enrolled property is sold before the agreement period has expired, the new owner can choose one of the following options: 1) complete the agreement period with the current plan; 2) adjust the plan to meet their goals and objectives; 3) withdraw the land and pay the penalty and fee. Currently a landowner can close 160 acres per municipality to the public. Any land enrolled over that 160 acres will be open to the public. The tax benefit is substantially greater for enrolled acreage that is open to the public. If the land is open to the public, the public has the right to hunt, fish, hike, cross-country ski and sight-see without the landowner's permission. If the land is closed, the public needs the landowner's permission to be on the land. In 2009, there were 66 participants in the MFL program encompassing about 1702.23 total acres enrolled: 1347.68 acres of closed enrolled forestlands and about 354.55 acres of open enrolled forestlands in the planning area.

Natural Areas and Critical Species Habitat Sites

A comprehensive inventory of natural resources and important plant and animal habitats was conducted by SEWRPC in 1994 as part of the regional natural areas and critical species habitat protection and management study. The inventory systematically identified all remaining high-quality natural areas, critical species habitat, and sites having geological significance within the Region. Ownership of identified natural areas and critical species habitat sites in the planning area were reviewed and updated in 2010.

Natural Areas

Natural Areas are tracts of land or water so little modified by human activity, or sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the landscape before European settlement. Natural

Areas are classified into one of three categories: natural areas of statewide or greater significance (NA-1), natural areas of countywide or regional significance (NA-2), and natural areas of local significance (NA-3). Classification of an area into one of these three categories is based on consideration of the diversity of plant and animal species and community type present, the structure and integrity of the native plant or animal community, the uniqueness of the natural features, the size of the site, and the educational value.

Fifty one natural areas lying wholly or partially in the Ozaukee County planning area have been identified. These sites, which together encompass 7,477 acres, or about 5 percent of the planning area, are described in Table 2.15 and shown on Map 2.30.

Critical Species Habitat and Aquatic Sites

Critical Species Habitat and Aquatic sites consist of areas outside Natural Areas, which are important for their ability to support rare, threatened, or endangered plant or animal species. Such areas constitute “critical” habitat considered to be important to the survival of a particular species or group of species of special concern. Seven sites supporting rare or threatened plant and animal species have been identified in the Ozaukee County planning area. These sites encompass an area of 294 acres, less than 1 percent of the planning area, and are described in Table 2.16 and shown on Map 2.31. There are also 30 aquatic sites supporting threatened or rare fish, herptile, or mussel species in the County planning area. There are 73.1 stream miles and 413 lake acres of critical aquatic habitat in the planning area, which are described in Table 2.17 and shown on Map 2.31.

Reestablishment of Forest Interior

A 400-acre site consisting of grasslands that were once cultivated agricultural lands in the western portion of Harrington Beach State Park was identified for re-establishment of forest interior habitat in the regional natural areas plan prepared by SEWRPC. The plan recommended this area be reestablished with native hardwood tree species to serve as a forest interior-nesting site for critical bird species. The site is shown on Map 2.31.

The DNR master plan for Harrington Beach State Park recommends maintaining the existing grasslands through prescribed burns and mechanical means such as mowing. The master plan does state that an alternative to maintaining the existing grasslands would be to restore the site to southern mesic forest. Southern mesic forests were the pre-settlement vegetation in the area and, like grasslands, are in decline.

Environmental Corridors and Isolated Natural Resource Areas

One of the most important tasks completed under the regional planning program for Southeastern Wisconsin has been the identification and delineation of those areas in which concentrations of the best remaining elements of the natural resource base occur. It has been recognized that preservation of these areas is essential to both the maintenance of the overall environmental quality of the region and to the continued provision of the amenities required to maintain a high quality of life for residents.

Seven elements of the natural resource base are considered essential to the maintenance of the ecological balance and the overall quality of life in the Region, and served as the basis for identifying the environmental corridor network. These seven elements are: 1) lakes, rivers, and streams and associated shorelands and floodplains; 2) wetlands; 3) woodlands; 4) prairies; 5) wildlife habitat areas; 6) unfarmed, wet, poorly drained, and organic soils; and 7) rugged terrain and high relief topography. In addition, there are certain other features which, although not a part

of the natural resource base, are closely related to the natural resource base and were used to identify areas with recreational, aesthetic, ecological, and natural value. These features include existing park and open space sites, potential park and open space sites, historic sites, scenic areas and vistas, and natural areas.

The mapping of these 14 natural resource and resource-related elements results in a concentration of such elements in an essentially linear pattern of relatively narrow elongated areas, which have been termed “environmental corridors” by SEWRPC. SEWRPC has combined these environmental corridors with other “isolated natural resources areas” to represent the best natural remnants remaining in the region. It would not be practical or even possible to preserve every last natural remnant in Ozaukee County. Nor is that being recommended. In fact, some creative compromises may accommodate both development and environmental objectives.

Primary environmental corridors include a wide variety of the most important natural resources and are at least 400 acres in size, two miles long, and 200 feet wide. The primary environmental corridors of Ozaukee County are generally along major stream valleys and around major lakes, and consist of almost all of the remaining high-value woodlands, wetlands, and wildlife habitat areas within the County. These corridors also include the undeveloped floodland and shorelands associated with the major surface water bodies within the County. These primary environmental corridors are, in effect, a composite of the best individual elements of the natural resource base of Ozaukee County, and have truly immeasurable environmental and recreational value.

Secondary environmental corridors serve to link primary environmental corridors, or encompass areas containing concentrations of natural resources between 100 and 400 acres in size and one mile long. Where secondary environmental corridors serve to link primary corridors, no minimum area or length criteria apply. The secondary environmental corridors in Ozaukee County are located generally along intermittent streams or grass waterways that serve as links between segments of primary environmental corridors. These secondary environmental corridors contain a variety of resource elements, often remnant resources from primary corridors that have been developed for intensive agricultural purposes or urban land uses.

Isolated natural resource areas contain significant remaining resources apart from environmental corridors. These isolated natural resource features represent “pockets” of undisturbed areas that are not large enough to meet the size or length criteria for primary or secondary environmental corridors. They are at least five acres in size and at least 200 feet wide.

The delineated environmental corridors and isolated natural resource areas located within the Ozaukee County planning area, as of 2000, are shown on Map 2.32.

The preservation of environmental corridors and isolated natural resource areas in essentially natural, open uses can assist in flood-flow attenuation, water pollution abatement, noise pollution abatement, and maintenance of air quality. Corridor preservation is important to the movement of wildlife and for the movement and dispersal of seeds for a variety of plant species. In addition, because of the many interacting relationships between living organisms and their environment, the destruction and deterioration of any one element of the natural resource base may lead to a chain reaction of deterioration and destruction. For example, the destruction of woodland cover may result in soil erosion and stream siltation, more rapid stormwater runoff and attendant increased flood flows and stages, as well as destruction of wildlife habitat. Although the effects of any single environmental change may not be overwhelming, the combined effects will eventually create serious environmental and developmental problems. These problems include flooding, water

pollution, deterioration and destruction of wildlife habitat, loss of groundwater recharge, as well as a decline in the scenic beauty of the planning area. The importance of maintaining the integrity of the remaining environmental corridors and isolated natural resource areas thus becomes apparent.

As shown on Map 2.32, the primary environmental corridors in the Ozaukee County planning area are located along the Milwaukee River and major streams, along Lake Michigan, around several lakes, and in large wetland areas. In 2000, about 32.4 square miles, comprising about 14 percent of the planning area, were encompassed within primary environmental corridors. Secondary environmental corridors are located chiefly along the smaller perennial streams and intermittent streams in the planning area. About eight square miles, comprising about 3 percent of the planning area, were encompassed within secondary environmental corridors in 2000. Isolated natural resource areas within the planning area include a geographically well-distributed variety of isolated wetlands, woodlands, and wildlife habitat. These areas encompassed about 5.3 square miles, or about 2 percent of the planning area, in 2000. Table 2.18 sets forth the amount of land encompassed by primary and secondary environmental corridors and isolated natural resource areas in each participating local government.

CULTURAL RESOURCES

The term cultural resource encompasses historic buildings, structures, and sites and archeological sites. Cultural resources in Ozaukee County have important recreational and educational value. Cultural resources help to provide the County and each of its distinct communities with a sense of heritage, identity, and civic pride. Resources such as historical and archeological sites and historic districts can also provide economic opportunities for communities and their residents. For these reasons it is important to identify historical and archeological sites located in the Ozaukee County planning area. It is also important to include an inventory of museums and cultural venues such as theaters. While such venues may not be historical or archeological sites in themselves, they are cultural resources in that they may house items of historical or archeological importance, contain historical records and information, be an educational resource, or be an outlet for performances of cultural significance.

Historical Resources

In 2010 there were 32 historic places and districts in the planning area listed on the National Register of Historic Places and the State Register of Historical Places, as set forth in Table 2.23 and shown on Map 2.37. In most cases, a historic place or district is listed on both the National Register and on the State Register. After the State Register was created in 1991, all properties which are nominated for the National Register must first go through the State Register review process. Upon approval by the State review board, a site is listed on the State Register of Historic Places and recommended to the National Park Service for review and listing on the National Register of Historic Places. The only exceptions are federally owned properties. These properties may be nominated for to the National Register directly by the National Park Service. Of the 32 historic places and districts listed on the National and State Registers, 27 are historic buildings or structures, five are historic districts, and one is a shipwreck. Sites and districts listed on the National Register of Historic Places and the State Register of Historic places have an increased measure of protection against degradation and destruction.

The 32 historic places and districts listed on the National and State registers of historic places are only a small fraction of the buildings, structures, and districts listed in the Wisconsin Architecture and History Inventory. The Wisconsin Architecture and History Inventory is a database

administered by the State Historical Society of Wisconsin, which contains historical and architectural information on approximately 120,000 properties Statewide. The listed sites have architectural or historical characteristics that may make them eligible for listing on the National and State registers of historic places. In 2005 there were 2,046 properties in Ozaukee County included in the Wisconsin Architecture and History Inventory. The inventory can be accessed through the State of Wisconsin Historical Society website at www.wisconsinhistory.org/ahi.

In addition to those historic sites and districts nominated to the National and State registers of historic places, there are 119 sites in the Ozaukee County planning area which have been designated as local landmarks by local governments. Local landmarks are set forth in Table 2.24. Like historic sites listed on the National and State registers, properties designated as local landmarks have an extra level of protection against degradation and destruction. A local government is authorized to designate local landmarks after a landmarks commission or historic preservation commission has been established by ordinance. Landmark commissions and historic preservation commissions are typically seven to nine member boards which review applications for local landmark status and may also review proposed alterations to historic properties or properties located in historic districts. Landmark and historic preservation commissions may also designate local historic districts; however, designation of districts typically requires approval from the local governing body. Local governments in the Ozaukee County planning area, which had established landmark or historic preservation commissions as of 2005, include the City of Cedarburg, City of Mequon, City of Port Washington, Village of Thiensville, and Town of Cedarburg.

Archaeological Resources

Preservation of archaeological resources is also important in preserving the cultural heritage of the Ozaukee County planning area. Like historical sites and districts, significant prehistoric and historic archaeological sites provide the County and each of its communities with a sense of community heritage and identity and can provide for economic opportunities through tourism if properly identified and preserved. Archaeological sites found in the Ozaukee County planning area can fall under two categories, prehistoric sites and historic sites. Prehistoric sites are defined as those sites which date from before written history. Historic sites are sites established after history began to be recorded in written form (the State Historical Society of Wisconsin defines this date as A.D. 1650).

As of 2005, there were 393 known prehistoric and historic archaeological sites in the Ozaukee County planning area listed in the State Historical Society's Archaeological Sites Inventory, including prehistoric and historic camp sites, villages, and farmsteads; marked and unmarked burial sites; and Native American mounds. No archaeological sites in Ozaukee County are listed on the National or State Registers of Historic Places.

Local Historical Societies and Museums

There are several local historical societies affiliated with the State Historical Society of Wisconsin in the planning area. These include the Ozaukee County Historical Society, Cedarburg Cultural Center, Mequon Historical Society, Port Washington Historical Society, and Saukville Area Historical Society. Each historical society contains a varying number of facilities housing items of historical or archeological significance, historical records and information, educational facilities, or gallery and performance facilities, which are summarized on Table 2.25.

As indicated in Table 2.25, most of the historical societies in the planning area maintain facilities which contain items of historical or archaeological significance and historical records. The Cedarburg Cultural Center includes galleries which feature exhibits and performances and also two

off-site museums. The Mequon Historical Society maintains a historic site listed on the National and State Registers of Historic Places and a reading room. The Ozaukee County Historical Society maintains several sites including a collection of pioneer buildings, a one-room school house, and archives of historical records pertaining to Ozaukee County. As of 2005, the Ozaukee County Historical Society was also working to restore the Interurban Depot in the City of Cedarburg for use as a museum and an archives research center. The Port Washington Historical Society also provides a reading room in the City of Port Washington. Other museums located in the Ozaukee County planning area include the National Flag Day Foundation Americanism Center located in the Town of Fredonia and the Wisconsin Museum of Quilts and Textiles located in the City of Cedarburg.

Sanitary Sewer Service

Table 2.33 summarizes existing conditions and design capacities of public sewage treatment plants in the planning area, as documented for regional WQMP update. Lands in each sanitary sewer service area served with sanitary sewers in 2000 are also shown on Map 2.42. These areas were identified by SEWRPC by mapping the locations of existing sanitary sewers as part of the regional land use plan update. Sewer locations were provided by municipalities and sewer and utility districts. About 29 square miles, or about 12 percent of the County, were served by public sanitary sewers in 2000. An estimated 64,500 residents, or about 78 percent of Ozaukee County residents, were served by public sewer.

Map 2.42 also shows two sanitary sewer service areas which are not served by sewage treatment plants. These areas, Waubeka and Lake Church, fit the urban characteristics used to delineate sanitary sewer service areas in the regional WQMP and are recommended to be served by sewage treatment plants in the Villages of Fredonia and Belgium, respectively. A refined sewer service area was identified for Waubeka in the Village of Fredonia sewer service area plan prepared in 1984. A refined sewer service area has not yet been identified for the Lake Church area.

Private On-Site Wastewater Treatment

Ozaukee County regulates private on-site wastewater treatment systems (POWTS) for any development that is not served by sanitary sewer in the Ozaukee County portion of the planning area (Washington County regulates development in the Washington County portion of the planning area). Development in this case applies to residential uses and commercial and industrial uses that have employees. The authority to regulate POWTS comes from the Wisconsin Administrative Code, specifically Chapters Comm 5, Comm 16, Comm 82 through 87, and Comm 91. Chapter 9 of the Ozaukee County Code of Ordinances sets forth the regulations for POWTS in both incorporated and unincorporated portions of the County.

There are several different types of POWTS including conventional systems, in-ground pressure systems, mound systems, at-grade systems, holding tank systems, and other experimental systems. All wastewater must discharge into a public sewerage system or a POWTS. The ability of soil to accept wastewater from a development differs depending on the type of soil. For this reason, all development proposed to be served by a POWTS requires a field inspection to determine if the soils present in a specific location are suitable for the proposed development and what method of on-site wastewater treatment is most suitable. In 2010, there was a total of 7893 POWTS Ozaukee County. As indicated in Graph 2.3, the predominant type of POWTS utilized in every municipality in the County is the Below Ground System. Most of the POWTS listed in Table 2.34 are located in civil towns and the City of Mequon; however a small number may be located in incorporated areas within the townships.

Stormwater Management Facilities

The dispersal of urban land uses over greater amounts of the planning area increases stormwater runoff, which must be accommodated by the stream network or by engineered storm sewer systems to which new urban development is adjacent. Stormwater management facilities should be adequate to serve a proposed urban development. Such facilities may include: curbs and gutters, catch basins and inlets, storm sewers, and stormwater storage facilities for quantity and quality control such as detention and retention ponds.

Street improvements in areas with urban density development should employ curb and gutter and storm sewer facilities to carry the amount of stormwater runoff that can be generated in such an area (urban areas tend to have a greater percentage of impervious surfaces which produce increased stormwater runoff). To collect the increased stormwater runoff produced by some urban developments, stormwater storage and infiltration facilities may need to be constructed. These facilities consist of dry ponds, wet ponds, and infiltration basins. They serve to store excessive stormwater until drainage facilities have open capacity.

Street improvements in areas with rural density development (and less impervious surfaces) tend to employ roadside ditches and swales, culverts, and overland flow paths to carry stormwater runoff.

As shown on Map 2.44, about 25 square miles, or about 9 percent of the planning area, were served by curb and gutter stormwater management facilities in 2005. The Cities of Cedarburg and Port Washington and the Villages of Belgium, Fredonia, Grafton, Newburg, Saukville, and Thiensville have curb and gutter storm sewer systems which collect stormwater runoff. The Towns of Belgium, Cedarburg, Fredonia, Grafton, Port Washington, and Saukville rely on roadside swales and culverts to collect storm water and runoff. These areas encompassed about 188 square miles, or about 72 percent of the planning area. The City of Mequon had a combination of curb and gutter systems and roadside swales and culverts to handle stormwater collection in 2005.

SUMMARY

This chapter provides inventory information on existing agricultural, natural, cultural and community resources in the Ozaukee County planning area and each applicable local unit of government. Information regarding soil types, existing farmland, farming operations, topography and geology, water resources, forest resources, natural areas and critical species habitat sites, environmental corridors, park and open space sites, historical resources, archeological resources, and non-metallic mining resources is included in this chapter. The goals, objectives, strategies and work tasks set forth in Chapter 3 of this report are directly related to the inventory information presented in this chapter. Inventory findings include:

- There are five soil associations in Ozaukee County: the Kewanee-Manawa association, Ozaukee-Mequon association, Hochheim-Sisson-Casco association, Houghton-Adrian association, and the Casco-Fabius association. Soil associations in the Washington County portion of the planning area include: the Casco-Hochhiem-Sisson association, Ozaukee-Martinson-Saylesville association, Houghton-Palms-Adrian association, and Colwood-Boyer-Sisson association.
- The U.S. Natural Resources Conservation Service (NRCS) has created a land evaluation and site analysis (LESA) system for identifying areas to be preserved for farmland. LESA is a numeric system for rating potential farmland preservation areas by evaluating soil quality (LE or land evaluation) and geographic variables (SA or site assessment). To develop the LE rating the NRCS rated each soil type in Ozaukee and Washington Counties and placed the soil ratings into groups

ranging from the best to the worst suited for cropland. The best group is assigned a value of 100 and all other groups are assigned lower values. In addition to soil type, the land evaluation component considers slope, the agricultural capability class, and soil productivity.

- Lands used for agriculture were identified in the SEWRPC 2000 land use inventory and include all croplands, pasture lands, orchards, nurseries, and non-residential farm buildings. In 2000, agricultural lands occupied 86,285 acres, or about 35 square miles, representing almost 55 percent of the planning area.
- Ozaukee County farms produce a varied array of agricultural products including many varieties of crops and livestock. Among the most prominent of these agricultural products are corn, forage (hay, grass silage, and greenchop), soybeans, small grains, and dairy products.
- The total number of farms and median farm size in Ozaukee County are no longer recorded. However, the steady decrease in the number of farms previously recorded for Ozaukee County over the past 30 years indicates that this trend will continue in the future. Based on this assumption and the current farm statistics, the remaining farms sites in Ozaukee County have had to increase the number and/or size of farm buildings to accommodate for the consistent number of dairy cows and cattle.
- In 2005, there were 706 Wisconsin Farmland Preservation Program parcels under contract in Ozaukee County encompassing approximately 35,244 acres of farmland. There were 559 CRP contracts and 29 CREP contracts in Ozaukee County. CRP lands encompassed about 5,892 acres and CREP lands encompassed about 120 acres. There were four WRP agreements encompassing about 101 acres of land in Ozaukee County.
- A total of 16 sites of geological importance, including one glacial feature and 15 bedrock geology sites, were identified in the County in 1994 as part of the regional natural areas study. Together, these sites encompass about 274 acres in Ozaukee County.
- There are approximately 25 linear miles of Lake Michigan shoreline in the Ozaukee County planning area. The shoreline contains areas of substantial bluffs with heights of up to 140 feet, ravines, areas of gently rolling beaches with widths of up to 150 feet, and areas of low sand dune ridges and swales. Shoreline recession rates varied greatly along different segments of the lakeshore.
- In 2000, there were 23 sites encompassing almost 544 acres in the planning area being used for non-metallic mining, based on the SEWRPC land use inventory. There are also no sites in Ozaukee County which are registered as sites with marketable nonmetallic mineral deposits.
- The majority of the planning area is located in the Milwaukee River South Watershed, which covers 168 square miles, or approximately 66 percent of the planning area.
- Surface waters cover an area of 2,280 acres, or about 1 percent, of the planning area. There are two major inland lakes located entirely within the planning area, the 57 acre Lac du Cours in the City of Mequon and the 148 acre Mud Lake in the Town of Saukville. In addition to the major lakes there are 546 minor lakes and ponds distributed throughout the planning area. The total surface area of major and minor lakes / ponds in the planning area is 986 acres. There are approximately 94 miles

of perennial streams in Ozaukee County. There are approximately 15 square miles of floodplain and 29 square miles of wetlands in the planning area.

- Groundwater consumption in the County has increased from 6,660,000 gallons per day to 7,620,000 gallons per day, a 14 percent increase, between 1979 and 1995. Over 84 percent of the total water used per day in Ozaukee County was groundwater in 1995.
- The Managed Forest Law (MFL) is an incentive program intended to encourage sustainable forestry on private woodlands in Wisconsin with a primary focus on timber production. In 2009, there were 66 MFL participants encompassing about 1,702 acres of forestlands enrolled in the program. Of the 1,702 acres there was 1,347 acres not open to the public, and about 355 acres open to the public for passive use and hunting.
- Natural areas are tracts of land or water so little modified by human activity, or sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the landscape before European settlement. Fifty natural areas lying wholly or partially in the Ozaukee County planning area have been identified. These sites encompass 7,446 acres, or about 5 percent of the planning area.
- Nonurban land uses consist of agricultural lands; natural resource areas, including surface waters, wetlands, and woodlands; quarries and landfills; and unused land. Nonurban land uses encompassed about 124,356 acres or about 78 percent of the planning area in 2000. Agricultural land was the predominant land use in the planning area in 2000. It encompassed 85,799 acres, or about 69 percent of nonurban land uses and 54 percent of the total planning area. Natural resource areas consisting of surface water, wetlands, and woodlands combined to encompass 27,892 acres, or about 22 percent of nonurban land uses and about 18 percent of the total planning area. Extractive and landfill uses combined to encompass about 662 acres, or less than 1 percent of nonurban land uses and the total planning area. Open lands encompassed about 10,003 acres, or about 8 percent of nonurban land and about 6 percent of the total planning area.
- Sewer service areas within the planning area include the Villages of Belgium, Fredonia, Grafton, Newburg, and Saukville and the Cities of Cedarburg and Port Washington. The Village of Thiensville and portions of the City of Mequon are located within the Milwaukee Metropolitan Sewerage District (MMSD) and wastewater is treated at MMSD sewage treatment plants in Milwaukee County. About 66 square miles, or 25 percent of the planning area, were within existing sanitary sewer service areas in 2005. There are also two sanitary sewer service areas which are not served by sewage treatment plants in the planning area. These areas, Waubeka and Lake Church, fit the urban characteristics used to delineate sanitary sewer service areas in the regional water quality management plan and are recommended to be served by sewage treatment plants in the Villages of Fredonia and Belgium, respectively.
- Ozaukee County regulates private on-site wastewater treatment systems (POWTS) for any development that is not served by sanitary sewer in the Ozaukee County portion of the planning area. Development in this case applies to residential uses and commercial and industrial uses that have employees. Chapter 9 of the Ozaukee County Code of Ordinances sets forth the regulations for 7,750 POWTS in both incorporated and unincorporated portions of the County.
- Portions of Ozaukee County served by public water utilities encompassed about 18 square miles, or about 7 percent of the County, in 2005. An estimated 45,400 County residents, or about 55 percent

of the County population, was served by public water utilities in 2000. Private water supply systems in the County served about three square miles in 2005. An additional 23 square miles, or 9 percent of the County, were not served by a public water utility or private water supply system. These areas typically contained sub-urban density single family residential developments or agricultural areas, which obtained their water supply from private wells.

Chapter 3: GOALS, OBJECTIVES, STRATEGIES and WORK TASKS

The 4 Goals along with the Objectives, Strategy, & Work Task established in the plan will be implemented over the next five-year time period 2011-2015

Goal 1 – Improved Land and Water Resources

Objective 1: Habitat protection and restoration	
Strategy 1a. Restore, Protect, and Enhance Natural Areas, Critical Species Habitat, and Open Space	
	Work Task: Work with OWLT (Ozaukee Washington Land Trust), WDNR, USFWS, Friends of Cedarburg Bog, Ulao Creek Partnership, Sucker Brook Partnership, Harrington Beach State Park, Riveredge Nature Center & other Conservation Partners on the acquisition of Easements and fee simple purchase of Natural Areas identified in the Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin. Develop the Ozaukee Interurban Trail as a greenway corridor.
Strategy 1b. Increase Species Diversity and Protect Endangered and Threatened Species Habitat	
	Work Task: Apply for Wisconsin Coastal Management Program Grant to improve the Sucker Brook habitat. Monitoring to Address 7 of 11 Beneficial Use Impairments (BUI's) - Milwaukee Estuary AOC
Strategy 1c. Protect Riparian Lands Along the Waterways to Help Provide Habitat, Reduce Erosion, Stabilize Bank Erosion, Decrease Stormwater Runoff, and Increase Property Values	
	Work Task: Provide technical information and assist in applying for monetary assistance to the Mole Creek, Sucker Brook and Sauk Creek Restoration Projects. Continue to implement CREP throughout the County. Pollution prevention through stormwater quality management, public education and outreach, and public involvement and participation. Partner with the Conservation Fund to assist with the Green Seams Program. Continue to administer the County Shoreland & Floodplain Zoning Ordinance. Update the Shoreland Zoning Ordinance to reflect the update to NR115
Strategy 1d. Manage Invasive Species, Both Plant and Animal	
	Work Task: Continue membership and administration of tasks recommended by the SE Wisconsin Invasive Species Consortium. Provide for invasive plant education, outreach, monitoring and control programs. Continue partnership with Invasive Plant Association of Wisconsin (IPAW). Work with the Friends of Cedarburg Bog at Cedarburg Bog. Continue implementation of the Gypsy Moth Suppression Program. Promote action to protect Lake Michigan from Asian Carp. Partner with DNR, U.S. Forest Service, DATCP, Town and Country RC&D, APHIS, UWEX and others to properly address the infestation of Emerald Ash Borer.
Strategy 1e. Restore & Enhance Grasslands & Woodlands	
	Work Task: Implement CREP (Conservation Reserve Enhancement Program), CRP (Conservation Reserve Program), and WRP (Wetland Restoration Program), WHIP (Wildlife Habitat Incentive Program).Administer the County Tree, Shrub & Prairie Seed Sale Program.

Strategy 1f. Restore & Enhance Wetlands
Work Task: Implement CREP (Conservation Reserve Enhancement Program), CRP (Conservation Reserve Program) and WRP (Wetland Reserve Program), WHIP (Wildlife Habitat Incentive Program). Administer the County Tree, Shrub & Prairie Seed Sale Program
Strategy 1g. EQIP, CREP, CRP, Buffer Water Courses, WRP
Work Task: Implement CREP (Conservation Reserve Enhancement Program), CRP (Conservation Reserve Program), and WRP (Wetland Reserve Program), WHIP (Wildlife Habitat Incentive Program), EQIP (Environmental Quality Incentive Program), Administer the County Tree, Shrub & Prairie Seed Sale Program.
Strategy 1h. North Branch Milwaukee River Wildlife & Farming Heritage Project
Work Task: Implement North Branch Milwaukee River Wildlife and Farming Heritage Project involving Purchase of Development Rights (PDR) and fee simple purchase of lands from cooperative landowners in the project area to: <ul style="list-style-type: none"> •Maintain the rural-agricultural character •Maintain and enhance existing natural resources •Restore plant communities and wetlands to improve wildlife habitat and water quality •Provide nature-based outdoor recreation and education opportunities
Strategy 1i. Remove Fish Passage Barriers and Improve Habitat
Work Task: Continue to remove fish passage barriers and monitor fish populations.
Strategy 1j. Enhance ecologic productivity of Milwaukee River Estuary
Work Task: Enhance and utilize GIS-based Wildlife Tool, inventory stream impediments and habitat, remove fish passage barriers and enhance fish habitat.
Objective 2: Protect public recreation and access
Strategy 2a. Provide, Protect, and Improve Safety, Public Access and Recreational Opportunities
Work Tasks: Implement Ozaukee County Park and Open Space Plan. Work with OWLT on land and easement acquisition. Continue to support Ozaukee County's Interurban Trail by promoting trail improvements. Support Conservation Subdivisions and conservation subdivision design through education and pilot programs. Support the WDNR North Branch Farming Heritage Area. Implement Wisconsin Statutes Chapter 236 for public access requirements.
Strategy 2b. Ensure The Safe Use Of Beach Water Resources and Make Beaches More Clean For Patrons
Work Task: Work with Ozaukee County Public Health Department on Beach Monitoring. Administer the County Construction Site Control and Post Construction Stormwater Management Ordinance and parameters of the Wisconsin Pollution Discharge Elimination System Permit (Stormwater Permit) issued to the County.

Objective 3: Pollution reduction and control	
Strategy 3a. Reduce Cropland Erosion	
	Work Task: Continue to promote CREP and CRP. Concentrate on installing buffers on Sauk/Sucker Creek. Work toward all streams being adequately buffered in the Ulao Creek and Sucker Brook watershed. Enforce guidelines required of participants in the FPP (Farmland Preservation Program) and track compliance. Aim to get 10% of the fields above "T" to goal by 2015.
Strategy 3b. Reduce Nutrient Loading to Water Resources	
	Work Task: Continue to promote through available resources CRP and CREP. Concentrate on installing buffers on 303 (d) list waters, watercourses directly emptying into Lake Michigan, Sauk Creek and Sucker Brook. Work towards all Streams being buffered in the Ulao Creek Watershed. Determine and track farm compliance with the State Standards and Prohibitions regarding NR 151 and ATCP 50. Enforce guidelines required of participants in the FPP (Farmland Preservation Program) Reduce amount of winter spread manure on 50% of critical acres in the Sauk/Sucker Watershed. Implement 590 plans on all manure storage systems in Sauk/Sucker Watershed and follow up on plan implementation each year.
Strategy 3c. Conservation Planning	
	Work Task: Prepare/revise conservation plans to ensure compliance with FPP Guidelines and State Standards and Prohibitions regarding NR 151 and ATCP 50. Complete conservation plans in the Sauk Creek, Sucker Brook, and Onion River Watersheds targeted for GLRI Funds.
Strategy 3d. Compliance with NR 151 Performance Standards and Prohibitions	
	Work Task: Work towards compliance on priority farms and address all complaints to ensure compliance with the State Standards and Prohibitions regarding NR 151 and ATCP 50. Enter into a Memorandum of Understanding (MOU) with DNR.
Strategy 3e. Protect Groundwater and Surface Water from Animal Waste Contamination	
	Work Task: Administer the County Animal Waste Storage Ordinance
Strategy 3f. Remove Contaminated Sediments in 303(d) list waters	
	Work Task: Collaborate with WNR and USEPA to remove sediment contaminated with PCBs in 303 (d) listed waters. Provide for education and public awareness.
Strategy 3g. Improve and Protect Water Quality and Public Safety by Correcting Failing Septic Systems and Ensure Proper Septic System Maintenance	
	Work Task: Administer County Sanitation Ordinance. Enforce the correction of failing septic systems and administer the POWTS Maintenance Tracking Program. Continue participation in the Wisconsin Fund Program to aid in the correction of failing systems.
Strategy 3h. Investigate Impacts of Thermal Pollution on Water Quality. Plan According to Information Received	

Work Task; In the Mole Creek Restoration area look at ways to reduce thermal Heating when issuing permits, and provide technical support for stream monitoring

Strategy 3i. Storm Water & Construction Site Erosion Control – NR 216

Work Task: Administer the County Construction Site Erosion Control and Post Construction Stormwater Management Ordinance. Comply with the conditions of the WPDES Municipal Separate Storm Sewer System General Permit. Continue to coordinate and update the A Stormwater Information and Education Plan for Ozaukee County and Local Units of Government. Encourage compliance of NR 216 within Ozaukee County through plat and Zoning reviews.

Strategy 3j. Monitoring to address 7 of 11 Beneficial Use Impairments (BUIs) – Milwaukee Estuary Area of Concern (AOC)

Work Task: Determine current baseline water quality within the Ozaukee County Portion of the Milwaukee AOC, PCB content in the sediment samples
Current baseline fish population within the Milwaukee Estuary AOC.

Objective 4: Protect natural systems

Strategy 4a. Promote Protection of Groundwater Recharge Areas and Natural Hydrology

Work Tasks: Minimize the impact of impermeable area in the Shoreland Area by revising the County Shoreland Ordinance to meet revised NR ~~451~~ 115 Standards. Promote wetland protection, creations, enhancements, and restorations. Implement Regional Water Supply Plan prepared by SEWRPC.

Strategy 4b. Floodplain Protection

Work Tasks: Identify communities in the floodway with repetitive flood damage and pursue state and federal hazard mitigation assistance. Administer Shoreland and Floodplain Zoning Ordinance.

Objective 5: Protecting public safety

Strategy 5a. Focus on water quality impacts to health, safety, and welfare of people

Work Tasks: Identify Abandoned Wells and work to properly abandon. Provide property owners with failed septic systems the appropriate well water safety information. Post fish advisories, Provide education for PCB cleanup work by USEPA on Cedar Creek. Provide education on DNR posted health advisories. Remedy landfill issues through promoting landfill abandonment / monitoring efforts. Make readily available the map of abandoned landfills located in the Ozaukee County Comprehensive plan page 185.

Strategy 5b. Promote protection of property against flooding and storm impacts

Work Tasks: Implement Flood Mitigation with the Federal Emergency Management Agency (FEMA) and WDNR. Continue to provide for National Flood Insurance Program through FEMA and Administer the County Shoreland & Floodplain Zoning Ordinance

Objective 6: Preserve and protect farmland and other working lands

Strategy 6a. Managed Forest Law

Work Tasks: Update GIS and encourage sign-up of the program with WDNR.
Strategy 6b. Implement Farmland Preservation Program/Wisconsin Working Lands Initiative
Work Tasks: Update the County Farmland Preservation Plan to meet the new requirements of the Wisconsin Working Lands Initiative. Insure and track compliance of FPP rules, especially having all fields planned to: T: and completion of nutrient management plans. Assist the Land Conservation Partnership and County Land Preservation Board with administration of the Working Lands Initiative Program.
Strategy 6c. Promote Farm and Ranch Protection Program and other farmland incentive programs
Work Tasks: Assist communities, non-profit groups, and DNR in identifying appropriate areas to apply for the federal program and grants. Apply strategy 6d as available. Pursue with partners other federal grants.
Strategy 6d. Encourage County and Town programming to protect farmland
Work Tasks: Promote open space and continued farmland uses through education and development of a town and county supported funding program. Provide technical assistance for Town farmland protection programs.
Strategy 6e. Provide technical and financial assistance to North Branch Wildlife and Farming Heritage Area
Work Tasks: Provide maps, tile locations, soils, conservation plans to the WDNR or OWLT on parcels of interest. This includes landowner contacts, if warranted. Participate in Technical and Advisory Committees.
Objective 7: Protect Lake Michigan and associated resources
Strategy 7a. Protect and enhance Lake Michigan Water Quality
Work Task: Implement CREP on the direct Lake Michigan tributaries. Complete conservation plans in the GLRI - NRCS targeted watersheds. Work with GLNAC and Lake Michigan Federation and other partners. Promote the Public Health Department Beach Monitoring Program. Provide technical assistance to assess the Cladophera problem along Lake Michigan shorelines. Work with Lake Michigan Shoreland Alliance, SHOZ Lake Michigan Homeowners, and Sucker Brook Partnership.
Strategy 7b. Control and monitor Exotic and Invasive Species
Work Tasks: Work with private and public groups on programs designed to control and eradicate invasive species associated with Lake Michigan.
Strategy 7c. Inform public on Lake Michigan bluff erosion
Work Task: Continue to work with the Wisconsin Coastal Management Program on bluff erosion information to the public. Update Ozaukee County web site on bluff erosion. Revise county Shoreland Ordinance to address bluff erosion as necessary. Work with NRCS (Natural Resource Conservation Service) to become a Plant Material County for bluff erosion.
Objective 8: Wildlife Management
Strategy 8a. Wildlife Damage Abatement and Claims Program

Work Task: Continue to provide administrative & technical assistance in the program.
Continue to administer the Deer Donation Program.

Strategy 8b. Promote Installation of Bluebird Houses.

Work Tasks: Continue to work with Friends Of Harrington Beach State Park to sell Bluebird Bird Feeders and Bat Houses.

Strategy 8c. Promote working with all non-profit conservation organizations

Work Task: Continue to work with OWLT, Ulao Creek Partnership, Sucker Brook Partnership, Pheasants Forever, Wings Over Wisconsin, Whitetails Unlimited, Friends of Cedarburg Bog. Develop new conservation partners and volunteers.

Strategy 8d. Promote Opportunities Involving State and Federal Programs.

Work Task: Promote the US Fish & Wildlife Service Partners for Wildlife Program, DNR Wetland Restoration & Prairie Restoration Program.

Goal 2 – Regional Leadership, Education and Collaboration

Objective 1: Improved stakeholder education and public participation

Strategy 1a. Educate the public, decision makers, and media on issues and responsibilities pertaining to Land and Water Resources

Work Task: Support Citizen Monitoring, provide school talks, County Fair Display, distribute Department Newsletter, "Ozaukee Dirt". Give talks to speaking engagement such as Realtors Association, Rotary, Chamber of Commerce, Tourism etc.

Strategy 1b. Identify and educate the public, decision makers, students and media on costs of providing different levels of service for addressing water quality concerns.

Work Task: Go to Town, Village, City, and County Meetings and promote the importance of dollars targeted to conservation issues. Provide annual PowerPoint presentation that addresses the Five Year Goals, Strategies, Work Tasks and progress outcomes. Apply for appropriate grants to target conservation issues.

Strategy 1c. Promote water resource protection education among stakeholders at all levels.

Work Tasks: Continue to provide a scholarship to a student or teacher going into the environmental field. Continue to do the work task in 1a.

Objective 2: Improved collaborative relationships and partnerships

Strategy 2a. Encourage existing and future partnerships to improve land and water quality

Work Tasks: When appropriate partner with non-profit groups in applying for grants or promoting programs that meet joint goals and objectives.

Strategy 2b. Promote collaboration among stakeholders at All levels

Work Task: Introduce different non-profit entities to each other in meetings or by correspondence. Work collaboratively with other government agencies.

Strategy 2c. Create programs and policies focusing on Countywide land and water quality issues

Work Task: Develop/Update Ordinances that focus on conservation. Ordinances will include NR 151 Prohibitions and Standards, as well as Com 83, NR 216, NR 116, NR 115 and any other appropriate rule.

Strategy 2d. Work together with other governmental units to implement the Regional Water Quality Management Plan (RWQMP) and Regional Water Supply Plan to ensure a comprehensive regional approach.

Work Tasks: Develop and Update LWRM Plan; Work collaboratively with MMSD and SEWRPC on the RWQMP effort.

Goal 3 – Governmental Role in Environmental Protection

Objective 1: Improved policy regulations and enforcement

Strategy 1a. Enforce existing government regulations consistently

Work Task: Continue to partner with the WDNR to enforce NR 151 (Prohibitions & Standards, including Tillage Setback, Phosphorus Index, and Process Wastewater, and TMDL consideration) which are not in the County Ordinances. Maintain consistency administering: NR115 Wisconsin's Shoreland Management Program, NR116 Floodplain, NR216 Storm Water Control, ATCP. 50, NR 135 Non-Metallic Mining, 66.1001 Comp Planning, and Chapter 236 Platting & review.

Strategy 1b. Promote policies and regulations that improve and protect water quality.

Work Task: Develop or Update And Enforce The Following County Ordinances: Manure Storage, Construction Site Erosion Control and Post Stormwater Management Ordinance, Shoreland & Floodplain Zoning, and Sanitation.

Strategy 1c. Promote Policies and Regulations that Ensure Adequate Fish Passage

Objective 2: Improved government planning and monitoring

Strategy 2a. Establish and improve coordinated planning, monitoring systems, and implementation efforts associated with all levels of government

Work Task: Promote the use GIS Data Sharing. Collaboration. Develop new GIS data layers. Implement Map Modernization Plan.

Goal 4 – Effective Planning and Design

Objective 1: Comprehensive Planning & Farmland Preservation

Strategy 1a. Continue Implementation of the County Multi-jurisdictional Comprehensive Plan for Ozaukee County.

Work Task: Continue to work with many partners on the applicable goals of the County Comprehensive Plan.

Strategy 1b. Implement County planning review of plat, per Wis. Stats. Chap. 236 and County Shoreland Zoning Ordinance.
Work Tasks: Provide for public access to navigable rivers, streams and lakes information, per Wis. Stats. Chap. 236
Strategy 1c. Update and Implement County Farmland Preservation Plan.
Work Task: Work with Land Preservation Board, Land Conservation Partnership, Planning & Parks Dept, etc. to update County Farmland Preservation Plan per the Wisconsin Working Lands Initiative
Objective 2: Implement Park and Open Space Plan
Strategy 2a. Natural Area, Open Space, and Critical Species Habitat Planning
Work Task: Promote the purchase of Natural Area and Critical Species Habitat Sites identified by SEWRPC. Develop potential county funding program for purchase of natural areas. Apply for WDNR Stewardship and Wisconsin Coastal Management Program funds. Develop Ozaukee Interurban Trail, Protect Environmental Corridors through Plat review.
Strategy 2b. Conduct On-Going Planning and Comprehensive Evaluations of Water Quality in the Waterways
Work Task: Annually compile monitoring data and determine potential "trends" in the quality of land / water resources. Conduct through Land & Water Resource Management Planning.
Strategy 2c. Prioritize Water Quality Issues in Comprehensive and Land Use Planning
Work Task: Provide adequate water quality information to decision-makers. Protect Environmental Corridors through Plat review. Implement Non-metallic Mining Ordinance.
Strategy 2d. Develop update to Park and Open Space Plan
Work Task: Assess current Park and Open Space Plan, conduct committee meetings and develop the Ozaukee County Park & Open Space Plan update.
Objective 3: Incorporate Regional Water Quality Management and Watershed Basin Planning adopted by County Board
Strategy 3a. Implement Watershed Action Plans and the Area Water Quality Management Plan Prepared by SEWRPC
Work Task: Utilize Watershed Action Plans and the Area Water Quality Management Plan to establish water quality program and goals for the Greater Milwaukee Watersheds.
Strategy 3b. Implement Sheboygan River Basin Plans
Work Task: Use Sheboygan River Basin Plan in targeting Priority Farms. Develop a Restoration Plan for the Sucker Brook Watershed. Update DNR Sauk and Sucker Creek Management Plans.
Strategy 3c. Direct drainage into Lake Michigan
Work Task: Target gully or direct discharges to Lake Michigan in Priority Farms. Apply for WCMP Funds to address direct drainage runoff. Implement CREP.

Objective 4: Integrated funding and implementation of plans	
	Strategy 4a. Working On Integrated Plan Goals
	Work Task: Use available funds on a voluntary basis, but still aiming at the water quality needs & Priority Farms; implement with Ozaukee County Comprehensive Plan, Regional Water Quality Management Plan, Regional Water Supply Plan, and Menomonee River Watershed Watershed Action Plan.
	Strategy 4b. Determine Total Costs and Benefits; Identify funding sources for private strategies.
	Work Task: Work on integrated funding opportunities (Including an Assessment of Environmental, Social, Economic and Opportunity Costs). Apply for grant funding through WDNR Stewardship, WCMP, WisDOT and other funding sources.
Objective 5: County Planning and Review	
	Strategy 5a. Evaluate all impacts of alternatives on discrete populations
	Work Task: Work to assure water quality, but be aware of alternative uses of land and habitat changes. Implement Land Division review procedures under Shoreland Zoning Ordinance and Wis. Stats. Chap. 236.

***** All highlighted strategies are Ozaukee County's Priorities for implementation. SWRM Grant money will be targeted for these priorities.

Consultation with Wisconsin Department of Natural Resources

Wisconsin Department of Natural Resource officials were contacted to participate on the Ozaukee County Land and Water Resource Management Plan Advisory Committee, which met on October 10 and December 6, 2005. At the October 10, 2005 meeting, Milwaukee River Basin Team Leader (Sharon Gayan) emphasized to the Committee that NR 216 should be emphasized in the plan and that the Basin Plan should be utilized. The Sheboygan River Basin Water Team Leader (Vic Pappas) also attended the October 10, 2005 meeting and his suggestions to the Committee were confirmed in a phone conversation on October 17, 2005. Mr. Pappas mentioned that LWRM Plan should concentrate on Priority Farms as farms which have unlimited cattle access to streams, as well as targeting water quality issues associated with farms located in Impaired Watersheds (303(d) list (Table 3.3 in Appendix 3). The LWRM Plan should also include a joint effort between the LWM Department and the WDNR to incorporate NR243 issues, such as the location of animal-feeding operations and other county or town level requirements that operations with less than 1,000 animal units must follow to protect water quality, regardless of location. Mr. Pappas also suggested that the County LWM Department apply for TRM Grants when a situation arises. Other WDNR staff members involved with the development of this LWRM Plan are noted in the LWRM Plan Advisory Committee listing. A final draft was mailed to DATCP and DNR Staff for comments with a deadline on comments due by January 22, 2011.

Key Water Quality and Soil Erosion Critical Areas

Ozaukee County's Transect Survey which now has six years worth of data shows that we have approximately 20% of crop fields above "T". The trend in data shows a steady decrease in soil loss, but

still approximately 20% above “T”. Ozaukee County will continue to stress soil loss in FPP (Farmland Preservation Program) Plans. See Table 3.4 in Appendix 3 for Transect Survey Reports.

According to the inventory data and additional WDNR research reports, Mole Creek is the only potential cold-water fishery in Ozaukee County. As Mole Creek is a unique, high quality resource in Ozaukee County, the LWM Department will work with the WDNR and other partners on grant and permit issuances to promote this water resource.

According to the inventory data and Sheboygan River Basin Plan, Sauk and Sucker Creek have a phosphorous and sediment-loading problem. Ozaukee County will target efforts to establish buffers on these two waterways, which also directly drain to Lake Michigan.

According to the inventory data, sediment and phosphorous loading has reduced the water quality of almost every waterway in Ozaukee County. Ozaukee County will pursue stormwater and construction site erosion control ordinances to address these impairments. Impaired waterways in the County, on the 303(d) list, will also be targeted for conservation practices to improve water quality.

According to the inventory, Ozaukee County’s natural resources (particularly Natural Area, Critical Species Habitats, and Environmental Corridors) are under pressure from increased population and households in the form of new development. Hence, Ozaukee County has made it a priority to protect and preserve these threatened areas.

According to the inventory data and WDNR research, Ozaukee County has lost a significant amount of acreage devoted to wetlands. Therefore, Ozaukee County has made wetland protection and restoration a priority. The prioritization of Potentially Restorable Wetlands (PRWs) in Ozaukee County has become a major planning focus with a collaborative project initiated by the WDNR.

According to the inventory data many of the subwatersheds in the County are facing a biological threshold of 10% imperviousness within the subwatershed due to increased development. Therefore, Ozaukee County will prioritize a Stormwater Management Ordinance that emphasizes infiltration and reduced imperviousness. Ozaukee County LWM Department will also emphasize the protection of Environmental Corridors through preservation and plan review.

According to the inventory data presented, farmland and other working lands in Ozaukee County have decreased over the past decades. Therefore, Ozaukee County LWM Department and its partners will pursue innovative funding and conservation programs to preserve farmland and working lands.

An analysis of the maximum potential for stream buffers along streams adjacent to agricultural lands in each survey township is provided in Tables 2.11, 2.12, Graph 2.2, and Maps 2.16, 2.17. This analysis will provide for targeted implementation of CREP and SWRM funds for installing riparian buffers.

PRIORITY FARMS

Targeted Lands For Identifying “Priority Farms” in Ozaukee County

Ozaukee County will target agricultural lands that are within or adjacent to the following areas:

- Sauk and Sucker Creek Watershed,
- waterways in Ozaukee County flowing directly into Lake Michigan
- Onion River Watershed

- Impaired 303 (d) list waters
- and any landowner receiving a Notice Of Discharge (NOD)
- and where there is a known site where the pollution concern can be addressed in a cost-effective manner throughout the county.

Systematic Approach For Identifying “Priority Farms”

From the “targeted lands” listed above, Priority Farms will be identified. A systematic approach for identifying priority farms within 303 (d) list waters, Sauk and Sucker Creek, and areas flowing directly to Lake Michigan will be applied by surveying tax parcel numbers for compliance with Prohibitions and Standards. Starting in the far NE section of the targeted land area and going clockwise in the section until all the tax parcels in the section are completely surveyed for compliance Non-Point Prohibitions and Standards. When that section is completed the next highest numbered section will be selected in a direction going East - West. The number of tax parcels selected for compliance with the states Prohibitions & Standards will be based on how many are in the section. One “section” in each of the three-targeted lands will be surveyed each year. This survey using the priority farm tracking form checklist, **will not be cost share dependent**. If cost share money is still available, a second section in all three targeted areas will be surveyed until all cost share money is used. An example of the priority farm tracking form checklist is in Appendix 3.

Cost Share Assistance Availability for “Priority Farms”

Cost share assistance will be granted mainly on a voluntarily basis first in the “targeted lands” mentioned above, unless it becomes evident that critical management needs are not resolved in a timely manner. However landowners receiving a Notice of Discharge will be a priority for cost-share assistance. Cost share moneys available will be given to BMP practices, which will help meet Wisconsin’s agricultural performance standards and prohibitions, as defined in NR 151. Controlling discharges from these “Targeted Lands” and “Priority Farms”, which is caused mainly by surface water runoff should have the highest potential for reducing non-point source agricultural pollution.

- 1) The following is a further breakdown on the priority use of cost share dollars (**a.** is the first priority and **d.** is the last priority):
 - a. Landowners receiving a Notice of Discharge (NOD).
 - b. Landowners voluntarily requesting cost share assistance for a parcel of land not meeting NR 151.05 and NR 151.08 State Standards and Prohibitions.
 - c. Landowners needing assistance for permit requirements due to the Ozaukee County Animal Waste Management Ordinance (Chapter 9).
 - d. Landowners re-applying for FPP “Agreements”, where the parcel does not meet the states Prohibitions and Standards. Cost share money will also be provided for FPP “Exclusive Agricultural Zoning Certificate” applicants who need to get into compliance before applying for the certificate.
- 2) Second option for use of cost share money: Unused cost share money (available after voluntary approach) will be targeted towards “Priority Farms”, starting with the first full surveyed section in the watershed. Watersheds are given priority in the following sequence: Sauk/Sucker Watershed, Waters Flowing Directly to Lake Michigan, and Impaired 303(d) List Waters.

- 3) Third option for unused cost share money: The second fully surveyed section will be targeted only after all three watersheds have certified the first section as being in compliance with performance standards and prohibitions. Once this is done the same steps shall occur in the manure as option two.

Enforcement of State Performance Standards and Prohibitions:

- a) Landowners identified, as priority farm will have onsite evaluation to determine if State Agricultural Non-Point Performance Standards are being met. See Checklist in appendix 3.
- b) If State Agricultural Non-Point Performance Standards **are being met** – compliance will be documented in their Conservation Plan and a GIS Data Layer will be made for tracking. The landowner will be contacted by mail telling him/her of their status for compliance and their ineligibility for future cost share assistance.
- c) If State Standards **are not being met** officials will contact landowner to inform landowner of status of noncompliance with state standards. This contact will include certified mailing of findings to landowner by the Land and Water Management (LWM) Department.
- d) The landowner will be given opportunity to appeal findings at the regular monthly
 1. Environment and Land Use (ELU) Committee meeting.
 2. If the ELU Committee agrees with landowners appeal the findings will be amended or discarded.
 3. If the ELU Committee disagrees with landowner’s appeal of findings, the LWM Department staff will proceed with schedule of implementation of BMP conservation practices needed to bring landowner into compliance.
 4. Cost share will be offered to a landowner for conservation practices needed. Farms under WPDES program rules do not have to be offered cost share assistance.
 5. Landowners will be given two years to comply with schedule of compliance when cost sharing is available.
 6. Schedule of compliances with cost share agreements will be recorded on GIS layer and their conservation plan. Landowners who fail to agree to implement a schedule of compliance will be issued a notice of non-compliance and turned over to Ozaukee County Corporation Council for fines, and/or legal action.

County Tracking of State Performance Standards and Prohibitions Compliance.

The LWM Department will complete a tracking form for each Priority Farm. The tracking form is basically a verification checklist of the agricultural performance standards and prohibitions. The tracking form “checklist” for each tax parcel will be kept in a file cabinet. An example of the tracking form is included in Appendix 3.

Ozaukee County will assemble a priority farm list each year based upon criteria found in chapter 3. The BMP’s installed on the Tax Parcels will meet NR 151 standards. They will be tracked on a web application for NR 151 Tracking GIS Data Layer.

Conservation Practices Needed to Address Key Water Quality and Erosion Problems

Ozaukee County Land and Water Management Department will use all conservation practices available. Cost share avenues offered to implement the conservation practices usually come from five sources. These sources include CRP, CREP, TRM, EQIP, and SWRM funding. Additional funds have been received by several other services including WCMP, private non-profits, and the Great Lakes Protection Office. Attached is a list of the most common practices with cost sharing.

COST SHARE RATES

(may change - based on funding program)

	TRM	50	EQIP
Practice	DNR Rates (90% if Economic Hardship)	DATCP Rates* (90% if Economic Hardship)	NRCS- EQIP** (Possibly 90% if Economic Hardship, rules in development)
Manure storage systems	70%	70%	70%, max of \$750,000. 1 / producer 750,000
Manure storage system closure	70%	70%	50%
Barnyard runoff control systems	70%	70%	50%
Access roads and cattle crossings	70%	70%	50%
Animal trails and walkways	70%	70%	50%
Contour farming	70% or \$9.00/ ac, up to 4 yr.	70% or \$9.00/ ac, 4 yr.	Flat Rate
Cover and green manure crop	70% or \$25.00/ ac, up to 4 yr.	70% or \$25.00/ ac, 4 yr.	Flat Rate
Critical area stabilization	70%	70%	Flat Rate
Diversions	70%	70%	50%
Field windbreaks	70%	70%	50%
Filter strips	70% of installation cost + (\$ 500/ ac if riparian)	non- riparian or post-CREP = (70% install.+ \$ 100/ ac/ yr, 4 yr); riparian or before CREP expires = CREP rate	50% of installation cost
Heavy use area protection	70%	70%	50%
Livestock fencing	70% or \$3 to \$8/rod	70%	50%, max of \$1.09/ft. non- barnyard, \$5.00/ft. barnyard
Livestock watering facilities	70%	70%	50%
Milking center waste control systems	70%	70%	Funded as part of manure storage system (50%; \$100,000 max)
Nutrient management	70% or \$6/ ac 1st yr & \$4 add'l yr., up to 4 yr.	70% or \$7.00/ ac, 4 yr.	\$7.00 per acre for three years
Pesticide management	70%	70% or \$7.00/ ac, 4 yr.	Flat Rate
Relocating or abandoning AFO's	70%	70% not to exceed 70% of cost of manure mgmt. system or 70% of eligible relocation costs	Not cost- shared
Residue Management	70% or \$18.50/ ac, up to 4 yr	70% or \$18.50/ ac, 4 yr.	Flat Rate
Riparian buffers	70% install.+ \$500/ ac.	CREP rate	75% installation cost

Roofs	70%	70%	50% over manure storage or barnyard system
Roof runoff systems	70%	70%	75%
Sediment basins	70%	70%	75% (50% if barnyard system)
Streambank and shoreline protection	70%	70% (rock and timber riprap for fish habitat limited to 25% of overall project cost)	75%
Field Strip- cropping	70% or \$7.50/ ac, up to 4 yr.	70% or \$7.50/ ac, up to 4 yr.	Flat Rate
Strip- cropping	70% or \$13.50/ ac, up to 4 yr.	70% or \$13.50/ ac, 4 yr.	Contour Stripcropping: \$13.50/ ac, 1 yr. Contour Buffer Strips: \$10/ ac, 1 yr.
Subsurface drains	70%	70%	50%
Terrace systems	70%	70%	50%
Underground outlets	70%	70%	50%
Waste transfer systems	70%	70%	50% as part of manure storage system
Wastewater treatment strips	70%	70%	50%
Water and sediment control basins	70%	70%	50%
Grassed waterways	70%	70%	75%, max of \$7500/ ac
Well decommissioning	70%	70%	50%, max of \$2,000/ abandonment
Wetland restoration	70%	70%	75%

* Under ATCP 50, payments shall be made for land areas greater than .5 ac in size that are forced out of agricultural production by a required conservation practice. If the land is in a riparian area, the rate is equal to the rate received in CREP. If the land is outside a riparian area, the rate is 70% (90% is economic hardship determined) of the FSA soil rental rate. This condition does not apply to land directly occupied by a facility or structure, such as a manure storage facility, installed as part of the practice. Maintenance costs are not known at this time.

** All NRCS practices will have price caps based off of 2006 Draft.

County Strategies to Encourage Voluntary Implementation of Conservation Practices

- Ozaukee County will attempt to use cost- share incentives to get voluntary implementation of conservation practices.
- Farmland Preservation Program sign ups will be used to inform landowners of status regarding State Agricultural non point Performance Standards. See page 83 for FPP monitoring.
- Utilize Information and Education strategies (Chapter 6).
- Provide education and information through workshops, newsletters and the County website on the Performance Standards, Prohibitions, and construction practices, in partnership UW-Extension Ozaukee County.

Chapter 4: PLANNED ACTIVITIES

Priorities Measurements - Implementation Schedule / Work Plan

Goal 1: Improved Land and Water Resources

Objective	Activities based on Strategies (in Chapter 3)	Responsible Agencies (Lead agency listed first)	Total estimated needs	2011	2012	2013	2014	2015	Unit Of Measurement Of Implemented Practices	
(1) Habitat Protection and Restoration	(1a)	Restore, Enhance, And Protect Natural Areas, Critical Habitat, Open Space	OWLT, WDNR, LWM	100 acres	20 acres	20 acres	20 acres	20 acres	20 acres	100 acres
	(1b)	Increase Species Diversity. Protect Endangered Species Habitat	WDNR, LWM, PP	Talks & Brochures	2 events	2 events	2 events	2 events	2 events	10 events
	(1b)	Increase Species Diversity, Protect Endangered Species Habitat	WDNR, PP	Monitoring to Address 7 of 11 Beneficial Use Impairments (BUI's) – Milwaukee Estuary AOC	Work Product Per GLRI Grant	Work Product Per GLRI Grant	Work Product Per GLRI Grant			Work Products Per GLRI Grant
	(1c)	Protect Riparian Land along Waterways, Reduce Erosion	LWM, WDNR, PP	Partner to restore 2 miles of Mole Creek	0.5 miles	0.5 miles	0.5 miles	0.5 miles	0 miles	2 miles
	(1c)	Protect Riparian Lands along Waterways, Reduce Erosion	LWM, WDNR	Partner to Improve the Habitat of Sucker Brook	0.5 miles	0.5 miles	0.5 miles	0.5 miles	0 miles	2 miles
	(1d)	Manage Invasive Species	LWM, PP, SEWISC, DNR	Gypsy Moth Suppression Monitoring in all areas of the county	1 Unit	1 Unit	1 Unit	1 Unit	1 Unit	5 Units
	(1d)	Manage Invasive Species	LWM, OWLT, PP, SEWISC, DNR	Eradicate known Japanese knotweed in the county	5 sites	2 sites	2 sites	2 sites	2 sites	13 sites

Objective	Activities based on Strategies (in Chapter 3)	Responsible Agencies (Lead agency listed first)	Total estimated needs	2011	2012	2013	2014	2015	Unit Of Measurement Of Implemented Practices
(2) Protect Public Recreation and Access	(1e) Restore & Enhance Grasslands and Woodlands	NRCS, LWM, WDNR, OWLT, USFWS, PP	Combination of 800 acres	160 acres	160 acres	160 acres	160 acres	160 acres	800 acres
	(1f) Restore and enhance Wetlands	USFWS, WDNR, NRCS, LWM, OWLT	25 acres	5 acres	5 acres	5 acres	5 acres	5 acres	25 acres
	(1g) EQIP, CREP, Buffer water courses	NRCS, FSA, LWM, DATCP, WDNR	5 miles	1 mile	1 mile	1 mile	1 mile	1 mile	5 miles
	(1h) North Branch Milwaukee River Wildlife & Farming Heritage Project	WDNR, OWLT, NRCS, LWM, PP	3 Easements/Acquisitions	1 easement/acquisition		1 easement/acquisition		1 easement/acquisition	3 easement/acquisition
	(1i) Remove Fish Passage Barriers and Improve Fish Habitat	PP, WDNR, NOAA, LWM, USEPA	155 barriers	70 barriers	70 barriers	5 barriers	5 barriers	5 barriers	155 barriers
	(1j) Enhance ecologic productivity of Milwaukee Estuary	PP, WDNR, LWM	GIS Based Wildlife Tool, Inventory Habitat and Impediments, Barrier Removal, Habitat Enhancement	Work Product per GLRI Grant	Work Product per GLRI Grant				Work Products per GLRI Grant
	(2a) Provide public access and recreational opportunities	LWM, Parks Department, WDNR, OWLT	Partner to protect or acquire two sites of public interest	1 site	-	-	-	1 site	2 sites
	(2b) Beach monitoring	Public Health Department	4 Months / Year	4 Months	4 Months	4 Months	4 Months	4 Months	20 Months

Objective	Activities based on Strategies (in Chapter 3)	Responsible Agencies (Lead agency listed first)	Total estimated needs	2011	2012	2013	2014	2015	Unit Of Measurement Of Implemented Practices
(3) Pollution Reduction And Control	(3a) Reduce Cropland Erosion	LWM, NRCS, FSA	Transect Survey Shows About 20% Of Fields Over "T".	2%	2%	2%	2%	2%	10% reduction in fields over "T" in Transect Survey
	(3b) Reduce Nutrient Loading to Water Resources	LWM, NRCS, CCA's, Private Consultants	Complete Nutrient Management Plans 590, Priority area, Sucker Brook, Sauk Creek and Onion River Watershed	2000 acres	2000 acres	2000 acres	2000 acres	4000 acres	12000 acres
	(3c) Conservation Planning	LWM, NRCS	Prepare/Update Conservation Plans	5,000 acres	2,500 acres	2,500 acres	2,500 acres	2,500 acres	15,000 acres
	(3d) Compliance with NR151 Performance Standards and Prohibitions	LWM, WDNR	Resolve compliance complaints/ address issues on priority farms	2 farms	2 farms	2 farms	2 farms	2 farms	10 farms
	(3e) Protect Groundwater and Surface Water from Animal Waste	LWM,DNR	5 Manure Storage Permits	1 permit	1 permit	1 permit	1 permit	1 permit	5 permits
	(3f) Remove Contaminated Sediments In 303(d) list waters	WDNR, EPA, Army Corps	1 stretch of Cedar Creek	1 site (Cedar Creek, PCBs) No Stretch	No Stretch	No Stretch	No Stretch	No stretch	1 Stretch Of Cedar Creek
	(3g) Correction Of Failing Septic Systems	LWM, Dept. of Commerce	125 systems	25 systems	25 systems	25 systems	25 systems	25 systems	125 systems

Objective	Activities based on Strategies (in Chapter 3)	Responsible Agencies (Lead agency listed first)	Total estimated needs	2011	2012	2013	2014	2015	Unit Of Measurement Of Implemented Practices
	(3g) Maintenance of Septic Systems	LWM	50,000 Reports	10,000 reports	10,000 reports	10,000 reports	10,000 reports	10,000 reports	50,000 reports
	(3h) Thermal Pollution Impacts, Provide I & E & Technical Assistance	LWM, DNR	Monitor Mole Creek	1 site	-	-	-	-	1 site
	(3i) Administer Stormwater System General Permit	LWM, PP	All Conditions of Permit	Applicable sites	All Applicable Sites				
	(3i) Administer Construction Site and Post Construction Stormwater Mgmt. Ordinance	LWM, WDNR	As Applicable	Applicable sites	All Applicable Sites				
	(3i) Coordinate Stormwater Public Education and Outreach And Public Involvement And Participation together with Permitted Communities	LWM, WDNR, UWEX, Cities, Villages and Towns	Meetings to Coordinate Activities	2 meetings	10 meetings				
	(3j) Monitoring to address 7 of 11 Beneficial Use Impairments (BUIs)- Milwaukee Estuary Area of Concern (AOC)	PP, WDNR, LWM	Water Quality Monitoring, PCB Testing, fish sampling per GLRI Grant	On Going	On Going				2 years of Sampling
(4) Protect Natural Systems	(4a) Promote Infiltration and Natural Hydrology	SEWRPC, LWM, PP	Adopt SEWRPC Regional Water Supply Plan	1 Plan					1 Plan

Objective	Activities based on Strategies (in Chapter 3)	Responsible Agencies (Lead agency listed first)	Total estimated needs	2011	2012	2013	2014	2015	Unit Of Measurement Of Implemented Practices	
(5) Protecting Public Safety	(4b)	Pursue Hazard Mitigation Assistance Restore Floodway Areas	LWM, PP,WDNR,FEMA	Restore 1 Area	–	1 Area	-	-	-	1 Area
	(5a)	Focus on water quality issues of health and safety	LWM, Public Health Department, WDNR	Identify Abandoned Wells and promote proper abandonment	Inventory One Township	Inventory One Township	Inventory One Township	Inventory One Township	Inventory Two Township	6 Townships
	(5b)	Administer Shoreland and Floodplain Zoning Ordinance	LWM, PP,WDNR, SEWRPC	Update Ordinance	1 ordinance					1 Ordinance
(6) Preserve and Protect Farmland and other Working Lands	5(c)	Inform residents of former solid waste facilities	LWM, PP	Distribute map as needed						On going
	(6a)	Promote Managed Forest Law	DNR, LWM	Distribute program information and promote additional contacts	1	1	1	1	1	5 Contacts
	(6b)	Update Farmland Preservation Plan	PP, UWEX, LWM, NRCS	Adopt Farmland Preservation Plan		1 Plan				1 Plan
	(6b)	Implement FPP	LWM, PP, DATCP, NRCS	Compliance Check	25 farms	125 Farms				
	(6c)	Promote Purchase of Development Rights (PDR) and farm and ranch lands protection programs	LWM, PP, WDNR, OWLT, NRCS,	5 Easements	1	1	1	1	1	5 Easements
(6d)	County Programming to Protect Farmland	PP, LWM, UWEX, NRCS,FSA	Develop County Funding Program	–	1	–	–	–	1 County Funding Program	

Objective	Activities based on Strategies (in Chapter 3)	Responsible Agencies (Lead agency listed first)	Total estimated needs	2011	2012	2013	2014	2015	Unit Of Measurement Of Implemented Practices
(7) Protect Lake Michigan and Its Resources	(6e) Provide Assistance to North Branch Milwaukee. Wildlife and Farming Heritage Area	DNR, LWM, PP, OWLT	Per Land Acquisition	1	-	1	-	1	3 Land Acquisitions
	(7a) Enhance Lake Michigan water Quality	LWM, NRCS, WCMP, WDNR	Use all available cost share avenues to install conservation practices	Install one BMP, which deals with soil erosion	Install one BMP, which deals with soil erosion	Install one BMP, which deals with soil erosion	Install one BMP, which deals with soil erosion	Install one BMP, which deals with soil erosion	5 BMP Practices Installed
	(7b) Control Exotic Species	Non-profit Groups, WDNR, LWM, PP, NRCS, SEWISC	Partner with public and private groups interested in controlling invasive species	Two I&E Events	10 I&E Events				
(8) Wildlife Management	(7c) Inform Bluff Landowners About Erosion Concerns	LWM, SEWRPC, Coastal Management, UW Sea Grant	Provide I&E Material	As Needed	Yearly Accounts Of I&E				
	(8a) Administer Wildlife Damage Abatement & Claims Program	LWM, WDNR	Approx. 10 participants/year	# Participating	# Participated				
	(8b) Promote Bluebird Restoration - Sale Bluebird Houses, Install on County Properties	LWM, Friends of Harrington Beach State Park, PP	Sell Bluebird Houses	10	10	10	10	10	50 Houses Sold
	(8c) Work with Non-profit Conservation Organizations	LWM, WDNR, USFWS	Work with all Non-Profit Groups	As Needed	# of interactions				

Goal 2: Regional Leadership, Education and Collaboration

Objective	Activities based on Strategies (in Chapter 3)	Responsible Agencies (Lead agency listed first)	Total estimated needs	2011	2012	2013	2014	2015	Unit Of Measurement Of Implemented Practices
(1) Improved Stakeholder Education and Public Participation	(1a) Citizen Monitoring, I&E, and provide Scholarships	LWM	Public talks, Displays, Newsletters	4 / Year	20 / 5 Years				
	(1b) Educate public and decision makers on cost of services for water quality protection	LWM, WDNR, DATCP, NRCS	4 Meetings with PowerPoint Presentation / Year	4 / Year	4 / Year	4 / Year	4 / Year	4 / Year	20 / 5 Years
	(1c) Promote water resource protection by educating stakeholders	LWM, NRCS	Scholarship	1	1	1	1	1	5 Scholarships
(2) Improved Collaborative Relationships and Partnerships	(2a) Encourage partnerships to work with government and non-government groups	LWM, Towns, Cities, Villages, SEWRPC, WDNR, DATCP, NRCS	Per talks and brochure	2 / Year	10 / 5 Years				
	(2b) Promote collaborations among stakeholders	PP, LWM	Comprehensive Planning Meetings	12 / Year	60 / 5 Years				
	(2c) Create programs and policies focusing on land and water issues	LWM, WDNR, NRCS, DATCP	Compliance with NR151, Comm83, NR216	1	1	1	1	1	5 Program Events
	(2d) Develop and assist Water Quality Planners	LWM, SEWRPC, WDNR, DATCP	Per Program	1	1	1	1	1	5 Meetings / 5 Years

Goal 3: Governmental Role in Environmental Protection

Objective	Activities based on Strategies (in Chapter 3)	Responsible Agencies (Lead agency listed first)	Total estimated needs	2011	2012	2013	2014	2015	Unit Of Measurement Of Implemented Practices
(1) Improved Policy Regulations and Enforcement	(1a) Update County Ordinances to Include NR 151 and other appropriate codes	LWM, WDNR, DATCP, Comprehensive Planning	These Include: NR115, NR116, NR216, NR 151, ATCP 50, and Wis. Stats. 66.1001	As Needed	# of Ordinances Updated or Developed				
	(1b) Improve on Coordinated Planning Among Agencies	LWM, PP, NRCS, FSA, WDNR, DATCP, UWEX	All Times of Year	As Needed	# of Maps Generated				
	(1c) Promote Policies and Regulations that Ensure Adequate Fish Passage	WNDR, PP, LWM	Implement Guidelines	As Needed	# of Maps Generated				

Goal 4: Effective Planning and Design

(1) Comprehensive Planning	(1a) Implement County Multi-jurisdictional Comprehensive Plan	PP, UWEX, SEWRPC, LWM, Towns, Cities and Villages	One Plan	On going	1 Plan Implementation				
	(1b) Implement County Planning review of Plat per Wis. Stats Chap 236	PP, SEWRPC, WDNR, UWEX, LWM	Number Of Plats reviewed per month	As Needed	# of Plats Reviewed Per Month				

Objective	Activities based on Strategies (in Chapter 3)	Responsible Agencies (Lead agency listed first)	Total estimated needs	2011	2012	2013	2014	2015	Unit Of Measurement Of Implemented Practices
(2) Implement Park and Open Space Plan	(1c) Update and Implement County Farmland Preservation Plan	PP, UWEX, LWM, NRCS, Towns	One Plan	On going	1 Plan Implementation				
	(2a) Continue development of Ozaukee Interurban Trail and work on acquisition of natural areas	PP, UWEX, OWLT, WDNR, LWM	All times of year	As Needed	# of new miles of trail / greenway? # Of Easements Or Purchases From All Partners In The County All 7 Watersheds At Least Once Per Five Years # of Water Quality Reports Per Watershed LWM Department Receives Per Year				
	(2b) Conduct evaluations of water quality in waterways	WDNR, LWM, PP, Public Health Dept.	Per waterway	As Needed					
	(2c) Prioritize water quality issues in Comprehensive and Land Use Planning	PP, SEWRPC, UWEX, LWM	Provide water quality information for Ordinance and permit decisions	As Needed					
	(2d) Update Park & Open Space Plan	PP, SEWRPC, UWEX, LWM	Conduct meetings and adopt any potential changes	1 Plan	-	-	-	-	1 Plan
(3) Incorporate Regional Water Quality Management & Watershed Basin Planning	(3a) Implement Watershed Action Plans & Area Water Quality Mgt Plan	WDNR, SEWRPC, LWM, PP, Public Health, UWEX	All Times Of Year	As Needed	Funds received Used In Planning				

Objective	Activities based on Strategies (in Chapter 3)	Responsible Agencies (Lead agency listed first)	Total estimated needs	2011	2012	2013	2014	2015	Unit Of Measurement Of Implemented Practices
(4) Integrated funding and implementation of Plans	(3b) Sheboygan River Basin management Plan & Goals	WDNR, SEWRPC, LWM, PP, Public Health Dept., UWEX	All Times Of Year	As Needed	Funds received Used In Planning				
	(3c) Direct funds to area's / problems that drain directly into Lake Michigan	LWM, NRCS, WDNR	2.5 Miles of Buffers, Grassed Waterways TBD	.5 mile Buffer	.5 miles buffer/1 grassed waterway	.5 miles buffer/1 grassed waterway	.5 miles buffer/1 grassed waterway	.5 miles buffer	2.5 miles buffer/3 grassed waterways
	(4a) Working on integrated Plan Goals	LWM, PP, DATCP, WDNR, UWEX, SEWRPC, NRCS, FSA	Implement Voluntary BMP Practices, Target Priority Farms, and Implement Comprehensive Plan	Install 2 BMP's to comply with NR 151	Install 2 BMP's to comply with NR 151	Install 2 BMP's to comply with NR 151	Install 2 BMP's to comply with NR 151	Install 2 BMP's to comply with NR 151	10 BMP's to comply with NR151
	(4b) Determine total cost and benefits of implementing Plans (LWRM Plan, Comp Mgmt Plan, etc.)	LWM, DATCP, PP, SEWRPC	Grant dollars received. Water Quality and Aesthetic Benefits Per Year	Funds Water Quality Benefit per year	Funds Water Quality Benefit per year	Funds Water Quality Benefit per year	Funds Water Quality Benefit per year	Funds Water Quality Benefit per year	Funds, Water Quality Benefit
(5) County Planning and Review	(5a) Evaluate impacts of alternatives on discrete populations	LWM, UWEX, SEWRPC	All Times Of Year	As Needed	# Of Plans Reviewed				

**** Yellow Highlighted Activities are based on Strategies. The highlighted areas considered priority activities for Ozaukee County.

Description of activities to ensure compliance with Prohibitions and Standards as related to Priority Farms can be found on pages 71 – 73 of chapter 3.

Multiyear description of Activities to Ensure Compliance with FPP (Farmland Preservation Program) as it relates to the State's Standards and Prohibitions is described below.

- Schedules of compliance and Notices of Noncompliance will be tracked on a newly created Ozaukee County LWM Department Data Base (Not Developed as to Date).

- Ozaukee County only has three effective “Farmland Preservation Agreements” and they are not subject to the new soil and water conservation standards until their agreements expire. The soil and water conservation standards only apply to these agreements once they reapply or when any new agreements are signed. At this time the standards need to be met for program compliance. The “agreements” will be tracked for compliance with soil and water standards by the tax parcels involved
- For landowners who are in “Exclusive Agricultural Zoning” and have a certificate showing they are in FPP, the standards apply to them as soon as the county contacts them through a spot check for compliance with FPP rules.

Ozaukee County will spot check 25% of the land in FPP every year. During the spot check Ozaukee County will inform the FPP participant of their compliance status per tax parcel. If the participant has a tax parcel out of compliance with state land and water standards the county will inform them they have five years to get into compliance.

The same “checklist” used in the Priority Farm process will be used for FPP compliance. A separate GIS layer will be used in tracking FPP participants and compliance.

Schedules of compliance and non-compliance, cover page, will be attached to landowner’s Conservation Plan and transfer to future landowners of that tax parcel.

If a tax parcel is out of compliance with FPP requirements, a notice of non-compliance will be filled out and sent to the appropriate agency.

Multiyear Tracking of Goals, Objectives, and Strategies

- Progress in achieving the goals, objectives and strategies through the work tasks assigned will be tracked through the LWRM Program. Annual Accomplishment Report Form. The 2003 example can be seen in Appendix 4.1.
- County completed conservation practices reporting form as Appendix 4.2.

Multiyear Costs of Activities and Sources of Funding

(Goal #)	Objective = Work Task	Staff time (Rate)	Cost share - Source of Funds	Staff Cost (2011 dollars) \$42.66 / hr.
(1) Improved Land and Water Resources	Habitat Protection and Restoration = Natural Areas Preservation, Decrease Fish Impediments, Enhancement & Restoration of Grasslands, Woodlands & Wetlands, Invasive Species Management, EQIP, CREP, CRP, Buffers, Agriculture Conservation Easements	1,500 hrs/yr - 7,500 hrs total	Stewardship Funds, OWLT, Coastal Mgmt. Grants, NOAA, DNR, FSA, NRCS, DATCP. Land purchase = \$1.0 million total. All other program implementation cost = \$3,753,000	\$319,950
	Protect Public Recreation And Access = Support N. Branch Milwaukee River Wild. & Farming Heritage Project, Park & Open Space Plan, Water Quality Monitoring	200 hrs/yr - 1,000 hrs total	- EPA / WDNR funds - Private funds - WisDOT funds Stewardship Funds, OWLT, Coastal Mgmt. Grants = Implementation cost = \$50,000	\$42,6600
	Pollution Reduction & Control = Promote Buffers, Implement FPP, Determine Farm Compliance in AWAC Areas, Conservation Planning, Enforce Prohibitions and Standards, Check Compliance Of 590 Plans, Work On 303D listed Waters, Correct Failing Septic Systems, Implement NR216 & Storm Water and Construction Site Erosion Control Ordinances.	4,160 hrs/yr - 20,800 hrs total	CREP, TRM, EQIP, WI FUND = Implementation Cost = \$975,000	\$887,328
	Protect Natural Systems = Implement Regional Water Supply Plan, Floodplain Mitigation,	500 hours - 2,500 hrs	FEMA, WI Emergency Mgmt. Implementation Cost \$1.6million	\$106,650
	Protecting Public Safety = Administer Shoreland & Floodplain Zoning Ordinance; Identify Abandoned Wells, Post Fish Advisory & Beach Closings. Administer Sanitation Ordinance	2500 hours - 12,500 hrs	WDNR, WCMP	\$533,250

Preserve & Protect Farmland & Working Lands = Update Farmland Preservation Plan, Purchase Development Rights, Assist N. Branch Milwaukee River Project, Encourage sign-up in MFL, Implement FPP, Promote Farm & Ranch Land Program, Encourage Open Space Planning	1,000 hrs/yr - 5,000 hrs	NRCS, WRP, WDNR, MFL, Stewardship Program, FPP, DATCP	\$213,300
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Multiyear costs of activities and funding (continued)

(Goal #)	Objective = Work Task	Staff time (Rate)	Cost share - Source of Funds	Staff Cost (2011 dollars) \$42.66 / hr.
	Protect Lake Michigan & Its Resources = Complete Conservation Plans, Work With GLNAC, Coastal Management Programs, Bluff Erosion	250 hrs/yr - 1,250 hrs total	GLNAC, DNR, Coastal Mgmt. Implementation Cost = \$35,000	\$53,325
	Wildlife Management = Administer Deer Donation Program, Sell Blue Bird Houses & Bat Houses, County Tree Program, Promote Grasslands & Woodlots, Partner with USFWS & DNR on Projects in Leopold Wetland Mgmt. District	500 hrs/yr - 2,500 hrs total	County Tree Program, WDC, EQIP, WHIP, CRP, CREP, MFL, WRP. Implementation Cost = \$500,000	\$106,650
(2) Regional Leadership, Education and Collaboration	Improved Stakeholder Education & Public Participation = County Fair, Citizen Monitoring, School & Organization Talks, Provide Scholarship	500 hrs/yr - 2,500 hrs total	County, UCP, Whitetails Unlimited, Pheasants Forever, Wings Over WI. Implementation Cost = \$50,000	\$106,650
	Improved Collaborative Relationships & Partnerships = Partner With Non-Profit Organizations On Applying For Grants & Projects	500 hrs/yr - 2,500 hrs total	Whitetails Unlimited, Ducks Unlimited, Pheasants Forever, Wings Over WI, OWLT, Etc...	\$106,650
(3) Strong Government Role in Environmental Protection	Improved Policy Regulations & Enforcement = NR 115, 116, 135, 151, 216, ATCP 50, Com 83, County Ordinances	500 hrs/yr - 2,500 hrs total	WDNR, DATCP, COUNTY, NRCS, FSA	\$106,650

	Improved Government Planning & Monitoring = Coordinate planning with other partners, develop & maintain GIS data sharing	250 hrs/yr - 1,250 hrs total	All Partners	\$53,325
(4) Effective Planning and Design	Comprehensive Planning = Implement Comprehensive Plan, Update and Implement FPP	1,000 hrs/yr - 5,000 hrs total	SEWRPC, All partners = Implementation Cost = \$456,000	\$213,300
	Implement Park & Open Space Plan = Promote purchase or protection Of Natural Areas Identified By SEWRPC & Implement Plan	500 hrs/yr - 2,500 hrs total	All Partners	\$106,650

Multiyear costs of activities and funding (continued)

(Goal #)	Objective = Work Task	Staff time (Rate)	Cost share - Source of Funds	Staff Cost (2011 dollars) \$42.66 / hr.
	Incorporate Regional Water Quality Management & Watershed Basin Planning = Use DNR's & SEWRPC's Watershed Basin Plans	500 hrs/yr – 2,500 hrs	All Partners Implementation Cost = \$25,000	\$106,650
	Integrated Funding & Implementation Of Plans = use voluntary approach but enforce BMP's to meet water quality goals	500 hrs/yr - 2,500 hrs total	All Partners Implementation Cost = \$25,000	\$106,650
	County Planning & Review = Water Quality is goal, but be aware of alternative land uses and changes in land	500 hrs/yr - 2,500 hrs total	All Partners	\$106,650
	TOTALS	7.38 full time employees = 15,360 hrs/yr or 76,800 hrs for five years	Approx. \$11,329,000 for five years	\$655,258/yr or \$3,276,288 for 5 yr

Notes related to Multiyear costs of activities and funding Chart:

The chart is representative of LWM Department Staff only. No other agency staff time is included in the chart estimates or has been negotiated.

- Staff costs are averaged at \$42.66 per hour for salary and fringe benefits (2011 rates)
- Ozaukee County LWM Department has:
3.4 Full-time Staff for Land & Water Conservation Activities
1.7 – Full-time Staff for Sanitation Activities
1.2 Full-time Staff for Zoning Activities

Chapter 5. Regulations for Plan Implementation

State and Local Regulations Ozaukee County will use to implement Plan

State and Local Regulations Ozaukee County will use to implement the LWRM Plan will include: County Ordinances, Compliance Procedures, Notices, Hearings, Enforcement and Appeal of Agricultural Standards and Prohibitions. Performance standards and prohibitions are a vital component of County Land and Water Resource Management Plans. The WDNR and DATCP have developed performance standards for agriculture and non-agriculture nonpoint pollution sources. In October 2002 after long deliberation and many public hearings new state runoff rules took effect. WDNR rule (**NR 151**) sets performance standards for runoff and to protect water quality. The DATCP rule (**ATCP 50**) identifies conservation practices available to maintain compliance with the WDNR standards. Specifically the DATCP rule sets the requirements that **nutrient management plans (NMP)** must comply with state law. The prohibitions listed in § 281.16(3) Wisconsin Statute.

Please see the end of chapter 3 for the location, enforcement, and tracking of the Priority Farms.

Each Tax Parcel As Applied To Priority Farms Shall Meet Compliance With State Standards and Prohibitions:

Manure Management Prohibitions:

1. That a livestock operation may have no overflow of manure storage structures.
2. That a livestock operation may have no unconfined manure pile in a water quality management area.
3. That a livestock operation may have no direct runoff from a feedlot or storage manure into the waters of the state.
4. That a livestock operation may not allow unlimited access by livestock to waters of the state in a location where high concentrations of animals prevent the maintenance of adequate sod cover.

Ozaukee County Manure Storage Ordinance;

Priority Farms will comply with State Standards & Prohibitions for manure management and Ozaukee County's current Manure Storage Ordinance was updated to reflect the new NRCS 313 standard and incorporate the State's "Manure Management Prohibitions". This was accomplished September 2007

Existing Land Use Regulations

Good community development depends not only on quality planning at all levels of government, but on practical implementation measures as well. Land use and development regulations affect the type of uses allowed, as well as the detailed design and site layout of proposed developments. The following presents a summary of land use regulations adopted by Ozaukee County and zoning, subdivision, and official mapping regulations adopted by participating local governments.

Zoning

A zoning ordinance is a public law that regulates and restricts the use of private property in the public interest. The primary function of zoning should be to implement an adopted master or comprehensive plan. Indeed, Section 66.1001(3) of the Wisconsin Statutes requires that zoning, land divisions, and official mapping decisions made by local and county governments be consistent with local and county comprehensive plans as of January 1, 2010.

A zoning ordinance divides a community into districts for the purpose of regulating the use of land and structures; the height, size, shape, and placement of structures; and the density of housing. A zoning ordinance typically consists of two parts: a text setting forth regulations that apply to each of the various zoning districts, together with related procedural and administrative requirements; and a map delineating the boundaries of zoning districts.

County Shoreland and Floodplain Zoning Ordinances

Under the *Wisconsin Statutes*, counties are responsible for the zoning of shoreland areas within unincorporated areas. Shoreland areas are defined in the *Statutes* as lands within the following distance from the ordinary high-water mark of navigable waters: one thousand feet from a lake, pond, or flowage; and three hundred feet from a river or stream or to the landward side of the floodplain, whichever distance is greater.

The Ozaukee County ordinance includes restrictions on uses in wetlands located in the shorelands, and limits the types of uses that can occur in the 100-year recurrence interval flood hazard area to prevent damage to structures and property and to protect the floodwater conveyance and storage capacity of floodplains. The ordinance also includes restrictions on the removal of vegetation and other activities in the shoreland area, and requires that most structures be set back a minimum of 75 feet from navigable waters. Minimum requirements for uses in unincorporated shoreland areas are set forth in Chapter NR 115 of the *Wisconsin Administrative Code*. Minimum floodplain requirements are set forth in Chapter NR 116.

Map V-7 depicts shoreland-wetland areas, including floodplains, in the planning area regulated under the shoreland and floodplain zoning ordinances adopted by Ozaukee County.

County regulations continue to apply to areas annexed by cities and villages after May 7, 1982, unless the city or village adopts shoreland regulations that are at least as restrictive as those included in the County ordinance. Where County regulations continue in effect, the city or village is responsible for enforcing the regulations. Cities and villages are also required to regulate wetlands within shoreland areas, including those that were in the city or village prior to 1982, under Chapter NR 117 of the *Administrative Code*; and to enforce the minimum floodplain standards set forth in Chapter NR 116 of the *Administrative Code* within all floodplain areas of the city or village.

County Construction Site Erosion Control and Post Construction Stormwater Management Ordinance

In accordance with Chapter NR 151 of the Wisconsin Administrative Code, this ordinance applies to unincorporated areas of Ozaukee County that are located in an “Urbanized Area” identified by the U. S. Bureau of the Census, adjacent developing areas, and areas whose runoff will connect to a municipal separate storm sewer system that is regulated under subch. I of NR 216 Wis. Adm. Code and where a town board has not adopted a similar ordinance.

County Nonmetallic Mining Reclamation Ordinance

The Ozaukee County nonmetallic mining reclamation ordinance was established to ensure the effective reclamation of nonmetallic mining sites in Ozaukee County in compliance with Chapter NR 135 of the *Wisconsin Administrative Code* and Subchapter I of Chapter 295 of the *Wisconsin Statutes*. The purpose of this ordinance is to adopt the uniform statewide standards for nonmetallic mining required by Section 295.12(1) (a) of the *Statutes* and Chapter NR 135 of the *Administrative Code*. It is not intended to repeal or interfere with any existing rules, regulations, ordinances, or permits concerning nonmetallic mining reclamation previously adopted pursuant

to other Wisconsin law. The requirements of this ordinance apply to all operators of nonmetallic mining sites within Ozaukee County operating or commencing operation after August 1, 2001, except for nonmetallic mining sites located in a city, village, or town within the County that has adopted an ordinance pursuant to Section 295.14 of the *Statutes* and Section NR 135.32(2) of the *Administrative Code*. All reclamation plans must meet the standards set forth by the Ozaukee County nonmetallic mining reclamation ordinance including those addressing: surface water and wetland protection, groundwater protection, topsoil management, final grading and slopes, topsoil redistribution for reclamation, revegetation and site stabilization, criteria for assessing completion of successful site reclamation, intermittent mining, and maintenance.

County Highway Access Control Ordinance

The purpose of the County highway access control ordinance is to regulate access onto County trunk highways in order to promote safety, convenience, and economic viability and to protect the public investment in existing and proposed highways. The design standards set forth in the ordinance promote the orderly and safe movement in and out of private and public properties to minimize interference to through highway traffic and to control the use of drainage structures and appurtenances as may be necessary to preserve the physical structure of County highways. The ordinance contains regulations regarding existing accesses to County trunk highways, vacated accesses, access prohibitions, subdivision of land, access spacing and frequency along County trunk highways, and access design standards. Administration and enforcement practices are also included.

Local Zoning Ordinances

Each city, town, and village in Ozaukee County has adopted a zoning ordinance. Zoning district regulations for each participating local government are summarized in Appendix H.

Map V-8 depicts generalized zoning in the planning area based on zoning in effect in 2000. To prepare the map, local zoning districts were converted to a uniform classification system and mapped. The composite map reflects general zoning as well as floodplain and shoreland zoning. On the map, floodplain zoning districts in undeveloped areas are shown as conservancy, regardless of any underlying general zoning district regulations, if the provisions of the floodplain district effectively preclude new urban development. Both the Ozaukee and Washington County floodplain zoning regulations, which are contained in the county shoreland zoning ordinances, prohibit development in the floodway portion of the floodplain. Also, where the provisions of a county shoreland zoning ordinance and a town general zoning ordinance differ, the map reflects the more restrictive ordinance.

A number of communities require nonmetallic mining restoration plans for nonmetallic mining sites through local zoning ordinances. Communities with zoning ordinances that require restoration plans include: the Town of Cedarburg, Town of Fredonia, Village of Fredonia, Town of Grafton, City of Port Washington, and Town of Port Washington. Local zoning requirements are in addition to State nonmetallic mining site reclamation requirements. All nonmetallic mining operations must comply with Chapter NR 135 of the Wisconsin Administrative Code as enforced by Ozaukee County, unless the municipality has adopted a nonmetallic mining reclamation ordinance that complies with Chapter NR 135. The Town of Saukville adopted a nonmetallic mining reclamation ordinance, in February 2005, which meets the State requirements.

Extraterritorial Zoning Regulations

The Wisconsin Statutes authorize cities and villages to adopt extraterritorial zoning regulations for adjacent unincorporated areas, in cooperation with the adjacent town, within three miles of a city of the first, second, or third class; and within 1.5 miles of a city of the fourth class or villages. The City of Mequon is the only municipality in Ozaukee County which has adopted an extraterritorial zoning ordinance. The ordinance applies to an approximately 1,528 acre area in the Town of Grafton, adjacent to the northeast portion of the City. The Mequon extraterritorial zoning regulations were approved by the joint City-Town zoning committee in October, 2004. The Village of Saukville initiated the process of adopting an extraterritorial zoning ordinance, which will apply primarily to the Town of Saukville, in July 2005. The Village of Newburg also initiated preparation of an extraterritorial zoning ordinance in July 2005.

Land Division Regulations

A land division ordinance is a public law that regulates the division of land into smaller parcels. Land division ordinances provide for appropriate public oversight of the creation of new parcels and help ensure that new development is appropriately located; lot size minimums specified in zoning ordinances are observed; arterial street rights-of-way are appropriately dedicated or reserved; access to arterial streets and highways is limited in order to preserve the traffic-carrying capacity and safety of such facilities; adequate land for parks, drainage ways, and other open spaces is appropriately located and preserved; street, block, and lot layouts are appropriate; and adequate public improvements are provided. Land division ordinances can be enacted by cities, villages, and towns and by counties, with the latter applying only to unincorporated areas. Thus, within unincorporated areas, it is possible for both counties and towns to have concurrent jurisdiction over land divisions. Cities and villages also have “extraterritorial” plat approval jurisdiction over subdivisions proposed near their corporate boundaries.

Chapter 236 of the *Wisconsin Statutes* sets forth general requirements governing the subdivision of land, including, among others, surveying and monumenting requirements, necessary approvals, recording procedures, and requirements for amending or changing subdivision maps. The *Statutes* also grant authority to county and local governments to review subdivision maps, commonly referred to as plats, with respect to local plans and ordinances. Section 236.45 authorizes county and local governments to adopt their own land division ordinances, which may be more restrictive than State requirements.

The Ozaukee County shoreland and floodplain zoning ordinance includes land division regulations for areas located in the shoreland. Ozaukee County also has authority under Section 236.10 of the *Statutes* to review and approve all subdivisions located in unincorporated portions of the County. All cities and villages in the planning area have adopted a land division ordinance, and all of the towns except the Town of Belgium have adopted a land division ordinance. Under Chapter 236, local governments are required to review and take action on plats for subdivisions. Subdivisions are defined in the *Statutes* as “a division of a lot, parcel, or tract of land by the owner thereof or the owner’s agent for purpose of sale or of building development, where the act of division creates five or more parcels or building sites of 1.5 acres each or less in area; or five or more parcels or building sites of 1.5 acres each or less in area are created by successive divisions within a period of five years.” Local subdivision ordinances may be broader in scope and require review and approval of land divisions in addition to those meeting the statutory definition of a “subdivision.” Table V-5 provides a summary of the scope of land division ordinances adopted by local governments in the planning area.

Extraterritorial Platting Authority

Under Section 236.10 of the *Statutes*, a city or village may review, and approve or reject, subdivision plats located within its extraterritorial area if it has adopted a subdivision ordinance or an official map. Section 236.02 of the *Statutes* defines the extraterritorial plat review jurisdiction as the unincorporated area within three miles of the corporate limits of a city of the first, second, or third class, or within 1.5 miles of the corporate limits of a city of the fourth class or a village. In accordance with Section 66.0105 of the *Statutes*, in situations where the extraterritorial plat approval jurisdiction of two or more cities or villages would otherwise overlap, the extraterritorial jurisdiction between the municipalities is divided on a line, all points of which are equidistant from the boundaries of each municipality concerned, so that no more than one city or village exercises extraterritorial jurisdiction over any unincorporated area. The extraterritorial plat review area for each city and village in the County is depicted in Map V-9. The extraterritorial area changes whenever a city or village annexes land, unless the city or village has established a permanent extraterritorial area through a resolution of the common council or village board or through an agreement with a neighboring city or village. A municipality may also waive its right to approve plats within any portion of its extraterritorial area by adopting a resolution that describes or maps the area in which it will review plats, as provided in Section 236.10(5) of the *Statutes*. The resolution must be recorded with the County register of deeds.

Official Mapping Ordinances

Section 62.23(6) of the *Wisconsin Statutes* allows the Common Council of any City to establish an official map for the precise identification of right-of-way lines and boundaries of streets, highways, waterways, and parkways and the location and extent of railroad rights-of-way, public transit facilities, parks, and playgrounds. An official map is intended to be used as a precise planning tool for implementing master and comprehensive plans and for insuring the availability of land for the above features.

Section 61.35 of the *Statutes* applies the authority provided cities under Section 62.23 to develop an official map to villages. Similarly, Section 60.10(2) (c) authorizes towns to engage in the same planning activities, including preparation of an official map, as a village provided the town board has adopted village powers and created a town plan commission. All of the towns in Ozaukee County have adopted village powers and created a town plan commission. The clerk of any city, village, or town in the County that adopts an official map by ordinance or resolution must record a certificate showing that the city, village, or town has established an official map with the Ozaukee County register of deeds.

One of the basic purposes of the official map is to prohibit the construction of structures and their associated improvements on land that has been designated for future public use. The official map is a plan implementation device that operates on a communitywide basis in advance of land development and can thereby effectively assure the integrated development of the street and highway system. Unlike subdivision control, which operates on a plat-by-plat basis, the official map can operate over the entire community in advance of development proposals. The official map is a useful device to achieve public acceptance of long-range plans in that it serves legal notice of the government's intention well in advance of any actual improvements. Table V-6 lists those communities in the planning area that have adopted an official map.

Summary

Southeastern Wisconsin, Ozaukee County, and Ozaukee County's communities have a rich history of planning. Numerous plans have been developed at the regional level including a regional land use plan, regional transportation system plan, freeway reconstruction plan, regional bicycle and pedestrian plan, regional natural areas plan, water quality management plan, regional groundwater plan, and regional water supply plan. Plans developed at the County level include a farmland preservation plan and County park and open space plan. In addition, each community in the County has adopted a land use, master, or comprehensive plan, and many of the communities in the County have developed park and open space plans and bicycle and pedestrian plans. These existing plans provided the foundation for developing this multi-jurisdictional comprehensive plan for Ozaukee County.

The comprehensive planning law requires that zoning, subdivision, and official mapping ordinances be consistent with a governmental unit's comprehensive plan as of January 1, 2010. As of that date, the County shoreland zoning ordinance and subdivision regulations must be consistent with the comprehensive plan adopted by the County Board, and city, village, and town zoning, subdivision, and official mapping ordinances must be consistent with the comprehensive plan adopted by the Common Council, Village Board, or Town Board. To assist in meeting this requirement, all local zoning, subdivision, and official mapping ordinances as well as the County shoreland and floodplain zoning ordinance have been inventoried and summarized in this chapter. The Implementation Element (Chapter XIV) identifies modifications to existing ordinances needed to implement the comprehensive plan presented in this report.

Chapter 6. INFORMATION AND EDUCATION

Information and Education Strategy

This strategy is an integral part of each goal and objective listed in Chapter 3. The Information and Education (I & E) strategy is critical to accomplishing each resource goal, since the goals require many individuals in the county to make behavioral changes to protect land and water resources. Individuals will most likely not make these changes unless they understand the importance of land and water resources, how they are inter-connected, ways to protect these resources, and what instruments are available to assist them.

Just as each goal is accompanied with a list of objectives to fulfill this function, so are the objectives used in the I & E Strategy. The educational objectives for each goal have been detailed and list ways to accomplish these objectives.

GOALS

Plan Goal 1: Improve land and water resources by raising awareness of the financial assistance opportunities available through various funding sources, and providing education and information on the Performance Standards, Prohibitions, and construction practices.

Educational Objectives:

- Increase awareness of the benefits of buffers through public information and educational programs.
- Help farmers and other landowners in rural areas to become aware of the problem of rural sediment loading from cropland.
- Advise farmers of the benefits of Residue Management and how this practice can help reduce the problem of rural sediment loading.
- Provide education and information through workshops, newsletters and the County website on the Performance Standards, Prohibitions, and construction practices, in partnership UW-Extension Ozaukee County.

Ways to accomplish objectives:

- One-on-one contact with landowners
- Newsletters
- Mailings
- No-till demonstrations

Plan Goal 2: Improve regional leadership, education and collaboration by informing citizens about the ecological, recreational and economic value of land and water conservation.

Educational Objectives:

- Educate the Public, Decision Makers, and Media on Issues and Responsibilities Pertaining to Land and Water Resources
- Identify and Educate the Public, Decision Makers, Students and Media on Costs of Providing Different Levels of Service for Water Quality
- Promote Water Resource Protection Education Among Stakeholders at All Levels
- Encourage Existing and Future Partnerships to Improve Land & Water Quality
- Promote Collaboration Among Stakeholders at All Levels
- Create Programs and Policies Focusing on County Wide Land and Water Quality Issues

- Develop a Facilities Plan and Regional Water Quality Management Plan to Ensure a Comprehensive Regional Approach to All Water Systems Management
- Create and Update Stormwater Information and Education Plan for Ozaukee County and participating local units of government

Ways to accomplish objectives:

- LWM will use photos and stories about county conservation experiences at Town, Village, City, and County Meetings to illustrate their previous Plan's successes and current Plan priorities and issues.
- Conduct Citizen Stream Monitoring, school talks, County Fair booth/display, Department Newsletter called "The Dirt". Give talks to speaking engagement such as Realtors Association, Rotary, Chambers of Commerce, etc.
- Attend Town, Village, City, and County Meetings and relay the importance of dollars targeted to conservation issues. Apply for appropriate grants to target conservation issues.
- Continue to provide a scholarship to a student or teacher going into the environmental field.
- When proposed activities correspond to the LWRM Plan goals, objectives, and strategies, the County will partner with non-profit groups in applying for grants or promoting a program.
- Introduce different non-profit entities to each other in meetings or by correspondence.
- Develop ordinances that focus on conservation. Ordinances will include NR 151 Prohibitions and Standards, as well as Com 83, NR 216 and any other appropriate rule.
- Develop and update LWRM Plan (2006-2010)
- Attend conferences (e.g. Water Quality Initiative)

Plan Goal 3: Governmental Role in Environmental Protection by encouraging local municipalities to adopt management practices initiated at the county level.

Educational Objectives:

- Enforce existing government regulations consistently.
- Promote policies and regulations that improve and protect water quality.
- Establish and improve coordinated planning, monitoring systems, and implementation throughout all levels of government.
- Integrate the priority farms strategy into the agricultural performance standards implementation strategy and work plan.

Ways to accomplish objectives:

- Incorporate NR 151 (Prohibitions and Standards) into County Ordinances. Follow the following: NR115 Shoreland and Floodplain Ordinance, NR116 Floodplain, NR216 Stormwater Control, ATCP. 50, NR 135 Non-Metallic Mining, 66.1001 Comp Planning, and Chapter 236 Platting and review.
- Develop or update and enforce the following County Ordinances: Manure Storage, Stormwater control, construction site erosion, and Land Division.
- Develop a data-driven, systematic approach to identifying Priority Farms, such as targeting specific geographic areas (e.g. in WQMA), focusing on resource issues (e.g. exceeding T), or basing the strategy on other factors (e.g. size).
- Develop and promote the use of GIS data sharing. Collaborate meetings.
- Pollution prevention through stormwater quality management, storm sewer GIS mapping, public education and outreach, and public involvement and participation.

Plan Goal 4: Effective Planning and Design by encouraging landowners to adopt new management practices.

Educational Objectives:

- Implement planning for Natural Areas, Open Spaces, and Critical Species Habitat Sites to assess new management practices.
- Conduct on-going planning and comprehensive evaluations of water quality in County waterways.
- Prioritize water quality issues in Comprehensive and Land Use Planning
- Incorporate Regional Water Quality Management and Watershed Basin Planning for Milwaukee River, Sheboygan River, and other area's draining to Lake Michigan.
- Integrate funding and implementation of Plan goals and determine total costs (including an assessment of environmental, social, economic and opportunity costs) and benefits of alternatives.
- Evaluate all impacts of alternatives on discrete populations.

Ways to accomplish objectives:

- Promote the purchase of Natural Areas and Critical Species Habitat Sites identified by SEWRPC.
- Conduct and report on Land and Water Resource Management Planning efforts. Reports will include the following minimum content:
 - Major accomplishments from previous Plan
 - Major resource concerns
 - Priority goals, objectives and activities for new Plan
 - Measures of success
- Use the Milwaukee River and Sheboygan River Basin Plans in targeting Priority Farms.
- Use available funds on a voluntary basis, but still aiming at the water quality needs and Priority Farms.
- Work on integrated funding opportunities.
- Work to assure water quality, but be aware of alternative uses of land and habitat changes.

Chapter 7: COORDINATION

Coordination with federal, state and local agencies, roles and responsibilities

Voluntary cost share components of this plan will rely upon Federal, and State cost share programs. These programs include: Environmental Quality Incentive Program (EQIP) from USDA, Land and Water Resource Management Plan funding from DATCP, and Conservation Reserve Enhancement Program (CREP) from USDA and DATCP. Additional sources of funding include the WCMP, WDNR Stewardship funding, WDNR Targeted Runoff Management Grants and Notice of Discharge Grants and local non-profit organizations.

Staffing assistance from the Joint WDNR, DATCP allocation process will be key to the success of the LWRM Plan.

Ozaukee County LWM Department staff are responsible for the implementation, design and construction of the conservation practices identified in this plan. Engineering assistance and job approval will be coordinated with the DATCP area engineering staff and Natural Resource Conservation Service Area Field Office.

Regulatory compliance related to State Agricultural Nonpoint Performance Standards and Ozaukee County ordinances will be coordinated between the Ozaukee County LWM Department and the Ozaukee County Corporation Counsel.

Many agencies, units of government, and organizations are involved in protecting land and water resources in Ozaukee County. Each agency has its own particular mission and leadership, but has a common goal to preserve and protect the environment for future generations. Cooperation is imperative to guarantee successful plan implementation. Many of these agencies are included in the LWRM Plan and will be relied upon for technical support, funding, cooperation and guidance.

Chapter 8. MONITORING AND EVALUATION

Monitoring the improvement of the land and water resources of Ozaukee County will indicate the true measures of the success of the Land and Water Resource Management Plan. While there may not be dollars available for in-depth monitoring such as installing Master Monitoring Sites; there are a number of less detailed monitoring programs already in existence.

Below is a list of monitoring programs, which Ozaukee County LWM Department will utilize:

Program	Participants	Activities
Testing the Waters	High School students throughout Ozaukee County	Sampling the Milwaukee River and Cedar Creek for turbidity, phosphorus, dissolved oxygen, etc.
Water Action Volunteers	Ulao Creek Partners, teachers, landowners, interested citizens	Sampling Ulao Creek and Milwaukee River for turbidity, stream depth / velocity, macroinvertebrates, and recording rainfall events
Multi-Stream comparison	Wisconsin Department of Natural Resources	Sampling several tributaries of Milwaukee River for suspended solids, phosphorus, macroinvertebrates, etc.
National Water Quality Assessment Program	United States Geological Survey	Sampling in Milwaukee River watershed for suspended solids, B.O.D., phosphorus, macroinvertebrates, etc.
Signs of Success	Wisconsin Department of Natural Resources	Focus on one BMP with sampling of stream habitat, limited chemical monitoring and fish sampling, and photographs
Lake Michigan Beach Monitoring	Ozaukee County - Public Health Department	Sampling at low, medium and high priority beaches in Ozaukee County
Water Quality Initiative	MMSD, SEWRPC, WDNR	Water Quality Presentations, Data Collection and Forecasting Conditions, Watershed Planning Conferences

The LWM Department will continue to work closely with the participants of these monitoring programs to provide the department with information regarding “trends” in the quality of the land and water resources. The term “trends” is used because water resource biologists have indicated that parameters such as in-stream habitat may take years to show a response. The LWM Department will also encourage expansion of their monitoring programs.

LWRM Plan strategies and work tasks can be redirected on a monthly basis, during ELU Committee meetings. The progress of LWRM Plan objectives will be discussed during annual meetings with WDNR staff. Annual reporting to the ELU Committee, County Board, WDNR and DATCP will also document LWRM Plan strategy successes / setbacks and progress of objectives. The measured success of the LWRM Plan will be included in annual reporting required for grant funded programs (WCMP and WDNR Stewardship) and DOA Comprehensive Planning reports. The LWM Department will also provide annual reporting to the WDNR on MS4 permitting for stormwater management and construction site erosion control.

In addition, the LWM Department will provide annual Powerpoint presentations to the ELU Committee, County Board, etc. The presentations will include recent results of monitoring programs and address the success of Five Year Goals, Strategies, Work Tasks, and progress of implemented conservation practices.

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GLOSSARY

303(d) Waters: This list identifies waters which are not meeting water quality standards, including both water quality criteria for specific substances or the designated uses. It is used as the basis for development of Total Maximum Daily Loads (TMDLs) under the provisions of Section 303(d)(1)(C) of the Clean Water Act, U.S. Environmental Protection Agency (USEPA) USEPA requires that the WDNR update its list ever two years. It is also called the List of Impaired Waters. In Ozaukee County, Cedar Creek and the southern portion of the Milwaukee River are on the 303(d) list of impaired waters.

Environment and Land Use Committee (ELUC) and Land Conservation Committee (LCC): The portion of county government empowered, by Chapter 92 of the Wisconsin Statutes, to conserve and protect the county's soil, water and related natural resources.

Animal Unit (AU): Single animal types or combination of animal types, which are fed, confined, maintained or stabled in an animal feeding operation. 1000 pounds of livestock live weight is equivalent to one AU.

ATCP 50: The chapter of Wisconsin's Administrative Code that implements the Land and Water Resource Management Program as described in Chapter 92 of the State Statutes. It identifies those conservation practices that may be used to meet performance standards.

Best Management Practices (BMPs): The most effective practice or combination of practices for reducing nonpoint source pollution to acceptable levels.

Conservation Plan: A record of decisions and intentions made by land users regarding the conservation of the soil, water and related natural resources of a particular unit of land.

Conservation Reserve Program (CRP): A provision of the federal Farm Bill that takes eligible cropland out of production and puts it into grass or tree cover for 10 – 15 years.

Conservation Reserve Enhancement Program (CREP): Program partnership between USDA / FSA, DATCP and Ozaukee County that enhances the conservation payments of the regular CRP, particularly for buffers along streams.

Critical Species Habitats: Defined by the SEWRPC as tracts of land or water, which support Federally or State-listed rare, threatened, and/or endangered plant or animal species.

Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP): The state agency responsible for establishing statewide soil and water conservation policies and administering the state's soil and water conservation programs. The DATCP administers state cost-sharing funds for a variety of LCC operations, including support for staff, materials and conservation practices.

Wisconsin Department of Natural Resources (WDNR): The state agency responsible for managing state owned lands and protecting public waters. WDNR also administers programs to regulate, guide and assist LWM and individual land users in managing land, water, fish, and wildlife. The WDNR administers state cost-sharing funds for priority watershed project, Targeted Runoff Management (TRM) grants, and Urban Nonpoint Source Construction and Planning grants, Gypsy Moth Suppression Program funds, Knowles-Nelson Stewardship Grants, and other land and water related funding.

United States Environmental Protection Agency (USEPA): The agency of the federal government responsible for carrying out the nation's pollution control laws. It provides technical and financial assistance to reduce and control air, water and land pollution.

Environmental Corridor: Environmental corridors are areas in the landscape containing especially high value natural, scenic, historic, scientific, and recreational features. In Ozaukee County they generally lie along major stream valleys and lakes, and consist of almost all of the remaining high-value woodlands, wetlands, and wildlife habitat areas within the County. These corridors also include the undeveloped floodland and shorelands associated with the major surface water bodies within the County.

Environmental Quality Incentives Program (EQIP): Federal program to provide technical and cost-sharing assistance to landowners for conservation practices that provide water quality protection.

Ephemeral Erosion: Channeled, concentrated erosion that results in gullies.

Farm Service Agency (FSA): USDA agency that administers agricultural assistance programs including price supports, production controls and conservation cost sharing.

Fish Consumption Advisory (FCA): Food and Drug Administration imposed limit or restriction on fish consumption based on elevated toxicity levels – generally mercury or PCBs.

Farmland Preservation Program (FPP): A state program that provides property tax relief to Wisconsin farmland owners while at the same time preserving farmland through local land use planning and soil conservation practices.

Geographic Information System (GIS): A computerized system of maps and layers of data about land including parcels, soils, land cover, topography, watersheds, roads and streams. Such geographically based data layers improve the ability to analyze complex data for decision-making.

Grassland Reserve Program (GRP): Voluntary program that helps landowners and operators restore and protect grassland, including rangeland, and pastureland, and certain other lands, while maintaining the areas as grazing lands.

Impaired Waters List: Same as the 303(d) list.

Land and Water Management Department (LWM): The department of county government responsible for administering planning, Land and Water Conservation Programs and the [Sanitary](#), [Shoreland Zoning](#), [Manure Storage](#), and [Nonmetallic Mining](#) Ordinances. The department operates under the oversight of the Ozaukee County Board of Adjustment, Environment and Land Use Committee, and Comprehensive Planning Board.

Land and Water Resource Management Plan (LWRM): A locally developed and implemented multi-year strategic plan with an emphasis on partnerships and program integration. The plan includes a resource assessment, identifies the applicable performance standards and related control of pollution from nonpoint sources, identifies a multiyear description of planned activities, established a progress tracking system, and describes an approach for coordinating information and implementation programs with other local, state and federal agencies, communities and organization (ATCP 50.12).

Natural Resources Conservation Service (NRCS): Part of USDA, NRCS provides soil survey, conservation planning and technical assistance to local land users.

Natural Areas: Defined by the SEWRPC as tracts of land or water that have not been significantly impacted by human activity and are considered to be representative of the pre-European-settlement landscape.

Notice of Discharge (NOD): A written notice to any person not in compliance with Ozaukee County Ordinance – Chapter 9. This code involves the proper design, construction, and/or operation of animal waste storage facilities that may cause pollution of the surface and groundwater of Ozaukee County.

Nonpoint Source Pollution (NPS): Pollution from many small or diffuse urban and rural sources. Livestock waste finding its way into a stream and causing water pollution is an example of nonpoint source pollution.

Nonpoint Source Pollution Abatement Program: A WDNR water quality program under Chapters 120 and § 281, Wisconsin Statutes that provides technical assistance and cost sharing to landowners to develop and maintain management practices to prevent or reduce nonpoint source water pollution in designated watersheds.

NR 151: WDNR administrative code that established runoff pollution performance standards for non-agricultural facilities and transportation facilities, including performance standards and prohibitions for agricultural facilities and practices designed to meet water quality standards.

Nutrient Management Plan: The Nutrient Management Plan means any of the following: (a) A plan required under § ATCP 50.04 (3) or 50.62 (5) (f). (b) A farm nutrient plan prepared or approved, for a landowner, by a qualified nutrient management planner.

ORW/ERW: WDNR classifies streams as Outstanding Resource Waters (ORW) and Exceptional Resource Waters (ERW) as listed in NR 102.10 and NR 102.11. ORW waters have excellent water quality and high-quality fisheries and do not receive wastewater discharges. ERW waters have excellent water quality and valued fisheries but may already receive wastewater discharges. There are no ORWs in Ozaukee County, and the only ERW in the County is at the headwaters of Onion Creek.

RUSLE II: Revised universal soil loss equation – equates various factors to determine erosion rates on cropland for sheet and rill erosion.

Shoreland Zoning Area: The unincorporated areas of Ozaukee County regulated by Ozaukee County Code Ordinance - Chapter 7. These areas are within 1,000 feet of navigable lakes, ponds or flowages; areas within 300 feet of navigable rivers or streams; and land within the 100-Year floodplain (floodway and flood fringe).

Soil and Water Resource Management Program (SWRM): DATCP program that provides counties with funds to hire and support Land Conservation Department staff and to assist land users in implementing DATCP conservation programs (ATCP 50).

Soil Loss Tolerance (T): Erosion rate in tons per acre per year at which a soil could maintain productivity.

Soil Survey: NRCS conducts the National Cooperative Soil Survey and publishes soil survey reports. Soils data is designed to evaluate the potential of the soil and management needed for maximum food and fiber production.

** Glossary terms located in this document are **bold and italicized** the first time they appear and their abbreviations are included if necessary. After the first use most of the terms are abbreviated throughout the rest of the plan.

Appendix 1

Insert UWEX Survey and
Results



LAND & WATER MANAGEMENT DEPARTMENT

Andy Holschbach, Director
Edward J. Pfister, Sanitation & Zoning Coordinator
Jeffrey P. Bell, Land & Water Coordinator
www.co.ozaukee.wi.us

Land and Water Resource Management Plan Advisory Committee

Agenda

November 16, 2010, 10:00 a.m. to Noon
Administration Center, Room 6 (Auditorium)
121 W. Main Street, Port Washington, WI

1. Introductions
2. Land & Water Resource Management Plan Overview
3. Chapter 3. Goals, Objectives, Strategies, and Work Tasks
4. Chapter 4. Planned Activities
5. Land & Water Resource Management Plan Review and Approval Process
6. Adjournment

Priorities Identified by the Milwaukee River Basin Land and Waters Partners

1. Protect Natural lands.
 - Encourage the protection of environmental corridors and isolated natural areas.
 - Help to implement the Kettle Moraine Task Force goals related to protecting the Mid-Kettle Moraine through public education and fund raising activities.
 - Encourage WDNR and other agencies to purchase more of the environmental corridor areas.
 - Establish a natural area in the North Branch Watershed.
 - Encourage municipalities in the basin to adopt the Partnership Agreement and Goals.
 - Encourage municipalities in the basin to adopt Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin (SEWRPC, 1997).
2. Promote “smart growth” initiatives in the basin.
 - Develop strategies to change existing zoning laws and policies to promote sound local and county land use development.
 - Encourage sound local and county land use planning.
 - Adopt land use management practices that guarantee clean water and healthy ecosystems in the future.
 - Encourage adoption of comprehensive stormwater management plans by all cities, villages, towns and counties in the basin.
3. Educate citizens about the importance of the basin as a resource and support efforts to improve, maintain and enhance its quality.
 - Develop an educational strategy focusing on a range of publics to increase awareness of the resource and how to protect it.
 - Improve people’s perception of the river as an asset.
4. Improve water quality by controlling both point and non point sources of pollution
 - Address problems associated with milk house waste
 - Encourage training and enforcement of more uniform erosion control ordinances
 - Develop a “user-friendly” method for addressing failing septic systems
 - Implement the Milwaukee Estuary Remedial Action Plan
 - Implement a clean-up of contaminated sediments on Cedar Creek
 - Implement the remainder of the Cedar Creek PCB contaminated sediment clean-up by Mercury Marine and Amcast Corporation
 - Complete feasibility study for the remediation of contaminated sediment in the Estabrook Impoundment
 - Support efforts to have save, fishable and swimmable waters.
5. Protect riparian areas.
 - Restore degraded riparian areas.
 - Adopt county agricultural shoreland management ordinances.
 - Support purchase of conservation easements for riparian areas

Goals and Priorities Identified by the Southeastern WI Watershed Trust, Inc. (Sweet Water)

1. Make measurable progress toward improving the water resources in the region
2. Identify/support land use practices and design that enhance/improve water resources and promote and restore ecological benefits.
3. Forge and strengthen relationships to leverage funding and recommend policies to assist in the implementation of projects to produce lasting water resource benefits and cost savings throughout the Greater Milwaukee Watersheds and near shore Lake Michigan.

Primary Purposes of Sweet Water Include

Primary Purpose 1.

To achieve water resource goals and objectives – such as clean water , conservation, ecological function – through innovative and sustainable practices.

Primary Purpose 2.

To improve water quality in the Grater Milwaukee Watersheds to support a healthy regional economy and improve quality of life.

Primary Purpose 3.

To test and then implement innovative approaches and practices that will achieve improvements in water resources in a cost effective way.

Primary Purpose 4.

To build partnerships and enhance collaborative decision-making and joint project implementation, engaging government, business, the building industry, agriculture, environmental, and other stakeholder organizations to obtain broad agreement and recommend where to invest funds to get the greatest benefit.

Primary Purpose 5.

Through collaborative action, to increase the region's success in attracting new funding and leverage existing funding for water quality and water resource improvements.

Priorities Identified by the Sheboygan River Basin Land and Water Partners.

1. Promote Sound Land Use in the Sheboygan Basin

- Conserve the character of rural areas in the basin including natural areas, prime agricultural lands, and environmental corridors
- Encourage compatible land uses adjacent to public lands
- Encourage re-development of brownfields, abandoned and derelict properties in urban areas
- Support & encourage Comprehensive Land Use Planning (“Smart Growth” in the basin)
- Promote measures designed to improve air quality i.e. mass transit, multi-modal transportation options, ozone action)

2. Conserve and Restore Riparian Areas in the Sheboygan Basin

- Combine public and private efforts to restore riparian stream buffers for water quality and wildlife
- Conserve and restore wetland functions and values in the basin
- Conserve and enhance sensitive habitat areas in lakes
- Restore environmental integrity and recreation values in the lower Sheboygan River
- Remove dams and restore free flowing waterways, where feasible

3. Acquire Sufficient Public Lands and manage for Multiple Uses

- Complete the Sheboygan Marsh master Plan
- Promote public land acquisitions that protect natural areas and provide recreational opportunities
- Connect the northern and southern units of the Kettle Moraine State Forest

4. Improve Water Quality

- Encourage best management practices in agricultural areas
- Promote stormwater management measures that prevent non-point pollution in rural and urban areas
- Support measures that prevent the pollution associated with the use of bio-solids
- Protect groundwater resources in the basin

5. Educate Citizens on the Importance of Natural Resources in the Basin

- Improve public outreach for education of land and water issues in the basin
- Provide land development information related to wise use of resources

(January 20 & 27)

**OZAUKEE COUNTY ENVIRONMENT AND LAND USE COMMITTEE
PUBLIC HEARING NOTICE**

NOTICE IS HEREBY GIVEN that a public hearing will be held at a meeting of the Ozaukee County Environment and Land Use Committee on Friday, February 4, 2011 at 10:00 a.m. in Room A-200 of the Ozaukee County Administration Center, 121 W. Main St., Port Washington, Wisconsin to consider the following item:

Update to the Ozaukee County Land and Water Resource Management Plan. A copy of the DRAFT Land and Water Resource Management Plan update for Ozaukee County is available at the County Land & Water Management Department, 121 W. Main Street, Port Washington, Wisconsin, 53074 or can be viewed on the web at

<http://www.co.ozaukee.wi.us/LandWaterManagement/PDF/DraftOzaukeeLand&WaterPlan2011-2015.pdf>

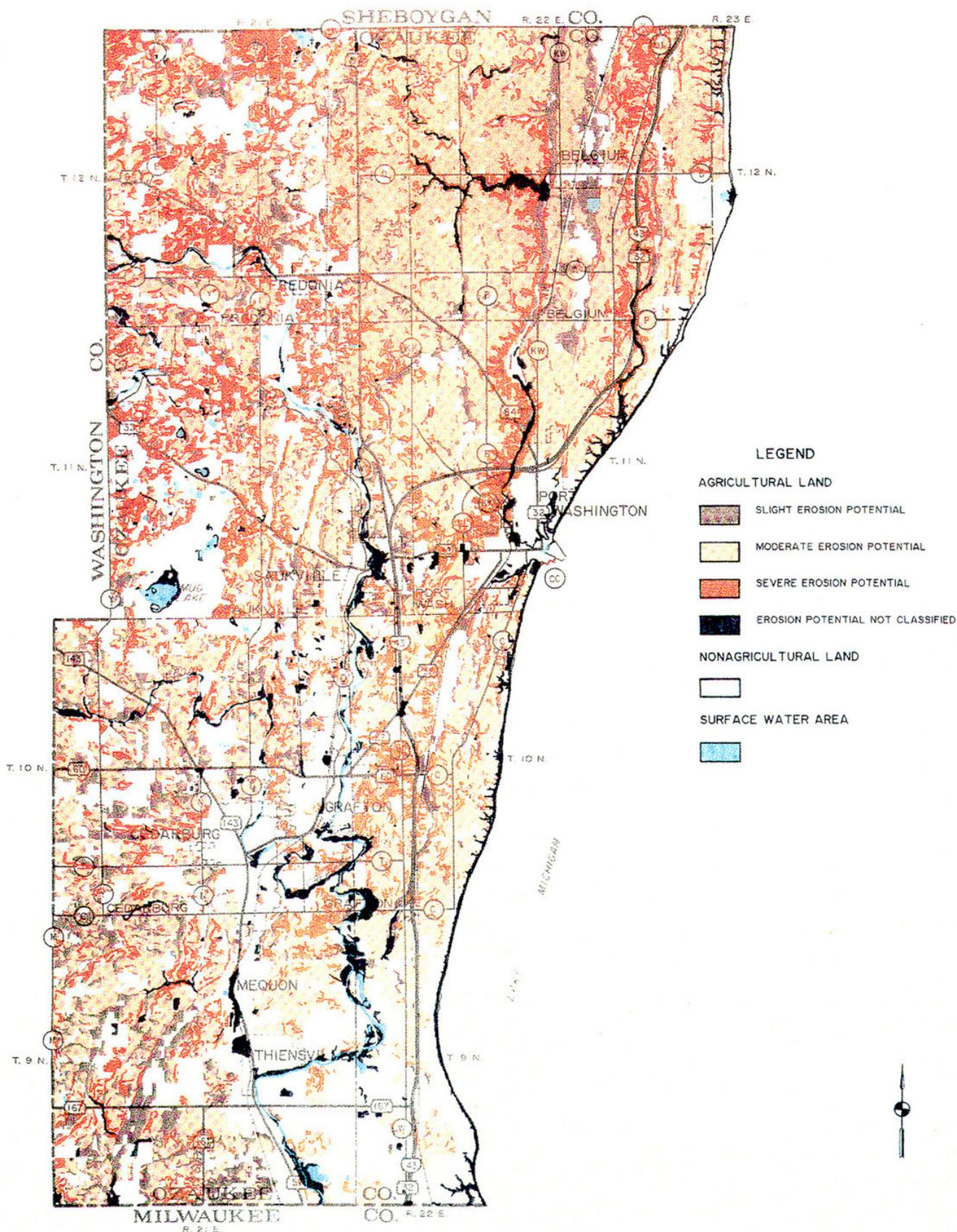
Any comments on the Ozaukee County Land & Water Resource Management Plan update should be provided to the Land & Water Management Department at the above address. All comments received will be provided to the Environment and Land Use Committee for consideration. Written and oral comments will be taken at the public hearing.

William S. Niehaus, Chairman
Environment and Land Use Committee

Appendix 2

MAP 2.1

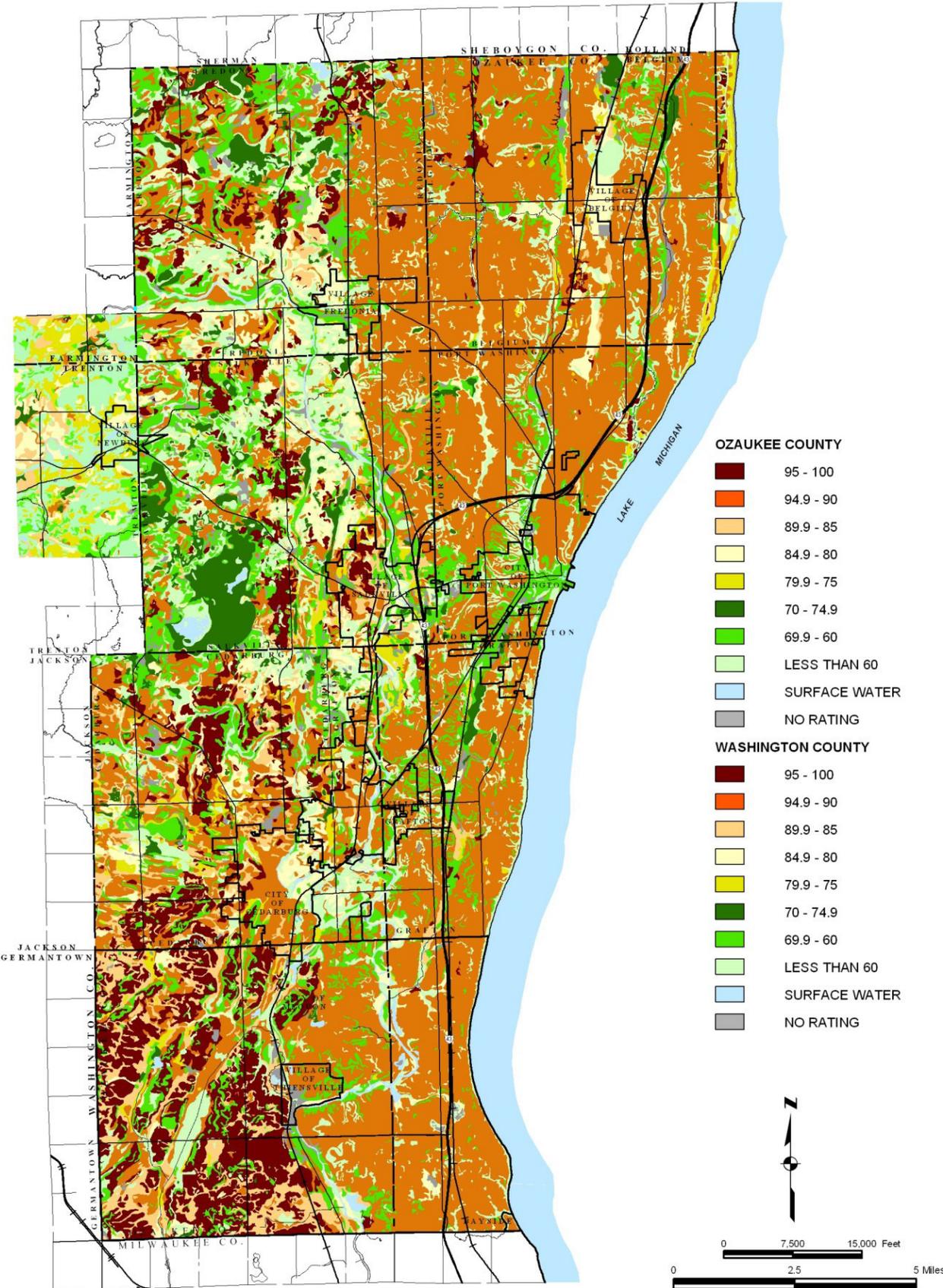
SOIL EROSION POTENTIAL FOR AGRICULTURAL LANDS IN OZAUKEE COUNTY



Source: U. S. Department of Agriculture, Soil Conservation Service; and SEWRPC.

MAP 2.2

LAND EVALUATION RATING FOR AGRICULTURAL LAND IN THE OZAUKEE COUNTY PLANNING AREA



Source: Natural Resources Conservation Service and SEWRPC.

Table 2.1

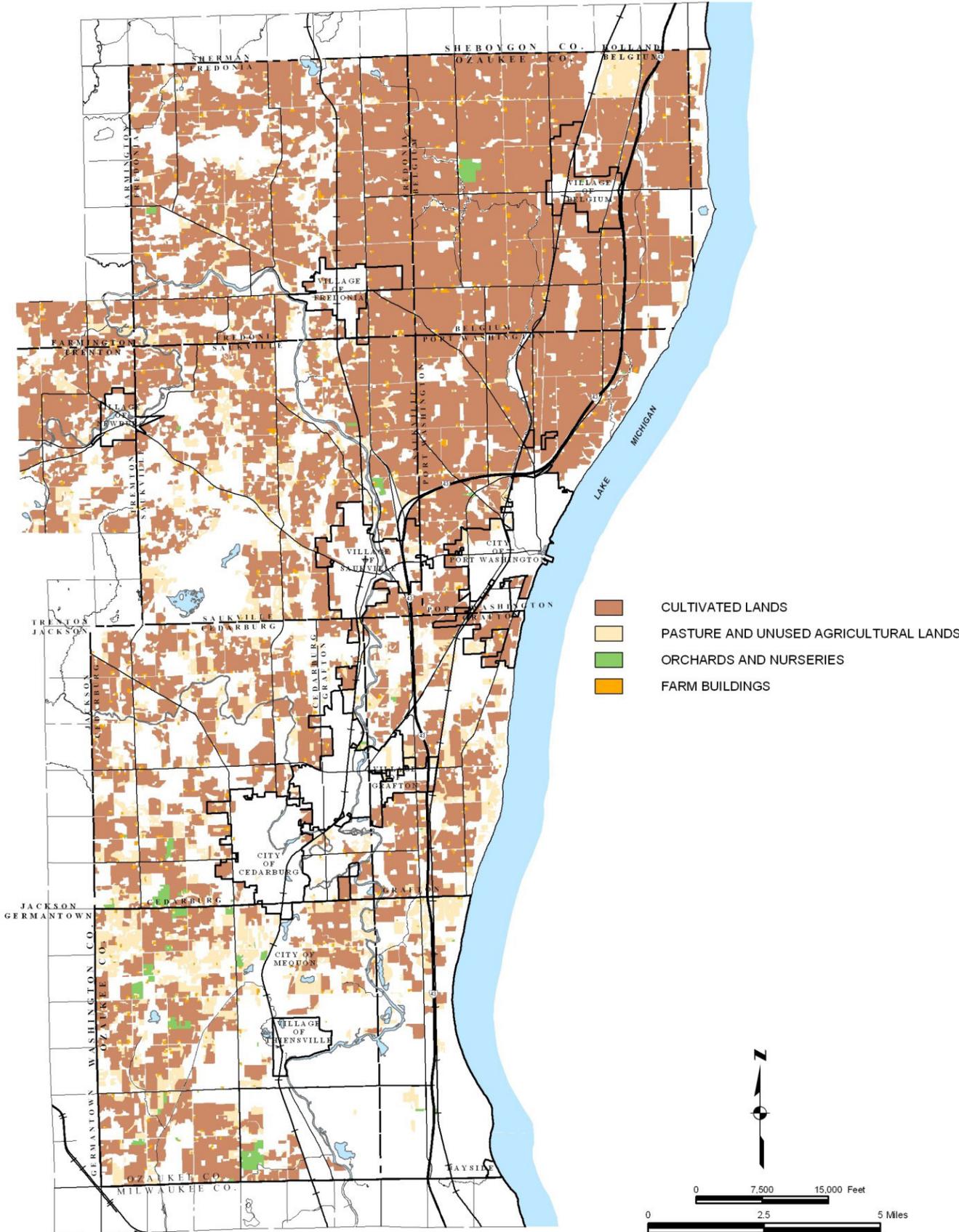
LAND EVALUATION RATINGS FOR AGRICULTURAL USE IN THE OZAUKEE COUNTY PLANNING AREA

Local Government	95 – 100 (acres)	90 – 94.9 (acres)	85 – 89.9 (acres)	80 – 84.9 (acres)	75 – 75.9 (acres)	70 – 74.9 (acres)	60 – 69.9 (acres)	Less than 60 (acres)
City of Mequon	6,808	12,282	3,685	835	306	101	2,786	2,976
Town of Belgium	566	15,203	224	1,441	772	320	1,469	2,418
Town of Cedarburg	2,877	5,226	1,876	1,750	587	519	2,637	2,685
Town of Fredonia	2,205	7,684	735	1,964	168	1,312	3,457	4,304
Town of Grafton	82	5,818	240	343	271	185	1,377	1,214
Town of Port Washington	64	8,052	27	484	76	118	1,201	1,511
Town of Saukville	1,663	4,522	828	1,859	472	2,826	3,805	4,608
Town of Farmington	8	52	219	143	527	84	63	522
Town of Trenton	9	106	592	805	1,128	129	694	2,476
Other Cities and Villages	551	6,407	988	1,468	468	119	2,241	2,998
Ozaukee County Planning Area	14,833	65,352	9,414	11,092	4,775	5,713	19,730	25,712

Source: NRCS and SEWRPC.

MAP 2.3

EXISTING AGRICULTURAL LANDS IN THE OZAUKEE COUNTY PLANNING AREA: 2000



Source: SEWRPC.

Table 2.2

**EXISTING AGRICULTURAL LANDS IN THE OZAUKEE COUNTY
PLANNING AREA: 2005**

Local Government	Cultivated Lands (acres)	Pasture Land and Unused Agricultural Land (acres)	Orchards and Nurseries (acres)	Farm Buildings (acres)	Total (acres)
City of Mequon	7,070	3,795	873	226	11,964
Town of Belgium	17,231	751	240	305	18,527
Town of Cedarburg	6,650	1,666	306	256	8,878
Town of Fredonia	13,609	974	48	266	14,897
Town of Grafton	3,649	1,079	20	108	4,856
Town of Port Washington	8,123	237	23	142	8,525
Town of Saukville	8,940	1,765	122	276	11,103
Town of Farmington	968	153	0	27	1,148
Town of Trenton	2,826	420	0	68	3,314
Other Cites and Villages	2,689	341	6	37	3,073
Total	71,755	11,181	1,638	1,711	86,285

Source: SEWRPC.

Graph 2.1

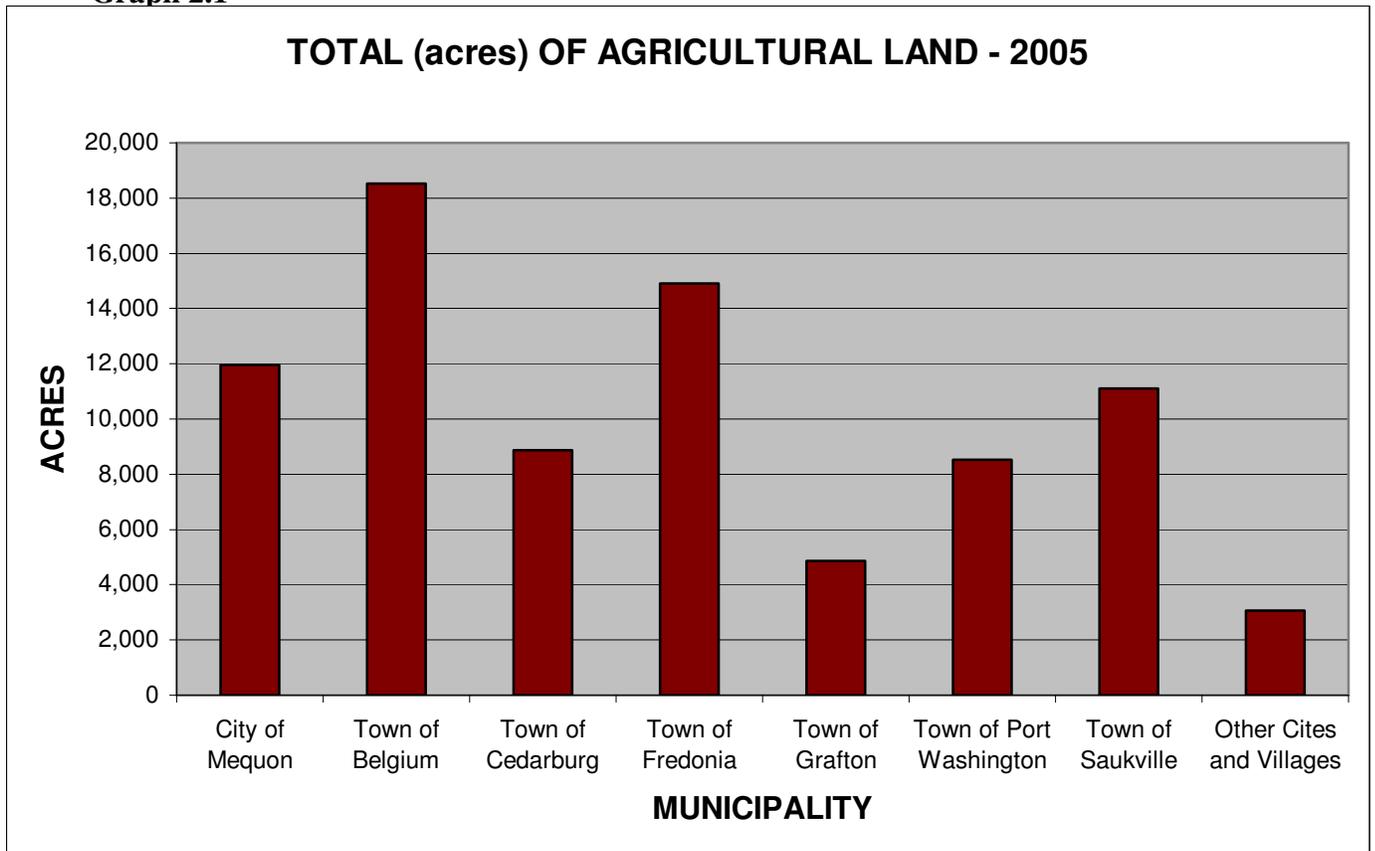


Table 2.3

AGRICULTURAL PRODUCTION IN OZAUKEE COUNTY: 2002

Crop	Ozaukee County ^a							State of Wisconsin	
	Land Area 2002 (acres)	Land Area 1999 (acres)	Change 1999 – 2002 (acres)	Percent Change 1999 - 2002	Land Area 1990 (acres)	Change 1990 – 1999 (acres)	Percent Change 1990 - 1999	Percent Change 1999 - 2002	Percent Change 1990 - 1999
Corn	19,900	16,700	3,200	19.0	22,200	-5,500	-25.0	5.0	-3.0
Forage	15,200	17,800	-2,600	-15.0	21,400	-3,600	-17.0	-17.0	-11.0
Soy	9,100	9,500	-400	-4.0	3,000	6,500	217.0	17.0	202.0
Small Grains	6,400	6,400	0	0.0	12,100	-5,700	-47.0	-6.0	-50.0
Total	50,600	50,400	200	0.4	58,700	-8,300	-14.0	-3.0	-1.0

^aIncludes Ozaukee County only.

Source: U.S. Census Bureau, USDA National Agricultural Statistics Service, and SEWRPC.

Table 2.4

**AGRICULTURAL PRODUCTS PRODUCED BY OZAUKEE COUNTY FARMS:
2002^a**

Agricultural Product	Number of Farms	Percent
Livestock and poultry – Cattle and Claves	172	32.3
Livestock and poultry – Hogs and Pigs	10	1.9
Livestock and poultry – Sheep and lambs	20	3.8
Livestock and poultry – Chickens (egg production)	17	3.2
Crops – Corn for grain	150	28.1
Crops – Corn for silage or greenchop	104	19.5
Crops – Wheat for grain	87	16.3
Crops – Oats for grain	91	17.1
Crops – Barley for grain	15	2.8
Crops – Sorghum for silage or greenchop	3	0.6
Crops – Soybeans	118	22.1
Crops – Potatoes	9	1.7
Crops – Forage	218	40.9
Crops – Vegetables	59	11.1
Crops – Orchards	15	2.8
Total	1,088 ^b	204.2 ^b

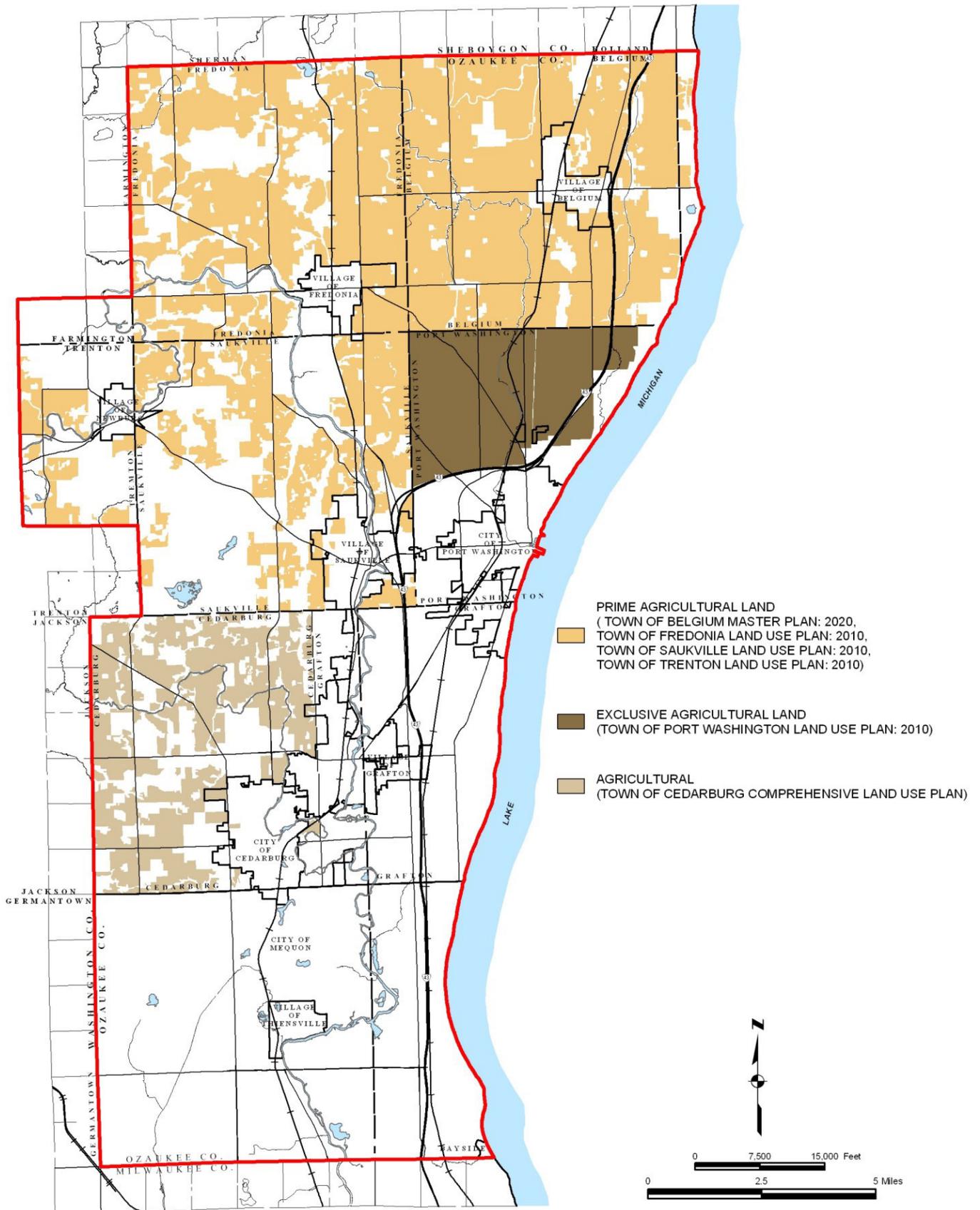
^aIncludes Ozaukee County only.

^bThere were 533 farms in Ozaukee County in 2002. The number of farms total is greater than 533 and the percent total is greater than 100.0 because many farms produce more than one agricultural product.

Source: U.S. Census Bureau, USDA National Agricultural Statistics Service, and SEWRPC.

MAP 2.5

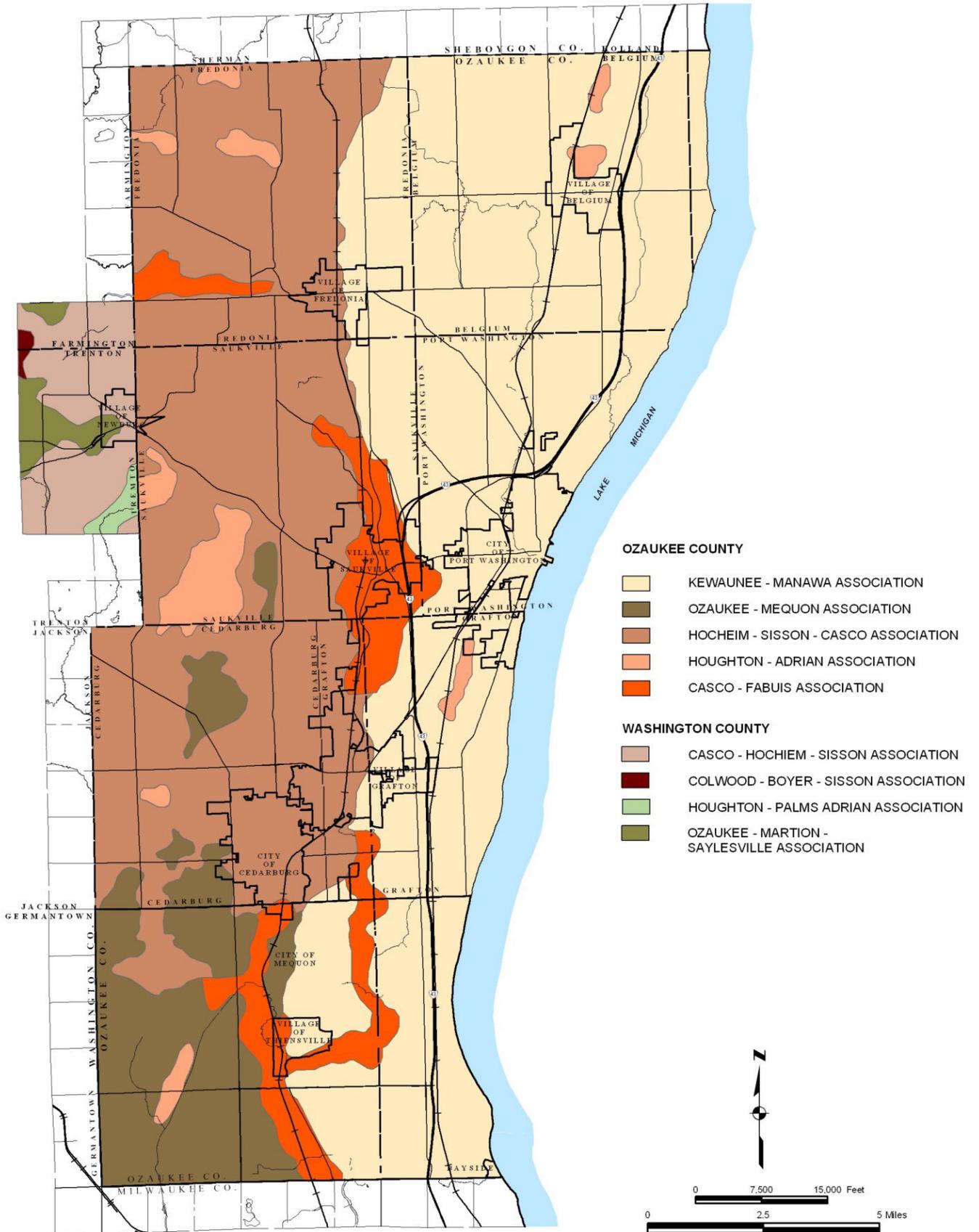
FARMLAND PRESERVATION AREAS DESIGNATED IN ADOPTED LOCAL LAND AND MASTER PLANS



Source: SEWRPC.

MAP 2.6

GENERAL SOIL ASSOCIATIONS IN THE OZAUKEE COUNTY PLANNING AREA



Source: Natural Resources Conservation Service and SEWRPC.

Table 2.5

FARMS IN OZAUKEE COUNTY AND WISCONSIN BY VALUE OF SALES: 2002

Value of Sales	Ozaukee County ^a		State of Wisconsin	
	Number	Percent	Number	Percent
Less than \$2,500	226	42.4	30,491	39.5
\$2,500 to \$4,999	35	6.6	5,389	7.0
\$5,000 to \$9,999	33	6.2	5,788	7.5
\$10,000 to \$24,999	62	11.6	8,362	10.8
\$25,000 to \$49,999	33	6.2	5,929	7.7
\$50,000 to \$99,999	31	5.8	7,242	9.4
\$100,000 or more	113	21.2	13,930	18.1
Total	533	100.0	77,131	100.0

^aIncludes Ozaukee County only.

Source: U.S. Census Bureau, USDA National Agricultural Statistics Service, and SEWRPC.

Table 2.6

FARM SIZE IN OZAUKEE COUNTY AND WISCONSIN: 2002

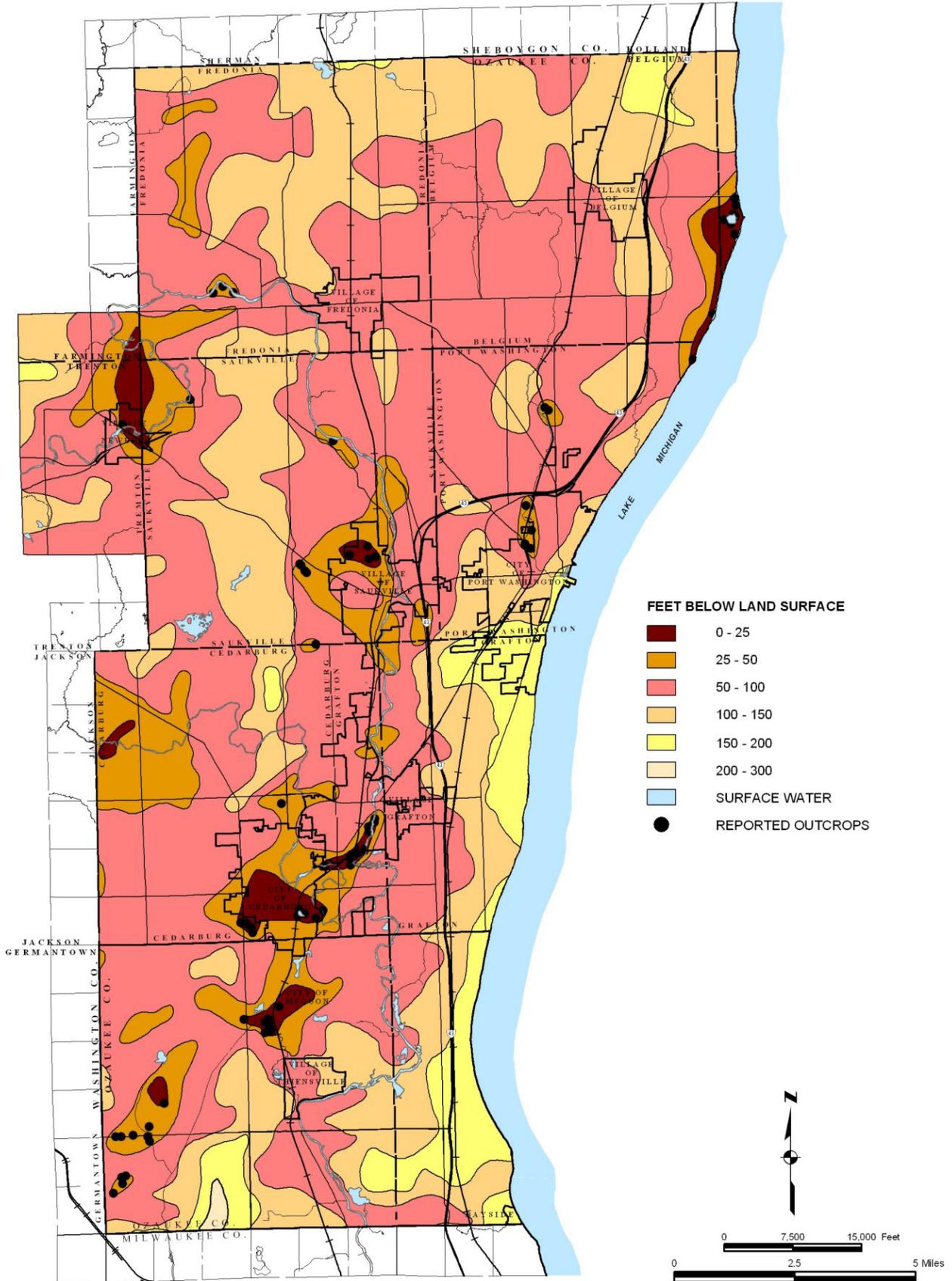
Size (acres)	Ozaukee County ^a		State of Wisconsin	
	Number	Percent	Number	Percent
Less than 10 acres	59	11.1	4,141	5.4
10 to 49 acres	164	30.8	17,152	22.2
50 to 179 acres	169	31.7	29,458	38.2
180 to 499 acres	118	22.1	20,021	25.9
500 to 999 acres	17	3.2	4,465	5.8
1,000 acres or more	6	1.1	1,894	2.5
Total	533	100.0	77,131	100.0

^aIncludes Ozaukee County only.

Source: U.S. Census Bureau, USDA National Agricultural Statistics Service, and SEWRPC.

MAP 2.8

GENERALIZED DEPTH TO BEDROCK IN THE OZAUKEE COUNTY PLANNING AREA



Source: University of Wisconsin - Extension, Wisconsin Geological and Natural History Survey and SEWRPC.

Table 2.7

SIGNIFICANT GEOLOGIC SITES IN THE OZAUKEE COUNTY PLANNING AREA: 2005^a

Number on Map 2.7	Site Name	Classification Code^b	Site Area (acres)	Location	Ownership	Description
1	Thiensville Roadcut and Quarry	GA-1	9	T9N, R21E, Section 10 City of Mequon	Ozaukee County and private	Road cut and small old quarry provide only sizable exposure of the Devonian Thiensville Formation anywhere
2	Ozaukee Buried Forest	GA-1	32	T9N, R21E, Section 17 City of Mequon	Private	Old water-filled sand quarry contains remnants of ancient forest
3	Milwaukee River-Grafton Outcrops and Lime Kiln Park	GA-1	57	T10N, R21E, Sections 24, 25 Village of Grafton Section 25 Town of Grafton	Ozaukee County and private	Undisturbed, 40-foot-high rock outcrops along the Milwaukee River, containing the best and most extensive exposures of Silurian Racine Dolomite in the Region. Historically used for scientific research
4	Cedar Creek-Anschuetz Quarries	GA-1	5	T10N, R21E, Section 26 Town of Cedarburg	Private	Outcrops and abandoned quarries along Cedar Creek that were main supply of stone for area buildings
5	Phyllocarid Quarry	GA-1	4	T12N, R21E, Section 29 Town of Fredonia	Private	Small, partially water-filled quarry in Upper Silurian Waubakee Dolomite. Only site in Wisconsin where Silurian phyllocarid fossils have been found
6	Virmond Park Clay Banks	GA-2	10	T9N, R22E, Section 28 City of Mequon	Ozaukee County	Clay banks along Lake Michigan shoreline

Number on Map 2.7	Site Name	Classification Code^b	Site Area (acres)	Location	Ownership	Description
7	Groth Quarry	GA-2	7	T10N, R21E, Section 35 City of Cedarburg	City of Cedarburg	One of the more important geological sites in the area because of its prominence in the fossil reef studies of eminent geologists. Contains unique reef fossil biota
8	Druecker's Lime Kiln	GA-2	1	T11N, R22E, Section 9 Town of Port Washington	Private	Nineteenth-century patented lime kiln, possibly only remaining example
9	Sauk Creek	GA-2	3	T11N, R22E, Section 29 Town of Port Washington	Private	Unquarried riverbank and low falls exhibiting natural outcrops of Silurian Racine Dolomite
10	Harrington Beach State Park Quarry	GA-2	25	T12N, R23E, Section 19 Town of Belgium	Department of Natural Resources	Large, water-filled quarry and restored pot kiln, and extensive exposures of Devonian rock containing abundant, highly diverse marine fossils
11	Little Menomonee River Reef District	GA-2	1	T9N, R21E, Sections 19, 20, 30 City of Mequon	Private	Silurian Racine Dolomite reef rock exposures. Has considerable importance in scientific research. Contains a wide variety of reef features
12	Riveredge Bluff	GA-3	1	T11N, R21E, Section 6 Town of Saukville	Riveredge Nature Center	Rock bluff of massive Racine Dolomite on south bank of Milwaukee River

Number on Map 2.7	Site Name	Classification Code^b	Site Area (acres)	Location	Ownership	Description
13	Saukville Reef	GA-3	3	T11N, R21E, Section 26 Village of Saukville	Private	Small quarries exposing Racine Dolomite reef
14	Waubeka Quarry	GA-3	2	T12N, R21E, Section 29 Town of Fredonia	Private	Small, abandoned quarry exhibiting an uncommonly exposed type section
15	Fredonia Quarries	GA-3	6	T12N, R21E, Section 34 Town of Fredonia	Private	Two small, undisturbed mid-19th-century quarries and several outcrops of Racine Dolomite
16	Belgium Abandoned Shoreline	GA-3	108	T12N, R22E, Section 36 Town of Belgium	Private	Gravel and sand beaches and wind-cut cliffs and terraces indicating higher ancient lake levels
Total	--	--	274	--	--	--

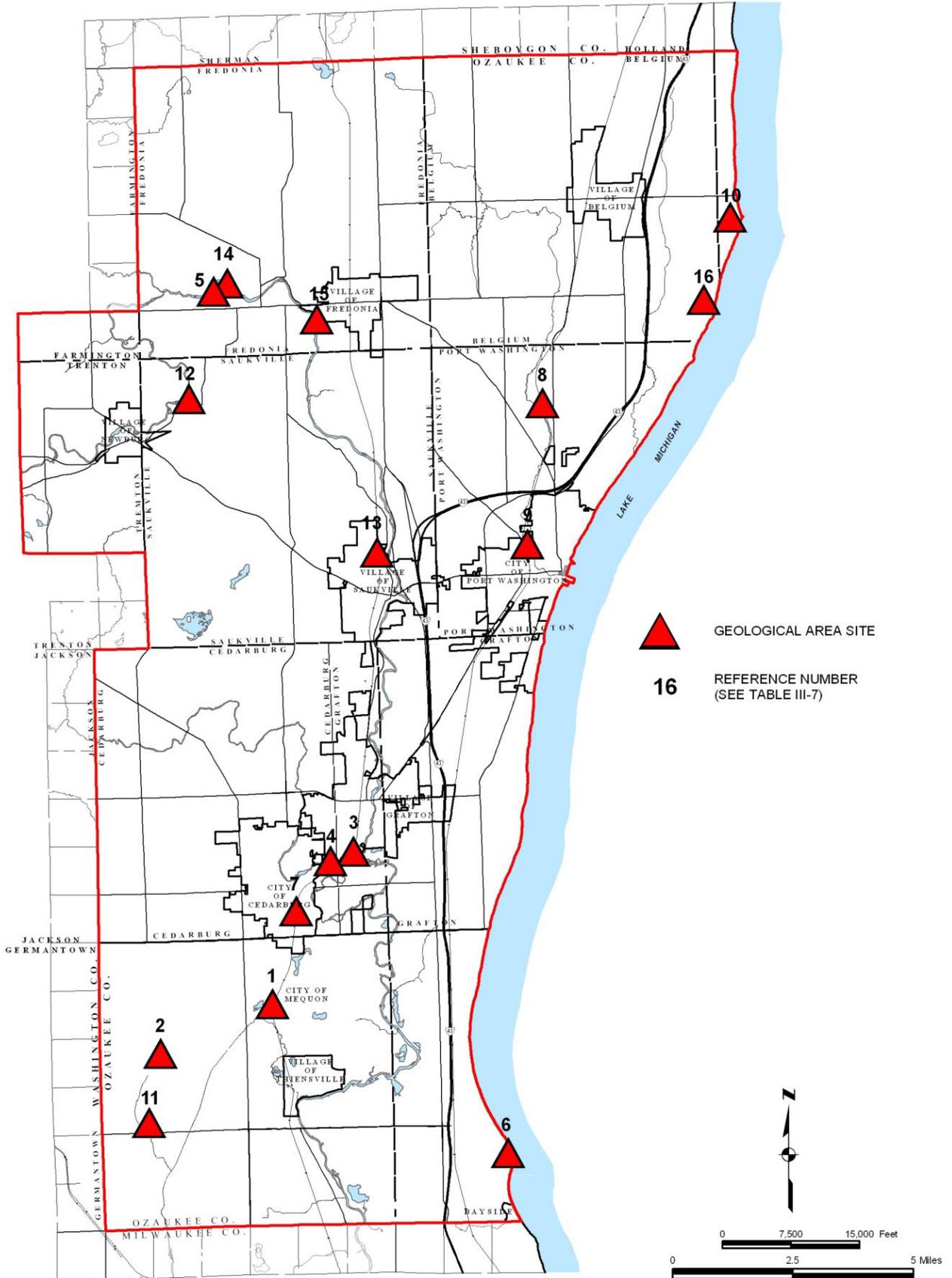
^a Inventory conducted in 1994; ownership information updated in 2005.

^bGA-1 identifies Geological Area sites of statewide or greater significance; GA-2 identifies Geological Area sites of countywide or regional significance; and GA-3 identifies Geological Area sites of local significance.

Source: Wisconsin Department of Natural Resources, Wisconsin Geological and Natural History Survey, and SEWRPC.

MAP 2.9

SIGNIFICANT GEOLOGICAL SITES IN THE OZAUKEE COUNTY PLANNING AREA: 1994



Source: SEWRPC.

Table 2.8

BLUFF STABILITY AND SHORELINE RECESSION ALONG LAKE MICHIGAN THE OZAUKEE COUNTY: 1995

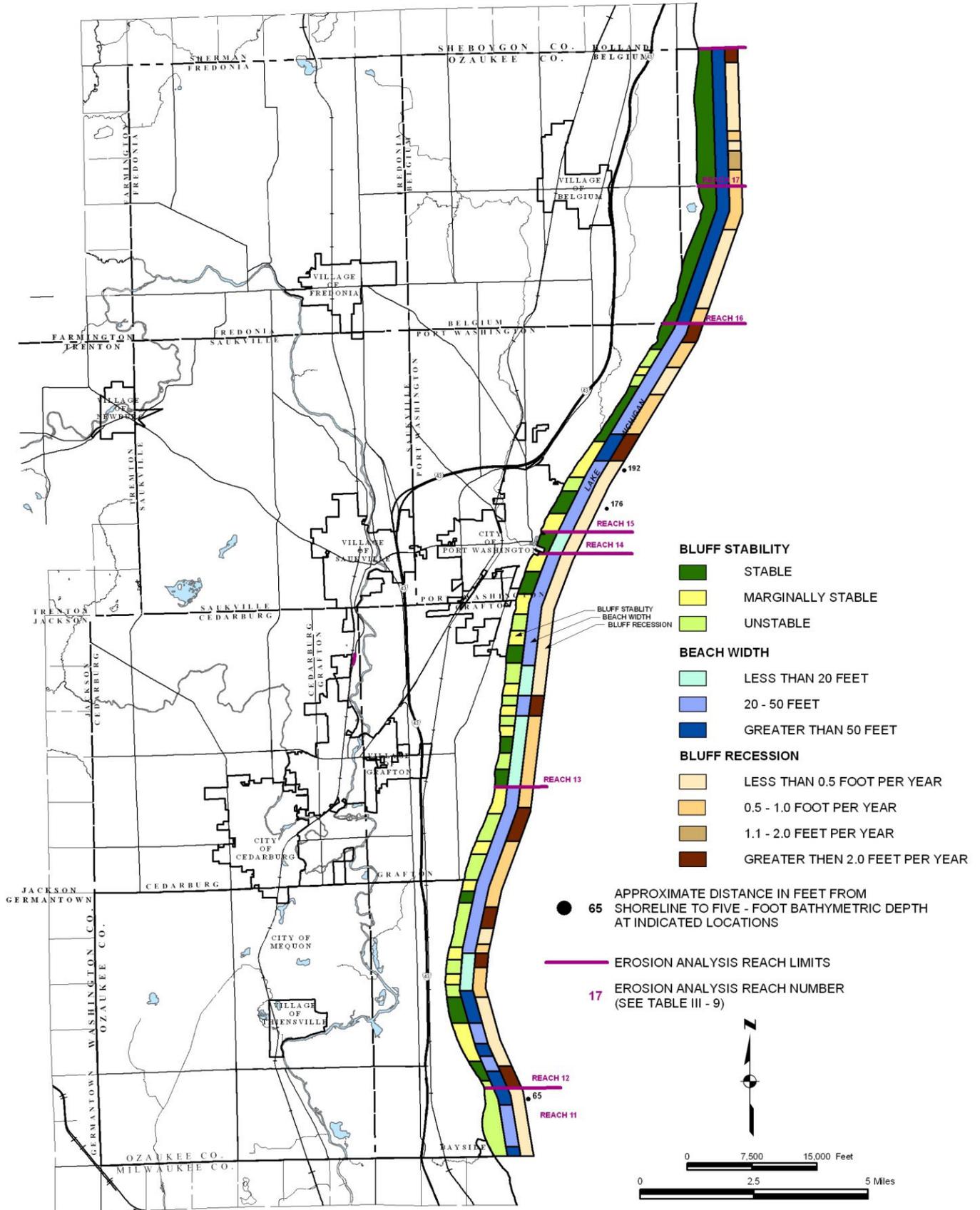
Shoreline Analysis Reach (see Map 2.8)	Bluff Heights (feet)	Deterministic Bluff Stability Safety Factor		Shoreline Recession Data 1963-1995		Estimated Beach Width (feet)	
		1995 Conditions	1977 Conditions	Total (feet)	Annual Average (feet per year)	1995 Conditions	1977 Conditions
Reach 11 ^a	80 - 140	0.69 – 1.12	0.69 – 1.13	20 - 100	0.3 – 2.5	0 - 100	10 - 25
Reach 12	80 - 140	0.57 – 1.88	0.66 – 1.05	0 - 70	0.0 – 2.2	0 - 100	0 - 25
Reach 13	100 - 130	0.59 – 1.81	0.49 – 0.82	0 - 60	0.0 – 1.9	0 - 50	10 - 30
Reach 14	No significant bluff	N/A	N/A	50	1.6	No significant beach	No significant beach
Reach 15	85 - 100	0.72 – 1.47	0.61 – 1.21	0 - 50	0 - 1.6	10 - 100	5 - 70
Reach 16	No significant bluff	N/A	N/A	0 - 80	0.0 - 2.5	0 - 150	5 - 20
Reach 17	No significant bluff	N/A	N/A	0 - 130	0.0 – 4.1	30 - 100	Less than 20

^aIncludes a portion of Milwaukee County.

Source: SEWRPC.

MAP 2.10

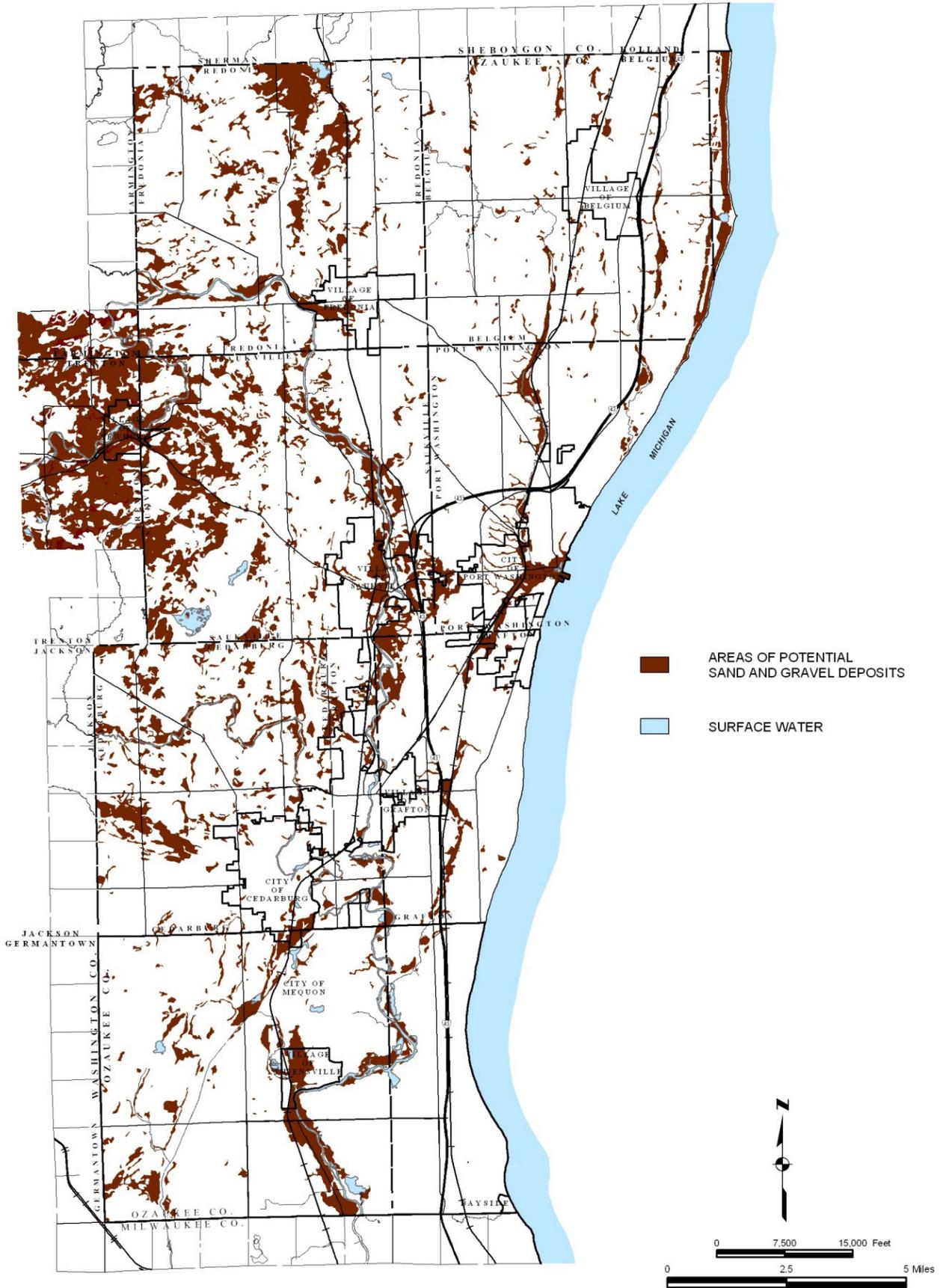
SUMMARY OF LAKE MICHIGAN SHORELINE EROSION AND BLUFF STABILITY ANALYSIS IN THE OZAUKEE COUNTY PLANNING AREA: 1995



Source: T.B. Edil, D.M. Mickelson, J.A. Chapman, and SEWRPC.

MAP 2.11

SAND AND GRAVEL DEPOSITS IN THE OZAUKEE COUNTY PLANNING AREA



Source: Natural Resources Conservation Service and SEWRPC.

Table 2.9

**PROBABLE SOURCES OF SAND AND GRAVEL IN THE OZAUKEE COUNTY
PLANNING AREA**

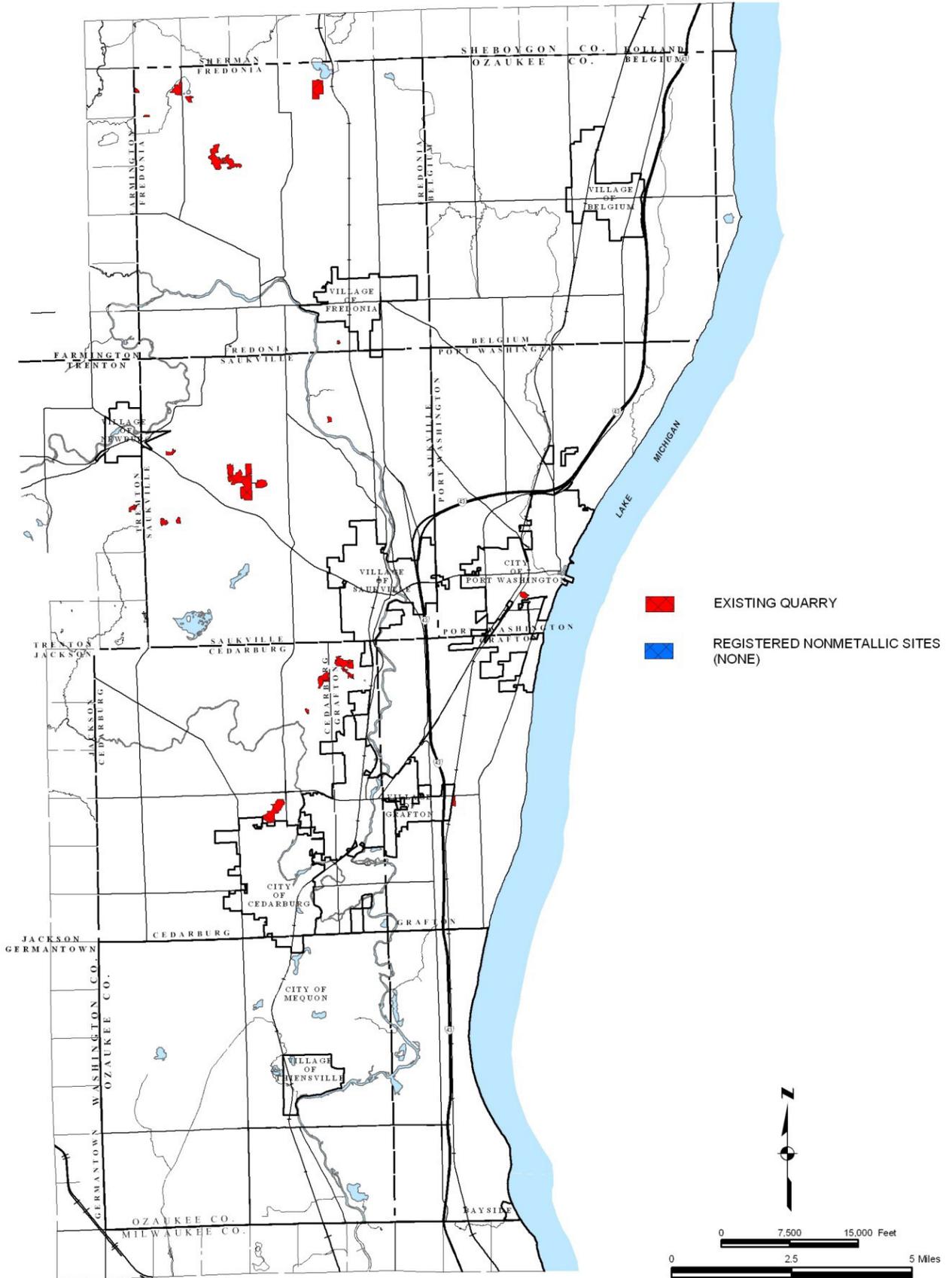
Local Government	Sand (acres)	Gravel (acres)
City of Mequon	2,403	1,346
City of Port Washington	613	478
Village of Belgium	15	7
Village of Fredonia	188	140
Village of Grafton	245	152
Village of Newburg	378	363
Village of Saukville	625	520
Village of Thiensville	244	23
Town of Belgium	1,722	687
Town of Cedarburg	2,926	1,590
Town of Fredonia	3,464	2,430
Town of Grafton	889	627
Town of Port Washington	786	485
Town of Saukville	5,035	3,726
Town of Farmington	792	786
Town of Trenton	3,191	3,008
Ozaukee County Planning Area ^a	23,752	16,482

^aIncludes data for the City of Cedarburg.

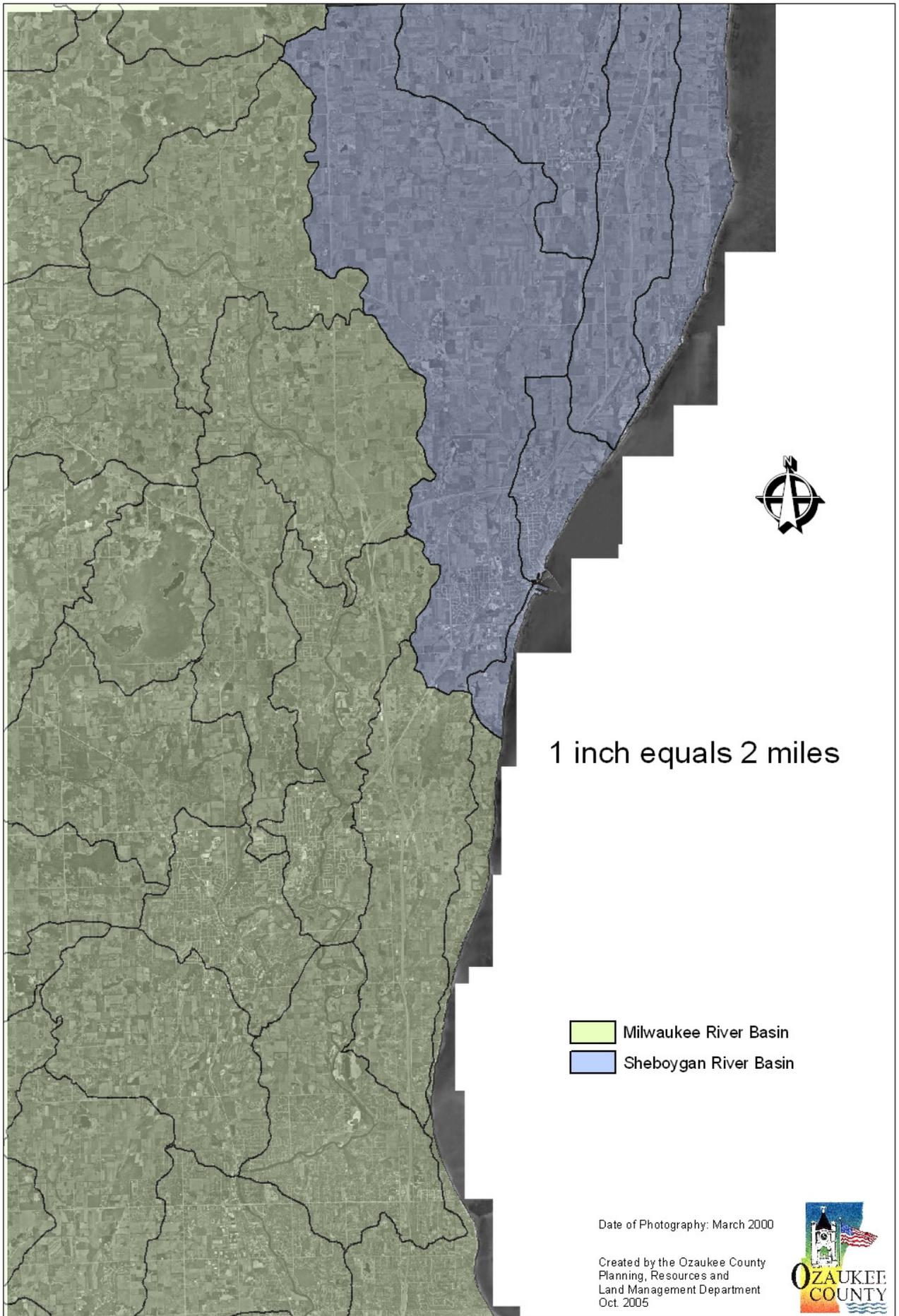
Source: SEWRPC.

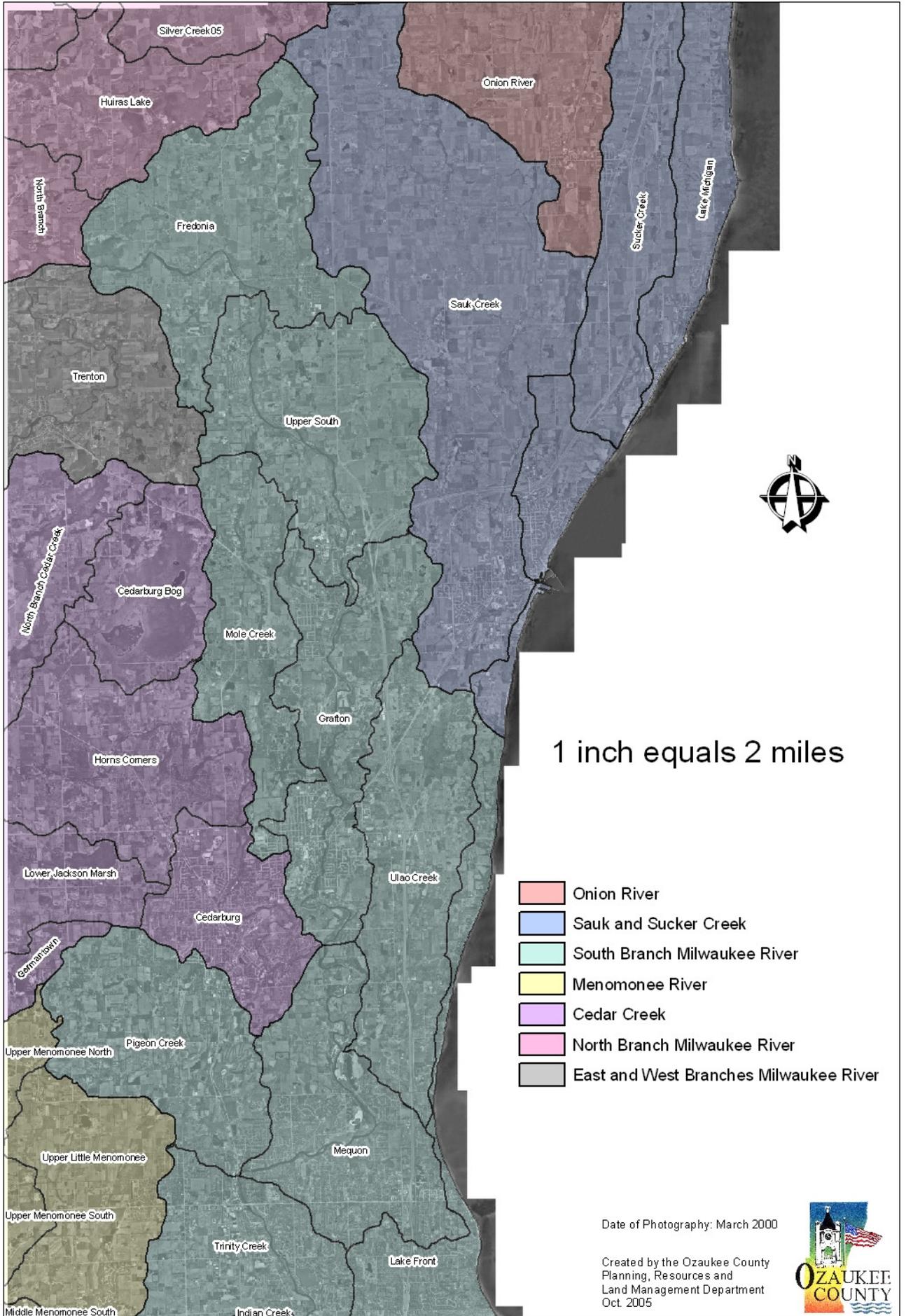
MAP 2.12

EXISTING QUARRIES IN THE OZAUKEE COUNTY PLANNING AREA: 2000



Source: SEWRPC.





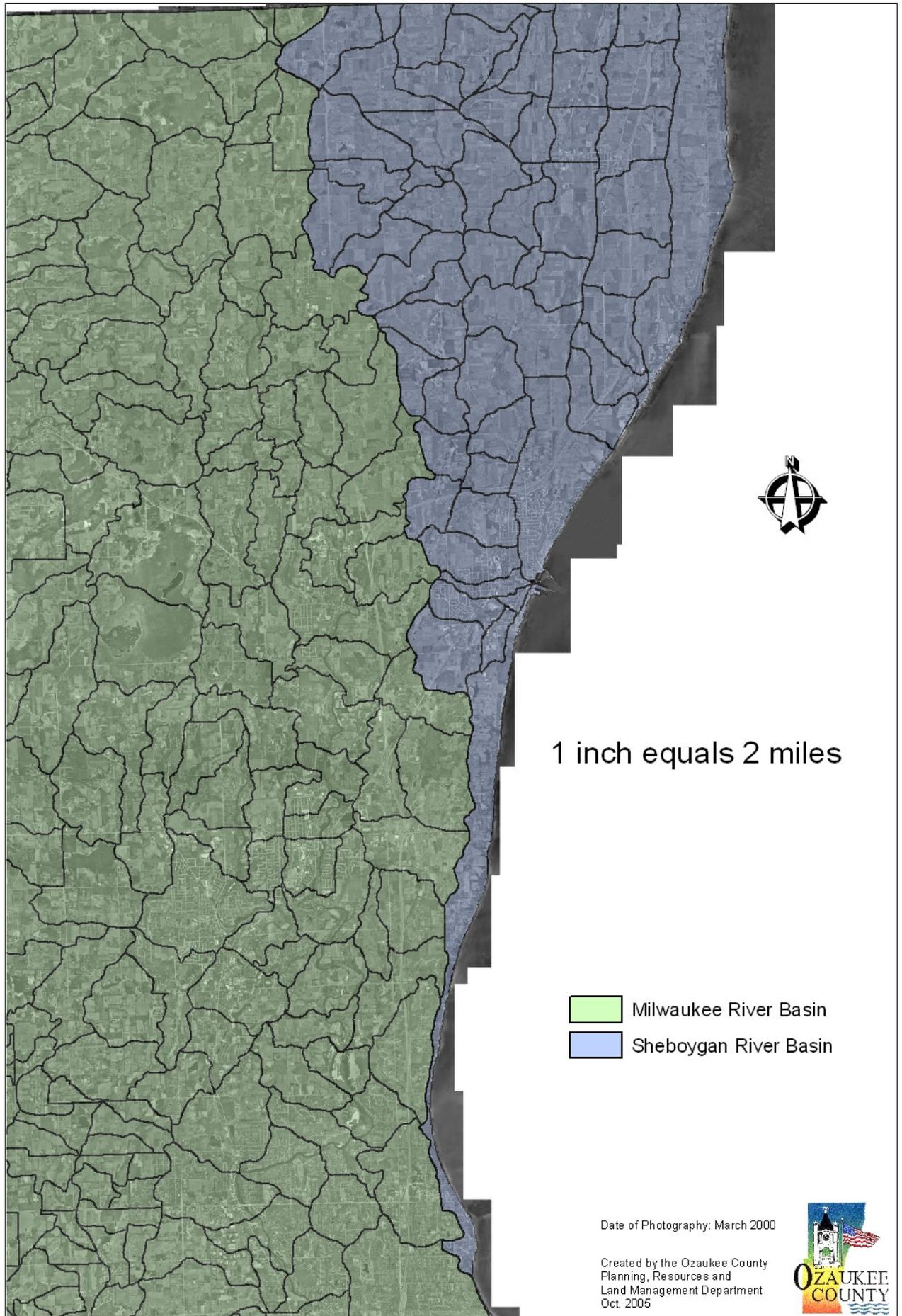


Table 2.10

FISH CONSUMPTION ADVISORY - MILWAUKEE RIVER SOUTH *

Waterbody / Fish Species	Unlimited	Eat no more than One meal a week or 52 meals / year	Eat no more than One meal per month or 12 meals / year	Eat no more than One meal every two months or six meals / year	Do Not Eat
Milwaukee River - Above Estabrook Falls to Grafton					
Carp					All Sizes
Northern Pike				All Sizes	
Smallmouth Bass			All Sizes		
Redhorse			All Sizes		
Rock Bass			All Sizes		
Largemouth Bass			All Sizes		
Black Crappie				All Sizes	
Milwaukee River - Above Grafton (Lime Kiln Park) to Newburg Dam					
Carp		All Sizes			
Redhorse		All Sizes			
All Other Species	All Sizes				

* Important Health Information for People Eating Fish from Wisconsin Waters 1999, Pub No. FH824 99Rev, Wisconsin Division of Health and Wisconsin Department of Natural Resources.

FISH CONSUMPTION ADVISORY - CEDAR CREEK *

Waterbody / Fish Species	Unlimited	Eat no more than One meal a week or 52 meals / year	Eat no more than One meal per month or 12 meals / year	Eat no more than One meal every two months or six meals / year	Do Not Eat
Cedar Creek from the Milwaukee River up to Bridge Road in the Village of Cedarburg, including Zeunert Pond					
All Species				All Sizes	
Cedar Creek above Cedarburg, including Cedarburg Pond					
Carp		All Sizes			
All Other Species	All Sizes				

* Important Health Information for People Eating Fish from Wisconsin Waters 1999, Pub No. FH824 99Rev, Wisconsin Division of Health and Wisconsin Department of Natural Resources.

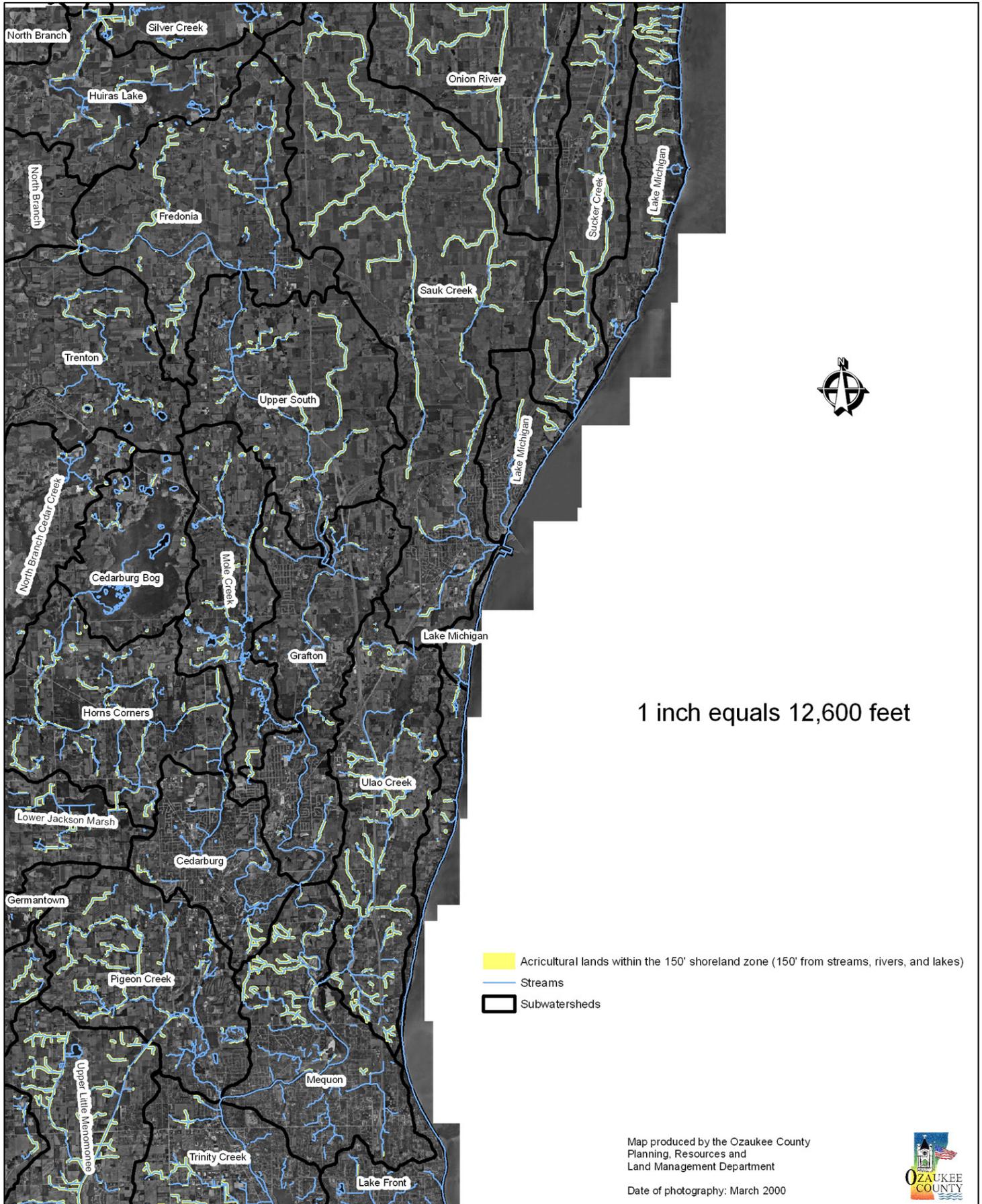
Table 2.11

20 FOOT INVENTORY - ACREAGE ALONG STREAMS

TOWNSHIP	LWRM Plan (1990 Aerials)	2000 Aerials & LU
Belgium	268.37	176.48
Fredonia	149.08	65.69
Port Washington	76.16	32.35
Grafton	129.04	52.34
Cedarburg	159.84	43.59
Saukville	152.86	34.32
Mequon/Thiensville	N/A	202.64
TOTAL (no Mequon)	935.35	404.77
TOTAL		607.41

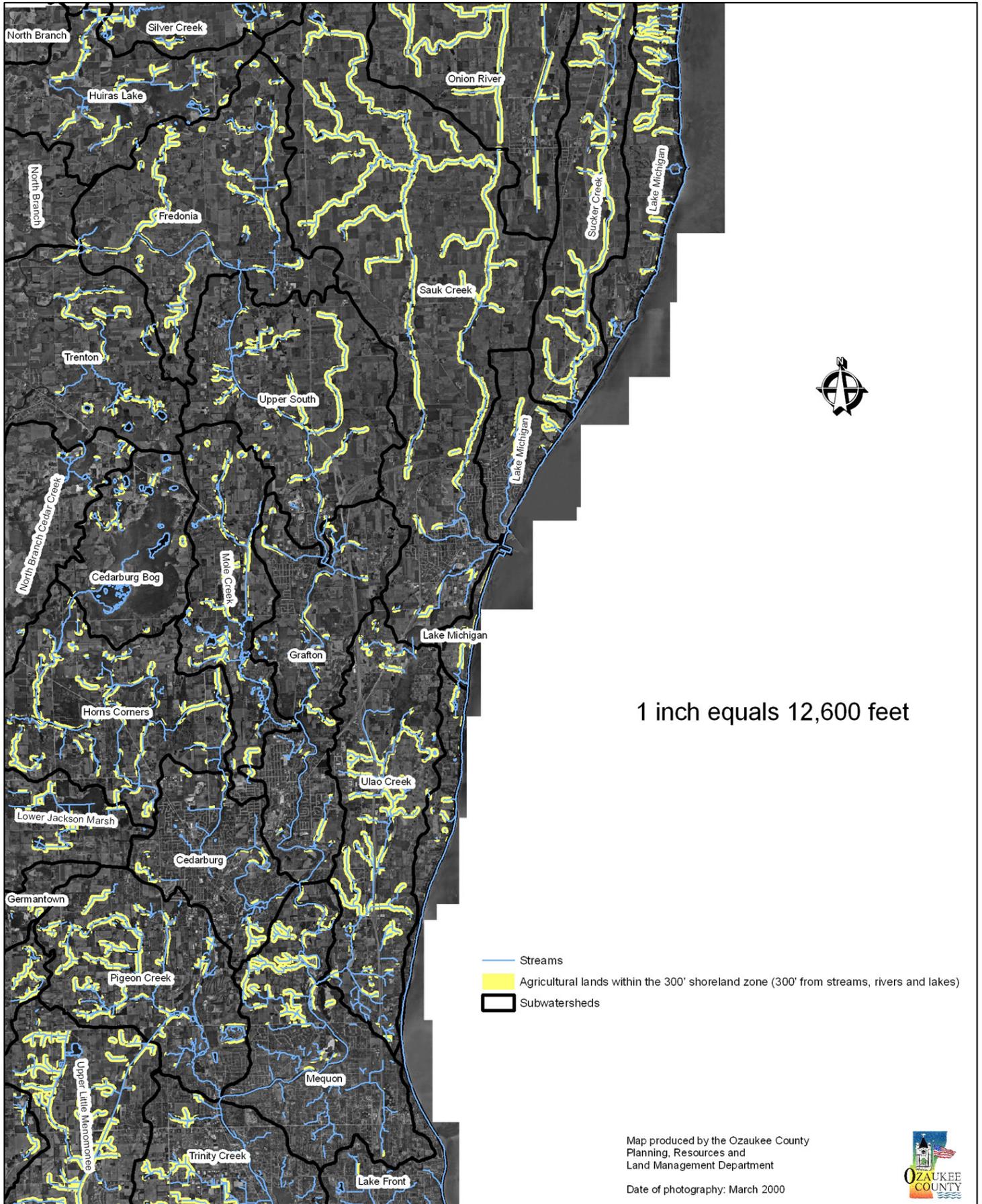
MAP 2.16

Map of Agriculture Fields within 150 feet of streams



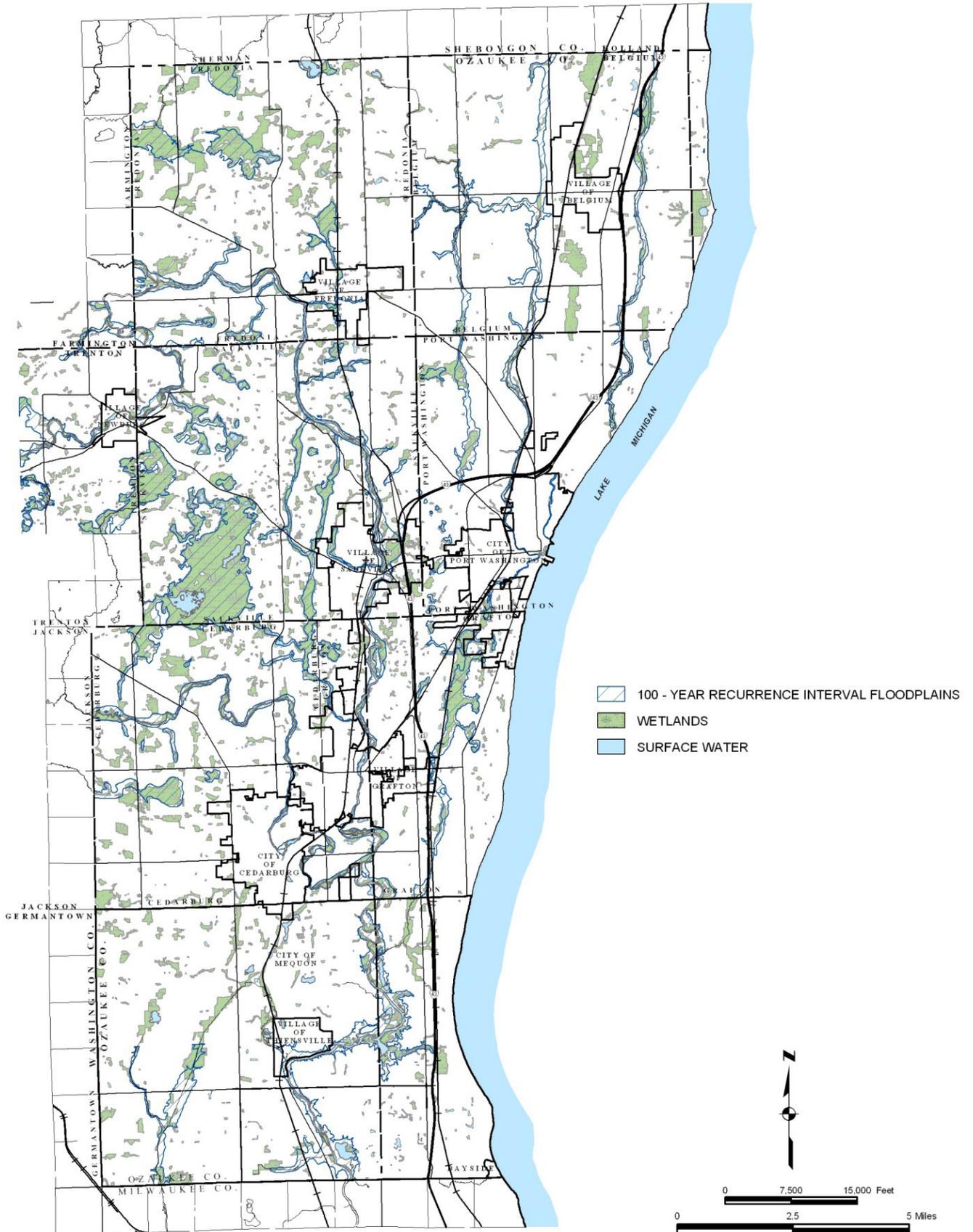
MAP 2.17

Map of Agriculture Fields within 300 feet of streams



MAP 2.18

SURFACE WATERS, WETLANDS, AND FLOODPLAINS IN THE OZAUKEE COUNTY PLANNING AREA



Source: SEWRPC.

Table 2.13

SURFACE WATER, FLOODPLAINS, AND WETLANDS IN THE OZAUKEE COUNTY PLANNING AREA

Local Government	Surface Water (acres)	Floodplain (acres)^a	Wetlands (acres)
City of Mequon	655		2,099
City of Port Washington	15		170
Village of Belgium	0		37
Village of Fredonia	3		106
Village of Grafton	51		79
Village of Newburg	26		34
Village of Saukville	39		302
Village of Thiensville	11		1
Town of Belgium	72		1,570
Town of Cedarburg	334		2,658
Town of Fredonia	284		3,240
Town of Grafton	104		983
Town of Port Washington	11		686
Town of Saukville	508		4,908
Ozaukee County Planning Area ^b	2,280		17,750

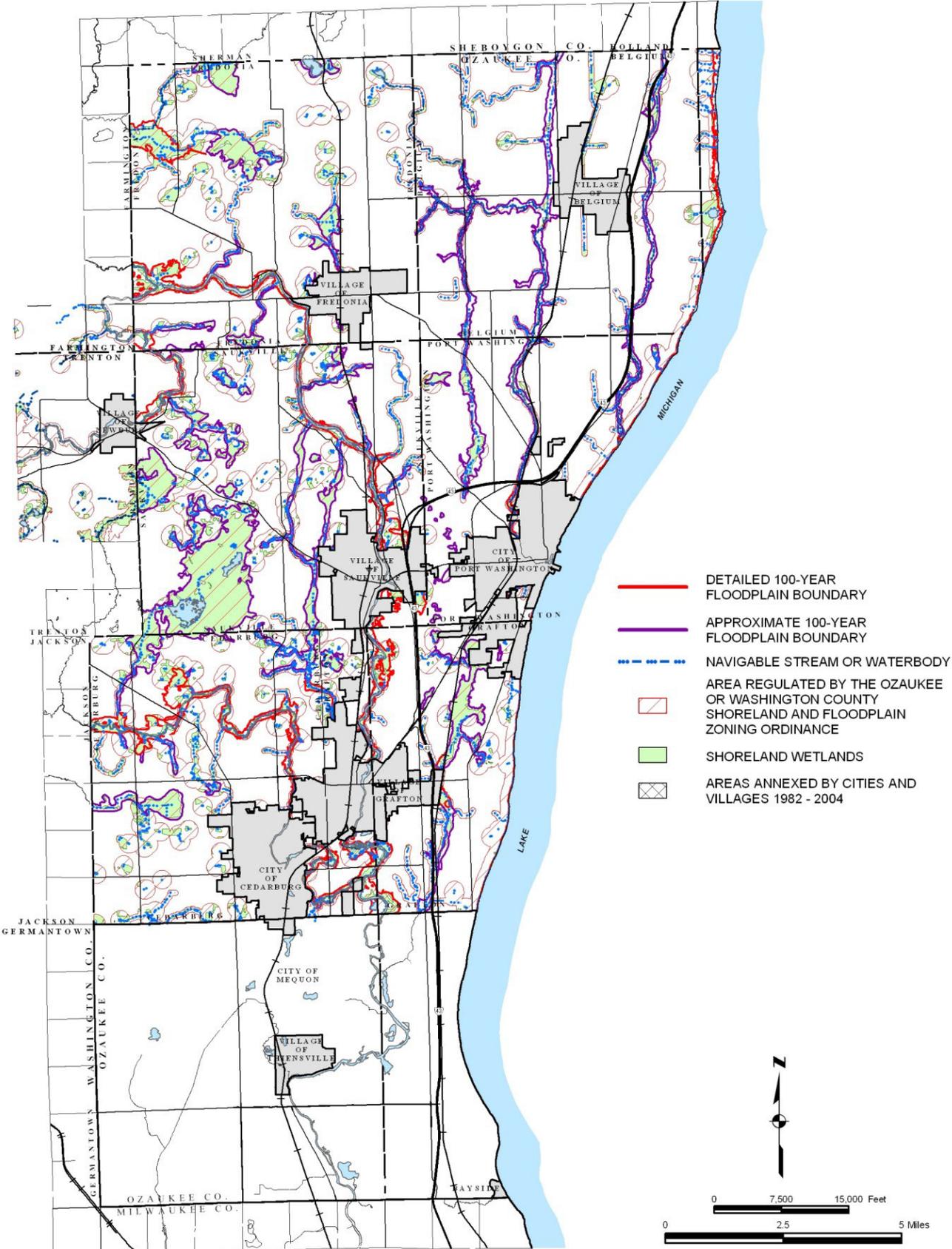
^aAreas within the floodplain in participating local governments will be identified upon adoption of the update to the Ozaukee County shoreland and floodplain zoning ordinance by the Ozaukee County Board of Supervisors. The Board is expected to consider the ordinance for adoption in April 2006.

^bIncludes data for all participating local governments, the City of Cedarburg, and those portions of the Village of Bayside, Town of Farmington, and the Town of Trenton located in the planning area.

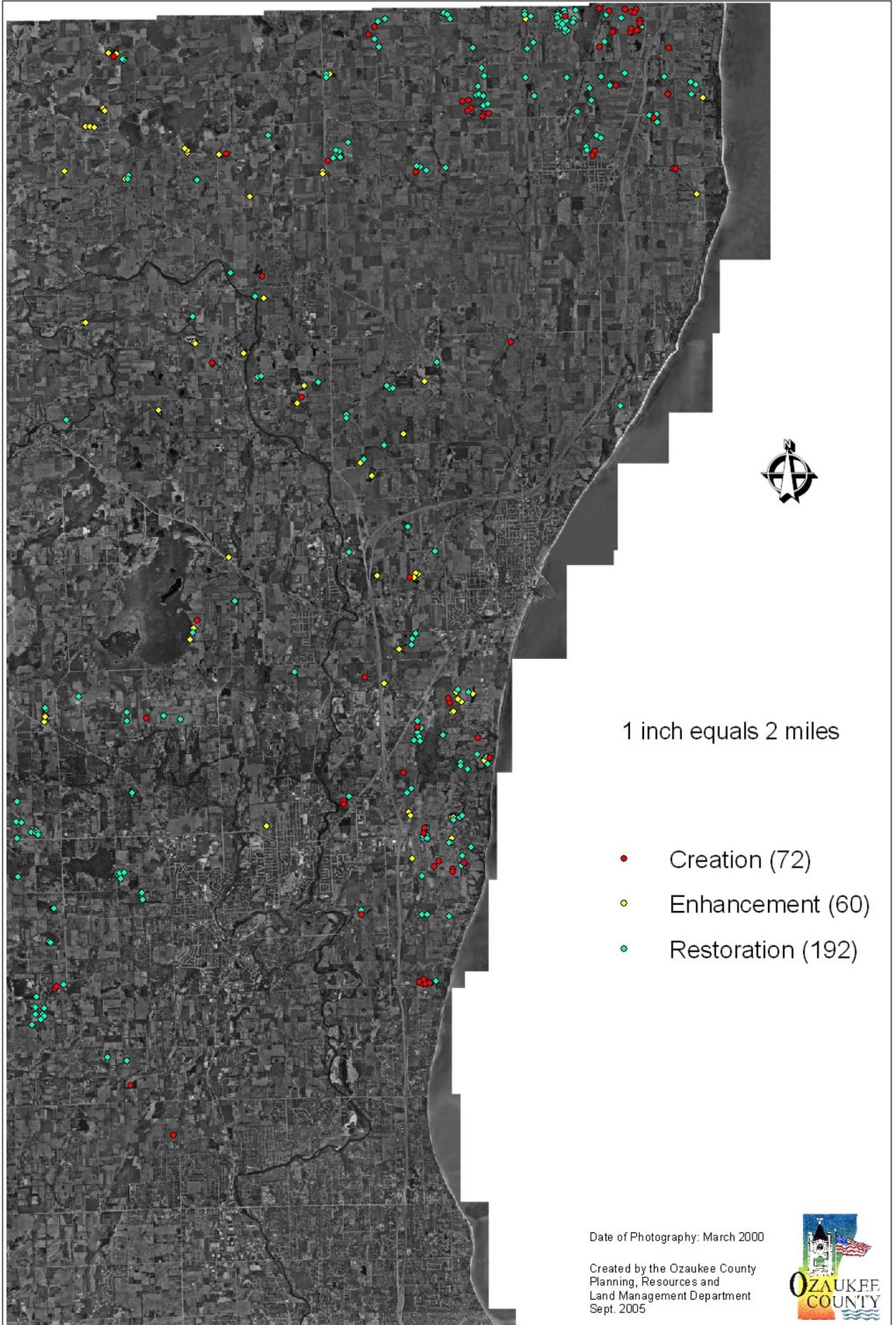
Source: SEWRPC.

MAP 2.19

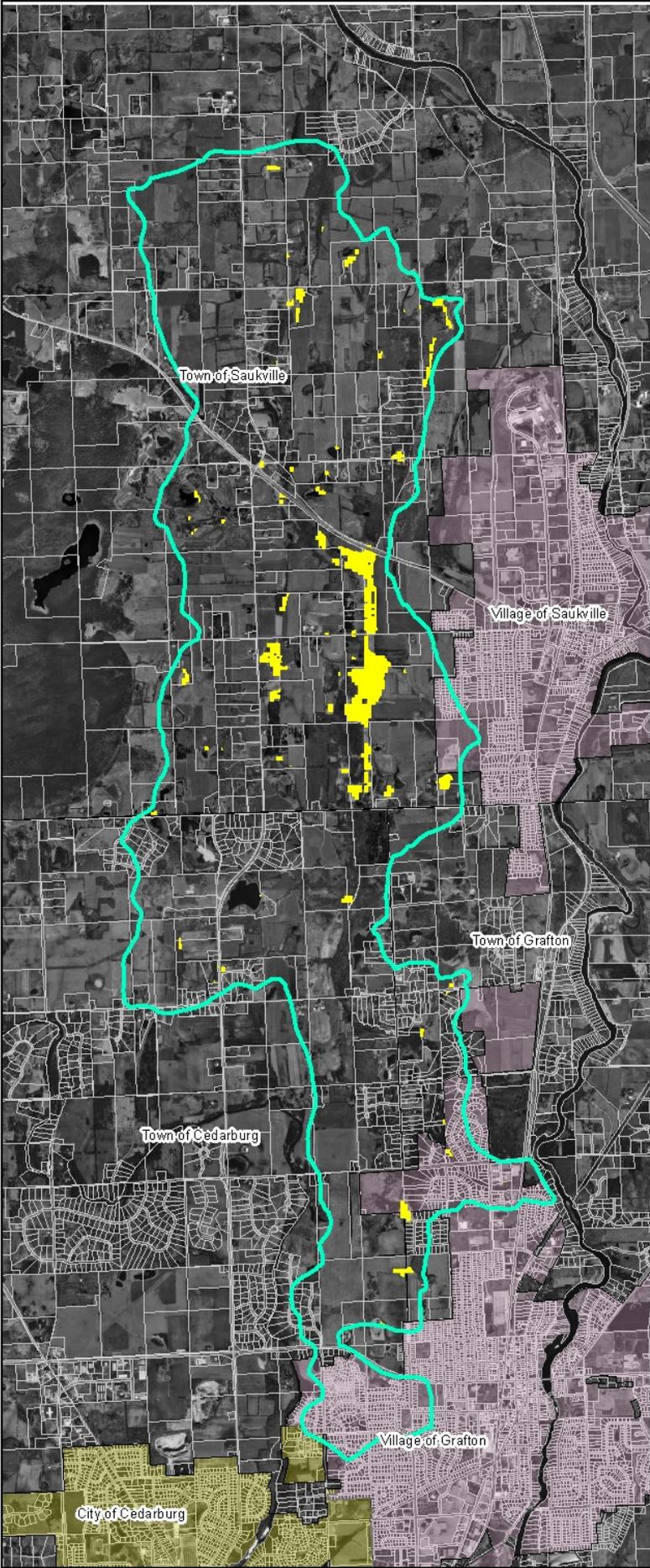
SHORELAND AND FLOODPLAIN ZONING IN UNINCORPORATED AREAS
IN THE OZAUKEE COUNTY PLANNING AREA: 2005



Source: SEWRPC.



Mole Creek Drainage Area



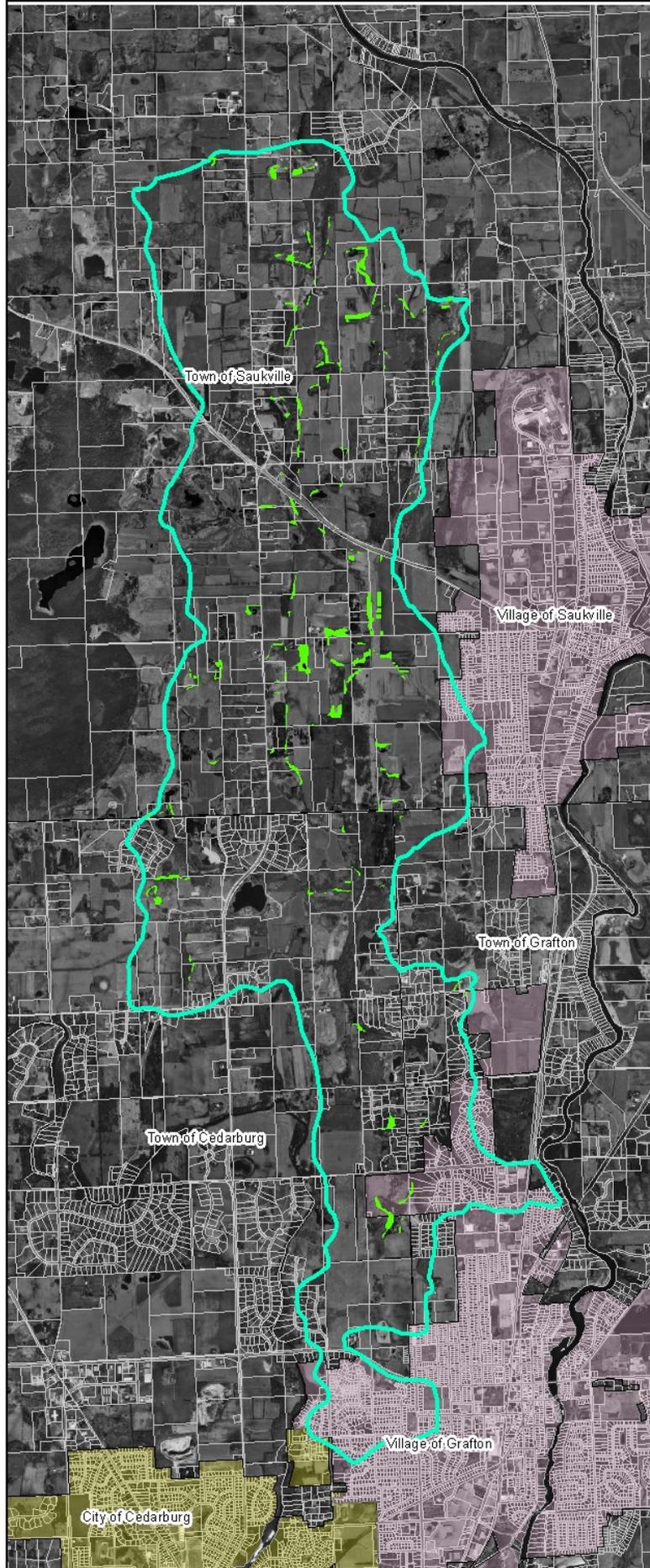
1 inch equals 3,000 feet



-  Reed Canary Grass Monotype
-  Mole Creek Watershed

Date of Photography: March 2000
Created by the Ozaukee County
Planning, Resources, and
Land Management Department
Sept. 2005





1 inch equals 3,000 feet



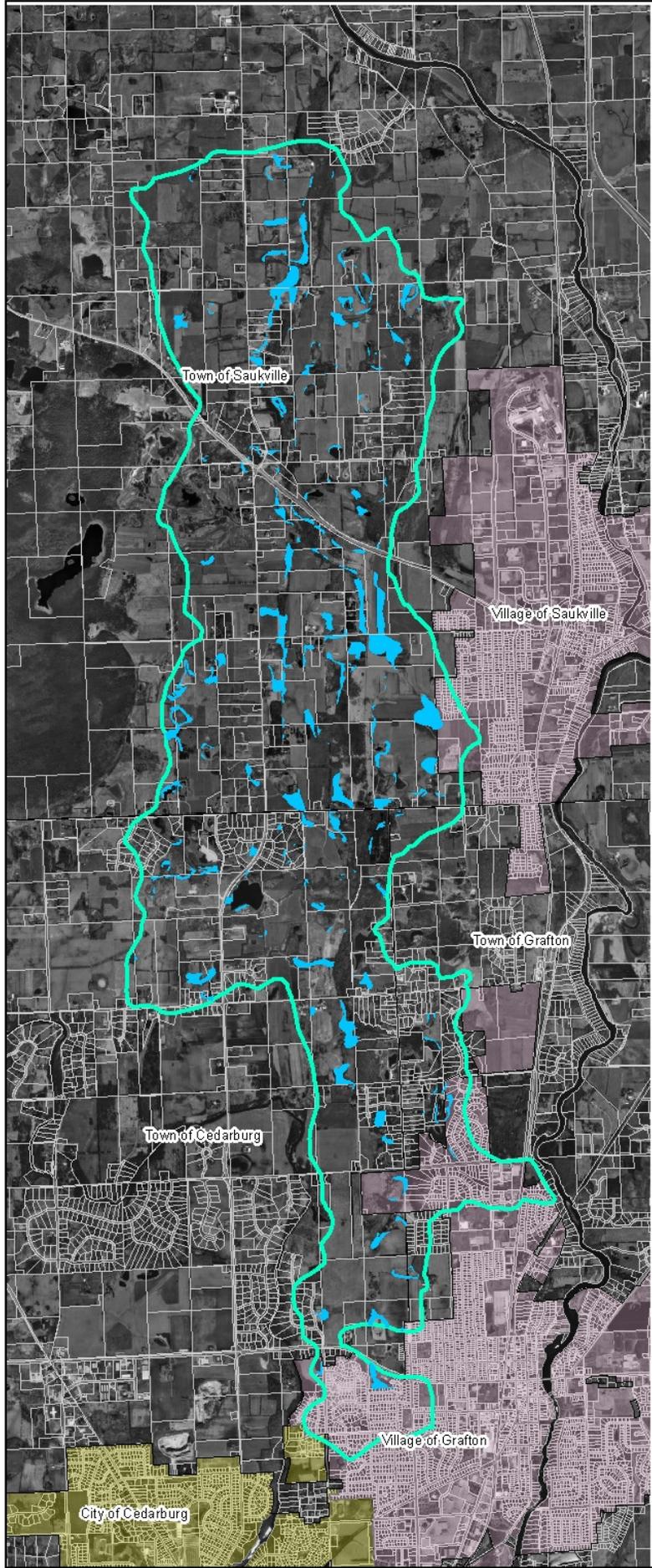
-  Cropped Wetland
-  Mole Creek Watershed

Date of Photography: March 2000

Created by the Ozaukee County
Planning, Resources, and
Land Management Department
Sept. 2005



Mole Creek Drainage Area



1 inch equals 3,000 feet



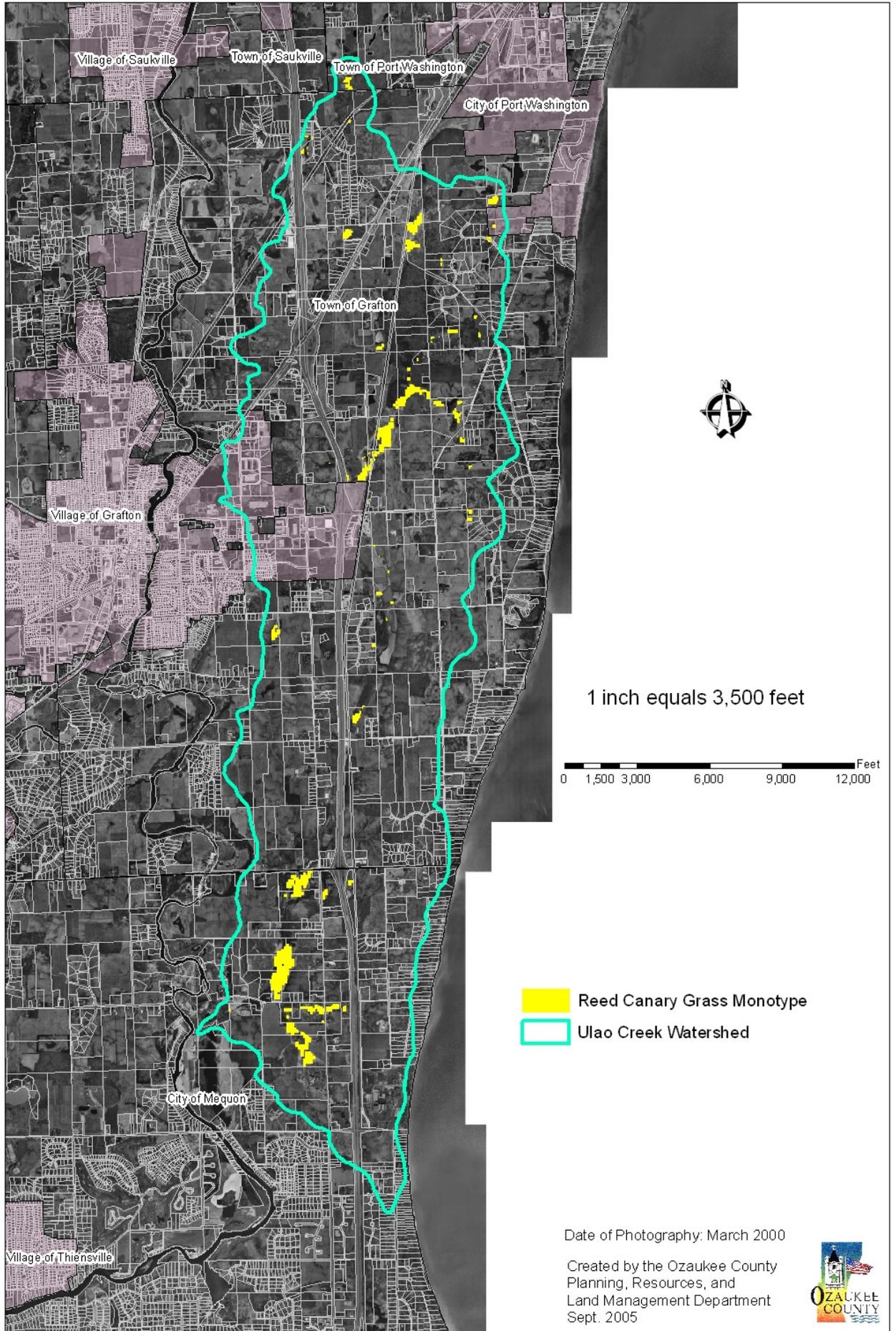
-  Potentially Restorable Wetland (PRW)
-  Mole Creek Watershed

Date of Photography: March 2000

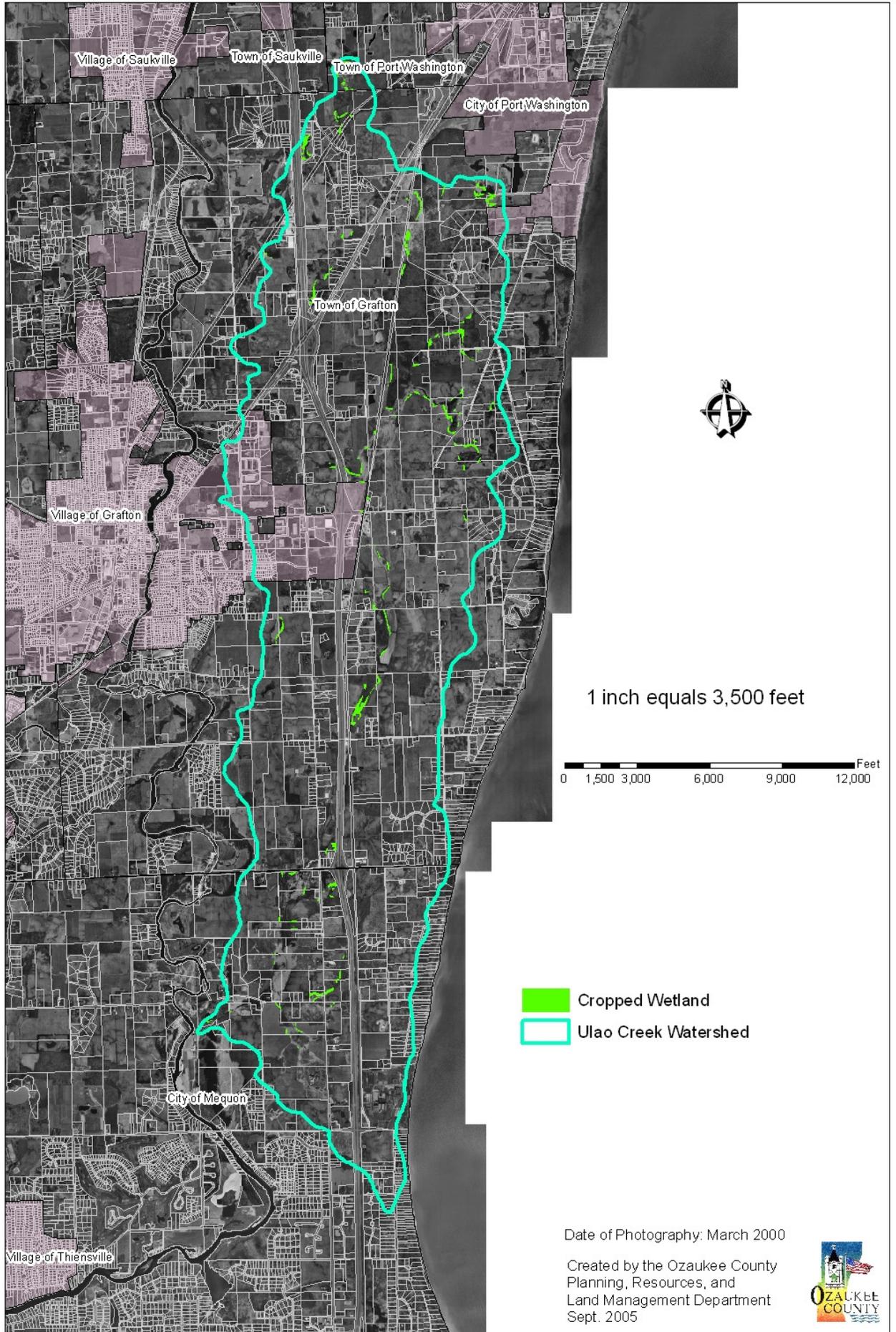
Created by the Ozaukee County
Planning, Resources, and
Land Management Department
Sept. 2005



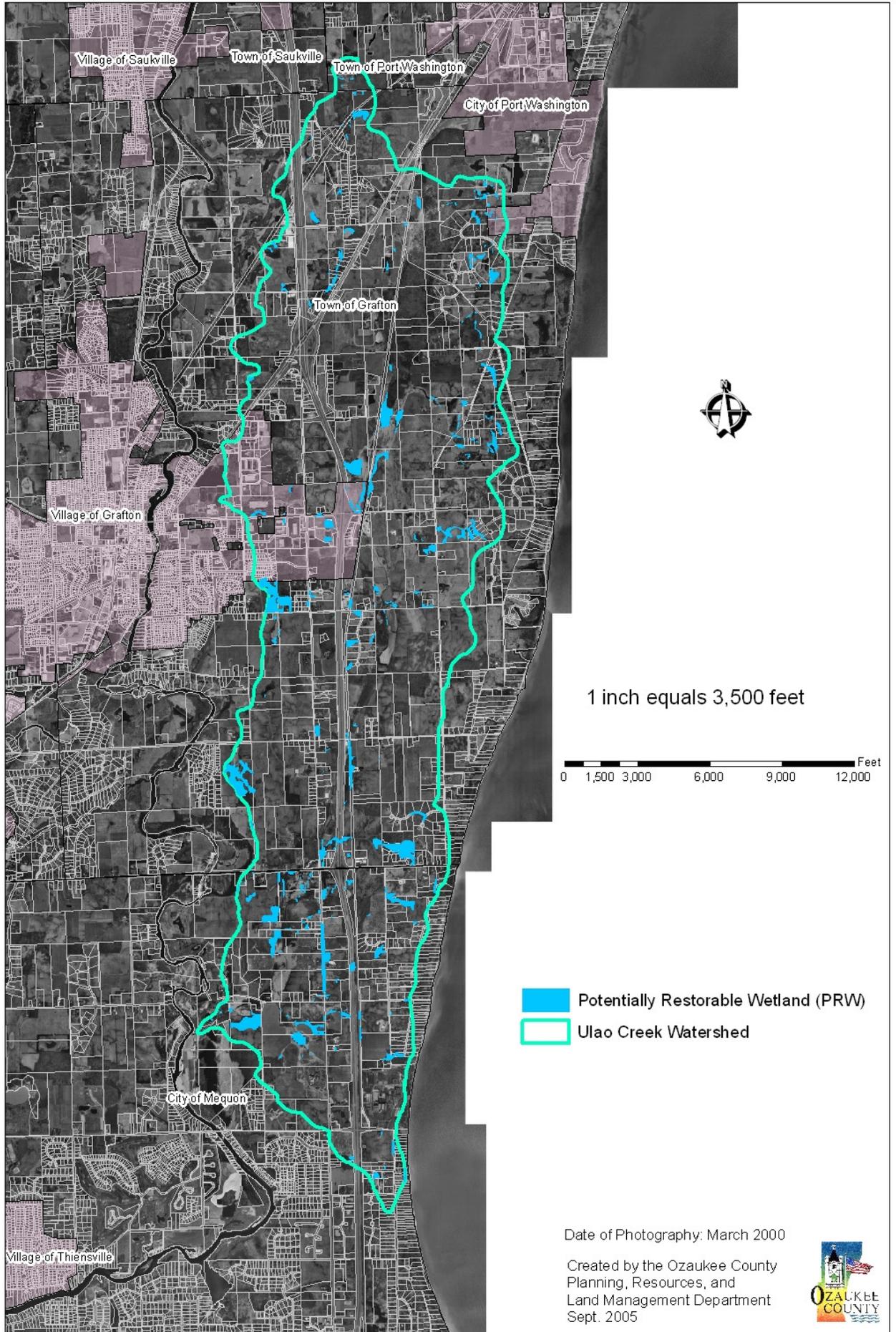
Ulao Creek Drainage Area



Ulao Creek Drainage Area



Ulao Creek Drainage Area

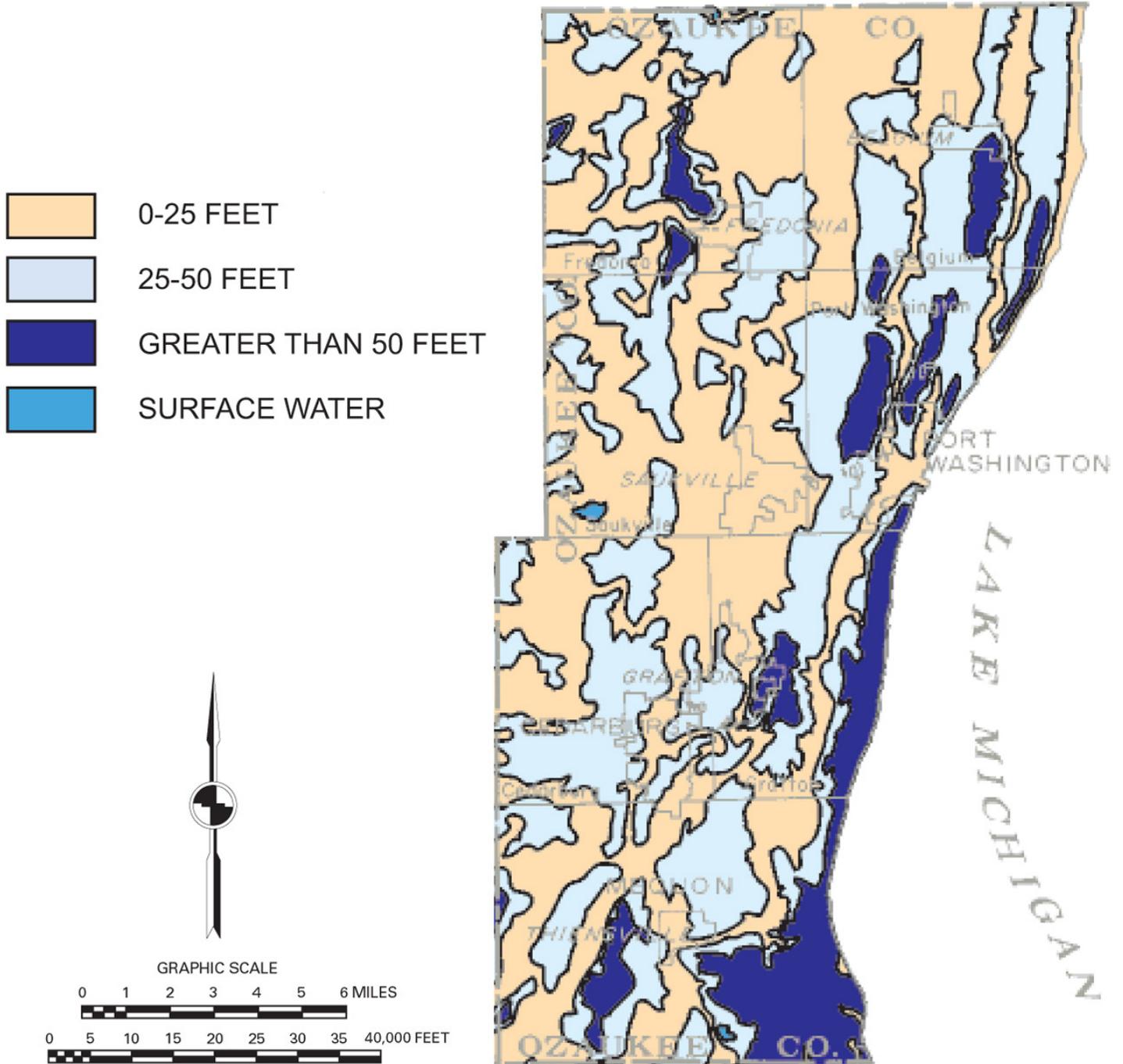


Date of Photography: March 2000

Created by the Ozaukee County
Planning, Resources, and
Land Management Department
Sept. 2005



DEPTH TO WATER TABLE IN OZAUKEE COUNTY



Source: Wisconsin Geological and Natural History Survey and SEWRPC.

Table 2.14

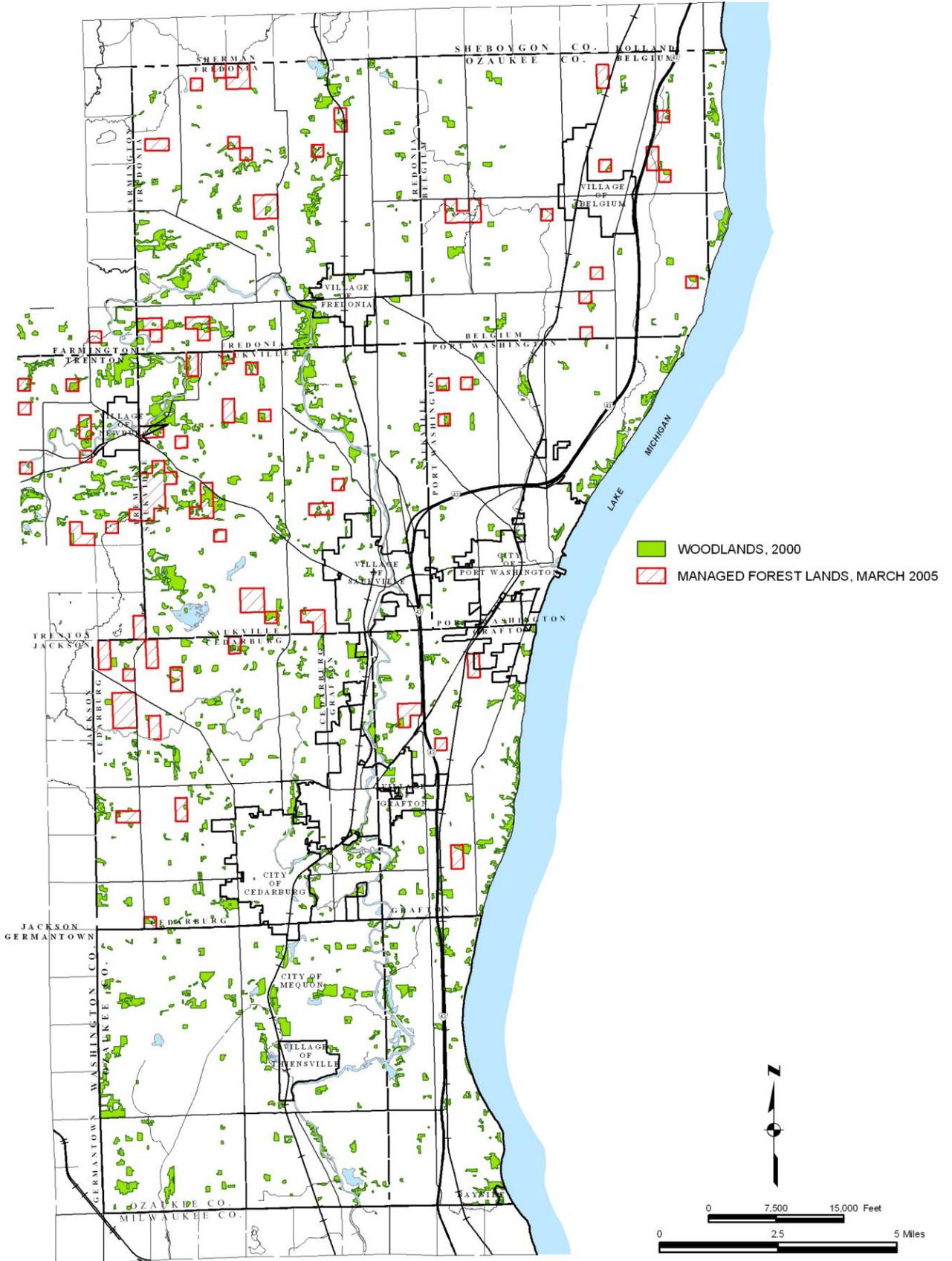
**CONTAMINATION POTENTIAL OF SHALLOW GROUNDWATER
IN THE OZAUKEE COUNTY PLANNING AREA**

Depth To Aquifer (Feet)	Estimated Permeability	Estimated Soil Percolation	Final Contaminant Potential Rating	Acres	Percent
Greater than 50	Low	Low	L9: Low	0	0.0
Greater than 50	Low	Moderate	L8: Low	0	0.0
Greater than 50	Moderate	Low	L7: Low	0	0.0
Greater than 50	Moderate	Moderate	L6: Low	0	0.0
Greater than 50	High	Low	L5: Low	0	0.0
25 to 50	Low	Low	L4: Low	1,196	0.8
25 to 50	Low	Moderate	L3: Low	59,516	37.5
25 to 50	Moderate	Low	L2: Low	0	0.0
Less than 25	Low	Low	L1: Low	961	0.6
Greater than 50	Low	High	M9: Moderate	0	0.0
Greater than 50	Moderate	High	M8: Moderate	0	0.0
Greater than 50	High	Moderate	M7: Moderate	0	0.0
25 to 50	Low	High	M6: Moderate	109	0.1
25 to 50	Moderate	Moderate	M5: Moderate	6,289	4.0
25 to 50	High	Low	M4: Moderate	0	0.0
Less than 25	Low	Moderate	M3: Moderate	33,812	21.3
Less than 25	Moderate	Low	M2: Moderate	0	0.0
Less than 25	High	Low	M1: Moderate	1,095	0.7
Greater than 50	High	High	H9: High	0	0.0
25 to 50	Moderate	High	H8: High	552	0.3
25 to 50	High	Moderate	H7: High	0	0.0
25 to 50	High	High	H6: High	0	0.0
Less than 25	Low	High	H5: High	5,387	3.4
Less than 25	Moderate	Moderate	H4: High	6,466	4.1
Less than 25	Moderate	High	H3: High	7,569	4.8
Less than 25	High	Moderate	H2: High	24,101	15.2
Less than 25	High	High	H1: High	11,504	7.2
--	--	--	--	158,557	100.0

Source: SEWRPC.

MAP 2.29

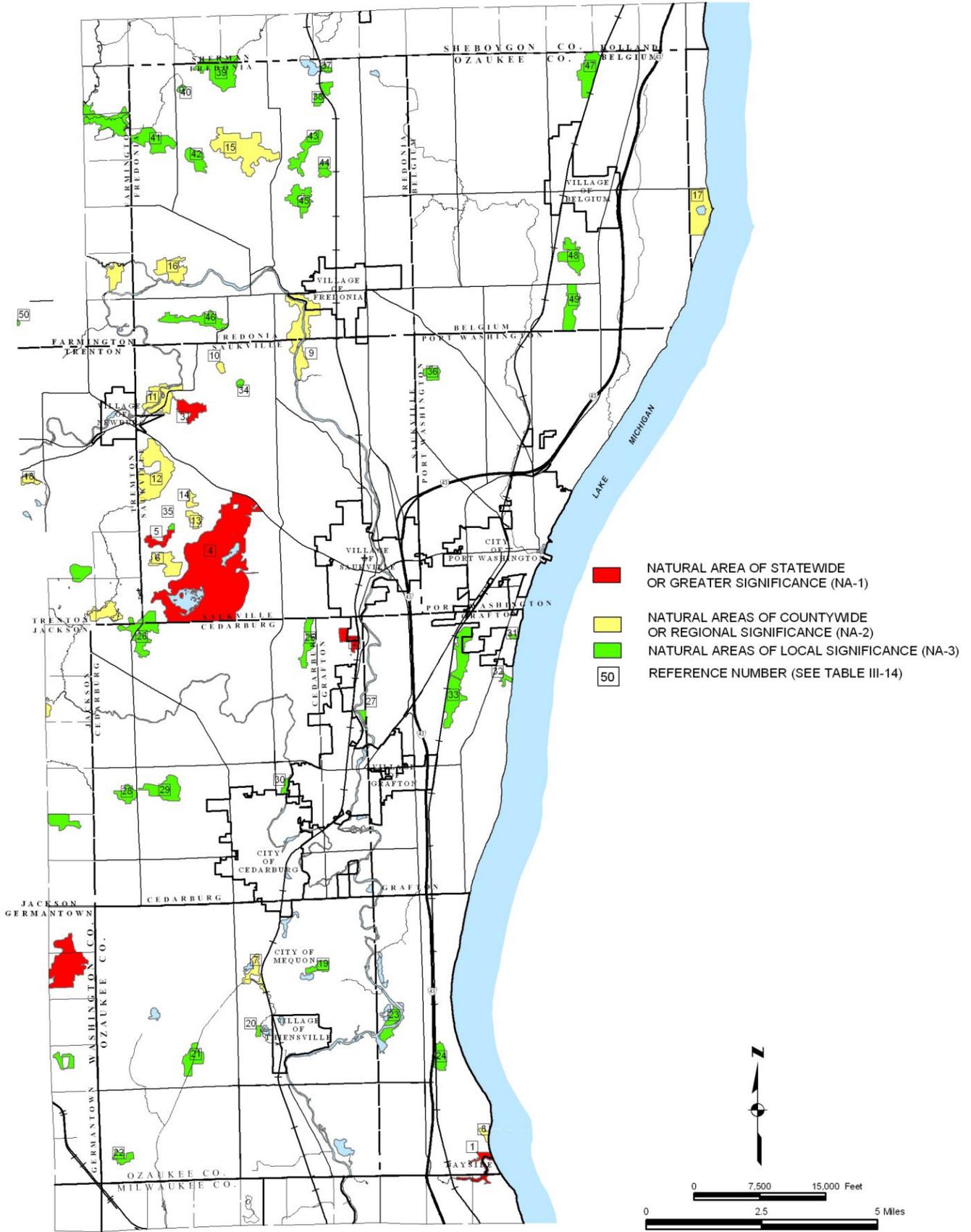
WOODLANDS AND MANAGED FOREST LANDS IN THE OZAUKEE COUNTY PLANNING AREA



Source: Ozaukee County and SEWRPC.

MAP 2.30

NATURAL AREAS IN THE OZAUKEE COUNTY PLANNING AREA AND ENVIRONS: 1994



Source: SEWRPC.

Table 2.15

NATURAL AREAS IN THE OZAUKEE COUNTY PLANNING AREA: 2005^a

Number on Map 2.29	Area Name	Classification Code ^b	Location	Ownership	Size (acres)	Description and Comments
1	Fairy Chasm State Natural Area	NA-1 (SNA, RSH)	T9N, R22E Sections 32, 33 City of Mequon T8N, R22E Sections 4, 5 Village of Bayside	The Nature Conservancy and other private	47 (plus 33 in Milwaukee County)	An 80- to 100-foot-deep wooded ravine which extends approximately 1.25 miles west from its confluence with Lake Michigan. The steep slopes support white pine, white cedar, and yellow birch on the north-facing slopes and dry-mesic hard-woods on the more exposed south-facing slopes. The ravine has special significance because cold air drainage enables several plant species with more northerly affinities to occur this far south. The flora includes the State-designated endan-gered pine-drops (<u>Pterospora andromedea</u>). The area extends south into Milwaukee County
2	Kurtz Woods State Natural Area	NA-1 (SNA, RSH)	T10N, R21E Section 1 Town of Grafton and Village of Saukville	The Nature Conservancy and other private	70	A mature southern mesic hard-woods that is a remnant of the once-extensive pre-settlement forest which covered this part of the Region. Dominated by sugar maple, beech, and white ash, with a moderately rich ground flora. Several small, dry kettle depressions are present. The woods have been undisturbed for at least 60 years. The younger woods to the southeast are important as a buffer
3	Riveredge Creek and Ephemeral Pond State Natural Area	NA-1 (SNA, RSH)	T11N, R21E Sections 7, 8 Town of Saukville	Riveredge Nature Center and other private	97	Second-order streams of exceptionally high water quality, fed by three first-order branches, all of which are spring-fed. Contains a stable, well-balanced, diverse fauna. Surrounding vegetation is a complex of second-growth northern wet-mesic forest, conifer swamp, shrub-carr, alder thicket, and young maple-beech and aspen woods. Contains a good population of the forked aster (<u>Aster furcatus</u>), a State-designated threatened species
4	Cedarburg Bog State Natural Area	NA-1 (SNA, RSH)	T11N, R21E Sections 19, 20, 21, 28, 29, 30, 31, 32, 33 Town of Saukville	Department of Natural Resources, University of Wisconsin-Milwaukee, Ozaukee-Washington Land Trust and other private	2,009	One of the largest and least disturbed bogs in eastern Wisconsin, containing an extensive conifer swamp forest, open bog, a shallow hard-water drain-age lake, and mesic woods on isolated islands. A portion of the area contains a string bog, characterized by noticeable ridges running perpendicular to water flow. This is the southernmost example in the world. The very high species diversity includes a large number of regionally rare species, many of which are northern relicts. A National Natural Landmark
5	Sapa Spruce Bog State Natural Area	NA-1 (SNA, RSH)	T11N, R21E Section 30 Town of Saukville	University of Wisconsin-Milwaukee and private	59	High-quality acid bog dominated by black spruce at one of its southernmost locations in Wisconsin. The rich, diverse flora includes at least six species of sphagnum moss
--	Subtotal	NA-1	5 sites	--	2,282	--
6	Cedarburg Beech Woods State Natural Area	NA-2 (SNA, RSH)	T11N, R21E Section 30 Town of Saukville	University of Wisconsin-Milwaukee and private	130	Good-quality, mature, beech- and sugar maple-dominated southern mesic forest in a moraine area of low gravelly hills and kettle holes. Dis-turbance, including past selective logging and grazing, appears to be minimal. Grades into lowland forest to north and northeast. Historic-ally a site of scientific research
7	Pigeon Creek Low and Mesic Woods	NA-2 (RSH)	T9N, R21 E Section 10 City of Mequon	Private	81	A combination of lowland hardwoods, wet-mesic woods, and upland mesic woods, much of which borders the cold, clear fast waters of Pigeon Creek. On the grounds of a former fox farm. Contains the State-designated endangered heart-leaved plantain (<u>Plantago cordata</u>), as well as the State-designated threatened snow trillium (<u>Trillium nivale</u>) and forked aster (<u>Aster furcatus</u>)

Number on Map 2.29	Area Name	Classification Code^b	Location	Ownership	Size (acres)	Description and Comments
8	Donges Bay Gorge	NA-2 (RSH)	T9N, R22E Section 33 City of Mequon	Private	22	A deep, steep-sided clay ravine on the Lake Michigan shore, containing a white pine and beech forest. Northern relict species are present. The area has suffered from erosion, encroaching residential development, and over-grazing by deer
9	Milwaukee River Mesic Woods	NA-2 (RSH)	T11N, R21E Section 3 Town of Saukville T12N, R21E Section 34 Town of Fredonia and the Village of Fredonia	Ozaukee County, Girl Scouts of Milwaukee Area, Inc., and other private	382	Morainal deposits along a two-mile stretch of the Milwaukee River support moderate- to good-quality upland mesic woods, with lowland hardwoods in depressions. Species diversity is generally good throughout
10	Ducks Limited Bog	NA-2	T11N, R21E Section 5 Town of Saukville	Ducks Limited and other private	21	Good-quality sphagnum bog on north side of a shallow lake and bordered by a deep moat. Typical acid-bog species present include leatherleaf, round-leaved sundew, snake-mouth orchid, grass-pink orchid, bog rosemary, blueberry, winterberry, pitcher plant, and cranberry. Area south of lake is more disturbed
11	Riveredge Mesic Woods	NA-2 (RSH)	T11N, R21E Sections 6, 7 Town of Saukville	Riveredge Nature Center and other private	212	Good-quality regenerating stand of mesic woods and lowland hardwoods bordering the Milwaukee River. Trees are medium-aged. A variety of habitats supports a rich species complement, including several uncommon species. Disturbed by highway and residences in the southern portion of the woods. Area north of Milwaukee River is wetter and more disturbed. Much of woods owned by Riveredge Nature Center
12	Kinnamon Conifer Swamp	NA-2 (RSH)	T11N, R21E Sections 18, 19 Town of Saukville	Private	382	A large wooded lowland, containing a combination of good-quality northern wet-mesic forest of white cedar and northern hardwoods swamp of black ash. Low glacial ridges within the swamp support mesic upland woods. Past disturbance appears, overall, to be minimal. The good, diverse northern understory includes a number of regionally uncommon species
13	South Conifer Swamp	NA-2	T11N, R21E Section 20 Town of Saukville	Private	52	Good-quality conifer swamp containing typical northern species. One of the few sites in the Region in which black spruce is present. Small lake is bordered by a narrow cattail fringe. Contains headwaters of Cedarburg Bog
14	Max's Bog	NA-2 (RSH)	T11N, R21E Section 20 Town of Saukville	Private	30	Two small, undeveloped, shallow lakes surrounded by good-quality bog mats. The area contains a number of species with more northern affinities
15	Huiras Lake Woods and Bog	NA-2	T12N, R21E Sections 8, 9, 10, 16 Town of Fredonia	Wisconsin Department of Natural Resources, Milwaukee Jewish Welfare Fund and other private	435	Large lowland and upland forested area that has been relatively undisturbed since last cut. A bog is located in the southern portion. Good diversity of tree and ground-layer species. The small, landlocked seepage lake is valuable for waterfowl migration and nesting. A number of northern relict species are present
16	Janik's Woods	NA-2 (RSH)	T12N, R21E Sections 29, 30 Town of Fredonia	Private	163	A relatively large, good-quality woodlot that is recovering from past disturbance. Southern portion is an upland containing medium-aged red oak, sugar maple, and basswood, with a diverse ground flora. Lowland hardwoods to the north contain scattered conifers
17	Harrington Beach Lacustrine Forest	NA-2	T12N, R23E Section 19 Town of Belgium	Department of Natural Resources	178	Moderate- to good-quality mature second-growth northern wet-mesic forest, located just west of the shoreline beach ridge. Dominant trees include green and black ashes, basswood, and white cedar. This is a regionally rare community type, heavily used by migratory birds
18	Myra Wetlands	NA-2	T11N, R20E Section 15 Town of Trenton	Private	69	Good-quality wetland complex of shallow lake, marsh, sedge meadow, shrub-carr, and lowland hardwoods
--	Subtotal	NA-2	13 sites	--	2,157	--
19	Highland Road Woods	NA-3	T9N, R21E Section 11 City of Mequon	Private	53	Mesic woods of moderate quality dominated by sugar maple, beech, and basswood. Low areas contain ephemeral ponds

Number on Map 2.29	Area Name	Classification Code ^D	Location	Ownership	Size (acres)	Description and Comments
20	Pigeon Creek Maple Woods	NA-3 (RSH)	T9N, R21E Section 15 City of Mequon	Private	13	A small but good-quality mesic woods on sloping uplands above Pigeon Creek. Ground flora is very rich and diverse, including a large population of twinleaf (<i>Jeffersonia diphylla</i>), a State-designated special concern species
21	Solar Heights Low Woods	NA-3	T9N, R21E Sections 20, 21 City of Mequon	City of Mequon and private	114	Disturbed floodplain forest dominated by red and silver maples and yellow birch. Changing water levels and Dutch elm disease have altered the canopy. Native species diversity is low, and exotic species are proliferating
22	Triple Woods	NA-3	T9N, R21E Section 31 City of Mequon	Private	51	Upland mesic forest of sugar maple and beech. Despite past logging, the spring flora is relatively diverse. Offers protection to tributaries of the Little Menomonee River
23	Ville du Parc Riverine Forest	NA-3	T9N, R22E Sections 18, 19 City of Mequon	City of Mequon and private	111	One of the last remnants of riverine forest along this portion of the Milwaukee River. Contains old river channels. The woods is mostly second-growth, with a mixture of upland and lowland species
24	Mequon Wetland	NA-3	T9N, R22E Section 20 City of Mequon	Private	77	A mixed wetland area consisting of deep and shallow marsh, fresh (wet) meadow, shrub-carr, and young wet to wet-mesic lowland hardwoods. Wetland filling and water-level changes due to ditching and channel realignment have disturbed the area
25	Mole Creek Swamp	NA-3 (RSH)	T10N, R21E Section 2 Town of Cedarburg	City of Cedarburg, Town of Cedarburg, and private	89	Primarily a disturbed, low, wooded area bordering Mole Creek, dominated by green ash, alder, and red-osier dogwood
26	Cedar-Sauk Low Woods	NA-3	T10N, R21E Sections 5, 6 Town of Cedarburg T11N, R21E Section 31 Town of Saukville T11N, R20E Section 36 Town of Trenton	Private	204 (plus 14 in Washington County)	Lowland hardwood forest of silver maple, green and black ash, and American elm, with evidence of abundant past disturbances, including grazing, power-line right-of-way, and two highways. Stream flows through area from Cedarburg Bog
27	Grafton Woods	NA-3 (RSH)	T10N, R21E Sections 13, 18 Town of Grafton	Ozaukee-Washington Land Trust and other private	18	Small mesic woods on east side of Milwaukee River. Despite history of grazing and selective cutting, has a good species diversity, including American gromwell (<i>Lithospermum latifolium</i>), a State-designated special concern species
28	Sherman Road Woods	NA-3	T10N, R21E Section 19 Town of Cedarburg	Private	72	Lowland hardwood forest with much second growth due to past grazing
29	Five Corners Swamp	NA-3	T10N, R21E Section 20 Town of Cedarburg	Wisconsin Department of Natural Resources and private	173	A large lowland hardwood forest that is suffering from disturbance, including selective cutting and a network of wide trails. Dominant trees are red and silver maples and cottonwood. A wind-storm in June 1991 snapped or uprooted a large number of mature trees
30	Cedar Creek Forest	NA-3 (RSH)	T10N, R21E Section 23 Town of Cedarburg	Private	23	Sugar maple and beech woods on west bank of Cedar Creek. Threatened by encroaching residential development
31	Cedar Heights Gorge	NA-3	T10N, R22E Section 4 City of Port Washington	Private	9	Disturbed, narrow, steep-sided gorge leading to Lake Michigan. Almost complete dominance by white cedar
32	Lions Den Gorge	NA-3	T10N, R22E Section 10 Town of Grafton	Ozaukee County	20	Deep ravine on Lake Michigan shore. Dominated by white cedar and hardwoods, with a relatively good-quality herb layer, including a few northern relicts
33	Ulao Lowland Forest	NA-3	T10N, R22E Sections 4, 5, 8, 9, 17 Town of Grafton Section 4 City of Port Washington	Private	347	A large lowland hardwoods area, dominated by red and silver maples and black ash. Adversely affected by changing water levels, selective cutting, and Dutch elm disease, which have opened the canopy. Marshy stands occur throughout
34	Hansen's Lake Wetland	NA-3	T11N, R21E Section 4 Town of Saukville	Ozaukee-Washington Land Trust and other private	13	Small but good-quality lake surrounded by cattails, shrub-carr, and lowland hardwoods, with scattered tamaracks. Lake is stocked with bluegills
35	Knollwood Road Bog	NA-3	T11N, R21E Section 19 Town of Saukville	Private	9	Small lake surrounded by a sphagnum mat, shallow marsh, and lowland hardwoods

Number on Map 2.29	Area Name	Classification Code^b	Location	Ownership	Size (acres)	Description and Comments
36	Hawthorn Drive Forest	NA-3	T11N, R22E Section 6 Town of Port Washington	Private	54	Wet-mesic red maple and American elm forest, with an upland forest of red oak, beech, and basswood to the south. Canopy has been opened by disease and logging
37	Spring Lake Marsh	NA-3	T12N, R21E Section 2 Town of Fredonia	Private	19	Good-quality wetland complex bordering a clear, shallow lake. Good habitat diversity includes shrub-carr, sedge meadow, shallow marsh, and cedar-tamarack swamp
38	Spring Lake Beech Forest	NA-3	T12N, R21E Section 2 Town of Fredonia	Private	65	Small mesic hardwood forest dominated by small- to medium-sized beech, sugar maple, basswood, and white ash, with a long history of selective cutting
39	County Line Low Woods	NA-3	T12N, R21E Sections 4, 5 Town of Fredonia T13N, R21E Sections 32, 33 Town of Sherman	Private	214 (plus 58 in Sheboygan County)	Large but mostly young lowland hard-woods of mixed composition and having history of disturbance. Many openings in canopy allow dense undergrowth. Extends north into Sheboygan County
40	Beekeeper Bog	NA-3	T12N, R21E Section 5 Town of Fredonia	Ozaukee County and private	15	Good example of a typical kettle-hole bog with shallow water, shrub-carr, and northern wet-mesic white cedar forest. The southeastern portion has been ditched. Contains a good number of species with more northerly affinities
41	Department of Natural Resources Lowlands	NA-3	T12N, R21E Section 7 Town of Fredonia	Department of Natural Resources and private	186	Primarily a disturbed lowland hardwood forest with streams. Ponds have been dredged by Department of Natural Resources
42	Pioneer Road Lowlands	NA-3	T12N, R21E Sections 8, 17 Town of Fredonia	Private	94	A low, wet woodlot with a history of disturbance. North half contains a dense stand of tamarack, cedar, and black ash, with some large individual trees. South half has large scattered trees and thick undergrowth
43	Cedar Valley Swamp	NA-3	T12N, R21E Sections 10, 11, 15 Town of Fredonia	Private	141	An irregularly shaped lowland area disturbed by Dutch elm disease, logging, and water-level changes. Dominated by black ash, red maple, and white cedar, with small areas of tamarack. A small upland island in the center contains mature trees
44	Evergreen Road Bog	NA-3 (RSH)	T12N, R21E Section 14 Town of Fredonia	Private	44	Good-quality tamarack-cedar bog, with a large sedge-shrub area to the north and upland hardwoods to the southeast. Threatened by residential development
45	Kohler Road Woods	NA-3	T12N, R21E Sections 15, 22 Town of Fredonia	Private	124	Primarily a low, wet woods of medium-aged red and silver maples, yellow birch, and black ash. South half is younger, with many cut stumps
46	Waubeka Low Woods	NA-3	T12N, R21E Sections 31, 32 Town of Fredonia	Ozaukee County, Ozaukee-Washington Land Trust, and other private	161	Primarily a wooded lowland of tamarack, black ash, and yellow birch, but with glacial ridges containing upland trees. There is a history of disturbance
47	Cedar Grove Swamp	NA-3	T12N, R22E Sections 2, 3 Town of Belgium	U.S. Fish and Wildlife Service and private	177	Extensive second-growth forest on ditched lacustrine flats with clayey soils. Dominated by red and silver maple, black ash, yellow birch, American elm, and swamp white oak. Repeatedly logged and encroached on by agriculture and ditching
48	Belgium Swamp—North	NA-3	T12N, R22E Section 27 Town of Belgium	Private	150	An extensive, but young, lacustrine forest 2.5 miles from Lake Michigan, with American elm, black ash, and red and silver maples. Disease, logging, and windthrow have opened the canopy, permitting a brushy understory to develop
49	Belgium Swamp—South	NA-3	T12N, R22E Section 34 Town of Belgium	Private	148	Low, flat, wet forested area of black ash and silver and red maples, with some yellow birch and basswood. Old wind-falls and dead standing trees are com-mon. There is a history of disturbance, resulting in a very open and brushy appearance
50	Green Lake Bog	NA-3	T12N, R20E Section 34 Town of Farmington	Private	19	Small but good-quality undeveloped bog lake bordered by sphagnum mat, conifer swamp, and mesic hardwoods
--	Subtotal	NA-3	32 sites	--	3,007	--
--	Total	All Natural Areas	50 sites	--	7,446	--

^a Inventory conducted in 1994; ownership information updated in 2005.

^bNA-1 identifies Natural Area sites of statewide or greater significance.

NA-2 identifies Natural Area sites of countywide or regional significance.

NA-3 identifies Natural Area sites of local significance.

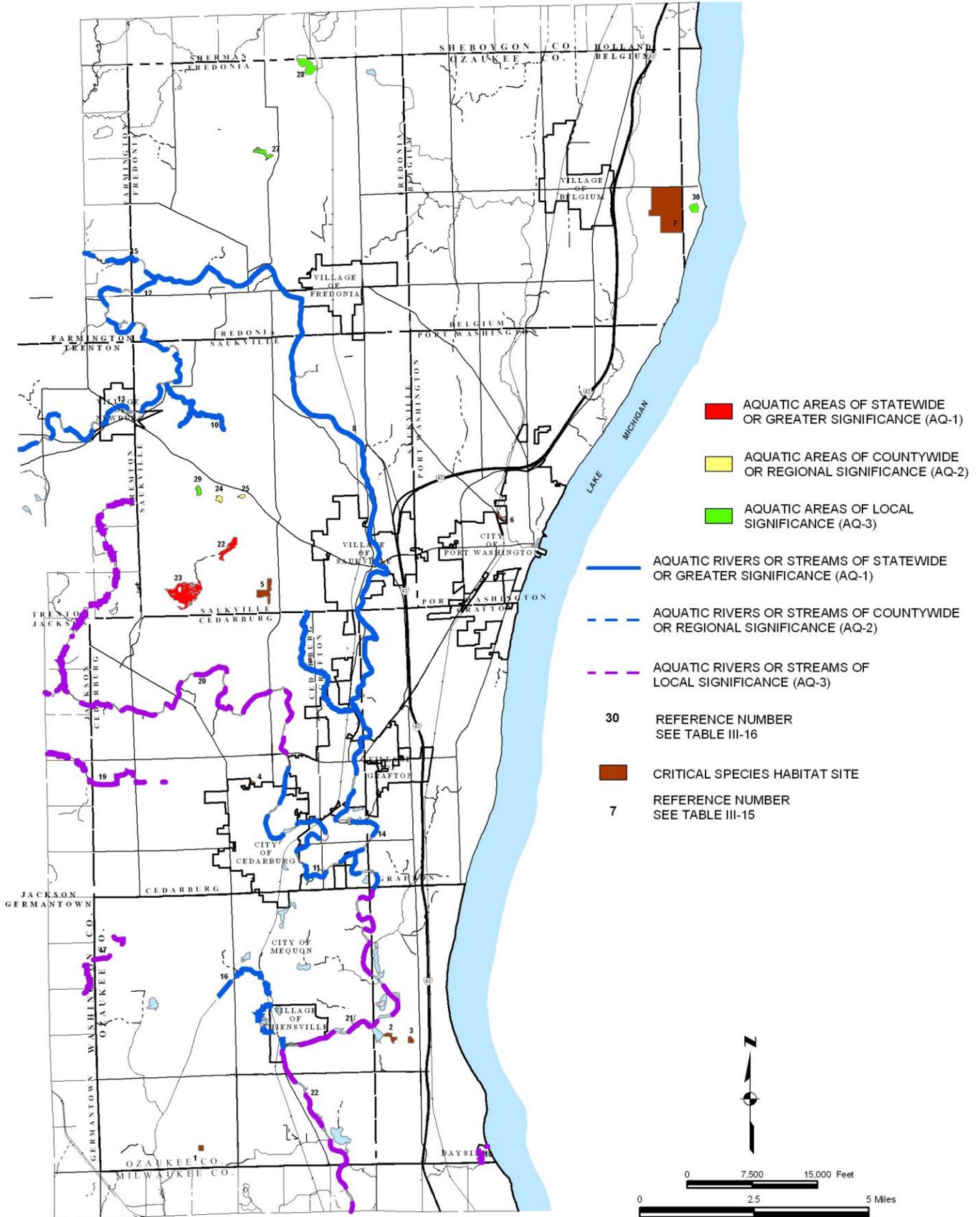
SNA, or State Natural Area, identifies those sites officially designated as State Natural Areas by the State of Wisconsin Natural Areas Preservation Council.

RSH, or Rare Species Habitat, identifies those sites which support rare, threatened, or endangered animal or plant species officially designated by the Wisconsin Department of Natural Resources.

Source: Wisconsin Department of Natural Resources and SEWRPC.

MAP 2.31

**CRITICAL SPECIES HABITAT SITES AND AQUATIC HABITAT SITES
IN THE OZAUKEE COUNTY PLANNING AREA AND ENVIRONS : 1994**



Source: SEWRPC.

Table 2.16

**CRITICAL SPECIES HABITAT SITES LOCATED OUTSIDE NATURAL AREAS
IN THE OZAUKEE COUNTY PLANNING AREA: 2005^a**

Number on Map 2.30	Site Name and Classification Code^b	Location	Ownership	Size (acres)	Species of Concern^c
1	Strauss Woods (CSH-P)	T9N, R21E, Section 33 City of Mequon	Private	7	American gromwell (<i>Lithospermum latifolium</i>) (R)
2	Pecard Sedge Meadow (CSH-P)	T9N, R22E, Section 19 City of Mequon	Private	13	Yellowish gentian (<i>Gentiana alba</i>) (T)
3	Eastbrook Road Woods (CSH-P)	T9N, R22E, Section 19 City of Mequon	Private	8	Forked aster (<i>Aster furcatus</i>) (T)
4	Cedarburg Woods—West (CSH-P)	T10N, R21E, Section 22 Town of Cedarburg	Private	4	Goldenseal (<i>Hydrastis canadensis</i>) (R)
5	Cedar-Sauk Upland Woods (CSH-P)	11N, R21E, Section 33 Town of Saukville	Private	38	American gromwell (<i>Lithospermum latifolium</i>) (R)
6	Sauk Creek Nature Preserve (CSH-P)	T11N, R22E, Section 29 City of Port Washington	Ozaukee County	22	Forked aster (<i>Aster furcatus</i>) (T)
7	Harrington Beach State Park Old Fields (CHS-B)	T12N, R22E, Section 24 Town of Belgium	Department of Natural Resources	202	Upland sandpiper (<i>Bartramia longicauda</i>) (R)
Total	--	--	--	294	--

^a Inventory conducted in 1994; ownership information updated in 2005.

^b CSH-P identifies a critical plant species habitat site; CSH-B identifies a critical bird species habitat site.

^c "R" refers to species designated as rare or special concern; "T" refers to species designated as threatened.

Source: SEWRPC.

Table 2.17

**CRITICAL AQUATIC HABITAT SITES IN THE OZAUKEE COUNTY
PLANNING AREA: 2005^a**

Number on Map 2.30	Streams	Size (stream miles)	Rank^b	Description and Comments
8	Milwaukee River main stem upstream from STH 33	11.1 miles	AQ-1 (RSH)	Important reservoir for critical fish species, including the striped shiner, an endangered fish species, and three threatened fish species
9	Milwaukee River downstream from STH 33 to STH 57 (includes Mole Creek)	8.7 miles	AQ-1 (RSH)	Important reservoir for the striped shiner; good overall fish population and diversity
10	Riveredge Creek	1.6 miles	AQ-1 (RSH)	A slow, cold, spring-fed stream, with excellent water quality; contains a very diverse invertebrate assemblage; a designated State Natural Area
11	Cedar Creek downstream from STH 60	6.7 miles	AQ-2 (RSH)	Good fish population and diversity, including three critical fish species; good assemblage of mussel species
12	Milwaukee River downstream from STH 33 to main stem	4.3 miles ^c	AQ-2 (RSH)	Biotic Index Rating ^d of "Excellent" critical fish species present; good assemblage of mussel species
13	Milwaukee River downstream from STH 33 to main stem	5.6 miles ^e	AQ-2 (RSH)	Biotic Index Rating ^d of "Excellent" critical fish species present; good assemblage of mussel species
14	Milwaukee River downstream from STH 57 to CTH C	4.5 miles	AQ-2 (RSH)	Critical fish species present, including the striped shiner; Biotic Index Rating ^e of "Good"
15	North Branch, Milwaukee River	0.8 miles ^c	AQ-2 (RSH)	Good overall fish population and diversity, including critical fish species; Biotic Index Rating ^f of "Good to Excellent"
16	Pigeon Creek	2.4 miles	AQ-2 (RSH)	Good overall fish population and diversity, including critical fish species; critical plant species adjacent to and within the channel
17	North Branch, Menomonee River upstream from STH 145	0.8 miles ^c	AQ-3	Bisects several Natural Areas
18	Fish Creek	1.0 miles ^c	AQ-3	Bisects Fairy Chasm State Natural Area
19	Cedar Creek downstream from Little Cedar Creek inflow to CTH M	0.5 miles ^c	AQ-3	Good fish population and diversity; bisects Jackson Swamp, an identified Natural Area
20	Cedar Creek downstream from CTH M to STH 60	8.8 miles ^c	AQ-3	Good fish population and diversity; good mussel species assemblage
21	Milwaukee River downstream from CTH C to Mequon Road	13.4 miles	AQ-3 (RSH)	Good fish population and diversity and mussel species richness
22	Milwaukee River downstream from Mequon Road to Brown Deer Road	2.9 miles ^c	AQ-3 (RSH)	Biotic Index Rating ^d of "Good"; critical fish species present
	Total (14 stream reaches)	67.5 miles	--	--

Number on Map 2.30	Lakes ^g	Size (Acres)	Rank ^b	Description and Comments
23	Long Lake	34 acres	AQ-1(RSH)	A shallow seepage lake with an undeveloped shoreline and wilderness character within the Cedarburg Bog State Natural Area; a variety of plant communities surrounds the Lake; critical herptile habitat
24	Mud Lake	245 acres	AQ-1 (RSH)	A shallow, undeveloped seepage lake within the Cedarburg Bog State Natural Area; a variety of plant communities surrounds the lake
25	Big Bienborn Lake (Horn Lake)	12 acres	AQ-2 (RSH)	A seepage lake adjacent to the Cedarburg Bog State Natural Area
26	Watts Lake	7 acres	AQ-2	A deep spring lake within the Cedarburg Bog State Natural Area; an undeveloped shoreline
27	Quarry Lake	19 acres	AQ-3	An abandoned limestone quarry which is an identified Geological Area site adjacent to an identified Natural Area, Harrington Beach Lacustrine Forest
28	Huiras Lake	26 acres	AQ-3	An undeveloped seepage lake encompassed by an identified Natural Area, Huiras Lake Woods and Bog
29	Spring Lake	57 acres ^c	AQ-3	A seepage lake with adjacent wetlands important for breeding and feeding habitat for wildlife
30	Unnamed lake	13 acres	AQ-3(RSH)	A seepage lake with suitable habitat for Blanding's turtle, a threatened species
- -	Total (8 lakes)	413 acres	- -	- -

^a Inventory conducted in 1994; ownership information updated in 2005.

^bAQ-1 identifies Aquatic Area sites of statewide or greater significance, AQ-2 identifies Aquatic Area sites of countywide or regional significance, and AQ-3 identifies Aquatic Area sites of local significance. RSH, or Rare Species Habitat, identifies those aquatic areas which support rare, endangered, threatened, or "special concern" species officially designated by the Wisconsin Department of Natural Resources.

^cLake or stream is located partially within Ozaukee County. Number refers to acreage or stream miles located within the County.

^dStream located in Washington County. Stream miles located within Washington County.

^eBased upon the Hilsenhoff Biotic Index (HBI) discussed in Wisconsin Department of Natural Resources Technical Bulletin No. 132, Using a Biotic Index to Evaluate Water Quality in Streams, 1982.

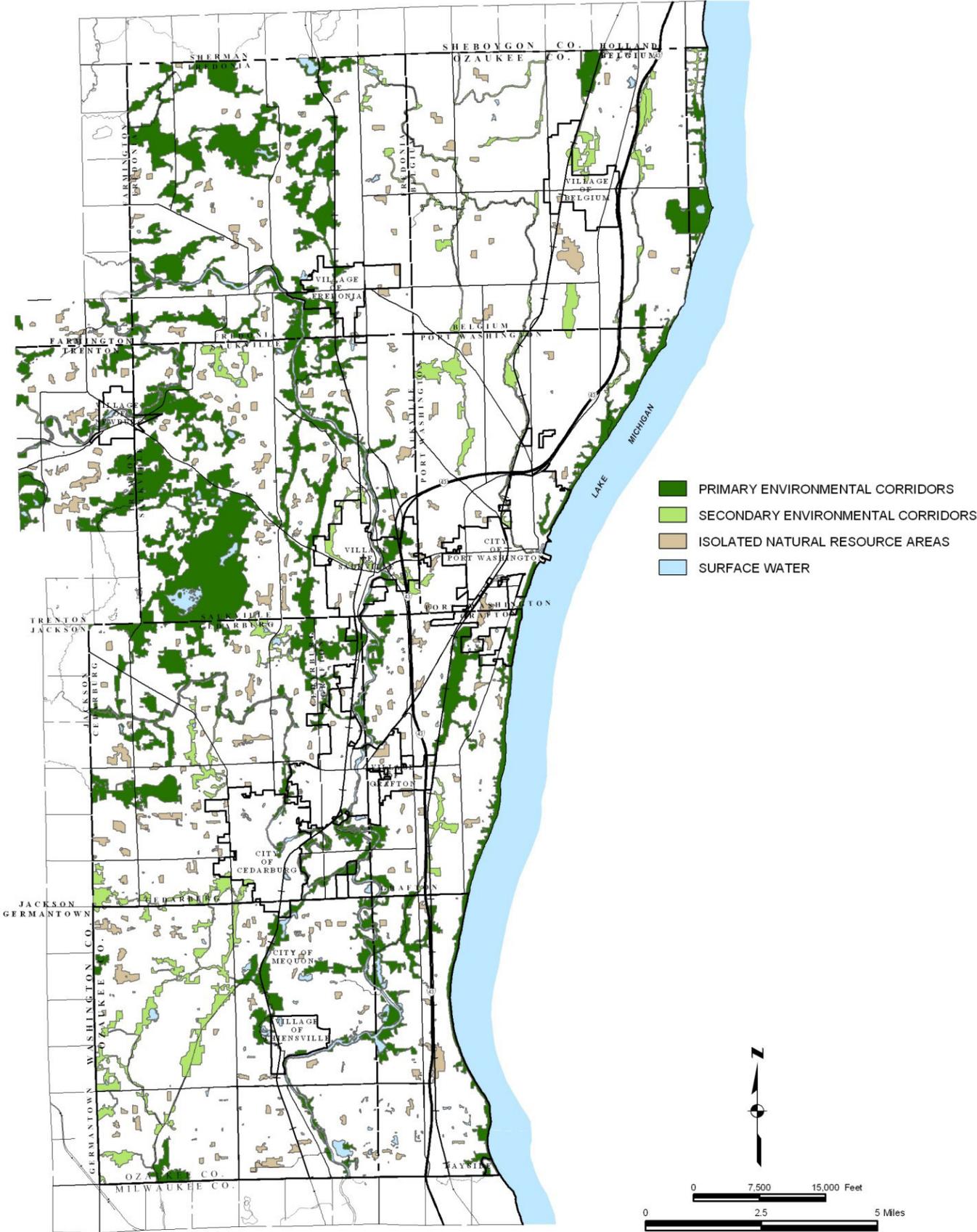
^fBased upon the Index of Biotic Integrity (IBI) discussed in U.S. Department of Agriculture, Forest Service, General Technical Report No. 149, Using the Index of Biotic Integrity (IBI) to Measure Environmental Quality in Warmwater Streams of Wisconsin, April 1992.

^g"Seepage lakes" are lakes which have no inlet or outlet and whose main source of water is direct precipitation and runoff supplemented by groundwater. "Spring lakes" are lakes which have no inlet but do have an outlet and whose main source of water is groundwater flowing directly into the basin and from the immediate drainage area.

Source: Wisconsin Department of Natural Resources and SEWRPC.

MAP 2.32

ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS
IN THE OZAUKEE COUNTY PLANNING AREA: 2000



Source: SEWRPC.

Table 2.18

EXISTING ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS: 2000

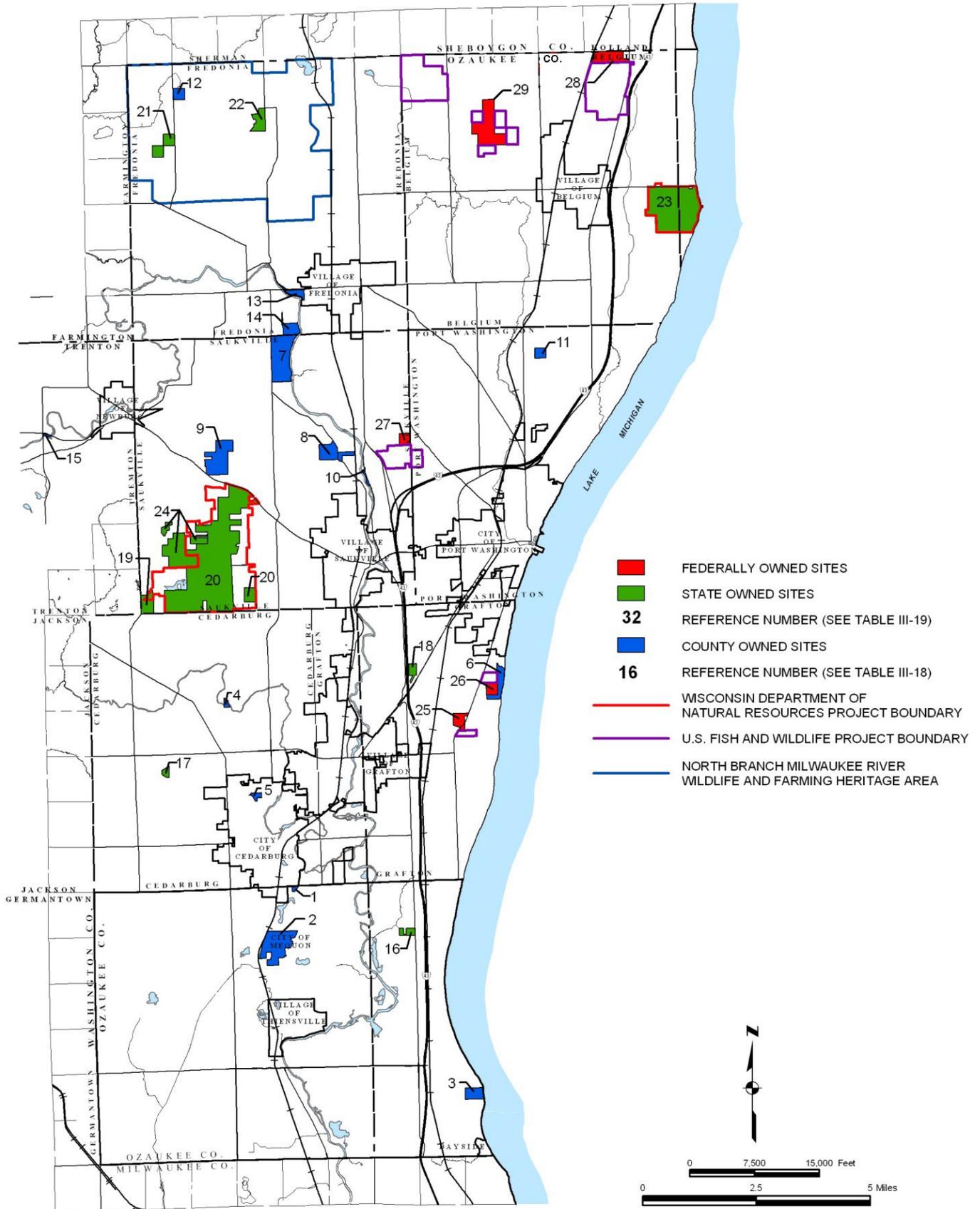
Local Government	Primary Environmental Corridors (acres)	Secondary Environmental Corridors (acres)	Isolated Natural Areas (acres)
City of Mequon	2,305	1,225	825
City of Port Washington	261	23	98
Village of Belgium	0	29	6
Village of Fredonia	157	8	31
Village of Grafton	116	10	70
Village of Newburg	66	0	0
Village of Saukville	219	148	32
Village of Thiensville	26	6	0
Town of Belgium	946	1,248	394
Town of Cedarburg	2,778	756	582
Town of Fredonia	4,344	159	367
Town of Grafton	1,301	176	277
Town of Port Washington	444	645	161
Town of Saukville	5,881	290	587
Ozaukee County Planning Area ^a	20,193	4,758	3,884

^aIncludes data for all participating local governments, the City of Cedarburg, and those portions of the Village of Bayside, Town of Farmington, and Town of Trenton located in the planning area.

Source: SEWRPC.

MAP 2.33

EXISTING COUNTY, STATE, AND FEDERAL PARK AND OPEN SPACE SITES
IN THE OZAUKEE COUNTY PLANNING AREA: 2005



Source: SEWRPC.

Table 2.19

**COUNTY OWNED PARK, OUTDOOR RECREATION, AND OPEN SPACE
SITES: 2005**

Number on Map 2.32	Site Name	Location	Size (acres)
	Ozaukee County		
1	Carlson Park/Ozaukee Ice Center	T9N, R21E, Section 2, City of Mequon	7
2	Mee-Kwon County Park	T9N, R21E, Section 11, City of Mequon	244
3	Virmond Park	T9N, R22E, Section 28, City of Mequon	64
4	Covered Bridge Park	T10N, R21E, Section 10, Town of Cedarburg	12
5	Ozaukee County Fairgrounds	T10N, R21E, Section 22, City of Cedarburg	18
6	Lions Den Gorge Nature Preserve	T10N, R22E, Section 10, Town of Grafton	75
7	Hawthorne Hills County Park	T11N, R21E, Section 3, Town of Saukville	286
8	Tendick Nature Park	T11N, R21E, Section 14, Town of Saukville	125
9	Guenther Farmstead	T11N, R21E, Section 17, Town of Saukville	213
10	Ehlers County Park	T11N, R21E, Section 24, Town of Saukville	10
11	Ozaukee County Trail Park	T11N, R22E, Section 4, Town of Port Washington	36
12	Bee Keeper Bog	T12N, R21E, Section 5, Town of Fredonia	39
13	Waubedonia Park	T12N, R21E, Section 34, Town of Fredonia	45
14	Shady Lane Property	T12N, R21E, Section 34, Town of Fredonia	62
--	Total 14 Sites	--	1,236

Source: SEWRPC.

Table 2.20

**EXISTING STATE AND FEDERAL PARK, OUTDOOR RECREATION,
AND OPEN SPACE SITES IN THE OZAUKEE COUNTY PLANNING AREA:
2005**

Number on Map 2.32	Site Name	Location	Size (acres)
	Wisconsin Department of Natural Resources Sites		
16	WDNR Site	T9N, R22E, Section 7, City of Mequon	30
17	Cedarburg Habitat Preservation	T10N, R21E, Section 20, Town of Cedarburg	19
18	WDNR Site	T10N, R22E, Section 8, Town of Grafton	33
19	WDNR Site	T11N, R21E, Section 31, Town of Saukville	80
20	Cedarburg Bog State Natural Area	T11N, R21E, Section 32, Town of Saukville	1,604
21	Scattered Wetland	T12N, R21E, Section 7, Town of Fredonia	80
22	WDNR Site	T12N, R21E, Section 9, Town of Fredonia	73
23	Harrington Beach State Park	T12N, R22E, Section 24, Town of Belgium	666
--	Subtotal – Eight Sites	--	2,585
	University of Wisconsin Sites		
24	Cedarburg Bog UWM Field Station	T11N, R21E, Section 30, Town of Saukville	295
--	Subtotal – One Site	--	295
	U.S. Fish and Wildlife Service Sites		
25	U.S. Fish and Wildlife Service	T10N, R22E, Section 9, Town of Grafton	44
26	U.S. Fish and Wildlife Service	T10N, R22E, Section 16, Town of Grafton	55
27	U.S. Fish and Wildlife Service	T11N, R21E, Section 13, Town of Saukville	41
28	U.S. Fish and Wildlife Service	T12N, R22E, Section 2, Town of Belgium	120
29	U.S. Fish and Wildlife Service	T12N, R22E, Section 8, Town of Belgium	278
--	Subtotal – Five Sites	--	660
--	Total – 15 Sites	--	3,540

Source: SEWRPC.

Table 2.21

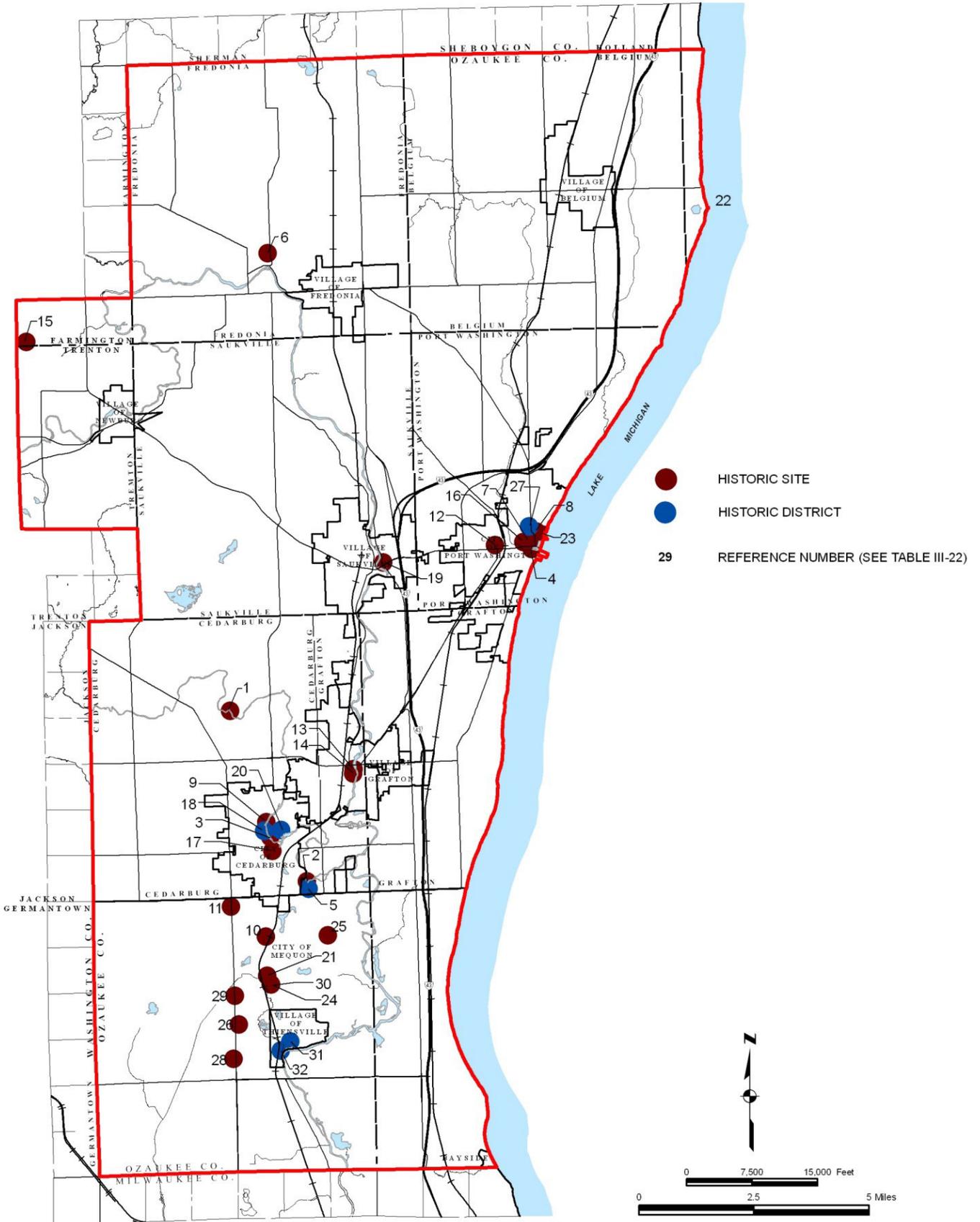
**PRIVATELY OWNED RESOURCE PROTECTION SITES IN THE OZAUKEE
COUNTY PLANNING AREA: 2005**

Number on Map 2.34	Name	Owner	Location	Size (acres)
66	Fairy Chasm	The Nature Conservancy	City of Mequon	20
67	Mequon Nature Preserve	Ozaukee Washington Land Trust	City of Mequon	408
68	Birding Habitat – 2 Ponds West		Town of Cedarburg	40
69	(OWLT)	Ozaukee Washington Land Trust	Town of Cedarburg	1
70	(OWLT)	Ozaukee Washington Land Trust	Town of Fredonia	121
71	(OWLT)	Ozaukee Washington Land Trust	Town of Fredonia	5
72	Kurtz Woods	The Nature Conservancy	Town of Grafton	31
73	(OWLT)	Ozaukee Washington Land Trust	Town of Grafton	18
74	Riveredge Nature Center	Riveredge Nature Center	Town of Saukville	344
Total	--		--	988

Source: SEWRPC.

MAP 2.37

HISTORIC SITES AND DISTRICTS LISTED IN THE NATIONAL AND STATE REGISTERS OF HISTORIC PLACES IN THE OZAUKEE COUNTY PLANNING AREA: 2000



Source: State Historical Society of Wisconsin and SEWRPC.

Table 2.23

**HISTORIC SITES AND DISTRICTS IN OZAUKEE COUNTY LISTED ON
THE NATIONAL AND STATE REGISTER OF HISTORIC PLACES: 2005**

Number on Map 2.36	Site Name	Location	Year Listed
1	Covered Bridge	T10N, R21E, Section 10, Town of Cedarburg	1973
2	Concordia Mill	T10N, R21E, Section 35, Town of Cedarburg	1974
3	Cedarburg Mill	T10N, R21E, Section 27, City of Cedarburg	1974
4	Edward Dodge House	T11N, R22E, Section 28, City of Port Washington	1975
5	Hamilton Historic District	T10N, R21E, Section 35, Town of Cedarburg	1976
6	Stony Hill School	T12N, R21E, Section 28, Town of Fredonia	1976
7	Old Ozaukee County Courthouse	T11N, R22E, Section 28, City of Port Washington	1976
8	St. Mary's Roman Catholic Church	T11N, R22E, Section 28, City of Port Washington	1977
9	Hilgen and Wittenburg Woolen Mill	T10N, R21E, Section 27, City of Cedarburg	1978
10	Jonathon Clark House	T09N, R21E, Section 3, City of Mequon	1982
11	John Riechert Farmhouse	T09N, R21E, Section 4, City of Mequon	1982
12	Harry W. Bolens House	T11N, R22E, Section 29, City of Port Washington	1983
13	Grafton Flower Mill	T10N, R21E, Section 24, Village of Grafton	1983
14	Cedarburg Woolen Company Worsted Mill	T10N, R21E, Section 24, Village of Grafton	1983
15	St. Peter's Church	T12N, R20E, Section 34 Town of Farmington	1983
16	Hoffman House Hotel	T11N, R22E, Section 28, City of Port Washington	1984
17	Wayside House	T10N, R21E, Section 34, City of Cedarburg	1986
18	Washington Avenue Historic District	T10N, R21E, Section 27, City of Cedarburg	1986
19	Payne Hotel	T11N, R21E, Section 25, Village of Saukville	1991
20	Columbia Historic District	T10N, R21E, Section 26, City of Cedarburg	1992
21	Edwin J. Neiman Sr. House	T09N, R21E, Section 10, City of Mequon	1996
22	Steamer (Niagara)	T11N, R23E, Section 19, Town of Belgium	1996
23	Port Washington Light Station	T11N, R22E, Section 28, City of Port Washington	1999
24	Mequon Town Hall and Fire Department	T09N, R21E, Section 10, City of Mequon	2000
25	Bigelow School	T09N, R21E, Section 1, City of Mequon	2000

Number on Map 2.36	Site Name	Location	Year Listed
26	William F. Jahn Farmstead	T09N, R21E, Section 15, City of Mequon	2000
27	Port Washington Downtown Historic District	T11N, R22E, Section 28, City of Port Washington	2000
28	Jacob Voigt House	T09N, R21E, Section 21, City of Mequon	2000
29	O'Brien-Peuschel Farmstead	T09N, R21E, Section 16, City of Mequon	2000
30	Isham Day House (Yankee Settler's Cottage)	T09N, R21E, Section 10, City of Mequon	2000
31	Green Bay Road Historic District	T09N, R23E, Section 23, Village Thiensville	2004
32	Main Street Historic District	T09N, R23E, Section 23, Village Thiensville	2004

Source: State Historical Society of Wisconsin and SEWRPC.

Table 2.24

LOCAL LANDMARKS IN OZAUKEE COUNTY: 2005^a

Number on Map III-23	Local Government	Site Address/ Historic Name
1	City of Cedarburg	Bridge Road Bridge
2	City of Cedarburg	Immanuel Heritage Cemetery
3	City of Cedarburg	N57 W6406 Center Street
4	City of Cedarburg	Founders Park
5	City of Cedarburg	Immanuel Windmill
6	City of Cedarburg	W66 N695 Madison Avenue
7	City of Cedarburg	W62 N718 Riveredge Drive
8	City of Cedarburg	W62 N732 Riveredge Drive
9	City of Cedarburg	W61 N819-831 Sheboygan Road
10	City of Cedarburg	W65 N733 St. John Avenue
11	City of Cedarburg	N94 W5142 Thornapple Lane
12	City of Cedarburg	W61 N338 Washington Avenue
13	City of Cedarburg	W61 N358 Washington Avenue
14	City of Mequon	13165 N. Cedarburg Road / Jonathan Clark House
15	City of Mequon	14053 N. Wauwatosa Road / John Reichert Farmhouse
16	City of Mequon	12116 N. Wauwatosa Road / Jahn Homestead (Tax Key # 1401511024.00)
17	City of Mequon	12116 N. Wauwatosa Road / Jahn Homestead (Tax Key # 1401511019.00)
18	City of Mequon	6006 W. Mequon Road / Thoreau School
19	City of Mequon	8414 W. County Line Road / Little Meadowmere Farm
20	City of Mequon	1901 W. Pioneer Road / William Vocke Barn (Octagon)
21	City of Mequon	9022 W. County Line Road / John Guidinger House
22	City of Mequon	8519 W. Donges Bay Road / Ehrenfried Hahmann House
23	City of Mequon	11011 N. Grandville Road / Gottlieb Hilgendorf House
24	City of Mequon	8440 W. Donges Bay Road / Phillip Klumb House
25	City of Mequon	3330 W. Freistadt Road / Fredrick Schwecke House
26	City of Mequon	8812 W. Donges Bay Road / George Berckas House
27	City of Mequon	10011 W. Heather Drive / August Ernst House
28	City of Mequon	707 W. Pioneer Road / Mathias Hoyer House
29	City of Mequon	7405 W. Donges Bay Road / Carl Schaefer House

Number on Map III-23	Local Government	Site Address/Name
30	City of Mequon	11401 W. Mequon Road / Ludwig Hilgendorf House
31	City of Mequon	11333 N. Cedarburg Road / Mequon Town Hall
32	City of Mequon	12351 N. Granville Road / Lindenwood School
33	City of Mequon	11312 N. Cedarburg Road / Yankee Settlers Cottage
34	City of Mequon	11312 N. Cedarburg Road / Yankee Settlers Cottage
35	City of Mequon	10839 N. Wauwatosa Road / Andreas Geidel House
36	City of Mequon	4228 W. Bonniwell Road / Bigelow School
37	City of Mequon	7525 W. Bonniwell Road / Bonniwell School
38	City of Mequon	12740 N. River Road / Holstein School
39	City of Mequon	10649 W. Donges Bay Road / Franklin School
40	City of Mequon	7426 W. Donges Bay Road / Sunnyside School
41	City of Mequon	12510 N. Wauwatosa Road / John O'Brien House
42	City of Mequon	11550 N. Wauwatosa Road / Jacob Voight House
43	City of Mequon	800 W. Dandelion Lane / Christoph Blaubach House
44	Village of Thiensville	107 Buntrock Avenue
45	Village of Thiensville	109 – 113 Buntrock Avenue
46	Village of Thiensville	115 Buntrock Avenue / site of former CMSTP&P Station
47	Village of Thiensville	118 Buntrock Avenue / site of former Milwaukee Electric Rail Station
48	Village of Thiensville	123 Buntrock Avenue / site of former Wilson Grain Elevator
49	Village of Thiensville	138 Buntrock Avenue / site of first church in the Village
50	Village of Thiensville	206 Elm Street
51	Village of Thiensville	213 Elm Street
52	Village of Thiensville	214 Elm Street / Van Buren School
53	Village of Thiensville	217 – 223 Elm Street
54	Village of Thiensville	225 Elm Street
55	Village of Thiensville	231 Elm Street
56	Village of Thiensville	101 Green Bay Road / former Village Hall and Firehouse
57	Village of Thiensville	106 – 108 Green Bay Road
58	Village of Thiensville	113 – 115 Green Bay Road / former Thiensville House Hotel
59	Village of Thiensville	118 Green Bay Road / site of original Thien Home
60	Village of Thiensville	119 – 133 Green Bay Road / site of former Memmler Hotel
61	Village of Thiensville	122 Green Bay Road / site of former Old Mill
62	Village of Thiensville	130 Green Bay Road

Number on Map III-23	Local Government	Site Address/Name
63	Village of Thiensville	136 Green Bay Road / site of first bank in the Village
64	Village of Thiensville	137 – 139 Green Bay Road
65	Village of Thiensville	141 – 143 Green Bay Road
66	Village of Thiensville	144 – 146 Green Bay Road / site of former Zimmerman General Store and Residence
67	Village of Thiensville	147 Green Bay Road / Staudy Meat Market
68	Village of Thiensville	149 Green Bay Road
69	Village of Thiensville	150 Green Bay Road
70	Village of Thiensville	151 Green Bay Road
71	Village of Thiensville	153 Green Bay Road / site of first telephone exchange
72	Village of Thiensville	155 Green Bay Road / site of first telephone exchange
73	Village of Thiensville	157 – 159 Green Bay Road / site of Gierach Blacksmith
74	Village of Thiensville	161 Green Bay Road
75	Village of Thiensville	162 Green Bay Road / site of Fireman’s Hall
76	Village of Thiensville	163 Green Bay Road
77	Village of Thiensville	165 – 169 Green Bay Road
78	Village of Thiensville	170 Green Bay Road / site of former Thiensville Park, and first United States post office built exclusively as a post office
79	Village of Thiensville	171 – 175 Green Bay Road
80	Village of Thiensville	177 Green Bay Road / Hadler’s Harness Shop
81	Village of Thiensville	183 Green Bay Road
82	Village of Thiensville	184 – 186 Green Bay Road / former residence and business of Henry Mohrhusen
83	Village of Thiensville	192 – Green Bay Road
84	Village of Thiensville	193 – 195 Green Bay Road
85	Village of Thiensville	200 Green Bay Road / site of former residence of pioneer William Carbys
86	Village of Thiensville	101 Main Street, North / site of former Oscar Bublitz General Store
87	Village of Thiensville	417 Main Street, North / Blaser Residence
88	Village of Thiensville	104 – 108 Main Street, South / site of former Bartlet Funeral Home
89	Village of Thiensville	105 – 107 Main Street, South / site of former Commercial House
90	Village of Thiensville	116 – 120 Main Street, South / former Maas Residence

Number on Map III-23	Local Government	Site Address/Name
91	Village of Thiensville	119 – 121 Main Street, South / site of former John Bublitz General Store
92	Village of Thiensville	127 Main Street, South
93	Village of Thiensville	128 Main Street, South
94	Village of Thiensville	130 Main Street, South
95	Village of Thiensville	133 Main Street, South / site of Thiensville Lumber Company
96	Village of Thiensville	136 Main Street, South / site of first auto repair garage
97	Village of Thiensville	140 Main Street, South
98	Village of Thiensville	155 Green Bay Road / site of first telephone exchange
99	Village of Thiensville	146 – 154 Main Street, South
100	Village of Thiensville	159 – 161 Main Street, South
101	Village of Thiensville	163 Main Street, South
102	Village of Thiensville	164 Main Street, South
103	Village of Thiensville	167 – 175B Main Street, South
104	Village of Thiensville	174 – 180 Main Street, South
105	Village of Thiensville	177 Main Street, South
106	Village of Thiensville	179 Main Street, South
107	Village of Thiensville	184 Main Street, South
108	Village of Thiensville	185 Main Street, South
109	Village of Thiensville	188 Main Street, South
110	Village of Thiensville	192 Main Street, South
111	Village of Thiensville	193 Main Street, South
112	Village of Thiensville	195 – 199 Main Street, South
113	Village of Thiensville	201 Main Street, South
114	Village of Thiensville	205 Main Street, South
115	Village of Thiensville	207 Main Street, South
116	Village of Thiensville	209 Main Street, South
117	Village of Thiensville	210 Main Street, South
118	Village of Thiensville	213 Main Street, South, former residence of Dr. Albers, Thiensville's first doctor
119	Village of Thiensville	226 Main Street, South

^aData collection has not been completed for the City of Mequon and Town of Cedarburg. Source: SEWRPC.

Table 2.25

**LOCAL HISTORICAL SOCIETIES IN THE OZAUKEE COUNTY PLANNING
AREA: 2005**

Historical Society	Location
Cedarburg Cultural Center Galleries and Offices	W62 N546 Washington Avenue, City of Cedarburg
Kuhefuss House Museum	W63 N627 Washington Avenue, City of Cedarburg
General Store Museum	W61 N480 Washington Avenue, City of Cedarburg
Mequon Historical Society	
Isham Day House	City of Mequon
Reading Room	6100 West Mequon Road 112N, City of Mequon
Ozaukee County Historical Society	
Ozaukee County Pioneer Village	4880 CTH I, Town of Saukville
Interurban Depot Historic Restoration	City of Cedarburg
Stoney Hill School	5595 CTH I, Town of Fredonia
Ozaukee County Archives Research Center	Lower level of Lincoln Building adjacent to Cedarburg City Hall, City of Cedarburg
Port Washington Historical Society	
Port Washington Historical Society Reading Room	101 East Grand Avenue. City of Port Washington
Saukville Area Historical Society	

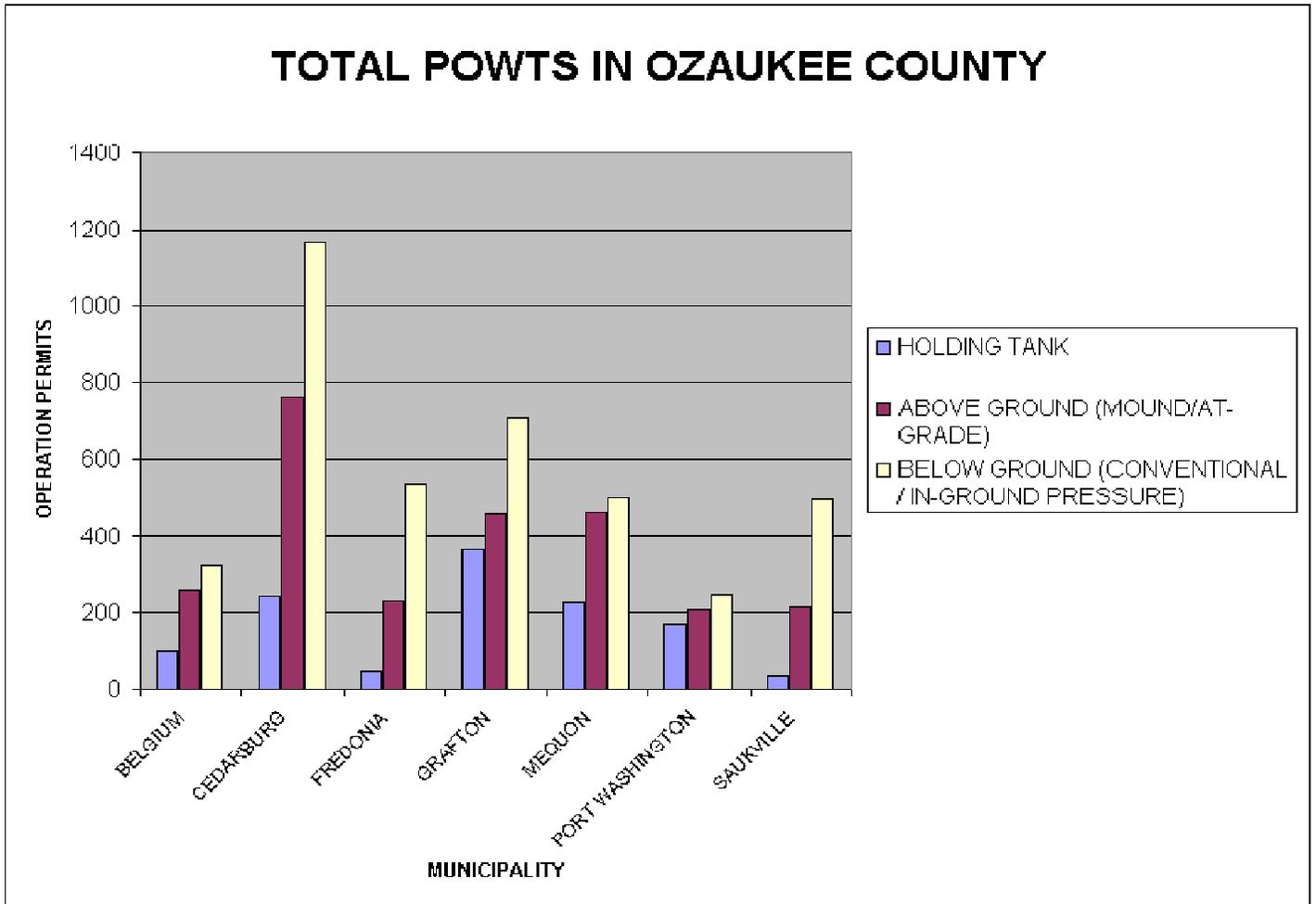
Source: State Historical Society of Wisconsin and SEWRPC.

Table 2.34: TOTAL POWTS IN OZAUKEE COUNTY – PER PROPERTY LISTINGS *

LOCAL GOVERNMENT	HOLDING TANK	ABOVE GROUND (MOUND/AT-GRADE)	BELOW GROUND (CONVENTIONAL / IN-GROUND PRESSURE)	OPERATIONAL PERMITS
BELGIUM	99	257	323	679
CEDARBURG	241	765	1,166	2172
FREDONIA	44	231	538	813
GRAFTON	365	459	709	1533
MEQUON	226	462	499	1187
PORT WASHINGTON	169	208	245	622
SAUKVILLE	32	217	495	744
TOTAL POWTS	1176	2599	3975	7750

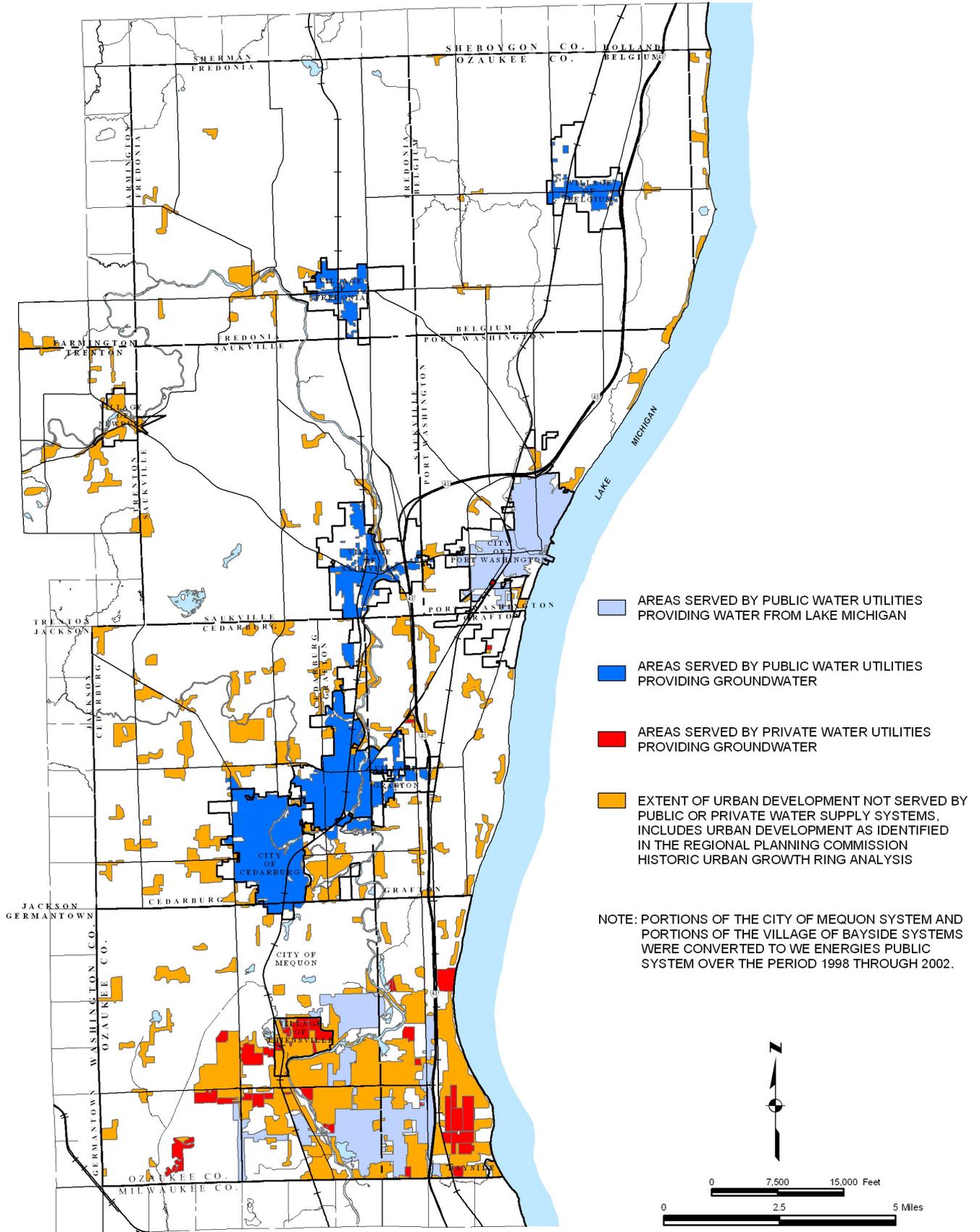
* Ozaukee County PRLM Department, 11/23/05

Graph 2.3



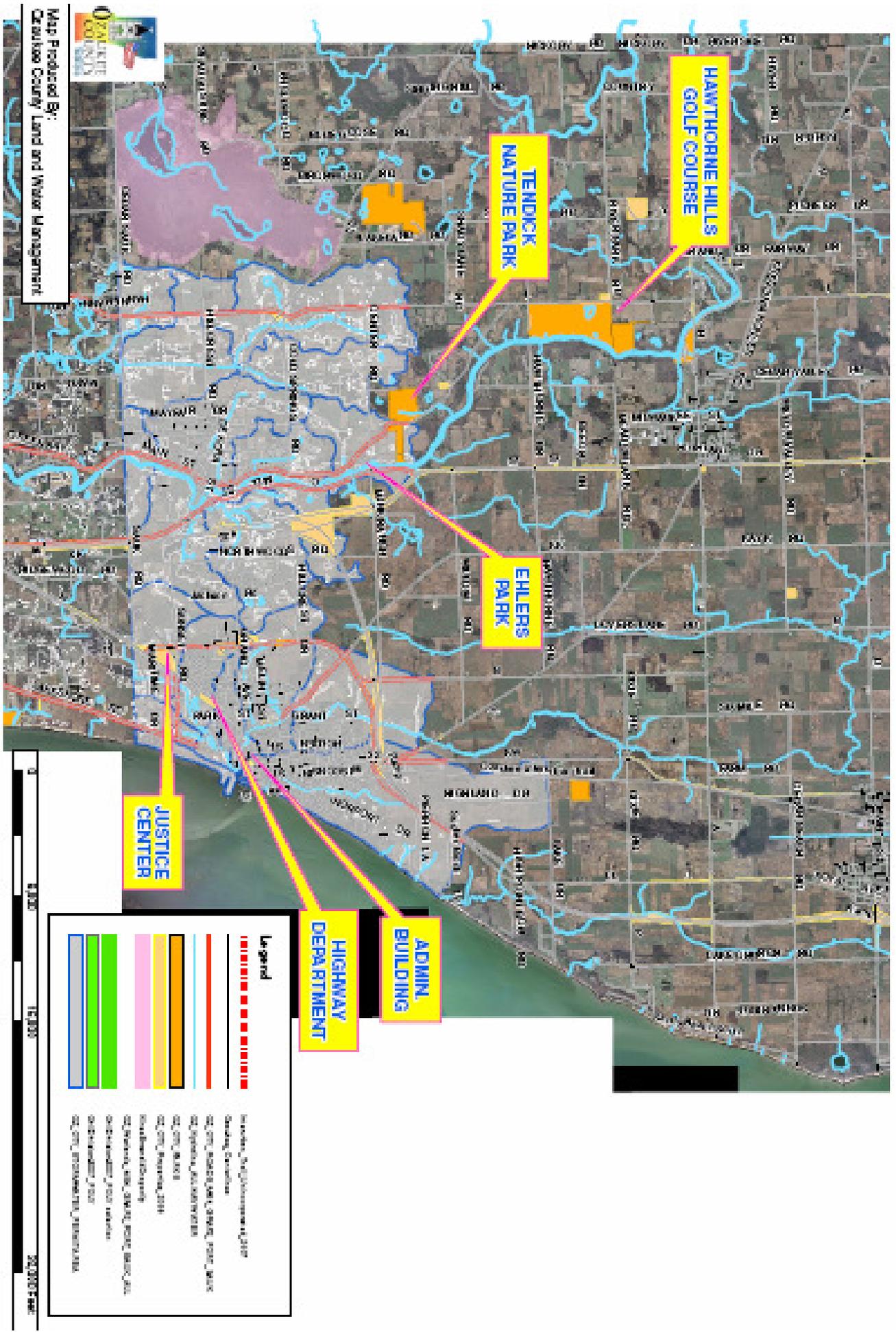
MAP 2.43

**AREAS SERVED BY PUBLIC AND PRIVATE WATER UTILITIES
IN THE OZAUKEE COUNTY PLANNING AREA: 2005**

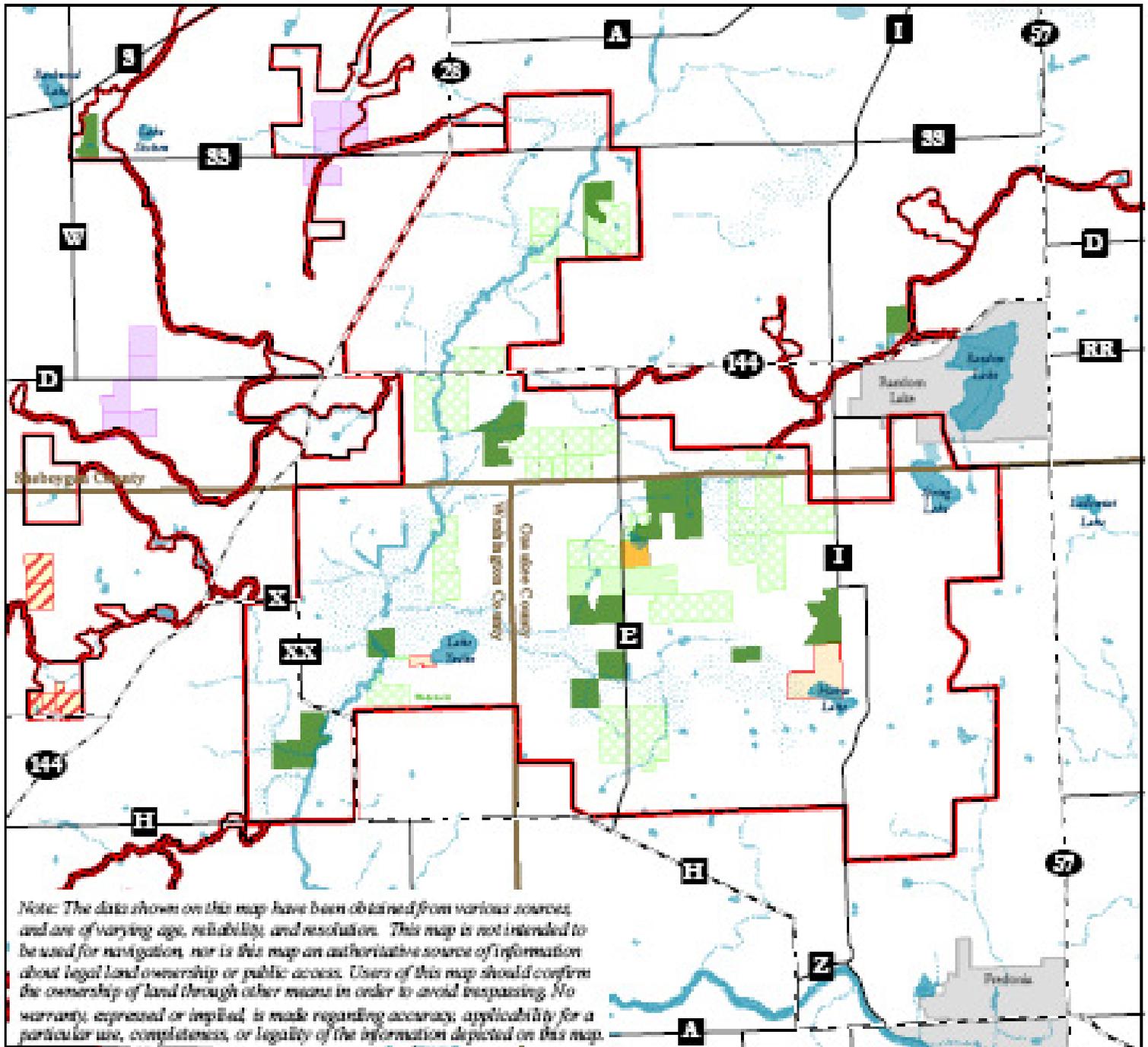


Source: SEWRPC (inventory conducted for Regional Water Supply Study).

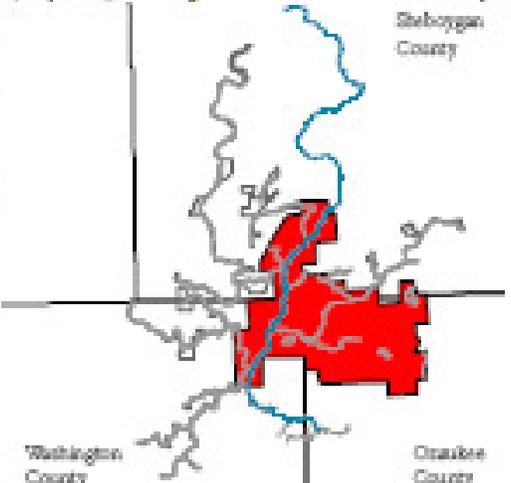
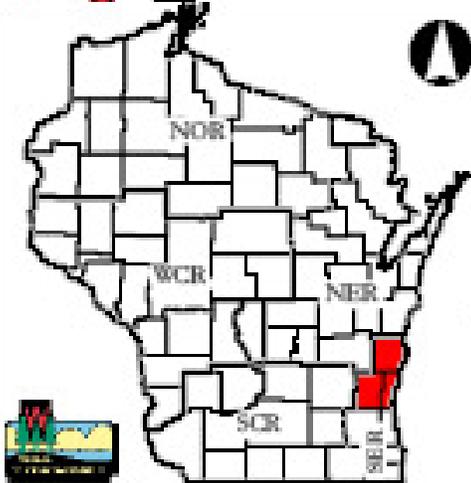
MAP 2.45 - OZAUKEE COUNTY STORMWATER REGULATED AREA



Map 2.55 North Branch Milwaukee River Wildlife & Farming Heritage Area



Note: The data shown on this map have been obtained from various sources and are of varying age, reliability, and resolution. This map is not intended to be used for navigation, nor is this map an authoritative source of information about legal land ownership or public access. Users of this map should confirm the ownership of land through other means in order to avoid trespassing. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map.



Legend

- DNR Land Open to Public
- DNR Easement - Open to Public
- DNR Easement - No Public Access
- US Fish & Wildlife Service
- County Owned
- Land Trust Owned
- Land Trust Easement
- Project and Streambank Boundary
- County Boundaries

Scale 1:85,000
0 3 Miles

Appendix 3

