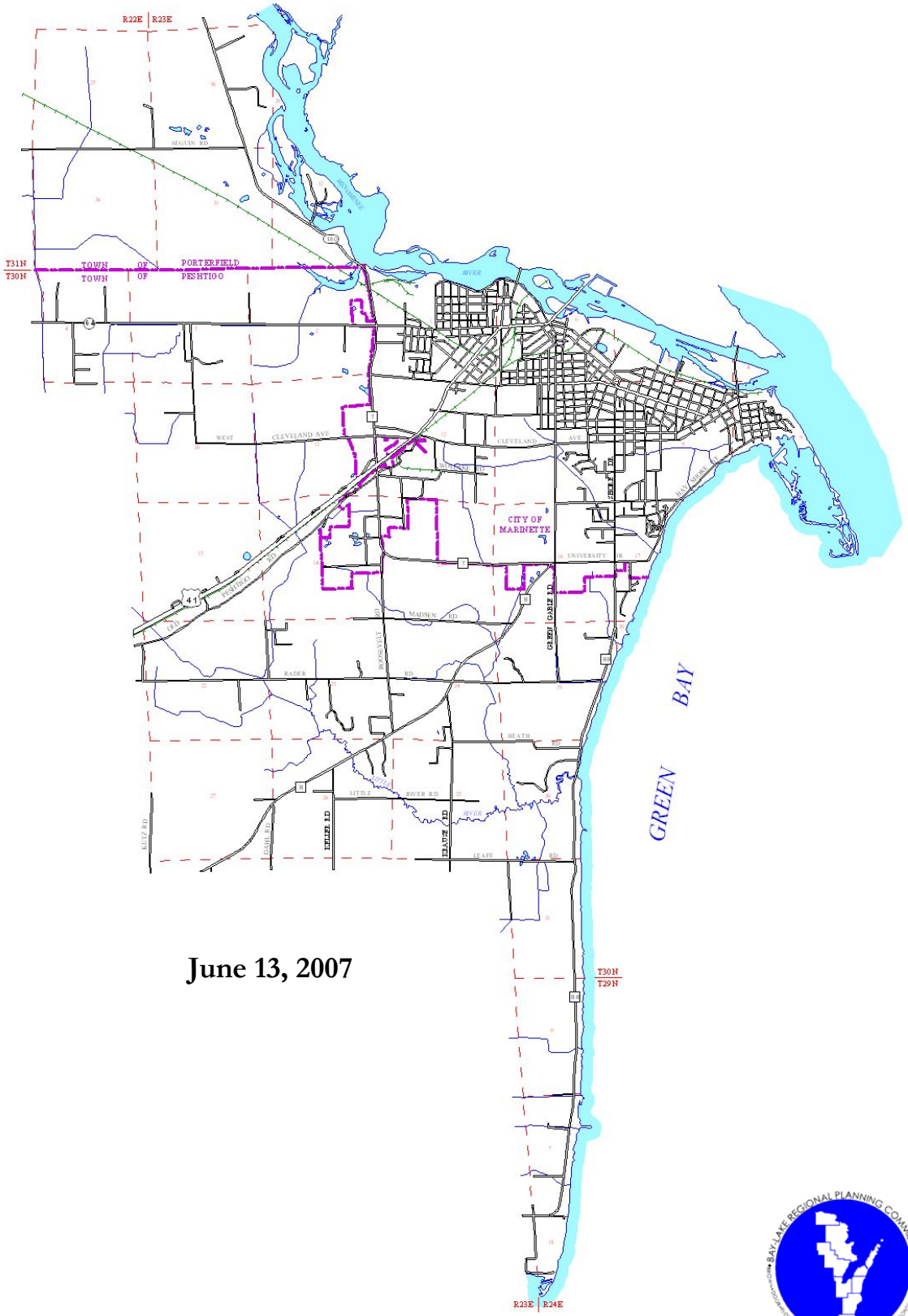
Technical Report No. 80

Marinette 2025 Areawide Sewer Service Plan Update



June 13, 2007

Prepared By:
Bay-Lake Regional Planning Commission

Marinette 2025 Areawide Sewer Service Plan Update

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Prepared for the Wisconsin Department of Natural Resources

By

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Chapter 1: INTRODUCTION

INTRODUCTION

In 1972, the U.S. Congress passed amendments to the Federal Water Pollution Control Act (P.L. 92-500, known as the Clean Water Act). This act called for a national goal of fishable and swimmable waters to be achieved by July 1, 1983, through a comprehensive program of water quality planning, construction grants for municipal wastewater treatment facilities, and a national wastewater discharge permit program for municipal and industrial discharges.

Section 208 of the Clean Water Act requires local agencies, designated by the Governor, or the State Water Quality Agency (in Wisconsin, the Department of Natural Resources herein referred to as WDNR), to prepare Areawide Water Quality Management Plans.

State and Federal regulations also require that these plans indicate the most cost-effective and environmentally sound wastewater treatment configuration for a municipal sewage treatment facility for a 20-year planning period. This is accomplished with the development of a 208 Municipal Point Source Plan, more commonly known as a Sewer Service Area Plan.

In addition to the preparation of the Sewer Service Area Plan, a second key element of the Clean Water Act is Section 201, which requires the preparation of a facility plan. A 201 Facility Plan is a detailed engineering analysis of the most cost-effective sewage collection and treatment system for a particular planning area. When approved, the Facility Plan and Sewer Service Area Plan form the municipal point source element of the *areawide water quality management plan*.

After the plan is approved by the WDNR, State and Federal regulations (NR 121, NR 110) require permits to be obtained for wastewater treatment facilities, facility plans, interceptors and sewer extensions; all of which must be in conformance with the Areawide Water Quality Management Plan.

BACKGROUND OF PLANNING NEEDS

The city of Marinette planning area consists of approximately 25,421 acres (39 square miles) and is located in the southeastern portion of Marinette County. It is bordered to the north by the Menominee River and to the east by the bay of Green Bay. The Menominee River flows into Green Bay from the west. The community nearest to Marinette is Menominee, Michigan, which is directly north of the city and makes up the northern half of the Marinette-Menominee metropolitan area. Because of its size and location, the Marinette-Menominee metropolitan area serves as a commercial and industrial center for a large area of northeastern Wisconsin and the Upper Peninsula of Michigan. State Highway 64 and US Highway 41 intersect in the city, approximately 56 miles north of the city of Green Bay. These highways provide access to the city of Marinette from other communities relatively close to the city including the city of Peshtigo.

Map 1.1 illustrates the general location of the city of Marinette in Wisconsin; Map 1.2 is a map of the planning area; while Map 1.3 displays the city of Marinette base.

The city of Marinette planning area contains a variety of natural resources. The natural resource base of the planning area is the primary determinant of its development potential and ability to provide a pleasant and habitable environment. The principal elements of the natural resource base are climate, topography, geology, soils and natural areas, including woodlands, wetlands and water resources. Knowledge and recognition of these elements and their interrelationships are essential so that human use and alteration of the natural environment does not advance to the detriment of nonrenewable or slowly renewable resources.

The city of Marinette planning area is a mix of predominantly wooded areas with scattered agricultural lands surrounding the city to the south and west. The planning area has many natural amenities including the Menominee River and the bay of Green Bay, along with numerous tributaries, woodlands, approximately 6,627 acres of wetlands, and various archeological sites. Much of the Marinette planning area outside the city relies on a good groundwater source to provide its residents with safe drinkable water.

Marinette's 1985 *Sanitary Sewer Service Plan* identifies that this plan will be updated every five years in order to address changing conditions within the area. Though the city of Marinette has not experienced an increase in population, the adjacent towns of Peshtigo and Porterfield are experiencing rapid population growth and are projected to increase their populations through an increase in residential developments. These developments are occurring along the periphery of the city of Marinette and along the Lake Michigan/Green Bay coastline. The towns of Peshtigo and Porterfield both have high numbers of wetlands within their municipal limits. Future infringement on these wetlands is likely and should be controlled in order to allow the wetland's ecosystems to function and help recharge the area's groundwater. Existing and future developments with private on-site wastewater treatment systems may experience system failures and the city of Marinette would then be pressured into extending sanitary sewer to alleviate these septic problems. In the event that sewer lines are extended, further development along sewer mains may occur. It is the goal of the *Marinette Areawide Sewer Service Plan Update* to protect local water quality and provide the necessary guidance on the location of future development within the study area.

The city completed an update to its waterfront plan in 2001 and adopted an update to its comprehensive plan in 2004 to bring it into compliance with s66.1001 Wis. Stats. As part of the planning process, the city re-examined existing land use controls for consistency with its comprehensive plan. The 1985 Marinette Sanitary Sewer Service Plan was identified by the city as a plan having a high priority for being updated. The existing sewer service plan was designed to project conditions to 2005 and is out-dated.

Over the years, the Menominee River waterfront has been developed with a mixture of land uses, including commercial, industrial and residential uses, without appropriate transitional zones or topsoil erosion controls, which have contributed to the deterioration of the river's water quality in the past. The Menominee River has also been used as the receiving waters for industrial and domestic wastes and other contaminants. As these contaminants have degraded the water quality, the public use of riverfront areas and water-associated activities have declined as have local revenues brought in by these uses. With the decline of river uses and the increase of federal and state water quality regulations, the community has recognized the Menominee River and its waterfront as an asset, which has resulted in a push to improve the water quality of the Menominee River.

At this time, land uses within the planning area pose only a moderate threat to the groundwater. Floodplains in the planning area exist mostly along the Menominee River and Green Bay. Currently there are no ambient air quality concerns for the planning area. Both threatened and endangered species exist within Marinette County and likely within the planning area. The planning area also provides ample room for a variety of plants and animals and has an abundance of wetlands.

The natural resources of the planning area will need to be monitored and in some cases protected in order to preserve them for future generations. As growth pressures begin to climb, the planning area will need to consider future impacts on these resources against any proposed future gains. Community "character" will be of importance as well. Preserving/promoting a sense of place is key for all communities. Protecting entryways into the planning area as well as considering the visual impacts along transportation corridors will greatly assist the planning area in reaching its vision. Working closely with businesses and the county will be needed in order to best manage these high profile locations.

The 1985 Marinette Sewer Service Area Plan was completed by the Bay-Lake Regional Planning Commission under a grant with WDNR to assist in planning the municipal point source element of the State's Water Quality Management Plan for the Marinette area. The Commission worked at the direction of the Marinette Areawide Water Quality Management Plan Policy Advisory Committee, who in turn serves the WDNR in an advisory capacity. The Policy Advisory Committee is composed of five members: three members representing the city of Marinette and one member each representing the town of Peshtigo and the town of Porterfield. The By-Laws of the Advisory Committee are found in Appendix A.

The primary responsibility of the Advisory Committee is to develop and maintain a sewer service area boundary for the Marinette area and an institutional structure for implementing the point source element of the Areawide Water Quality Plan. This plan was established in response to the previously stated issues and concerns and will serve the following purposes:

1. Project future needs for sewer service and establish the geographic extent of the sewer service area for the year 2025.
2. Provide technical data for designing cost effective and environmentally sound sewage treatment configurations for the planning area.
3. Identify and protect sensitive environmental areas as environmental corridors or environmentally sensitive areas (ESAs) to improve the quality of both surface and ground waters by permitting no sewer developments in these areas.
4. Define the procedures for reviewing boundary and plan amendments and sewer extensions.
5. Serve as a guideline for government interaction and development of community plans.
6. Provide a basis for community officials to direct community growth without urban sprawl and protect environmental, social and economic concerns.

The delineation of a sewer service area not only identifies those areas eligible to receive sanitary sewer service, but also identifies and protects natural and environmentally sensitive areas from future development and indiscriminate urban growth. Such areas include, but are not limited to, areas of steep slope, floodways, shorelands and wetlands. Wastewater treatment facilities could then be designed to provide adequate treatment capacity for the anticipated population growth in the sewer service area, while protecting sensitive natural areas and water quality.

A sewer service area identifies the land area intended for sewer services that will be made available during the 20-year planning period. Delineating a service boundary is critical in designing sewage collection to serve existing and future residents of the Marinette area in the most cost-effective and environmentally sound manner.

The service area in this plan is delineated with the aid of the 20-year population projection, an acceptable residential population density, and a forecast of non-residential (i.e., commercial, industrial) growth, all of which result in acreage demand and allocation. The service area excludes major areas found to be environmentally or physically unsuitable for sewered development. Land included in the service area is deemed eligible to receive sewer service; however, the governmental entities providing sewer service are not obligated to serve specific areas. This plan anticipates, however, that areas identified within the boundary will be served during the next twenty years, with the caveat that changes in the population or housing trends may call for modifications or amendments to the plan during the same period.

Sanitary sewers represent perhaps the greatest catalyst to development within an area. Orderly land use and organized community growth are directly dependent upon the orderly provision of such essential services. A sewer service plan should provide each of the participating municipalities with a valuable tool to manage its growth in the most cost-effective and environmentally acceptable fashion.

Upon approval of the *Marinette Areawide Sewer Service Plan* by the Wisconsin Department of Natural Resources, permits for wastewater treatment facilities, facility plans, interceptors and sewer extensions must be in conformance with the plan. The Bay-Lake Regional Planning Commission with assistance from the Sewer Service Area Plan Technical Advisory Committee (TAC) shall serve as the local body to review such projects and to ensure plan conformance.

In addition to delineating a sewer service area, the plan provides a framework for further planning among the individual municipalities. Much of the data, trends and projects developed in this plan may be used for detailed community plans. The goals, objectives and policy statements adopted in this plan will provide guidance in developing detailed statements of community direction through the local plans.

This plan also provides a framework for modifying the sewer service boundary, which provides an equitable and logical means for responding to changing physical, social and economic conditions. These boundary amendments are subject to WDNR review and approval. In addition, an update of this 208 Municipal Point Source Plan should be undertaken every five years to address changing conditions in community growth patterns and incorporate new information in the sewer service area amendment process.

DELINEATION OF THE PLANNING AREA

The delineation of the planning area assists in focusing the study efforts on a well-defined geographic area and facilitates a comprehensive examination of data needed in the planning effort. The criteria that were examined in delineating the *Marinette Areawide Sewer Service Plan* include:

1. The basin divide between the Menominee and Peshtigo River Basins;
2. The area that potentially could be provided with public sewer service.
3. The recognition of extraterritorial powers for zoning, subdivision review and official mapping.

4. The recognition of formally adopted comprehensive plans and other land use related studies or reports.
5. The recognition of areawide land use trends and patterns.
6. The recognition that water quality problems are areawide concerns.

Based on these criteria, the planning area for the Marinette Sewer Service Area Plan covers approximately 29 square miles of land in the southeastern corner of Marinette County and includes the entire city of Marinette and portions of the towns of Peshtigo and Porterfield. Map 1.1 shows the planning area relative to Marinette County and the State of Wisconsin. For the purpose of this plan, any reference to the towns of Peshtigo and Porterfield will correspond specifically to that portion of the town in the planning area, unless indicated otherwise.

PLAN CONTENTS

Chapter One:
This chapter contains the introduction and delineation of the planning area.

Chapter Two:
This chapter documents the plan's goals, objectives and policies regarding sewer service area planning.

Chapter Three:
This chapter presents a brief discussion of the planning area's wastewater treatment facilities.

Chapter Four:
This chapter presents the results of a 2004 land use inventory conducted by the Bay-Lake RPC, an inventory of natural features in the planning area, and the definition and mapping of environmentally sensitive areas that are unsuitable for the installation of waste water treatment systems.

Chapter Five:
This chapter presents population, housing and employment forecasts and a land use allocation required to meet the forecasted demands. This technical information provides a basis from which local decision makers can forecast their growth needs for a sewer service area boundary.

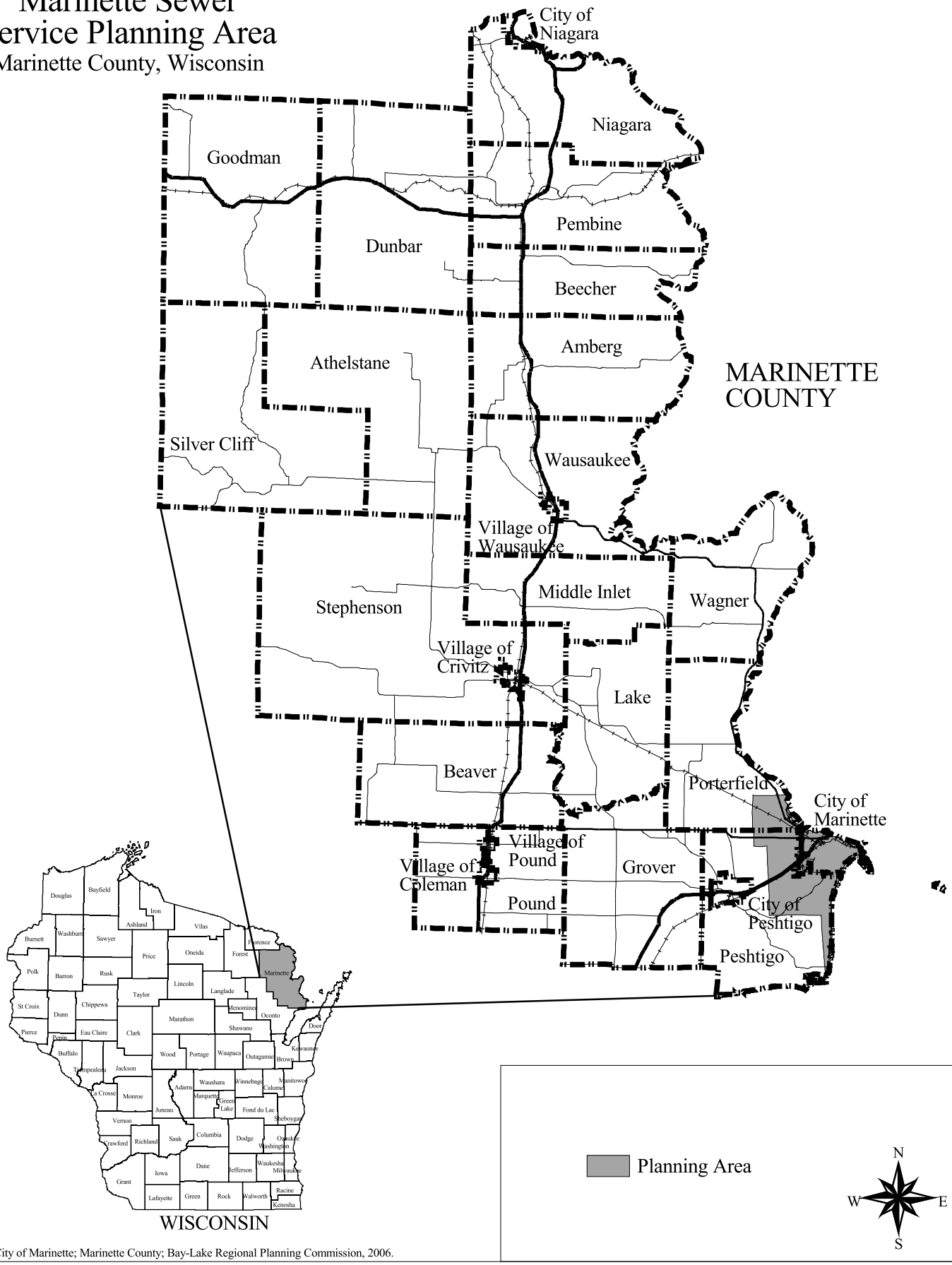
Chapter Six:
This chapter presents the delineated sewer service area for the city of Marinette.

Chapter Seven:
This chapter contains an outline of the plan's implementation and institutional structure. It sets forth the procedures for amending and updating the plan.

Location Map

Marinette Sewer Service Planning Area

Marinette County, Wisconsin

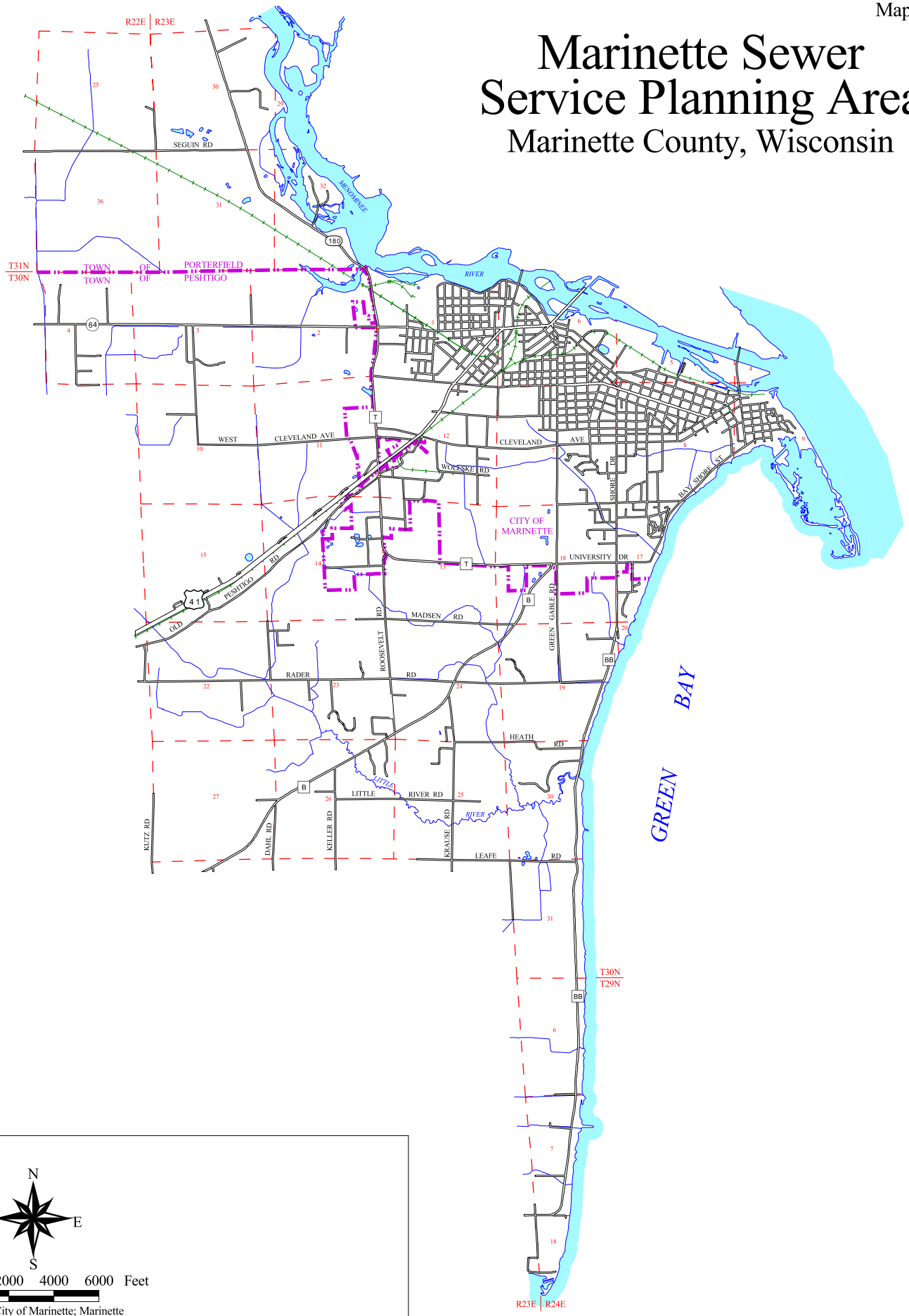


Source: City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 1.2

Marinette Sewer Service Planning Area

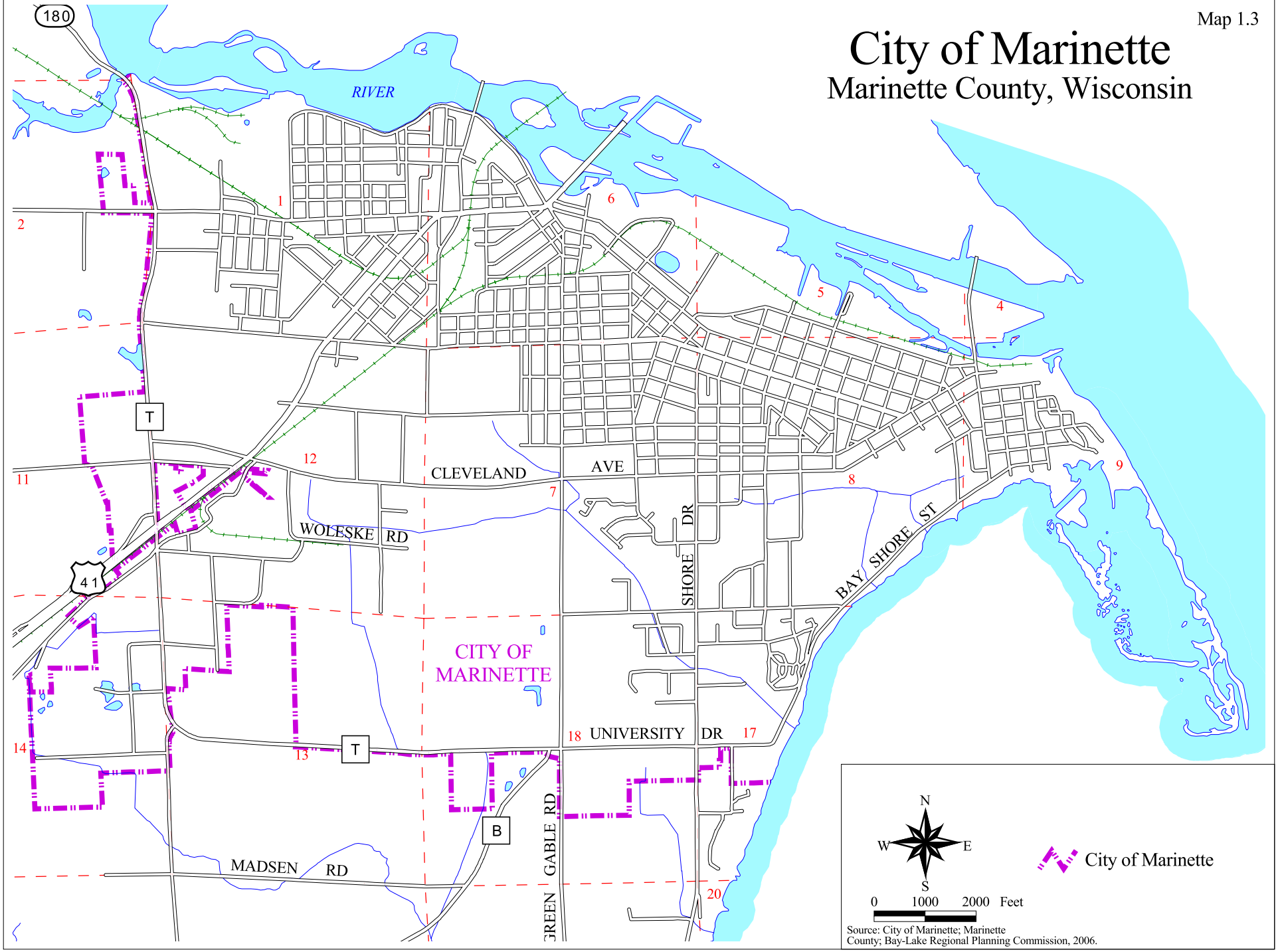
Marinette County, Wisconsin



Source: City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 1.3

City of Marinette
Marinette County, Wisconsin



Chapter 2: GOALS, OBJECTIVES, AND POLICIES

INTRODUCTION

An early task in any planning process is to establish the goals and objectives that will provide the direction and a framework for the development of policies which lead to final plan implementation. The goals are a statement of direction, while the objectives consist of measurable results that determine if the goals are being attained. Policy statements are guidelines for action that achieve the goals and objectives.

The diversity of local community interest requires that common concepts are established for the sewer service area plan. Establishing common concepts, such as goals, objectives and policies provides a framework for cooperative planning efforts in other areas of inter community interest such as transportation, recreation, and economic development. These goals and objectives are based off those region wide goals and objectives that BLRPC uses as a base to ensure consistency in its planning efforts on a local and regional scale.

ESTABLISHED GOALS, OBJECTIVES AND POLICIES

GOAL 1:

Guide the future growth within the defined sewer service area and beyond in an efficient and orderly manner to promote contiguous and ultimately compact development following locally adopted comprehensive planning documents, balancing private property rights with the highest and best land use criteria and, above all, considering the best interests of the public.

OBJECTIVE 1:

Provide sanitary sewer to those existing subdivisions or areas with failing systems, and to those areas where needs are documented and which are economically and environmentally feasible and is in the best interests of the municipalities.

POLICIES:

1. The *Marinette Areawide Sewer Service Plan* should be reviewed and updated every five years to assess population, household and land use conditions and trends.
2. Sewer extensions that conform to the sewer service area plan, the city's sanitary extension master plan and integrate into the ultimate development of compact and contiguous development shall be given priority.
3. Sewer extensions should not be made beyond the 20-year urban sewer service area unless the plan is amended.
4. Sewer service should be adequately sized to handle projected sewage and water volumes for the immediate area and for the upstream volumes based upon a fifty year build out, if applicable.
5. Sewer extensions should be used as an important tool to implement community plans and growth policies.

OBJECTIVE 2:

Provide sufficient land area for reasonable future development of municipalities as prescribed by Wisconsin Administrative Code, NR 121.

POLICIES:

1. Community plans should be developed, adopted and updated every five years to reflect changing economic and physical conditions.

OBJECTIVE 3:

Encourage utilization of vacant lands within the city of Marinette that are currently provided with urban services.

POLICIES:

1. Promote in-fill development and redevelopment.
2. Use financial incentives, such as Tax Incremental Financing to promote in-fill development.

GOAL 2:

Guide future rural development in an efficient, orderly and compatible manner.

OBJECTIVE 1:

Encourage development that is consistent with city, town and county plans.

POLICIES:

1. Planning should be addressed on an areawide basis by the representatives of the participating governing units; however, specific plans should be implemented by the local units of government employing local zoning, subdivision review, urban services standards and environmental standards.
2. When adjoining local government plans exist, cooperation should be fostered to ensure compatibility.

OBJECTIVE 2:

Encourage future rural developments to locate in those areas that are suitable for on-site sewage disposal systems. However, future rural development should be encouraged to develop such that it will be easily served with public sewer as soon as it is available.

POLICIES:

1. Rural development shall be encouraged to locate adjacent to existing rural development where adequate facilities and services are available and soils are suitable for on-site disposal systems.
2. Development in area with soils that are marginal for septic systems shall be analyzed for its ability to prohibit low density residential development.
3. Holding tank systems are only appropriate as a system where all other systems are not appropriate, consistent with the Marinette County Zoning regulations.

4. Certified surveys, land divisions and subdivision development plans shall be designed to allow for future in-fill and shall locate septic fields and holding tanks such that they allow for simple integration into a future underground conveyance system. Compatibility of future in-fill can be accommodated by creating mock land divisions for the future within existing parcel divisions and locating structures and sanitary facilities accordingly.

GOAL 3:

Protect water quality, natural resources and sensitive natural areas from the encroachment of urban development.

OBJECTIVE 1:

Delineate environmental corridors and encourage future development to locate in areas that result in minimal environmental impacts.

POLICIES:

1. Local land use plans and zoning ordinances should be adopted or revised by the county, cities, and towns as needed to guide urban development away from encroaching upon the plan's designated environmental corridors, as defined by the Bay-Lake RPC.
2. Encourage developers to follow Wisconsin Best Management practices for stormwater management, as well as local ordinance, policy and applicable State of Wisconsin regulations such as NR 216.
3. Sewer extensions to natural areas not included in environmental corridors should conform to applicable rules and regulations, which include Wisconsin Administrative Codes NR 116 for shorelands and floodplains, NR 115 and 117 for wetlands and NR 121 for environmental corridors, and should be reviewed on a case by case basis.
4. Sanitary sewer extensions into areas identified as containing prime agricultural and forest land shall be placed with a greater level of care and shall meet a higher standard of necessity when approval is considered by the governing body.
5. Sewer extensions should not be permitted in areas identified as being in an environmental corridor unless the extension is to serve uses which are compatible with the corridor designation, such as public parks and outdoor recreation facilities or unless the extension must pass through the environmental corridor to serve areas that lie beyond the environmental corridor.
6. Development should be avoided in outdoor recreation and open space resource areas identified in Marinette County and the local governments' outdoor recreation and open space plans.

GOAL 4:

Eliminate health hazards associated with failing wastewater disposal systems and protect the quality of the water and land resources in the planning area.

OBJECTIVE 1:

Correct inadequate sewage collection and treatment facilities which result in potential threats to the health and welfare of the public.

POLICIES:

1. Investigate alternative methods that may be used to oversee the installation, maintenance and cleaning of on-site sewage systems.
2. Identified health hazard areas contiguous to existing sewered development should be given priority for sewer extension.
3. The installation of cluster on-site disposal systems which may be easily connected to municipal collection systems should be encouraged to eliminate health hazards/pollution problems at the outer fringe of the service area.
4. Development in non-sewered areas should be based on the capacity of the soil to accommodate on-site wastewater treatment, as well as on local plans and zoning ordinances.
5. All private and public sewage collection and treatment facilities should be designed and constructed employing the local municipality's engineering standards, and should be consistent water quality and environmental criteria of the State of Wisconsin.

GOAL 5:

Minimize public sewerage service costs.

OBJECTIVE 1:

Plan sewer service extensions.

POLICIES:

1. Avoid duplication of facilities.
2. Establish a system for review of the installation of public sewerage systems within the planning area.

OBJECTIVE 2:

Stage the installation of new or expanding facilities.

POLICIES:

1. Plan sewerage extensions and treatment facilities so that they can be installed incrementally as needed in a cost-effective manner.

Chapter 3: EXISTING WASTEWATER TREATMENT SYSTEMS

INTRODUCTION

This chapter outlines the current wastewater treatment facilities (WWTF) and collection systems which existed throughout the planning area during the initial phase of the plan, as well as an overview of the conditions within each existing sanitary district and the status of their planning efforts for wastewater treatment

INVENTORY OF EXISTING WASTEWATER TREATMENT SYSTEMS

There is only one sanitary district within the planning area. The following description gives information related to the sanitary district's facilities and planning status.

Wastewater Treatment Plant

The current wastewater treatment plant was constructed in 1990 and is located at 1603 Ely Street, on the city's northeast side. The wastewater treatment process at the plant involves the treatment of the wastewater and the sludge or solids within the water.

After the raw wastewater is collected by the sewage collection system, it is filtered at the headwork building. In this building, the larger materials and grit are removed from the wastewater. The wastewater is then pumped into two primary clarifiers, which separate the solids from the water. The solids are sent to the sludge digester for treatment, and the wastewater is sent by gravity to the aeration tank. In the aeration tank, the BOD (biological oxygen demand) and other nutrients in the wastewater are removed by oxygen and bacteria. The wastewater then goes into one of four final clarifiers. The clarifiers remove all additional solid materials from the wastewater, which is then either returned to the aeration tank or taken to the sludge thickener. The final treatment process at the plant is disinfection of the wastewater. The water runs into two ultraviolet channels, which destroys any bacteria that might remain. The treated water is then discharged into the Menominee River.

The treatment of sludge at the plant involves the material being pushed into a flotation sludge thickener. Here the sludge is pushed to the surface by bubble aeration and then lifted out of the water by a skimmer. After this, the sludge is pumped into anaerobic sludge digester, where the methane producing organisms in the sludge are broken down. The digested sludge is then transferred into a sludge storage tank, where it stays until it is ready to be hauled off by truck for agricultural use.

The wastewater treatment plant has an average design flow of approximately 5.1 million gallons per day, and an average design BOD loading of 6,600 pounds per day. According to the 2002 Compliance Maintenance Annual Report, the Marinette treatment plant received an overall score of 12, which means the plant is in good physical and structural shape. The plant presently serves the city of Marinette adequately.

Sewage Collection System

For more than 80 years the city of Marinette's sewage collection system had been comprised of both separated sewers and combined storm and sanitary sewers; sewer construction in the city has now separated the city's remaining combined sewer systems (Map 3.1). The separate pipes reduce the cost of treating wastewater because it decreases the volume of flow coming into the

plant. The system collects and conveys domestic, commercial, and industrial wastewater generated within the city to the wastewater plant for treatment. Ten sewage collection lift stations are located throughout the city. The lift stations are used for pumping the sewage to the treatment plant.

The initial sanitary sewer collection system was constructed in the early 1900s. These older sewers and associated manholes were constructed of hand laid clay brick and mortar. The majority of the sewer was constructed between 1910 and 1950s because of development within the city. The extensions were made of vitrified clay or reinforced concrete pipes with block or brick manholes. From the late 1950s to the 1970s, new sewer extensions were constructed of vitrified clay pipe with rubber gasket joint material or ABS plastic truss pipe with solvent weld joints. Since the 1970s, new extension or replacement sewers have been constructed with the use of PVC pipes. Repairs and maintenance of the collection system are done by wastewater utility workers. The work needed to replace and install new extensions is contracted out by the city to private construction companies.

Major reconstruction projects were completed in 2004 and 2005 to replace failing brick sewers along Carney, Hall and Stephenson Streets as well as in conjunction with the USH 41 highway reconstruction.

Storm Sewer System

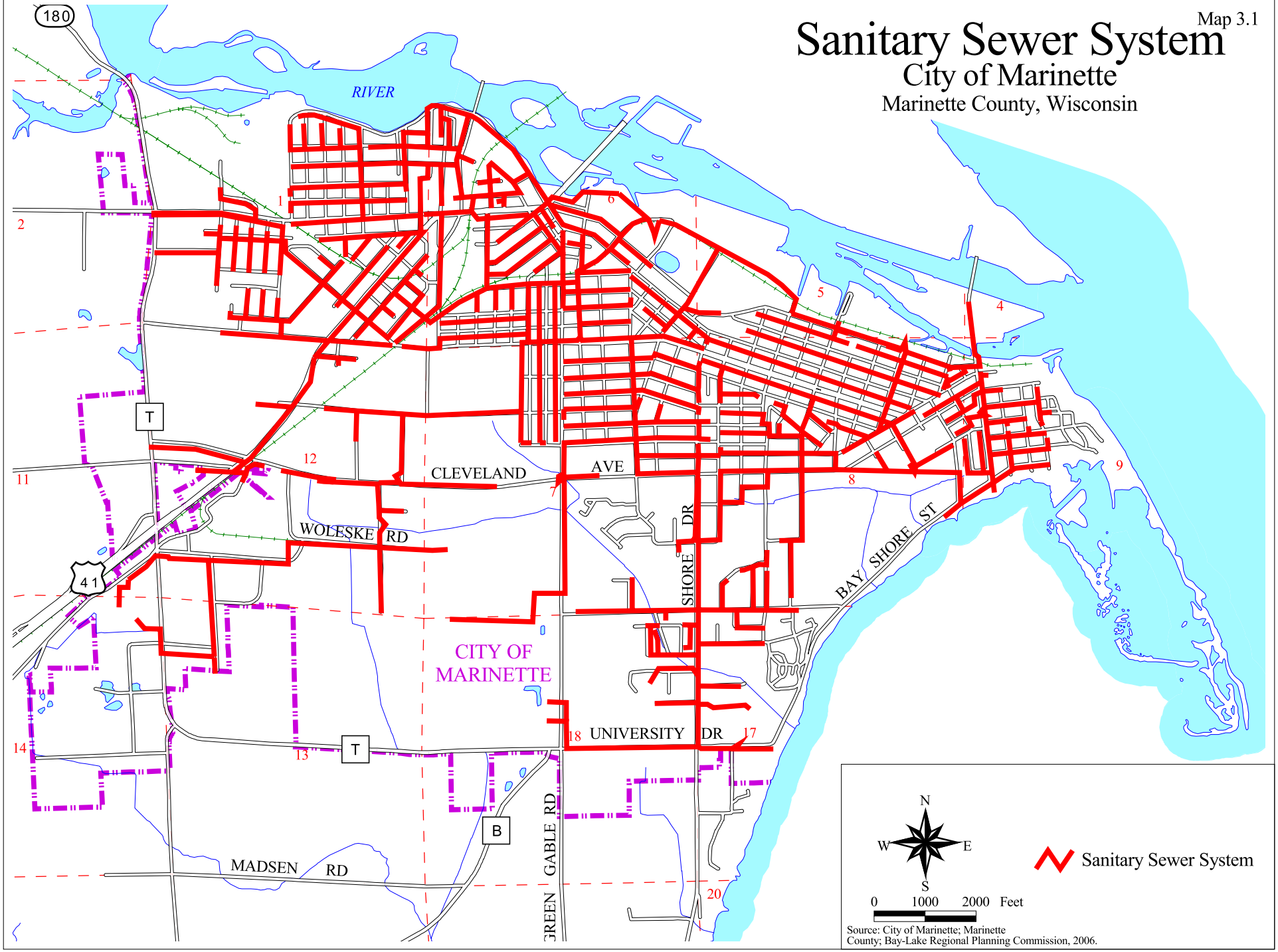
The storm sewer system is comprised of storm sewers, culverts, open ditches and drainage basins. The system drains into one of three water areas: the Menominee River, the Bay of Green Bay or Madigan Lauerman Ditch Watershed. About 50 to 60 percent of the city's streets have curbs and gutters. Two major areas within the city lack curbs and gutters: the southern half of the city, south of Cleveland Avenue and the area west of Owena Street.

Map 3.1

Sanitary Sewer System

City of Marinette

Marinette County, Wisconsin



Source: City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

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Chapter 4: LAND CHARACTERISTICS

INTRODUCTION

Examining the existing land use characteristics within the planning area will assist in defining development patterns which have occurred in recent years. This, in turn, can be utilized to project where future growth and development will occur. Additionally, many physical and biological characteristics that affect land development can be identified. Builders, elected officials and property owners need to consider these factors in development proposals to eliminate costly mistakes and a variety of construction or environmental problems. Some of the factors that need to be considered include existing land use(s), soil types, steep slopes, construction site erosion, distance to surface waters, stormwater runoff, high groundwater, wetlands, floodways and floodplains, bedrock geology, wildlife habitats, scientific area, forested lands and prime agricultural lands.

LAND USE IN THE PLANNING AREA

The planning area consists of a three mile radius around the existing city boundary. The planning area extends into two towns, Peshtigo, and Porterfield, and encompasses a total of approximately 25,845 acres. Of this, 4,767 acres are within the city limits of Marinette. The majority of the lands within the planning area are woodlands, some croplands and other natural areas. In the city, the area is about two-thirds developed and one third non-developed lands. The text below describes the land uses within the city limits. Table 4.1 lists the acreage for the entire planning area and the city, as well as the percentage of developed and undeveloped land within the city. Map 4.1 shows the land use in the city and Map 4.2 shows the land use within the planning area.

In 2003, Bay-Lake RPC conducted an inventory of the existing land uses within the planning area. Existing land use conditions were inventoried through a windshield survey of the rural areas, on 1998 1"=400' orthophotography. The data was then transferred onto a digital base map of the area and digitized into the Commission's Geographic Information System (GIS) for mapping. These tabulations are summarized in Table 4.1.

Since this plan is formulated as a reaction to the wastewater treatment concerns in compliance with NR 121 for the city of Marinette and the areas that could be sewered by the wastewater treatment plant, land use information has been supplied for the entire planning area. Summaries of land use by minor civil division can be found in the appendix of this document.

The planning area's most prevalent land use is natural areas (i.e. woodlands, floodplains, wetlands), comprising 39 percent of the land use; the balance of the land use, 61 percent, is comprised of developed uses. Within the city of Marinette, the primary land uses are residential and transportation (highways, streets) related, totaling approximately 22 percent and 17 percent of the land use, respectively.

Table 4.1: City of Marinette Planning Area Land Use Calculations

City of Marinette Land Use Type	Total Acres	Percentage Total Land	Percentage Developed Land
DEVELOPED			
Residential	1,036.8	21.7%	35.5%
Single Family	911.3	19.1%	31.2%
Two Family	40.3	0.8%	1.4%
Multi-Family	41.6	0.9%	1.4%
Group Quarters	0.2	0.0%	0.0%
Mobile Homes	86.8	1.8%	3.0%
Commercial	229.6	4.8%	7.9%
Industrial	372.1	7.8%	12.7%
Transportation	823.0	17.3%	28.2%
Communications/Utilities	21.4	0.4%	0.7%
Institutional/Governmental	273.0	5.7%	9.3%
Recreational	120.5	2.5%	4.1%
Total Developed Acres	2,919.9	61.2%	100.0%
UNDEVELOPED			Percentage Undeveloped Land
Undeveloped Open Space	363.1	7.6%	19.7%
Natural Areas	1,213.2	25.4%	65.7%
Water Features	271.0	5.7%	14.7%
Total Undeveloped Acres	1,847.3	38.8%	100.0%
Total Land Area	4,767.2	100.0%	

Planning Area Land Use Type	Total Acres	Percentage Total Land	Percentage Developed Land
DEVELOPED			
Residential	2,077.8	8.0%	41.8%
Single Family	1,864.6	7.2%	37.5%
Two Family	40.3	0.2%	0.8%
Multi-Family	42.1	0.2%	0.8%
Group Quarters	0.2	0.0%	0.0%
Mobile Homes	130.6	0.5%	2.6%
Commercial	335.9	1.3%	6.7%
Industrial	474.3	1.8%	9.5%
Transportation	1,463.9	5.7%	29.4%
Communications/Utilities	68.3	0.3%	1.4%
Institutional/Governmental	300.7	1.2%	6.0%
Recreational	255.5	1.0%	5.1%
Total Developed Acres	4,976.5	19.3%	100.0%
UNDEVELOPED			Percentage Undeveloped Land
Undeveloped Open Space	2,038.1	7.9%	9.8%
Natural Areas	18,448.2	71.4%	88.4%
Water Features	382.4	1.5%	1.8%
Total Undeveloped Acres	20,868.7	80.7%	1129.7%
Total Land Area	25,845.2	100.0%	

Source: Bay-Lake Regional Planning Commission, 2005.

Residential Land

Residential land accounts for the largest percent of developed land within the city at 1,036 acres or 35 percent of the developed land (21 percent of the total land in the city). This land is located primarily in the center of the city and along the river and bay and is more sparse in the outskirts of the city. Residential land is broken up into many categories. In the city of Marinette, the majority of the residential structures are single family. Two family (duplexes), multi family (apartments), group homes, mobile homes and vacant or abandoned structures make up the rest of the residential category.

Commercial Land

Commercial land within the city accounts for 230 acres or 8 percent of the developed land within the city. The commercial land is located primarily along three corridors: Marinette Avenue, Hall Avenue and Cleveland Avenue as well as in the Pine Tree Mall. Businesses include but are not limited to gas stations, restaurants, bars, car dealerships, doctors and retail stores. For more specific information on area businesses, please contact the Marinette Area Chamber of Commerce or go to the website www.marinettechamber.com/.

Industrial Land

Industrial land is land used for the extraction or transformation of materials, for fabrication of products, for wholesaling of products and/or for long-term storage of products. Also included in this definition are large, private storage sheds for individual use. Marinette has about 372 acres (13 percent of developed lands) of land dedicated to industrial use. Most of this land is along the Menominee River and in the south central portion of the city. Industrial uses are located throughout the city. New industry is located in the city's industrial park.

Transportation

The land use category of transportation includes all land used for the movement of people and materials, including related terminals and parking facilities. In Marinette, this accounts for 823 acres or 28 percent of the city's developed land. This is the second largest category of developed land use in the city. The majority of this land is used for the local road system. Other uses include the railroad corridor and large parking lots.

Communication/Utilities

Communication and utilities are defined as land used for the generation, processing and/or transmission of electronic communication or of water, electricity, petroleum or other transmittable products and for the disposal, waste processing and/or recycling of byproducts. Within the city, this accounts for 21 acres or less than one percent of the city's developed land and includes telephone dispatch centers, electric substations, water towers, wastewater or sewage treatment plants and recycling centers.

Institutional/Governmental

This land use category includes all land for public and private facilities; for education, health or assembly; for cemeteries and related facilities; and for all government facilities used for administration or safety, except public utilities and outdoor recreation. Within the city, this category accounts for 273 acres of land or just over 9 percent of the developed land in the city. Major uses are the Marinette County Courthouse, Bay Area Medical Center, UW- Marinette and

NWTC. Other institutional or governmental facilities in the city include; city hall, post office, municipal garages, police/fire station, all educational facilities including day care, library, clinic, fraternal organizations (Lions or Elks clubs), cemeteries and churches.

Parks and Recreational

Land used in this category is for outdoor sports and general recreation, for camping or picnicking facilities, for nature exhibits or for the preservation of historic or cultural resources. Within the city limits, there are 120 acres of land in recreation. This land is primarily parks and playfields scattered throughout the city. The major community parks are Marinette City Park, Red Arrow Park and Stephenson Island. Fred Carney and Daggett Street Parks are the city's only neighborhood parks.

Undeveloped Land

Undeveloped land consists of woodlands, wetlands, crop and pasture lands, water features and any other undeveloped open space. There are 1,847 acres of undeveloped land in the city including 271 acres of surface water (Menominee River). The majority of this undeveloped land is natural areas including woodlands, wetlands and grasslands.

NATURAL FEATURES

This section is intended to provide an inventory of the existing physical and environmental features within the planning area. Builders, elected officials and property owners need to consider how these resources are affected by development in order to eliminate costly mistakes and a variety of construction or environmental problems. Some of the resources/features which need to be considered include: wetlands, floodways and floodplains, bedrock geology, scientific and natural areas, woodlands, unique wildlife habitats, areas of steep slope and historic and archeological sites. Many of these features are found in corridors that are located along rivers, streams, shorelines and natural drainageways and are essential to the maintenance of an ecological balance and diversity, as well as for the preservation of the natural beauty of the area.

The city of Marinette planning area is a mix of predominantly wooded areas with scattered agricultural lands surrounding the city to the south and west. The planning area has many natural amenities including the Menominee River and the bay of Green Bay, along with numerous tributaries, woodlands, approximately 6,627 acres of wetlands and various archeological sites. Much of the Marinette planning area outside the city relies on a good groundwater source to provide its residents with safe drinkable water.

Over the years, the Menominee River waterfront has been developed with a mixture of land uses, including commercial, industrial and residential uses, without appropriate transitional zones or topsoil erosion controls, which have contributed to the deterioration of the river's water quality in the past. The Menominee River has also been used as the receiving waters for industrial and domestic wastes and other contaminants. As these contaminants have degraded the water quality, the public use of riverfront areas and water-associated activities have declined as have local revenues brought in by these uses. With the decline of river uses and the increase of federal and state water quality regulations, the community has recognized the Menominee River and its waterfront as an asset, which has resulted in a push to improve the water quality of the Menominee River.

At this time, land uses within the planning area pose only a moderate threat to the groundwater. Floodplains in the planning area exist mostly along the Menominee River and Green Bay. Currently there are no ambient air quality concerns for the planning area. Both threatened and endangered species exist within Marinette County and likely within the planning area. The planning area also provides ample room for a variety of plants and animals.

Watersheds and Sub-Watersheds

Four watersheds encompass the city of Marinette planning area. The Menominee River watershed covers the northern portion of the planning area; the Little River watershed is in the central portion draining to Green Bay; the western areas are within the Peshtigo River watershed; and the eastern edge and much of the southern half of the city drains directly to Green Bay through several small un-named tributaries. The Menominee River was designated as one of Wisconsin's four Areas of Concern in 1978. The primary reason for designating the Menominee River as an Area of Concern by the Great Lakes Water Quality Board was based on the presence of arsenic and other contaminants found in the river and harbor sediments. The Area of Concern includes the main stem of the river from the mouth of the bay upstream to the second dam. It also includes the adjacent near shore area of the river mouth and an undetermined distance to the east into the bay. The watersheds within the planning area are shown on Map 4.3.

Groundwater & Source Water Resources

In Wisconsin, the primary sources of groundwater contamination are agricultural activities, municipal landfills, leaky underground storage tanks, abandoned hazardous waste sites and spills. Septic tanks and land application of wastewater are also sources for possible contamination. The most common ground water contaminant is nitrate-nitrogen, which comes from fertilizers, animal waste storage sites and feedlots, municipal and industrial wastewater and sludge disposal, refuse disposal areas and leaking septic systems.

Areas outside of the city of Marinette and inland from the Menominee River and Green Bay rely on groundwater for industrial, municipal, farm and domestic water supplies. There are two principal aquifers in the area; the glacial drift and the underlying sandstone. Water from the uppermost glacial drift aquifer is limited in quantity and is subject to contamination by pollutants because of its proximity to the ground surface.

Deep wells, which penetrate the underlying sandstone formations, yield greater quantities of water than shallow wells in the uppermost aquifer. The quality of groundwater in the area is generally suitable for most uses. However, it is very hard and locally high in iron.

Source water is untreated water from streams, rivers, lakes and groundwater aquifers. Affordable, safe drinking water is essential to the health, development and stability of all communities. Conventionally, treatment has been the only step in maintaining safe drinking water for surface water systems. The quality of treated drinking water is a function of the pretreatment water quality.

The Marinette Water Utility relies solely upon source water from Green Bay to provide drinking water to its more than 12,000 consumers. As with most surface water systems, Marinette’s source water is significantly impacted by the source water area and highly susceptible to contamination. This is due to a high concentration of potential contaminant sources in the source water area near the drinking water intakes and the intakes’ distance and relative direction from

the discharge of a major stream. Green Bay water quality is frequently poor and winds coupled with discharge from the Menominee River and nearby intermittent streams allow contaminated source water to enter the drinking water intakes.

Runoff of storm water also presents a source of contamination for Marinette's source waters. As a result, the Wisconsin Department of Natural Resources made effective a series of eight administrative rules that address the control of polluted runoff from urban and rural land use activities. This includes NR 151, which addresses runoff performance standards for non-agricultural and agricultural practices, and NR 216, which establishes criteria and procedures for issuance of storm water discharge permits and limits the discharge of pollutants carried by storm water runoff into nearby waters.

Surface Waters

The principal water resources located in the Marinette planning area are the Menominee River and Green Bay. Not only do these waters provide fishing, boating, swimming and other recreational activities, but Green Bay is the source of Marinette's municipal water supply. In addition, the shoreline areas of both of these water bodies, especially northwest and south of the Marinette city limits have provided desirable locations for a somewhat concentrated residential development. Map 4.4 shows the surface water resources in the planning area.

Lakes

The following information for the lakes and flowages within the planning area has been taken from the Wisconsin Department of Natural Resources *Surface Water Resources of Marinette County*, 1975.

Lower Scott Flowage - The flowage is classified as a medium hard water drainage impoundment on the Menominee River having slightly acid, medium brown water of low transparency. Northern pike, largemouth bass, pan fish and sturgeon have been reported in the flowage.

Upper Scott Flowage - The flowage is classified as a medium hard water drainage impoundment on the Menominee River having slightly acid, light brown water of low transparency. Northern pike, largemouth bass, smallmouth bass, pan fish, walleye and sturgeon have been reported in the flowage. A boat landing provides public access.

Green Bay - The part of Green Bay associated with the southeastern portion of Marinette County provides excellent recreational opportunities. At different times of the year, smallmouth bass, walleye and northern pike as well as salmon and brown, rainbow and lake trout are prevalent in the bay.

Rivers and Streams

The following information for the rivers and streams within the town has also been taken from the Wisconsin Department of Natural Resources *Surface Water Resources of Marinette County*, 1975. Streams are defined in this study as those which have a permanent flow or any streams of intermittent (seasonal) flow which have significance for recreational purposes. The following is a brief description of the two named streams in the planning area. Map 4.4 shows the location of these streams.

Menominee River - a hard water stream having slightly alkaline, light brown water. This river, which forms the boundary of Marinette County with upper Michigan, flows into Green Bay at

Marinette. The river provides recreational opportunities for fishermen and boaters as well as a diverse fishery. The river is also used by industry for manufacturing processes. Two flowages in the city of Marinette provide access and spawning areas for northern pike, small and largemouth bass, pan fish, walleye and lake sturgeon.

Little River - a hard water stream flowing into Green Bay having neutral, light brown water. A variety of fish make spawning runs in this 5.4 mile stream including trout, pike and salmon. Public access is available at road crossings and a WDNR pond adjacent to the stream.

Shoreland Corridors

Shorelands are often viewed as valuable recreational and environmental resources in both urbanized and rural areas. As a result, the State of Wisconsin requires that counties adopt shoreland/floodplain zoning ordinances to address the problems associated with development in floodplain areas. Development in shoreland areas is generally permitted but specific design techniques must be considered. Development in these areas is strictly regulated and in some instances, is not permitted. The authority to enact and enforce these types of zoning provisions is set forth in Chapter 59.97 of the *Wisconsin Statutes* and Wisconsin Administrative Codes NR 115, 116, and 117 and is established in the Marinette County Zoning Ordinance, Section 14.

The city of Marinette and Marinette County are currently administering shoreland/wetland zoning ordinances. The jurisdiction of the ordinances include shorelands of navigable waters of the county which are 1,000 feet from the normal high water elevation of a lake, pond or flowage; and 300 feet from the normal high water elevation of a river or stream or to the landward side of a floodplain.

Floodplains

Floodplains are often viewed as valuable recreational and environmental resources. These areas provide for storm water retention, groundwater recharge, and habitat for various kinds of wildlife unique to the water.

Development permitted to take place in these areas is susceptible to storm damage and can have an adverse effect on water quality and wildlife habitat. In addition, it can also result in increased development and maintenance costs such as: providing floodproofing, repairing damage associated with flooding and high water, increased flood insurance premiums, extensive site preparation and repairing water related damage to roads, sewers and water mains. Some communities have special ordinances for remodeling and expanding buildings within the floodplain. New expansions may have to be compliant to the rules of floodplain construction.

As a result, the state of Wisconsin requires that counties, cities and villages adopt shoreland/floodplain zoning ordinances to address the problems associated with development in floodplain areas. Development in shoreland areas is generally permitted, but specific design techniques must be considered. Development in floodplain areas is strictly regulated and in some instances is not permitted. For planning and regulatory purposes, the floodplain is normally defined as those areas, excluding the stream channel, that are subject to inundation by the 100-year recurrence interval flood event. This event has a one percent chance of occurring in any given year. Because of this chance of flooding, development in the floodplain should be discouraged and the development of park and open space in these areas encouraged.

The authority to enact and enforce these types of zoning provisions in counties is set forth in Chapter 59.97 of the Wisconsin Statutes and Wisconsin Administrative Code NR 116. This same authority is also vested to cities and villages in Chapter 62.23 of the Wisconsin Statutes.

Much of the planning area along the Menominee River and Green Bay lies within the 100-year floodplain. The extensive wetland area along the Menominee River is subject to flooding as is the Menekaunee area, Red Arrow Park and Seagull Bar. The southeastern shoreline along the bay is a flood hazard area (Map 4.5).

Wetlands

According to the Wisconsin Department of Natural Resources, wetlands are areas where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophilic vegetation. Other common names for wetlands are swamps, bogs, or marshes. Wetlands serve as a valuable natural resource. They provide scenic open spaces in both urban and rural areas. Wetlands act as natural pollution filters, making many lakes and streams cleaner and drinking water safer. They act as groundwater discharge areas and retain floodwaters. Finally they provide valuable and irreplaceable habitat for many plants and animals. According to the WDNR, the city of Marinette contains more than 105 acres of wetlands. Because of their importance, there are strict state and federal regulations regarding wetlands.

Wisconsin Administrative Codes NR 103, NR 115 and NR 117 fall under the jurisdiction of the Wisconsin Department of Natural Resources and mandate that wetlands be protected in both the rural and urban areas of the state. In the unincorporated areas, NR 115 provides the legislation to protect wetlands of five acres or more that are within the jurisdiction of county shoreland zoning ordinances. These wetland provisions would be applicable in the towns of Porterfield and Peshtigo. To protect wetlands in the incorporated areas, NR 117 was enacted in 1983 and requires that all shoreland wetlands of five acres or more be protected.

The city of Marinette falls within the boundaries of the Special Wetlands Inventory Study (SWIS), a joint federal and state effort to study the wetlands of the Green Bay area. The study, completed in 1993, was directed by the U.S. Environmental Protection Agency (EPA) and included the U.S. Fish & Wildlife Service (US F&WL) , the WDNR, the U.S. Army Corps of Engineers (USACOE), the National Oceanic & Atmospheric Administration (NOAA) and the Bay-Lake Regional Planning Commission. More than 4,000 of the 6,000 wetlands mapped by the WDNR were field verified and a database created which classifies and characterizes each wetland. The SWIS database includes information on academic studies, agency records, Superfund site information, underground storage tank inventories, Remedial Action Plan location information, identification of some sites for restoration or enhancement of wetlands, as well as bibliographic information. The database also includes data on each wetland identifying its site name, WDNR abbreviation, unique ID, location, watershed, USGS watershed code, quadrangle name, owner, evaluator, date, sources used, remarks, adjacent land use, disturbance, acreage, a brief narrative and a number of other pieces of information related to the wetland's hydrologic properties, water quality and habitat.

The Wisconsin Department of Natural Resources categorized the city of Marinette as a Priority One Community for wetlands mapping and protection. The Wisconsin Wetland Inventory maps indicate that areas of wetlands can be found along the Menominee River, north of Water Street between 6th Street and Ogden Street, in Red Arrow Park and in an area in the southeast part of

the city just west of Bayshore Drive and north of Edwin Street. Much of the planning area north and west of the city is covered by wetlands with large areas north of US Highway 41 (Map 4.6).

Placing any development, especially sanitary sewers, in wetland areas or areas with wet soils often requires special installation techniques which are reflected in additional construction costs. The filling or draining of wetlands can be quite costly; it destroys the productive capacity of the ecosystem and can adversely affect surface water quality and drainage.

Topography and Steep Slope

The city of Marinette is in the Eastern Ridges and Lowlands geographic province of Wisconsin. Topography ranges from nearly level plains and depressions to gently sloping or sloping sandy ridges.

Ground elevations within the city generally increase from the east-central area along the Menominee River in a northwesterly direction. The ground elevations within the corporate limits of Marinette range from low of 578 feet to a high of 621 feet near the western city limits along Hall Avenue.

The eastern part of the city, locally known as Menekaunee, is generally the lowest area with elevations less than 584 feet east of Sixth Street. Elevations range from 592 to 597 feet throughout most of the central city from Sixth Street to the Chicago & Northwestern Railroad right-of-way, while the area west of the tracks is above 607 feet, with the exception of a limited area bordering the Menominee River.

GEOLOGY

Bedrock Geology

Marinette County is overlain with a mantle of drift deposited by a series of glaciers during the Pleistocene period. Within the corporate limits of the city, most of the drift consists of water-sorted sand, or sand and gravel, called outwash. Records of water well logs within the city of Marinette indicate that there is 85 feet of sand and gravel underlain by dolomite.

Bedrock in the planning area consists of Galena, Decorah and Platteville formations, which vary in thickness from zero to 250 feet. The bedrock causes problems in areas where large stones and bedrock are near the soil surface, which can hinder excavation and considerably increase the cost of construction and providing sewer, water and gas service. In addition, this type of situation can prevent conventional on-site septic systems from functioning properly, which may result in wastewater passing through the cracked bedrock and contaminating the groundwater. To date, bedrock has not presented any significant problems to development in the planning area.

Glacial Geology

The surface features of Marinette County are the result of the movement of the Green Bay lobe of the Continental Glacier formed during the Pleistocene epoch. The glaciers moved in a general northwest to southeast direction as indicated by existing drumlins and eskers. Deposits left by glaciers are divided into two types: till, which is unsorted debris deposited directly from the ice with little or no reworking by water; and sorted and stratified water-laid deposits noted as glacio-fluvial deposits. The planning area is characterized by ground moraine and glacial lake deposits overlying Paleozoic sedimentary bedrock. Map 4.7 shows the glacial geology within the area.

SOILS

Prime Agricultural Lands

Prime farmland as defined by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) is the land that is best suited to food, feed, fiber and oilseed crops. Urban or built-up areas of these soils are not considered prime farmland. The soil qualities, growing season and moisture supply are those needed for a well managed soil to produce a sustained high yield of crops in an economic manner. Within the Marinette planning area, only a very small portion of the soils are considered to be prime farmland soils. These soils are found primarily in the town of Porterfield portion of the planning area and just west of the city north of US Highway 41. They represent less than three percent of the total planning area soils. Map 4.8 shows the prime farmland soils within the city of Marinette planning area.

Basements

Within the *Marinette County Soil Survey*, the NRCS provides information on the suitability and limitations of soils for a variety of natural resource and engineering uses. In particular, the soil survey provides information on the limitations of each soil for building site development including the construction of dwellings with basements. Dwellings are considered to be structures built on shallow excavations on undisturbed soil with a load limit the same as for a single family dwelling no higher than three stories. The ratings are based on soil properties, site features and observed performance of the soils.

According to the Natural Resources Conservation Service, *severe limitations* mean soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs and possibly increased maintenance are required. *Moderate limitations* mean soil properties or site features that are not favorable for the indicated use may require special planning, design or maintenance to overcome, or minimize, limitations. *Slight limitations* mean soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome. Refer to the *Marinette County Soil Survey* for additional information regarding soil limitations for building site development.

As illustrated on Map 4.9, soils with moderate and slight limitations for dwellings with basements are scattered throughout the planning area with concentrations along the bay and in the southern portion of the area.

NATURAL AREAS

State Natural Areas are designated by the WDNR Bureau of Endangered Resources as tracts of land in a natural or near natural state, which are managed to serve several purposes including scientific research, teaching of resource management and preservation of rare native plants and ecological communities. There is currently one designated State Natural Areas within the study area, although a number of other sites possess characteristics which make them suitable for designation.

The *Natural Area Inventory - Wisconsin's Great Lakes Coast, Revised 1980, Draft Update 1991* report, which was prepared by the Wisconsin Department of Administration and the Wisconsin Department of Natural Resources, and updated by the Bay-Lake Regional Planning Commission, identifies three natural areas within the planning area. Natural areas are defined in the report as a tract of land or water so little modified by man's activity or sufficiently recovered that it contains

intact native plant and animal communities believed to be representative of the pre-settlement landscape.

The two areas which were identified in that survey are the Ansul Patterned Dunes and the Seagull Bar Scientific Area. The Ansul Patterned Dunes are designated as NA-2 Natural Areas, which are "tracts of land and/or water slightly modified by man's activities or insufficiently recovered from past disturbances such that they are of county or multi-county natural area significance ...". Seagull Bar is identified as a state scientific area. The report defines scientific areas as "those natural areas, geological sites, or archaeological sites (or combinations) of at least state significance which have been designated by the Scientific Areas Preservation Council".

The following description of the two natural areas within the planning area (Map 4.10) has been excerpted from the *Natural Area Inventory*.

1. Ansul Patterned Dunes

   This privately owned 180-acre natural area is located in the southwest portion of the city adjacent to University Drive. It is characterized by stabilized dunes with Hill's oak-jack pine forest (and white birch, red maple) on dry sandy ridges with ephemeral ponds and sloughs between the dunes.

2. Seagull Bar Scientific Area

   This 20-acre area is classified as a State Scientific Area and is owned by the Department of Natural Resources. The area which is just south of the Menominee River mouth is characterized by sand spits, quiet lagoons and emergent vegetation. The area attracts migrating shore birds and waterfowl in great numbers. Beach and shore vegetation, submerged aquatics and coastal wetlands during low water periods are important features.

ENVIRONMENTALLY SENSITIVE AREAS

Introduction

Wisconsin Administrative Code NR 121.05(1)(g)2c describes natural features and sensitive environmental areas that are to be excluded from sewer service areas and protected from sewered development in order to protect water quality. These areas are referred to as “environmentally sensitive areas” (ESAs) and are defined by the code as follows:

> *“Major areas unsuitable for the installation of waste treatment systems because of physical or environmental constraints are to be excluded from the sewer service are. Areas to be considered for exclusion from the sewer service area because of the potential for adverse impacts on the quality of the waters of the state from both point and nonpoint sources of pollution include but are not limited to wetlands, shorelands, floodway and flood plains, steep slope, highly erodable soils and other limiting soil limitations, groundwater recharge areas and other such physical constraints.”*

Other areas, including areas of scientific value or other important natural, historical, archaeological and cultural features that warrant protection from sewered development may also be included in the definition of an environmental environmentally sensitive area.

Designation of ESAs is intended to:

1. Protect general public health, safety, and welfare;
2. Protect surface and groundwater quality;

3. Reduce damage from flooding and stormwater runoff;
4. Maintain important wildlife habitats or outdoor recreation areas (with the support of local units of government); and
5. Reduce the costs of public utilities and environmental damages.

Some examples of potential cost benefits to the community and individuals include: less property damage from stormwater runoff and sedimentation, fewer insurance claims which result in lower insurance rates and lower maintenance costs for public utilities.

The ESA concept has been effectively adopted in many regions of Wisconsin and is being applied to the planning area to help preserve remaining undisturbed natural resources. Buffering of ESAs, particularly wetlands, can avoid negative impacts caused when development occurs directly adjacent or adjoining to the ESA .

ESA Definition

The *Marinette 2025 Areawide Sewer Service Area Plan* sets forth the following definition of important natural and sensitive environmental features, hereinafter referred to as Environmentally Sensitive Areas and shown on Map 4.11 to be used within this plan for the purpose of implementing NR 121:

- All lakes, ponds, flowages, rivers and streams identified on the 7.5 minute U.S.G.S quadrangle maps and their adjacent 75-foot shoreland buffer, as measured from the ordinary high water mark, shall be designated as ESAs.
- All lakes, ponds, flowages, rivers and streams identified on the U.S.G.S. quadrangle maps shall be considered navigable until such time as an official Wisconsin Department of Natural Resources determination indicates otherwise.
- Any Environmentally Sensitive Area associated with a non-navigable lake or pond shall extend 25 feet from the ordinary high water mark.
- Any Environmentally Sensitive Area associated with a non-navigable flowage, river or stream shall extend 25 feet from the both sides of the center of the channel of such feature.
- All floodplains (FEMA 100-year) shall be designated as ESAs.
- All Department of Natural Resources (DNR) mapped wetlands shall be included in an ESA. Any Environmentally Sensitive Area associated with such a wetland two acres in size shall extend 50 feet beyond the edge of the wetland.
- Areas of steep slope (12 percent or greater) shall be designated as ESAs.
- Publicly owned scientific and natural areas and areas with identified archaeological sites shall be included in the ESA.
- Other significant natural resource features, including but not limited to, river and stream headwaters, high-value wildlife habitat areas, geologic and natural area sites, steep slopes and wet, poorly drained and organic soils, shall be considered for inclusion as an ESA on a case-by-case basis by the TAC.

Sewer Extension Prohibited

Sewer extensions for development within designated ESAs will be prohibited. An exception to this exclusion does exist as the plan recognizes that it may be necessary, in some case, to construct sanitary sewers across and through identified environmental corridors, and that, compatible land uses such as public parks and outdoor recreation facilities may need sewer at a future date. Also, mapping detail may not portray exact boundaries of physical features as they currently exist, in which case an onsite inspection would need to be conducted to properly identify the environmental corridor. The Technical Advisory Committee and WDNR will review these exceptions/modification of environmental corridor mapping on a case-by-case basis. Pursuant to NR 1.95, when an exception of this particular nature exists, all reasonable alternatives to crossing the environmental corridor with sanitary sewer will be considered. Any changes to the ESA delineation would require a plan amendment and WDNR approval.

Intensive uses to be considered for exclusion from within ESAs include but are not limited to; permanent structures such as residential, commercial, or industrial buildings; impervious surfaces such as parking lots and concrete or asphalt surfaced storage areas; and site disturbing activities such as clearing, grubbing, grading and filling. Any consideration of development within or adjacent to an ESA must be in conformance with all applicable Federal, State and local rules and regulations including the provisions and requirements of the Federal Clean Water Act, Wisconsin Administrative Codes NR 103, 115, 116, 117, 121, 216 and 299, and local zoning ordinances.

Uses which may be compatible with the protection and preservation of ESAs include non-intensive recreational facilities such as trails and picnic areas; in some instances, utility facilities such as sewer and water lines, detention basins and stormwater drainage-ways; and limited clearing, grubbing, grading, and filling.

If there is any doubt to the location of, or infringement on ESAs at the time of sewer extension or boundary amendment requests (as delineated on the review maps), the Bay-Lake Regional Planning Commission will consult with and request site specific information (including proposed building footprints) from the local municipality and/or petitioner. This information, along with the ESA criteria from this plan, will be used to make a recommendation on the proposal.

Application of the above ESA definition will not apply to those areas currently developed or platted at the time of plan publication, but will apply to those areas not yet developed or platted at the time of publication.

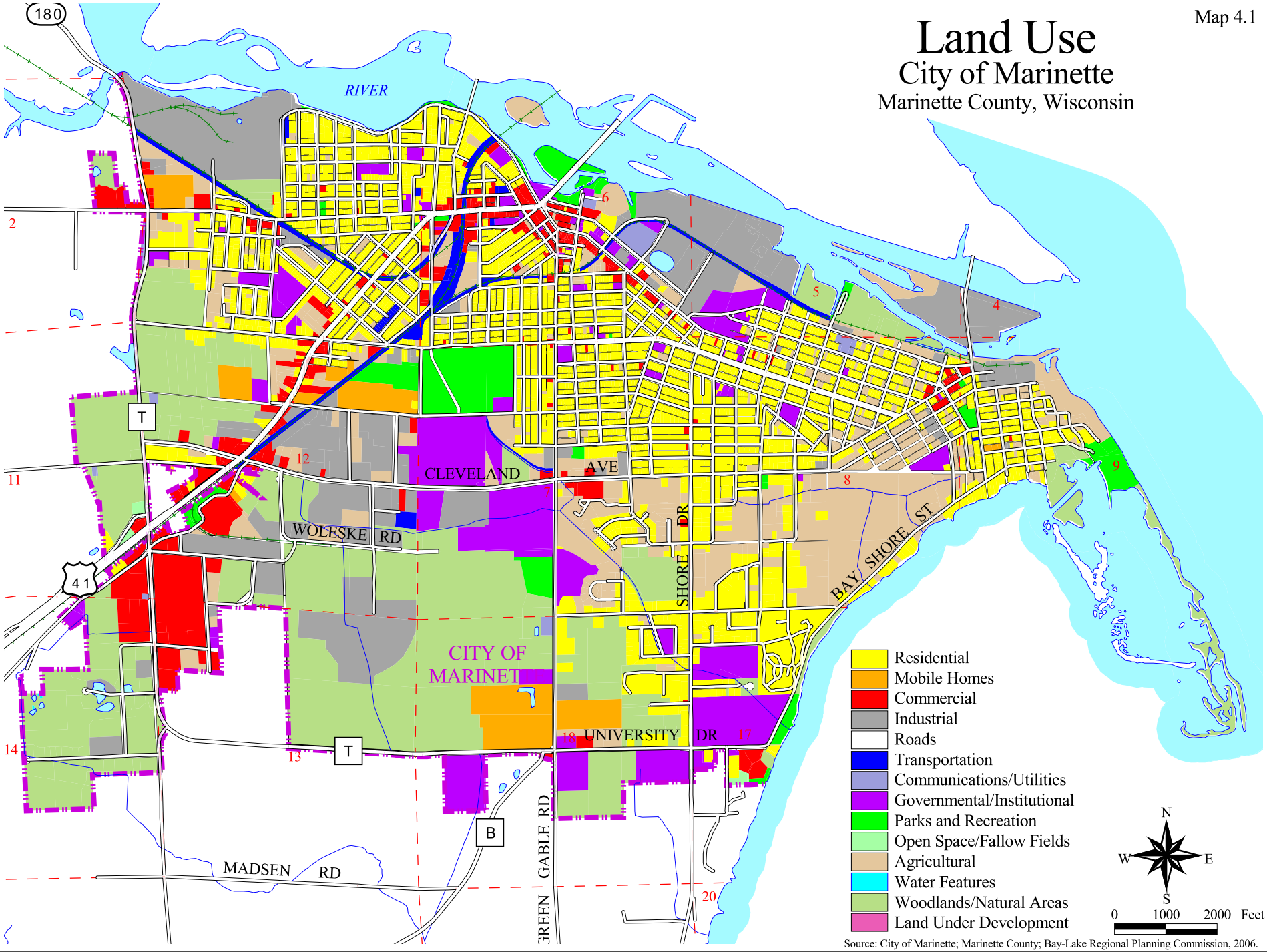
ESAs have been delineated by the BLRPC using GIS software. Map 4.11 shows the general location of ESAs throughout the planning area. Although ESAs may overlay existing developed lands, it is their location throughout the undeveloped portion of the Sewer Service Area that will determine future sewered development.

Map 4.1

Land Use

City of Marinette

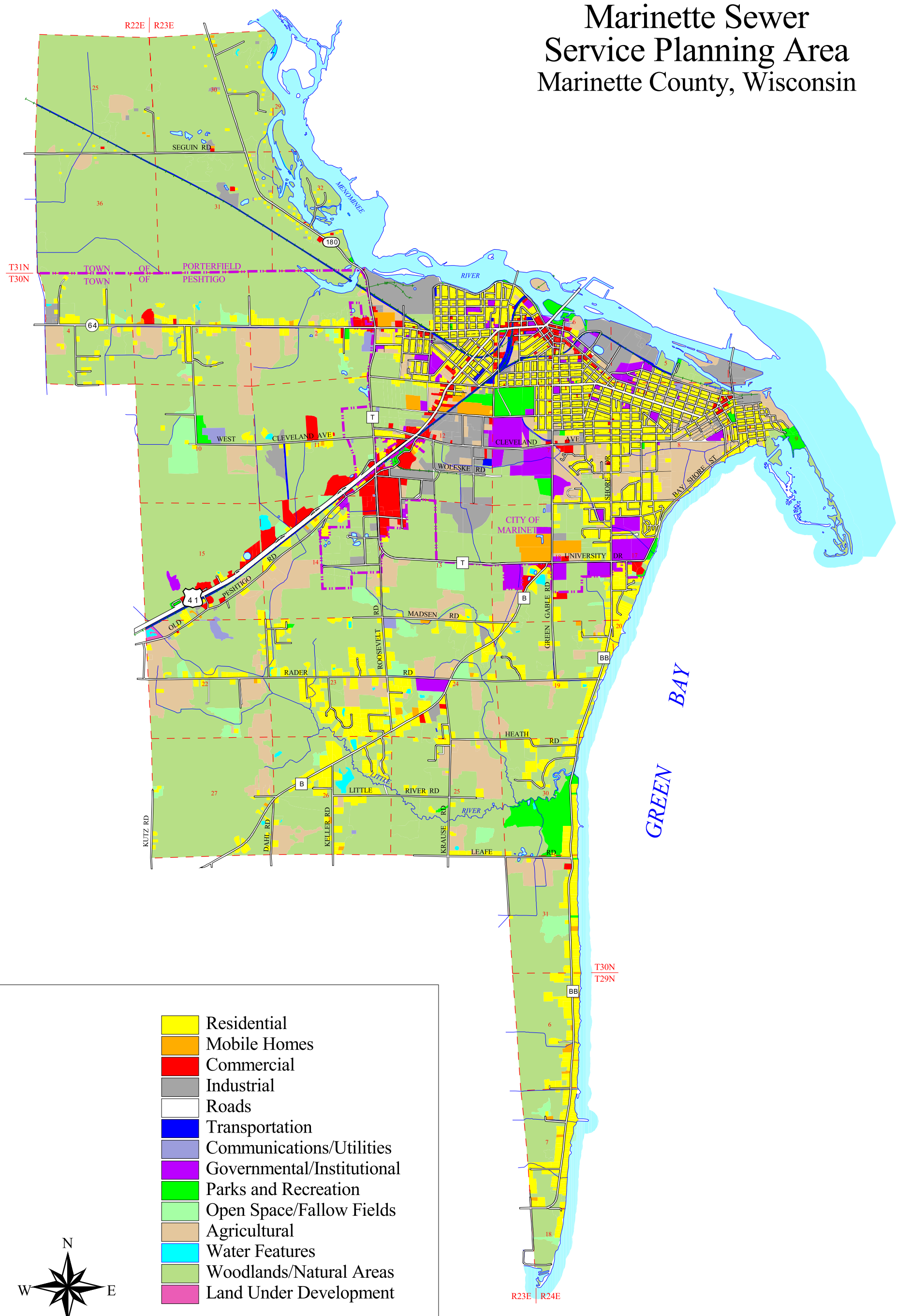
Marinette County, Wisconsin



Source: City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 4.2

Land Use
Marinette Sewer Service Planning Area
Marinette County, Wisconsin



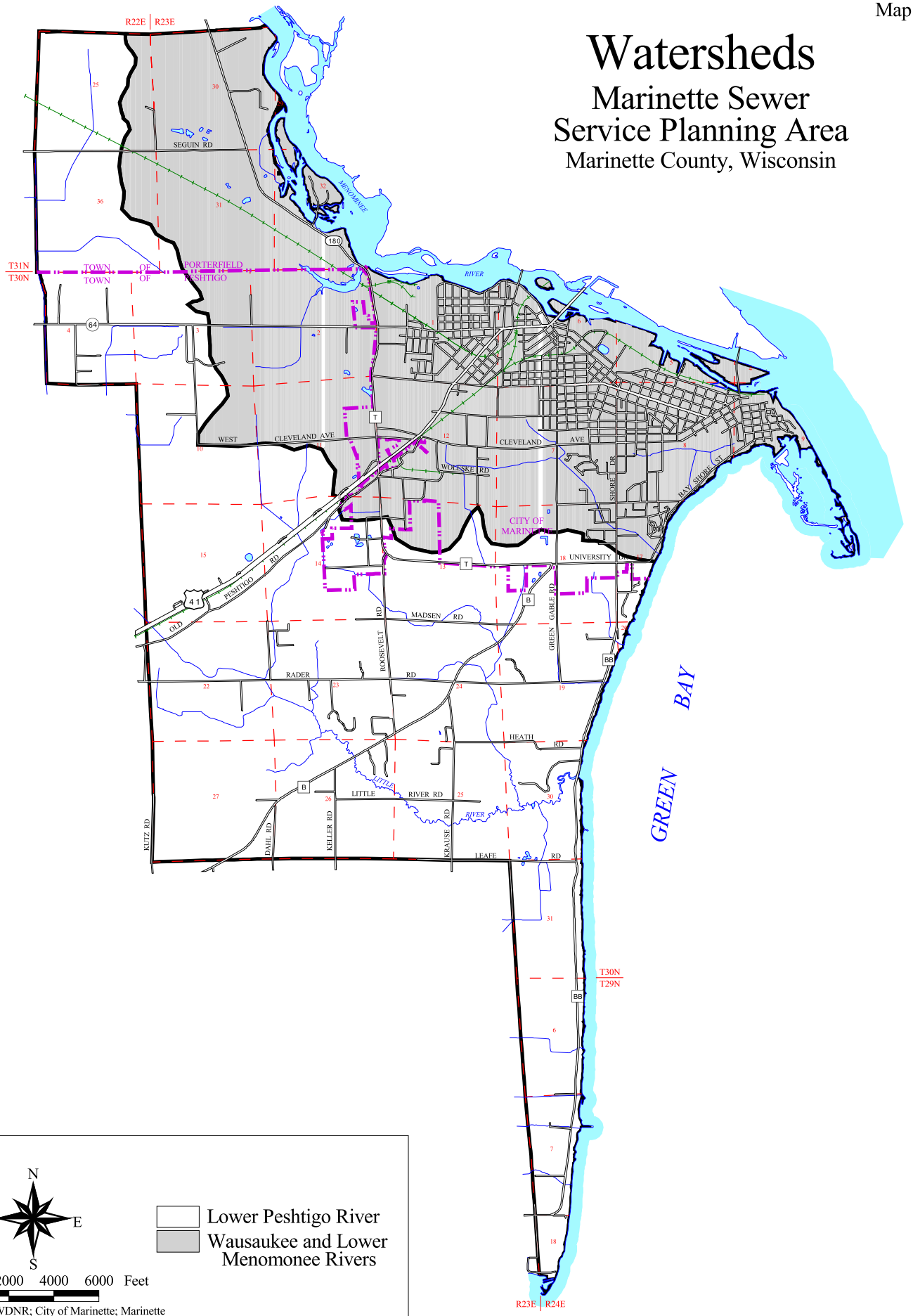
Source: City of Marinette; Marinette County;
Bay-Lake Regional Planning Commission, 2006.

Map 4.3

Watersheds

Marinette Sewer Service Planning Area

Marinette County, Wisconsin



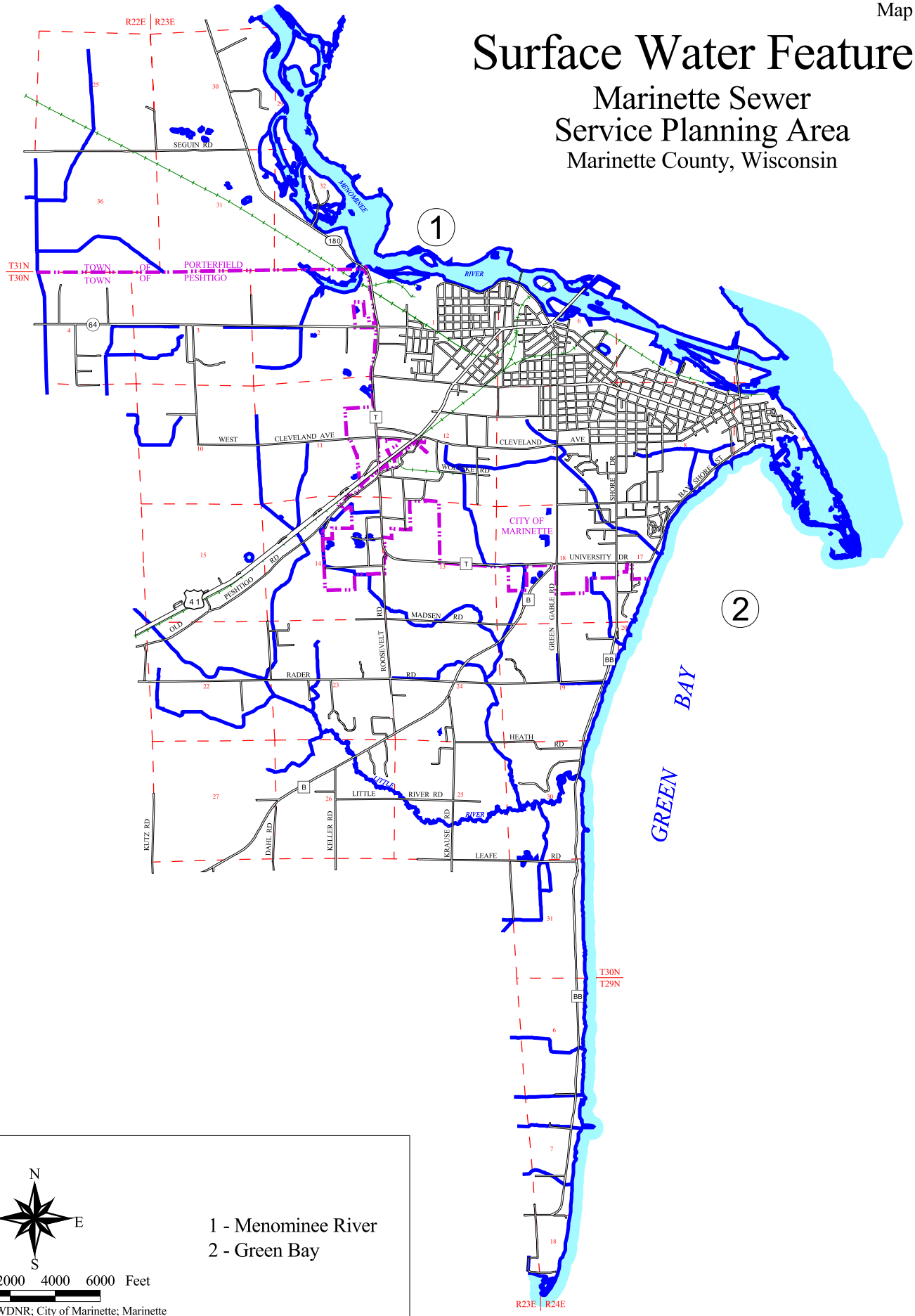
Source: WDNR; City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 4.4

Surface Water Features

Marinette Sewer Service Planning Area

Marinette County, Wisconsin



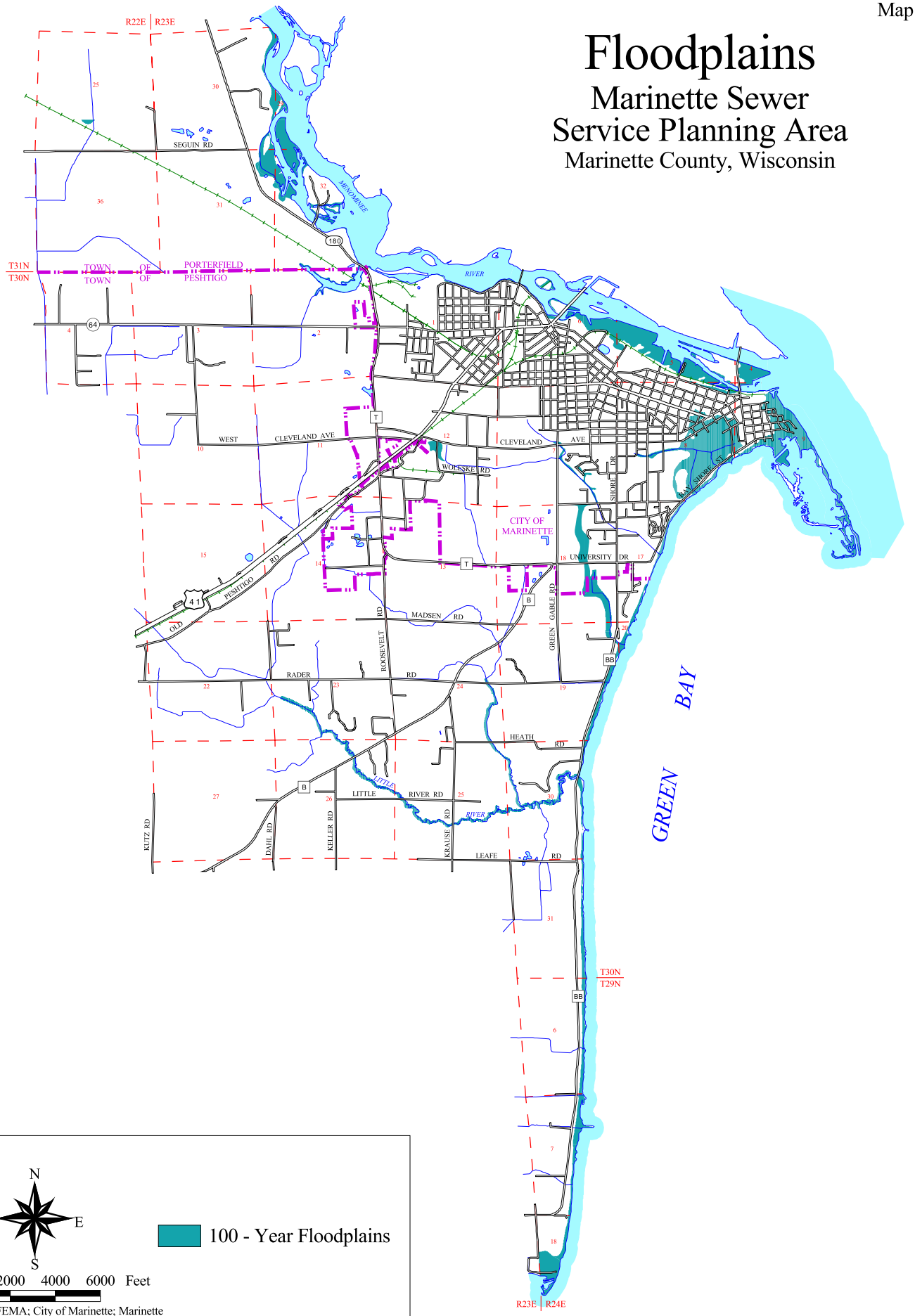
Source: WDNR; City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 4.5

Floodplains

Marinette Sewer Service Planning Area

Marinette County, Wisconsin



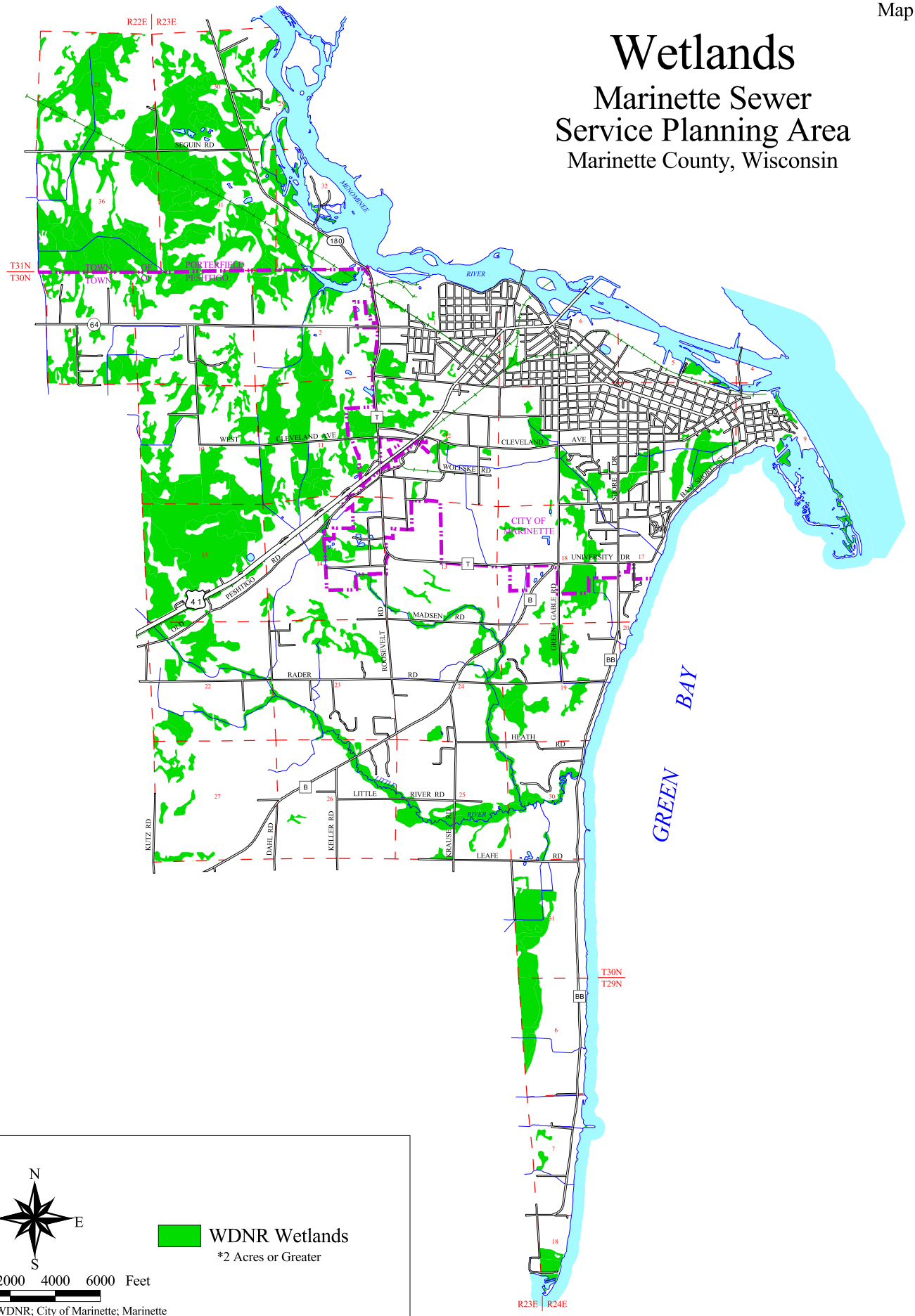
Source: FEMA; City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 4.6

Wetlands

Marinette Sewer Service Planning Area

Marinette County, Wisconsin



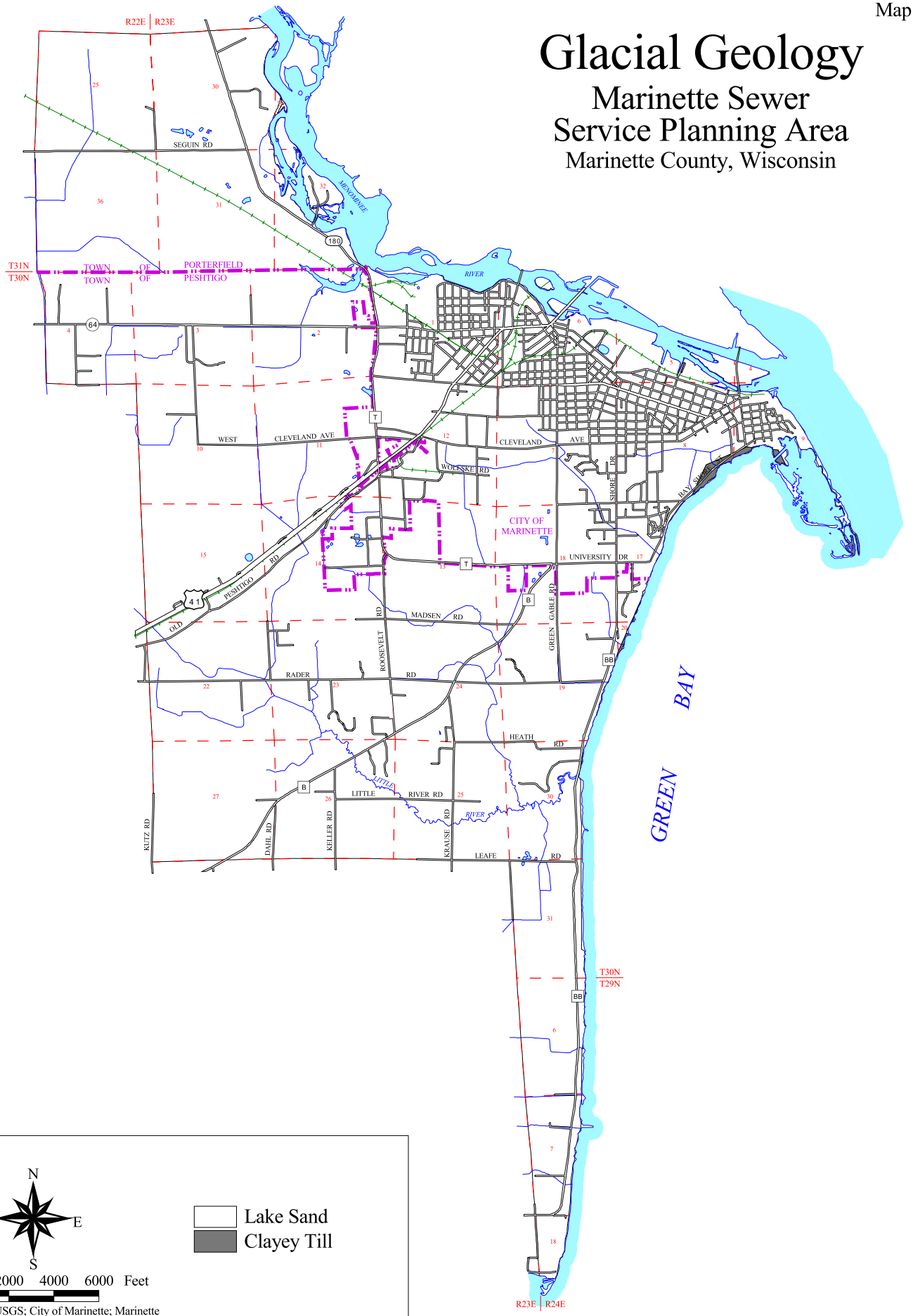
Source: WDNR; City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 4.7

Glacial Geology

Marinette Sewer Service Planning Area

Marinette County, Wisconsin



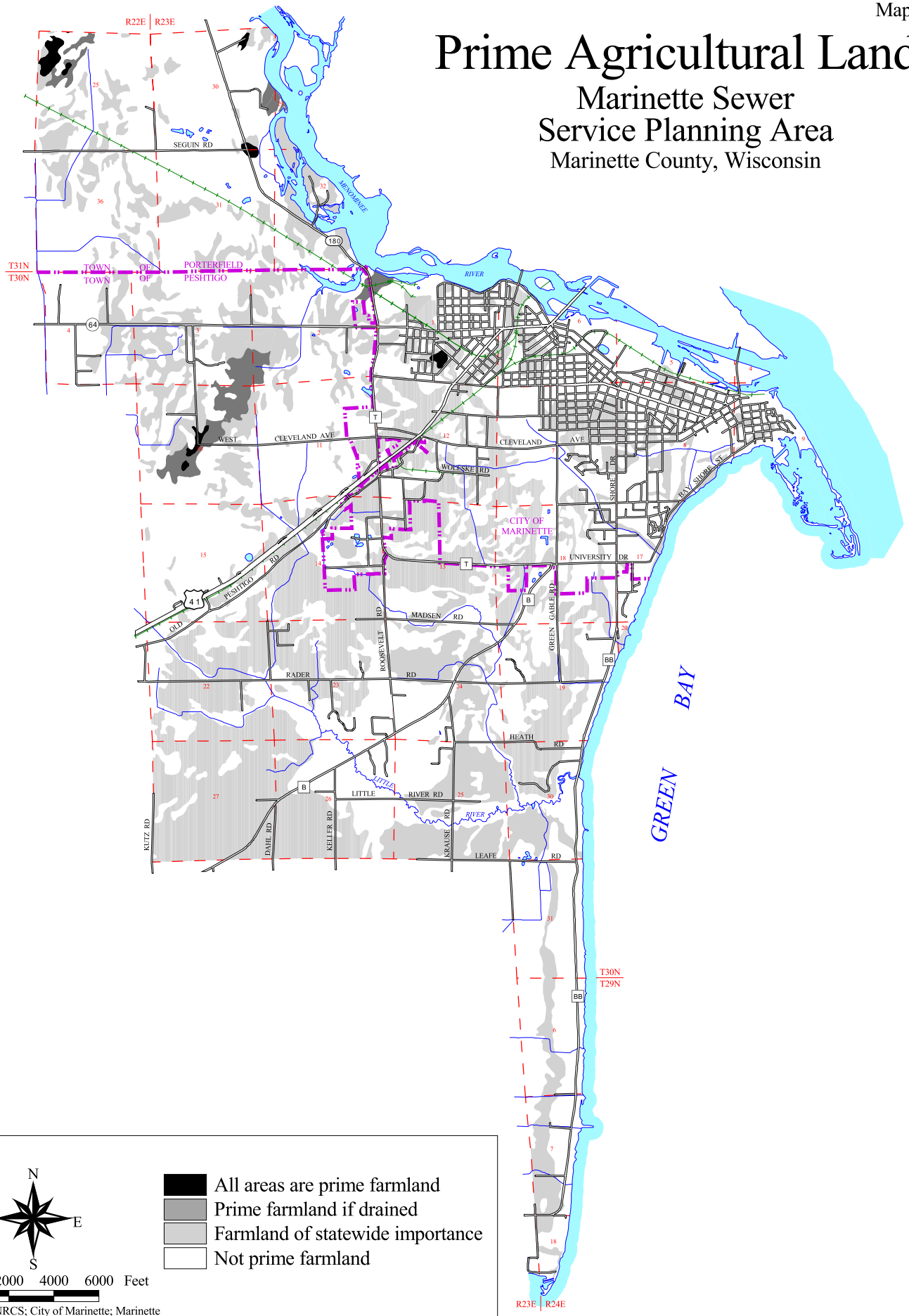
Source: USGS; City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 4.8

Prime Agricultural Lands

Marinette Sewer Service Planning Area

Marinette County, Wisconsin



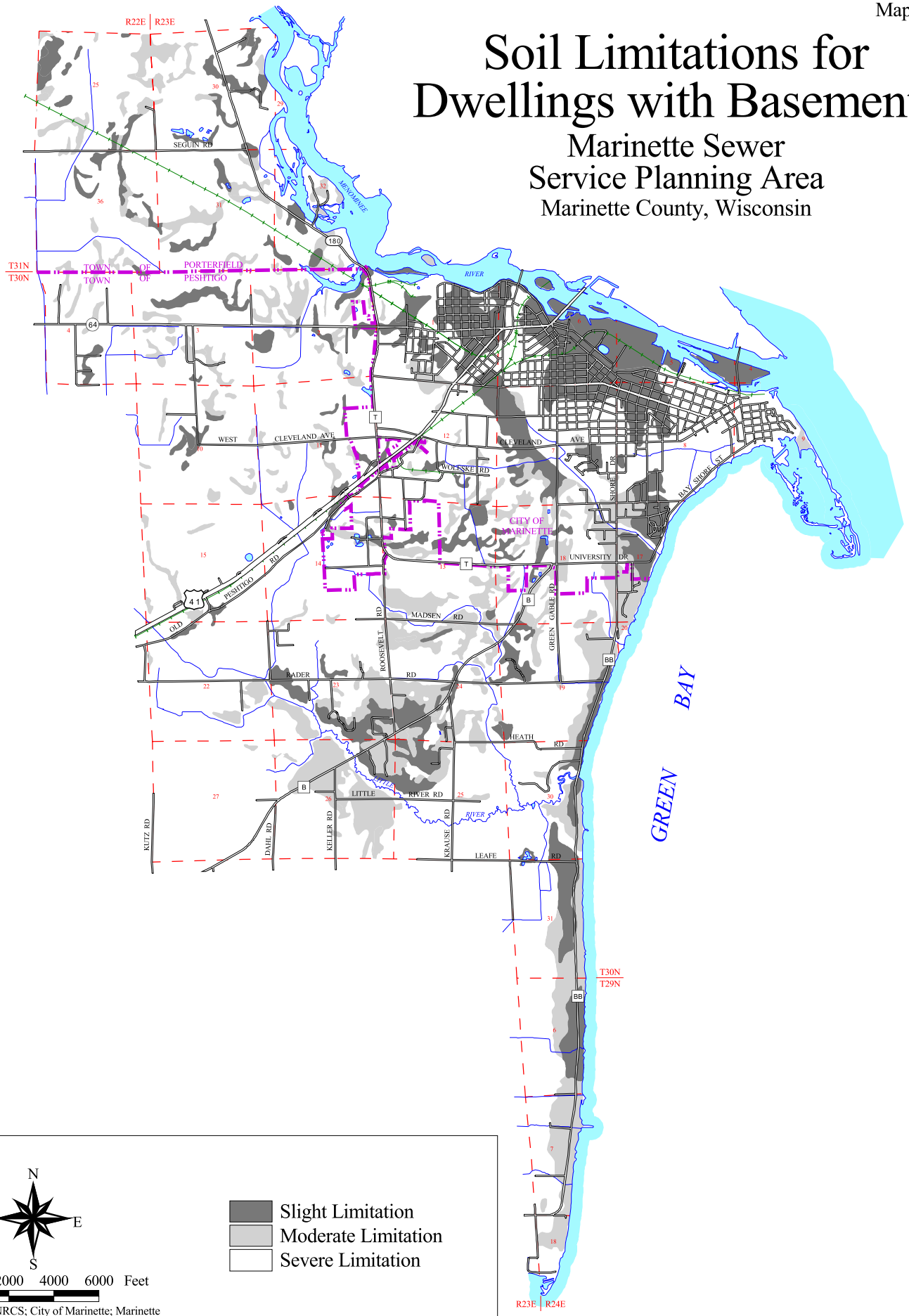
Source: NRCS; City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 4.9

Soil Limitations for Dwellings with Basements

Marinette Sewer Service Planning Area

Marinette County, Wisconsin



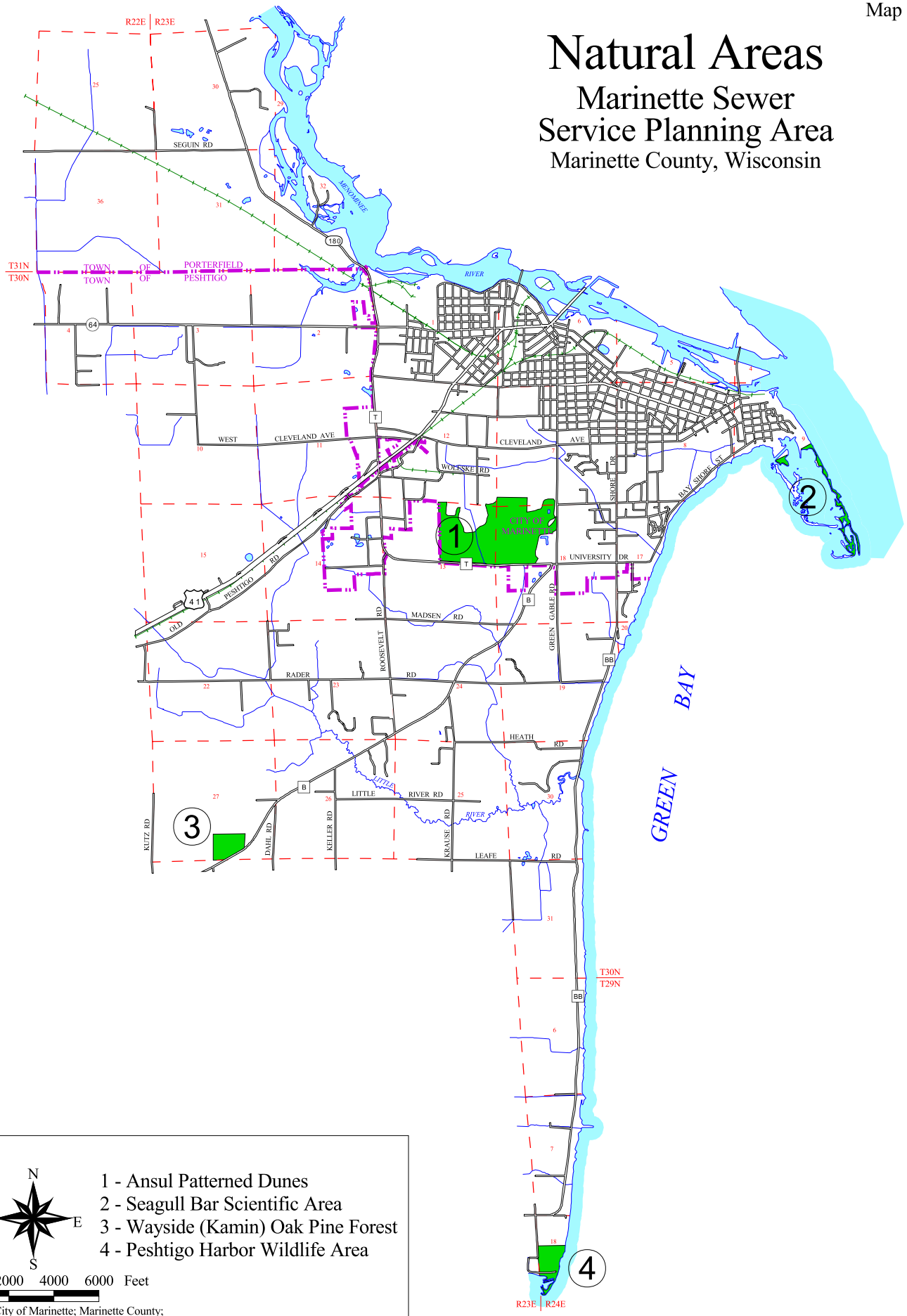
Source: NRCS; City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 4.10

Natural Areas

Marinette Sewer Service Planning Area

Marinette County, Wisconsin



N
W E
S

1 - Ansul Patterned Dunes
2 - Seagull Bar Scientific Area
3 - Wayside (Kamin) Oak Pine Forest
4 - Peshtigo Harbor Wildlife Area

0 2000 4000 6000 Feet

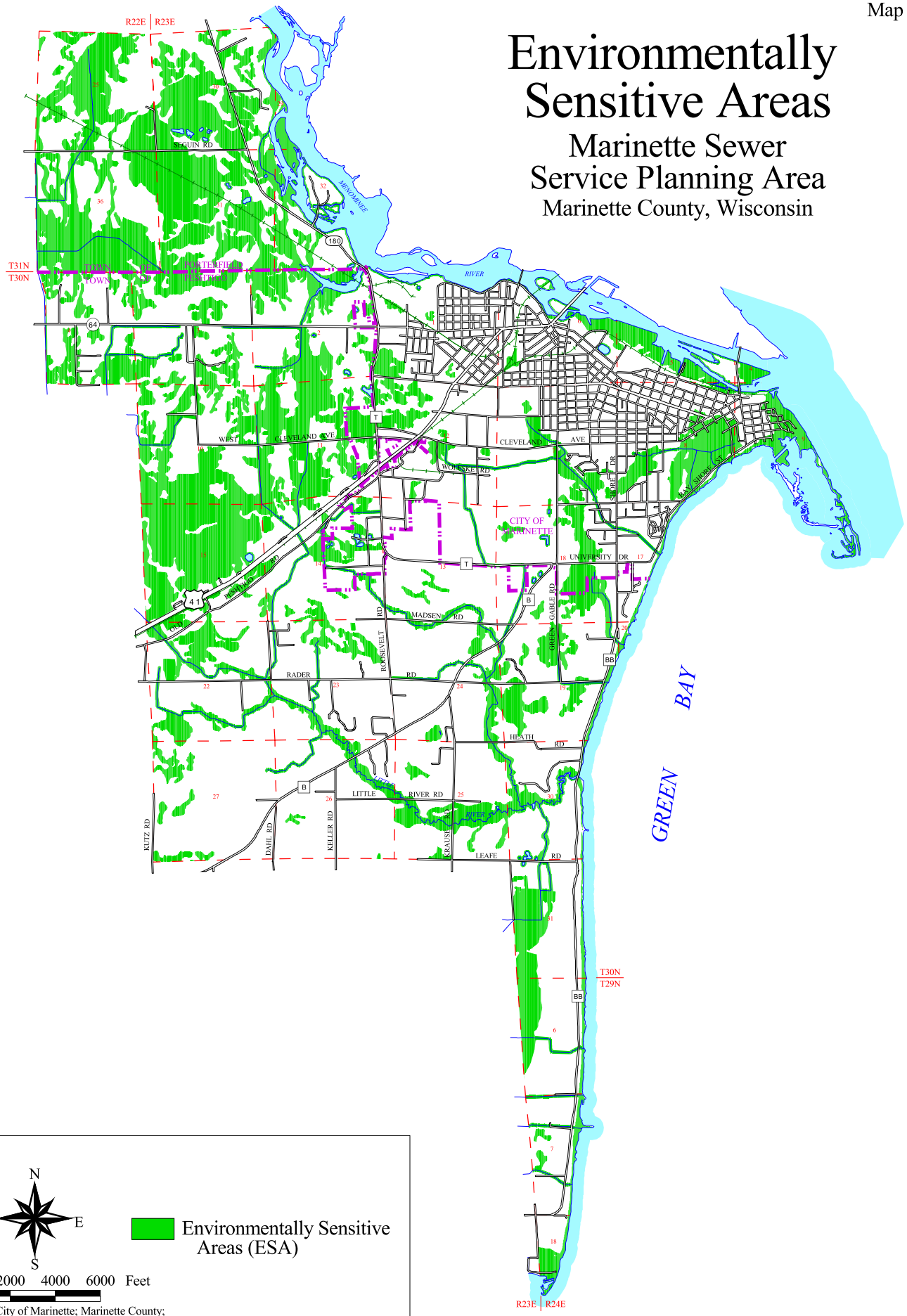
Source: City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

Map 4.11

Environmentally Sensitive Areas

Marinette Sewer Service Planning Area

Marinette County, Wisconsin



Source: City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

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Chapter 5: SOCIOECONOMIC AND LAND USE PROJECTIONS

INTRODUCTION

Many factors affect the future growth of a community. These factors can generally be included in the following three broad-based categories:

1. Political, social, and economic conditions that affect population change;
2. Natural, environmental and engineering limitations that affect development; and
3. Existing growth patterns.

Of these, the first category is most often the hardest to predict with accuracy. The best method to evaluate theses factors is to provide a population increase estimate (projection) and apply that growth to various areas. This will allow for economic evaluation of alternative locations for future growth. Physical factors directly affect where the future development should occur. These factors can make development in some areas physically difficult, uneconomical or undesirable. Examples of limiting physical factors include: wetlands, floodplains, shorelands, steep slopes or highly erodable soils near surface waters. Existing growth influences development through the location and extension of necessary public facilities and utilities. If future growth is allowed to go uncontrolled and developable areas are abundant, development is likely to occur in a scattered manner.

Careful analysis of all of these factors will provide a basis for projecting and guiding growth within the planning area. This chapter examines these factors and how they may affect future growth in the Marinette Planning Area.

POPULATION, HOUSING, EMPLOYMENT PROJECTIONS

In order to obtain a clear understanding of the Marinette Planning Area, important factors pertaining to the population of the area must be carefully analyzed. For the majority of the planning decisions, population analysis and projections play an important role for long-range planning.

Population Projections

Projecting the future total populations within the planning area is of great importance in determining the finalized sewer service area. The population size (past, present and projected) and household characteristics provides one indication of how much land will be needed for future residential land uses. The population distribution also provides an indication of where the various land uses and community facilities should be located in the future. The projections used are the 2000-2025 Department of Administration (DOA) population projections by five year increments for minor civil division (MCD). DOA utilizes the cohort component method of population projection. These are the official state projections, consistent with U.S. Bureau of Census State of Wisconsin projections. The DOA county projections are required to be used as control totals in accordance with Wis. Admin. Code NR 121 for the development of sewer service area plans. The city of Marinette has experienced a steadily decreasing population since 1970 (Table 5.1).

In 2003, the Wisconsin Department of Administration (WDOA) Demographic Services Center prepared population projections to the year 2025 for the communities and counties of the state,

utilizing a projection formula that calculates the annual population change over three varying time spans. From this formula, the WDOA indicated that the city of Marinette was projected to have a population of 10,305 persons by 2025. This would be a decrease of 1,288 persons from the 2005 estimate of 11,593 persons, which appears to be an accelerated reduction in population over the next 20 years. According to WDOA, the surrounding town of Peshtigo is also expected to see a decline in population while the town of Porterfield is expected to grow through 2025. The 2005 population estimates indicate that the town of Peshtigo is growing significantly faster than the WDOA projections while the city of Marinette is declining at a slower rate than predicted.

Table 5.1: Marinette Planning Area Population and Projections, 1970-2025

	Actual				Estimate	Projections					2005-2025 Number	2005-2025 Percent
Govenrmental Unit	1970	1980	1990	2000	2005	2005	2010	2015	2020	2025	Change	Change
City of Marinette	12,696	11,965	11,843	11,749	11,593	11,476	11,252	10,983	10,668	10,305	-1,288	-11.1%
Town of Peshtigo	2,951	3,566	3,564	3,819	3,956	3,774	3,760	3,730	3,682	3,613	-343	-8.7%
Town of Porterfield	1,405	1,857	1,805	1,991	2,081	2,050	2,117	2,174	2,217	2,245	164	7.9%
Planning Area Total	19,022	19,368	19,202	19,559	19,635	19,305	19,139	18,902	18,587	18,188	-1,447	-7.4%

Source: U. S. Bureau of the Census, 2000 Census of Population, General Population Characteristics, and the WDOA, Household Projections by Household Type (for counties): 2005.

Household Size and Housing Projections

Another determining factor in allocating acreage for the sewer service area is that of household size, or more commonly referred to as "persons per household". The projected number of persons per household is expected to decline throughout the 20-year planning period throughout the planning area and within respective municipalities. The historical and projected persons per household figures for the city of Marinette Planning Area are contained in Table 5.2.

Table 5.2: Persons Per Household, 1990-2025

	Planning Year						
Geographic Area	1990	2000	2005	2010	2015	2020	2025
City of Marinette	2.41	2.24	2.18	2.11	2.06	2.03	2.00
Town of Peshtigo	2.74	2.61	2.53	2.45	2.39	2.36	2.33
Town of Porterfield	2.81	2.59	2.51	2.43	2.38	2.34	2.31
Marinette County	2.55	2.38	2.31	2.24	2.19	2.15	2.12

Source: U. S. Bureau of the Census, 2000 Census of Population, General Population Characteristics, and the WDOA, Household Projections by Household Type (for counties): 2003.

Note: The projected incremental difference for the county was applied to the 2000 Census population per household figures for the city and towns to arrive at the projected population per household figures.

These persons per household figures relate to future land uses directly. For example, if Community A currently had a total population of 1,000 persons, a persons per household figure of 3 and an average residential lot size of 1 acre, then approximately 333 acres of land would be needed to house the total population. If the total population and lot size stayed the same, but the persons per household figure dropped to 2.5, then approximately 400 acres (an increase of 67 acres) would be necessary to house the same population. Positive population projections divided by household size yields the number of additional dwelling units, as shown in Table 5.3, to house the increased population. The town of Porterfield is the only unit of government in the planning area projected to have an increase in population resulting in an increase in housing units of 110 units.

Table 5.3: Housing Projections, 2000-2025

Geographic Area	Census 2000	Projected Population 2005	2010	2015	2020	2025	Population Change 2000-2025	Projected Dwelling Units Needed 2025
City of Marinette	11,749	11,476	11,252	10,983	10,668	10,305	-1,444	0
Town of Peshtigo	3,819	3,774	3,760	3,730	3,682	3,613	-206	0
Town of Porterfield	1,991	2,050	2,117	2,174	2,217	2,245	254	110
Planning Area Total	17,559	17,300	17,129	16,887	16,567	16,163	-1,396	0

Source: U.S. Bureau of the Census, 2000, WDOA, 2003, BLRPC, 2005.

Employment Projections

The Commission used employment projections to identify acreage needed for future industrial and commercial development. These future totals are to be used as a minimum for development consideration during this plan. Based on BLRPC standards, nine acres (gross) and 11 acres (gross) per 100 employees were used for industrial and commercial growth respectively. Employment projections were determined utilizing a "market share" technique. Though this is not an exact science in determining future employment, it helps identify for this planning activity a "ballpark figure" in which to begin the analysis. City employment projections were developed by utilizing projected county employment projections. The first step was to determine the city's "share" or percentage of the total employment for the county by industrial division for 2000. These percentages were then applied to the county employment figures for 2000 to estimate the city employment by economic division. Projections for the year 2025 were obtained by applying to the 2000 figures the projected annual percentage change in employment by divisions as determined by the Wisconsin Department of Workforce Development for the Bay Area. The employment totals are depicted in Table 5.4. Employment overall is expected to increase by approximately 21 percent from 2005 to 2025, with Marinette's employment increasing from 5,905 to 7,162 persons employed.

Table 5.4: Employment Projections, City of Marinette 2000-2025

Division	City of Marinette Number Employed 2000	Employment Projections City of Marinette 2005	2010	2015	2020	2025	Percent Change 2005-2025	Numeric Change 2005-2025
Agriculture, forestry, fishing and hunting, and mining	81	90	98	107	115	124	38.30%	34
Construction	202	223	245	266	288	309	38.30%	86
Manufacturing	1,841	1,847	1,853	1,858	1,864	1,870	1.26%	23
Wholesale trade	79	83	88	92	96	100	20.51%	17
Retail trade	825	870	914	959	1,003	1,048	20.51%	178
Transportation and warehousing, and utilities	150	160	170	181	191	201	25.43%	41
Information	100	109	117	126	134	143	31.75%	34
Finance, insurance, real estate, and rental and leasing	198	210	222	235	247	259	23.29%	49
Profssnal, scientific, mangmnt, admin, and waste mngmnt serv	163	177	191	205	219	233	31.75%	56
Educational, health and social services	1,032	1,162	1,292	1,421	1,551	1,681	44.69%	519
Arts, entertainment, recreation, accommodation and food serv	557	594	630	667	703	740	24.63%	146
Other services (except public administration)	168	182	197	211	226	240	31.75%	58
Public administration	195	199	202	206	209	213	7.19%	14
All Industries	**5,591**	5,905	6,219	6,533	6,848	7,162	21.28%	1,257

Source: Wisconsin Department of Workforce Development, Bay Area Industry Projections: 2002-2012; Bay-Lake Regional Planning Commission, 2005.

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Chapter 6: SEWER SERVICE AREA BOUNDARY

INTRODUCTION

As was documented in the preceding chapters of this document, a variety of physical and socio-economic factors contribute to the future growth of a community. Manipulation of some of these factors may help guide such growth in a logical and cost-effective manner. This chapter presents the factors that were utilized in determining the Sewer Service Area boundary for the city of Marinette area.

The delineation of the final sewer service area boundary consisted of four steps: 1) projection of population, and employment housing for the design year 2025; 2) application of land allocation standards to the projections to developed an initial land use allocation; 3) modification of the land use allocation based on local polices and locally adopted plans through an iterative review process; and 4) delineation of a sewer service area boundary based the results of step 3.

2025 INITIAL LAND USE PROJECTIONS AND ALLOCATION

The initial number of acres set aside for development for the design year of 2025 was based on accepted planning standards of growth and is shown in Table 6.1. The focus of the land allocation was on the city of Marinette as the center of industry and population in the area. These standards were applied to the population projections in Table 5.1, the housing projections in Table 5.3 and the employment projections in Table 5.4 to project land needed for additional residential, parks, governmental, industry and commercial development. These allocations and standards were then reviewed locally by the city of Marinette and adjusted by the Commission to account for local trends.

The city of Marinette will require a minimum of 684 acres to accommodate future residential and employment growth during the 2000 to 2025 planning period. These projections served as a basis for discussion with the city of Marinette to delineate the sewer service area boundary as detailed in this section.

Residential

According to the *City of Marinette 2025 Comprehensive Plan Update*, the city will require approximately 100 acres of gross residential land to accommodate residential growth. This is based on additional land area needed to accommodate a change in density from 2.24 people per household to 2.00 people per household over the planning period plus a market factor to accommodate growth in the area that may occur from development of USH 41 to a four-lane highway from the city of Oconto north to the town of Peshtigo. In addition, the city is proposing to provide sewer service to existing residential development adjacent to the bay of Green Bay in the town of Peshtigo. The area is currently served by private septic systems, many of which are out-dated or failing adding to water quality problems in the vicinity. This area covers approximately 82 acres between Shore Drive and the bay.

Parks

According to land use planning standards, approximately 44 acres of additional park lands are required in the city of Marinette.

Governmental

As the seat of Marinette County government, the city of Marinette has an abundance of governmental land. No new growth is predicted in this category.

Industry and Commercial

As the center of business and industry, a majority of the growth within the city of Marinette Sewer Service Area in expected to be industrial and commercial growth. Based on the employment projections noted above, approximately 140 acres of land for industrial development and 114 acres of land for commercial use are required by the city of Marinette to accommodate new development. In addition, 135 acres are currently committed for industrial growth and 12 acres for commercial growth within the area.

Table 6.1: Initial Sewer Service Area Land Allocation for New Development

	Residential	Parks	Governmental	Industrial	Commercial	Total
C. Marinette	182	44	-	275	126	627

Source: BLRPC

Notes; "-" indicates no additional acreage required

The following land use standards used to calculate land allocations were based on Bay-Lake Regional Planning Commission Regional Comprehensive Plan Objectives, Principles, and Standards and the *City of Marinette 2025 Comprehensive Plan.*

[1] Acres of single residential based on 3 dwelling units per gross acre, and acres of multi-family based on 6 dwelling units per gross acre.

[2] Acres of parks based on 14 gross acres per 1,000 persons.

[3] Acres of government based on 12 gross acres per 1,000 persons

[4] Acres of industrial based on 9 gross acres per 100 employees, plus lands committed for industrial development.

[5] Acres of commercial based on 11 gross acres per 100 employees, plus lands committed for commercial development.

SSA BOUNDARY DETERMINATION

As noted above, the initial acreage allocation as shown in Table 6.1 determined that at a minimum, approximately 627 acres of additional land would be required to meet future growth requirements for the Marinette Sewer Service Area boundary. This initial allocation did not include a market factor to accommodate market forces for freedom in the market place and to accommodate the future growth plans of the city of Marinette, as identified by city staff and as described in the adopted comprehensive plan. To address this, the Commission staff presented the initial allocation for review and comment at meetings that were held with the city of Marinette.

At these meetings, a determination was made of the location of all proposed locally significant residential developments, industrial parks, commercial areas, institutional and governmental facilities and parks and conservancy areas. These areas were then included within the proposed sewer service area boundary for each city. Also at these meetings, a determination was made of the consistency of the proposed sewer service area boundary with land use plans contained in locally adopted comprehensive plans. Those areas shown in the comprehensive plan as being served with sewer were included within the proposed sewer service area boundary. As a result of this consultation with the city of Marinette, the sewer service area boundary was delineated. The total acreage needed to accommodate the predicted growth in residential, commercial and industrial growth in the area was increased to 684 acres to allow for flexibility in locating new development given the amount of significant environmentally sensitive features within the Sewer Service Area.

Map 6.1 depicts the delineated sewer service area for the city of Marinette and the tabular data is presented in Table 6.2. The sewer service area boundary shown on the map represents the outer extent of projected sewer service area. Environmentally Sensitive Areas, as depicted on Map 6.1 and as defined in Chapter, 4 are not available for sewered development. This boundary configuration aids in the protection of environmentally sensitive areas and, at the same time, provides adequate acreage of developable lands for each community, allows for flexibility in terms of the future locations for development, and promotes consistency with locally adopted comprehensive plans. Table 6.2 details the land allocation within the sewer service areas.

Location of an area within the sewer service area boundary does not mean that it is to be immediately served by public sewers nor does it guarantee that it will ever be served by public sewer. Decisions concerning timing of services, the conditions of service, or whether to actually provide sewer service or not are controlled by the city of Marinette and its respective wastewater treatment plant. However, as a general rule, the extension of sewers should be carried out so that areas that are presently undeveloped and are contiguous to the wastewater collection system and/ or that can be served by existing wastewater collection facilities are developed prior to areas requiring the development of new collection facilities.

The sewer service area boundary lines are drawn as near to scale as possible. Generally the sewer service area lines are drawn to follow municipal boundaries, quarter section lines or fractions thereof, property ownership lines, the center line of roads or streams, or a fixed distance from the aforementioned features. The boundary lines are tied to the Marinette County Coordinate System on the county base map, and has real world coordinates in a geographic information system (GIS).

City of Marinette SSA boundary

To foster consistency amongst plans under 1999 Wisconsin Act 9, the Sewer Service Area for the city of Marinette coincides with the city's 2025 planning boundary.

Table 6.2: Acreage Allocation Marinette SSA

	Marinette	Peshtigo	Porterfield	Total
Developed	3,228	342	13	3,583
Undeveloped	146	532	6	684
Environmentally Sensitive Areas	994	192	61	1,247
	4,368	1,066	80	5,514

Source: BLRPC

Notes

[1] Developed means land currently used for residential, commercial, industrial, transportation (mapped right of way), utilities, governmental, or outdoor recreational use, lands mapped on an official map as parkways, and lands mapped on approved subdivisions.

[2] Not developed means lands that are not developed, such as farmland and other open space, excluding ESAs.

[3] For Marinette, this area approximates the city's peripheral planning areas as identified in the city's adopted comprehensive plan.

[4] Includes buffer areas.

The city of Marinette sewer service area boundary encompasses approximately 5,500 acres, consisting of approximately 4,368 acres within the current city limits and 1,146 acres that are outside of the city limits. Of the total acres, approximately 3,583 are developed, 684 acres are undeveloped, and 1,247 acres are environmentally sensitive areas (see Map 6.1 and Table 6.2.). The 684 acres of undeveloped land is a conservative estimate of the amount of land required for development by 2025.

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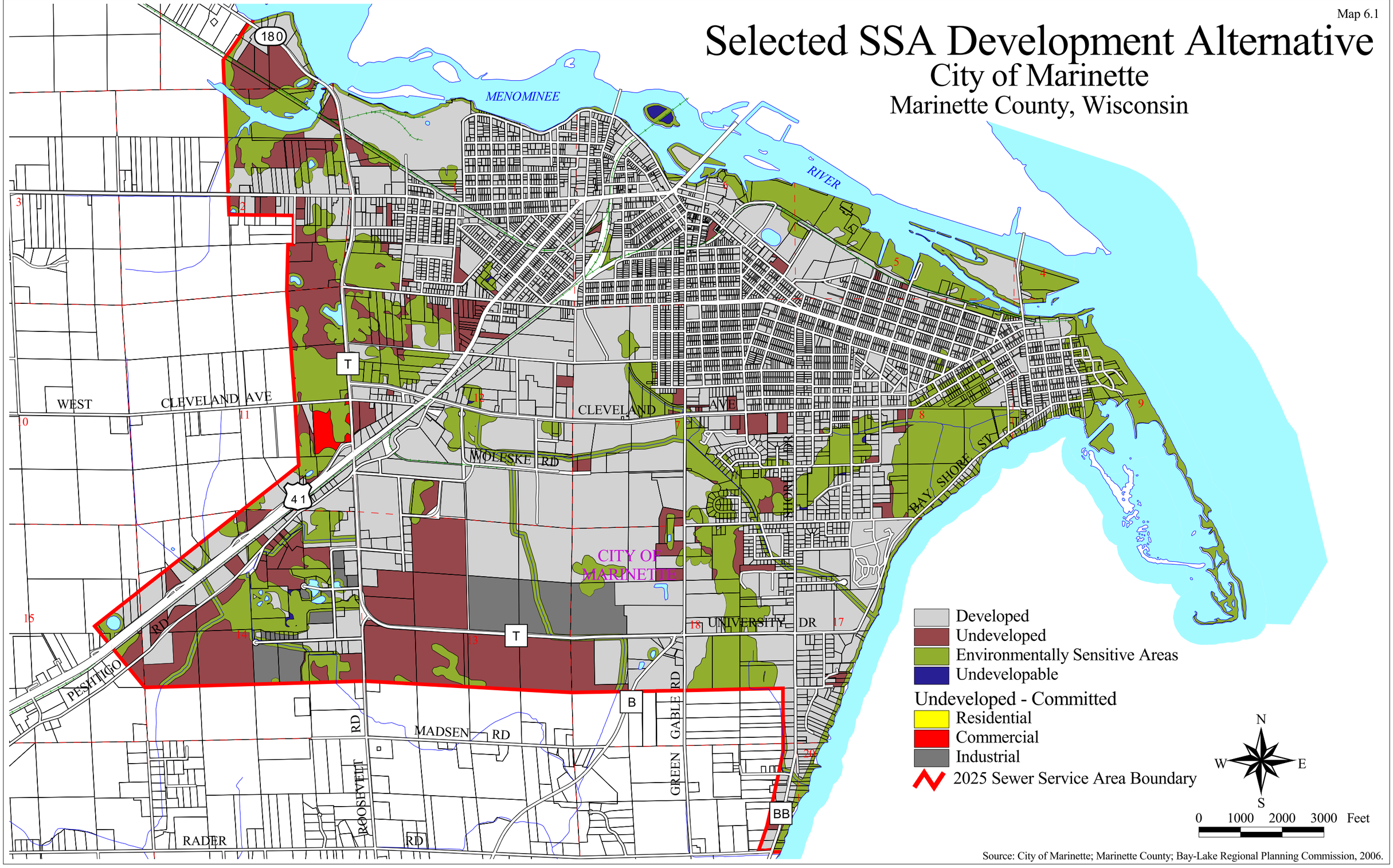
Selected SSA Development Alternative

City of Marinette

Marinette County, Wisconsin



Source: City of Marinette; Marinette County; Bay-Lake Regional Planning Commission, 2006.

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Chapter 7: PLAN IMPLEMENTATION AND INSTITUTIONAL STRUCTURE

INTRODUCTION

The success of any planning program can best be measured by the extent to which the program is implemented and by how well the plan provides a framework for further investigation into the problems or issues being addressed.

The following sections describe the institutional mechanism for implementing this plan. These include:

- Technical Advisory Committee
- Procedures for Sewer Extension Review;
- Wastewater Treatment Facility Review;
- Subdivision Review for Plan Conformance;
- Sewer Service Area Boundary Amendments;
- Plan Amendments; and
- Plan Update.

TECHNICAL ADVISORY COMMITTEE

The Technical Advisory Committee (TAC) shall consist of three appointed representatives from the city of Marinette, one appointed representative from the town of Peshtigo, and one appointed representative from the town of Porterfield. The responsibility of the TAC is to provide information, guidance and recommendation for the proposals and future development within the *Marinette Areawide Sewer Service Plan* boundaries outside the city of Marinette municipal limits. The TAC shall meet as needed to review amendments to the sewer service boundaries. The TAC shall oversee and ensure that development proceeds in accordance to the goals, objectives and policies of this plan and that all necessary actions be implemented to advance development so that it is in agreement with this plan. Each member will have one vote during times of final weighting for amendment requests.

Along with the TAC, Wisconsin Department of Natural Resources and Bay-Lake Regional Planning Commission staff representatives (without voting powers) will sit in on the Technical Advisory Committee meetings. The TAC will convene, when requested, to oversee the implementation duties of the Marinette SSA Plan.

PROCEDURE FOR SEWER EXTENSION REVIEWS

With the final approval of this plan, WDNR will require that applications for sewer extensions in the Marinette area be reviewed by Bay-Lake Regional Planning Commission to determine if the extensions are in conformance with the sewer service area plan. This local review process is illustrated in Figure 1 and is outlined below:

1. The city of Marinette or their consulting engineers should submit a letter and a simple plan map of the proposed sewer extension to the Bay-Lake Regional Planning Commission. To avoid delays, this submittal shall be made early in the planning process, prior to completing detailed plans and specifications for the project. Submitting the plans early will ensure that local review is made prior to submittal of the plans to WDNR and that costly detailed sewer design and specification documents are not prepared for areas that do not conform to the plan and are subsequently rejected by WDNR.

2. The Bay-Lake Regional Planning Commission will review all submissions for sewer extension projects and will provide a recommendation as to whether or not the proposed project is in conformance with the plan.

3. The Bay-Lake Regional Planning Commission will review all submissions and will provide the applicant with a review letter within **15** days of receipt of the plan map. If the proposed sewer extension is in conformance with the plan, the letter should be attached to the sewer extension plans which are submitted to WDNR by the applicant. Additionally, the Bay-Lake Regional Planning Commission will notify the city of Marinette of the issuance of a conformance letter.

4. If the proposed extension is not in conformance with the plan or if there are questions about consistency, the applicant and the city of Marinette will be notified by letter within **15** days.

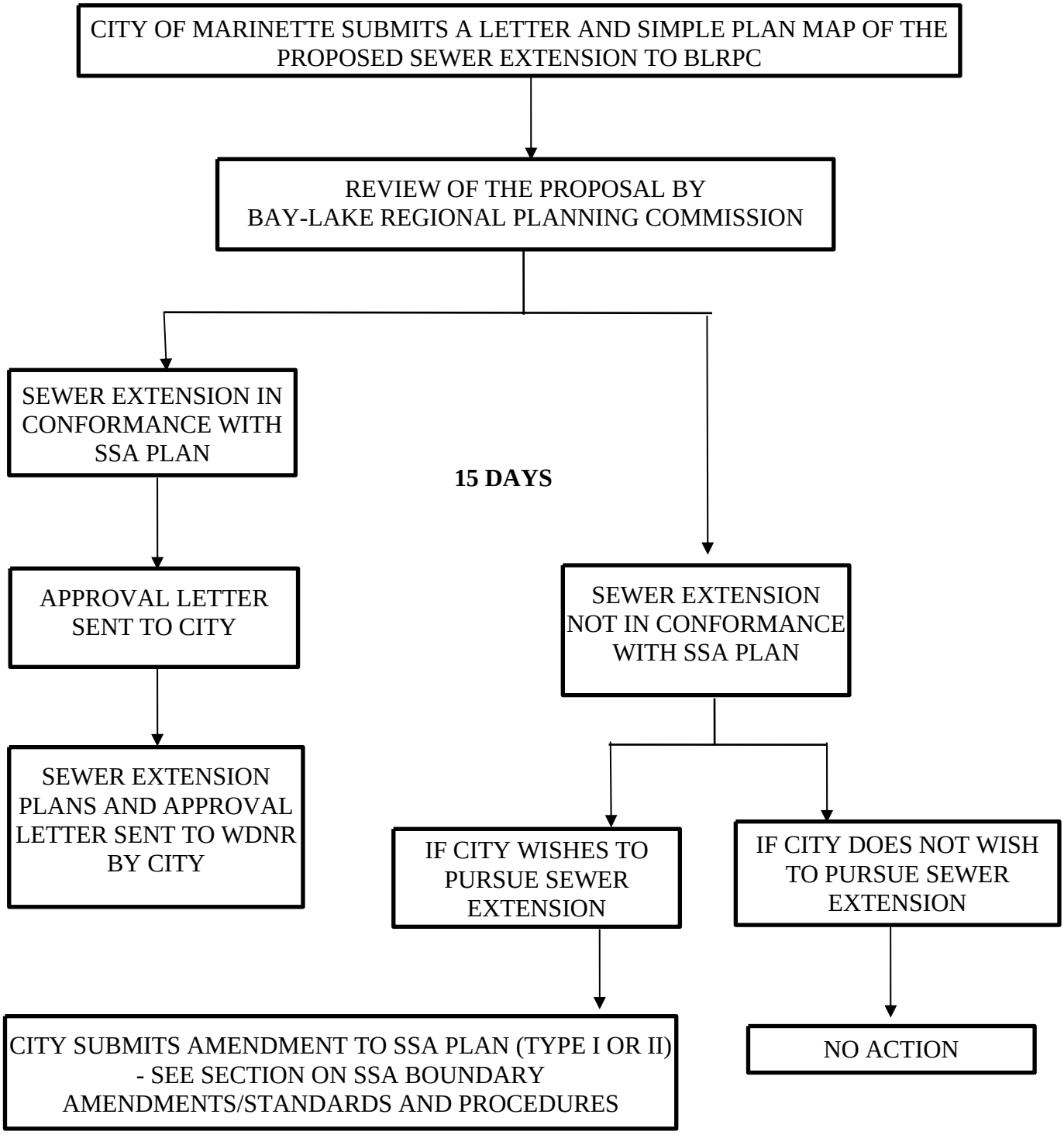
    a) The city should then decide if it wishes to further pursue the sewer extension. If not, no further action is necessary.

    b) If the sewer extension is pursued, the plan must be amended in order for the proposed extension to be in conformance. The process for adopting plan amendments is discussed in the section entitled, “Sewer Service Area Boundary Amendments: Standards and Procedures.”

        i) After the plan is amended, the city of Marinette should submit the proposed sewer extension plan as discussed in number 1 above.

5. Additionally, in accordance with NR 113.07(1) (e), proposals for large holding tanks (greater than 3,000 gpd) whose waste would go to the Marinette wastewater treatment facility would require an amendment to the plan.

Figure 1: Flow Diagram of Procedure for Sewer Extension Review



Source: Bay-Lake Regional Planning Commission, 2005.

WASTEWATER TREATMENT FACILITIES REVIEW

The *Marinette Areawide Sewer Service Plan* does not anticipate that there will be any need for additional sewage treatment facilities to serve non-industrial development in the planning area. Any sewage collection facilities built within the established 20-year sewer service area should be connected to existing wastewater treatment plants.

Proposals for new wastewater treatment facilities are subject to WDNR regulations, including s. NR 110.08(5) of the Wis. Adm. Code, which states: "It is the policy of the department to restrict the construction of new sewage treatment facilities in order to preserve and protect the quality of the waters of the state." This policy is defined by the other specific requirements found in s. NR 110.08(5). These requirements generally serve to discourage or disallow many new plants, especially small private plants, but whether any particular proposal for a new or upgraded facility is approved depends on the particular circumstances involved. Larger, regional wastewater facilities are usually preferable for the following reasons:

- Economies of scale exist in the construction, operation and maintenance of regional treatment plants.
- Owners of small treatment plants generally have less financial capability to hire a competent operator and carry out necessary maintenance and repairs.
- The administrative costs are greater with the regulation of large numbers of small plants.
- In urban areas, there is usually a significant investment of public dollars in existing treatment plants designed to serve all anticipated development in the urban area; the provision of additional treatment facilities in these areas is not cost-effective.

  Note: It is also recognized by the WDNR that connection to an existing treatment facility is not always cost-effective or environmentally sound and there may be instances where a small sewage treatment facility is the most feasible solution.

Additional treatment facilities to serve residential, commercial, or public facilities should not be approved by the Marinette TAC as being in conformance with this plan unless it is documented that it is cost-effective, environmentally-sound, and in the best interest of the municipality. One common reason for the construction of a small wastewater treatment facility is to provide interim sewage treatment service to an area of development until sewers may be extended to serve that area. At such time public sewers are extended to serve the development, the treatment plant may be phased out. This approach may be used to solve wastewater treatment problems in areas which are not currently considered to be cost-effective for regional sewer extensions.

If new wastewater treatment is needed in a particular circumstance, it should only be approved if it satisfies the requirements for specific situations specified in Section 121.05(1)(g) and Section 110.08(5) of the Wisconsin Administrative Code. These situations and subsequent requirements include:

1. Treatment Facility to Serve Existing Residential Development: It is necessary to solve a documented and severe existing water quality (groundwater or surface water) or public health problem related to failing on-site systems; or, it is needed to replace an existing treatment facility which is not in compliance with its Wisconsin Pollutant Discharge Elimination System (WPDES) permit.

- It is the cost-effective solution to the existing problem.
- It is municipally owned, operated and maintained.

2. Interim Treatment Facility: It is necessary to solve a documented and severe existing water quality (groundwater or surface water) or public health problem related to failing on-site systems; or it is needed to replace an existing treatment facility which is not in compliance with its WPDES permit.

- It is the most cost-effective solution to the existing problem.
- It is municipally owned, operated and maintained.
- The sewage collection system is designed so that it may be easily connected to the regional system in the future.
- The service area of the proposed system lies entirely within the planned service area of the regional system as delineated in this plan.
- An agreement is signed by all involved municipalities which provides for a specified date of abandonment and connection; this inter-municipal agreement shall be reviewed and approved by the WDNR prior to facilities plan approval; the WPDES permits shall contain schedules for facilities abandonment and connection.

3. Treatment Facility Serving Isolated Non-Residential Development: The development may not be more rationally and efficiently located in an urban area and thus be accommodated by an existing municipal plant.

- Joint treatment with adjacent wastewater treatment system is not feasible.
- The proposed facility is designed to handle only the waste generated by the development.
- The WPDES permit limits service to the development specified in number 3.
- In the case of a commercial facility, only commercial facilities that serve and facilitate travel on public highways.

4. Treatment Facility to Serve New Residential Development: Proposals for a new treatment facility intended to serve new residential development may be denied.

Note: Variances may be granted only after the general public interest, environmental impacts, and socioeconomic impacts have been considered as well as the impact on orderly development and the provision of general government services and the following criteria have been met:

- The proposal is consistent with the responsibility to protect, maintain, and improve water quality management.

- It is municipally owned, operated and maintained.
- It is the cost-effective solution to the problem.
- All other federal, state and local approvals and permits have been obtained.

SSA BOUNDARY AMENDMENTS: STANDARDS AND PROCEDURES

Since unanticipated development may occur beyond that acreage which was determined necessary for the 20-year Sewer Service Area boundary, a mechanism for reviewing and revising the service area boundary is essential. Amendments will provide the city of Marinette and private developers with the needed flexibility to incorporate community growth, additional technical data, new community needs and ongoing public input into the sewer service planning process. The Bay-Lake Regional Planning Commission will review amendment requests and forward them to the TAC, maintain the records of boundary amendments, review 208 requests for sewer extensions, and update the service area boundary map.

Two types of amendments to the service area boundaries may be expected. *Type One Amendments* are required when the city's service area boundary changes but the total acreage is not increased. The amendment would be reviewed by BLRPC and the Technical Advisory Committee and, if approved according to the Amendment Procedures, a request for a sewer service area amendment is forwarded to the WDNR. *Type Two Amendments* would result in an increase in the city's service area acreage. This type of amendment would be used to add to the total acres that have been projected for land development up to the existing corporate limits or for municipalities that are experiencing population growth in excess of that projected in the plan. The amendment would be reviewed by BLRPC and the Technical Advisory Committee and, if approved according to the Amendment Procedures, a request for a sewer service area amendment is forwarded to the WDNR.

In both types of amendments, procedures were developed to provide a fair and reasonable means of reviewing service area boundary changes. These procedures include public notice, public comment period, public hearings, and public records of the proceedings of the hearing. The public notice shall be published in the official paper of the city of Marinette. All costs associated with the preparation and publishing of the public notice shall be borne by the petitioner.

Standards were established to provide a framework for analyzing the merits of proposed SSA boundary amendments and to identify basic parameters necessary for amendment evaluation. These amendment standards and their established procedures are outlined below:

Amendment Standards

To provide an equitable and uniform basis for revising the sewer service boundaries, all proposed amendments which would shift or add acreage to the service area shall meet standards one through six and number seven when applicable. Annexations or detachments of territory (as defined in Chapter 66 of the Wisconsin Statutes) within the boundaries of the sewer service area do not constitute amendments to the SSA Boundary and are therefore subject to amendment procedures.

1. There shall be minimal adverse impacts on environmental corridors and water quality as a result of development stimulated by the amendment.

2. Existing or planned sewage treatment facilities must have sufficient capacity to treat the projected wastewater flows generated by the added territory.
3. The SSA boundary amendment area must be in conformance with the local comprehensive plan adopted under s 66.1010 Wis. Stats. and zoning regulations and the established goals and objectives of this plan.
4. The configuration of sewer service area boundaries may be modified provided that the amendment area has a common boundary with the current sewer service area and will not create a void within the sewer service area.
5. Modifications of the boundary can be shown to be cost-effective, orderly and a logical extension of urban development.
6. The delivery of other services by the existing and proposed community facilities (i.e. parks, schools, fire protection, etc.) will be available and will be provided for the amended area.
7. When the projected number of acres of the *Marinette Areawide Sewer Service Plan* have been developed, the service area may be increased by amending the boundary when it can be demonstrated:
    a) The current population growth rate exceeds the plan's projected population growth rate for the city.
    b) The population density standard is modified by the Technical Advisory Committee to reflect quantifiable changes in the city's population distribution.

Amendment Procedures

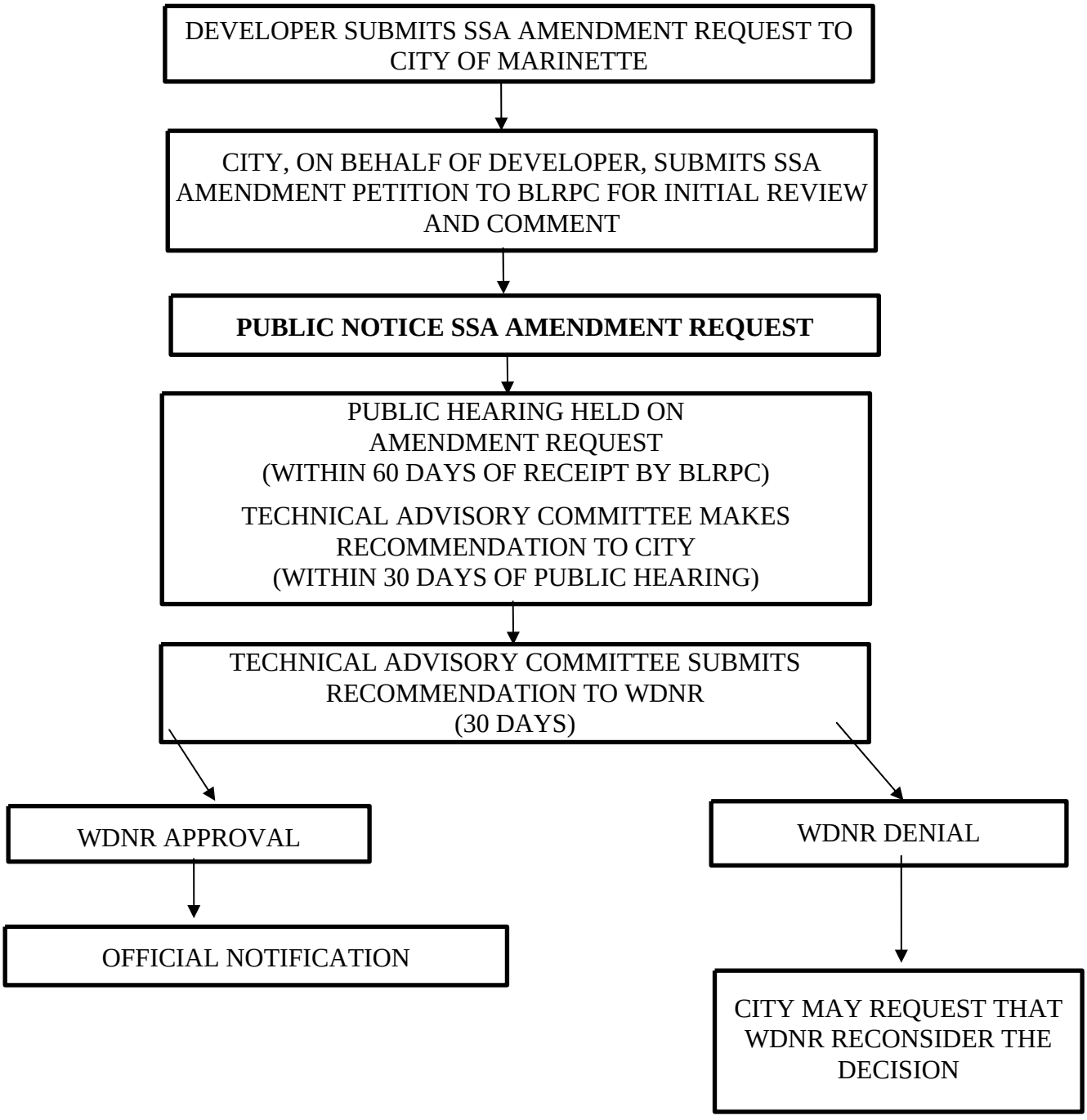
Type I Amendment: A municipality amends the service area boundaries without increasing the land area the municipality has within its sewer service boundary. For every acre added to the municipality's service area, an area of developable land of equal size is removed. For this type of amendment, the following procedure is used (a flow diagram of this procedure is shown in Figure 2):

1. A petition to include or exclude a particular area from the Marinette Sewer Service Area is filed with the city. The petition should include a map showing the location of the properties; general development plans for the area including land use proposals and a preliminary timetable for implementing the development plan; and an indication of the specific service needs of the site (i.e., sewer and water line size, water pressure, roadways, etc.).
2. The city refers the petition to the BLRPC for initial review. The BLRPC then forwards the request (with a recommendation) to the Technical Advisory Committee (TAC) for review and recommendation to the WDNR.
3. Within **60** days of receiving a completed amendment application by the BLRPC, the Technical Advisory Committee holds a public meeting and public hearing on the petition following publication of a Class I Notice according to Chapter 985 of the Wisconsin Statutes. The public notice shall be published in the official paper of the city. All costs associated with the preparation and publishing of the public notice shall be borne by the petitioner. Representatives submitting the petition,

BLRPC staff, WDNR staff, and interested citizens may testify. A record of the public hearing proceedings and testimony shall be maintained by the Technical Advisory Committee. The Technical Advisory Committee shall then take action on the proposed amendment within **30** days of the public hearing.

3. In formulating a recommendation, the BLRPC and TAC should consider: citizen input received at the meeting; comments from other local committees and the WDNR; conformance with community plans; development trends in the area; possible impacts on the physical environment; and conformance with the adopted Sewer Service Area Plan goals and objectives and the amendment standards. Land recommended for removal from the service area should have a low development potential in terms of recent development trends in the municipality, inadequate urban services, unique environmental features, or poor site conditions due to soils or groundwater. *Additionally, signed statements from affected landowners acknowledging withdrawal from the sewer service area will be required.*
4. The TAC shall review the recommendations and take final action on the amendment request within **30** days of the public hearing. All or any part of the petitioned land may be added to or removed from the service area along with additional safeguards or conditions deemed necessary by the TAC to carry out the intent of the sewer service area amendment standards.
5. Amendments approved by the TAC shall be submitted to the WDNR within **30** days of approval. The WDNR will review the amendment and notify the city and the BLRPC within **45** days of receiving the amendment.
6. The WDNR should normally approve the amendment within approximately **45** days unless the WDNR determines that an environmental assessment (EA) is required in accordance with ch. NR 150, Wis. Adm. Code. If an EA is required, the WDNR will prepare it and issue a public notification to allow for receipt of public comments to be considered prior to final approval. When an EA is required, the WDNR review period may extend to approximately three months or more. An EA is normally required if the amendment proposal delineates an area of over 1,000 acres that may be served with sewer, or if it may result in the sewered area increasing by more than five (5) percent per year. The WDNR may require an EA under any project circumstances if they determine the proposal has the potential to cause significant environmental effects and may involve unresolved conflicts in the use of available resources. Once a WDNR decision is made, and if approved, the BLRPC can review sewer extensions and submit comments to the WDNR for sewer extension plan approval. If the WDNR rejects the amendment, the city may request the Department to reconsider their decision.
7. Approval conflicts between the WDNR and the Technical Advisory Committee must be resolved before sewer lines are extended into any new area.

Figure 2: Flow Diagram of Procedures for SSA Boundary Amendment (Types I and II)



Source: Bay-Lake Regional Planning Commission, 2005.

Type II Amendment: A municipality amends the sewer service boundary to increase the total acreage of the service area.

It was previously stated that Type II Amendments would be used when the Marinette Sewer Service Area boundary is modified to accommodate land for new development over the next 20 years, or for municipalities which are experiencing growth in excess of that projected in the sewer service plan. In addition, the plan will be reviewed every two and one-half years and updated every five years to incorporate modifications to the service boundary based upon unanticipated growth occurrences. When a Type II Amendment is made, the following procedure is used (a flow diagram of this procedure is shown in Figure 2):

1. If the city of Marinette receives a development petition which requires the expansion of the sewer service area, a boundary amendment petition is submitted to the city. If the city seeks to expand the sewer service boundary beyond the allotted acreage, a petition should be sent to the BLRPC by the city, which includes:
    a) comparisons of population projections of the sewer service plan with actual population increases in the city.
    b) comparisons of land acreage projections in the plan with the actual amount of land which is vacant.
    c) data on the current development densities of the city.
    d) information on the capacity of existing sewer lines and treatment facilities to service the area proposed for additions to the sewer service boundary.
2. The city refers the petition to the BLRPC for initial review. The BLRPC then forwards the request (with a recommendation) to the Technical Advisory Committee (TAC) for review and recommendation to the WDNR.
3. Within **60** days of receiving a completed amendment application by the BLRPC, the Technical Advisory Committee holds a public meeting and public hearing on the petition following publication of a Class I Notice according to Chapter 985 of the Wisconsin Statutes. The public notice shall be published in the official paper of the city of Marinette. All costs associated with the preparation and publishing of the public notice shall be borne by the petitioner. Representatives submitting the petition, BLRPC staff, WDNR staff, and interested citizens may testify. A record of the public hearing proceedings and testimony shall be maintained by the Technical Advisory Committee. The Technical Advisory Committee shall then take action on the proposed amendment within **30** days of the public hearing.
4. In formulating a recommendation, the BLRPC and TAC should consider: citizen input received at the meeting; comments from other local committees and the WDNR; conformance with community plans; development trends in the area; possible impacts on the physical environment; and conformance with the adopted Sewer Service Area Plan goals and objectives and the amendment standards.
5. The TAC shall review the recommendations and take final action on the amendment request within **30** days of the public hearing. All or any part of the petition land may be added to the service area along with additional safeguards or conditions deemed necessary by the TAC to carry out the intent of the sewer service area amendment standards.

6. Amendments approved by the TAC shall be submitted to the WDNR within **30** days of approval. The WDNR will review the amendment and notify the city and the BLRPC within **45** days of receiving the amendment.
7. The WDNR should normally approve the amendment within approximately **45** days unless the WDNR determines that an environmental assessment (EA) is required in accordance with ch. NR 150, Wis. Adm. Code. If an EA is required, the WDNR will prepare it and issue a public notification to allow for receipt of public comments to be considered prior to final approval. When an EA is required, the WDNR review period may extend to approximately three months or more. An EA is normally required if the amendment proposal delineates an area of over 1,000 acres that may be served with sewer, or if it may result in the sewered area increasing by more than five (5) percent per year. The WDNR may require an EA under any project circumstances if they determine the proposal has the potential to cause significant environmental effects and may involve unresolved conflicts in the use of available resources. Once a WDNR decision is made, and if approved, the BLRPC can review sewer extensions and submit comments to the WDNR for sewer extension plan approval. If the WDNR rejects the amendment, the city may request the Department to reconsider their decision.
7. Approval conflicts between the WDNR and the Technical Advisory Committee must be resolved before sewer lines are extended into the new area.

OTHER DOCUMENT AMENDMENTS

All other portions of this SSA Plan (text, data, and maps) may be amended by the Technical Advisory Committee upon request. Proposed amendments shall be submitted to the BLRPC and forwarded to the members of the Technical Advisory Committee at least **seven (7)** days prior to the meeting at which action on the amendment will be taken. Amendments approved by the Technical Advisory Committee will be transmitted to the WDNR for review and final approval.

In accordance with NR 113.07(1) (e), proposals for large holding tanks (greater than 3,000 gpd) whose waste would go to the Marinette wastewater treatment facility would require an amendment to the plan.

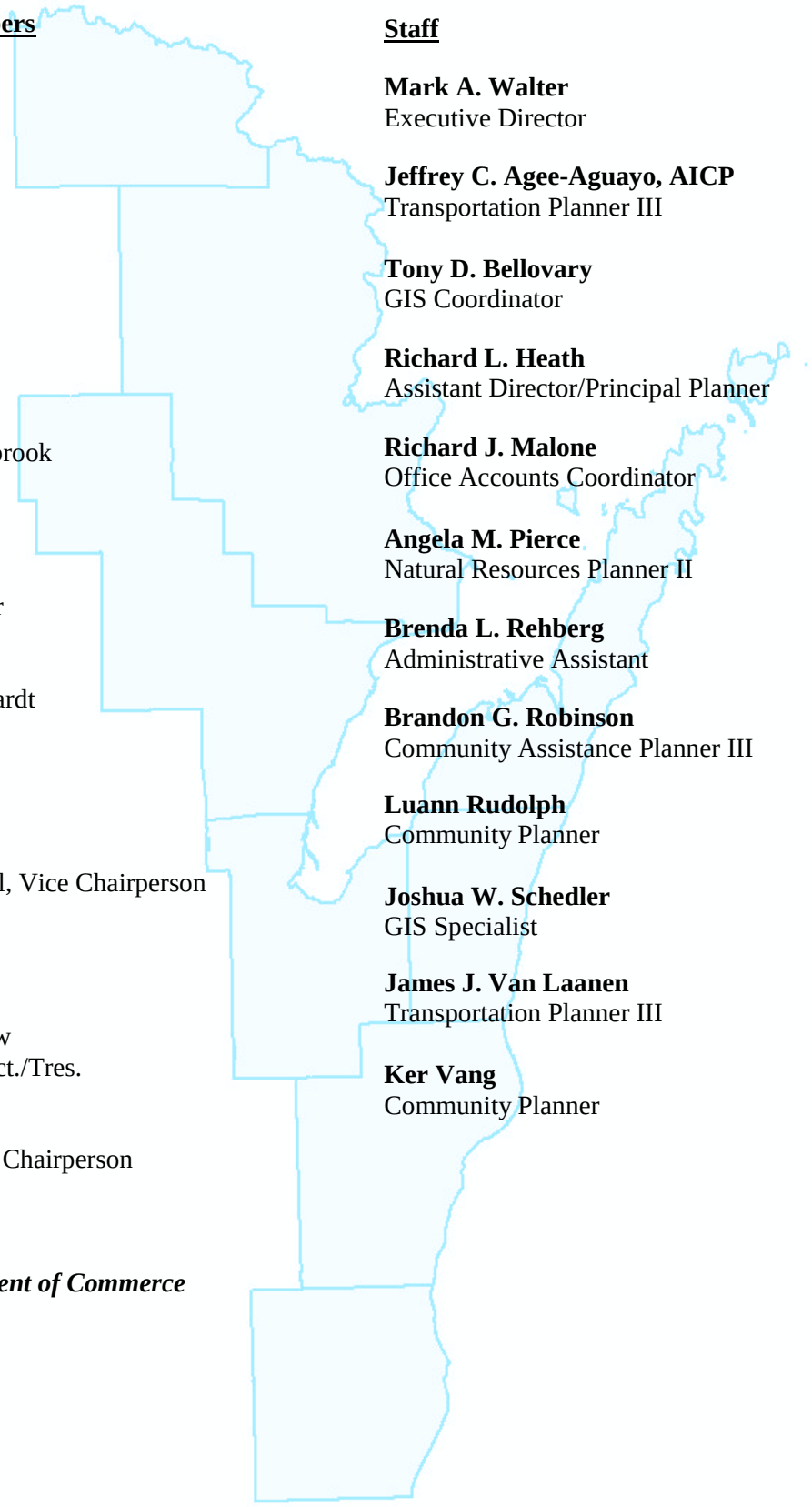
PLAN UPDATE

A comprehensive review of the *Marinette Areawide Sewer Service Plan* should be undertaken every two and one-half years and updated, if necessary; otherwise updated every five years, with the first such review and update to be initiated by 2011. The updated should include as a minimum:

1. A review and update of the 1990 and 2000 population trends.
2. A review and update of population and demographic projections to the year 2025.
3. A review of population densities, household size, and urban development trends.
4. An assessment of impact from major land use changes or developments.
5. A review of any significant changes to environmentally sensitive lands.
6. A review and revision, if necessary, of the policy statements.

7. A description of relevant events occurring during the preceding five years which were made during the preceding five years.
8. A description of amendments to the plan and service area boundaries which were made during the preceding five years.
9. A review and revision of service area boundary extended to accommodate the area's population for the next 20-year planning period.
10. A review of changes in the institutional structure for plan review and implementation.
11. An update on citizen participation efforts.

Bay-Lake Regional Planning Commission



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