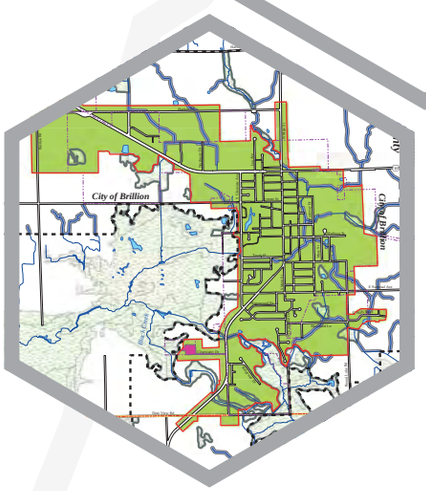
Brillion 2030
Sewer Service Area Plan

Brillion WI

SMALL CITY, BIG HEART



East Central Wisconsin
Regional Planning Commission
ECWRPC

Calumet•Menominee•Outagamie•Shawano•Waupaca•Waushara•Winnebago

June 2014

2030 BRILLION

SEWER SERVICE AREA PLAN

WDNR CERTIFICATION DATE: April 24, 2014

Prepared by the

East Central Wisconsin Regional Planning Commission

in cooperation with the

State of Wisconsin Department of Natural Resources

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ABSTRACT

TITLE:	2030 Brillion Sewer Service Area Plan
CONTACT:	Joe Huffman – Sewer Service Area Planner
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SUBJECT:	Sanitary sewer service area delineation for future community growth.
DATE:	April 24, 2014 (WDNR Certification Date)
PLANNING AGENCY:	East Central Wisconsin Regional Planning Commission
SOURCE OF COPIES:	East Central Wisconsin Regional Planning Commission 400 Ahnaip Street, Suite 100 Menasha, WI 54952 (920) 751-4770 www.eastcentralrpc.org

This plan updates and supersedes the *2000 Brillion Sewer Service Area Plan* which is an element of the Manitowoc River Basin Water Quality Management Plan. This plan was prepared by the East Central Wisconsin Regional Planning Commission and was certified by the Wisconsin Department of Natural Resources on April 24, 2014 as part of the *State of Wisconsin Water Quality Management Plan*. It provides population and land use projections and delineates future growth areas for the Brillion Sewer Service Area. Also identified are environmentally sensitive areas which should not be developed. This plan contains policy recommendations encouraging cost-effective and environmentally sound development patterns.

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* See rear pocket on back cover.

CHAPTER 1

INTRODUCTION

CHAPTER 1: INTRODUCTION

This report represents the second update of the *Brillion Sewer Service Area Plan*, a formal element of the *State of Wisconsin's Water Quality Management Plan*, which for this area includes the *Manitowoc River Basin Water Quality Management Plan* (WDNR, 1991). In the thirty years sewer service areas have been in effect, they have had significant impacts on urban development. Both communities and land developers are now more aware of sewer service areas and are using the plans and policies in planning future growth.

REPORT FORMAT

This plan describes and delineates the 2030 Brillion Sewer Service Area. The plan was developed in accordance with state and federal guidelines and involved public input and review. These measures include:

- one public hearing/informational meeting; and
- working sessions with local officials.

This plan discusses the Sewer Service Area, (SSA), characteristics, projected growth levels and the service area plan map, (Exhibit 8). The beginning and end portions of this document discuss traits common to all SSA plans, such as:

- service area goals, objectives and policies;
- service area delineation and planning process; and
- service area amendment and update process.

PURPOSE

This Brillion Sewer Service Area Plan Update amends the 2000 Brillion Sewer Service Area Plan. The update is part of a regularly scheduled re-evaluation of sewer service area plans. Water Quality Plan elements, including sewer service areas, are to be updated every five years as provided by Wisconsin Administrative Code NR-121.07(2)(a)1. However, this schedule is dependent upon available funds and priorities established within the WDNR.

Sewer service area plans serve as a basis for Wisconsin Department of Natural Resources (WDNR) approval of state and federal grants for the planning and construction of wastewater collection and treatment facilities. They also serve as a basis for WDNR approval of locally proposed sanitary sewer extensions and the Wisconsin Department of Safety and Professional Services approval of private sewer laterals. In addition, environmentally sensitive areas (ESAs) identified in the service area plans serve as a guide for environmental permit decisions by federal and state and local agencies.

Sewer service area plans are intended to be an important planning and development guide for local communities. The updated plans:

- Identify wastewater treatment and collection needs for sewer service areas through the year 2030.

- Forecast the amount and location of future urban development areas.
- Identify environmentally sensitive areas where development should be limited to protect water quality.
- Contain land use development forecasts and recommendations for implementing wastewater treatment and collection plans for individual sewer service areas.
- Establish "holding tank" service areas for isolated and rural special uses where appropriate.

BACKGROUND

The passage of the Federal Water Pollution Control Act Amendment (P.L. 92-500) in 1972 marked the beginning of a new approach to the planning, design and construction of municipal wastewater collection and treatment facilities. This law established Areawide Water Quality Management Planning under Section 208 and also the Facility Planning Grant Program under Section 201. The preparation of sewer service area plans for major urban areas was a significant part of this planning process, (see Exhibit 1 for 'designated' and 'non-designated' areas).

In recent years, the State of Wisconsin has embodied many of the federal areawide and facility planning requirements in the Wisconsin Administrative Code. These administrative rules set forth clear procedures and standards regarding the preparation of these plans and their implementation. Specific sections of the code directly pertaining to these activities are NR-121, concerning areawide waste treatment management planning; and NR-110, concerning facility planning and sanitary sewer extensions.

In June 1977, East Central completed initial sewer service area plans for 23 communities within the Fox Valley area under contract with the Fox Valley Water Quality Planning Agency (FVWQPA). These plans delineated sewer service areas through the year 2000. The service area plans were adopted as part of the Point Source element of the Fox Valley Water Quality Management Plan in January, 1979. In 1985, the East Central Wisconsin Regional Planning Commission entered into a memorandum of understanding with the Wisconsin Department of Natural resources to initiate sewer service area planning for the non-designated portions of the East Central ten county region. This memorandum sets out the responsibilities and relationships among the parties relative to the planning, management and implementation of sewer service area plans.

The contractual agreement provides that East Central will periodically review, revise and update the service area plans, and review proposed sewer extensions and sanitary laterals for conformance with the approved areawide water quality plan. As provided by Wisconsin Administrative Code NR-121, the WDNR's role is to review and approve every sewer service area plan and plan amendment taking into account water quality impacts and cost effectiveness.

The WDNR and East Central Planning also reviews and approves plans for wastewater treatment facilities and sewer extensions and laterals based upon conformance with the areawide plan. The contract agreement outlines rather broadly the responsibilities of each of the agencies involved in managing sewer service areas.

In order to address specific development proposals which impact sewer service area plans on a day-to-day basis, East Central has adopted an *"Amendment Policy and Procedure for Sewer Service Areas."* The amendment policies and procedures, initially adopted in 1978, were revised in 1984, 1990, with additional amendments regarding the urban areas (Fox-Cities/Oshkosh/Fond Du Lac) in late 1996 and early 1997. These policies and procedures established standards and criteria for amending sewer service area boundaries and also describes the procedure for amending sewer service area plans. The amendment policies, (page 62), provide a mechanism whereby communities can alter service area boundaries in response to changes in both the rate and direction of development.

The amendment process provides the flexibility for communities to adjust to short-term changes in development trends and thus provides a means of accommodating changing development trends between the five-year updates.

The Brillion Sewer Service Area Plan was adopted by the City of Brillion on October 28, 2013; by the Town of Brillion on October 8, 2013 and by the Town of Rantoul on June 10, 2013. East Central's Community Facilities Committee adopted the plan via Resolution 38-13 (January 8, 2014) and by its full Commission on January 31, 2014. The plan update was certified by the Wisconsin Department of Natural Resources and became effective on April 24, 2014 (Appendix A).

GOALS, OBJECTIVES AND POLICIES

In the ten-county region of the East Central Wisconsin Regional Planning Commission, sewer service area plans are prepared within the context of the regional comprehensive land use plan, New Directions for Growth and Development (ECWRPC, 1978). The process used for the 1978 land use plan established goals, objectives and policies formulated in response to citizens' desires and needs brought forth in East Central's public participation program. Appropriate goals, objectives and policies were referenced as the groundwork for the establishment of 104 urban service area plans and boundaries.

A major review and update of the goals, objectives and policies was completed in 1995 and 1996 and have been incorporated within the Community Facilities Chapter of the Commission's approved *2030 Regional Comprehensive Plan* (visit ww.eastcentralrpc.org for a .pdf copy.) As part of the updating process in 1995 and 1996, the earlier set of goals, objectives and policies have been refined to provide more specific guidance for service area planning. The refinements are a result of additional community and technical advisory committee participation in the service area update planning process. The refinements also reflect various state and federal laws and regulations which impact sewer service area growth and development activities.

Four overall goals have been identified. These goals and related objectives and policies pertain to growth management, urban service delivery, environmental resources and open space. Objectives and policies related to the goals point out the significant interrelationship between urban growth and land use, sanitary sewerage planning and the environment. Together, they provide a sound basis for determining a community's future development.

The intent of the Brillion Sewer Service Area Plan is to encourage efficient, orderly and planned land use development patterns which allow for logical, cost-effective sewered development that incorporates sound environmental management practices. The land use element provides

direction and integrates four sub-area functional plans which have direct impacts on future land use. These functional areas are Growth Management, Urban Service Delivery, Environmental Resources and Open Space.

GROWTH MANAGEMENT

Goal: Encourage an orderly and planned pattern of community growth and development.

Objective: Allocated Growth. Promote balanced allocation of land areas to accommodate current and future urban development needs.

Policies:

1. The supply of land allocated for urban development should approximate the current and future needs as determined from population, employment and land use projections which have been developed in conjunction with adopted comprehensive or urban service area plans.

2. New urban development patterns should incorporate planned areas of mixed use and density neighborhoods that are clustered and compatible with adjacent uses.

3. Work places, shopping centers, recreational facilities, and community facilities should be located to provide a mix of land uses for improved accessibility for residents.

4. Urban designs with higher density land use alternatives should be promoted.

Objective: Planned Urban Communities. Promote planned urban communities which contain centralized, compact, contiguous and compatible urban development patterns.

Policies:

1. Vacant developable lands within existing urban areas should first be in-filled, then development staged outward from the existing development limits.

2. New subdivision development should be encouraged within existing urbanized areas or as an expansion of existing urban areas concurrent with the provision of necessary facilities and services.

3. The expansion of major commercial and industrial land use activities should be adjacent to existing areas or in areas designated for such development in adopted comprehensive plans.

4. Natural and man-made features, such as ridge lines, streams and major highways, should be considered in the expansion and staging of urban development.

5. Urban development should only take place in designated urban service areas.

6. Community development plans should be coordinated in multi-jurisdictional urban areas.

7. Urban sprawl in the form of unplanned development which is non-contiguous, low density, scattered and inefficiently served should be discouraged.

Objective: Environmentally Sound Development. Promote urban development which protects environmentally sensitive areas and is compatible with the natural resource base.

Policies:

1. Urban development should be directed to suitable land and discouraged on unsuitable land, such as floodplains, wetlands, prime agricultural soils, areas of high bedrock and groundwater, steep slopes, prime wildlife habitat, unique scientific areas and areas of historical or archeological significance.

2. The development of environmentally sensitive areas should be discouraged.

3. Adverse development impacts to surface water and groundwater should be mitigated.

4. Designs and plans for new development should preserve open spaces for public use, complement the existing landscape, and conserve energy and natural resources.

5. Land reclamation should be required following extractive operations or other uses which significantly alter the land surface.

6. Urban redevelopment activities should weigh environmental, health and safety factors against associated costs and benefits.

Objective: Efficient Development. Promote efficient and cost-effective development in urban growth areas.

Policies:

1. Urban development should be encouraged at densities adequate to sustain reasonable urban service costs.

2. Urban development should occur in areas served by adequate public facilities and services.

3. A variety of types, prices and locations of housing should be provided to promote convenience, choice and affordability.

4. Development patterns and site designs that support multimodal transportation should be encouraged.

5. Major commercial and industrial areas should be provided with readily accessible major transportation systems.

6. Community comprehensive plans should be adopted prior to the extension of urban services.

Objective: Rural Land Development. Preserve rural land uses by requiring planning which considers water and sanitary sewer adequacy.

Policies:

1. Agricultural and open space characteristics of rural areas should be preserved.

2. Rural development should be limited to land with suitable physical characteristics and soils supporting conventional on-site sewage treatment systems.

3. Rural residential housing should be limited to dependent single lot use in agriculture and open space areas.

4. Rural subdivision development should be limited to areas which do not negatively impact agricultural or open space uses and the provision of public services.

5. Rural subdivision development should be restricted in urban planning areas until long-term urban services are provided.

Objective: Compatibility with the Transportation Network. Encourage development in areas that are served by existing transportation infrastructure.

Policies:

1. Infill development and redevelopment projects should be promoted in order to avoid the need for extension of transportation infrastructure and service.

2. Design standards for infill should be given different consideration for transportation/traffic requirements compared to "greenfield" development.

URBAN SERVICE DELIVERY

Goal: Promote urban services in an efficient, environmentally sound, and socially responsible manner.

Objective: Economical Public Facilities. Provide efficient, economical, and equitable public facilities and services to urban development.

Policies:

1. The use of existing public facilities and services should be maximized in the allocation of future urban growth.

2. Designing of new and upgraded transportation and utility facilities with capacities sufficient to respond to existing demand levels and to the additional demand generated by planned development should be encouraged.

3. A full range of essential urban services and facilities should be provided to urban development areas.

4. The costs of providing urban services should be minimized through higher density development.

5. Major infrastructure extensions should be staged to coincide with community growth rates.

6. Utilities serving individual developments should be extended consistent with community water and wastewater system plans.

7. Provision of public facilities and services should be coordinated with the location and timing of new development.

Objective: To promote sanitary sewerage systems which are environmentally sound.

Policies:

1. Disturbances of natural resources should be minimized when constructing sanitary sewerage systems.

2. Constructing sanitary sewers through environmentally sensitive areas should be avoided whenever possible.

3. The design and construction of sanitary sewerage facilities should not promote development in environmentally sensitive areas.

4. Sanitary sewerage systems should meet water quality standards.

5. When feasible, sanitary sewer systems and stormwater drainage systems should be designed and constructed concurrently to achieve pollution abatement, gain drainage benefits and minimize disruption of natural resources.

6. Erosion and sediment control practices should be utilized in constructing sanitary sewer systems where the potential for erosion is high.

Objective: To promote sanitary sewerage systems which will effectively and economically serve urban development.

Policies:

1. The number of waste treatment plants should be minimized to avoid duplication of facilities, institute economies of scale and lessen environmental degradation.

2. Urban development should be provided with sanitary sewer service which is reasonably sized.

3. Existing capacity in sanitary sewerage systems should be used before making substantial expansion or extensions of service.

4. Sanitary sewerage system construction and sizing should be staged to encourage lower capital investment and greater flexibility.

5. Sanitary sewerage systems should be provided for existing development whenever they are the most cost-effective alternative for addressing failing on-site disposal systems.

6. Gravity flow sewer and interceptor systems should be utilized whenever it is cost-effective.

Objective: Cooperative Provision of Services. Provide services where efficiency, equity, and economies of scale can be obtained through cooperation and coordination.

Policies:

1. Overlapping urban service areas, facility and system capacities and service capabilities should be discouraged.

2. The proliferation of major public infrastructure facilities should be discouraged.

3. Inter-municipal agreements should be promoted for the provision of joint services.

4. More uniform facility design and service standards should be encouraged for multiple jurisdiction development areas.

ENVIRONMENTAL RESOURCES

Goal: Protect the environment and manage natural resources in an ecologically sound manner.

Objective: Water Quality Protection. Improve and protect surface and groundwater quality.

Policies:

1. The quality and supply of groundwater should be protected as the principal source of water supply and encourage water conservation programs.

2. The use of natural drainage patterns and measures should be promoted to enhance water quality.

3. Wetlands should be preserved as an essential component of the hydrologic system.

4. The risk of groundwater contamination should be reduced in aquifer recharge areas.

5. Lakeshore and streambank erosion should be minimized.

6. Construction site erosion should be controlled and urban stormwater runoff reduced.

7. Non-point source pollution abatement programs should be supported.

8. The adverse water quality impacts of agricultural runoff should be minimized.

Objective: Air Quality Maintenance. Improve or maintain high air quality throughout east central Wisconsin.

Policies:

1. Air pollution abatement programs and air quality regulations should be supported.

2. Geographically coordinated abatement strategies should be encouraged.

3. The public should be provided with information on air quality programs and specific air quality problems.

4. The increased use of transportation modes that are more efficient and environmentally sound than the private automobile should be encouraged.

5. Noise pollution should be reduced and noise sources isolated.

Objective: Environmentally Sensitive Area Protection. Preserve and protect environmentally sensitive areas and promote the linkage of these areas into environmental corridors.

Policies:

1. The natural environment should be recognized as an integrated system of interacting and finite land, water and air resources to protect the health and stability of this system.

2. Shoreland, floodplain and wetland areas should be protected as essential components of the hydrologic system and their scenic and recreational value preserved.

3. The disturbance of environmentally sensitive areas by utilities and transportation facilities construction should be minimized.

4. Critical natural areas should be preserved and protected from development and other adverse impacts.

5. Adjacent land uses which adversely impact sensitive areas should be restricted or mitigated.

6. The interrelationship of adjacent landscape types should be recognized to avoid dividing the natural units or breaking important linkages.

Objective: Wildlife Habitat Management. Manage wildlife and wildlife habitat in a manner that maintains ecological stability and diversity, and considers social and economic impacts.

Policies:

1. The diversity and population of plant and wildlife species should be maintained and increased.

2. Critical habitat areas for endangered and rare species should be preserved and enhanced.

3. Wildlife habitat such as fencerows, woodlots and natural areas should be protected and expanded.

4. Adequate public access to hunting and fishing areas should be provided.

5. Responsible public use of private land should be encouraged.

6. Wildlife and plant populations should be managed in ways that do not impose undue financial loss to individual property owners.

7. Plant and animal preserves used specifically for educational and observational purposes should be maintained and expanded.

Objective: Food and Fiber Production. Preserve land suitable for the production of food and fiber to meet present and future needs.

Policies:

1. Land best suited for agriculture or forestry should be preserved for these uses or in other uses which enable the land to be readily converted to agricultural or forestry production.

2. Ecologically sound and economically feasible farm and forestry management practices which preserve soil productivity and minimize soil loss should be encouraged.

3. Soil should be recognized as one of the basic and most important resources and programs to preserve and improve productivity and wise use consistent with soil capability should be developed and promoted.

Objective: Solid Waste Management. Employ a comprehensive management approach for solid and organic wastes.

1. Unique areas should be protected by minimizing the impact of individual development proposals.

2. Significant natural areas should be preserved as public open space.

3. Public access and use within environmental corridors and drainage ways should be promoted.

OPEN SPACE

Objective: Urban Recreation Needs. Plan for the future open space and recreational needs of the urban area.

Policies:

1. All municipalities should be encouraged to participate in the development of a comprehensive park and open space plans.

2. Opportunities should be identified for developing a network of recreational trails along highly attractive environmental corridors, natural waterways, and transportation rights-of-way to link major recreational facilities and residential areas.

3. Coordination between neighboring jurisdictions should be facilitated for development of parks and recreation facilities and linkages.

4. Future parks and open space areas should be preserved so that suitable and adequate land will be available to provide active and passive recreational opportunities as growth occurs.

Objective: Cost-Effective Recreation. Provide recreational opportunities in a cost-effective manner.

Policies:

1. Facilities should be developed which can provide multi-seasonal recreational opportunities.

2. The use of existing recreational facilities should be optimized.

3. Duplicative recreational facilities and programs should be avoided.

4. Grants and funding assistance should be maximized in the acquisition and development of recreational facilities.

5. Municipalities and school districts should be encouraged to cooperate in the development of community recreational and playground facilities.

6. The development of the county park system should be encouraged to complement recreational opportunities available in local parks.

7. Municipalities should be encouraged to establish capital funding and other parkland dedication methods to provide for future recreational needs.

Objective: Attractive Communities. Make individual communities, and the region as a whole, a more attractive place to live, work, and play.

Policies:

1. Scenic areas should be preserved and landscaping and other site development requirements strengthened to promote community beautification.

2. Additional billboard proliferation should be prevented, their placement controlled and a phase-out program promoted.

3. Community tree planting programs on street terraces and public areas should be promoted.

4. Waterfront areas should be preserved and redeveloped to promote greater public recreational use.

5. Scenic easements to protect important viewsheds should be considered.

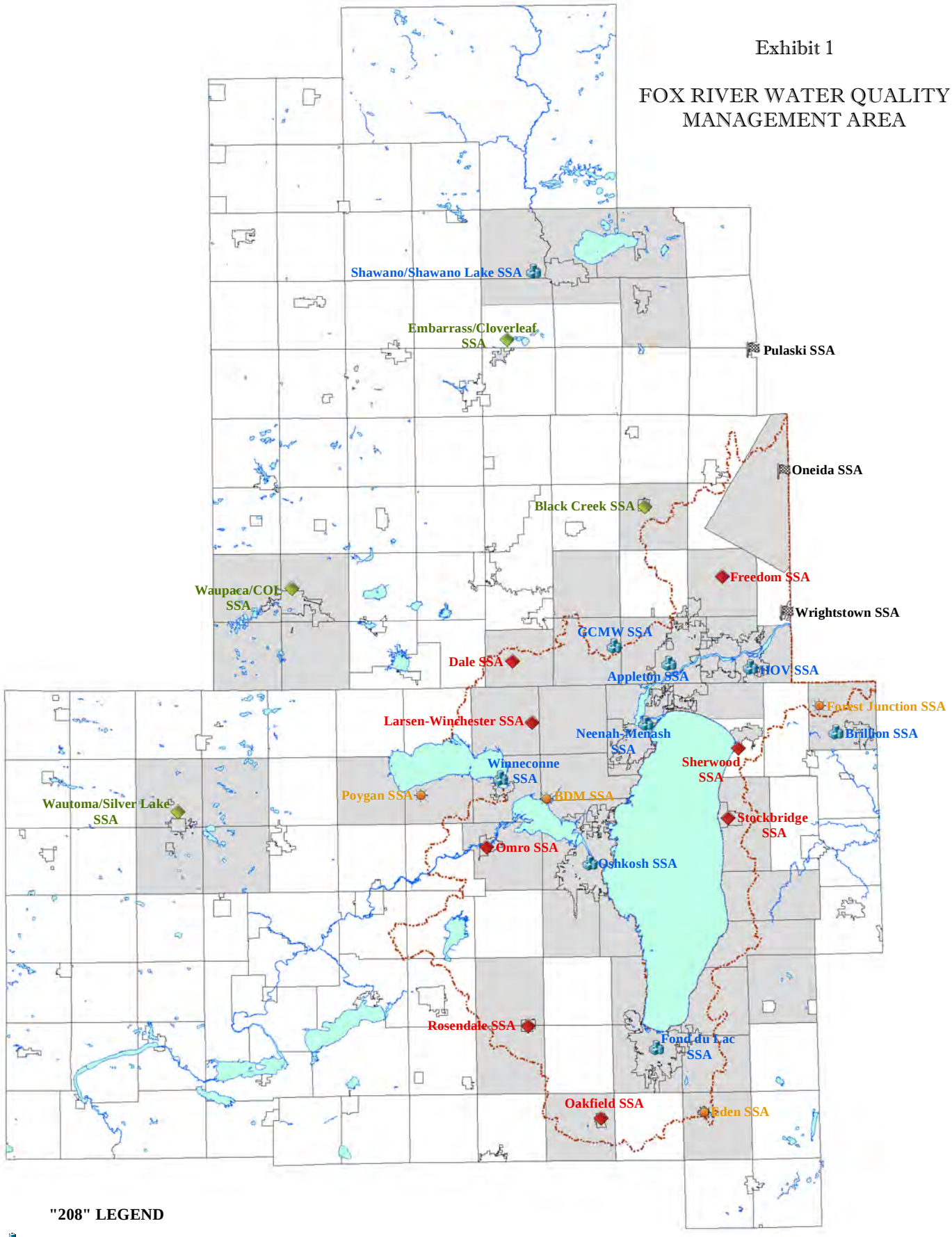
WATER QUALITY MANAGEMENT AREAS

The Statewide Water Quality Management Plan identifies three designated, (complex), water quality management planning areas within the State of Wisconsin with the remainder of the state identified as a "non-designated" area. Within the East Central region, the Fox Valley Designated Water Quality Management Area comprises major portions of the four urban counties surrounding Lake Winnebago, (Calumet, Outagamie, Fond du Lac and Winnebago). The 1,580 square mile area has been specifically designated for water quality planning because of the concentration of industries and urbanization along the Fox River and Lake Winnebago. Within this overall area there are 17 different sewer service areas that have been delineated and individual plans prepared, (Exhibit 1).

The remainder of the region is identified as a non-designated water quality management area. To date, within the East Central region, there are seven sewer service area plans in effect within the non-designated 208 area. The "non-designated" portion of the East Central region, as well as the remainder of the state, are further divided into major river basins. For each river basin the WDNR has prepared a water quality plan. The Brillion Sewer Service Area is located within a "non-designated" area and lies within the North Branch Manitowoc River, a subwatershed of the Manitowoc River Basin.

Exhibit 1

FOX RIVER WATER QUALITY MANAGEMENT AREA



"208" LEGEND

- Regional Facility
- Regionalization Potential
- Designated SSA Plan
- Non-Designated SSA Plan
- Plans Administered by Brown County
- Designated "208" Boundary

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CHAPTER 2

BRILLION SSA PLAN
OVERVIEW

CHAPTER 2: BRILLION SEWER SERVICE AREA PLAN OVERVIEW

PLAN ASSUMPTIONS AND READER NOTES

The beginning year for this update was 2012, and hence; data was finalized late 2012 to coincide with this starting timeframe. The plan itself looks out 20 years into the future (2030). The reader should further note that all references to SSA boundaries and acreages are associated with the 'updated' (2012) land use conditions, not with the 'current' (2000) plan features. Basically, the plan is written as if it has already obtained WDNR approval.

2030 SSA POPULATION, DEVELOPMENT AND ACREAGE PROJECTIONS

In order to ease the reading of this document, all of the detailed demographic and development projection data for each Designated Management Areas (DMA) are contained in a separate appendix (Appendix B). Figures for the aggregate SSA are referenced in the text for descriptive purposes. An attempt was made to have all data reflect conditions as of late year, 2012. The planning horizon also encompasses a slightly longer time span, rather than the traditional 20 year span. This will allow staff to provide (in 5-year increments) a 20-year population and development projection when reviewing sewer projects and sizing through the Water Quality Management (WQM or 208) review process.

FUTURE LAND USE DESIGNATIONS

The SSA plan has tables and maps which illustrate 2030 SSA's vacant acreage by proposed land use type. Each community's land use classification scheme was assessed and simplified so that common land use categories could be compared.

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CHAPTER 3

BRILLION SEWER
SERVICE AREA

CHAPTER 3: BRILLION SEWER SERVICE AREA

PLANNING AREA DESCRIPTION

The planning area is defined partially by what is felt to be an approximation of the "ultimate service" area of the treatment plant based on capacity, the extent of service areas for individual lift stations or interceptor sewers, as well as delineating and including nearby clusters of development currently utilizing on-site systems which may have long-term needs for sanitary sewer (usually more than 20 years). To this end, East Central is aware the Forest Junction sewer service area has initiated a facilities planning effort to evaluate current and future alternatives for wastewater treatment. Among the alternatives being explored is a potential regionalization scenario with the Brillion sewer service area. This circumstance is addressed through this plan's 'Goals, Objectives and Policies' section of this report, (**Objective: Cooperative Provision of Services,** page 8). It should also be noted East Central administers a sewer service area plan for the community of Forest Junction with these same goals, objectives and policies. Future updates to either of these plans will continue to explore the concept of regionalization where and if practical.

The Brillion planning area and sewer service area are located in the northeastern part of Calumet County at the intersection of USH 10 and CTH PP. The majority of the planning area is located within the Town of Brillion, with some portions extending into the Town of Rantoul, and includes the City of Brillion. This plan update re-configures the planning area to exclude large areas of WDNR wetlands, (Exhibit 2). The total Planning Area encompasses approximately 5, 217.7 acres or 8.2 square miles. The updated Planning Area includes all of Sections 22, 23, 24, 25 and portions of Sections 21, 26, 27, 28, 34, 35 and 36 in T.20N-R.20E, and; portions of Sections 1, 2 and 3 in T.19N-R.20E.

Planning Area Additions/Expansions

There were approximately 672 acres deleted from the previous planning area. Of the 672 acres removed, 632 acres were designated wetland areas with the remaining 40 acres being removed from the Town of Rantoul. Only 40 acres were being added to expand the planning area. The 40 acre planning area expansion is located along Round Lake Road, more particularly the NW ¼, SE ¼, Section 36, T20N, R20E. This minor addition is to avoid a coincidence of line between the sewer service area, (SSA), and the planning area boundary, (PAB). In summary, the 2050 Brillion planning area boundary had a net decrease of 632 acres from the previous plan, (Exhibit 2).

LAND USE AND DEVELOPMENT

Exhibit 3 illustrates the 2012 existing land use for the Brillion SSA along with the updated planning area boundary for reference purposes. This information is based on the Commission's detailed land use inventory with corrections made by the community during the update process. This data corresponds with a timeframe (or 'snapshot') of mid-year 2012

In this update, the 2030 SSA contains 1,820.02, an increase of nearly 11% over the last plan period or 168.7 acres. Within the 2030 SSA 903 acres (49.6%) are considered to be developed.

The developed lands can be described as follows (Appendix B, Table B-11): 364 acres of single family and multi-family residential land use (19.9% of total SSA); 35.8 acres of commercial land use (1.9% of total SSA); 48.4 acres of industrial land use (2.6% of total SSA); 300.7 acres of transportation/road use (16.4% of total SSA); 148 acres of public/institutional/use (8.4% of total SSA); 5.8 acres of utility use and .2 acres of planned stormwater detention ponds (0.3% of total). A total of 58 acres are considered to be undevelopable land areas or 3.4%. The remaining 137 acres, (7.5% of total area), are designated as environmentally sensitive areas that include wetland and/or stream buffers and designated wetland areas.

Residential Development

Residential development within the 2030 Brillion Sewer Service Area is the dominate land use category. There are considered to be 15.9 acres of multi-family residential, exclusively confined to the city's south central downtown district. The balance of residential development, 347.7 acres includes approximately 7 acres of an established mobile home park located on the city's eastern corporate limits. The balance of single family residential development can be found concentrated in the central north-south corridor within the City of Brillion. Planned residential developments are expected to continue within the Brillion service area thus promoting cost-effective delivery of services.

Commercial Development

Existing commercial development can be found within the downtown district of Brillion which represents approximately 93% of all commercial development, (33.2 acres in city development and 2.5 acres are attributed to the Towns of Brillion and Rantoul). Commercial activity has made significant inroads north of USH 10 in the City of Brillion. It is anticipated future commercial development will occur in this area. There are no known designated commercial or office parks within the City of Brillion.

Industrial Development

Industrial development totaling 48.4 acres is confined primarily within the north and northeast portion of the 2030 service area. While there are no known designated industrial parks in the City of Brillion, 39.2 acres or 81% lies in this area particularly along USH 10. Small pockets of industrial development are found in the downtown district amounting to less than 2 acres or 3.9% of the total industrial development. The Brillion area is home to at least three major manufacturing or industrial operations providing major employment opportunities to the surrounding area. One active quarry and a municipal landfill can be found in the northern most portion of the City of Brillion. These large land masses have no impact to the wastewater treatment facility thereby not being a contributor to flow volumes and therefore not part of the 2030 Brillion Sewer Service Area.

Public/ Institutional Uses

The City of Brillion provides public and administrative services with respect to open space and recreational facilities, fire protection, police services, educational opportunities, public drinking water and sewer service. The City of Brillion provides park facilities that can be describe as such; Horn Park located east of North Parkway Drive and north of Madison Street; Heritage Park located on South Main Street and CTH PP; Peters Athletic Field on South Glenview Avenue and Tesch Street; South Park located on South Main and Horn Streets. In addition, the City of Brillion is host to the Deer Run Golf Course situated east of CTH PP and north of Fawn Ridge Subdivision. In a more regional sense the Brillion area has access to organizations and natural settings that include the Brillion State Wildlife Area, High Cliff State Park, the Brillion Conservation Club and the Brillion Nature Center. Several lakes are in the area for boating, wildlife and fishing opportunities. The most notable water body is Round Lake located southeast of the City of Brillion providing surface water activities. Public and parochial schools are part of the Brillion School District.

A mixture of urban, agricultural, recreational and rural development is present in the planning area. The City of Brillion is the core of denser urban development. With a 2030 estimated population of 3,308 persons, the City of Brillion covers an area of approximately 1,757.9 acres, (2.75 square miles), of which approximately forty-six per cent is developed. The Towns of Brillion and Rantoul, to the extent they are included in this plan, is developing predominately residential land uses with large vacant areas of agricultural and woodland uses. The existing developments within the towns are served by on-site systems.

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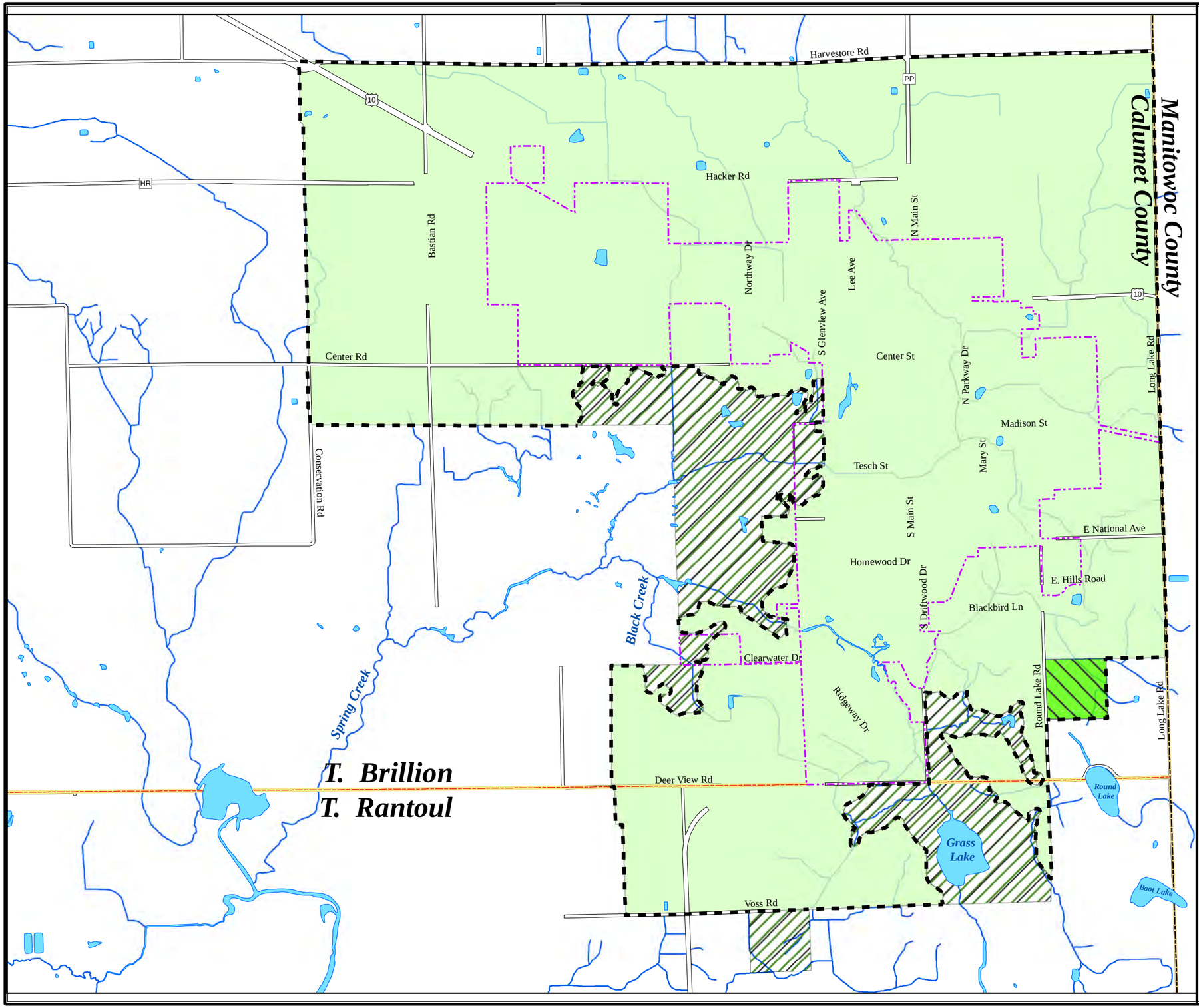
Exhibit 2

YEAR 2050 BRILLION PLANNING AREA



PLANNING AREA CONDITIONS

- 2050 Planning Area Boundary
- Planning Area Contraction
- Planning Area Expansion
- 2050 Planning Area Boundary
- City Corporate Limits
- Township Boundary
- County Boundary
- Streams

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Scale in Feet

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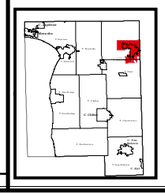
Source: Digital base data provided by Calumet County. Land Use data provided by the Town of Brillion, Town of Rantoul and the City of Brillion. Wetland data provided by WDNR. Thematic data created by ECWRPC.



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MAY, 2014

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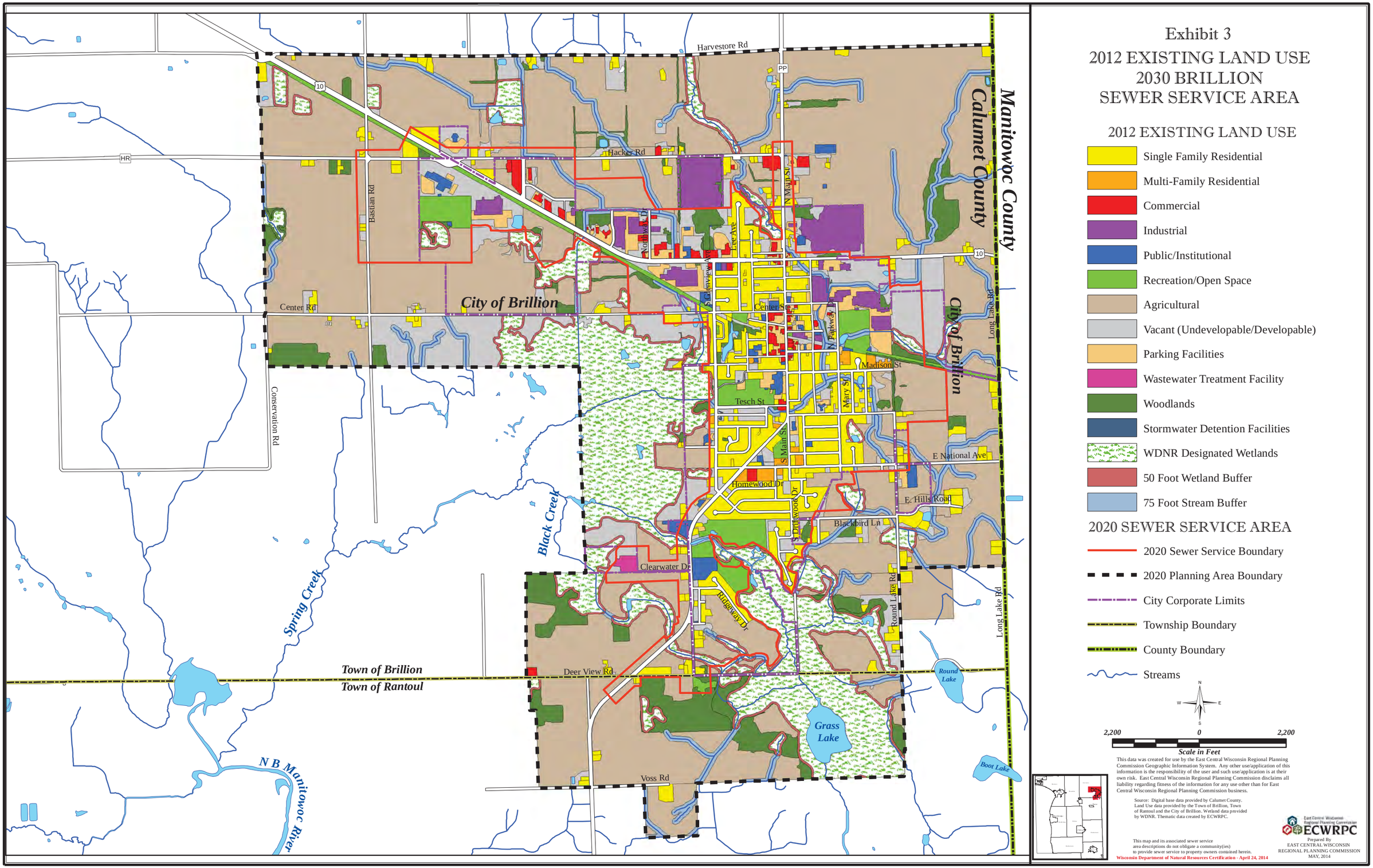

Exhibit 3
2012 EXISTING LAND USE
2030 BRILLION
SEWER SERVICE AREA

2012 EXISTING LAND USE

- Single Family Residential
- Multi-Family Residential
- Commercial
- Industrial
- Public/Institutional
- Recreation/Open Space
- Agricultural
- Vacant (Undevelopable/Developable)
- Parking Facilities
- Wastewater Treatment Facility
- Woodlands
- Stormwater Detention Facilities
- WDNR Designated Wetlands
- 50 Foot Wetland Buffer
- 75 Foot Stream Buffer

2020 SEWER SERVICE AREA

- 2020 Sewer Service Boundary
- 2020 Planning Area Boundary
- City Corporate Limits
- Township Boundary
- County Boundary
- Streams

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LIMITING ENVIRONMENTAL CONDITIONS

Limiting environmental conditions for development are found throughout the Brillion planning area as indicated on Exhibit 4. Areas of steep slope are prevalent in the eastern and southern quadrants of the planning area with smaller areas scattered throughout the service area. High bedrock appears to be consolidated to an area south and west of the wastewater treatment facility. Being a rather large expanse this bedrock area covers approximately 275 acres. Ground water within two feet of the surface is abundant throughout the City of Brillion and the Towns of Brillion and Rantoul as a whole. These conditions will pose minor limitations for development and the use of individual septic systems within the planning area.

Watersheds and Water Features

The Brillion Sewer Service Area and its Planning Area falls entirely within the North Branch Manitowoc River subwatershed of the Manitowoc River Basin with all drainage flowing directly or indirectly into Lake Michigan via existing ditches, wetland areas, and stream corridors. The North Branch Manitowoc River subwatershed covers most of northeastern Calumet County and encompasses approximately 42,746 acres (66.8 square miles). This subwatershed was recommended for additional study and assessment to determine the watershed's ranking for the NPS priority selection process according to the Manitowoc River Basin Plan (WDNR, 1991).

Major surface water features within the Brillion Planning Area include:

- Spring Creek - According to the Manitowoc River Basin Plan, this creek is a very hard water stream originating north of Brillion and flowing for more than five miles generally southwesterly before draining into the Brillion Marsh and continuing to its confluence with the North Branch Manitowoc River. The sport fishery of this creek is limited due to the sluggish flow of water through the Brillion Marsh, as well as the periodic low oxygen content;

- Black Creek - This creek is located in the southern portion of the Planning Area, north of Deer View Road. According to the Surface Water Resources of Calumet County (WDNR, 1971), Black Creek is an intermittent stream that seasonally flows into Brillion Marsh with little or no fishery potential.

- Grass Lake - According to the Surface Water Resources of Calumet County, Grass Lake is a marshy basin which contains no fishery and has little recreational use except waterfowl hunting. No public access is available to this lake.

- Brillion Marsh - The largest wetland area within the subwatershed, this marsh is the headwaters for the North Branch Manitowoc River.

Wetlands

Wetlands are essential environmental features for providing wildlife habitat, scenic open spaces, flood water retention and groundwater discharge areas. Wetlands act as a natural filtering system for nutrients such as phosphorus and nitrates. They provide a buffer zone protecting shorelines and streambanks. These wetlands are found throughout the Planning Area, but are most prevalent in the western and southern portions.

Forested wetlands are found mainly in the southern portion of the Planning Area, east of CTH PP, while several areas of scrub/shrub wetlands existing north of USH 10 and west of CTH PP. Large areas of palustrine, emergent, narrow-leaved wetlands exist within the Brillion Marsh, the headwaters for the North Branch Manitowoc River. Portions of this marsh are owned by the WDNR and designated as the Brillion State Wildlife Area. The Brillion State Wildlife Area is managed primarily for waterfowl and is open for public hunting, trapping, and dog trials. Great egrets, a Wisconsin threatened species, are common during the summer months within the Wildlife Area.

Wisconsin Administrative Code NR 115 and NR 117 mandate that wetlands be protected in both the rural and urban areas of the state. In the unincorporated areas, NR 115 protects wetlands or portions of wetlands within the shoreland zone that are designated on Wisconsin Wetland Inventory maps prepared by the Wisconsin Department of Natural Resources. To protect wetlands in incorporated areas, NR 117 was enacted in 1983 and requires that all wetlands or portion of 5 acres or more in size located in the shoreland zone be protected and outlines minimum shoreland zoning standards for Wisconsin cities and villages. In addition to NR 115 and NR 117, NR 103 outlines water quality standards for wetlands and requires that all practicable alternatives be considered to avoid and minimize wetland disturbance and to ensure preservation, protection, restoration and management of wetlands. Any alterations that are to be made to any wetland, regardless of size, need to be reviewed and approved by the U.S. Corps of Engineers and the WDNR before any action can be taken.

Floodplains

Mapped FEMA Floodplains exist within various portions of the defined Planning Area. Areas susceptible to flooding are considered unsuitable for any type of development due to the potential health risks and property damage. As revised in 1984, the Flood Insurance Rate Map (FIRM) for the *unincorporated* portions of Calumet County identify numerous areas within the Town of Brillion and Town of Rantoul which are subject to flooding within the 100-year floodplain. These areas are located along Black Creek and surrounding Grass Lake in the southern portion of the Planning Area; encompassing a majority of the Brillion Wildlife Area in the western portion; along Spring Creek and the "Ariens Ditch" in the northern portion, and; in several spotty low-lying areas in the eastern portion of the Planning Area. A majority of the floodplain areas outside of the City are currently undeveloped at this time and with some moderate limitations on the expansion of development within these areas. To the extent that the Brillion Marsh has flooding problems the City of Brillion and the Wisconsin Department of Natural Resources have been evaluating potential remedies. The short-term goal in this process includes removing cattails and other over-grown vegetation within the Spring Creek channel. This removal process would originate from South Bastian Road east to the City of Brillion corporate limits. This re-establishment of the Spring Creek channel is planned for 2014-2015. According to officials involved in the project failure to address this issue in the short-term could lead to more costly alternatives, such as dredging, in the future.

Further revisions to the Flood Insurance Rate Map (FIRM) for the City of Brillion and adjacent unincorporated areas have been made with an effective date of February 4, 2009. Exhibit 4 found in this report reflects floodplain conditions on 1984 FEMA data, (please see Appendix D for updated flood delineations on current FEMA mapping). A large portion of these areas are currently developed or encroached upon which has caused flooding problems in previous years. The City has taken some measures recently to construct new flood control structures and

identify future stormwater detention/retention ponds which will alleviate future flooding. The City of Brillion currently enforces a '*Stormwater Drainage Facilities Code'*. This code addresses recommended sizing for culverts, swales and stormwater ditches. In addition, any new platting within Calumet County is reviewed for conformance with the Calumet County Subdivision Ordinance.

Adhering to the WDNR Compliance Agreement the City of Brillion has developed a stormwater management plan, (Spring Creek Stormwater Management Plan), to address the City's infiltration/inflow problems. The study area developed for this stormwater management plan, (Appendix D, Figure E-3), contains areas of older sanitary sewer infrastructure and older homes believed to pose the highest rates of infiltration/inflow into the sewer system. The identification of these problem areas are in addition to available FEMA mapping and no proposals are being initiated to amend the FEMA mapping. Current FEMA flood mapping can be found in Appendix D.

Soils

Soils support the physical base for development within the Planning Area. Knowledge of the limitations and potential difficulties of soil types is important in evaluating land use proposals such as residential development, utility installation and other various projects. Some soils exhibit characteristics such as slumping, compaction, erosion, and high water tables which place limits on development. Severe soil limitations do not necessarily indicate areas cannot be developed, but rather indicate more extensive construction measures must be taken to prevent environmental and property damage. These construction techniques generally increase the costs of development and the utilities needed to service that development.

According to the Soil Survey of Calumet and Manitowoc Counties, prepared by the USDA in 1980, three major soil associations are present within the Brillion Planning Area:

- Kewaunee-Manawa-Poygan Association: This soil association encompasses approximately 80 percent of the Planning Area. This association consists of soils on undulating ground moraines made up of knolls, ridges, and plains that are dissected by drainageways and broad depressions. The soils are mostly nearly level to sloping, but along the sides of drainageways and on escarpments, they are steeper. These soils are well drained to poorly drained that have a dominantly clayey subsoils and substratum. They have good potential for cultivated crops but have severe limitations for use as septic tank absorption fields.

- Pella-Mundelein-Shiocton: This soil association comprises approximately 10 percent of the Planning Area and is located just west of the City limits. This soil association coincides with many areas of the Brillion Wildlife Area. This association consists of soils on till plains and in glacial lake basins. The soils are mostly nearly level, but in some areas are gently sloping. Theses soils are somewhat poorly drained and poorly drained that are dominantly loamy throughout. If drained, these soils have good potential for cultivated crops. These soils have severe limitations for use as septic tank absorption fields.

- Houghton-Palms-Willette: This soil association is located in the south-central and south-eastern portion of the Planning Area and comprises approximately 10 percent of the total area. This association consists of soils in glacial lake basins and on till plains. They are

nearly level and are very poorly drained. Most of these soils are in natural vegetation of trees and sedges which provide good habitat for wildlife. These soils also have severe limitations for septic systems.

Based on this soils information, no steep slopes (12% or more) are present within the Planning Area. Bedrock located near the surface is of concern primarily in the northern portion of the planning area. The depth to bedrock within the Planning Area ranges from 33 feet in the northeastern portion to 178 feet in the western portion. High bedrock may not only hinder development due to the cost of rock excavation, but it also coincides with a lack of soil which can filter pollutants before they reach groundwater; thus, the potential for groundwater contamination in high or exposed bedrock areas can be extremely high.

Groundwater

The groundwater resources of area are generally plentiful and of fair quality. Groundwater resources within the Planning Area are linked directly to the surficial glacial deposits and underlying bedrock structure. The Brillion Planning Area covers the Niagara Dolomite bedrock formation almost entirely. Since no detailed geologic maps are available in this area, a small portion of the southern and/or western extent of the Planning Area may or may not contain this geologic layer of bedrock. In most areas along the western extent of the Niagara Dolomite, an escarpment (cliff face or steep slope) is present, however; in the Brillion area this western extent is "submerged" below glacial till. Assuming that this bedrock layer is present throughout the Planning Area, four aquifers should be present. These aquifers can be generally described as follows:

- The Water Table Aquifer - Present in all areas of the Planning Area and consists of glacial sediments deposited by several glacial advances that covered portions of all of Calumet County. The thickness of this aquifer is variable, being greatest in pre-glacial bedrock valleys and least over topographic highs in the bedrock surface. Sand and gravel seams, present throughout the aquifer, typically can transmit adequate amounts of water for private well systems.

- The Niagara Aquifer - Specific to the area underlying the Niagara Cuesta, this aquifer forms an important regional aquifer along the western side of Lake Michigan. The Niagara Aquifer is underlain by Mequoketa Shale which does not transmit water easily and, therefore, acts as a confining layer between the Niagara Aquifer and the much more expansive Sandstone Aquifer of Wisconsin. The Niagara Aquifer consists of water stored in cracks and fractures located randomly throughout the rock. Fractured rock aquifers are particularly susceptible to pollution. In such areas, human activities and land uses take place in close proximity to features that provide relatively direct point source input routes for aquifer recharge. Dissolved and suspended contaminants can be moved rapidly across the land and into the subsurface with little or nothing to inhibit them. Examples of affected water supply wells, springs, and surface water bodies are common in such geologic settings. The potential for groundwater contamination is classified as high throughout most of this area.

- The Platteville-Galena Aquifer - Located below the Water Table Aquifer and below the layer of Mequoketa Shale, this aquifer is comprised primarily of dolomite and acts as a leaky confining layer over the sandstone aquifer. It does not transmit water as readily as

the underlying sandstone, but it is capable of supplying adequate amounts of water to private water systems due to secondary fractures.

- The Cambrian (St. Peter's) Sandstone Aquifer - The area's thickest and most important aquifer, it is the most widely uses for sustained high capacity wells for municipal and industrial uses.

All City of Brillion residents are provided public drinking water from a municipal system drawing water from three individual wells. Two of these wells are approximately 180 feet in depth, drawing groundwater from the Niagara Dolomite (Silurian) Aquifer, while the third well is at a depth of 805 feet and drawing groundwater from both the Galena-Platteville and St. Peter Sandstone formations. The two shallower wells are more susceptible to contamination due to the fractured nature of the dolomitic limestone of the Niagara Dolomite formation. Individual shallow wells outside of the City are also more susceptible to the threat of contamination.

Concerns on the future provision of public water to areas of the City exist based on the topography of the land. According to the City's engineers, areas in the eastern portion of the City or beyond, which are at or above 864' above sea level, may be not be serviceable by municipal water without significant modifications to the water system to increase water pressure. This will limit the amount of new development in these areas and, if not improved, direct most new development to the western and southern areas of the City. Currently, the City of Brillion is in the process of developing a new water supply well, Well #5, and is scheduled for completion and expected to be on-line by the Summer, 2014. This is due in large part to one of the existing wells reaching its usefulness. In addition, the City of Brillion Water Utility continues to scout locations for a future well, Well #6. City officials indicate Well #6 could materialize by 2015.

The City of Brillion currently addresses wellhead protection through their Municipal Code, more specifically, Chapter 98, Article IV, Division 3 under the Utilities section. This ordinance also applies to any private wells located within the city corporate area.

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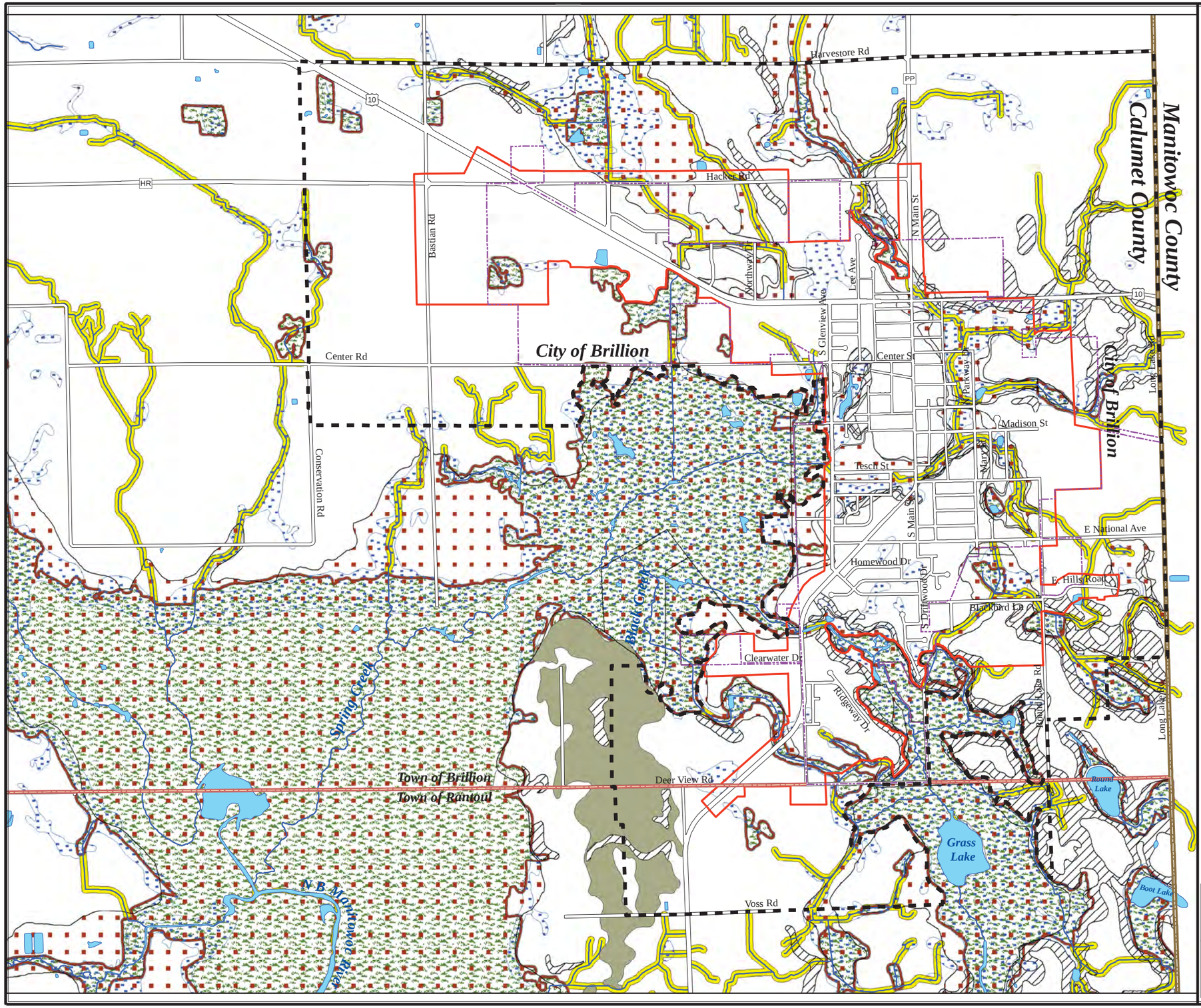

Exhibit 4

ESA & LIMITING CONDITIONS 2030 BRILLION SEWER SERVICE AREA

BOUNDARY LEGEND

- 2030 Sewer Service Boundary
- 2050 Planning Area Boundary
- City Corporate Limits
- Township Boundary
- County Boundary
- Streams

ENVIRONMENTAL CONDITIONS

- Floodplain/Floodway Areas
- Bedrock Within 5 Feet of Surface
- Groundwater Within 2 Feet of Surface
- Slopes Greater Than 6 Per Cent
- WDNR Designated Wetlands
- 50 Wetland Buffer
- 75 Foot Stream Buffer

The 2030 Brillion Sewer Service Area falls entirely within the North Branch Manitowoc River subwatershed being part of the Mantitowoc River Basin.

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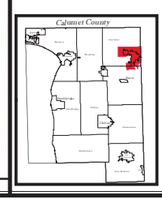

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DESIGNATED MANAGEMENT AREAS

Exhibit 5 illustrates the existing Designated Management Areas (DMAs) within the 2030 Brillion Sewer Service Area. DMAs are the legal entities (communities, sanitary districts, or utility districts), responsible for the collection and/or treatment of wastewater. Within the Brillion Planning Area there are four governmental entities which exist, one of which is the Designated Management Agency.

City of Brillion*
Town of Brillion
Town of Rantoul
Calumet County

Short descriptions of each DMA, including basic information on their involvement in land use planning and intergovernmental cooperation activities is contained below:

City of Brillion - The City of Brillion covers an area of approximately 2.75 square miles, or 1,757.9 acres. In the 2010 Census count the City had a population of 3,148 persons with 2.6 persons per household.

The City is equipped with a Community Development department and a City Administrator's office conducting land use planning and capital improvement projects. In addition, the City Plan Commission and City Council oversee the adoption of major development efforts. The City of Brillion is currently operating under an adopted 2003 Comprehensive Land Use Plan with amendments to the plan as recently as 2009. The City of Brillion is the sole collector and treatment of wastewater for the 2030 Brillion Sewer Service Area.

Town of Brillion – Roughly 27% or 488 acres that make up the 2030 Brillion Sewer Service Area are considered to be within the jurisdiction of the Town of Brillion. There is very little existing development, primarily residential, within the 2030 Brillion Sewer Service Area. The vast majority or, 68% of vacant developable land, remains in agriculture and other vacant developable property. A majority of residents within the Town of Brillion rely on individual on-site wastewater treatment systems (conventional, mound, and holding tank). Calumet County currently has a ban on holding tank installations for new development, however; they may be used as replacement systems. The Town of Brillion adopted their Smart Growth Plan in 2003. According to the 2010 Census the Town of Brillion had a total of 580 households with a rate of 2.6 persons per household equating to 1, 486 persons.

Town of Rantoul – The Town of Rantoul has the least impact on the 2030 Brillion Sewer Service Area. Actual sewer service is limited to the extreme southern portion of the service area

* Indicates DMA designation.

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Exhibit 5

POLITICAL JURISDICTIONS and DMA's BRILLION SEWER SERVICE AREA

MUNICIPALITIES

- City of Brillion
- Town of Brillion
- Town of Rantoul
- 2050 Planning Area Boundary
- 2030 Sewer Service Area Boundary
- Streams

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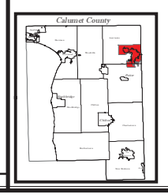

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along CTH PP. A small segment of service area is located along CTH PP and easterly just south of the township boundary. As with the Town of Brillion, residents in the Town of Rantoul utilize on-site wastewater systems for treatment. In terms of land use planning the Town of Rantoul is included in the *'Calumet County Year 2025 Smart Growth Plan'* adopted in 2007 with plan amendments added as recently as 2012. According to the 2010 Census the Town of Rantoul had a total of 285 households with a rate of 2.8 persons per household amounting to a population of 798 persons.

SEWERAGE COLLECTION AND TREATMENT SYSTEM

A majority of residents within the Towns of Brillion and Rantoul rely on individual on-site wastewater treatment systems (conventional, mound, and holding tank). Calumet County currently has a ban on holding tank installations for new development, however; they may be used as replacement systems. Although the City provides public sewer, there are several homes in outlying areas of the City which are still utilizing on-site systems.

The City of Brillion's wastewater treatment facility (WWTF) is located on 1201 Clearwater Drive in the southwestern portion of the community. This facility was constructed in 1981 with several minor modifications occurring to the present date. The treatment plant uses an activated sludge treatment system to process raw sewerage followed with tertiary filtrations by sand filters. The treated effluent is discharged into Black Creek, a tributary of the Manitowoc River with treated sludge being fed to a reed bed. In the event the reed bed cake is removed plans are in place to land fill or land spread the sludge. The plant has had an excellent record of performance and has consistently met permit limits. Significant reductions in phosphorous and chloride effluent limits are expected to be enforced during the planning period for this report. The Brillion wastewater treatment facility, as a recommendation and to be in compliance with their WPDES permitting, should address these issues in future facilities planning. During the reporting year 2011 the Brillion wastewater treatment facility had removal efficiencies of 97.2% for Biochemical Oxygen Demand, (BOD), with an average monthly effluent of 3.6 mg/l and Total Suspended Solids, (TSS), effluent averaging 3.4 mg/l per month. According to the 2011 Compliance Maintenance Annual Report (CMAR), the plant was designed for a maximum average design flow of 993,000 gallons per day (.993 mgd). The annual average monthly flow for 2011 was .726 mgd; therefore, approximately 27 percent of the capacity remains unused in the system. Recent upgrades to the plant include the replacement of a sludge pump and blower motor. In addition, a supervisory control and data acquisition system, (SCADA), has been installed to allow the treatment plant operator the flexibility to monitor and control the entire wastewater system from a remote location.

In summary, the permit and design information for the City of Brillion treatment plant is as follows:

- **WPDES Permit Number:** WI-0020443-08-0, (expires September 15, 2015)
- **Receiving Water:** Brillion Marsh via unnamed tributary to Spring Creek
- **Design Flow:** .993 mgd
- **Average Flow (Jan.- Dec., 2011):** .726 mgd
- **Design BOD (lb./day):** 1,203
- **Average BOD Influent (lb./day, Jan.-Dec., 2011):** 135.1
- **Average BOD Effluent (lb./day, Jan.-Dec., 2011):** 3.6

- **Treatment Type:** Activated Sludge
- **Sludge Treatment:** Aerobic Digestion
- **Sludge Disposal:** Feed sludge to reed beds

Collection/Conveyance Systems

The City's existing wastewater collection system consists sewer mains ranging from six inches to 21 inches in diameter. The smaller sewers lead to larger collector sewers, which, in turn, feed into a series of 18-inch and 21-inch interceptors located in the central portion of the City. Wastewater is then pumped into a 14-inch forcemain for transport into a 21-inch interceptor which leads to the treatment plant. In total, there is slightly over 20 miles of public sewers within the City. The City currently jet cleans 1/5 of the entire system each year, inspects 25% of the manholes per year and does television inspections as deemed appropriate to identify infiltration and inflow problems. Defects if found are addressed via work orders and, in some cases, where larger issues arise repairs are conducted through street improvement projects. The City has, in 2011, developed and adopted the *"Wet Weather Peak Flows Facility Plan"*, (Appendix D), to address inflow/infiltration issues as related to the Brillion sewer collection system. Exhibit 6 depicts the major gravity sewers, force mains and lift stations.

There are four lift stations within the Brillion sewer system servicing existing and future single family residential subdivisions and other areas of development. The Ryan Street Lift station, (STH 10 and Glenview Avenue), serves areas west of the lift station primarily non-residential development. The Deer Run lift station, (South Driftwood Drive), serves the Deer Run Subdivision. Known as the Main Lift Station, this lift station conveys nearly all of the total wastewater flows within the City of Brillion to the wastewater treatment facility. Located east of Glenview Avenue, (in Peters Park), this lift station was last upgraded in 1993. The Fawn Ridge lift station serves the Fawn Ridge Subdivision conveying its flows north to Clearwater Drive where a 21 inch interceptor feeds into the treatment plant. Larger areas of planned residential development in the southwestern portion of the service area will be serviceable by gravity sewers flowing to a lift station located near CTH PP, (Fawn Ridge Subdivision). Post-development activity has yet to materialize given the recent construction of a high school south of USH 10. As development progresses in the northwest portion of the service area, it may require the City to strategize for additional lift stations or perform analysis on existing lift stations for possible upgrades. Concerns of domestic sewage bypassing related to the Main Lift Station and the wastewater treatment facility became evident after the WDNR issued a Notice of Violation of Section 5.2.6 of their WPDES permit. Subsequent to the violation the City of Brillion and the WDNR entered into a Compliance Agreement to address the obvious inflow/infiltration within the system. Thus the City of Brillion commissioned the *"Wet Weather Peak Flows Facility Plan",* (Appendix D). In addition, the City further developed an ordinance to address cross connection issues for homes built prior to 2000 upon the sale of residential properties. In summation, the City of Brillion, through regulatory and policy revisions and updates, continues to mitigate the inflow/infiltration issues regarding their sewer infrastructure.

Table 1: 2011 Brillion WWTP Performance Report

Month	INFLUENT			EFFLUENT		BOD Removal Efficiency
	Avg. Monthly Flow (mgd)	Average Mo. (C)BOD Concentration (mg/l)	Avg. Monthly (C)BOD Loading (lbs/day)	Avg. Monthly (C)BOD (mg/l)	Avg. Monthly TSS (mg/l)	
JAN	0.5055	174	732	3	2	98.28%
FEB	0.5665	183	863	5	2	97.27%
MAR	0.8550	113	808	4	2	96.46%
APR	1.3340	100	1,111	8	10	92.00%
MAY	0.8275	114	783	4	2	96.49%
JUN	0.9212	125	960	7	7	94.40%
JUL	0.6733	134	751	3	3	97.76%
AUG	0.5970	128	636	3	2	97.66%
SEP	0.5800	137	664	2	2	98.54%
OCT	0.5453	118	537	1	2	99.15%
NOV	0.7161	142	848	2	5	98.59%
DEC	0.5905	153	754	1	2	99.35%
Total	**8.71**	**1,621**	**9,447**	**43**	**41**	
Average	**0.726**	**135.1**	**787**	**3.6**	**3.4**	**97.16%**

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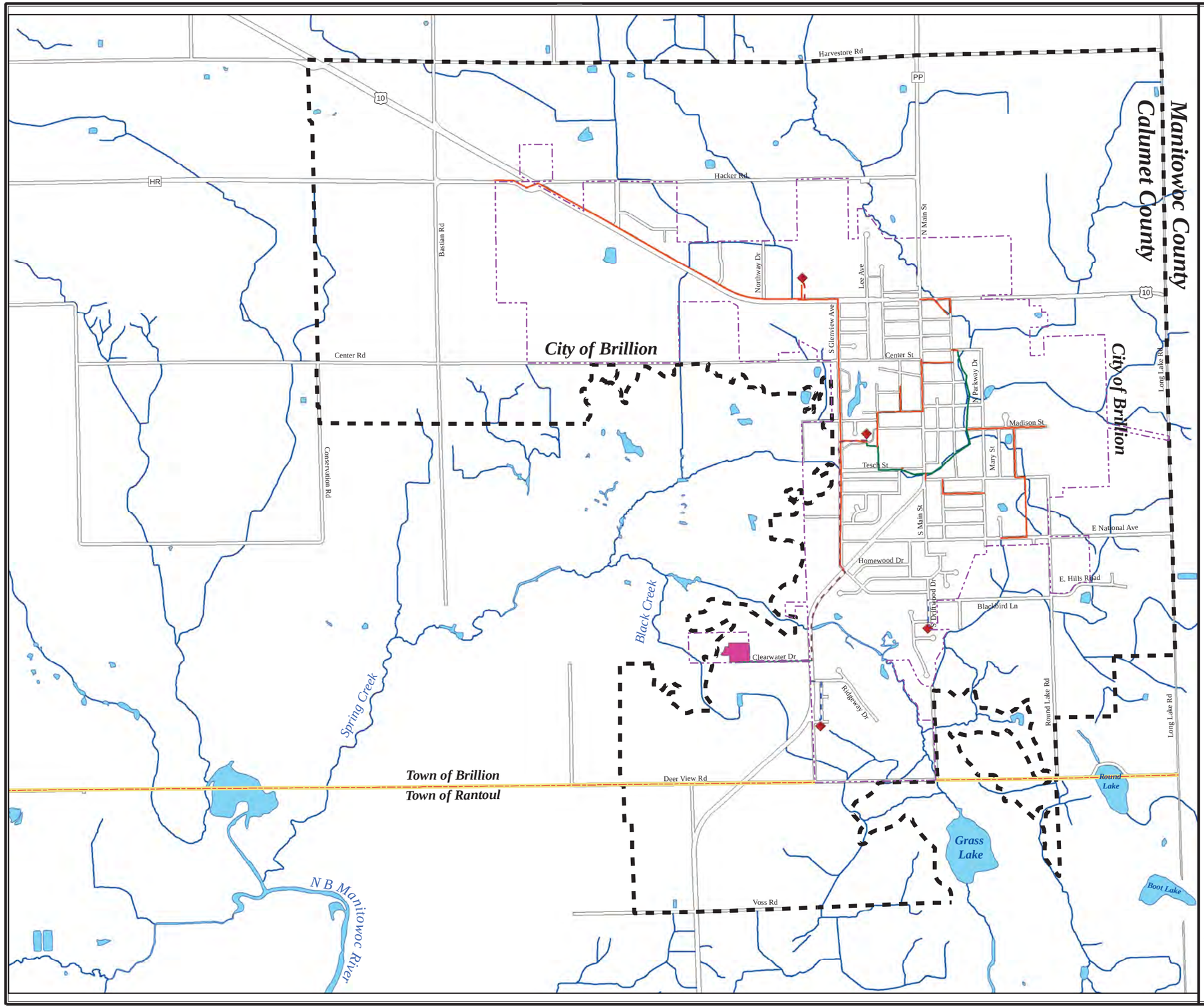
Exhibit 6

WWTP & INFRASTRUCTURE LOCATION 2030 BRILLION SEWER SERVICE AREA



2030 SEWER SERVICE AREA

- 2050 Planning Area Boundary
- City Corporate Limits
- Township Boundary
- Streams

SEWER INFRASTRUCTURE

- 10" - 15" Gravity Main
- 18" - 21" - Gravity Main
- 6", Force Main
- 8", Force Main
- 14", Force Main
- Lift Station
- Wastewater Treatment Facility

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Scale in Feet

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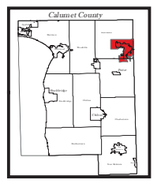

Source: Digital base data provided by Calumet County. Land Use data provided by the Town of Brillion, Town of Rantoul and the City of Brillion. Wetland data provided by WDNR. Thematic data created by ECWRPC.

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REGIONAL PLANNING COMMISSION
MAY, 2014

Wisconsin Department of Natural Resources Certification - April 24, 2014

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FORECAST GROWTH AND DEVELOPMENT

The 2030 Brillion Sewer Service Area is expected to have similar rates of growth as compared to previous years, (Table 2). The total sewer service area is projected to increase by 400 people, (440 including a 10% increase), thus bringing the population of 5,432 in 2010 to 5,832 persons in the year 2030. Wisconsin Department of Administration data based on their 2012 final estimates show an increase of 37 persons between the 2010 Census count and the 2012 final estimate. East Central's projection from 2012 to 2030 uses the share of the county method to determine the total population increase for the plan period. Broken down by municipality the City of Brillion represents approximately 6.4% of Calumet County with the Town of Brillion being 3% of the total and the Town of Rantoul representing 1.6% of the county share. This methodology produces an overall increase in population of 440 persons for the plan period. Projected households, (dwelling units), will experience a slight increase, even though a decline in persons per household is shown. With a 10% market factor built in an increase of 455 households are expected between 2010 and 2030. It is estimated that 92% of these units, (419), will be single family residential; 3%, (14), duplex units, and 5%, (23), slated for multi-family housing units. Residential densities of 3.0 single family units per acre, 5.0 units for duplex per acre and 10 units per acre for multi-family construction were used to allocate additional residential acreage needs.. These densities dictate an additional residential acreage need of 112 acres to sustain residential development and 134 acres with a 20% market factor applied. Actual allocations to the plan show only 81 acres of vacant developable lands being added for residential development. This low allocation is offset by two prominent areas designated as residential development within the existing sewer service area therefore providing ample developable areas for this land use.

Labor force and employment statistics from the 2010 Census shows the City of Brillion with a labor force of 2,300 persons. The actual participation rate is at 1, 574 persons or 68%. The forecasts for commercial and industrial growth amounted to a negligible 17 acres. Actual allocations for industrial and commercial uses totaled approximately 46 acres. The 2030 Brillion Sewer Service Area anticipates continued economic growth as evidenced by designating these allocations as a priority two development area.

Based on the increase in population for the year 2030 the allocations expanding the service area seem reasonable for this particular plan update. In addition, the proximity to the Fox Cities, Green Bay and Manitowoc coupled with a strong industrial base and the completion of a new high school in recent years, the City will likely continue to experience modest growth within the community.

Based on this information, this update of the SSA attempted to re-allocate or, (re-position), existing vacant lands to appropriate growth areas instead of adding significant amounts of new land to the SSA. Wetland buffers required minor adjustments to the 2030 sewer service area boundary for the purposes of consistency.

Table 2: Brillion SSA Population and Housing Projections

Projection Type	Census 2010	DOA 2012	2015	2020	2025	2030	Change 2010 - 2030	Change w/ 10% Increase
Total Population	5,432	5,469	5,522	5,645	5,738	5,832	**400**	**440**
Total Households (d.u.)	2,084	2,099	2,210	2,295	2,371	2,539	**455**	**501**

Source: 2010 US Census Bureau, Dept. of Administration 2010 Estimates, ECWRPC

GROWTH ALLOCATION AREAS AND 2030 SSA

The policy basis for allocating acreage for future development is outlined in the Sewer Service Area Delineation and Planning Process on page 36. These policies take into account a broad range of land use and environmental concerns directed toward encouraging orderly, cost-effective and environmentally sound development. Working within the broad policy base, the sewer service area plan also considers sewer system capacities, land development market trends, development plans and preferences of the individual communities. New vacant lands available for development within the updated SSA boundary total 726 acres.

Priority Development Area Mapping

During the SSA Plan update a thorough assessment regarding the phasing, or 'priority' areas of development was determined by the City of Brillion. During the working meetings with the City and email exchanges, a map was developed which indicated their general thoughts of development timing based on their local comprehensive plan, landowner knowledge and planned capital improvements. Three levels of 'priority' were assigned to overall areas requested for addition to the current plan update and can be simply described as follows: Priority #1 – generally felt to develop in the next 5 to 10 years; Priority #2 – generally felt to develop in 10 to 20 years, and; Priority #3 – generally thought to develop in 20 or more years, primarily based on the need for and timing of major sewer infrastructure. For the entire SSA, the 'priority area requests', were as follows:

- Priority #1 areas – 146 acres;
- Priority #2 areas – 91.8 acres; and
- Priority #3 areas – 129.2 acres.

Exhibit 7 illustrates the 'priority areas' and their location based on the City's request. While East Central will not formally hold each community to these development priorities, they will serve to remind the Commission, community, and public of the basic thoughts of development timing determined in 2012. It should be noted that East Central may, and in some cases has, recommended conditions be attached to WDNR sewer extension approvals where needed to deal with conflicts related to development timing issues or to preserve designated environmentally sensitive areas that lie within the growth allocation areas.

The 146 acres listed as a Priority #1 consist of two separate areas. Both of these areas were previously included in the 2020 Sewer Service Area Plan and are **not** considered to be allocation areas. The first area totals approximately 93 acres located along Bastian Road in the northwest corner of the 2030 Brillion Sewer Service Area. This area is proposed to develop as single family and/or mixed residential construction. The second area totaling approximately 53

acres would allow continuation with the phasing of the Fawn Ridge Subdivision. This area is located south of Ridgeway Road and CTH PP in the southern reaches of the 2030 Brillion Sewer Service Area. The City has a high priority in developing both of these areas.

A third of this total, (Priority #2), or 30.4 acres were previously within the 2020 Brillion Sewer Service. This area along East National Avenue is scheduled for residential development. While it may be considered in-fill development, the City of Brillion places a high priority to develop this parcel to utilize the advantages of the existing infrastructure. This area is **not** an allocated addition to the 2030 Brillion Sewer Service Area. The remaining 61.4 acres is proposed to develop as commercial/industrial land uses. The proximity to USH 10 and CTH PP make this area logical and practical for such land uses.

The Priority #3 area containing 133.5 acres is bisected by Blackbird Lane. This priority area also includes an area of existing development along East Hills Road east of Round Lake Road. Various land uses are evident within this allocation including 23.3 acres of environmentally sensitive areas, (wetlands, stream/wetland buffers and open water features), 25.6 acres of existing development and 84.7 acres of developable lands. Predictably, 53% of this total is classified as agricultural use. Given the patterns of residential development within this area and the East Hills Road existing development, East Central has allocated this area for the 2030 Brillion Sewer Service Area.

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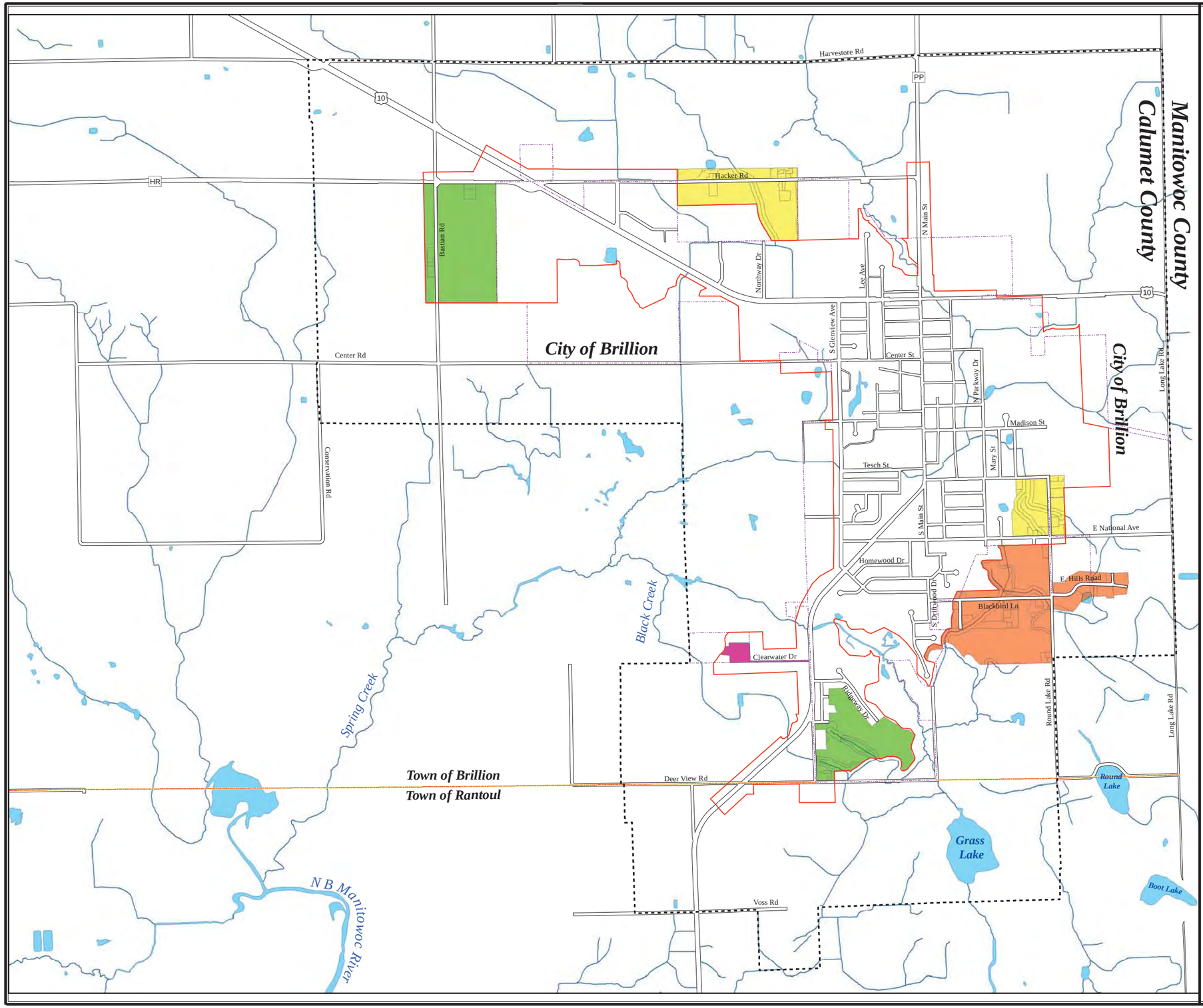
Exhibit 7

PRIORITY DEVELOPMENT AREAS 2030 BRILLION SEWER SERVICE AREA



2020 SEWER SERVICE AREA

- 2020 Planning Area Boundary
- 2020 Sewer Service Boundary
- City Corporate Limits
- Township Boundary
- Streams

PRIORITY DESIGNATIONS

- Priority One Designation
- Priority Two Designation
- Priority Three Designation
- Wastewater Treatment Facility

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Scale in Feet

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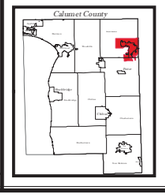

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East Central Wisconsin Regional Planning Commission
ECWRPC

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MAY, 2014

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Table 3: Summary of 2020 and Proposed 2030 SSA Conditions

SSA Characteristic	2020 SSA	2030 SSA	2020-2030 Difference
Developed Land Uses	873.32	902.82	29.50
Vacant Lands (see below for breakdown by proposed land use)	**597.98**	**787.80**	**189.82**
Vacant/Undevelopable Lands	57.07	0.00	-57.07
Environmentally Sensitive Areas*	114.21	127.55	13.34
Water Areas	8.81	9.46	0.65
Total SSA	**1,651.39**	**1,827.63**	**176.24**

Vacant Land By Proposed Land Use Type	2020 SSA	2030 SSA	2020-2030 Difference
Single Family Residential (incl. duplex)	276.55	363.09	86.54
Multi-Family Residential	53.55	53.55	0.00
Commercial/Industrial	202.90	249.08	46.18
Public Institutional**	42.07	44.56	2.49
Agriculture/Woodlands/Undevelopable/Unplanned	79.97	77.51	-2.46
Total Vacant Acreage	**655.04**	**787.79**	**132.75**

Source: ECWRPC, 2012 Land Use
**Includes wetland, stream and wetland buffers*
*** Includes open space, utilities, roadways, other public uses*

Year 2030 Sewer Service Area

The year 2030 Sewer Service Area for the Brillion WWTF is illustrated in Exhibit 8 and contains a total of 1,820.02 acres. Of this total, 137.01 acres, including open water areas, have been designated as environmentally sensitive areas (ESAs) and 726.2 acres are considered to be vacant/developable areas. Minus the vacant acreage that is reserved for public or institutional uses based on community requests the final figure of 684.4 acres are left to accommodate traditional residential, commercial, and industrial development. This compares to a calculated vacant acreage need of 151.0 acres for these types of development; therefore, an 'excess' of 575 vacant acres exists within the 2030 SSA, (Table B-11, Appendix B details the 2030 existing land use figures). A short description of the acreage allocations and growth areas are provided below:

- **City of Brillion –** Actual acreage allocation areas, based on the communities' priority designations, are depicted in Exhibit 8 and the larger "2030 Final Draft Allocation Map" located in the back of this report. The City of Brillion identified two areas as a priority for development. As previously stated these areas were already designated as 2020 sewer service area prior to the 2030 update process. These areas total 145 acres and are proposed to develop as single family residential and/or mixed residential uses. So, as a technical matter there were no sewer service area allocations for the City of Brillion.

- **Town of Brillion** – All allocated acreage awarded to the 2030 Brillion Sewer Service Area lies within the Town of Brillion. Area 1 totals approximately 61.4 acres located in the northern limits of the service area bisected by Hacker Road. This allocation is proposed to develop as commercial/industrial. Area 2 totals approximately 105 acres and is situated in the southeastern quadrant of the 2030 Brillion Sewer Service Area and west of Round Lake Road. The allocation area straddles Blackbird Lane. There are 29.3 acres of existing residential development along with 20.9 acres of designated environmentally sensitive areas. The remaining vacant developable acreage is slated for single family residential. It is anticipated that municipal services will be provided by the City of Brillion. Area 3 located east of Round Lake Road totals approximately 22 acres and existing residential development can be found on either side of East Hills Road. As development occurs from the west, (Area 2), it is anticipated service may be provided for east Hills Road.

- **Town of Rantoul** – There were no allocations within the Town of Rantoul. Changes, however, were made to the planning area boundary. A forty acre area in the extreme south central portion of the planning area, (Area 5), was removed and placed as a planning area expansion south of Blackbird Lane and east of Round Lake Road, (Area 6). To reference Areas 5 and 6 please see Exhibit 11: 2030 Final Draft Allocation in the rear section of this document.

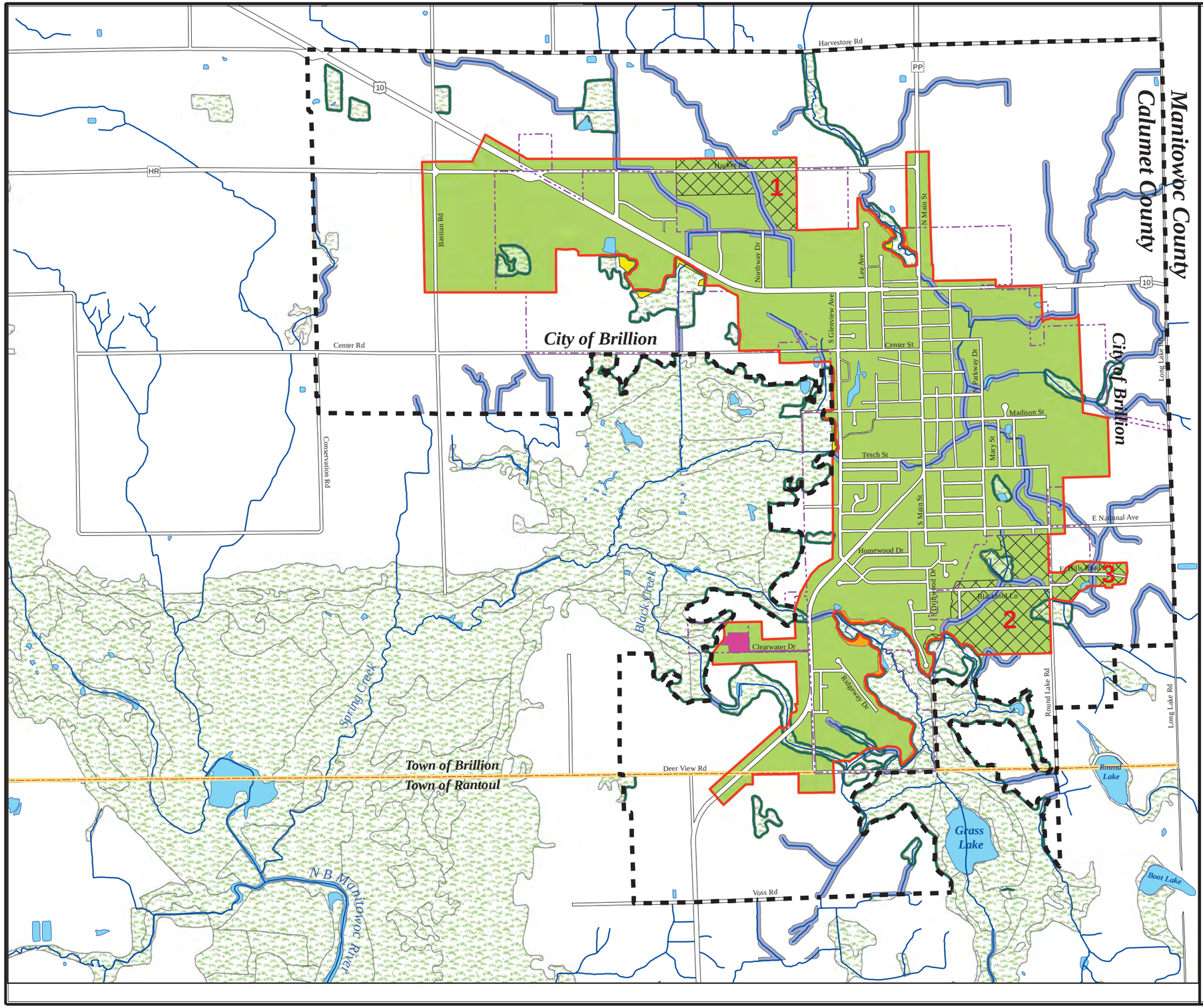
Minor administrative adjustments were made along the 2030 Brillion Sewer Service Area boundary. These adjustments are the result of the requirement to buffer the designated wetlands. East Central obtained updated wetland delineations from the Wisconsin Department of Natural Resources. Based on these updated wetlands it was necessary to bring the 2030 sewer service area boundary into conformance. In terms of acreage there were 8.3 acres added as a result of the administrative correction and approximately 13.1 acres removed for the same reasons. The final result shows a net decrease of 4.8 acres to the overall 2030 sewer service area boundary.

East Central has long maintained that extensive development between the current sewer service area and planning area boundaries be discouraged. By limiting planned subdivisions in these areas will greatly reduce the cost of retro-fitting utilities as the community expands outward. These recommendations and policies may be found on page 62 referencing Addendum Policy 1.4. This policy targets primarily urbanized developments, however, the City of Brillion, Towns of Brillion and Rantoul could well benefit from its stated purpose.

Holding Tank Service Areas

There are sewage holding tanks and individual on-site septic systems within the 2050 Brillion Planning Area. According to Wisconsin Administrative Code NR113 septic pumpage from these systems are directed to the regional treatment facilities. According to the 2011 Compliance Maintenance Annual Report the Brillion WWTF did not receive any outside septage nor was it requested to do so by private haulers. In addition, large holding tanks exceeding 3,000 gallons per day need a special holding tank service area designation. There are no known large holding tanks present in the 2050 Brillion Planning Area.

Exhibit 8
PROPOSED 2030 BRILLION SEWER SERVICE AREA



2030 SEWER SERVICE AREA

- 2050 Planning Area Boundary
- 2030 Sewer Service Area Boundary
- City Corporate Limits
- Township Boundary
- 2030 Sewer Service Area

SSA ALLOCATIONS

- 4 Sewer Service Area Allocations
- Administrative Contraction
- Administrative Expansion

ENVIRONMENTAL CONDITIONS

- Wastewater Treatment Facility
- 50 Foot Wetland Buffer
- 75 Foot Stream Buffer
- WDNR Designated Wetlands
- Streams

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Scale in Feet

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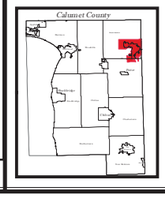

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WATER QUALITY ASSESSMENT AND DEVELOPMENT IMPACTS

Continued urbanization of the Brillion Planning Area will impact surface and groundwater resources. Short term impacts include the increase in surface water runoff and pollutant loadings as well as a reduction in groundwater recharge areas. Long term, cumulative development impacts include the loss of baseflow in streams and enhanced stream flashiness (flooding). The scope of these impacts cannot be precisely determined because specific development characteristics (location, type, density) are unknown. However, it is possible to generally estimate water quality impacts by applying assumptions concerning the nature of future development.

Point Source Water Quality Impacts

Population growth and commercial / industrial development will slightly increase loadings to the wastewater treatment plant and ultimately to surface waters of the Brillion Marsh. Without a wastewater engineering assessment it is not possible to analyze specific flows for the different existing land uses and estimate future flows for comparison to treatment plant design capacity. A rough estimate comparing existing average daily flows of current development can be made, (see table 4). Based upon this analysis, the average flows are expected to increase by .175 mgd or 175,000 gallons which is within the design capacity of the current treatment facility.

Non-Point Source Water Quality Impacts

The Brillion Sewer Service Area lies within the North Branch Manitowoc River subwatershed of the Manitowoc River Basin. The diversity of land uses within this watershed may contribute significant amounts of sediment loads, nutrients and other pollutants into the watershed. These loadings are carried via existing ditches, stream corridors and wetland areas found throughout the 2030 Brillion Sewer Service Area. Directly or indirectly, these loadings are ultimately deposited in Lake Michigan.

It is anticipated that surface runoff and pollutant loadings will increase with the forecast growth for the 2030 Brillion SSA. The placement of roads, buildings, parking lots and other large impervious areas increase the amount of water run-off thus carrying organic and inorganic pollutants associated with these land use types. The Department of Natural Resources has general guidelines for estimating unit area loadings of pollutants by land use categories. Within the 2030 Brillion SSA, four pollutants, (sediment, phosphorus, zinc and lead), have been analyzed for eight land use categories. The estimated loadings address both existing and future land uses. The estimates only relate to land uses within the service area with resultant impacts on the local rivers, streams and open water. Specific subwatershed analysis was not performed.

The estimated annual pollutant loadings for the existing development area, (based on 2012 land use), within the 2030 Brillion SSA are listed in Table 5. The land uses within this area consist primarily of older development with significant infrastructure therefore stormwater mitigation is more difficult and costly in these areas.

Table 6 illustrates the future annual pollutant loadings expected based on the total amounts of development which could occur by 2030 within the Brillion SSA if all the available vacant lands were developed. The pollutant loadings are estimates for the proposed land uses with no significant stormwater mitigation measures or practices adopted. Proposed land uses are

shown in Exhibit 9, Year 2030 SSA & Proposed Land Use. Utilization of stormwater detention facilities, site development controls, preservation of green space and other measures can help mitigate urban non-point source impacts on water quality. These loadings can serve as a baseline for proposed areawide stormwater reduction efforts.

Groundwater Impacts

Increased development of the recharge areas could have long-term impacts on the groundwater recharge. Conversion of rural/agricultural lands to urban uses may impact both the quality and quantity of groundwater as development continues. Groundwater recharge will decrease as areas are paved over or built upon. At the same time, withdrawal of groundwater on a regional basis is likely to increase for domestic, commercial and industrial use.

Water Quality Protection and Stormwater Management

Cumulative impacts, including loss of base flow in streams from increased development of impervious surfaces and enhanced stream flashiness and the resulting stream bank erosion from alterations to headwaters and tributaries, will occur with full build-out of the sewer service area. Stormwater management actions other than large-scale detention ponds are available for older urban areas such as enhanced street sweeping, comprehensive stormwater management and other nonstructural best management practices.

Stormwater management requirements are incorporated in the City of Brillion's Subdivision Design Ordinance and Stormwater Drainage Facilities Code to address run-off and on-site erosion as control measures. This ordinance applies to commercial, industrial and residential development of lands within the corporate limit area. Whether the developments are residential in nature or commercial/industrial construction the City may require storm sewering and/or detention pond construction as part of the stormwater management planning. The 25-year storm is the standard used in determining both pre and post development rates of runoff. Stormwater management plans for stormwater facilities require the implementation of the Wisconsin Construction Best Management Practices to address water quality and water quantity issues. In addition, the county subdivision ordinance provides stormwater management requirements applicable to any new plat in the county. If a new plat is located within the corporate boundaries of a city or village, the county still has review authority. The standards require that stormwater runoff after development shall not be at a greater peak rate than the rate of flow under pre-development conditions.

Table 4: Wastewater Flow Projections

Table 4.1: Brillion SSA - Projected 2030 Residential Wastewater Flows

SSA	2010 Population	2030 Population	2010-2030 Increase	2010-2030 SSA Population Increase (includes additional 10% of 2005-2030 increase)	Additional Flows (@ 80 gallons per day per person)		Peak Flows (@4.0 factor)	
					gallons per day (gpd)	millions of gallons (mgd)	gallons per day (gpd)	millions of gallons (mgd)
Brillion	5,432	5,832	400	440	35,200	0.035	140,800	0.141

Source: Brillion 2011 CMAR; ECWRPC

Table 4.2: Brillion SSA - Projected 2030 Commercial/Industrial Flows

SSA	2010-2030 Employee Increase	2030 Acres Needed for C/I Uses	Acres + 20% Market Factor*	Projected Flows (@ 1100 gal./ac./day)	
				Gallons per day (gpd)	Millions of Gallons per Day (mgd)
Brillion	**440**	**9**	**11**	**12,100**	**0.0121**

Source: Brillion 2011 CMAR; ECWRPC

Table 4.3: Brillion SSA - Summary of Projected Flows and WWTF Capacities

SSA	Additional Residential Flows (mgd)	Additional Comm/Ind. Flows (mgd)	Total Additional Flows (mgd)	Existing WWTF Flows (Avg. of 2006 mo. Avg. flows - mgd)*	Existing / Planned* WWTF Design Capacity (mgd)	Difference (Ex. / Planned Capacity - Existing & Projected Flows)
Brillion	**0.069**	**0.019**	**0.088**	**0.73**	**0.993**	**0.175**

Notes:
** WWTF design flow based on 2011 CMAR*
Source: Brillion 2011 CMAR; ECWRPC

Table 5: Brillion SSA - Existing (2012) Non-Point Source Pollution Loading Estimate

2012 Acres	Unit Area Loads by Land Use (lbs/acre/yr)					Calculated Loadings			
	Development Type	Sediment	Phosphorus	Zinc	Lead	Sediment	Phosphorus	Zinc	Lead
343.3	Medium Dens Res. (2-6 units/ac, no alleys)	190.0	0.5	0.2	0.2	**65,227.0**	**171.7**	**68.7**	**68.7**
15.9	Multi-Family Res. (3+ units / 1-3 stories)	420.0	1.0	0.7	0.8	**6,678.0**	**15.9**	**11.1**	**12.7**
7.0	Mobile Home/Trailer Park	190.0	0.5	0.2	0.2	**1,330.0**	**3.5**	**1.4**	**1.4**
35.7	Commercial (strip/downtown)	1,400.0	1.5	2.1	2.7	**49,980.0**	**53.6**	**75.0**	**96.4**
48.4	Industrial	900.0	1.5	2.1	2.4	**43,560.0**	**72.6**	**101.6**	**116.2**
300.3	Transportation	600.0	0.9	1.9	2.5	**180,180.0**	**270.3**	**570.6**	**750.8**
726.0	Undeveloped / Vacant	25.0	0.0	0.0	0.0	**18,150.0**	**3.0**	**0.0**	**1.5**
153.3	Institutional / Governmental	700.0	0.5	0.6	1.1	**107,310.0**	**76.7**	**92.0**	**168.6**
1,629.9	**TOTALS**					**472,415.0**	**667.1**	**920.4**	**1,216.2**
					Tons	**236.21**	**0.33**	**0.46**	**0.61**

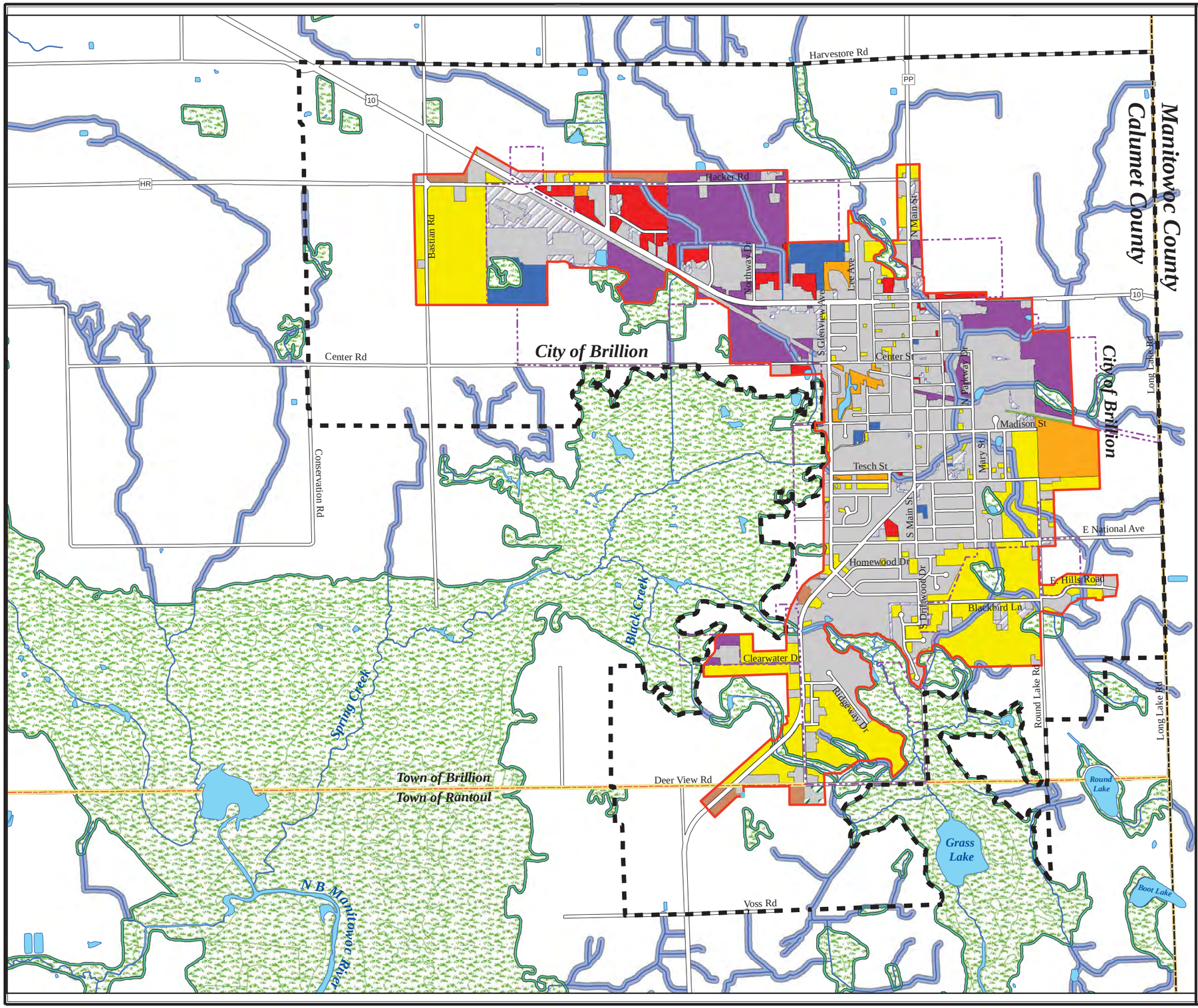
Table 6: Brillion SSA - Future (2030) Non-Point Source Pollution Loading Estimate*

2030 Acres	Unit Area Loads by Land Use (lbs/acre/yr)					Calculated Loadings			
	Development Type	Sediment	Phosphorus	Zinc	Lead	Sediment	Phosphorus	Zinc	Lead
84.0	Medium Dens Res. (2-6 units/ac, no alleys)	190.0	0.5	0.2	0.2	**15,960.0**	**42.0**	**16.8**	**16.8**
0.0	Multi-Family Res. (3+ units / 1-3 stories)	420.0	1.0	0.7	0.8	**0.0**	**0.0**	**0.0**	**0.0**
0.0	Mobile Home/Trailer Park	190.0	0.5	0.2	0.2	**1,330.0**	**3.5**	**1.4**	**1.4**
0.0	Commercial (strip/downtown)	1,400.0	1.5	2.1	2.7	**0.0**	**0.0**	**0.0**	**0.0**
47.0	Industrial	900.0	1.5	2.1	2.4	**42,300.0**	**70.5**	**98.7**	**112.8**
0.0	Transportation	600.0	0.9	1.9	2.5	**0.0**	**0.0**	**0.0**	**0.0**
-3.0	Undeveloped / Vacant	0.0	0.0	0.0	0.0	**0.0**	**0.0**	**0.0**	**0.0**
1.2	Institutional / Governmental	700.0	0.5	0.6	1.1	**840.0**	**0.6**	**0.7**	**1.3**
129.2	**TOTALS**					**60,430.0**	**116.6**	**117.6**	**132.3**
					Tons	**30.22**	**0.06**	**0.06**	**0.07**

Source: ECWRPC, 2012

Note: Total SSA acres is less than previously noted due to water features and other misc. land uses not being included in these calculations.

Exhibit 9
YEAR 2030 SSA and PROPOSED LAND USE 2030 BRILLION SEWER SERVICE AREA



SSA CONDITIONS

- 2030 Sewer Service Boundary
- 2050 Planning Area Boundary
- City Corporate Limits
- Township Boundary
- County Boundary

2030 PROPOSED LAND USE

- Proposed Single Family Residential
- Proposed Multi-Family Residential
- Proposed Commercial
- Proposed Industrial
- Proposed Open Space/Recreational
- Proposed Public/Institutional
- Proposed to Remain Agriculture
- Proposed to Remain Woodlands
- Existing Development
- Undevelopable
- 50 Foot Wetland Buffer
- WDNR Designated Wetlands
- 75 Foot Stream Buffer
- Streams

N W E S

2,200 0 2,200

Scale in Feet

This data was created for use by the East Central Wisconsin Regional Planning Commission Geographic Information System. Any other use/application of this information is the responsibility of the user and such use/application is at their own risk. East Central Wisconsin Regional Planning Commission disclaims all liability regarding fitness of the information for any use other than for East Central Wisconsin Regional Planning Commission business.

Source: Digital base data provided by Calumet County. Land Use data provided by the Town of Brillion, Town of Rantoul and the City of Brillion. Wetland data provided by WDNR. Thematic data created by ECWRPC.

This map and its associated sewer service area descriptions do not obligate a community(ies) to provide sewer service to property owners contained herein.

East Central Wisconsin Regional Planning Commission ECWRPC

Prepared By
EAST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION
MAY, 2014

Wisconsin Department of Natural Resources Certification - April 24, 2014

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East Central recommends receipt of preliminary subdivision plats for review for a conformance check with the sewer service area and water quality plan. Recommendations would be made for final plat approval based on water quality, stormwater management, environmental and cultural resource concerns.

East Central also provides mandatory sewer extension review comments. Where sanitary sewer extensions are proposed in mapped environmentally sensitive areas or on other lands whose physical characteristics indicate susceptibility to erosion or flooding, or where development of such lands is likely to impair surface or groundwater quality or uses, East Central may identify mitigating conditions to be incorporated into the development proposal. East Central may also request the WDNR to attach such conditions to any sewer extension approval for the proposed development. Where the impacts of development pose significant water quality impacts or negatively impact environmentally sensitive areas, the Commission may recommend denial of the proposed extension.

Voluntary preliminary plat review and mandatory sewer extension review are the primary mechanism for service area plan implementation and the attainment of water quality plan objectives.

PLAN IMPLEMENTATION AND RECOMMENDATIONS

1. Continue to implement existing plans and programs to control infiltration and inflow to the wastewater treatment plant so as to increase capacity for new developments.

2. Monitor new development and loadings to the WWTF in order to determine the appropriate time for the City to initiate facility planning efforts to address potential capacity deficiencies.

3. Close coordination for the planning of any sewered development in the transitional areas should be undertaken by the City of Brillion, the Town of Brillion, and the Town of Rantoul.

4. Efforts should be made to direct development to areas where sewers are already in place before extending new sewers into undeveloped areas. Efforts should also be made to maximize use of gravity sewers as well as capacity of existing wastewater pumping stations to avoid the capital, operating and maintenance costs associated with constructing new pumping facilities.

5. Environmental conditions in the planning area warrants concern with regard to construction site erosion, destruction of wetlands and impacts on ground and surface water quality. Development should either be directed away from wetlands and areas of steep slopes or appropriate erosion control measures should be applied to minimize the erosion hazard.

Although sewer service area planning was initiated at the state and federal levels, successful implementation of each plan rests primarily at the local level with some guidance provided by East Central Planning. In the state-approved Areawide Water Quality Management Plan,

certain local units of government were assigned water quality-related management functions. Entities with adequate authority to plan, construct, operate and maintain wastewater collection and treatment facilities were designated as management agencies for portions of the planning area within their jurisdictions.

The City of Brillion has been designated as a Class III Designated Management Agency (DMA) to provide wastewater collection and treatment within its planning area. As a Designated Management Agency for wastewater treatment and collection the City should do the following:

1. Adopt the Brillion Sewer Service Area Plan;

2. Review and update development policies and regulations in light of the sewer service plan and recommendations;

3. Submit preliminary land subdivision plats which are proposed to be sewered to the East Central Wisconsin Regional Planning Commission for review for consistency with sewer service area plans for the area;

4. Submit sanitary sewer extension requests to the East Central Wisconsin Regional Planning Commission for review for consistency with sewer service area plans prior to being submitted to the WDNR for approval;

5. Submit wastewater facilities plan elements and amended plan elements to the East Central Wisconsin Regional Planning Commission for review for consistency with sewer service area plans prior to submittal to the WDNR for approval; and

6. Carry out their management responsibilities for treatment facilities and collection systems as specified by state and federal requirements.

Implementation of the SSA Plan relies mainly on local government actions which use the plan recommendations as a guide for the extensions of new sewers to service development. However, ECWRPC plays an advisory role in these decisions in two distinct ways:

1. ECWRPC requests that communities within the region require developers to submit "preliminary" subdivision plats for staff review and comment (advisory only). Staff not only checks the proposed plat, (whether sewered or using on-site treatment), for conformance with the municipality's SSA Plan, but also reviews the subdivision's overall design and, more specifically, check the following items: potential water quality impacts to environmental corridors; groundwater aquifer / private well concerns; impacts to other natural and cultural features; construction site erosion control methods; storm-water management methods and concerns; internal vehicle/bicycle/pedestrian transportation system design; and other social / service provision impacts (i.e., parks, adjacent land use conflicts, police and fire protection, etc.), and;

2. Sewer extension requests are required to be submitted to ECWRPC for review and comment. Hopefully, staff has reviewed the preliminary plat prior to the extension request which can reduce conflicts at this point. However, staff normally requests that a copy of the final plat be submitted with the extension request. ECWRPC then issues a "208 Water Quality" letter if the extension request is in conformance with the municipality's current SSA Plan. In general, if the extension request is within the

designated SSA and does not have negative impacts to defined environmental corridors, a letter will be issued. Sometimes, requests fall outside of the SSA Boundary and thereby, usually initiates an SSA Amendment Request for continued consideration. If negative water quality impacts will occur to designated environmental corridors, a denial of the extension will occur, or recommended mitigation measures (i.e., stormwater management / erosion control devices, etc.) will be attached to the approval.

Utilizing these two methods, a majority of the water quality concerns relating to construction and development can be effectively monitored by ECWRPC for individual projects; thereby, assisting to attain the water quality objectives outlined within the plan's goals. In addition to ECWRPC's role in implementing sewer service area plans, local units of government may exercise other authority conferred upon them by state statute to preserve and protect water quality.

Local units may use this authority to plan and manage land use and development through subdivision, zoning and other development ordinances. Criteria can be written into existing ordinances or new ordinances can be adopted which promote orderly development and address water quality concerns. Additional actions by local units of government which are recommended for water quality protection include the adoption of construction site erosion and stormwater management ordinances and the preservation of greenways along existing drainage corridors.

As a local unit of government, the City of Brillion has within its municipal code, Chapter 86, Article II, Division 2 being part of the Subdivision Ordinance, gives specific mention of the East Central Regional Planning Commission as a review authority pertaining to preliminary plats. In addition, the City of Brillion requires developers to prepare drainage/stormwater plans for each planned development. These design standards and specifications are described in Chapter 86, Article IV of the Subdivision Ordinance. This ordinance is consistent with the language described as part of the plan implementation and recommendations mentioned above.

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CHAPTER 4

SEWER SERVICE AREA
DELINEATION & PLANNING
PROCESS

CHAPTER 4: SEWER SERVICE AREA DELINEATION AND PLANNING PROCESS

A sewer service area is a geographic area which is currently served or anticipated to be served with sanitary sewers within a 20-year planning period. Sewer service areas, sometimes called "urban service areas," were first delineated for the East Central region in 1978 in the plan New Directions for Growth and Development. In the initial plan, a generalized methodology was used for the estimation and allocation of growth which led to the identification of service area boundaries. Various state and federal guidelines, as well as regional policies, were utilized in the planning process. Since the initial delineation of service areas, the planning and management process has become much more complex and multi-faceted, thus greater detail in the explanation of the updating process is required.

The process of updating and refining sewer service area plans consists of the following major steps:

1. Identification of planning area limits;
2. Delineation of environmentally sensitive areas;
3. Identification and quantification of existing conditions;
4. Refinement of goals, objectives and policies;
5. Forecast of urban growth and re-delineation of service area limits;
6. Public and community input; and
7. Adoption and publication of final plans.

IDENTIFICATION OF PLANNING AREA LIMITS

The first step in delineating sewer service areas is the outlining of broad planning areas which include all feasible options for where urban growth might occur within a 40 to 50 year planning period (through the year 2040). Planning Area boundaries generally include all areas within existing city, village or sanitary district limits. These areas may also include clusters of development and adjacent areas where there is potential for the installation of a sanitary sewerage system in the foreseeable future. Areas which could be serviced by the existing infrastructure (lift station service areas or gravity sewers) are generally included within this boundary. Planning Areas generally extend beyond the existing or potential development areas to the nearest quarter section line. Planning areas serve as the study areas for wastewater facilities planning efforts.

DELINEATION OF ENVIRONMENTALLY SENSITIVE AREAS

Environmentally sensitive areas are geographic areas consisting of all lakes and streams shown on the USGS quadrangle maps and adjacent shoreland buffer areas as defined in Exhibit 4. All wetlands shown on the state Wisconsin Wetland Inventory Maps and floodways as delineated on the official Federal Emergency Management Administration Flood Boundary and Floodway Maps are also designated environmentally sensitive. The environmentally sensitive areas are mapped on the Commission's GIS system and are also shown on the maps contained in this plan.

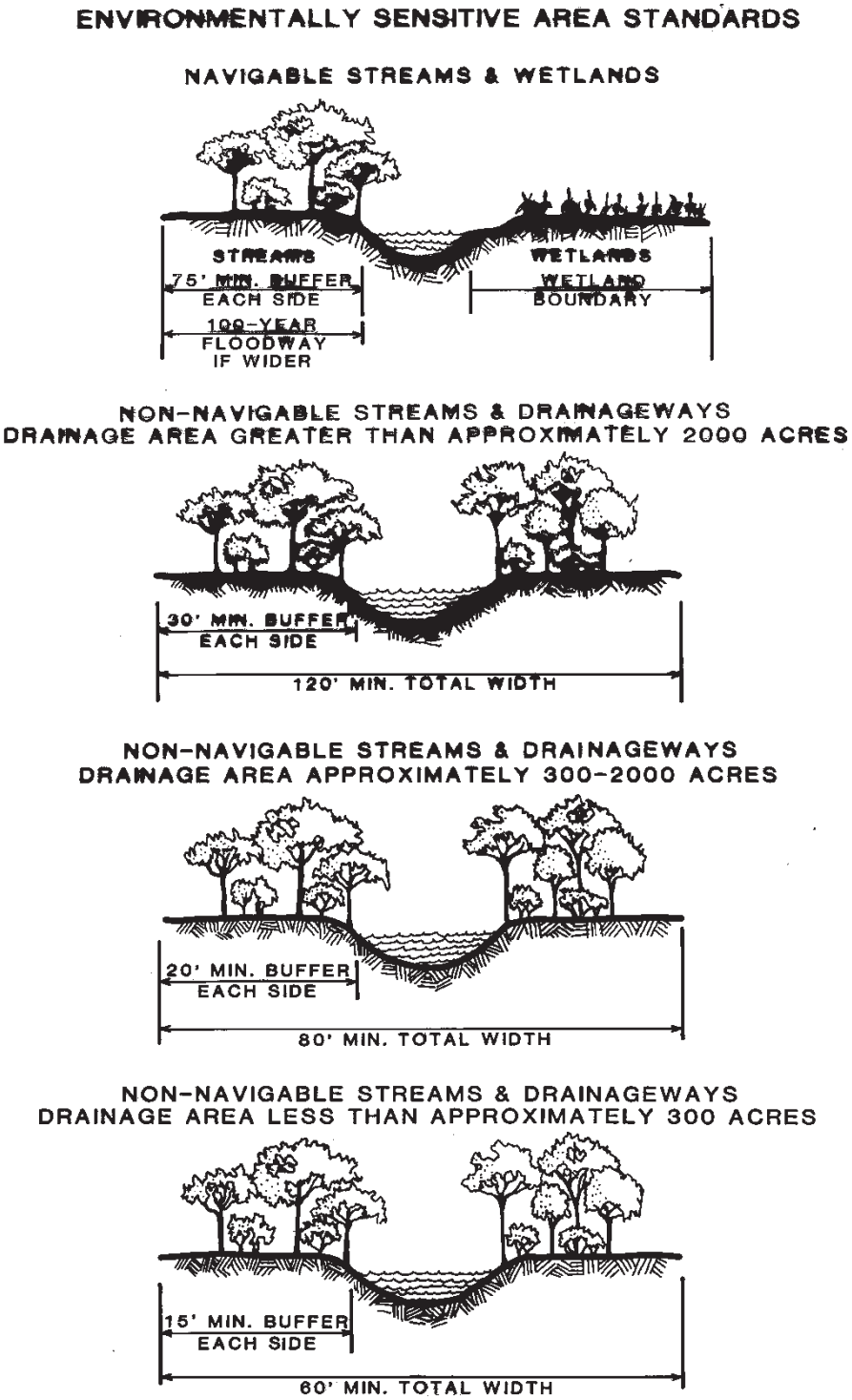
The purpose of designating environmentally sensitive areas is to preserve significant environmental features from encroachment by sewered development. Environmentally sensitive areas perform a variety of important environmental functions including stormwater drainage, flood water storage, pollutant entrapment, and the provision of wildlife habitat. They can also provide desirable green space to enhance urban aesthetics.

In the 1978 sewer service area plans only major wetlands as shown on the USGS quadrangle maps were considered environmentally sensitive. Since that time, the Department of Natural Resources through Wisconsin Administrative Code NR-121.05(g)(2)(c), has developed guidelines which serve as minimum criteria for the identification and delineation of environmentally sensitive areas. Department of Natural Resource guidance states, "Environmentally sensitive areas will be used for all environmental features that should be excluded from sanitary sewer service areas."

East Central, after deliberations with technical and policy advisory committees, defined environmentally sensitive areas in a manner that complements existing local, state and federal regulations which protect various environmental amenities. While NR-121 authorizes sewer service area plans to identify a broad array of natural features as environmentally sensitive areas, only those features which were believed vital in the East Central Wisconsin Region to preserve environmental quality were so designated.

Although the delineation of environmentally sensitive areas is intended to provide adequate long term and uniform environmental protection for all sewer service areas within the East Central Wisconsin Region, the environmentally sensitive area classification may be changed in two ways in response to specific local development proposals.

Figure 1: Environmentally Sensitive Area Standards



First, the classification can be removed provided that the conditions outlined in Section (E) of the Sewer Service Area Amendment Process are met. This re-designation is considered a major change. Major changes have the potential for significant impacts on water quality and would require the concurrence of the East Central Wisconsin Regional Planning Commission and the Department of Natural Resources before these changes would become effective for the purpose of reviewing sanitary sewer extensions. Examples include:

1. Removal of any mapped wetland area for sewered development, unless resulting from an activity exempted by state administrative rules governing wetland protection [NR-117.05(2)] or state approved rezoning of wetlands;

2. Reduction of a delineated floodway of any navigable stream or river, or removal of any area below the ordinary high water mark of a navigable stream, pond, or lake;

3. Total removal or change in the continuity of any corridor segment including floodways, wetlands, shoreland buffer strips or steep slopes adjacent to water bodies. The water quality benefit that was associated with the portion of the corridor removed must be provided in the development proposal.

In the second instance, the environmentally sensitive areas may be modified by a minor change. Refinements and minor changes would not require prior approval of the East Central Wisconsin Regional Planning Commission or the Department of Natural Resources. However, East Central would have to be informed of the change before it would be effective for the purposes of reviewing sanitary sewer extensions. East Central would then be responsible for informing the Department of Natural Resources of the change.

Refinements and minor changes are generally of two types. The first type involves changes resulting from revised, improved or more detailed background resource information to include:

a) Improved or revised WDNR certified floodway delineations resulting from revised flood studies;

b) Revised wetland boundaries on the Wisconsin Wetland Inventory Maps resulting from field inspections by WDNR personnel or resulting from an approved rezoning.

c) The second type involves changes which would not seriously affect water quality and are the result of specific development proposals to include:

d) Relocation of a non-navigable stream or drainageway as long as the environmental integrity of the stream or drainageway is preserved;

e) Shortening of a non-navigable stream or drainageway based upon field determination of its point of origin;

f) Adjustments to the widths of shoreland buffer strips along non-navigable streams and drainageways within the guidelines established in Exhibit 4;

g) Changes which would reduce the width of shoreland buffer strips below the minimum guidelines provided there are locally adopted stormwater drainage criteria that establish

corridor widths for drainageway preservation. Locally adopted criteria must be based upon sound engineering and environmental protection criteria; and

h) Changes which result from utility or roadway maintenance or construction which meet the criteria set forth in NR-115 or NR-117. It is not the intent of the environmental corridors to prevent or obstruct maintenance, expansion or construction of transportation or utility facilities intended to serve areas outside of the corridors, needed to maintain or improve continuity of those systems, or designed to serve compatible uses in the corridors, such as park shelters or facilities. Facilities intended to serve new sewered residential, commercial or industrial development in the corridors would not be permitted.

It should be noted, that as of the date of this plan, ECWRPC and WDNR staff are considering a revision of the regional definition of Environmentally Sensitive Areas which may include additional features based on water quality concerns. Communities with existing SSAs will be notified and offered an opportunity to give input during this process.

IDENTIFICATION AND QUANTIFICATION OF EXISTING CONDITIONS

The ability to inventory existing conditions both quantitatively and qualitatively are paramount to evaluating land use and development trends and impacts. Aerial photos are the basis for conducting land use inventories for the individual SSAs. Comparing aerial photos (land use inventories) at different time intervals can establish trends in types and magnitude of land uses. East Central's 1980 land use inventory has been updated utilizing more recent photos (where available) or spot field surveys for this purpose. Acreages for major land use categories have been computer digitized and aggregated by section and township-range. Totals were also calculated for each unit of government within the planning area. In conjunction with the land use mapping program, all city and village municipal boundaries, as well as sanitary district limits, were identified and transferred to the sewer service area maps.

Sanitary sewerage systems for all communities have been identified on the sewer service area file aerial photos. The location and size of all sewer collectors, mains, interceptors and forcemains are mapped in detail. In addition, the locations of all lift stations, pump stations and wastewater treatment facilities are shown. These maps are continually updated as new sewer extensions are reviewed by East Central.

Important for analyzing the planning areas, existing urban development areas were delineated as part of the original land use inventory. Urban development areas consist of all concentrations of development within the planning area, together with undeveloped lands which are either sewered or otherwise committed for development. These urban development areas are, in most instances, the minimal land areas which should be designated as sewer service areas.

The urban development areas have been further broken down into areas which are (1) both developed and sewered, (2) developed and unsewered, (3) undeveloped and sewered and (4) undeveloped and unsewered. In order to be classified as sewered, areas must be adjacent to public sewer lines, with the ability to connect either through private laterals or, in certain instances, private sewers. In general, lands within 200 feet of a public sewer are assumed to connect via a private sewer lateral.

In addition to the development information, the existing sewer service area boundaries were identified to determine the location and amount of land currently available for development outside of the urban development areas.

In addition to the designations of environmental sensitive areas (shorelands, wetlands and floodways), other areas with natural characteristics that could impact environmental quality or development potential have been identified. These areas have been termed areas with "limiting environmental conditions" and include areas with seasonal high groundwater (within one foot of the surface), floodplain areas, lands with shallow bedrock (within five feet of the surface) and areas with steep slopes (12 percent or greater). Unlike the environmentally sensitive areas, development is not excluded from land with limiting environmental conditions. The primary purpose of identifying these areas is to alert communities and potential developers of environmental conditions which should be considered prior to the development of such an area.

Complementing this information, additional data was collected on existing population, numbers of dwelling units, mixes and densities of residential development, existing employment by type and amount, and densities of industrial and commercial development.

Much of this information was available from the 1990 and later census materials; other information was gathered from state and local sources. This data is contained in East Central's information files for each sewer service area.

REFINEMENT OF GOALS, OBJECTIVES AND POLICIES

The conceptual and philosophical bases for sewer service area planning are the goals, objectives and policies. As stated earlier, the service area planning process has become much more complex since it was first initiated. In response to changing conditions, minor refinements have been made over time to the 1985 goals, objectives and policies (Appendix B). This effort was done in order to give direction to decisions involving the amount of growth in a given service area, especially the allocation and location of future growth.

FORECAST OF URBAN GROWTH

The forecasting of urban growth and development within the East Central region involves two primary analytical processes. These are 1) population projections and related dwelling unit and employment estimates, and 2) allocation of land use acreage. This process answers the question of the quantity and location of new growth. The process utilizes the sewer service area policies and various planning and development standards as a technical basis.

Population Projections

Population projections are is an important in forecasting urban growth. The projections used are the 1990-2020 Department of Administration (DOA) population projections by five year increments for individual counties. 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.

A detailed description of the population projection process is included in the East Central report Population Characteristics of the East Central Region, April 1994,(at the time of this writing, East Central, based on 2010 Census data and DOA's most current forecasts, is preparing in-house population projections for 2010-2040). The official DOA projections, first received in 1992, have been updated annually using the DOA annual population estimates for the counties and individual MCD's.

East Central has developed a process for breaking down the county population projections to the minor civil division (MCD) level. This estimating process uses the "share-of-the-county trending methodology." This methodology was used for all communities within the East Central region, with the exception of the Fox Cities, Sherwood and Fond du Lac. In these areas, a special procedure was used which established "urban area" control totals.

For the purposes of this plan update, East Central used population projections from the City of Brillion's, *'Infiltration/Inflow Corrective Actions',* report. The population estimates found within this publication were approved through an East central review for facilities planning. This report has also been approved by the Wisconsin Department of Natural Resources on November 1, 2012.

Residential Development

In addition to population projections, household size and housing densities are required to determine residential land needs. Household formation rates were estimated and translated into household size. The household size thus represents a typical dwelling unit which can be compared to population projections for estimating future dwelling units. The household size for the East Central region has been steadily declining and is anticipated to continue to decline. Thus, an anomaly occurs in which a community may not be increasing in population, but still is forming new households which require new housing construction.

Once household size was established, residential development densities and the mixture of single-family/multifamily uses was determined. The number of dwelling units per acre were determined from existing residential development densities for the three major urban areas. These densities were also used for larger outlying urban communities. Several smaller communities in the outlying areas were found to have less dense development and therefore a somewhat lower density was used.

The mix of residential development was determined from development and construction records from various communities as well as census materials for the urbanized area. The residential mix was found to vary greatly from community to community. Community specific mixes were used for freestanding communities; however, standardized splits for the Fox Cities, Oshkosh and Fond du Lac areas were developed and applied within the growth forecast method.

Population projections divided by household size established the number of dwelling units. The number of dwelling units by type (single or multifamily) divided by the density per acre resulted in the number of acres of residential land required. The resultant acreage was allocated as residential growth for land areas within each planning area.

Non-Residential Development

Forecasts of nonresidential development were also based upon population projections for sewer service area planning. There is, however, a significant difference between the methodology used for the three urban areas and the outlying planning areas. Within the urban areas the population projections served as a basis for estimating future employment. These employment estimates were used in conjunction with documented employment densities (number of employees per acre) for various land use types and employment categories to determine acreage needs for future nonresidential employment. Similar to the household participation rates for calculating dwelling units, labor force participation rates were used to calculate employment for various employment categories. These employment categories were broken down into two types of nonresidential development consisting of commercial and industrial land uses. After future employment was estimated for commercial and industrial uses, densities were applied (employees per acre) and total acres of the land needs were calculated. This acreage was then allocated within particular planning areas.

In the outlying areas, a much simpler process for forecasting nonresidential growth was required because of deficiencies in labor force and employment data available for small communities. Furthermore, because of the small commercial and industrial base of these communities, a refined process for estimating future employment could be subject to extreme error.

Local initiative for promoting development is a greater factor in future growth than statistical trends. A simple forecast method was used which calculated the existing amount of nonresidential development per capita within the area then multiplying this amount by the population growth for the planning period resulting in the amount of non-residential acreage required.

Growth Allocation

After the amount of growth is calculated for residential and non-residential uses within each planning area, the process of allocating this growth acreage is undertaken. The allocation process, (where growth should occur), is complex, and must integrate service area growth policies, planning standards and criteria as well as historical and market growth trends for a particular planning area. The allocation process establishes the future growth areas within each sewer service area.

A major product of the allocation process is the mapping of growth areas. Again, the Commission's GIS system was used to designate these growth areas. The following criteria and standards were utilized in the designation of growth areas:

1. All areas within a planning area which are currently served with public sanitary sewers shall be designated sewer service areas. Areas along existing and proposed (WDNR approved) sewer collector or interceptor lines (forcemains excluded) shall be designated sewer service areas. The depth of the sewer service area boundary line shall be to the average lot depth (maximum 400 feet) bordering the sewer or where average lot depths cannot be distinguished. Development within this area is generally considered to be serviceable by a private sewer lateral.

2. Unsewered areas of development within close proximity to existing sanitary sewer lines where the cost-effectiveness of the extension of sewers is not questionable shall be included in the service area. These areas have generally been designated as an urban development area.

3. Areas of existing development with approved wastewater facility plans shall be designated sewer service areas. (Note: Various areas of existing development previously designated may have been dropped because of lack of approved wastewater facilities plans.)

4. The acreage allocations of future development areas should approximate residential, commercial and industrial growth projections.

5. Environmentally sensitive areas shall be excluded from the sewer service area.

6. Holding tank service areas shall be designated for existing large holding tanks defined in NR-113 and for areas of existing development where no cost-effective alternative to the installation of a large holding tank is available. The cost-effective analysis is to be prepared by the owner. All large and individual holding tank wastes are to disposed of in accordance with NR-113.

The standards and criteria for allocating future growth areas are policy based. These considerations are:

1. Urban development patterns should incorporate planned areas of mixed use and density that are clustered and compatible with adjacent uses.

2. The allocation of future urban development should maximize the use of existing urban facilities and services.

3. Future urban development should be encouraged to infill vacant developable lands within communities and then staged outward adjacent to existing development limits.

4. Future commercial and industrial development should expand upon existing areas and be readily accessible to major transportation systems.

5. The boundaries of urban development should consider natural and man-made features such as ridge lines, streams and major highways.

6. Residential land use patterns should maximize their accessibility to public and private supporting facilities.

7. Urban development should be directed to land suitable for development and discouraged on unsuitable land, such as floodplains, areas of high bedrock, and areas of high groundwater.

8. Environmentally sensitive areas shall be excluded from the sewer service area to protect water quality.

9. Future urban development should pose no significant adverse impacts to surface or groundwater.

10. Urban development should be located in areas which can be conveniently and economically served by public facilities.

11. The waiver of acreage allocations based on density standards for large lot developments will be considered if the installation of sewers is cost-effective, the community adopts a development plan and subdivision plat for the area specifying no smaller subdivision of parcels will be allowed.

Combined with the policy-based criteria for allocating future development areas were various considerations involving the direction of growth trends and short term "market" factors. These considerations primarily involved experienced judgments by planning staff and consultations with local planning officials.

Early in the planning process, a policy decision was made that the total allocated growth acreage for individual sewer service areas delineated in the 1985 adopted plans and subsequent amendments, would not be reduced in quantity. This policy was applied to all sewer service areas which have a sewerage system or which have WDNR approved wastewater facilities plans for a sewerage system. The impact of this policy is that the areas available for future growth in various sewer service areas sometimes were greater than the updated forecast growth which was to be allocated. The result of this policy is that there were fewer service areas where the existing service area boundaries needed to be expanded.

PUBLIC AND COMMUNITY PARTICIPATION

Citizen participation during the update of the service area plans has been and is encouraged throughout the planning process In this service area planning update Goals, Objectives and Policies were refined in conjunction with the Transportation/Land Use Plan update process. Ad hoc Technical Advisory Committees, (TAC's), were formed and refined the policies 2004 and 2005.

General public participation is sought from communities and counties during the plan update process through individual meetings with affected entities. Public information meetings were held for each sewer service area once draft maps were completed. The purpose of sewer service area planning, the overall planning process, existing conditions of the service area and growth forecasts are explained. As a follow-up to these meetings, (in smaller communities these meetings may be combined), additional meetings are held for communities within each service area to address specific issues. The designated service area boundaries are reviewed as part of these meetings. Public information meetings are listed in Appendix A of the service area plan. A final public hearing is noticed and held as part of the Community Facilities Committee meeting and approval.

ADOPTION AND PUBLICATION OF FINAL PLANS

Each individual sewer service area is adopted by the East Central Wisconsin Regional Planning Commission as an element of the Commission's regional land use plan. After adoption, the plans are submitted to the Wisconsin Department of Natural Resources for certification as an element of the Water Quality Management Plan. After WDNR certification the plan becomes effective and copies of the final plans are distributed to the affected communities.

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CHAPTER 5

SEWER SERVICE AREA AMENDMENT & UPDATE PROCESS

CHAPTER 5: SEWER SERVICE AREA AMENDMENT AND UPDATE PROCESS

POLICIES AND PROCEDURES

The East Central Wisconsin Regional Planning Commission has adopted "*An Amendment Policy and Procedure for Sewer Service Areas"* to enable sewer service area plans to be amended in response to changing conditions and community plans. This procedure provides a flexible, yet equitable and uniform basis for revising sewer service area boundaries. This chapter was updated with, input from the Land Use Advisory Committee, during 1999-2000 as part of addressing policy issues related to the "*Long-Range Fox Cities, Oshkosh and Fond du Lac Transportation/Land Use Plan Addendum"* and certain provisions may apply to the communities illustrated in Exhibit 10.

East Central recommends that a representative from the government entity with Designated management Agency, (DMA), status meet with East Central staff to discuss the proposal. Most documentation and questions needed for the evaluation of the amendment can be addressed at that time.

EAST CENTRAL REVIEW AND RECOMMENDATION

East Central's Community Facilities Committee will review the proposed amendment within approximately 30 days of receipt of the request. The review will include a staff evaluation of the consistency of the proposal with East Central's amendment policies and criteria. The review will also include an evaluation of comments and recommendations received from local units of government and agencies notified of the proposal by East Central. The applicant may be requested to appear at the Community Facilities Committee meeting if there are significant issues involved. The Community Facilities Committee shall recommend approval or disapproval of the amendment. Upon approval, the amendment request shall be submitted to the Wisconsin Department of Natural Resources to request revision of the Water Quality Management Plan.

WDNR REVIEW AND APPROVAL

The Wisconsin Department of Natural Resources will review the East Central recommendations for the service area amendment. This review is an equivalent analysis action under s. NR 150.20 (2) (a) 3, Wis. Adm. Code. Once a WDNR decision is made, and if approved, East Central can review sewer extensions and submit comments to the WDNR for sewer extension plan conformance.

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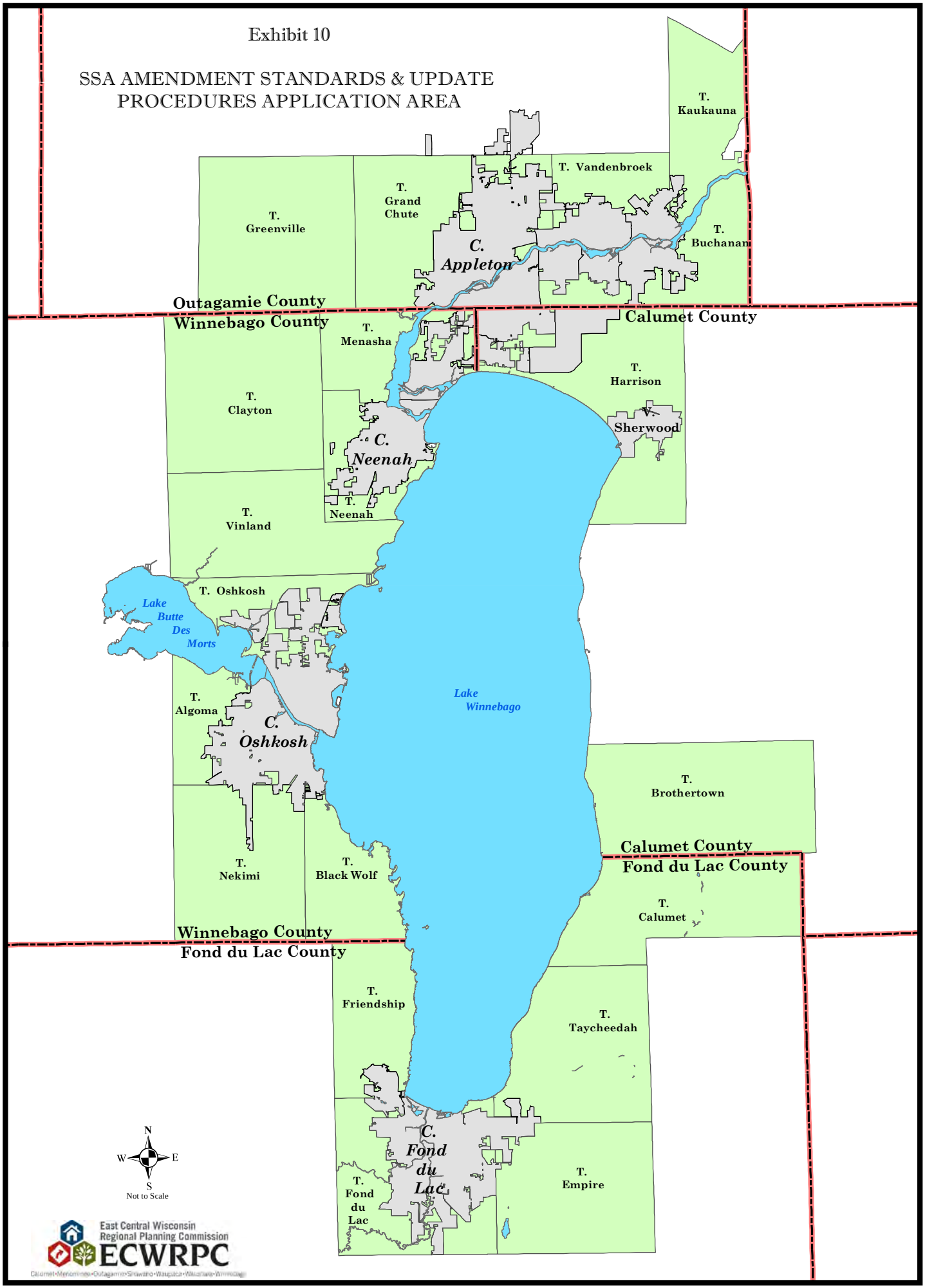
Exhibit 10

SSA AMENDMENT STANDARDS & UPDATE PROCEDURES APPLICATION AREA



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The formal amendment process includes the following elements:

Section I: Amendment Policies

A. Sewer service area boundaries may be modified (acreage swap) provided there is no increase in the total acreage of the specific sewer service area.

B. Sewer service area boundaries may be expanded provided there is a documented need for a sanitary sewer collection system for areas of existing urban development.

C. Sewer service area boundaries may be expanded provided there is a documented need for sanitary sewers to serve a proposed unique facility or development.

D. Sewer service areas may be expanded to provide communities with the flexibility to accommodate unanticipated short-term development. The community shall certify through plan commission action that the proposed amendment area is required for reasonable community growth and is consistent with adopted development plans.

E. Sewer service area boundaries may be modified by the re-designation of previously identified environmentally sensitive areas consistent with all the following standards:

    1. The environmentally sensitive area is immediately adjacent to an existing sewer service area.

    2. Appropriate local, state and federal environmental permits are granted for the proposed development.

    3. Major re-designations shall pose no significant adverse water quality impacts. Major re-designations include:

        a. removal of any mapped wetland area for sewered development unless resulting from an activity exempted by state administrative rules governing wetland protection [NR 117.05(2)] or state approved rezoning of wetlands.

        b. any change which would reduce a delineated floodway of any navigable stream or river, or which would remove any area below the ordinary high water mark of a navigable stream, pond or lake.

        c. any change resulting in the total removal or in the continuity of any corridor segment including floodways, wetlands, shoreland buffer strips or steep slopes adjacent to water bodies. The water quality benefit that was

associated with the portion of the corridor removed must be provided for in the development.

4. The re-designated acreage will be added to the service area total acreage.

F. Sewer service area boundaries may be modified or expanded to correct an error in the maps, data, transporting sewer designations, projections or allocations of the adopted sewer service area plan.

Section II: Amendment Criteria

Any proposed amendment shall be reviewed according to the following criteria:

A. The cost-effectiveness of the proposed amendment compared to other alternatives. East Central may require this determination from the applicant.

B. The environmental impacts of the proposed amendment shall be assessed in accordance with the criteria established in the Wisconsin Department of Natural Resources environmental assessment checklist. The Commission will evaluate the ability of the existing sewerage facilities to transport and treat the projected flows and will provide a water quality evaluation statement. East Central may also prescribe safeguards or impose additional conditions deemed necessary to protect the water quality in the area.

C. Amendments within the Urbanized Area Sewer Service Areas, (see Exhibit 10), should be consistent with East Central's *Long-Range Transportation/Land Use Plan Addendum* goals, objectives and policies particularly for density standards as follows:

Policy 1.4 Conformance:

1. The average net residential density of the buildable plat area is more than or equal to I unit per acre; or

2. The community has illustrated that development proposals meet the density requirements by being part of an overall "mixed density" concept documented in its local land use plan which meets the policy intent. (Note: Should amendments occur over time primarily low density development which does not meet the one acre requirement and no higher density development occurs, Section V, Urbanized Area Standard (1)(d) will apply at the next scheduled plan update).

3. If an amendment takes place which includes lands planned for residential development, without being platted prior to the amendment, ECWRPC will require an assurance from the community in the form of a resolution stating

that the development will meet these requirements. At the time of platting, ECWRPC will require that a copy of the preliminary plat be submitted for review.

D. Amendment areas under Section I Policy A & D shall have a common boundary with the current sewer service area and shall not create a void within the service area.

E. Policy B, (existing development), amendments must be contained within an approved SSA Planning Area. This boundary can be reviewed and considered for modification as a separate process, if necessary.

F. Amendment areas under Section I, Policy A and B involving the "swap" of land acreage shall, to the extent possible, utilize consistent land use areas on an acre for acre basis, based on the community's locally adopted and Commission certified Comprehensive Land Use Plan, (for Urbanized Area communities). Should the community not have enough of a particular type of land designated in its locally adopted Comprehensive Land Use Plan to allow for a swap, the community should consider utilizing the "regional swap" policy prior to submitting the amendment under Policy D. Any community affected by a "regional swap" shall be notified and given an opportunity to comment prior to Commission approval of the amendment.

G. Amendments submitted under Policy C, (Unique Facilities), must not only fit the definition contained in this plan, but the applicant must also submit additional information which illustrates that all impacts, including secondary land use impacts and their effects on water quality, transportation and public service provision be addressed prior to the Commission recommending approval of the amendment. Such amendment requests must also be consistent with locally adopted Comprehensive Land Use Plans. Amendments under this policy may be approved conditionally by the Commission so that other necessary approvals can occur concurrently.

Section III: Amendment Procedures

Proposed sewer service area amendments shall be reviewed according to the following procedure:

A. Requests for sewer service area amendments should be made by the governmental entity that will be expected to serve the area. Units of government seeking an amendment to the sewer service area boundary should transmit a letter requesting the amendment to East Central along with the following documentation:

1. A map of the proposed expansion area and, if required, reference area or any area to be deleted (swapped) which affects the boundary modification;

2. Estimates of existing and anticipated population, wastewater generation and means of collection from the area;

3. A description of the type of existing development and/or the type of future development expected to occur;

4. Ability of the treatment facility to treat the anticipated wastewater;

5. Methods of stormwater management and regulation for the added service area and surrounding areas which may be impacted; and

6. Documentation that all property owners in areas proposed to be deleted (swapped) was notified of this request by the unit of government seeking the amendment. Landowners potentially affected by the removal of property from the SSA shall be notified by the requesting entity at least 14 days prior to the scheduled Community facilities Committee meeting at which the amendment will be addressed. Failure to do so could result in the tabling of the amendment request until the next regularly scheduled CFC meeting, (policy amendment approved by WDNR on 08/26/04).

7. Plan Commission or Board action as required under Section I, Policy D.

8. Amendments submitted under Section I, Policy B, for Urbanized Area communities, (see Exhibit 10), will require that additional information be submitted and criteria be met as follows:

    a) Documentation that the community's locally adopted Comprehensive Land Use Plan illustrates the area as a future urban growth area which will provided a full range of services as spelled out in the *Long-Range Transportation/Land Use Plan Addendum's* density standards, and;

    b) A determination of the cost-effectiveness of providing public sanitary sewer versus on-site system replacement. This determination should be consistent with NR-110 requirements, and;

    c) Documentation that 30% of the existing on-site systems within the proposed amendment area be considered failing, (direct need), and;

    d) Documentation that approximately 30% or more of the balance of existing on-site systems within the proposed amendment area are subject to failure based on the physical condition of the on-site system itself and/or the physical characteristics of the subject site, (indirect need);

Documentation for c) and d) above can be in the form of: copies of County or State orders for on-site system replacement; copies of existing on-site system inspection reports; letters from the County Sanitarian indicating that the systems are failing or have the potential to fail; or documentation of recent private well tests which show bacterial contamination likely resulting from on-site system failure.

B. Based on this information the Community Facilities Committee, designated as the review committee by the East Central's bylaws, will review the proposed amendment to determine whether it meets the standards set forth in the Sewer Service Area Amendment Process. If no significant adverse water quality impacts are involved, East Central shall recommend approval of the Plan amendment and submit it to the Wisconsin Department of Natural Resources for State plan certification.

C. Requests for amendments under Section I, Policy F, pertaining to the addition of 'transporting sewers', (interceptors and forcemains which do not directly service new development), may be initiated by East Central staff upon written request of the DMA and would be submitted directly to the Wisconsin Department of Natural Resources for review and certification without the need for Community Facilities Committee approval. The WDNR would review and certify such amendments within 5 to 10 business days from receipt of East Central staff's submittal. Please note that the information needs, as noted above, as well as the conformance with existing review criteria are still required for East Central and the WDNR to process such amendments, (policy amendment approved by WDNR on 08/26/04).

Section IV: Appeal

If an applicant feels that a hardship exists in the strict interpretation and application of the amendment standards and criteria, consideration may be given to providing relief through a variance subject to the following requirements:

A. The hardship is significant and widespread owing to substantial pre-existing financial or legal commitments for sanitary sewer service.

B. The major objectives of the sewer service area plans can be met. The appeal shall be submitted to the Chairman of East Central for action at a regularly scheduled meeting of the Commission. Further appeals may be submitted to Wisconsin Department of Natural Resources.

Section V: SSA Plan Update Procedures and Standards

Even though local, regional and state levels of government engage in planning activities to direct their future, individual or multiple conditions can change over time. Some can be

predicted and handled proactively, (COMM 82, demographics, etc.), while some occur rapidly and generally without much warning, (economic conditions, regional growth patterns and rates, market demands, etc.). Sewer Service Area Plans are meant to be proactive type of plan which identifies future sewered growth areas based on cost-effectiveness service provision, water quality and regional cooperation/coordination. When conditions change these plans need to be updated to reflect those changes. This section describes the conditions under which Sewer Service Area Plans are updated and how previously developed and approved regional goals, objectives and policies, (i.e. *Long-Range Transportation/Land Use Plan Addendum*), will apply prior to, during or after the Update process.

Minimum Update Procedures and Standards (for all Sewer Service Areas)

SSA Plans will be updated on an approximate 5 year rotation. Funding, staff availability, urban growth demands and regional/state policy changes/proposals may alter this time interval. When updated the following items will be addressed:

1) A review and update of population, housing and employment trends and projections;

2) A review and update of land use demands based on socio-economic conditions and projections;

3) A review and update of existing physical conditions including:

   a) Existing land uses;
   b) Proposed land uses, (based on local, county, regional and state plans);
   c) Water quality and natural resource, (ESA), characteristics, changes and issues

4) A description of relevant events since the last plan update pertaining to sanitary sewer or having an impact on future sewer service including:

   a) Major WWTF improvements or changes;
   b) Major collection system improvements or changes;
   c) Local governmental changes, (i.e. sanitary district formations, intergovernmental boundary/service agreements, Comprehensive Land Use Plan updates, regulations and requirements);
   d) SSA Plan amendments and acreage consumption since the last plan update

5) A review and modification of mapping elements, if necessary, to accommodate future sewered growth and development including:

   a) Proposed major sewer system improvements and/or regional connections;
   b) A revised twenty year Sewer Service Area Boundary
   c) A revised forty to fifty year Planning Area Boundary;
   d) Environmentally Sensitive Area, (ESA)

6) A review of local governmental actions and regulations which have implemented the Sewer Service Area Plan;

7) An update of citizen information/education and participation efforts;

8) A review of the institutional structure for plan update and amendment review/approval and for plan implementation;

9) A review/revision of goals, objectives and policies, if necessary;

10) The development of recommendations and strategies for plan implementation.

Urbanized Area Procedures and Standards

The Urbanized Area Procedures and Standards will apply to the following communities: the Cities of Appleton, Kaukauna, Menasha, Fond du Lac, Neenah and Oshkosh; the Villages of Combined Locks, Harrison, Kimberly, Little Chute, Sherwood, North Fond du Lac; the Towns of Buchanan, Grand Chute, Greenville, Kaukauna, Vandenbroek, Harrison, Calumet, Empire, Fond du Lac, Friendship, Taycheedah, Algoma, Black Wolf, Menasha, Neenah, Nekimi, Oshkosh and Vinland. While this policy targets primarily urbanized developments the Towns of Brillion and Rantoul as well as the City of Brillion could well benefit from its stated purpose.

The Urbanized Area Standards and Procedures include the above listed "minimum" items in addition to the following reviews of local conformance with policies and requirements as spelled out in the *Long-Range Transportation/Land Use Plan Addendum* including:

1) Addendum Policy 1.3 Conformance – A review of local development densities within the SSA occurring between plan updates and their conformance with the minimum residential density requirement will need to be met as follows:

   a) Areas within the SSA prior to WDNR certification date of 1997, (or subsequently), Sewer Service Area Plan Update are not required to meet this policy, however; East Central staff will consider new residential developments which have occurred after this date as part of the overall density calculation, (therefore this will not penalize communities for recent development meeting the criteria and being 'banked' for lower densities elsewhere within the SSA);

   b) Areas allocated and approved as part of the 1997, (or subsequent), Plan Update are required to meet policy;

c) Areas amended to the SSA after a 1997 update are required to meet policy, (see SSA Plan Amendment Policies and Procedures section for additional information);

d) If an individual community does not meet the density requirements spelled out in the *Long-Range Transportation/Land Use Plan Addendum* it will not be eligible for additional Sewer Service Area acreage allocations in subsequent plan updates.

2) Addendum policy 1.4 – A review of local unsewered development patterns and locations and advisory recommendations pertaining to such information;

3) Comprehensive Plan Guidelines – A review of local land use planning for conformance with the Guidelines and the communities' plan certification status.

Section VI: Definitions

Sewer Service Area: A geographic area currently or anticipated to be served with sanitary sewers within the planning period as specified in the Sewer Service Area Plan element of the Water Quality Management Plan. This boundary delineates areas which can be provided public sanitary sewer more cost-effectively than on-site treatment methods over a 20 year period. ECWRPC determines this boundary based on the following information, (all of which are not necessarily listed in NR-121):

1) Definition and mapping of Environmentally Sensitive Areas, (ESA's);

2) Justified acreage allocations based on projected 20 year growth and development using ECWRPC accepted methodologies;

3) Projected available 20 year capacity of the wastewater treatment facility from publicly sewered development and established holding tank receiving areas;

4) Facilities plan listed projects and improvements;

5) Projected available 20 year capacity of interceptor sewers, force mains and ligt stations;

6) Location of existing sewer lines;

7) Existing and projected 20 year development patterns, (based on local comprehensive land use planning and zoning maps);

8) Proximity to development with known failing privately owned treatment works, (POTW's), or other on-site wastewater treatment systems;

9) Ability to provide recommended levels of urban service per the Addendum matrices;

10) Intergovernmental growth/service agreements, (advisory only); and

11) The boundary itself is located, for administrative purposes, on the location of:

a) Environmentally Sensitive Area, (ESA's)
b) Watershed, sub-watershed and drainage basin boundaries;
c) One lot depth, (300 feet), buffer from existing sewer line locations;
d) Quarter-section lines based on the Public Land Survey System, (PLSS);
e) Municipal and Sanitary District Boundaries;
f) Road centerlines;
g) Lift station service areas, (topography and depth); and
h) Gravity and interceptor sewer service areas, (topography and depth).

Sewer Service Planning Area: An area defined and approved by the Department of Natural resources under Wisconsin Administrative Code, NR-121 with the assistance and recommendation from the East Central Wisconsin Regional Planning Commission and input from involved communities. This is an area where urban growth is anticipated to occur over a longer period of time, (40 to 50 years), where short-term conflicting land use development should be discouraged. This boundary serves the purpose of delineating long-term, (40-50 year time horizon), cost-effective, urban growth areas. ECWRPC determines this boundary based on the following information, (all of which are not necessarily listed in NR-21):

1) Definition and mapping of Environmentally Sensitive Areas, (ESA's);

2) Justified acreage allocations based on projected 50 year growth and development using ECWRPC accepted methodologies;

3) Projected available 50 year capacity of interceptor sewers, force mains and lift stations;

4) Projected available 50 year capacity of the wastewater treatment facility from publicly sewered development and establish holding tank receiving areas;

5) Existing and projected 50 year development pattern, (based on local/county comprehensive land use plans and zoning maps;

6) Location of existing development with known private septic problems or potential risk for on-site system failures;

7) Intergovernmental growth/service agreements; and

8) The boundary itself is located for, administrative purposes, on the location of:

   a) Environmentally Sensitive Areas, (ESA's);
   b) Watershed, sub-watershed and drainage area boundaries;
   c) Nearest quarter-section lines of the Public Land Survey System, (PLSS);
   d) Municipal and Sanitary District boundaries;
   e) Wastewater treatment plant service areas, (when multiple plants available);
   f) Road centerlines;
   g) Lift station service areas, (topography and depth);
   h) Proposed and existing interceptor sewer service areas, (topography and depth);
   i) Extraterritorial review jurisdiction of involved incorporated communities, (this would be utilized only at the discretion of all affected communities).

Existing Urban Development: A geographic area with densities of development suitable for the efficient and economic provision of urban services such as sanitary sewer, water, transportation and storm drainage. (e.g. single family residential development greater than two units per gross acre)

Reference Area: A geographic area currently within the existing sewer service area which is at least 50 percent developed.

Unique Facility or Development: A proposed facility that, regardless of location, is considered to be "unanticipated"; and is of "regional importance". "Unanticipated" is defined as not being illustrated in a local community's or county's Comprehensive Plan and was not anticipated or projected in the Sewer Service Area Plan during the previous update. "Regional importance" is defined as a facility which, if constructed, would provide a widespread benefit to multiple local governmental jurisdictions within the Sewer Service Area. Examples of facilities fitting this criteria include state prisons, county landfills, regional public specialty facilities such as EAA, public museums or performing arts centers, churches, private, (commercial), specialty facilities such as the Kaukauna dog track, opportunistic park/recreation/open space acquisitions, public golf courses, other state and federal facilities as deemed appropriate. Not eligible are any type of school facility, local government administrative office or facility, residential golf course developments, local parks, private campgrounds, local airports or related facilities. These types and locations of future facilities should be addressed and, their needs quantified, in the community's local land use plans and the sewer service area plan update process. These listings may be added to from time to time based on individual SSA Plan Amendment proposals. Those specific facilities not listed above would be reviewed based on their merits and conformance with the intent of this definition.

Expansion Area: The geographic area proposed to be added to the existing sewer service area through the amendment process.

Cost-effectiveness: Analysis of sanitary sewerage system alternatives. The analysis shall include monetary costs and environmental as well as other non-monetary costs.

Environmentally Sensitive Area: Geographic areas consisting of all lakes and streams shown on USGS quadrangle maps and their adjacent shoreland buffer areas. Also all wetlands shown on the state Wisconsin Wetland Inventory Maps and floodways as delineated on the official Federal Emergency Management Administration Flood Boundary and Floodway Maps.

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APPENDICES

APPENDIX A

PLAN DEVELOPMENT &
APPROVAL DOCUMENTATION

Brillion Sewer Service Area Plan Update Meeting Record*

Date	Description
July, 2012	Town of Brillion Kick-Off Meeting
July, 2012	City of Brillion Kick-Off Meeting
January, 2013	Town of Rantoul Kick-Off meeting
May 6, 2013	2030 Brillion Sewer Service Area Public Hearing/Informational Meeting
May 8, 2013	Town of Rantoul Board Meeting re: May 8 Public Hearing
May 14, 2013	Town of Brillion Board Meeting re: May 8 Public Hearing
June 10, 2013	Town of Rantoul Board Meeting approves 2030 Brillion SSA Plan
July 9, 2013	Town of Brillion Board Meeting to discuss SSA issues
October 8, 2013	Town of Brillion Board approves 2030 Brillion SSA Plan
October 28, 2013	City of Brillion Common Council approves 2030 Brillion SSA Plan

* There were numerous emails in between meeting dates to collect, exchange and formulate this plan update. These correspondences are available for review as well.

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SUMMARY OF PROCEEDINGS
Draft
Community Facilities Committee
East Central Wisconsin Regional Planning Commission
Menasha Public Library Activity Room
January 8, 2014 – 1:00 P.M.

Committee Members Present:
Ernie Bellin……Winnebago County
Michael R. Thomas ..... Outagamie County
Bob Hermes ..... Menominee County

Committee Members Excused:
Ken Capelle ..... Shawano County

Committee Members Not Present:
Tim Hanna..... Outagamie County
Paul Hirte. ..... Outagamie County

Staff Present:
Eric Fowle . .....Executive Director, ECWRPC
Joe Huffman ..... ECWRPC Staff
Kathy Thunes ..... ECWRPC Staff

Others Present:

1. Welcome & Introductions.

Mr. Bellin welcomed everyone and introductions were made. The meeting was delayed until 1:20 P.M. to accommodate the late arrival of a committee member needed for a quorum.

2. Statement of Compliance/Wis. Stats. Ch. 19, Subchapter V, Sec. 19.84.

The open meeting law was recognized.

3. Pledge of Allegiance

The Pledge of Allegiance was recited.

4. Approval of Agenda / Motion to Deviate

Mr. Bellin called for a motion to approve the agenda. Mr. Hermes made a motion to approve. Mr. Thomas made the second. Motion carried.

5. Approval of October 16, 2013 Summary of Proceedings

Mr. Bellin introduced the October 16, 2013 Summary of Proceedings and called for a motion to approve. Mr. Thomas moved to approve the summary. Mr. Hermes made the second. Motion carried.

6. Public/Guest Comment

There were no comments.

7. Announcements

a) **Village of Harrison**

Mr. Fowle informed committee members that has learned that there is, in fact, a legal challenge to the Village of Harrison's recent consolidation actions. Several surrounding communities have joined in on the challenge. Updates will provided as details become available.

b) **City of Menasha Lawsuit – Waverly/Harrison**

Mr. Fowle confirmed to committee members there was a lawsuit filed by the City of Menasha against the Waverly Sanitary District/Town of Harrison involving the control of the Waverly Sanitary District. The City claims that since the municipal boundaries of the Village of Harrison incorporation have changed the majority of users being served are City residents. The City maintains that this scenario should allow the City to control that portion of the District. Mr. Fowle indicated the courts will decide this issue and details will be forthcoming when available.

c) **Waverly Sanitary District**

Mr. Fowle mentioned a meeting between private consultants detailing a long-term plan for sewer infrastructure within the eastern-most portion of the Waverly Sanitary District. Mr. Fowle acknowledged this planning effort was consistent with the current facilities planning for the Waverly Sanitary District and the Town/Village of Harrison which was completed in the early 2000's.

d) **Public Service Commission**

Mr. Fowle stated East Central was contacted by the Public Service Commission regarding a project that evaluates the expansion of the municipal water system within the Village of Harrison. Interestingly enough, the project may also have some impacts on the existing sewer system, possibly involving alternatives which would change flow directions to different treatment plants. Mr. Fowle described the history and political situation to the PSC and offered to assist in the planning effort if called upon. The PSC will be coming to meet with Commission staff and various communities in January and February.

8. Action Items

a) Approval of Draft 2014 ECWRPC Work Program Elements

Mr. Fowle mentioned that the name of the 1200 Work Program Element was changed to reflect the rebranding of the Commission and the Livable/Healthy Communities Initiative. He then referred the committee to Work Program Element 1200: Sustainable and Efficient Community Services & Facilities. Mr.

Fowle indicated that the figures contained within the program elements are fairly firm although some person days and/or money allocations may be revised prior to the January, 2014 Quarterly Commission Meeting. Mr. Fowle then touched on the major elements of the work program, generally describing their function and any changes that have occurred from last year. Ms. Thunes was questioned regarding Work Item 1227 Energy/Compost & Job Production through Food Waste. She mentioned that she provides periodic updates to the task force and that quarterly meetings continue to be scheduled. Ms. Thunes will also be working on a technical assistance request from the City of Neenah to update its 2008 Greenhouse Gas Emissions Study (Work Item 1211).

Work element 1230: Sewer Service Area Planning was overviewed by Mr. Fowle. While the work element remains largely unchanged, Mr. Fowle highlighted the sewer service activities fee structure, indicating that nearly $1,500 was collected in 2013. Significant changes were found in the 1233 Element: SSA Plan Updates whereby the communities of Eden and Oakfield were added to the program. Mr. Fowle indicated that the Fond du Lac SSA plan would remain a carry-over from 2013. This plan update, as described by Mr. Fowle, is pending the development of the Outside Users Group planning document that, in essence, sets parameters for growth management areas. Recent events involving the villages of Harrison and Sherwood has caused the 2030 Sherwood SSA plan update to be suspended until further notice, ultimately clearing the way for the Eden and Oakfield plan updates.

There being no further discussion Mr. Hermes moved to approve the 2014 Work Program Element 1200, as presented. Mr. Thomas made the second. Motion carried.

b) Approval of Resolution 38-13: Adopting the 2030 Brillion Sewer Service Area Plan Update

Mr. Huffman addressed committee members regarding the 2030 Brillion Sewer Service Area Plan update. Additional materials including review comments from WDNR personnel, floodplain/flood area mapping and minor corrective suggestions were discussed. It was indicated that the corrections, based on the WDNR review, have yet to be incorporated into the plan due to the time constraints for this meeting. Mr. Huffman referred to the summary allocation descriptions provided in the plan update. These descriptions were mapped and each allocation area was explained and justified for the purposes of this plan update. Mr. Huffman also detailed the timelines for the planning process, as related to the involved communities. Approval of the 2030 Brillion SSA Plan was received from the City of Brillion and the towns of Brillion and Rantoul. Based on the information provided, Chairman Bellin called for a motion to approve Resolution 38-13 which approves the 2030 Brillion Sewer Service Area Plan update for full Commission consideration. Mr. Hermes moved to approve the 2030 Brillion Sewer Service Area Plan update contingent that WDNR review suggestions are incorporated into the final draft document. Mr. Thomas made the second. Motion carried.

9. Program/Project Updates & Discussion

a) SSA Amendment Policies & Procedures

Mr. Fowle addressed the committee on the need to update the SSA program's amendment policies regarding the expansion of planning area boundaries during a plan period. Mr. Fowle used the Omro/Algoma situation as an example for the need to revise planning area criteria and amendment policies to deal with unusual circumstances. He indicated that the WDNR will require the Algoma Sanitary District to conduct a facilities plan to justify the reverse flow proposal. Mr. Fowle gave examples of other potential scenarios that may require an amendment based on 'regionalization'. Mr. Fowle informed committee members of a meeting, on December 10, 2013 between the WDNR and Commission Staff, to discuss the amendment policies and procedures affecting sewer service area plans. Other issues discussed with the WDNR revolved around the Darboy/Kaukauna issue and how to implement some of the decisions made by the WDNR. Interceptor divide concepts will not drive policy decisions in the future although the analysis of the concept is a sound planning practice. In addition, Mr. Fowle stated that the WDNR suggested ECWRPC de-emphasize the hardship aspect of the amendment appeals process. The term 'implementability' was also discussed, a term developed by the WDNR, and how it could be utilized as part of the SSA planning process. Mr. Fowle indicated that amendment policies and criteria could be strengthened to avoid having the definition of the WDNR's implementability being invoked in any approved SSA plan.

Mr. Fowle stated the meeting was informative and valuable from a planning standpoint. In addition, the WDNR suggested that East Central meet with other RPC's to discuss methods, procedures and innovations with respect to SSA planning. A meeting will offer an opportunity to determine where planning agencies may differ on sewer service related issues.

10. Contracts & Technical Assistance

a) Review of 2014 WDNR Contract

Mr. Huffman stated that the 2014 Water Quality Management (WQM) contract with the Wisconsin Department of Natural Resources will be submitted upon adoption of the 1200 Element of the 2014 Work Program relating to sewer service area activities. An updated and approved 2014 work program detailing the program activities is part of the application process. Based on todays' action on the Community Facilities work program, the WQM application and year-end billing reports will be submitted in early, 2014.

b) Update on Town of Winneconne 2013 Technical Assistance Project

Mr. Fowle provided an overview of the Town of Winneconne Technical Assistance Project which includes a service area analysis for the Butte des Morts Sewer Service Area and its relationship with the USH 45/116 interchange. Mr. Fowle is expecting a final report on the results of the issues discussed with the Town of Winneconne. The overriding issue is the

wastewater treatment plant's inability to serve additional development coupled with the community's reluctance to make major improvements to the plant. Mr. Fowle indicated that the Commission's involvement on this issue is primarily in the realm of comprehensive land use planning and updates to that plan. The Winneconne Town Board is responsible for comprehensive plan updates. In essence, the Town of Winneconne and the Butte des Morts Sanitary District must determine the ability to accommodate future growth in the area. Mr. Fowle stated that at some point the Town of Winneconne may want to take control of directing growth to specific areas. In summation, Mr. Fowle stated that he will share the final reporting on this project at the next meeting and for all practical purposes this technical assistance project is complete.

11. Next Meeting

The next regularly scheduled meeting was tentatively set for March 12, 2014 at the ECWRPC offices. A suggestion was made by one of the committee members to change the future meeting time to 10:00 A.M. Ms. Thunes will email members, not in attendance, and ask them to respond, if moving the meeting time to the morning will be an issue. Mr. Fowle asked the Committee if they would like to tour a community facility this summer during the June meeting. The Committee concurred, and the hydro-electric plant in the City of Kaukauna was selected as a tour site for the June, 2014 committee meeting. Ms. Thunes will contact the City of Kaukauna to set up the tour and reserve a meeting location.

12. Adjourn

Meeting adjourned at 2:20 P.M.

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SMALL CITY, BIG HEART

City of Brillion
130 Calumet Street
Brillion, Wisconsin 54110-1199

October 31, 2013

East Central Wisconsin Regional Planning Commission
Attn: Joseph Huffman, SSA Planner
400 Ahnaip Street, Suite 100
Menasha, WI 54952

RE: 2030 Brillion Sewer Service Area Plan Amendment

Mr. Huffman,

Please accept this letter as notification that on Monday, October 28, 2013 the Common Council of the City of Brillion approved the 2030 Brillion Sewer Service Area Plan Amendment. We look forward to the final review and approvals of the plan from East Central Wisconsin Regional Planning Commission and the Wisconsin Department of Natural Resources.

The City of Brillion will continue to carry out the management responsibilities for plan implementation and to insure that future development is consistence with the plan.

Sincerely,

Lori M. Gosz, WCMC, CMC
City Administrator/Clerk-Treasurer

Phone (920) 756-2250 **Fax (920) 756-2351** **www.ci.brillion.wi.us**

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June 10, 2013

The regular monthly meeting of the Town of Rantoul was called to order at 7:00pm at the Village Hall of Potter by Chairman Mertz. He verified that meeting notices were posted on June 5, 2013.

Motion by Jannette, second by Eickert to approve the May 2013 meeting minutes as printed; motion carried by voice vote. Motion by Eickert, second by Jannette to accept the Treasurer's report of Checking account balance of $2,564.44, Money Market account balance of $211,384.39 and Tax Collection Account of $0.00 for a total of $213,948.83; motion carried by voice vote.

Representatives from Ox Bow Sportsman Club were present to question the size of the culvert on Hilbert Road that was discussed and acted on at the May 22, 2013, Road Maintenance meeting. As this item was not on the agenda, it will be taken up at the July Town Board meeting.

Joe Huffman, East Central Wisconsin Regional Planning Commission, was present to discuss the changes to the City of Brillion's Sewer Service Area Plan that would affect the Town of Rantoul. After the areas in the Town of Rantoul that would be removed in the proposed plan were discussed, motion by Eickert, second by Jannette that the Town of Rantoul Town Board approves the 2030 Brillion Sewer Service Area Plan Proposed Allocations; motion carried by voice vote. A copy of the map showing the proposed changes follows.

A Bridge Petition Application for County Aid has been submitted for the culvert on Irish Road by the Village of Hilbert. A copy follows.

Motion by Jannette, second by Eickert to approve the liquor licenses for Brillion Conservation Club and Ox Bow Sportsman Club for the year ending June 30, 2014; motion carried by voice vote.

Motion by Eickert, second by Jannette to approve the Operators' (bartenders) licenses submitted by Brillion Conservation Club and Ox Box Sportsman Club for the year ending June 30, 2015; motion carried by voice vote. A list of licenses follows.

A postcard will be sent to the residents of the Town looking for a replacement for the Town Clerk. A copy of the postcard follows.

The annual review of wages and salaries will be discussed at the July 8, 2013, Town Board meeting.

The next Road Maintenance meeting will be called as needed.

Bills totaling $58,671.15 were presented. Motion by Jannette, second by Eickert to approve the bills as presented; motion carried by voice vote. An itemized list follows.

With no further business, motion by Eickert, second by Jannette to adjourn; motion carried by voice vote.

Respectfully submitted,
Mary Schwartz
Clerk, Town of Rantoul

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MINUTES – TOWN OF BRILLION
October 8, 2013

1. Meeting called to order at 7:00 pm. Maile, Fischer, Berken, Jannette, Ott and Parkin present.

   Guests –Bob Stanelle, Alicia Derber, Carl Weber, Lori Gosz

2. Affidavit of Posting signed by chairman and clerk.

3. Motion made by Berken and seconded by Fischer to approve September minutes.

4. Public Participation – Alicia Derber asked for update from Supervisor Fischer on calls made to Automatic Transmission Company. ATC has control of power lines across Alicia's property. Matt from ATC said that Alicia will not need to move trees. Matt will also look into the details of what is permitted for ditch cleaning near the lines. Darryl will clean out gravel by her driveway.

5. Motion made by Fischer and seconded by Berken to approve the Treasurer's Report.

6. Discussion on 2014 Ambulance Agreement with the City of Brillion. No changes to agreement from 2013. Motion made by Fischer and seconded by Berken to approve the Ambulance Agreement between the Town of Brillion and the City of Brillion.

7. Discussion held on Brillion Sewer Service Area. Wayne contacted Joe Huffman to let him know that Richard Levash would like his property west of the high school to remain in the Brillion Sewer Service Area. Motion made by Fischer and seconded by Berken with approval.

8. Clerk received letter from Julie Schmelzer, Calumet County Resource Department, offering an intern, if approved in the budget, to complete an inventory and develop a plan for the revitalization of the historic portion of Forest Junction. Board approved the request for an intern's assistance, at no cost to the Town, with a 2 yes and 1 no vote. Clerk will contact Julie and let her know board approved as long as no costs are incurred by the town.

9. Motion by Fischer and seconded by Berken to approve Certified Survey Map for David Boettcher.

10. Clerk's Report –
    a. 2014 General Transportation Aids are the same as 2013 at $114,593.
    b. The 2005 computer in the municipal building office needs to be replaced. Clerk will purchase a laptop for the office.

11. Chairman's Report –

    a. Mike Siewert from Martenson and Eisele submitted TRIP D application to Calumet County for repaving Harvestore Road estimated at $512,230. If funding is received, the town will be responsible for fifty percent of the total in the amount of $256,115.

    b. Clerk will submit to Calumet County the required paperwork for bridge/culvert aid for Man-Cal and Schmidt Roads.

12. Road Supervisor's Report –

    a. Most roadwork now completed. Culvert has been installed under the railroad tracks. Tractor will be going to M&H to put plow on.

13. Fischer/Berken motion to approve Vouchers 6632-6671.

14. Fischer/Berken motion to adjourn at 9:05 p.m.

Respectfully submitted,
Karen Jannette, Clerk

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Scott Walker, Governor
Cathy Stepp, Secretary
Telephone 608-266-2621
FAX 608-267-3579
TTY Access via relay - 711

WISCONSIN DEPT. OF NATURAL RESOURCES

November 1, 2012

Project No. S-2011-0602

Ms. Lori Gosz, Clerk
City of Brillion
130 Calumet Street
Brillion, WI 54110

Subject: Facilities Plan Approval For Clearwater Infiltration / Inflow Reduction Plan--
City of Brillion, Wisconsin

Dear Ms. Gosz:

The Department of Natural Resources has completed the review of the facilities planning report addressing the proposed clearwater infiltration / inflow (I/I) reduction plan for the City of Brillion sanitary sewer system. The facilities planning report is hereby approved. We concur with the report's recommendations which call for implementation of a long-term program to identify and remediate clearwater I/I sources for private properties / lateral sanitary sewers and sections of the municipal sanitary sewer system associated with future street reconstruction projects. Other elements include update of the City's ordinances to facilitate the private lateral sanitary sewer remediation program, installation of mini-stormwater and associated private lateral storm sewers, and public education / outreach to property owners regarding private I/I source reduction.

Pursuant to s. NR 110.03(28), Wisc. Admin. Code, please also note that the Department of Natural Resources does not regulate private lateral / building sanitary sewers. Any new private or proposed improvements to existing lateral / building sanitary sewers or correction of other identified I/I sources within private property would be regulated by the Department Safety and Professional Services.

In addition, the facilities planning report and this approval letter address only the overall proposed approach for reduction of clearwater I/I into the City of Brillion municipal sanitary sewer system. The facilities planning report and this approval letter do not address any improvements or upgrades for meeting future effluent limits at the City's existing wastewater treatment facility.

If you believe that you have a right to challenge this decision, you should know that the Wisconsin statutes, administrative rules and case law establish time periods within which requests to review Department decisions must be filed.

To request a contested case hearing pursuant to section 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with section NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with section NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the time period for filing a petition for judicial review.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Wis. Stats., you must file your petition with the appropriate circuit court and serve the petition on the Department within the prescribed time period. A petition for judicial review must name the Department of Natural Resources as the respondent.

Sincerely,

Thomas J. Mugan, P.E., Chief
Wastewater Section
Bureau of Water Quality

Stephen J. Smith, P.E.
Wastewater Section
Bureau of Water Quality

Cc: Ms. Amy Vaclavik – McMahon
Mr. Wes Grube -- Dept. of Safety And Professional Services
Dave Gerdman -- Green Bay Office
Anne Van Grinsven / Kelley O'Connor -- Green Bay Office

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PROPOSED RESOLUTION NO. 38-13

APPROVING THE UPDATED 2030 BRILLION SEWER SERVICE AREA

WHEREAS, the East Central Wisconsin Regional Planning Commission has been designated by the Wisconsin Department of Natural Resources as the sewer service area management agency for the ten county East Central region, and;

WHEREAS, the East Central Wisconsin Regional Planning Commission has entered into a memorandum of agreement with the Wisconsin Department of Natural Resources to develop, update and manage sewer service area plans for the designated area and select non-designated areas, and;

WHEREAS, the East Central Wisconsin Regional Planning Commission is preparing updated sewer service area plans for communities through the year 2030, and;

WHEREAS, the East Central Wisconsin Regional Planning Commission has held public participation and community meetings for those areas affected during the planning process, and;

WHEREAS, the Sewer Service Area Plans will be submitted to the Department of Natural Resources and certified as part of the Wisconsin Water Quality Plans.

NOW THEREFORE BE IT RESOLVED BY THE EAST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION:

Section 1. That the Commission adopt the draft plan for the 2030 Brillion Sewer Service Area Plan Update and recommend the Wisconsin Department of Natural Resources certification of the aforementioned plan update, and;

Section 2. That the Commission provide continuing sewer service area planning and management functions including sewer service area amendments, review of wastewater and sewer plans and the review of sewer extension requests for the 2030 Brillion Sewer Service Area.

Effective Date: January 8, 2014

Submitted By: Community Facilities Committee

Prepared By: Joseph W. Huffman, SSA Planner

Ernie Bellin, Chair – Winnebago County

Ken Capelle, Vice-Chair – Shawano County

Bob Hermes - Menominee County

Tim Hanna - Outagamie County

Michael Thomas – Outagamie County

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APPENDIX B

SSA DEMOGRAPHIC &
ACREAGE PROJECTION TABLES

Table B-1: Proposed Year 2030 Acreage Characteristics (Based on 2012 Land Use)

	Total SSA		C. Brillion SSA		T. Brillion SSA		T. Rantoul SSA	
	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total
2050 SSA Planning Area (acres)	**5,217.7**	**100.0**	**1,727.0**	**33.1**	**3,081.0**	**59.0**	**409.8**	**7.9**
Square Miles	**8.2**		2.7		4.8		0.7	
2030 Sewer Service Area Total	**1834.70**	100.0%	**1330.70**	**100%**	**487.41**	**100%**	**16.59**	**3%**
Single Family & Duplex Residential (including mobile homes & Accessory bldgs)	**350.28**	19.1%	300.12	22.6%	49.55	10.2%	0.61	0.1%
Multi-Family Residential	**15.93**	0.9%	15.93	1.2%	0.00	0.0%	0.00	0.0%
Commercial	**35.72**	1.9%	33.20	2.5%	2.52	0.5%	0.00	0.0%
Industrial	**48.37**	2.6%	48.29	3.6%	0.08	0.0%	0.00	0.0%
Public/Institutional (includes park & recreation)	**153.29**	8.4%	147.22	11.1%	3.63	0.7%	2.44	0.5%
Utilities (includes WWTP)	**5.80**	0.3%	5.80	0.4%	0.00	0.0%	0.00	0.0%
Transportation/Roads/Railroads/Parking Facilities	**300.27**	16.4%	252.55	19.0%	44.48	9.1%	3.24	0.7%
Existing/Planned Stormwater Detention Ponds	**0.16**	0.0%	0.16	0.0%	0.00	0.0%	0.00	0.0%
Vacant, Undevelopable	**0.00**	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Vacant, Developable (includes woodlands, agric. or undeveloped uses)	**787.87**	42.9%	437.79	32.9%	339.78	69.7%	10.30	2.1%
ESA - Stream & Wetland Buffers	**98.55**	5.4%	63.73	4.8%	34.82	7.1%	0.00	0.0%
ESA - Wetland	**29.00**	1.6%	17.38	1.3%	11.62	2.4%	0.00	0.0%
Open Water	**9.46**	0.5%	8.53	0.6%	0.93	0.2%	0.00	0.0%
Total SSA Developed Acres	**909.82**	**49.6%**	**803.27**	**60.4%**	**100.26**	**20.6%**	**6.29**	**1.3%**
Total SSA ESA/Water Acres	**137.01**	**7.5%**	**89.64**	**6.7%**	**47.37**	**9.7%**	**0.00**	**0.0%**

Year 2030 SSA Vacant Acres by Proposed Land Use Type

	Total SSA		C. Brillion SSA		T. Brillion SSA		T. Rantoul SSA	
	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total
SF Residential	**363.09**	46.09%	124.56	28.45%	238.53	70.21%	0.00	0.0%
MF Residential	**53.55**	6.80%	53.55	12.23%	0.00	0.00%	0.00	0.0%
Commercial	**57.13**	7.25%	51.28	11.71%	5.85	1.72%	0.00	0.0%
Industrial	**191.95**	24.36%	108.06	24.68%	83.89	24.69%	0.00	0.0%
Public/Institutional (includes parks/churches/utilities/roadways)	**44.56**	5.66%	44.32	10.12%	0.24	0.07%	0.00	0.0%
Remaining Woodlands	**2.64**	0.34%	0.63	0.14%	0.08	0.02%	1.93	18.7%
Remaining Agriculture or Unplanned	**74.94**	9.51%	55.40	12.65%	11.17	3.29%	8.37	81.3%
TOTALS	**787.86**	**100.00%**	**437.80**	**100.00%**	**339.76**	**100.00%**	**10.30**	**100.00%**

Source: ECWRPC, T. Brillion, C. Brillion Comp. Plan

Table B-2: Existing Year 2020 SSA Acreage Characteristics
(Based on 2012 Land Use)

	Total SSA		C. Brillion SSA		T. Brillion SSA		T. Rantoul SSA	
	Acres	%	Acres	%	Acres	%	Acres	%
2EXISTING 2020 PLANNING AREA BOUNDARY	**5,849.6**		**1,757.9**	**30.05%**	**3,467.4**	**59.28%**	**624.3**	**10.67%**
Square Miles	**9.1**		**2.7**		**5.4**		**1.0**	
2020 Sewer Service Area Total	**1651.39**	**100.00%**	**1,330.83**	**80.6%**	**303.97**	**18.4%**	**16.59**	**1.0%**
Single Family & Duplex Residential (incl. mobile homes & accessory buildings)	**331.44**	**20.07%**	298.37	22.4%	32.46	10.7%	0.61	3.7%
Multi-Family Residential	**15.93**	**0.96%**	15.93	1.2%	0.00	0.0%	0.00	0.0%
Commercial	**34.95**	**2.12%**	33.20	2.5%	1.75	0.6%	0.00	0.0%
Industrial	**48.37**	**2.93%**	48.29	3.6%	0.08	0.0%	0.00	0.0%
Public/Institutional (includes park & recreation)	**148.41**	**8.99%**	142.34	10.7%	3.63	1.2%	2.44	14.7%
Utilities (incl. WWTP)	**5.80**	**0.35%**	5.80	0.4%	0.00	0.0%	0.00	0.0%
Transportation/Roads/Railroads (incl. Parking Facilities)	**288.26**	**17.46%**	252.38	19.0%	32.64	10.7%	3.24	19.5%
Existing/Planned Stormwater Detention Ponds	**0.16**	**0.01%**	0.16	0.0%	0.00	0.0%	0.00	0.0%
Vacant, Undevelopable	**0.00**	**0.00%**	55.33	4.2%	1.74	0.6%	0.00	0.0%
Vacant, Developable (includes woodlands, agric. or undeveloped uses)	**655.05**	**39.67%**	374.66	28.2%	213.02	70.1%	10.30	62.1%
Total Vacant SSA Acreage	**655.05**	**39.67%**	**429.99**	**65.64%**	**214.76**	**32.8%**	**10.30**	**1.57%**
ESA - Stream Buffer and Wetland Buffer	**88.49**	**5.36%**	73.94	5.6%	14.55	4.8%	0.00	0.0%
ESA - Wetland	**25.72**	**1.56%**	21.94	1.6%	3.78	1.2%	0.00	0.0%
Open Water	**8.81**	**0.53%**	8.49	0.6%	0.32	0.1%	0.00	0.0%
Total SSA Developed Acres	**873.32**	**52.88%**	**796.47**	**59.8%**	**70.56**	**23.2%**	**6.29**	**37.9%**
Total SSA ESA/Water Acres	**123.02**	**7.45%**	**104.37**	**7.8%**	**18.65**	**6.1%**	**0.00**	**0.0%**

Year 2020 SSA Vacant Acres by Proposed Land Use Type	Total of All SSAs		C. Brillion SSA		T. Brillion SSA		T. Rantoul SSA	
	Acres	%	Acres	% of	Acres	% of	Acres	% of
SF Residential	**276.55**	**100.0%**	116.88	42.3%	159.67	58%	0.0	0.0%
MF Residential	**53.55**	**100.0%**	53.55	100.0%	0.00	0%	0.0	0.0%
Commercial	**56.82**	**100.0%**	51.26	90.2%	5.56	10%	0.0	0.0%
Industrial	**146.06**	**100.0%**	107.96	90.2%	38.10	26%	0.0	0.0%
Public/Institutional (includes Parks/Churches/Utilities/Roadways)	**42.07**	**100.0%**	41.83	73.9%	0.24	1%	0.0	0.0%
Agriculture or Woodlands	**22.93**	**100.0%**	3.12	99.4%	9.51	41%	10.3	44.9%
Undevelopable or Unplanned	**57.07**	**100.0%**	55.33	97.0%	1.74	3%	0.0	0.0%
TOTALS	**655.05**	**100.0%**	**429.93**	**65.6%**	**214.82**	**33%**	**10.30**	**1.6%**

Source: ECWRPC - SLU_2030_SSAMCD1

Table B-3: Brillion SSA Employment Forecasts 2020-2030

Geographic Area	2012 C/I Acreage	Employment Density	Employees	Projected 2030 C/I Acreage	Employment Density	Employees	2005 - 2025 Employee increase
T. Rantoul	0	10.1	0	0	0	0	0
T. Brillion	2	10.1	20.2	45	10.1	454.5	434.3
C. Brillion	83	10.1	838	163	10.1	1,646	808

Source: Freedom, 2025 Comprehensive Plan; ECWRPC, 2008

Table B-4: Brillion SSA - Commercial/Industrial Acreage Projections (Year 2030)**

Brillion SSA	
84	Acres of existing commercial/industrial (C/I) development
5,432	2020 Population
0.02	2020 C/I Per Capita

2030 - PROJECTED SSA (2030 projected minus 2010 existing)

Brillion SSA	
5,832	2030 Population projection
440	Population Increase (2010-2030)
0.02	2030 C/I Per Capita
7	**Projected Need*** *(2030 C/I Per Capita * Pop. Increase)*

ESTIMATED ACREAGE NEEDS

Brillion 2030 SSA C/I Projection

7 **C/I Acres Needed**

Application of 15% Infrastructure Factor = Gross Acreage Needs for C/I Uses

7	*	1.15	=	7.8

Application of 20% Market Factor = Adjusted Gross Acreage Needs for C/I Uses

8	*	1.2	=	**9**	*Note: This figure to be used as a guide for 2030 SSA allocations*

Note: C/I acreage amounts were calculated within the current SSA boundary line.
** C/I Projection Formula: Projected C/I Need = (2005 C/I Per Capita) (Population Increase)*
*** Includes acreage for all municipalities with the idea that the City will assume all industrial/commercial development*
Source: ECWRPC, 2012

Table B-5: 2030 Detail of SSA Acreage Modifications

	Total SSA		C. Brillion SSA		T. Brillion SSA		T. Rantoul SSA	
	Added	Removed	Added	Removed	Added	Removed	Added	Removed
2050 SSA Planning Area (sub-total acres)	**5217.75**	**-672.05**	1726.90	-30.96	3081.09	-403.2	409.76	-237.9
Final 2050 Planning Area Total	**4545.70**	**0.00**	**1695.94**		**2677.92**		**171.84**	
2030 Sewer Service Area Total	**190.63**	**0.00**	**7.19**	**0.00**	**183.44**	**0.00**	**0.00**	**0.00**
Single Family & Duplex Residential (including mobile homes)	**17.52**	**0.00**	0.44	0.00	17.08	0.00	0.00	0.00
Multi-Family Residential	**0.00**	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00
Commercial	**0.77**	**0.00**	0.00	0.00	0.77	0.00	0.00	0.00
Industrial	**0.00**	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00
Public/Institutional (includes park & recreation)	**0.00**	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00
Utilities	**0.00**	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00
Transportation/Roads/Railroads	**11.69**	**0.00**	0.22	0.00	11.47	0.00	0.00	0.00
Existing/Planned Stormwater Detention Ponds	**0.00**	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00
Vacant, Undevelopable	**0.00**	**0.00**	0.12	0.00	4.72	0.00	0.00	0.00
Vacant, Developable (includes woodlands, agric. or undeveloped uses)	**131.19**	**0.00**	5.68	0.00	120.67	0.00	0.00	0.00
ESA - Wetland Buffer	**3.46**	**0.00**	0.00	0.00	3.46	0.00	0.00	0.00
ESA - Stream Buffer	**17.55**	**0.00**	0.73	0.00	16.82	0.00	0.00	0.00
ESA - Wetland	**7.84**	**0.00**	0.00	0.00	7.84	0.00	0.00	0.00
Open Water	**0.61**	**0.00**	0.00	0.00	0.61	0.00	0.00	0.00
Total SSA Developed Acres	**29.98**	**0.00**	**0.66**	**0.0**	**29.32**	**0.00**	**0.00**	**0.00**
Total SSA ESA/Water Acres	**29.46**	**0.00**	**0.73**	**0.00**	**28.73**	**0.00**	**0.00**	**0.00**
Administrative Adjustments	**-4.81**	**-13.12**	**8.24**	**-13.12**	0.00	0.00		
Administrative Additions	8.31	0.00	8.24	0.0	0.07	0.00		
Administration Removals	-13.12	-13.12	0.00	-13.12	0.00	0.00		

Vacant Acres by Proposed Land Use Type	Total of All SSAs		C. Brillion SSA		T. Brillion SSA		T. Rantoul SSA	
	Added	Removed	Added	Removed	Added	Removed	Added	Removed
SF Residential	**85.04**	0.00	5.68	0.00	74.87	0.00		0.00
MF Residential	**0.00**	0.00	0.00	0.00	0.00	0.00		0.00
Commercial	**0.35**	0.00	0.00	0.00	0.00	0.00		0.00
Industrial	**45.80**	0.00	0.00	0.00	45.80	0.00		0.00
Public/Institutional (includes parks/churches/utilities, transportation)	**0.00**	0.00	0.00	0.00	0.00	0.00		0.00
Agriculture or Unplanned	**0.00**	0.00	0.00	0.00	0.00	0.00		0.00
TOTALS	**131.19**	**0.00**	**5.68**	**0.00**	**120.67**	**0.00**	**0.00**	**0.00**

Source: ECWRPC, C. Brillion, T. Brillion, T. Rantoul

Table B-6: Calumet County Population Estimates by MCD, 1970 to 2030

Jurisdiction	Census 1970	Census 1980	Census 1990	Census 2000	ECWRPC 2005	CENSUS 2010	DOA est. 2013	ECWRPC 2020	ECWRPC 2030
C. Appleton (pt.)	3,401	5,484	9,075	10,974	11,588	11,088	11,165	13,656	14,788
C. Brillion*	2,588	2,907	2,840	2,937	3,022	3,148	3,187	3,243	3,308
C. Chilton	3,030	2,965	3,240	3,708	3,849	3,933	3,920	4,034	3,990
C. Kaukauna (pt.)	n.a.	n.a.	n.a.	n.a.	0	0	0	0	0
C. Kiel (pt.)	298	429	376	321	324	309	317	278	223
C. Menasha (pt.)	0	0	73	688	1,225	2,209	2,346	2,655	3,789
C. New Holstein	3,012	3,412	3,342	3,301	3,364	3,236	3,213	3,028	2,573
V. Hilbert	896	1,176	1,211	1,089	1,121	1,132	1,132	974	793
V. Potter	0	0	252	252	259	253	249	306	332
V. Sherwood	350	372	837	1,550	2,188	2,713	2,763	3,765	4,972
V. Stockbridge	582	567	579	649	699	636	628	759	774
T. Brillion*	1,324	1,191	1,300	1,438	1,571	1,486	1,495	1,584	1,680
T. Brothertown	1,420	1,494	1,409	1,404	1,448	1,329	1,323	1,332	1,159
T. Charlestown	1,079	1,090	875	789	787	775	778	572	352
T. Chilton	1,116	1,120	998	1,130	1,169	1,143	1,140	1,159	1,090
T. Harrison	3,260	3,541	3,195	5,756	8,375	10,839	10,990	13,753	17,825
T. New Holstein	1,513	1,527	1,406	1,457	1,540	1,508	1,518	1,479	1,347
T. Rantoul*	1,243	1,184	895	812	833	798	794	818	844
T. Stockbridge	1,285	1,248	1,317	1,383	1,465	1,456	1,472	1,508	1,468
T. Woodville	1,207	1,160	1,071	993	975	980	975	744	500
Calumet County	27,604	30,867	34,291	40,631	45,803	48,971	49,405	55,647	61,805

**Source: Wet Weather Facilities Plan Report, May, 2011; 2010 Census Data; Department of Administration 2010 Final Estimates*

APPENDIX C

ENVIRONMENTAL ASSESSMENT
OF 2030 SSA ALLOCATIONS

APPENDIX C: ENVIRONMENTAL ASSESSMENT OF 2030 SSA ALLOCATIONS

The Brillion 2030 SSA acreage allocations are contained in three areas within the proposed sewer service area, (see '2030 FINAL DRAFT ALLOCATION MAP' at the end of this summary). Environmental issues are elements to this planning process and are described below. If known, aquatic invasive species, elevated nitrate levels in groundwater, loss of natural shorelines, etc., are identified.

Brillion 2030 SSA Allocation – Area 1	
Location	Town of Brillion, T20N R20E, S ½, S ½, NW ¼, Section 23; N ½, SW ¼, S 23;. This area totals 61.4 acres.
General Physical Features	This area is predominately in agricultural use and is bisected by Hacker Road.
Current Development	There are three existing residential homes on large lots within this area.
Planned or Proposed Development	This allocation area will develop as commercial/industrial uses. Existing sewer infrastructure in the area coupled with the proximity to a major roadway, (USH 10), make this a reasonable allocation.
Limiting Environmental Conditions*	Steep slope conditions, (greater than 6%). Development of these areas may require alternative construction methods to protect the area's surface and ground water quality and quantity. Approximately 6.2 acres within this allocation is considered environmentally sensitive in the form of stream buffers.
Water Features	The Brillion SSA lies entirely within the North Branch of the Manitowoc River being part of the Manitowoc River Basin.
WDNR Natural Heritage Inventory	There were no endangered or threatened species associated with this allocation area.

Brillion 2030 SSA Allocation – Area 2	
Location	Town of Brillion T20N, R20E, NW1/4, Sections 36. This area totals 104.6 acres.
General Physical Features	This area has gently sloping lands with pockets of steeper slopes along the eastern portion of Blackbird Lane. Minor depressions exist supporting small wetland and stream buffer areas. Approximately 61% of this allocation is in agricultural use.
Current Development	The existing roadway, Blackbird Lane, bisects the allocation area and has four existing homesteads. Excluding the environmental features the remainder of the allocation area is considered to be vacant developable land.
Planned or Proposed Development	Aside from the environmental constraints within this allocation the area is expected to develop as single family residential or a mix of residential land uses.
Limiting Environmental Conditions*	Steep slopes (greater than 6%), can be found along the eastern most edge of this allocation particularly along Blackbird Lane. While this condition is not expected to present significant development challenges other environmental conditions such as the 7.8 acres of wetlands, 3.4 acres of wetland buffers and approximately 9.7 acres of stream buffers may pose a more restrictive approach to development..
Water Features	The Brillion SSA lies entirely within the North Branch of the Manitowoc River being part of the Manitowoc River Basin.
WDNR Natural Heritage	There were no endangered or threatened species associated with this allocation area.

Brillion 2030 SSA Allocation - Area 3	
Location	Town of Brillion and City of Brillion T20N, R20E, S ½, NW ¼, NE ¼, Section 36 and N ½, NW ¼, NE ¼, Section 36. This area totals 22 acres.
General Physical Features	Gently sloping to moderate slopes exist in this area.
Current Development	East Hills Road extends easterly into this small allocation area. Existing developments, (single family residential0, totaling approximately 10.5 acres are found scattered primarily on the south side of E. Hills Road. The vacant areas along the roadway are considered to be developable lots for single family residential construction. Vacant developable areas total approximately 9.2 acres with the balance of 2.3 acres designated as environmentally sensitive as stream buffers.
Planned or Proposed Development	This allocation will develop as single family residential where available along E. Hills Road. This allocation is logical in the event these existing developments require sanitary sewer service in the near term.
Limiting Environmental Conditions*	A small segment of stream buffer originates north of E. Hills Road terminating south, (and beyond), of E. Hills Road comprising approximately 1.6 acres. Steep slope conditions exist at the intersection of Round Lake and E. Hills Roads with a small area of steep slopes at the extreme eastern portion of E. Hills Road.
Water Features	The Brillion SSA lies entirely within the North Branch of the Manitowoc River being part of the Manitowoc River Basin.
WDNR Natural Heritage Inventory	There were no endangered or threatened species associated with this allocation area.

**Natural occurring environmental conditions where development may not be suitable such as: groundwater within 1 foot of the surface, slopes greater than 12%, and bedrock occurring within 5 feet of the surface. Sources: ECWRPC, WDNR's Ecological Landscapes of Wisconsin, Ecosystem Management Planning Hand Book, WDNR's 2006 Impaired Waters List (303d list), & WDNR's Natural Heritage Inventory Working List.*

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APPENDIX D

UPDATED FEMA
FLOODPLAIN MAPPING

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 20 NORTH, RANGE 20 EAST.

MAP SCALE 1" = 500'

250 0 500 1000 FEET METE

ZONE AE

ZONE AE

840

838

HARVESTORE ROAD

Unnamed Stream

Spring Creek

ZONE A

ZONE X

ZONE X

ZONE AE

23

ZONE X

Unnamed Stream

Stream

HACKER ROAD

ZONE AE

838

828

827

825

823

822

ZONE AE

CITY OF BRILLION
550036

CALUMET COUNTY

CITY OF BRILLION

CITY OF BRILLION
550036

OF BRILLION
550036

ZONE X

JOINS PANEL 0087

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0079E

FIRM

FLOOD INSURANCE RATE MAP

CALUMET COUNTY, WISCONSIN

AND INCORPORATED AREAS

PANEL 79 OF 295

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CALUMET COUNTY	550035	0079	E
BRILLION, CITY OF	550036	0079	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
55015C0079E

EFFECTIVE DATE
FEBRUARY 4, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

WITHIN TOWNSHIP 20 NORTH, RANGE 20 EAST.

MAP SCALE 1" = 500'

250 0 500 1000 FEET METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0078E

FIRM

FLOOD INSURANCE RATE MAP

CALUMET COUNTY, WISCONSIN AND INCORPORATED AREAS

PANEL 78 OF 295

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CALUMET COUNTY	550035	0078	E
BRILLION, CITY OF	550036	0078	E

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MAP NUMBER
55015C0078E

EFFECTIVE DATE
FEBRUARY 4, 2009

Federal Emergency Management Agency

CALUMET COUNTY
UNINCORPORATED AREAS
550035

HARVESTORE ROAD

10

BASTIAN ROAD

HR

ZONE X

21

ZONE X

22

Unnamed Stream

ZONE A

CITY OF BRILLION
550036

HACKER ROAD

H.W. RYAN STREET

CALUMET COUNTY
CITY OF BRILLION

CITY OF BRILLION
550036

JOINS PANEL 0066

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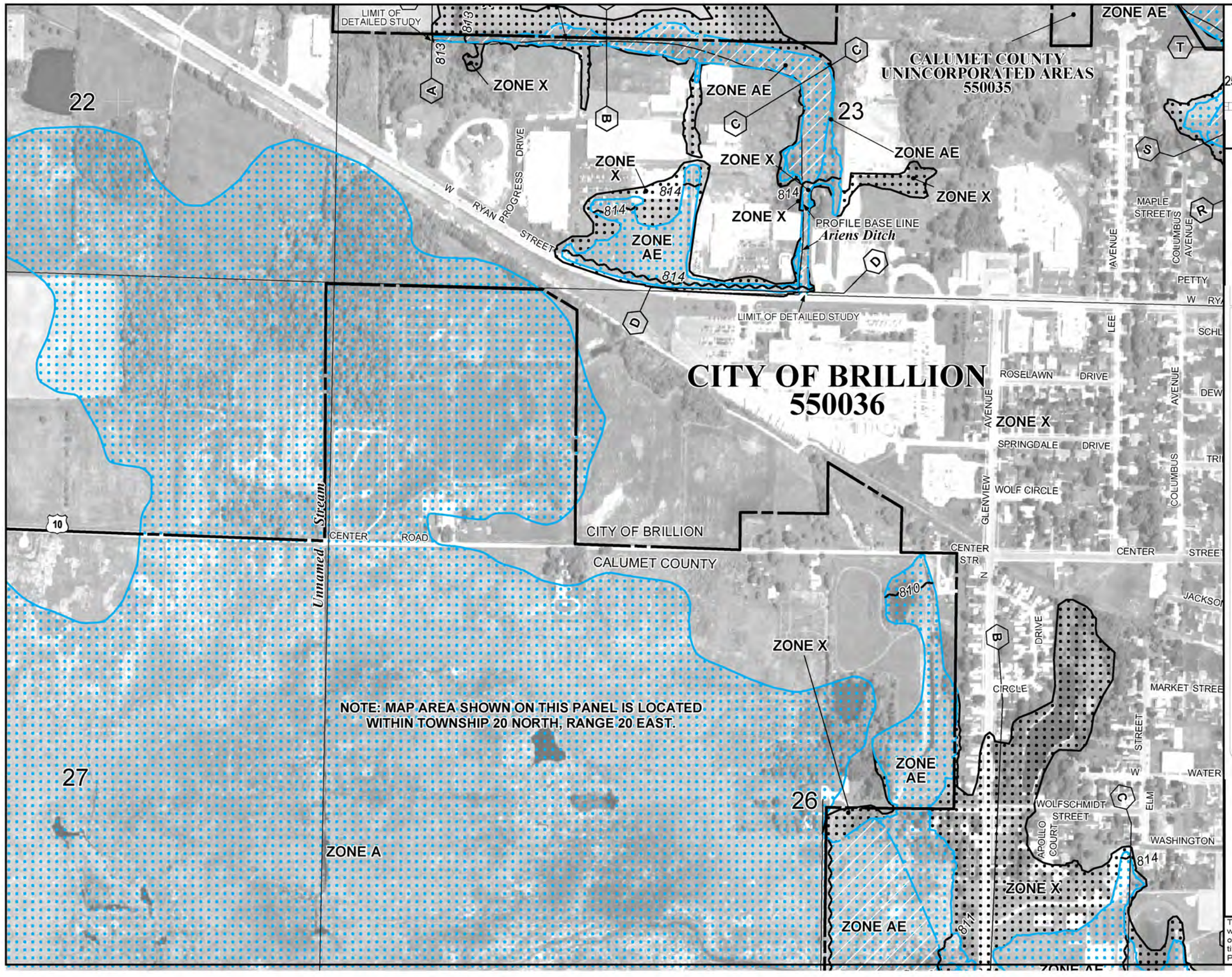

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0087E

FIRM

FLOOD INSURANCE RATE MAP

CALUMET COUNTY, WISCONSIN

AND INCORPORATED AREAS

PANEL 87 OF 295

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CALUMET COUNTY	550035	0087	E
BRILLION, CITY OF	550036	0087	E

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MAP NUMBER
55015C0087E

EFFECTIVE DATE
FEBRUARY 4, 2009

Federal Emergency Management Agency

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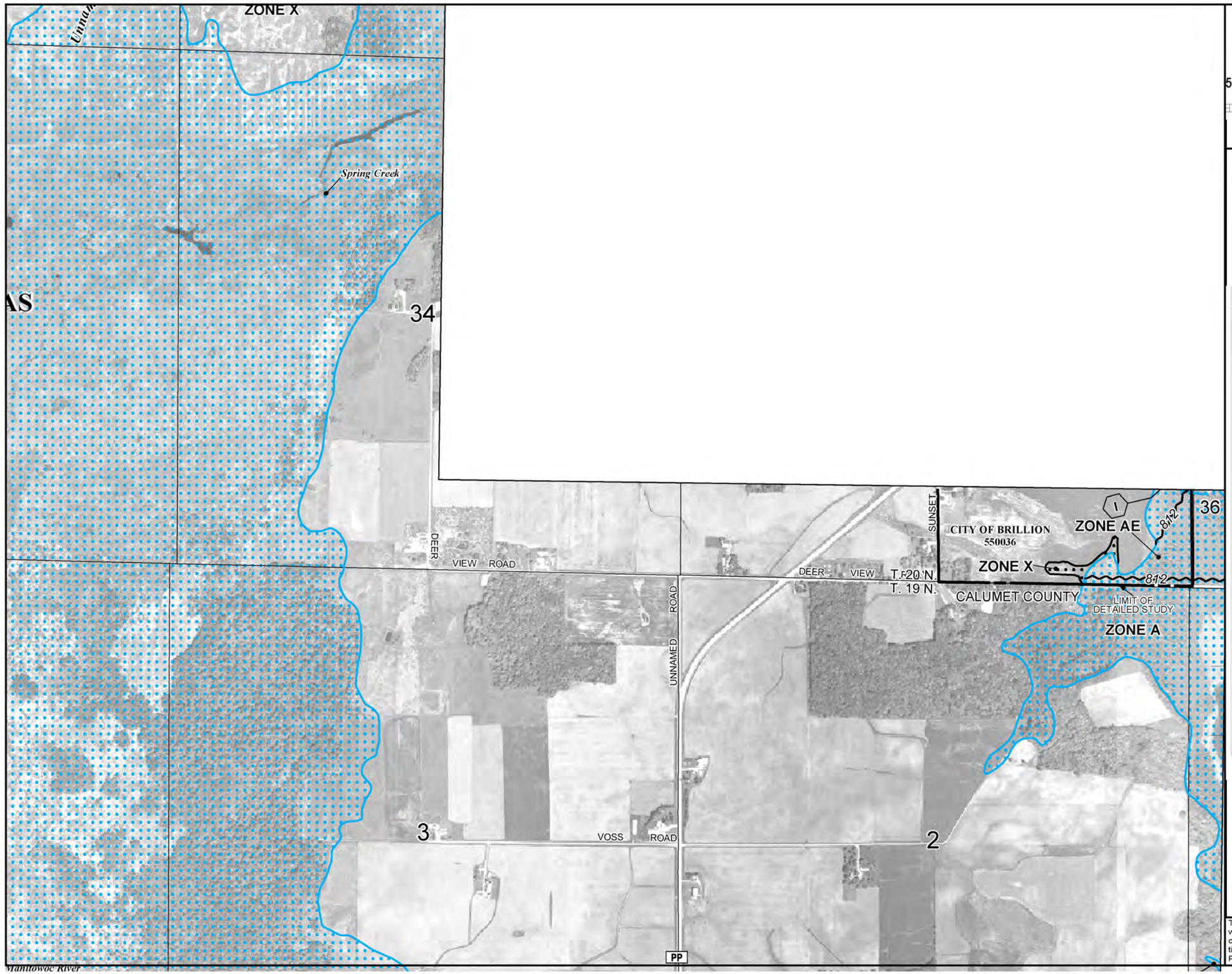

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METE 0 300 600

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0090E

FIRM

FLOOD INSURANCE RATE MAP

CALUMET COUNTY, WISCONSIN

AND INCORPORATED AREAS

PANEL 90 OF 295

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CALUMET COUNTY	550035	0090	E
BRILLION, CITY OF	550036	0090	E

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MAP NUMBER
55015C0090E

EFFECTIVE DATE
FEBRUARY 4, 2009

Federal Emergency Management Agency

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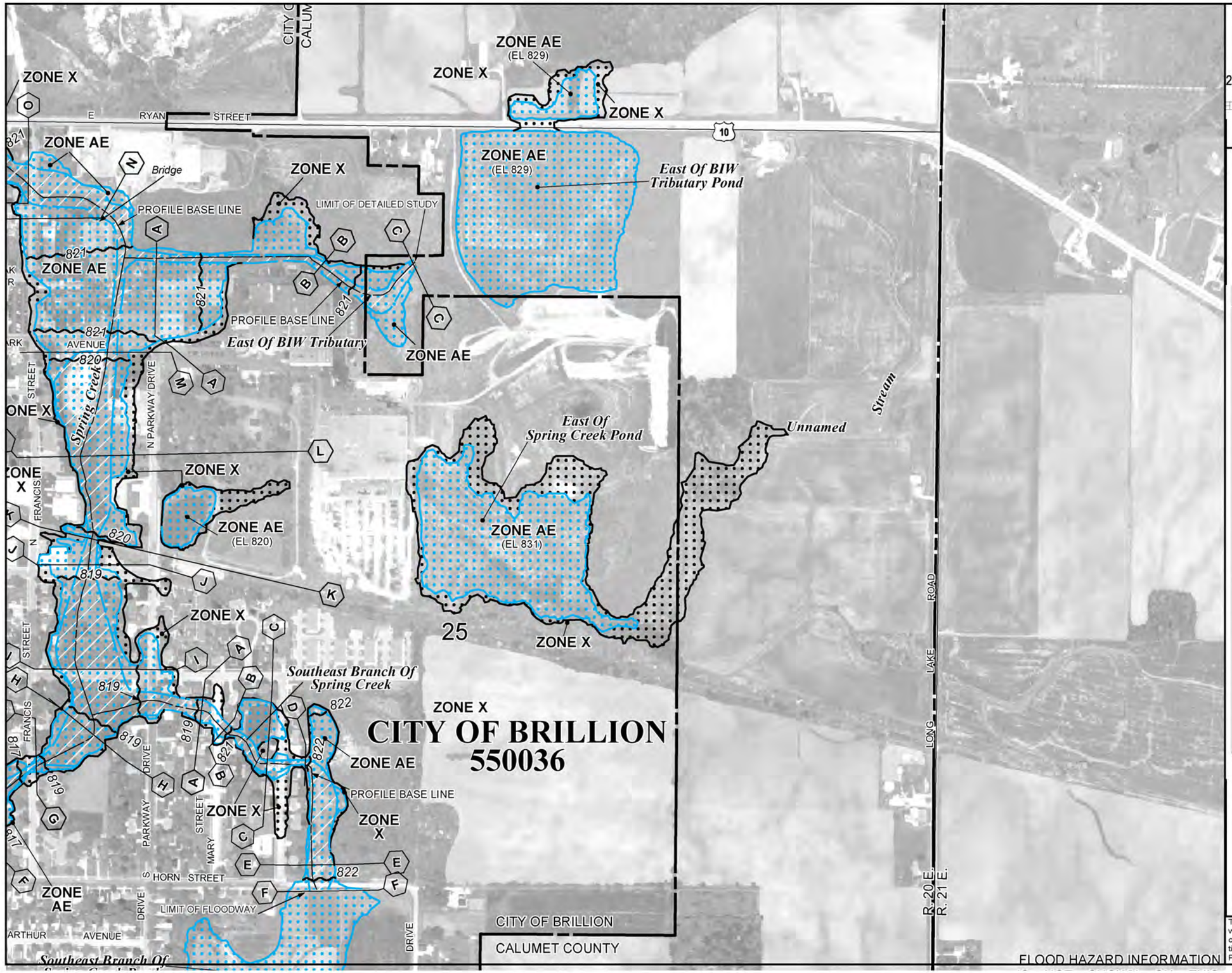

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0091E

FIRM

FLOOD INSURANCE RATE MAP

CALUMET COUNTY, WISCONSIN

AND INCORPORATED AREAS

PANEL 91 OF 295

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CALUMET COUNTY	550035	0091	E
BRILLION, CITY OF	550036	0091	E

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MAP NUMBER
55015C0091E

EFFECTIVE DATE
FEBRUARY 4, 2009

Federal Emergency Management Agency

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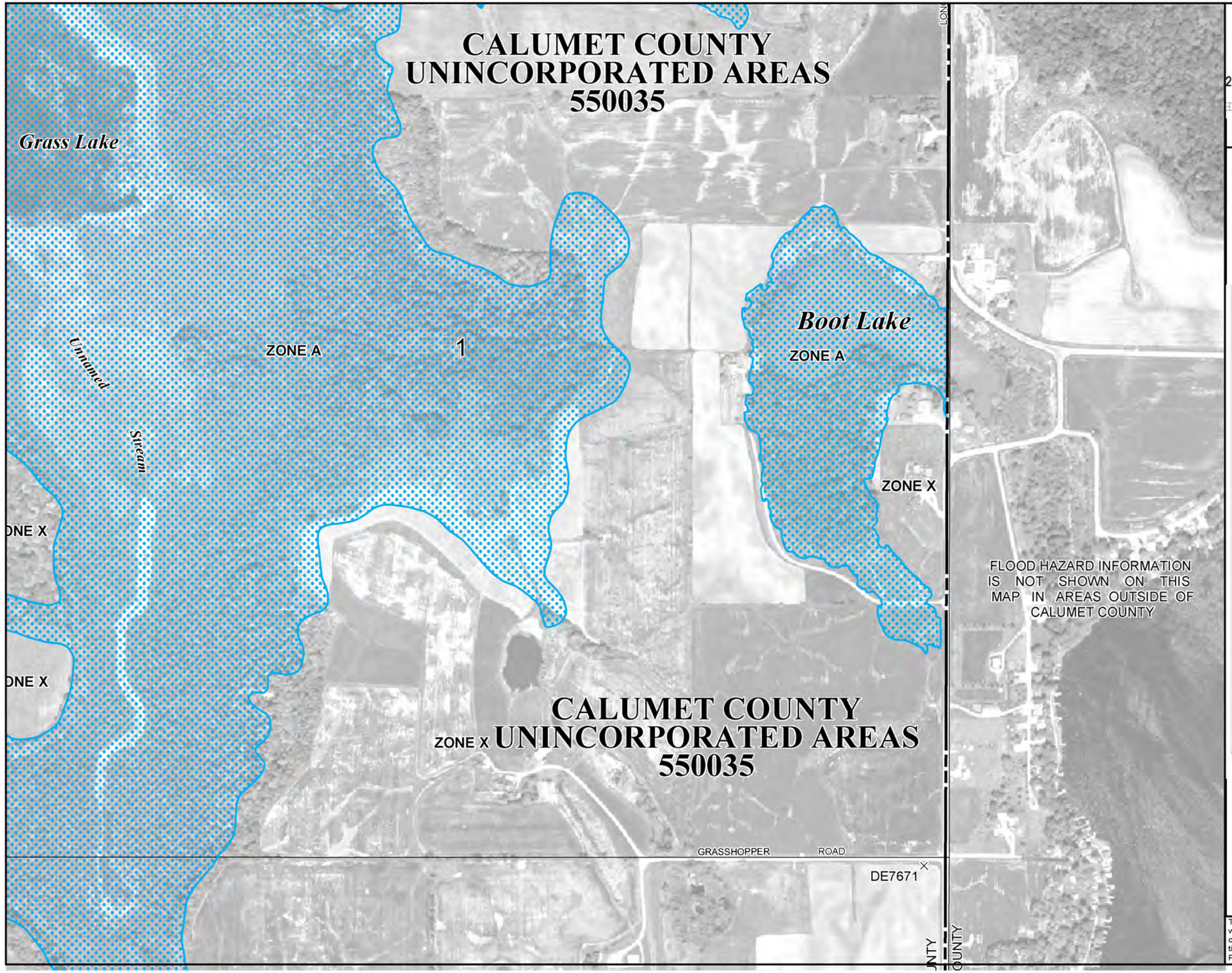

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METE

0 150 200

PANEL 0093E

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CALUMET COUNTY, WISCONSIN

AND INCORPORATED AREAS

PANEL 93 OF 295

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CALUMET COUNTY	550035	0093	E

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MAP NUMBER
55015C0093E

EFFECTIVE DATE
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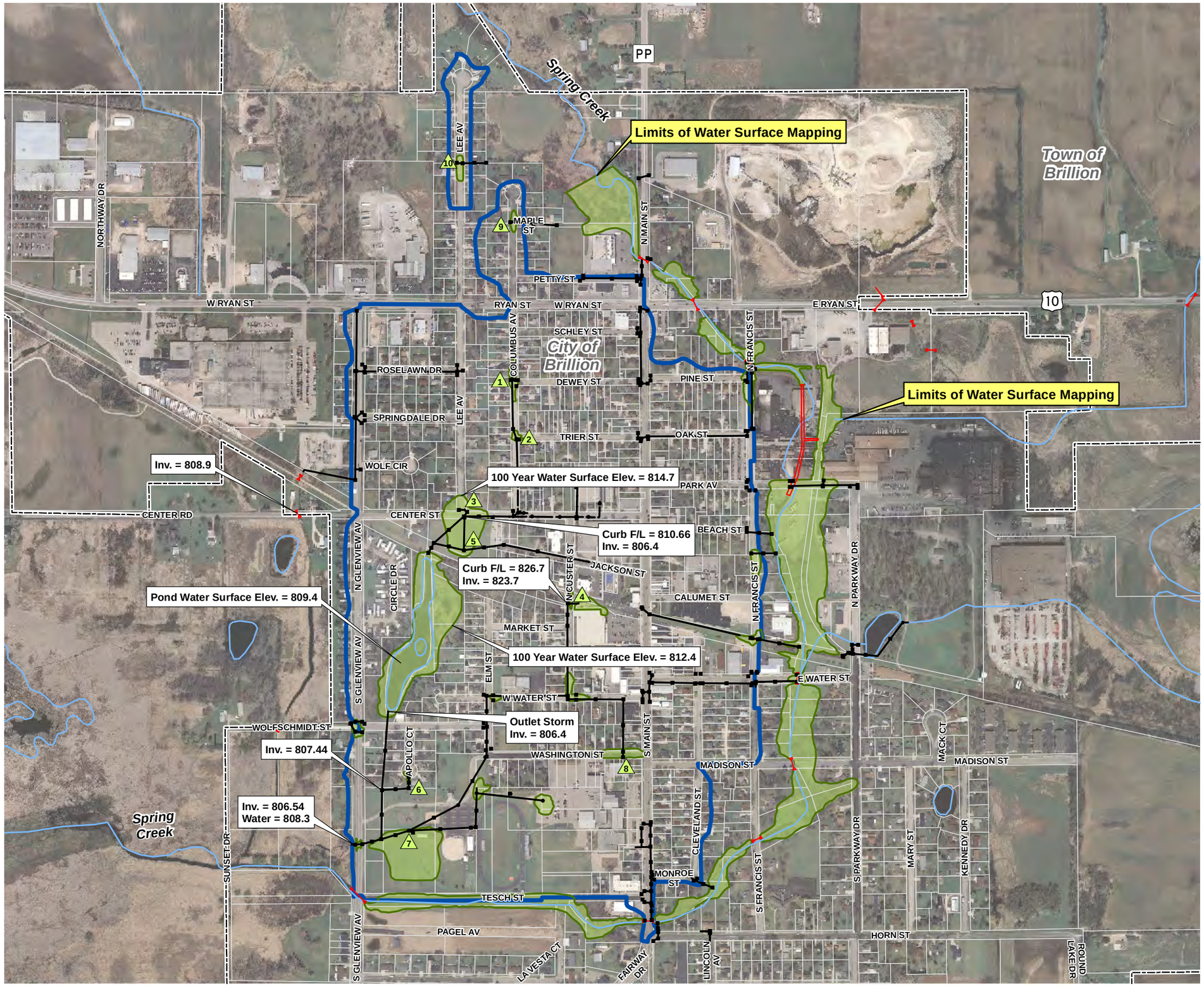

Brillion WI
SMALL CITY, BIG HEART

Mapped Features

- Study Area
- 100 Year Flooding Limits*
- Point of Interest
- Storm Sewer System
- Culvert
- Surface Water
- Parcel Line
- Municipal Boundary

*Flooding Limits reflect current conditions and are used for calculations. 2009 FEMA Flood Insurance Rate Maps (FIRM) reflect conservative mapping analysis.

Source: Calumet County, 2010.

Disclaimer: The property lines, right-of-way lines, and other property information on this drawing were developed or obtained as part of the County Geographic Information System or through the County property tax mapping function. McMAHON does not guarantee this information to be correct, current, or complete. The property and right-of-way information are only intended for use as a general reference and are not intended or suitable for site-specific uses. Any use to the contrary of the above stated uses is the responsibility of the user and such use is at the user's own risk.

0 600 1,200 Feet

McMAHON ENGINEERS ARCHITECTS

FIGURE E-3
FLOODING LIMITS - EXISTING
SPRING CREEK STORMWATER MANAGEMENT PLAN
CITY OF BRILLION
CALUMET COUNTY, WISCONSIN

w:\PROJECTS\B0004\91\0177\02\GIS\FigureE-3_B.mxd December 1, 2011 kpk

3'45.00"

44°13'07.50"

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METE

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0079E

FIRM

FLOOD INSURANCE RATE MAP

CALUMET COUNTY, WISCONSIN AND INCORPORATED AREAS

PANEL 79 OF 295

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CALUMET COUNTY	550035	0079	E
BRILLION, CITY OF	550036	0079	E

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MAP NUMBER
55015C0079E

EFFECTIVE DATE
FEBRUARY 4, 2009

Federal Emergency Management Agency

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ADDITIONAL FLOODPLAIN INFORMATION

To access current FEMA mapping please use this link: http://www.fema.gov.
To view the Brillion area FIRM mapping use panel numbers:

55015C0078E
55015C0079E
55015C0087E
55015C0090E
55015C0091E
55015C0093E

Source: Federal Emergency Management Agency 2014; McMahon Associates, 2010

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APPENDIX E

CITY OF BRILLION INFLOW/
INFILTRATION CORRECTIVE
ACTIONS REPORT

Engineering Report

Infiltration / Inflow (I/I) Corrective Actions

Prepared For The

CITY OF BRILLION

CALUMET COUNTY | WISCONSIN

Prepared By

McMAHON

NEENAH, WISCONSIN

NOVEMBER 9, 2010

McM. No. B0004-900117.02

I. CITY-WIDE FLOODING & INFILTRATION / INFLOW REDUCTION PROGRAM - 1990's

The City of Brillion had a long history of flooding problems. During large storm events, the water would overflow the banks of Spring Creek. Damage due to flooding occurred over a wide area of the City and impacted residential, commercial and industrial properties.

In the mid-1990's, extensive Infiltration/Inflow (I/I) investigations and repairs were done. Manholes in low-lying areas throughout the City were rehabilitated, including repairs of structural defects and bolt down covers, and chimney seals were installed. Several manholes, found to be beyond repair, were completely replaced. Cross-connections between the storm sewer system and the sanitary system were eliminated, and spot repairs were made in the collection system. The Main Lift Station was also upgraded, and the capacity of the Station was increased to convey more flow to the plant. These projects eliminated wet weather related basement backups or bypass pumping at the Main Lift Station.

In addition, in the mid-1990's, the City constructed two detention basins upstream of the City to detain runoff during significant rain events. Additional improvements included enlargement of a culvert restriction and removal of a bridge restriction. These storm water management projects significantly reduced the flooding in the City, which would also reduce I/I.

II. ANNUAL PROGRAMS

Each year, the City has a street maintenance project. The sanitary sewers in the project area are televised to identify defects. If there are defects found during the televising, they are repaired as part of the street project. Repairs include work on leaking manholes and spot repair of sewer mains.

Annually, approximately one-fifth of the sanitary sewer system is cleaned using a jetter. If roots are found during the cleaning process, a root cutter is used to clear the sewer. If other defects are found they are investigated and repaired.

III. INFILTRATION / INFLOW (I/I) INVESTIGATIONS & OTHER ACTIONS - 2008-2009

A. Infiltration / Inflow (I/I) Investigations

Since 2008, various efforts have been undertaken to identify and eliminate I/I in the Brillion System.

Wet weather televising was done in 2008. The interceptor that runs parallel along Spring Creek was televised because this is a wet area, especially during rainstorms. The sanitary sewer in West Ryan Street was also televised because the sewer is constructed in the ditch line and is susceptible to I/I. Additional televising was done generally in the northern portion of the City, which is the older portion on the following streets:

- Madison Street
- Mack Court
- Mary Street
- South Kennedy Drive
- South Parkway Drive
- Northway Drive
- LaVesta Court
- Park Avenue
- Francis Street
- Glenview Avenue
- Dewey Street
- Trier Street
- Calumet Street
- North Main Street
- Main Street
- Beach Street
- Cleveland Street

The televising was reviewed, the manholes on the televised sections were visually observed, and the condition of the manholes was recorded. A summary of visible sources of I/I in manholes, along with a projected rate of I/I, is presented in Table #1.

The sewer televising showed a lot of sewer laterals that were flowing with a lot of water. While it is expected that some laterals would be in use during the televising, it is not likely that such a large number of laterals would be discharging legitimate flows all at the same time. Defective laterals may be contributing a significant volume of clearwater.

Smoke testing was also conducted in 2008. The smoke testing was not very successful because a lot of smoke entered basements, including a nursing home, and smoke also billowed out of a lot of areas. Due to concerns about potential problems the smoke may cause, this work was not continued.

After the smoke testing, a meeting was held with the Plumbing Designer from McMAHON and a local plumber to discuss potential sources of I/I. It was concluded that a majority of the sewer laterals in the older parts of town are constructed of clay tile with oakum joints. It is also possible that, while downspouts may have been disconnected from the sewer, the connections may not have been properly sealed. To further investigate the condition of a sampling of laterals, access was gained to four homes on Trier Street and the laterals were televised.

The investigation reports from the lateral televising are provided in Appendix A. The home owners were sent copies of the reports. The home owner at 118 Trier had a plumber repair the lateral.

During heavy rain events, the system operators will pop manholes to observe the flows in the system. During a rain event in 2008, high flows were observed in the following areas:

- Petty Street at North Main Street
- North Parkway Drive just south of Park Avenue
- Tesch Street west of La Vesta Court (21-inch interceptor)

B. Rate Increase

Sewer rates were increased in 2009 to generate revenue for I/I reduction projects.

C. Clearwater Separation Requirements & Inspections Ordinance

The City has adopted a Time-Of-Sale Clearwater Separation Requirements & Inspections Ordinance. This Ordinance requires a 1 or 2-family property shall not be sold until a

Table #1

MANHOLE CONDITION REPORT
Infiltration / Inflow (I/I) Corrective Actions
CITY OF BRILLION

Qty.	Description	Repair Cost		Projected Clear Water Range			Total Clear Water Range			Removal Approx. 75% Effective Range		
		Each	Total	Each (gpm)			Each (gpm)			Each (gpm)		
37	Installation of Chimney Seals	$330	$12,210	0.5	to	5	19	to	185	14	to	139
3	Replace Open Pick Hole Lids	$250	$750	1	to	3	3	to	9	2	to	7
8	Inlet/Outlet Pipe Connection Leaks in Manholes	$200	$1,600	2	to	6	16	to	48	12	to	36
29	Seal Manholes with Bad Barrel Joints	$400	$11,600	0.5	to	5	15	to	145	11	to	109
2	Raise Castings & Covers Above Grade	$500	$1,000	1	to	3	2	to	6	2	to	5
34	Install Seals on Manhole Lids	$50	$1,700	0.5	to	5	17	to	170	13	to	128
4	Seal Block Manholes	$3,000	$12,000	0.5	to	5	2	to	20	2	to	15
15	Repair Active Manhole Leaks as Necessary	$230	$3,450	0.5	to	5	8	to	75	6	to	56
	Mobilization		$10,000									
	Coordination/Engineering/Contingency		$20,000									
	Opinion of Probable Cost		$70,000									
							Projected Clear Water Reduction, gpm			60	to	494

clearwater inspection has been conducted by the City Building Inspector. Corrections must be made prior to finalizing the home sale. A copy of the Ordinance is provided in Appendix B.

IV. 2010 CONSTRUCTION PROJECTS

During 2010, the following sanitary sewer projects were completed:

- Reconstruction of two fiberglass manholes that were in poor condition and leaking.
- Repair of a section of broken 8-inch sanitary sewer on Horn Street.
- Lining of approximately 400 LF of 8-inch sanitary sewer in an easement located north of Ryan Street and west of Lee Avenue (work to be completed in November 2010) and reconstruction of two manholes.

Additionally, a mini-storm sewer was constructed on National Avenue as part of the street repair project. The mini-storm sewer provides the home owners a place to discharge sump pump flows. If the home owners have a storm sewer to discharge clearwater flows to, they may be more inclined to eliminate illicit discharges to the sanitary sewer.

Roots were cut out of the 8-inch sanitary sewer in Francis Street from East Water Street to Madison Street.

V. INFILTRATION / INFLOW REPORT - SEPTEMBER 2010

The City retained the services of McMAHON to provide the following Scope of Services related to I/I investigations:

- Interview Midwest Contract Operations, Inc. (MCO) and City Staff to obtain 'hands-on' knowledge of system operations.
- Review previous investigations/studies.
- Coordinate with MCO flow monitoring at five locations for a 24-hour period.
- Compile weekly flow monitoring and rainfall data, and review for validity. Communicate inconsistences with MCO and City Staff as data collection occurs.
- Summarize flow monitoring data.
- Calculate I/I rates in the sub-basins using the flow monitoring data.
- Utilize Wisconsin Department Of Natural Resources (DNR) criteria for determining if the inflow and/or infiltration rates are excessive.
- In areas with excessive inflow or infiltration, recommend investigative techniques for determining I/I sources.
- Present the final results to the Utility Commission.

Based on the calculations presented in the report, it was concluded that I/I is excessive in the Brillion system. The following recommendations were included in the report:

- Complete the framework of items for implementation of the I/I Plan (refer to Table #2).
- Verify repairs recommended from previous studies were completed.
- Continue to perform springtime field inspections to identify I/I sources documenting problem areas with the City's GIS system.
- Identify and create a 5-year Capital Improvement Plan to eliminate large leaks and improperly connected sump pumps.

Additional recommendations are to focus investigations in Basin #2 and Basin #5, which had the highest recorded flow peaks during the flow monitoring. It was also recommended that the City consider a City-wide Storm Water Investigation. The focus of this investigation would be to identify areas where the existing storm sewer system can be extended. Also, deficiencies in the storm sewer system would be identified indicating a need for storm water detention ponds and/or storm sewer interceptors.

The Utility Commission reviewed and discussed the Infiltration/Inflow Report at their regularly scheduled meeting on September 20, 2010.

A Joint Meeting was held with the City Council and the Utility Commission on November 8, 2010. At that meeting, the City Council passed a motion to undertake a City-Wide Storm Water Management Plan. A Scope Of Services will be submitted to the City for the Management Plan in the near future.

Respectfully submitted,

Amy J. Vaclavik

Amy J. Vaclavik, P.E., BCEE
Associate / Senior Project Engineer
McMAHON

Table #2

FRAMEWORK OF ITEMS FOR IMPLEMENTATION OF INFILTRATION / INFLOW (I/I) PLAN
InfiltratiOn / Inflow (I/I) Corrective Actions
CITY OF BRILLION

Action Item:	Priority	Person or Persons Responsible for Completion
Update the sewer use ordinance.		
Develop informational materials to educate the public via utility bills, newsletters, newspaper, etc. to gain public buy-in.		
Hold joint meetings with the Common Council to discuss and obtain buy in for I/I program.		
Develop a CMOM program.		
Ensure legal authority to require inspection of private laterals and repairs as needed. This is very important in reducing I/I and the risk of basement backups for the homeowner.		
Identify funding mechanisms for I/I sewer system evaluation and projects.		
Develop Enforcement Action Program – An enforcement program should be clearly defined in a step by step process. Each step should be documented and communicated so that in cases where enforcement action is required, it is fair and legally defensible. Legal council should review and approve the enforcement program.		

APPENDIX A

TRIER STREET LATERAL TELEVISING INVESTIGATION REPORTS

McMAHON
ENGINEERS ARCHITECTS

City of Brillion
Televising Report
McM. No. B0004-990611

October 30, 2009

Address:	118 Trier
Date:	10/29/09
Weather:	Mostly cloudy. Not raining at time televising.
Temperature:	54°
Pipe Material:	4" cast iron above floor 6" clay pipe below floor
Condition:	Certain pipe sections were out of alignment. Deposits and leaking at main sewer cleanout. Evidence of small roots. Interior surface of pipe relatively good condition.
Storm Sump Pump:	No

Comments

Televised sanitary building drain and sanitary sewer through the 4" cast iron stack located on the west side of the basement. Cast iron pipe penetrated the floor and transitioned to clay pipe immediately below the floor. Sanitary building drain runs southeast from stack and heads south through a wye fitting at 13'- 0" east of the west basement wall. Water was observed running upstream of the wye fitting, which serves the kitchen sink drain, and two floor drains. No water was being used at the time of televising, so groundwater appears to be infiltrating the sanitary building drain, in the section leading to the kitchen sink stack. No water infiltration was noted at the two floor drains. At the floor cleanout on the south wall, water was dripping at the pipe joint and mineral deposits were evident in the sidewall. Roots where noted at joints and also in the center of one pipe section. Water appeared to bubble through one joint in the sewer.

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1909 - 2009

Address:	133 Trier
Date:	10/29/09
Weather:	Mostly cloudy. Not raining at time televising.
Temperature:	54°
Pipe Material:	4" cast iron and PVC above floor 6" clay pipe below floor
Condition:	Certain pipe sections were out of alignment. Open joint immediately below floor with root ball, evidence of roots at numerous joints.
Storm Sump Pump:	Yes

Comments

Cut apart 4" PVC stack located on the west wall and televised sanitary building drain and building sewer. PVC pipe transitioned to cast iron, then clay pipe below the basement floor. Root balls were found immediately downstream of the base of the stack. A wye fitting located near the exterior basement wall is probably the main sewer cleanout, but was located under cabinetry and not found in the basement. Evidence of water infiltration was minimal although numerous joints had roots penetrating, which indicates an opening in the joint between pipe sections.

The basement has a cistern which was full of water. Roof water from the southwest area of the house enters the cistern through the west wall. The gutter is broken on the west side so only a portion of the roof over the entryway feeds the cistern. A 2-1/2"± overflow from the cistern exists the building through the west wall. If the roof gutter is repaired, it is our opinion that the rain water could overflow the cistern and run into the basement sanitary floor drain.

A sump pump is located under the south basement stairway. The discharge pipe is broken at the west wall.

Another sump pump is located at the north end of the basement along the west wall. No drain tile is evident at the pit. The pump discharges to the basement floor at 5'- 0" from the floor drain. The floor was dry around the pump discharge.

MLS: sdk
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McMAHON
ENGINEERS ARCHITECTS

City of Brillion
Televising Report
McM. No. B0004-990611

November 4, 2009

Address:	203 Trier
Date:	11/3/09
Weather:	Mostly sunny.
Temperature:	43°
Pipe Material:	cast iron, copper & PVC above floor 6" clay pipe below floor
Condition:	Certain pipe sections were out of alignment. Evidence of small roots. Interior surface of pipe sections in good condition.
Storm Sump Pump:	No

Comments

Televised sanitary building drain starting at south stack which serves the kitchen sink. Could not push camera entire length of sewer so removed the camera. First 15'- 0" of building drain is partially clogged with grease. Televised and video taped building drain and sewer through main floor cleanout located on the west wall of the basement. Video was filmed starting at the main sewer in the street and pulled back to the main sewer cleanout. Building drain runs north and south along west wall of basement, and then jogs to the west at the main floor cleanout. No water was used during televising and a slight flow was observed in the sewer which is potential ground water infiltration. No dripping or leaking at joints was observed. Numerous joints were misaligned, and a substance that looked like oakum was bulging through the joint. It appeared as if a portion of the packing material pushed through the joint when the sewer was installed. Roots were noted at joints.

In the basement, a pipe from the crawl space enters the floor drain pit at the southwest corner. The owner's son advised that the water runs from the pipe during heavy rainstorms. The pipe may connect to foundation drainage.

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A Century of Innovation & Trust
1909 - 2009

Address:	121 Trier
Date:	11/3/09
Weather:	Mostly sunny.
Temperature:	43°
Pipe Material:	Cast iron above floor
	6" clay pipe below floor
Condition:	Pipe sections were in alignment, without gaps.

Storm Sump Pump: No

Comments

Televised sanitary building drain starting at the 4" cast iron stack located at the south end of the basement. Sanitary building drain extends northeast, and then exits the basement under the east wall. An abandoned 2" hub drain at the southeast corner of the house was originally connected to a downspout. The pipe is open at grade and connected to the sanitary sewer. The sewer was installed at a continuous slope, and the joints were in alignment without gaps. Small roots were noted at various joints. A slight flow due to water infiltration was observed in the sewer, just outside the basement wall.

The sewer was video taped starting at the main sewer in the street and pulled back to the 4" cleanout.

APPENDIX B

TIME-OF-SALE CLEARWATER SEPARATION ORDINANCE

ORDINANCE NO. OR09-__

AN ORDINANCE AMENDING THE MUNICIPAL CODE, CHAPTER 106, ZONING, ARTICLE II. GENERAL PROVISIONS, SECTION 106-49, CLEARWATER SEPARATION AS IT RELATES TO CLEARWATER SEPARATION REQUIREMENTS AND INSPECTIONS IN THE CITY OF BRILLION, CALUMET COUNTY, WISCONSIN

The Common Council of the City of Brillion do ordain as follows:

SECTION I: Chapter 106, Zoning, Article II. General Provisions, Section 106-49, Clearwater Separation, is hereby amended to add the following

Sec. 106-49 Clearwater separation requirements and inspection of pre-2000 residential properties.

(a) No person shall sell, transfer or convey ownership of any one-(1)- or two (2-) family residential building, constructed before January 1, 2000 and serviced by a sanitary sewer, until such time as a clear water inspection has been made or approved by the building inspection department as provided in this section. Changing ownership or accepting change of ownership without such an inspection shall constitute a violation of this section and shall be subject to the penalties set forth in section 106-70.

(b) The building inspection department shall, upon request, conduct an inspection of the premise to ensure compliance with the provisions of this section relating to illegal surface or ground water connections into the sanitary sewer system. Such inspection shall occur on or before the sale, transfer or conveyance of title of any such building but may occur thereafter if for some reason not requested earlier by the owner.

(c) A notice of noncompliance shall be issued by the building inspection department to the owner of record of any residential building not to be found in compliance with the provisions of this section. The notice shall set forth areas of noncompliance and shall order the owner to bring the building into compliance within an established period of time, in the noncompliance order.

(d) Where a request for inspection is made pursuant to this section, and if it is found that the premises was subject to a clear water inspection within the prior year, the owner may verify in writing that no changes have been made since the last inspection that would cause the premises to be noncompliant with this section and a re-inspection will not be required.

(e) In order to avoid delay or prevent a pending sale of a property affected by this section, a buyer or other transferee may file with the building inspection department evidence of a contract or accepted bid for work which, when

complete, will bring the property into compliance with this section. Compliance shall be met within the time limits set forth in subsection (c) above, along with evidence that adequate funds have been escrowed to complete said work. Also, a signed stipulation shall be on record agreeing to bring the property into compliance with this section with the applicable time limits. Said evidence and stipulation may only be filed after the inspection provided for in subsection (b) above is made. Failure by the buyer or transferee to bring the property into compliance within the applicable compliance period shall constitute a violation of this section and shall be subject to the penalties set forth in section 106-70.

(f) No warranty. An inspection meeting compliance only indicates that so far as can be reasonably determined by a visual inspection of the premises and review of City records, the premises meets the requirements of this section. Neither the City nor its inspectors assume any liability in the inspection findings, whether compliant or not and we do not guarantee or warrant the condition of the premises inspected.

(g) Not liable. The City of Brillion will not be liable for any unsafe or sanitary conditions that exist in any building inspected for Clearwater compliance. However, if any such conditions exist, and are noticed by an inspector, authority shall be granted to issue orders to correct such conditions.

(h) Fees, and re-inspection. The inspection fee will be the minimum fee for special projects as per Section 14-123.

SECTION II: This ordinance shall take effect upon passage and publication as required by law.

Ordinance Number OR09-__ introduced and its adoption moved by Alderperson _____; and seconded by Alderperson _____.

Upon a pole vote thereon, the result was as follows:

____ Votes Cast
____ Votes Yes
____ Votes No

The Mayor declared Ordinance Number OR09-__ adopted, approved and signed the same this _____ day of December, 2009.

_____
Gary Deiter
Mayor

Attested: _____
Lori M. Gosz, CMC
City Administrator/Clerk-Treasurer

Facilities Plan
Executive Summary

To Address
Wet Weather Peak Flows

Prepared For The
CITY OF BRILLION
CALUMET COUNTY | WISCONSIN

Prepared By
McMAHON
NEENAH, WISCONSIN

NOVEMBER 21, 2011
McM. No. B0004-910145

EXECUTIVE SUMMARY

The City of Brillion owns and operates the sanitary sewer collection system and Wastewater Treatment Facility that serves the residents and businesses in the City. Flows within the system have increased over the years and in 2010, during significant rain events, bypassing of flows occurred at both the Main Lift Station and at the Wastewater Treatment Facility, and basements were flooded. The Wisconsin Department of Natural Resources (DNR) issued a Notice of Violation of Section 5.2.6 of the WPDES permit for bypassing domestic sewage. After further review of the situation by the DNR, the City and the DNR entered into a Compliance Agreement, which requires the City to take actions to return to permit compliance. This Facilities Plan to Address Wet Weather Peak Flows has been prepared as required by the Agreement.

A Storm Water Management Plan has also been prepared, and was presented to the City Council, the Utility Commission and interested property owners on October 17, 2011. The operation of the storm sewer system is significantly restricted by the water level in the Brillion Marsh, located directly west of the City. The DNR has indicated that it is willing to meet with the City to discuss the impact the Marsh is having on the City. The Storm Water Management Plan will not be completed until that meeting is held. At this time, that meeting has not been scheduled.

During the Facility Planning process, the option of increasing the capacity of the Main Lift Station and the Wastewater Treatment Facility to handle peak flows was evaluated. A peak flow event, which occurred from July 22 to 24, 2010, was used to predict the current peak wastewater flows for the City. The City received 3.73-inches of rainfall over this period. Due to the high flows in the sewer system, flows were bypassed at the Wastewater Treatment Facility and the Main Lift Station. Several basements were also flooded. The estimated current peak wet weather flow to the Plant is projected to be 9.03 mgd (million gallons per day). The estimated hydraulic capacity of the existing Plant is 3.0 mgd. The upgrades needed at the Wastewater Treatment Facility to process 9.03 mgd would be extensive at a projected cost of $10.5 million.

Increasing the capacity of the Wastewater Treatment Facility is neither a feasible nor cost effective option for peak wet weather flow mitigation for the City. The low frequency of peak wet weather flow events and the extremely high peaking factor, compared to the Facility's average design flow, do not justify the gross oversizing of pumping and other unit processes. In addition, oversizing would likely create operational difficulties and loss of treatment efficiency under normal wastewater flows and loadings conditions.

The Utility Commission has decided to focus on an Infiltration/Inflow (I/I) Reduction Program to reduce peak wet weather flows in the system. The proposed program consists of:

- Private Sanitary Sewer Lateral Remediation Program:

  This program would consist of replacement or remediation of non-plastic material laterals on private property initially. Properties without sump pumps would be required to have sump pumps installed. The portion of the laterals located in the public right-of-way would be replaced or remediated as part of future street or utility replacement projects. The program costs would be assessed to the property owner and could be paid back to the City, with interest, over a 3-year period. The Utility Commission is currently working on Ordinances to implement this program.

- Other I/I Reduction Projects:

  - Replacement of manhole covers with open pick holes. (completed 2011)
  - Horn Park sewer replacement.
  - Columbus Street, north of HWY "10", street and utility replacement. If the City decides to move forward with the reconstruction of Columbus Street the sanitary sewer system, including laterals, sewer mains and manholes would be replaced.
  - Continue to enforce the Ordinance to eliminate illegal discharges to sanitary sewer when house is sold.

- Continue to educate the public by providing information about I/I, illegal connections, minimizing grease discharge to the sanitary sewer, backflow preventer installation, and homeowner insurance coverage. Public information can be distributed via the Brillion News, the City Newsletter, City website, handouts at City buildings, and at Public Information meetings.
- Conduct property inspections for illegal connections when City personnel enter buildings for meter changes, cross-connection survey, etc.
- Implement future sanitary sewer and lateral replacement/remediation projects as part of other street and/or utility replacement projects.
- Rehabilitate/reconstruct manholes as part of sewer replacement projects.

The Facilities Plan to Address Wet Weather Peak Flows will be submitted to the Department Of Natural Resources (DNR) on November 30, 2011, as required by the Compliance Agreement. A meeting will be held with the DNR to review the Plan and to develop a Compliance Schedule for the implementation of the I/I Reduction Program.

Respectively Submitted,

McMAHON

Amy J. Vaclavik, P.E., BCEE
Associate / Senior Project Engineer

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Facilities Plan

To Address
Wet Weather Peak Flows

Prepared For The

CITY OF BRILLION

CALUMET COUNTY | WISCONSIN

Brillion WI

SMALL CITY, BIG HEART

REVISED: NOVEMBER 29, 2011
NOVEMBER 11, 2011

McM. No. B0004-910145

AJV:

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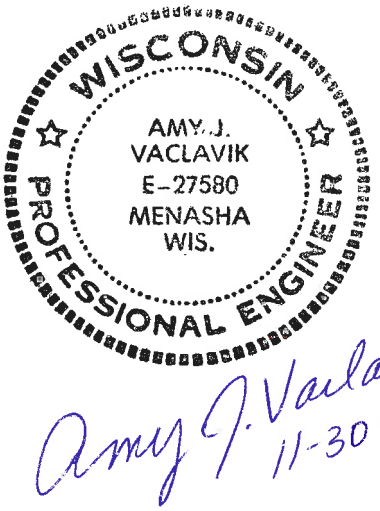
Facilities Plan

To Address
Wet Weather Peak Flows

Prepared For The
CITY OF BRILLION
CALUMET COUNTY | WISCONSIN

Prepared By
McMAHON
NEENAH, WISCONSIN

REVISED: NOVEMBER 29, 2011
NOVEMBER 11, 2011
McM. No. B0004-910145



Amy J. Vaclavik 11-30-11

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Facilities Plan

To Address
Wet Weather Peak Flows

Prepared For The
CITY OF BRILLION
CALUMET COUNTY | WISCONSIN

Prepared By
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NEENAH, WISCONSIN

REVISED: NOVEMBER 29, 2011
NOVEMBER 11, 2011
McM. No. B0004-910145

I. BACKGROUND

The City of Brillion owns and operates the sanitary sewer collection system and Wastewater Treatment Facility that serves the residents and businesses in the City. Flows within the system have increased over the years and in 2010, during significant rain events, bypassing of flows occurred at both the Main Lift Station and at the Wastewater Treatment Facility, and basements were flooded. The Wisconsin Department of Natural Resources (DNR) issued a Notice of Violation of Section 5.2.6 of the WPDES permit for bypassing domestic sewage. After further review of the situation by the DNR, the City and the DNR entered into a Compliance Agreement, which requires the City to take actions to return to permit compliance. Copies of the Notice of Violation and the Compliance Agreement are provided in Appendix A. A summary of the Compliance Agreement requirements is presented in Table #1. This Facilities Plan to Address Wet Weather Peak Flows has been prepared as required by the Agreement.

A Storm Water Management Plan has been prepared and was presented to the City Council, Utility Commission, and interested property owners on October 17, 2011. The operation of the storm sewer system is significantly restricted by the water level in the Brillion Marsh, located directly west of the City. The DNR has indicated that it is willing to meet with the City to discuss the impact the Marsh is having on the City. The Storm Water Management Plan will not be completed until that meeting is held. At this time, that meeting has not been scheduled.

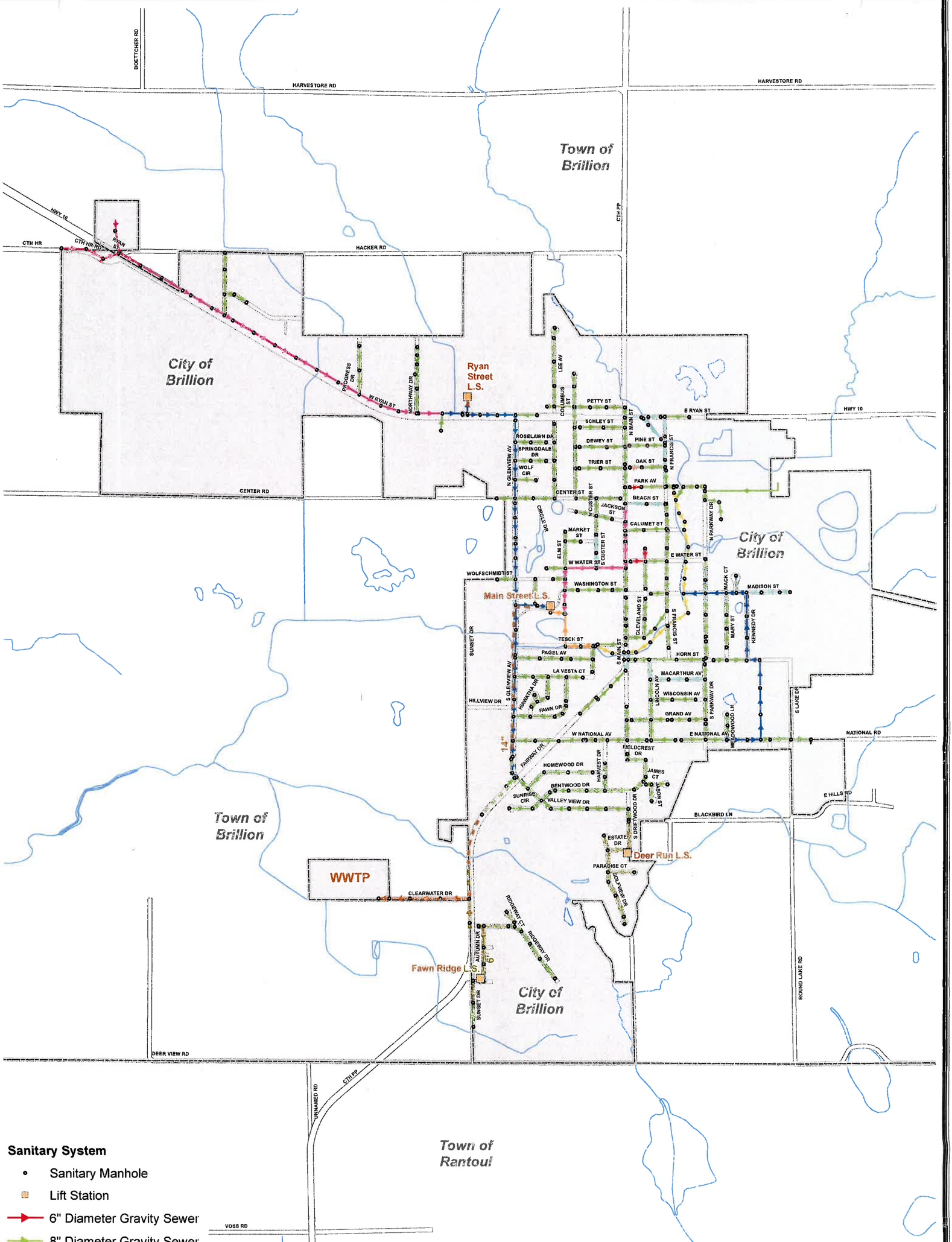
An Infiltration/Inflow Report, dated September 16, 2010, was prepared for the City by McMAHON. In order to determine and isolate the priority areas where Infiltration/Inflow (I/I) is excessive, previous system investigations were reviewed, and the system operators and City staff were interviewed to obtain operational information. Flow monitoring was conducted and analyzed. The data gathered and the conclusions/recommendations made in the September 2010 Report will be incorporated into this current Plan.

Table #1

COMPLIANCE AGREEMENT
WITH THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES SUMMARY

Actions Per Agreement	Action To Include	Deadline For Submittal To DNR
Notify DNR Of Any Overflows	Verbal and written notices to DNR of any sanitary sewer overflows as required by the permit	As They Occur
Develop A Manhole Corrective Action Plan	Address manhole defects identified.	March 15, 2011 (response to DNR was submitted on 3/23/11)
Develop A Storm Water Management Plan	Goals of Storm Water Management Plan: • Evaluate the existing storm sewer system to determine if adequate capacity is available. • Identify flood prone areas that may contribute to I/I problems. • Evaluate the feasibility of mini-storm sewers for sump pump discharges. • Identify alternatives to address system deficiencies, which may include the addition of storm water ponds, storm sewer interceptors. or increasing system capacity by increasing pipe sizes. • Evaluation of pros and cons of the options identified for effectively managing storm water.	December 1, 2011
Prepare A Facilities Plan	Goals of Facilities Plan: • Address wet weather peak flows. • Present and evaluate corrective actions.	December 1, 2011

After review of the Storm Water Management Plan and the Facility Plan, the DNR will negotiate what corrective actions will be taken and the timeline by which the corrective action will be taken.



Sanitary System

- Sanitary Manhole
- Lift Station
- 6" Diameter Gravity Sewer
- 8" Diameter Gravity Sewer
- 10" Diameter Gravity Sewer
- 12" Diameter Gravity Sewer
- 15" Diameter Gravity Sewer
- 18" Diameter Gravity Sewer
- 20" Diameter Gravity Sewer
- 21" Diameter Gravity Sewer
- Sanitary Forcemain

Other Mapped Features

- Municipal Boundary
- Right-of-Way Line
- Stream

0 1,500 3,000 Feet

Source: Calumet County, 2009-2001.

Disclaimer: The property lines, right-of-way lines, and other property information on this drawing were developed or obtained as part of the County Geographic Information System or through the County property tax mapping function. McMAHON does not guarantee this information to be correct, current, or complete. The property and right-of-way information are only intended for use as a general reference and are not intended or suitable for site-specific uses. Any use to the contrary of the above stated uses is the responsibility of the user and such use is at the user's own risk.

Brillion WI SMALL CITY, BIG HEART

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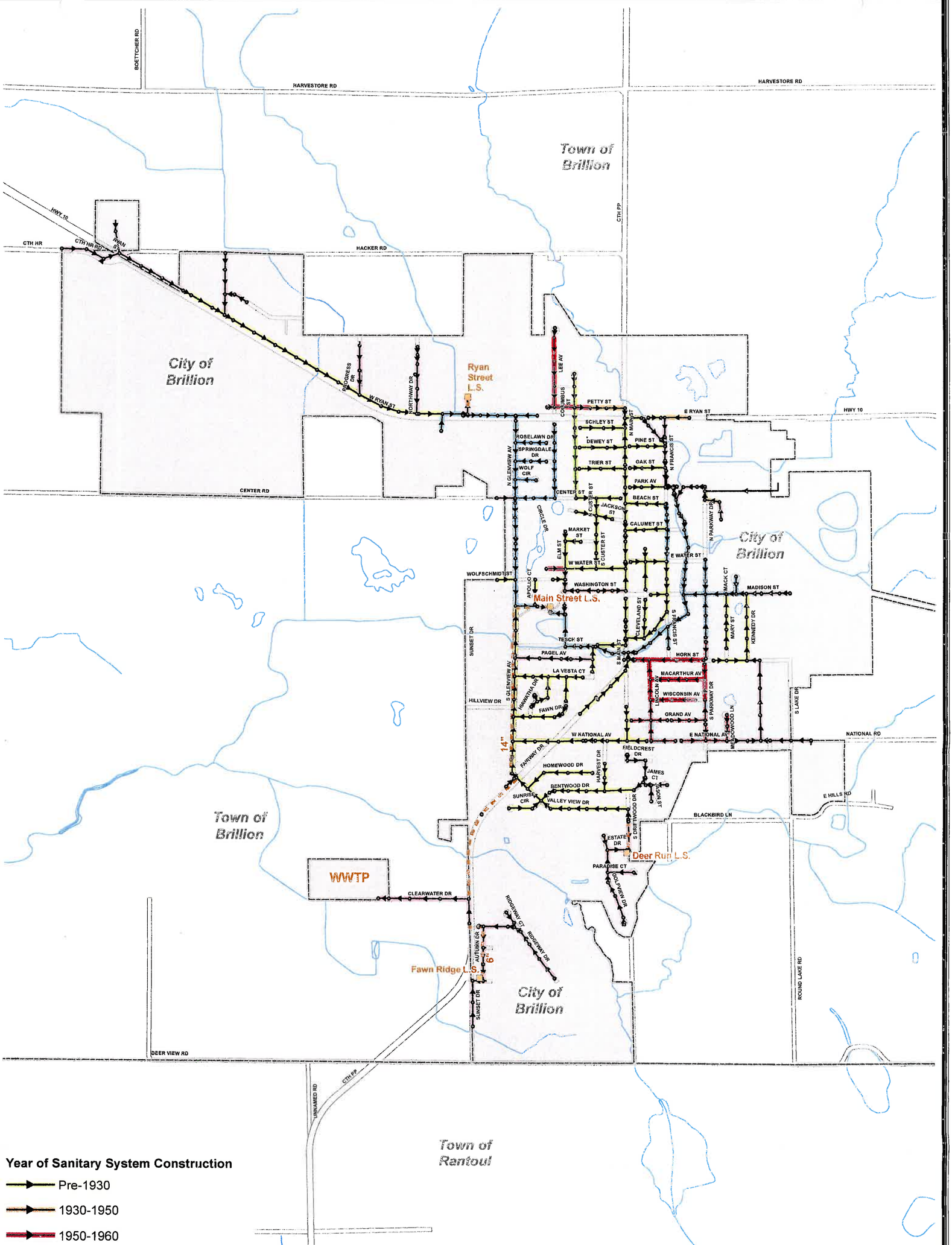
FIGURE 1
SANITARY SEWER SYSTEM
CITY OF BRILLION
CALUMET COUNTY, WISCONSIN



Year of Sanitary System Construction

- Pre-1930
- 1930-1950
- 1950-1960
- 1960-1970
- 1970-1980
- 1980-Present

Additional Sanitary System Features

- Sanitary Manhole
- Lift Station
- Sanitary Forcemain

Other Mapped Features

- Municipal Boundary
- Right-of-Way Line
- Stream

0 1,500 3,000 Feet

Source: Calumet County, 2009-2001.

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FIGURE 2
SANITARY SEWER SYSTEM CONSTRUCTION DATES
CITY OF BRILLION
CALUMET COUNTY, WISCONSIN

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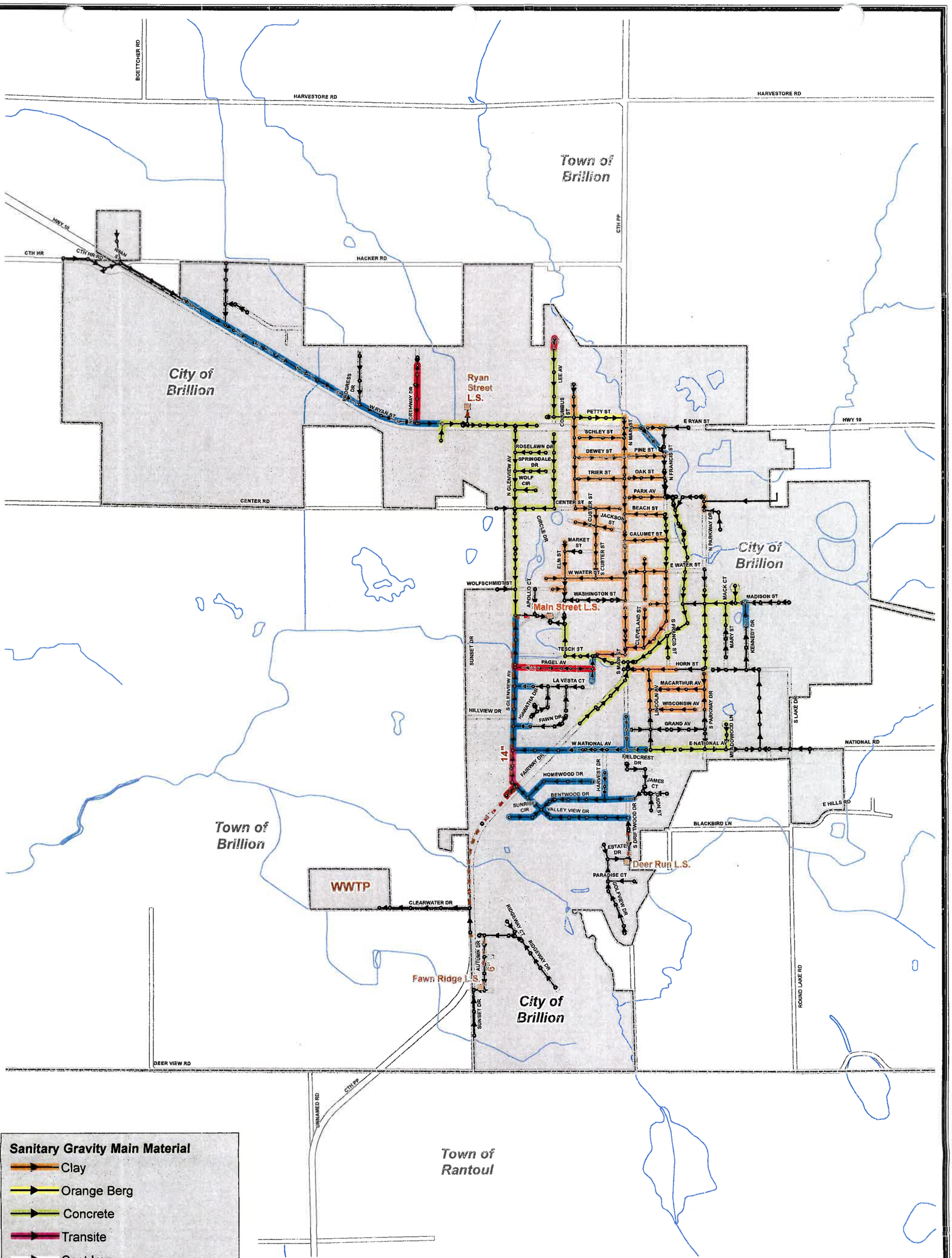

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FIGURE 3
SANITARY GRAVITY MAIN PIPE MATERIAL
CITY OF BRILLION
CALUMET COUNTY, WISCONSIN

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II. CURRENT SITUATION & NEEDS ASSESSMENT

A. Description Of Sanitary Sewer System

1. Collection System:

The City of Brillion sanitary sewer system is composed of approximately 20.6-miles of sanitary sewer. There are four lift stations in the system. Pipes in the system range from 6-inches to 21-inches in diameter. A map of the system is provided on Figure #1.

A majority of the collection system flows by gravity to the Main Lift Station, located in Peters Park, and is then pumped via a 14-inch force main to the Wastewater Treatment Facility. Sections of the system were constructed prior to 1930, and approximately half of the system was constructed prior to 1960. The sewers are constructed of a wide variety of materials, such as concrete, A.B.S. composite pipe, vitrified clay, asbestos cement and PVC pipe. Detailed information is not available on the amount of pipe of certain materials in the system. However, investigations conducted in 1981 concluded that it is likely that approximately half of the sewers and laterals are vitrified clay pipe. Sewer mains constructed since the 1970's have been constructed of PVC pipe. The approximate age of the sewer system is illustrated on Figure #2. A map showing pipe material is presented on Figure #3.

Annually, approximately one-fifth of the sanitary sewer system is cleaned using a jetter. If roots are found during the cleaning process, a root cutter is used to clear the sewer. If other defects are found, they are investigated and repaired. Prior to a street improvement project, the sewers in the project area are televised to identify defects. If there are defects found during the televising, they are repaired as part of the street project. Repairs include work on leaking manholes and spot repair of sewer mains.

2. Lift Stations:

There are four lift stations in the Brillion sewer system. The location of the stations is shown on Figure #1. The Ryan Street Lift Station is located on Ryan Street (STH '10'), west of Glenview Drive. This station serves the area west of station, which includes primarily non-residential development.

The Deer Run Lift Station, located on South Driftwood Drive, serves the Deer Run Subdivision.

The Main Lift Station conveys nearly all of the wastewater from the City to the Wastewater Treatment Facility. The Main Station is located near the site of the original Wastewater Treatment Facility, east of Glenview Avenue in Peters Park. This station was originally constructed in 1981 and upgraded in 1993.

The Fawn Ridge Lift Station is located in the far south area of the City. This station serves the Fawn Ridge Subdivision. Flow from this station is conveyed via a force main and gravity sewer north to Clearwater Drive, where it discharges to the 21-inch gravity sewer that carries all wastewater to the Wastewater Treatment Facility. The area served by this lift station is the only portion of the City that does not flow to the Main Lift Station.

B. Description Of Wastewater Treatment Facilities

The existing Wastewater Treatment Facility was constructed in 1980, and consist primarily of conventional activated sludge treatment. The original design parameters are as follows:

Existing WWTF Design Criteria :

Average Q, mgd	0.708
Peak Q, mgd	1.764
Ultimate Peak Hydraulic Capacity, mgd	3.0
BOD, ppd	1,180
TSS, ppd	1,420
Phosphorus, ppd	53

A majority of the City's wastewater flow is pumped to the Wastewater Treatment Facility from the Main Lift Station, located near Peters Park, which consists of three dry pit screw centrifugal solids handling pumps installed in 1993, and each rated for 2,000 gpm at 62-feet of TDH. A small lift station serving the Fawn Ridge Subdivision also pumps to the Wastewater Treatment Facility. Flows from the two lift stations combine in a 21-inch gravity sewer at the entrance to the Wastewater Treatment Facility and discharge to the Headworks facility upstream of a 2.5 mgd capacity vortex grit removal system. Following grit removal, raw wastewater passes through a cylindrical fine screen with a perforated plate screening basket containing ¼-inch openings and then through a 6-inch Parshall flume to measure the flow rate. The fine screen was installed and the influent channel enclosed with a building in 2001. The flume ultrasonic level measurement and flow reporting system is calibrated for 1,500 gpm maximum. The raw wastewater is also sampled in the Headworks using a refrigerated composite sampler.

Screened and de-gritted wastewater is split between two 30-foot diameter circular primary clarifiers with a sidewater depth of 8-feet. The clarifiers have design surface overflow and

weir loading rates of 575 gpd/sq.ft. and 4,720 gpd/ft., respectively, at a design flow rate of 407,000 gpd to each clarifier.

Primary effluent flows by gravity in an 18-inch pipe to the aeration basin distribution channel, which runs between the two 60-foot x 20-foot aeration basins with a sidewater depth of approximately 12-foot, 3-inches. The aeration basins were designed to be operated in a step feed configuration, where primary effluent is distributed along the length of the aeration basins. The aeration basins were designed for a Biochemical Oxygen Demand (BOD) loading of 40.1 lbs./1,000 cu.ft. and a hydraulic retention time of 7.5 hours. Air is supplied to the aeration basins through fine bubble tube diffusers by large centrifugal blowers. The aeration basins are designed for spiral roll mixing with the diffusers mounted to removable swiveling air headers along the outside wall of the tank. Mixed liquor from the aeration basins is split between two 30-foot diameter secondary clarifiers with a sidewater depth of 10-feet.

Brillion meets the WPDES permit effluent phosphorus limit through chemical precipitation of phosphate. Alum or ferric is added to the mixed liquor at the secondary clarifier splitter box, and precipitated phosphorus is settled out in secondary clarifiers. Phosphorus removal chemical is stored in an 8,000-gallon fiberglass storage tank near the secondary clarifiers. Chemical feed pumps are located in the Pump Building.

Secondary effluent flows by gravity in an 18-inch pipe to a diversion channel, where two helical screw pumps, each rated for 1,300 gpm, normally lift the effluent to four 8-foot x 10-foot tertiary filters with activated carbon media. The filters were designed for an average filtration rate of 1.5 gpm/sq.ft. and 5.1 gpm/sq.ft. at peak flow with one filter backwashing. The filters were designed with combined air/water backwashing at 12 gpm/sq.ft. of water and 7 cfm/sq.ft. of air. The filters can also be bypassed in the diversion channel.

Following tertiary filtration, the treated effluent flows through a chlorine contact tank providing 32-minutes of retention time at the peak design flow. Air is supplied to coarse bubble diffusers near the end of the tank to increase Dissolved Oxygen (D.O.) prior to discharge. Filter backwash water and effluent reuse are also supplied from the chlorine contact tank. Following dechlorination, effluent is discharged from the plant through a 24-inch outfall.

Primary and secondary sludge are pumped to an aerobic digester for stabilization. The two 40-foot x 20-foot x 12-foot sidewater depth primary aerobic digester tanks and 20-foot x 8-foot x 12-foot sidewater depth holding tank provide a design solids residence time of 20.5-days. The tanks are aerated and mixed using coarse bubble diffusers. The tanks were partially covered with precast panels in 2001 to help retain heat and promote digestion in

the cold winter months. A decant thickening tank is also available as part of the digestion system.

A reed bed sludge dewatering and storage system was constructed in 2001 to replace the original belt filter press dewatering system. The reed bed system consists of nine 4,680 sq.ft. reed beds with perforated drain tile draining back to a sanitary manhole outside of the Pump Building, where it is returned to the treatment system.

C. WPDES Permit

The existing Wastewater Treatment Facility discharges to an unnamed tributary to Spring Creek in the North Branch of the Manitowoc River Watershed under WPDES Permit No. WI-0020443-08-0, issued October 1, 2010 and expiring September 30, 2015. The effluent discharge limits are as follows:

Parameter	Limit Type	Limit	Sample Frequency	Sample Type
Flow		MGD	Daily	Continuous
Total BOD_5	Weekly Avg.	30 mg/L	2/Week	24-Hr Flow Prop Composite
	Monthly Avg.	20 mg/L		
Total Suspended Solids	Weekly Avg.	30 mg/L	2/Week	24-Hr Flow Prop Composite
	Monthly Avg.	20 mg/L		
Dissolved Oxygen	Daily Min.	4.0 mg/L	5/Week	Grab
pH Field	Daily Min.	6.0 s.u.	5/Week	Grab
	Daily Max.	9.0 s.u.		
Total Phosphorus	Monthly Avg.	1.0 mg/L	2/Week	24-Hr Flow Prop Composite
Chloride	Daily Max	1,500 mg/L	Monthly	24-Hr Flow Prop Composite
			Weekly	
Total Ammonia Nitrogen *		mg/L	Weekly	24-Hr Flow Prop Composite
Acute WET		TU_a	Summer 2012, Winter 2014	24-Hr Flow Prop Composite
Chronic WET		rTU_c	Summer 2012, Winter 2014	24-Hr Flow Prop Composite

* The WPDES permit contains effluent ammonia-nitrogen limits, which become effective in October 1, 2014, and a schedule of compliance related to data collection and facility modifications. The limits contained in the current permit were calculated based on default seasonal background values for pH and temperature. Therefore, Brillion conducted monthly in-stream testing for both parameters in 2010, and the ammonia limits were recently recalculated based on the new data.

The new effluent limits are as follows:

Months	Effluent Limitations
June-September	5.7 mg/L weekly average, 2.3 mg/L monthly average
October-November	5.8 mg/L weekly average, 2.3 mg/L monthly average
December-March	18 mg/L weekly average, 7.0 mg/L monthly average
April-May	8.0 mg/L weekly average, 3.2 mg/L monthly average

It should be noted that additional testing is currently being undertaken by the City of Brillion during October and November 2011 in an effort to generate more data for use in recalculating the effluent ammonia limits for the period between October 1 and November 30. A Report on Effluent Ammonia Discharges is due to the DNR by November 30, 2011. Based on this report, an Action Plan or Facility Plan Amendment may be required to be submitted by September 30, 2012, to evaluate wastewater treatment alternatives for compliance with the pending ammonia limits.

D. Wastewater Treatment Facility Influent Flows, Loadings & Treatment Performance

Influent flows and loadings to the Brillion Wastewater Treatment Facility from 2008 through 2010 are summarized in Table #2, below.

Table #2

INFLUENT FLOWS & LOADING SUMMARY

Parameter	2008	2009	2010
Influent Flow, mgd			
• Average	0.616	0.578	0.669
• Maximum Month	1.006	0.817	0.935
• Maximum Day	1.750	1.513	1.819
BOD, mg/L (Average)			
• Average	128	190	175
• Maximum Month	226	318	238
• Maximum Day	351	438	426
BOD, lbs./day			
• Average	653	963	1047
• Maximum Month	962	1533	1571
• Maximum Day	1547	2462	2633
TSS, mg/L (Average)			
• Average	167	269	207
• Maximum Month	347	433	244
• Maximum Day	652	767	469
TSS, lbs./day			
• Average	828	1359	1234
• Maximum Month	1345	2070	1689
• Maximum Day	2445	3491	3828

The Brillion Wastewater Treatment Facilities treatment performance from 2008 through September 2011 is summarized in Table #3, below. Generally, treatment efficiency has been very good; however, WPDES permit violations for effluent BOD, Total Suspended Solids (TSS), and Phosphorus (P) occurred in March 2009 due to an extended period of wastewater flows to the Treatment Facility that exceed the plant's design capacity.

Table #3

WASTEWATER TREATMENT FACILITY PERFORMANCE

	Avg. Effluent BOD_5 (mg/L)				Avg. Effluent TSS (mg/L)				Avg. Effluent Total P (mg/L)				Avg. Effluent NH_3N (mg/L)			
Month	2008	2009	2010	2011	2008	2009	2010	2011	2008	2009	2010	2011	2008	2009	2010	2011
January	5	5	3	3	2	2	1	2	0.2	0.4	0.5	0.9	4.6	2.9	0.4	0.2
February	9	9	5	5	2	5	2	2	0.4	0.4	0.2	0.6	7.1	2.4	0.4	1.0
March	8	**22**	7	4	4	**18**	4	2	0.2	**1.7**	0.5	0.3	1.1	6.7	0.5	0.7
April	17	5	6	8	8	5	4	10	0.5	0.4	0.3	0.7	3.6	0.1	0.7	0.7
May	4	6	4	4	1	3	2	2	0.5	0.2	0.3	0.2	0.5	0.2	0.3	0.6
June	5	3	3	8	2	2	1	7	0.3	0.3	0.4	1.3	1.2	0.1	0.1	2.1
July	3	3	6	4	3	3	3	3	0.4	0.6	0.3	0.4	0.1	0.7	1.7	0.1
August	2	2	3	4	2	2	1	2	0.3	0.2	0.3	0.8	0.1	0.2	0.1	0.1
September	2	3	3		2	1	2		0.7	0.6	0.5		0.1	0.7	0.1	
October	2	2	3		1	2	2		0.2	0.6	0.6		0.1	0.3	0.1	
November	2	3	2		1	2	2		0.5	0.3	0.4		0.3	0.2	0.1	
December	2	2	2		2	1	2		0.1	0.3	0.3		0.1	0.3	0.1	
Annual Avg.	5	5	4	5	3	4	2	4	0.4	0.5	0.4	0.6	1.6	1.2	0.4	0.7
Max. Month	17	22	7	8	8	18	4	10	0.7	1.7	0.6	1.3	7.1	6.7	1.7	2.1
# Violations	0	**1**	0	0	0	**1**	0	0	0	**1**	0	0				

E. Peak Wastewater Flow Estimates

During peak wastewater flow events at the Wastewater Treatment Facility, the raw wastewater backs up in the 6-inch Parshall flume and overflows the Headworks Building channels. The existing Parshall flume has a measuring capacity of 1,500 gpm (2.16 mgd) and often defaults to 0 gpm during peak flow events. The Main Lift Station is also bypassed during peak flow events in an effort to reduce the impact on the Wastewater Treatment Facility, as well as prevent basement backups in the community as wastewater flow to the lift station has significantly exceeded the pump capacity. Therefore, flow measurements at the Wastewater Treatment Facility cannot be used to determine peak wet weather wastewater flows.

A peak flow event, which occurred from July 22 to 24, 2010, was used to predict the current peak wastewater flows for the City of Brillion. The City received 3.73-inches of rainfall over this period, and the City had bypasses at the Wastewater Treatment Facility and Main Lift Station due to high flows. Two 4-inch engine-driven trash pumps and a pair of fire trucks were used to bypass at the lift station to minimize basement backups.

Estimated current peak wet weather flows can be estimated as the sum of the following flow components:

- The calculated capacity of the Main Lift Station pumps at high wet well levels
- The capacity of the portable trash pumps
- The capacity of the fire trucks
- The capacity of the lift station serving the Fawn Ridge subdivision

The following is a summary of the estimated current peak wet weather flow and the projected future peak wet weather flow in the City of Brillion, assuming no further I/I removal is achieved.

1. Main Lift Station:

The Main Lift Station includes three 53.6-HP, screw centrifugal pumps that were installed in 1993. Each pump has a design capacity of 2,000 gpm at 62-feet of head. The Lift Station discharges into the 21-inch gravity sewer at the entrance to the Wastewater Treatment Facility through a 14-inch D.I. force main. According to the Plant Operator, the wet well level during the peak flow event was 6 to 8-feet below grade, which is at least 8 to 10-feet higher than normal. The theoretical capacity of the lift station at the high wet well level with all three pumps operating at maximum speed and assuming a friction factor of 130 (C=130) for the force main is estimated at 3,720 gpm (5.36 mgd).

2. Portable Pumps:

During the peak wet weather flow events on July 22 and 24, 2010, the City used a pair of 4-inch engine-driven portable pumps to pump wastewater from a manhole near the Main Lift Station to ground. The theoretical capacity of each engine-driven pump assuming 20-feet of suction hose and 40-feet of discharge hose while pumping from a manhole with wastewater 6-feet below grade is estimated at 525 gpm. Therefore, the two pumps would have a combined capacity of 1,050 gpm.

3. Fire Trucks:

During the peak wet weather flow events on July 22 and 24, 2010, the City had the Fire Department help with bypass pumping. One truck was stationed near the Main Lift Station, and the other was stationed a block away on Glenview Avenue. The trucks were pumping to grade through a 2½-inch hose. According to the Plant Operator, each fire truck can pump between 500 to 600 gpm. The Operator stated that the fire trucks pumped intermittently. When pumping, the level in the wet well or manhole drops down and the trucks stop pumping until the level comes back up. For estimating purposes, it will be assumed that both fire trucks are pumping at a rate of 600 gpm each for a total of 1,200 gpm.

4. Fawn Ridge Lift Station:

The Fawn Ridge Subdivision is served by a duplex Lift Station that was constructed in 1998. The Plant Operators stated that they do not have capacity issues with this Lift Station. The original design calculations included with the DNR submittal estimate that the station would have a capacity of 195 gpm with one pump operating, and 280 to 300 gpm with two pumps operating. For the purposes of this Facilities Plan, it will be assumed that the peak capacity of the station is 300 gpm.

5. Summary:

The estimated current peak wet weather flow to the Wastewater Treatment Facility is as follows:

Main Lift Station

Installed Pumping Peak Capacity	3,720 gpm
Portable Trash Pumps	1,050 gpm
Fire Trucks Capacity	1,200 gpm
Total	5,970 gpm (8.6 MGD)
Fawn Ridge Lift Station:	300 gpm
WWTF Current Peak Flow	**6,270 gpm (9.03 MGD)**

The estimated hydraulic capacity of the existing Wastewater Treatment Facility is 2,083 gpm or 3.0 mgd.

F. Lift Station & Wastewater Treatment Facility Wet Weather Operation

As noted previously, raw wastewater bypassing occurs at both the Wastewater Treatment Facility Headworks and Main Lift Station during peak flow events. Effluent flow has also

previously backed up through the outfall and chlorine contact tank overflowing the walls of the secondary clarifiers. The tertiary filters are normally bypassed during peak flow events as solids washout from the aeration basins and secondary clarifiers causes the filters to back up quickly.

Significant lift station and Wastewater Treatment Facility improvements would be required to handle the estimated peak flow. The following is a summary of improvements required to handle the estimated peak flows.

1. Main Lift Station:

   The Main Lift Station has a current estimated capacity of 3,720 gpm. In order to provide over 6,300 gpm of pumping capacity, a new 12-inch force main would need to be constructed and operated concurrently with the existing 14-inch force main. Two new pumps, equal in capacity to existing pumps, would also need to be added to meet peak flow requirements.

2. Wastewater Treatment Facility:

   The existing Wastewater Treatment Facility has an estimated design hydraulic capacity of 2,083 gpm or 3 mgd. The hydraulic grade line through the Treatment Facility would need to be raised to prevent the secondary clarifier from overflowing onto the ground during peak flow events.

3. Headworks:

   The existing fine screen and grit removal systems have a design capacity of 2 mgd. The 6-inch Parshall flume is calibrated for a maximum flow 1,500 gpm or 2.16 mgd. Therefore, new Headworks facilities including fine screens, grit removal, and flow monitoring would be required to provide over 9 mgd of hydraulic capacity.

4. Primary Clarifiers:

   NR 110 requires that primary clarifiers provide a surface loading rate of 1,000 gpd/sq.ft., and weir overflow rate of 10,000 gpd/ft. at average flows and surface loading rate of 1,500 gpd/sq.ft. at peak hour flows. Over 6,000 sq.ft. of surface area would be required to handle the estimated peak flows, while the existing clarifiers provide about 1,400 sq.ft. of surface area. In addition, the weirs and walls of the clarifiers would need to be raised accordingly to fit within the required hydraulic grade line through the plant. Therefore, the existing clarifiers should be abandoned in favor of new advanced primary treatment technologies, such as

Salsnes Filters and High-Rate Ballasted or Solids Contact Clarifiers, designed to handle large influent flows within a small footprint.

5. Aeration Basins:

The existing aeration basins have a total volume of 29,400 cu.ft., which, according to NR 110, provides adequate volumetric loading capacity at current BOD loadings (approx. 37 lbs./kcf). However, the hydraulic capacity of the secondary treatment system should be increased to provide a sufficient hydraulic residence time at estimated peak flows. In addition, the loading capacity of the clarifiers will need to be increased (approx. 15 lbs./kcf) to meet pending effluent ammonia limits on a consistent basis.

6. Secondary Clarifiers:

NR 110 requires that secondary clarifiers provide a weir overflow rate of 10,000 gpd/ft. at average flows and surface loading rate of 1,200 gpd/sq.ft. at peak hour flows for conventional activated sludge treatment systems. Over 7,500 sq.ft. of surface area would be required to handle the estimated peak flows, while the existing clarifiers provide just over 1,400 sq.ft. of surface area. In addition, the weir elevation and walls of the clarifiers would need to be raised accordingly to fit within the required hydraulic grade line through the plant. Therefore, the existing clarifiers should be demolished and replaced with significantly larger diameter clarifiers (70-foot diameter) with greater side water depth and energy-dissipating inlets. The Return Activated Sludge (RAS) pumps would also need to be upgraded in order to provide sufficient peak flow capacity.

7. Tertiary Filters:

The existing tertiary filtration system has a peak flow capacity of 1,225 gpm based on 5 gpm/sq.ft. loading rate per NR 110. Therefore, they do not have sufficient capacity to handle estimated peak flows. Therefore, they should be abandoned, as they would not likely be needed after construction of aeration basin improvements and new secondary clarifiers. However, a new chemically enhanced filtration system will likely be required in the future to comply with recently implemented phosphorus standards.

8. Effluent Disinfection:

The existing chlorine contact tank was designed to provide 32-minutes of Hydraulic Residence Time (HRT) at a design peak flow rate of 1,225 gpm. However, Brillion is

no longer required to disinfect their wastewater. The existing tank is used for effluent re-aeration as well, as filter backwash and effluent reuse supply.

G. Wet Weather Operation Of Sanitary Sewer Collection System

A chart showing plant influent flows and precipitation for 2010 is provided on Figure #4. During periods of high flows, the influent flow meter at the Wastewater Treatment Facility does not record all of the flow, but Figure #4 does clearly illustrate that flows increase significantly during wet weather events. In late July 2010, there were a series of significant rainfall events and sewage had to be bypassed at the Main Lift Station and at the Wastewater Treatment Facility. Basement flooding on Francis Street was also reported.

The pumps at the Main Lift Station could not keep up with the flows, and trash pumps and fire pumps were used to pump sewage onto the ground. This effort probably protected many more basements from flooding.

III. INFILTRATION/INFLOW INVESTIGATIONS & ANALYSIS

A. Infiltration / Inflow Investigations

1. System Televising:

Since 2008, various efforts have been undertaken to identify and eliminate I/I in the Brillion system. Wet weather televising has been done in the spring. The televising indicates that a majority of the sewer mains are not significantly deteriorated; however, a lot of sewer laterals were flowing with a lot of water. While it is expected that some laterals would be in use during the televising, it is not likely that such a large number of laterals would be discharging legitimate flows all at the same time.

On June 10, 2008, the 8-inch sewer in Dewey Street, from Columbus Street to North Main Street, was televised. There had been 3-inches of rain on June 9, 2008. Of the 13 live laterals along the televised section of main, nine of the laterals were flowing. On June 13, 2008, the sewer main in Trier Street, from Columbus Street to North Main Street, was televised. There were 3-inches of rain on June 13, 2008, when this section of main was televised. Of the 17 live laterals along the televised section, all of the laterals were flowing. It is not likely that water was being used in all of these homes during the televising. These two streets are in the oldest section of the City and nearly all of the laterals are constructed of clay pipe. The televising indicates that a majority of laterals are leaking and/or there are illegal connections to the sanitary sewer system.

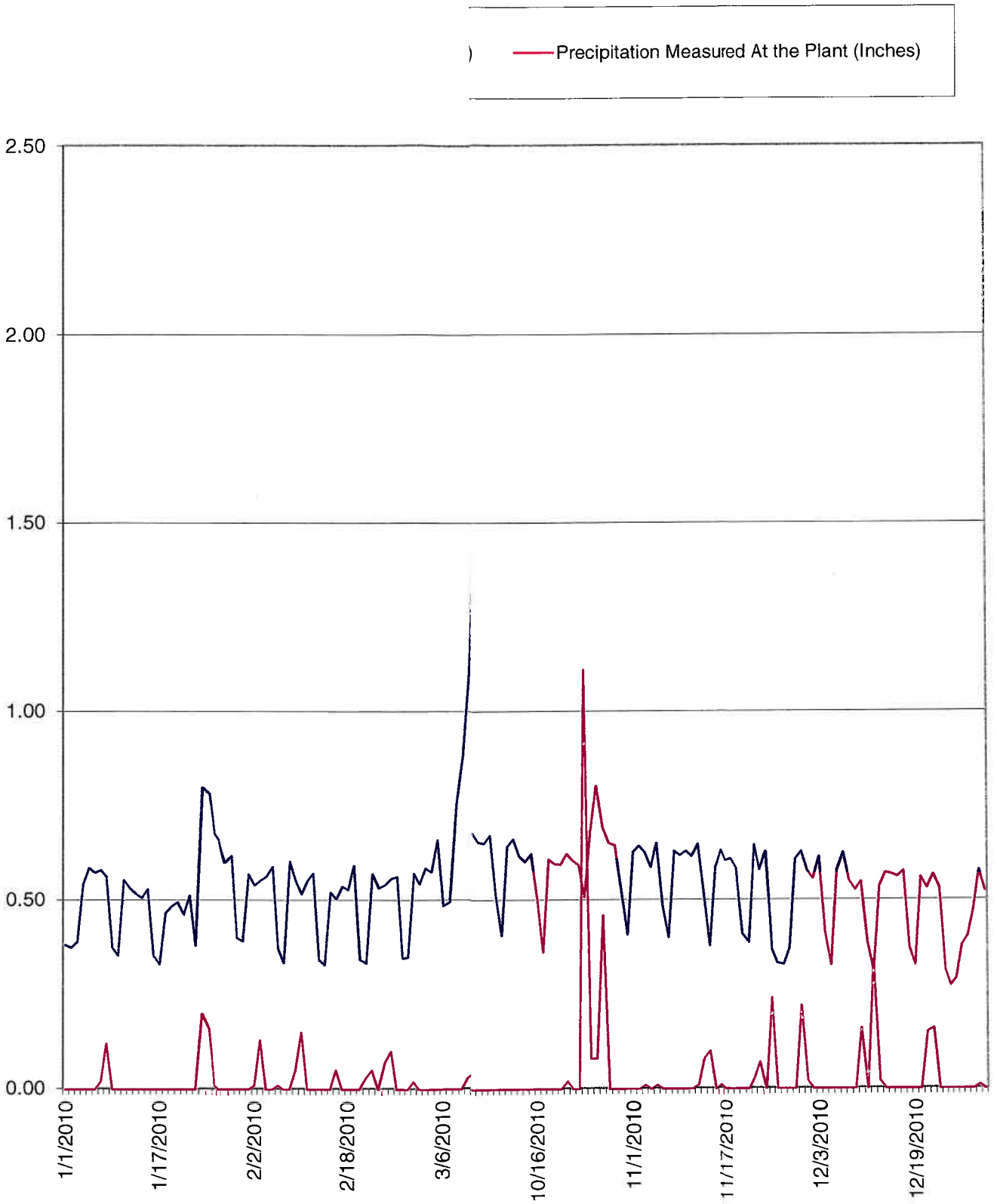

FIGURE 4

LUENT FLOWS & PRECIPITATION

TO ADDRESS WET WEATHER PEAK FLOWS
TY OF BRILLION, WISCONSIN

:M #B0004-910145.00 11/9/2011
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Wet weather televising was conducted on April 16, 2011 to identify potential sources of infiltration in the Francis Street area. Rain started falling at 8 a.m. that day and continued until 9 p.m. A total of 1.12-inches of rain fell that day. The televising was conducted between 11:30 a.m. and 2:30 p.m. The sections televised are highlighted on Figure #5. A listing of the findings is presented on Table #4, and summarized as follows:

Of 33 service laterals along the televised mains, 25 of the laterals were flowing. The Technician indicated that the flow appears to be infiltration in nearly every case. On Tesch Street, between South Main Street and LaVesta Court, there are two areas where there are multiple cracks in the pipe, however, there was no infiltration at these locations.

Additional televising was done on April 25, 2011 to identify potential root problems in the sewer. Root balls were cut out of the main at the following locations, as identified on Figure #5:

- Francis Street, near MH 314.
- On the section of easement sewer east of Cleveland Street.
- Monroe Street, between South Main Street and Cleveland Street.

Table #4

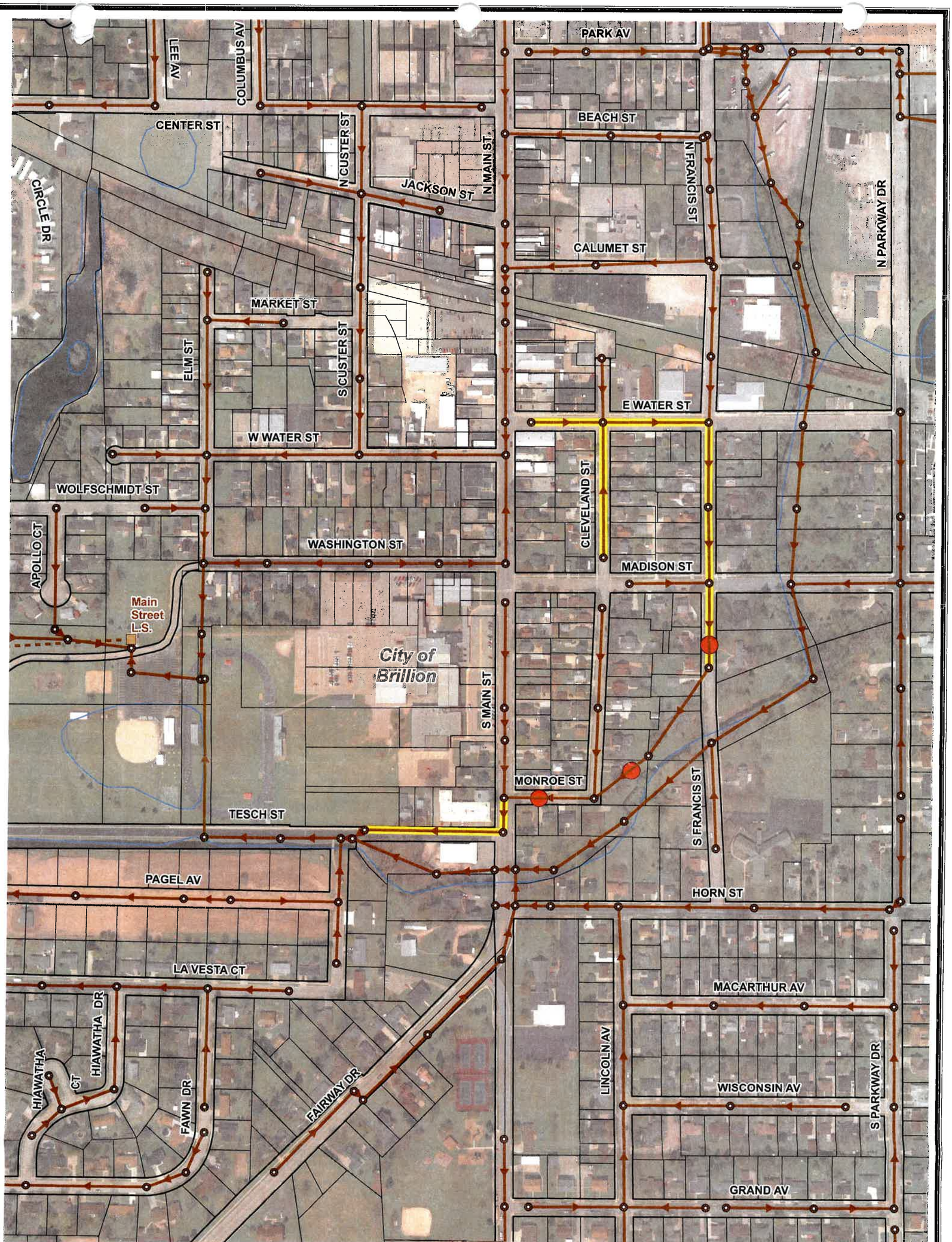
SUMMARY OF WET WEATHER TELEVISING FINDINGS
April 16, 2011

Location	Lateral	Flowing
Cleveland Street: MH 319 to MH 321		
35 ft.	1	
47.8 ft.	1	1
82.5 ft.	1	1
103.5 ft.	1	1
132.5 ft.	1	1
147.4 ft.	1	1
192.8 ft.	1	1
208.7 ft.	1	1
210.2 ft.	1	1
221.3 ft.	1	1
285 ft.	1	1
358.9 ft.	1	1
Comment From Crew: Infiltration in almost all services		
TOTAL	12	11

Table #4

SUMMARY OF WET WEATHER TELEVISING FINDINGS
April 16, 2011

Location	Lateral	Flowing
East Water Street: MH 320 to MH 321		
2 ft.	1	1
46.4 ft.	1	1
87.1 ft. (Offsets in Service, Now Flowing)	1	
177.8 ft.	1	1
TOTAL	4	3
East Water Street: MH 321 to MH 318		
119.9 ft.	1	1
254.8 ft.	1	1
310 ft.	1	
TOTAL	3	2
Francis Street: MH 318 to MH 317		
87.6 ft.	1	
167.1 ft.	1	1
174.2 ft.	1	1
186.4 ft.	1	1
261 ft.	1	
TOTAL	5	3
Francis Street: MH 317 to MH 315		
26.3 ft.	1	1
153.7 ft. (Infiltration & Roots)	1	1
164 ft.	1	
Comment: Water level is at 50% or more throughout most of this stretch		
TOTAL	3	2
Francis Street: MH 315 to MH 314		
182 ft. (Heavy mass of roots covering the whole pipe)		
200 ft.	1	1
206 ft.	1	1
256.4 ft.	1	
TOTAL	3	2
Main Street: MH 307 to MH 306		
31 ft.	1	1
TOTAL	1	1
Tesch Street: MH 306 to MH 304		
13 ft. (Multiple cracks in pipe)		
168.6 ft. (Multiple cracks in pipe)		
270.4 ft.	1	
308.7 ft.	1	1
TOTAL	2	1
GRAND TOTAL	**33**	**25**



Sanitary System

- Tree Roots Cut
- Televised Gravity Sewer
- Sanitary Manhole
- Lift Station
- Sanitary Gravity Sewer
- Sanitary Forcemain

Other Mapped Features

- Municipal Boundary
- Right-of-Way Line
- Stream

0 300 600 Feet

Source: Calumet County, 2009-2001.

Disclaimer: The property lines, right-of-way lines, and other property information on this drawing were developed or obtained as part of the County Geographic Information System or through the County property tax mapping function. McMAHON does not guarantee this information to be correct, current, or complete. The property and right-of-way information are only intended for use as a general reference and are not intended or suitable for site-specific uses. Any use to the contrary of the above stated uses is the responsibility of the user and such use is at the user's own risk.

Brillion WI
SMALL CITY, BIG HEART

McMAHON ENGINEERS ARCHITECTS

FIGURE 5
WET WEATHER TELEVISING
CITY OF BRILLION
CALUMET COUNTY, WISCONSIN

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2. Smoke Testing & Lateral Investigations:

Smoke testing was done in 2008 to identify locations where clear water may be entering the sanitary sewer system. The smoke testing was not very successful because a lot of smoke entered basements, including a nursing home, and smoke also billowed out of a lot of areas. Due to concerns about potential problems the smoke may cause, this work was not continued.

After the smoke testing, a meeting was held with the Plumbing Designer from McMAHON and a local plumber to discuss potential sources of I/I. It was concluded that a majority of the sewer laterals in the older parts of town are constructed of clay tile with oakum joints. It is also possible that, while downspouts may have been disconnected from the sewer, the connections may not have been properly sealed. To further investigate the condition of a sampling of laterals, access was gained to four homes on Trier Street and the laterals were televised. All of the televised laterals were 6-inch clay pipe. At three homes, pipe sections were out of alignment and there was evidence of roots. The homeowners were advised of the results of the televising. One of the homeowners had the lateral repaired. The City did not require that the other homeowners make repairs because they did not have a formal City-wide procedure established. Four homeowners on Francis Street that had flooded basements in 2010 had their laterals televised.

B. Infiltration / Inflow Analysis

In December 2009, City of Brillion retained the services of McMAHON to provide the following Scope of Services related to I/I Analysis:

- Interview Midwest Contract Operations, Inc. (MCO) and City Staff to obtain 'hands-on' knowledge of system operations.
- Review previous investigations/studies.
- Coordinate with MCO flow monitoring at five locations for a 24-hour period.
- Compile weekly flow monitoring and rainfall data, and review for validity. Communicate inconsistences with MCO and City Staff as data collection occurs.
- Summarize flow monitoring data.
- Calculate I/I rates in the sub-basins using the flow monitoring data.
- Utilize DNR criteria for determining if the I/I rates are excessive.
- In areas with excessive inflow or infiltration, recommend investigative techniques for determining I/I sources.
- Present the final results to the Utility Commission.

A copy of the I/I Report is provided separately. Based on the calculations presented in the report, it was concluded that I/I is excessive in the Brillion system. The following recommendations were included in the report:

- Complete the framework of items for implementation of the I/I Plan.
- Verify repairs recommended from previous studies were completed.
- Continue to perform springtime field inspections to identify I/I sources documenting problem areas with the City's GIS system.
- Identify and create a 5-year Capital Improvement Plan to eliminate large leaks and improperly connected sump pumps.

A map showing system basins is included in this current Facilities Plan as Figure #6.

Additional recommendations were to focus investigations in Basin #2 and Basin #5, which had the highest recorded flow peaks during the flow monitoring. It was also recommended that the City consider a city-wide storm water investigation. The focus of this investigation would be to identify areas where the existing storm sewer system can be extended. Also, deficiencies in the storm sewer system would be identified, indicating a need for storm water detention ponds and/or storm sewer interceptors.

The Utility Commission reviewed and discussed the I/I Report at their regularly scheduled meeting on September 20, 2010. A Joint Meeting was held with the City Council and the Utility Commission on November 8, 2010. At that meeting, the City Council passed a motion to undertake a City-Wide Storm Water Management Plan.

IV. FUTURE CONDITIONS

A. Population

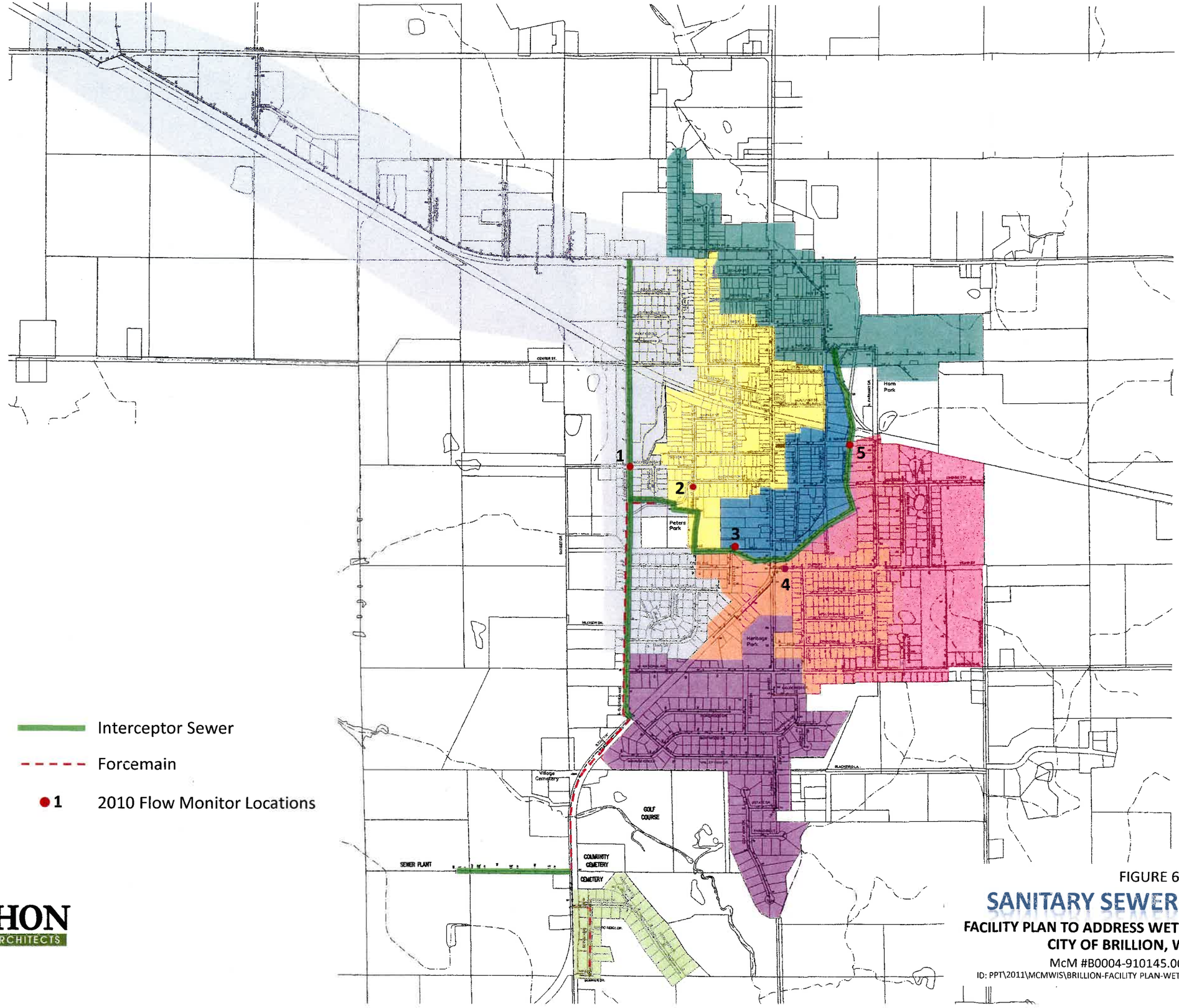
Future population projections were developed by McMAHON for use in this Facilities Plan. A modest population increase is projected for the City of Brillion. The First Addition to Fawn Ridge, consisting of 54 lots total, is planned to be developed in the future. Employment opportunities continue to be strong in the community, which will attract residents. Also, the City has experienced development of new services, including medical facilities and retail, which makes the community attractive for new residents. Historical and projected population information is provided on Table #5.

Table #5

CITY OF BRILLION POPULATION DATA

	1970	1980	1990	2000	2010	2015	2020	2025	2030
Census	2,588	2,907	2,840	2,937	3,148				
Proposed For Facility Plan May 2011						3,179	3,243	3,276	3,308
Percent Increase						1%	2%	1%	1%

Facilities Plan



Interceptor Sewer

Forcemain

● 1 2010 Flow Monitor Locations

SCALE: 1" = 600'

McMAHON ENGINEERS ARCHITECTS

FIGURE 6

SANITARY SEWER BASIN MAP

FACILITY PLAN TO ADDRESS WET WEATHER PEAK FLOWS
CITY OF BRILLION, WISCONSIN

McM #B0004-910145.00 11/9/2011

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Existing projections developed by East Central Wisconsin Regional Planning Commission (ECWRPC) and the Wisconsin Department of Administration do not take into account the 2010 Census data. The proposed projections were submitted to and accepted by the ECWRPC. A copy of the acceptance letter is provided in Appendix B.

B. Future Flow Projections

The average wastewater flow per person is estimated at 100-gallons per capital per day (gpcd), or 16,000 gpd for the additional 160 persons. A peaking factor of 4.0 is used to estimate the peak flow for the additional population, providing the following additional peak flow:

Additional Peak Flow =
160 persons x 100 gpcd x 4.0 peaking factor = 64,000 gpd (44 gpm or 0.064 MGD)

Telephone interviews were conducted with the major industries in the City of Brillion to inquire whether the industry will have anticipated wastewater flow increases in the next 20-years. Industries contacted include Ariens Company, Brillion Iron Works and Professional Plating. None of the contacted industries were anticipating future wastewater flow increases.

The projected Year 2030 Peak Wet Weather Flow for the City of Brillion, assuming no further I/I reduction, is 6,314 gpm or 9.09 MGD.

The following are proposed design influent flows based on historical data, assuming no inflow/infiltration reductions are achieved. It should be noted that the recorded historical influent flow data is falsely low during high flow periods due to flow meter calibration at 1,500 gpm maximum and bypassing at the Wastewater Treatment Facility Headworks.

Proposed Design Flows Without I/I Reductions:

Average	0.71 mgd
Maximum Month	1.15 mgd
Maximum Day	4.80 mgd
Peak Hour	9.09 mgd

Based on historical influent flow data from 2008 through 2010, the current Wastewater Treatment Facility average design flow of 0.71 mgd appears to be acceptable. The maximum month flow was projected based on the current average to maximum month ratio. The maximum day flow was estimated based on lift station and bypass pump run times during the peak flow event on July 24, 2010.

V. ALTERNATIVES EVALUATION

A. Wastewater Treatment Facility Upgrades To Treat Wet Weather Peak Flows

1. Proposed Wastewater Treatment Facility Upgrades:

As noted Section II, Paragraph F., significant Wastewater Treatment Facility improvements would be needed to handle the estimated peak design flows at the Main Lift Station and Wastewater Treatment Facility. The following is list of theoretical improvements at both the Main Lift Station and Wastewater Treatment Facility that would be required to handle the estimated peak design flow of 9.09 mgd. A Schematic of the proposed improvements is included in Figure #7. A proposed site plan is included in Figure #8.

a. Construct additional wet well capacity and install two new pumps of equal capacity to the existing the Main Lift Station.

b. Construct a new 12-inch force main from the Main Lift Station to the Wastewater Treatment Facility Headworks to be operated concurrently with the existing force main.

c. Demolish the existing Headworks, and construct a new Headworks facility with new influent fine screening and vortex grit removal systems with a hydraulic capacity of 9.1 mgd.

d. Construct a new high rate primary clarification system, such as the IDI Densadeg or Kruger Actiflo processes, which includes chemically enhanced ballasted primary sedimentation in a much smaller footprint compared to conventional primary clarification.

e. Convert the existing primary clarifiers to selector zones and additional aeration basin capacity by adding divider walls, raising the wall height to increase the hydraulic grade line through the facility, and installing new mixing and aeration equipment.

f. Convert the existing aeration basins to plug flow extended aeration to operate in conjunction with converted primary clarifiers. The walls of the aeration basins would be raised to increase the hydraulic grade line through the facility. New aeration systems and blowers under D.O. control also would be required.

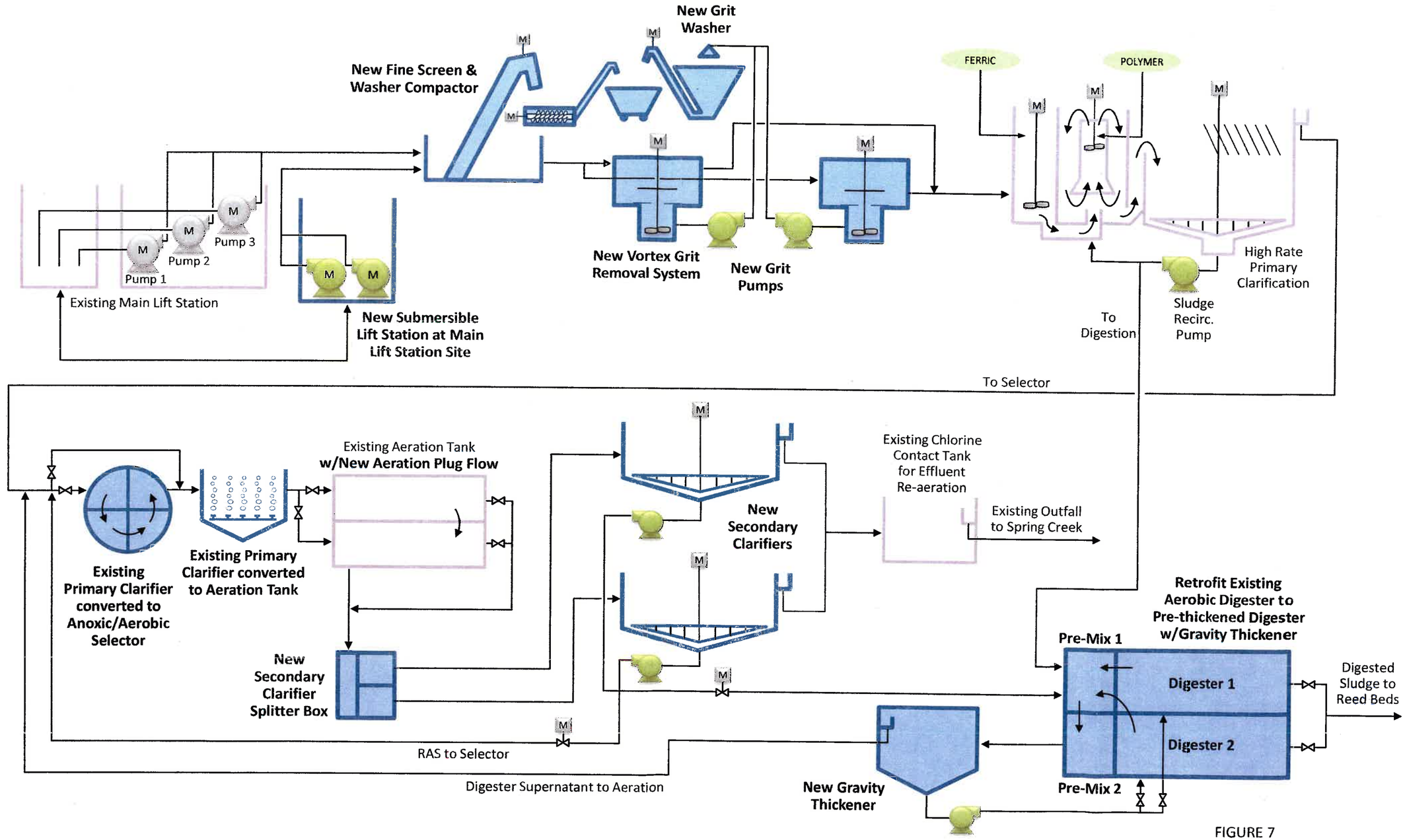

FIGURE 7

9.1 MGD WWTF SCHEMATIC

FACILITY PLAN TO ADDRESS WET WEATHER PEAK FLOWS
CITY OF BRILLION, WISCONSIN

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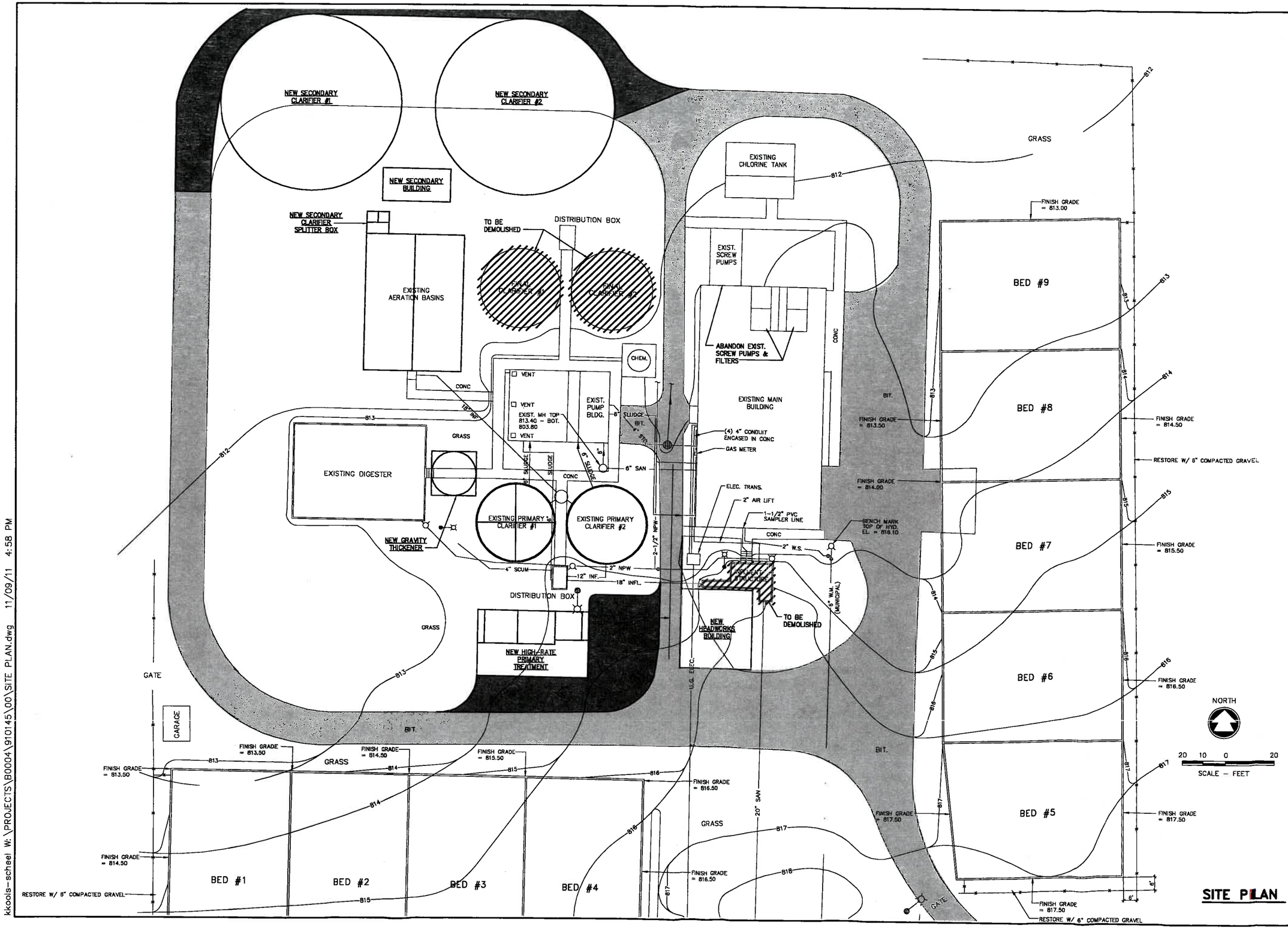

SITE PLAN

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McMAHON
ENGINEERS
1445 McMAHON DRIVE NEENAH, WI 54956
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NO.	DATE	REVISION

SITE PLAN---9.1 MGD WWTF
FACILITY PLAN TO ADDRESS WET WEATHER PEAK FLOWS
CITY OF BRILLION

DESIGNED	DRAWN
PROJECT NO.	
DATE AUG., 2011	
SHEET NO. FIG. 8	

g. Construct two new 80-foot diameter secondary clarifiers and RAS pump station, and abandon the existing secondary clarifiers.

h. Abandon the existing tertiary filters, and continue to use of the existing chlorine contact tank for effluent re-aeration and effluent reuse supply.

i. Construct a new gravity thickening and retrofit the existing aerobic digesters to a new pre-thickened aerobic digestion process including new aeration systems.

j. Continue to use the existing reed bed dewatering and storage system.

An Opinion Of Probable Capital Construction Costs[1] for the proposed Main Lift Station and Wastewater Treatment Facility improvements is as follows:

Table #6

PROPOSED MAIN LIFT STATION &
WASTEWATER TREATMENT FACILITY IMPROVEMENTS

Equipment	
Main Lift Pumps	$75,000
Fine Screen and Washer Compactor	225,000
Grit Removal System	185,000
Ballasted Sedimentation	876,000
Aeration Systems	40,000
Aeration Blowers	90,000
Secondary Clarifiers	242,000
RAS and Scum Pumps	150,000
Gravity Thickener and Digester Aeration	300,000
Subtotal	$2,183,000
Structural:	
Main Lift Wet Well	$70,000
Headworks Building	368,000
Primary Building	369,500
Primary Clarifier Modifications	83,500
Aeration Basin Modifications	71,500
Clarifier Splitter	23,500
Secondary Clarifiers	1,032,000
Secondary Building	157,000
Digester Modifications and Gravity Thickener	189,500
Subtotal	$2,294,500

Table #6

PROPOSED MAIN LIFT STATION &
WASTEWATER TREATMENT FACILITY IMPROVEMENTS

Mechanical Demolition	$25,000
Structural Demolition	15,000
Mechanical Installation	320,000
Mechanical Piping	450,000
HVAC	200,000
Plumbing	75,000
Electrical and Controls	555,000
Site Piping	325,000
Miscellaneous (Site Work, Excavation/Backfill, Paving, Landscaping, Fence, etc.)	620,000
Force Main	380,000
General Conditions	595,400
Subtotal	$8,037,900
Engineering and Contingencies	$2,411,370
Opinion Of Probable Capital Cost	**$10,449,270**

2. Evaluation of Proposed Wastewater Treatment Facility Upgrades:

Construction of the recommended Main Lift Station and Wastewater Treatment Facility improvements to significantly increase the hydraulic capacity of each is neither a feasible nor cost effective alternative for peak wet weather wastewater flow mitigation in the City of Brillion. The low frequency of peak wet weather flow events and the extremely high peaking factor, compared to the Wastewater Treatment Facility's average design flow, do not justify the gross oversizing of pumping and other unit processes; whereas, the current facility design average and maximum month flow criteria are in line with estimated future design flows. In addition, oversizing of these units would likely create operational difficulties and loss of treatment efficiency under normal wastewater flows and loadings conditions. Furthermore, construction of the proposed Wastewater Treatment Facility improvements would expand well beyond the current footprint of the existing facilities.

A nominal increase in Wastewater Treatment Facility hydraulic capacity may be warranted and will be considered along with treatment alternatives for compliance with pending ammonia and future phosphorus effluent discharge limitations. A Facility Plan to address compliance with these limits may be needed in accordance with the City's WPDES permit Compliance Schedule.

B. Infiltration / Inflow Reduction In Collection System

Due to the impracticalness and high cost of constructing a Wastewater Treatment Facility with sufficient capacity to treat the projected peak wet weather flows, the alternative of reducing I/I in the collection system is presented. It is proposed that, initially, the I/I reduction project will focus on eliminating illegal connections and remediated private laterals on private property.

1. Eliminating Illegal Connections:

Illegal connections to the sanitary sewer include connections that allow storm water or groundwater to enter the sanitary sewer system. This may include foundation drain and sump pump connections. Inspections for illegal connections have been done in the past, and it was found that there were not a lot of obvious illegal connections. The Wastewater System Operator will conduct on-site inspections for illegal connections when they are inside homes or buildings for other reasons such as water meter change-out, water system cross connection surveys, etc. These inspections will be an on-going effort because illegal connections are difficult to monitor. The connections can be re-installed by the property owner at any time or new connections made.

2. City-Wide Private Sanitary Sewer Lateral Remediation Program:

a. Proposed Program

The City-wide private sanitary sewer lateral remediation program would consist of requiring the replacement/remediation of private sanitary sewer laterals that are not constructed of PVC pipe or ABS pipe. It is proposed that initially the program will focus on remediation of the portions of laterals located on private property or beyond the paved street. Portions of laterals not replaced as part of the initial project would be replaced as part of a future street or utility replacement project. The proposed program also includes that property owners would be required to install sump pumps. A program to connect sump pump discharge lines to the storm sewer system would be required.

b. Program Implementation

1) Ordinances:

A 'Draft' Private Sewer Lateral Ordinance is provided in Appendix C. This ordinance would regulate the implementation of the lateral remediation program. A 'Draft' Storm Water Regulation (Sump Pump) Ordinance is provided in Appendix D.

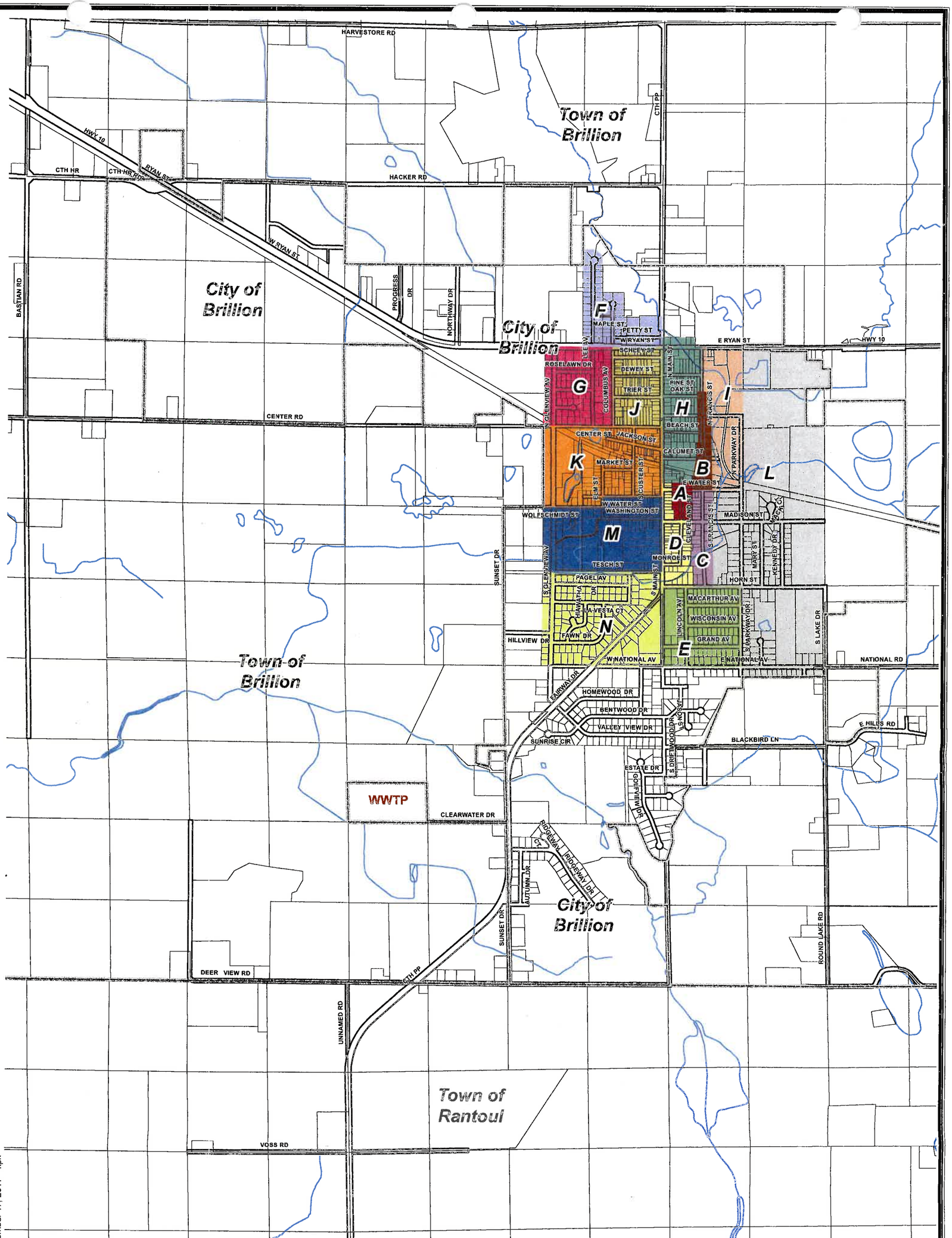
2) Identify Priority Areas:

The older portion of the City sewer system has been divided into project areas, as outlined on Figure #9. Based on the fact that basements have flooded on Francis Street, between Madison Street and East Water Street, and the results of nighttime manhole observations and televising, it is recommended that the areas identified as A, B and C on Figure #9 be the first areas to implement the proposed private sanitary sewer lateral remediation program. The nighttime manhole observations identified relatively high flows in the manhole at East Water Street and Francis and at Madison Street and Washington Street. Wet weather televising conducted in Areas A and B showed that of 33 service laterals along the televised mains, 25 of the laterals were flowing. The televising Technician indicated that the flow appears to be infiltration in nearly every case.

After a lateral remediation program has been successfully completed, the City could move on to the next priority area. The priority areas were generally established based on age of the homes and sewer system in the areas. Area E was identified as a relatively high priority area because it is suspected that there may be many sump pumps connected to the sanitary sewer system. Area F was outlined because the City is considering reconstructing Columbus Street north of Ryan Street and, also, wet weather manhole observations have identified relatively high flows in this area.

3) Present plan to the Public:

Before the City moves forward with a project, it is proposed that various Public Meetings be held to education the public of the overall situation regarding I/I and to present the proposed specific



Lateral Remediation Project Area

A F K
B G L
C H M
D I N
E J

Other Mapped Features

Municipal Boundary
Right-of-Way Line
Stream

N

0 1,500 3,000 Feet

Source: Calumet County, 2009-2001.

Disclaimer: The property lines, right-of-way lines, and other property information on this drawing were developed or obtained as part of the County Geographic Information System or through the County property tax mapping function. McMAHON does not guarantee this information to be correct, current, or complete. The property and right-of-way information are only intended for use as a general reference and are not intended or suitable for site-specific uses. Any use to the contrary of the above stated uses is the responsibility of the user and such use is at the user's own risk.

Brillion WI
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FIGURE 9
LATERAL REMDIATION PROJECT AREAS
CITY OF BRILLION
CALUMET COUNTY, WISCONSIN

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I/I reduction program. Smaller Project Meetings will also be held with the property owners before project plans are finalized.

4) Implement Plan:

The details of a private sewer lateral remediation program will be finalized once a specific project area is identified. The age of the homes within the project area will have to be identified and the laterals that are to be replaced identified. A Project Meeting will be held with the property owners in the area. It is recommended that the City obtain bids for the project. The bidding documents would be developed such that the homeowner would be able to select the lateral remediation option that best suits their specific situation. Remediation techniques are presented on Table #7. The advantages and disadvantages of the various options are also presented on Table #7. The costs of the remediation will be assessed to the property owner.

Table #7

REMEDIATION TECHNIQUES FOR PRIVATE LATERALS

	Conventional Reconstruction	Slip-Lining	Pipe Bursting	Cured-In-Place Liner
Advantages	• Proper slope • Remove dips and straighten alignment • Change pipe size • Pipe joints and lateral connection at main • Uncovers unknown problems • Maximizes useful life	• Less restoration costs • Pipe can be Schedule 40 PVC • Pipe joints and lateral connection at main • Rehabilitate under physical constraints	• Less restoration costs • Generally overall most cost effective • Less pipe joints (butt fused) • Size option • Ability to traverse bends and other alignment changes • Rehabilitate under physical constraints • Polyethylene pipe	• Less restoration costs • No joints • Ability to traverse bends and other alignment changes • Rehabilitate under physical constraints

Table #7

REMEDIATION TECHNIQUES FOR PRIVATE LATERALS

	Conventional Reconstruction	Slip-Lining	Pipe Bursting	Cured-In-Place Liner
Disadvantages	• Expensive restoration cost to homeowner • Physical constraints (garage, sheds, posts, decks, etc.) • Higher overall cost with restoration	• Pipe size must be reduced • Dips and sags remain • Cannot traverse bends or sudden alignment changes	• Dips and sags remain • Connections at mainline may rely on Furnco connections	• Connections to main • Dips and sags remain • Reduced effective pipe size • Cost is generally substantially higher than slip-lining or bursting

c. Project Costs

Typical lateral remediation costs are presented on Table #8.

Table #8

TYPICAL COST FOR SEWER LATERAL REPLACEMENT / REMEDIATION
Assume Homes Setback From Right-Of-Way Approx. 25-Feet

Lateral Replacement / Remediation (Private Property) - $30/LF	$1,700 - $2,200
Add for Work in the Basement	$800
Lateral Replacement / Remediation (in right-of-way, not including roadway restoration)	$1,500
Typical Cost	$4,000 - $4,500
	Use $4,500
Sump Pump Installation	$1,500
Coordination, Engineering & Contingencies (25%)	$1,500
TOTAL Opinion Of Probable Cost [1]	**$7,500**

d. Project Follow-Up

Once the construction project has been completed, the success of the implementation of the project would be reviewed by the Utility Commission and initial planning for the next project will begin. Knowledge gained from each project will be used to fine tune the next project.

3. Other I/I Reduction Projects:

In addition to the private sanitary sewer lateral remediation program, it is recommended that the City implement or maintain other I/I reduction projects or programs as described in this section.

a. Manhole Corrective Action Plan

As required by the DNR, the Brillion Utility Commission developed a Manhole Corrective Action Plan that was submitted to the DNR on March 23, 2011. A copy of the submittal is provided in Appendix E. The plan included replacing open pick lids on manholes, grouting of manhole leaks, raising castings and sealing or replacing block manholes.

Fifty-nine open pick manhole lids were replaced with solid lid covers in 2011. At this time, it is recommended that the City not proceed with the manhole grouting project. A majority of manhole leaks are relatively minor, compared to other sources of I/I, and, instead of spending money on grouting, it would be more cost effective to repair larger sources of I/I. Also, if the City implements a program of sanitary sewer main replacement, many of the recently grouted manholes would end up being replaced.

It is recommended that manhole castings and covers be raised above grade, and block manholes should be replaced in combination with future utility projects. This type of work is generally more effective than grouting.

b. Horn Park Sewer Rehab / Replacement

During nighttime manhole observations, it was noted that a considerable amount of water was coming from the 8-inch sewer main that services the public restrooms in Horn Park on the east side of the City. It is recommended that a section of this main and MH 348 be replaced. The leak on this line appears to be a significant source of I/I. The Opinion Of Probable Cost for this project is presented on Table #9.

Table #9

HORN PARK - SEWER MAIN REPLACEMENT
Opinion Of Probable Cost [1]

Description	Est. Quantity	Unit	Unit Price	Estimated Amount
8-inch Sanitary Sewer	300	L.F.	$50	$15,000
Reconstruct Manholes	2	Each	3,200	3,200
SUBTOTAL				$18,200
Engineering & Contingencies (25%)				$22,750

Assume this project would be done as part of a larger utility project, not a stand-along reconstruction project.

c. Columbus Street, North Of Hwy '10' - Street & Utility Replacement

The City has considered reconstructing Columbus Street, north of Ryan Street. This section of street is very flat and there is poor drainage. If the City elects to move forward with this project, it is recommended that the sanitary sewer system in this area be completely replaced. That includes the sewer main, manholes and laterals. The Opinion Of Probable Cost for this project is presented on Table #10.

Table #10

COLUMBUS STREET - COMPLETE RECONSTRUCTION
Opinion Of Probable Cost [1]

UTILITY COSTS Description	Est. Quantity	Unit	Unit Price	Estimated Amount
Traffic & Erosion Control	1	L.F.	$2,500	$2,500.00
8-inch Sanitary Sewer	635	L.F.	37	23,495.00
48-inch Sanitary Manholes	4	Each	2,250	9,000.00
6-inch Sanitary Lateral	420	L.F.	23	9,660.00
6-inch Sanitary Riser	7	Each	425	2,975.00
Abandon / Slurry Old Sanitary Mains	400	L.F.	6	2,400.00
8-inch Water Main	700	L.F.	36	25,200.00
6-inch Water Main	20	L.F.	5	1,100.00
6-inch Gate Valves	2	Each	975	1,950.00
4-inch Gate Valves	2	Each	775	1,550.00
8-inch Gate Valves	3	Each	1,150	3,450.00
Hydrant	2	Each	1,400	2,800.00
Corp & Curb Stops	14	Each	400	5,600.00
1-inch Water Lateral	420	L.F.	18	7,650.00
Temporary Concrete Removals	1	L.S.	3,000	3,000.00
Temporary Surfacing Winter 2012	1	L.S.	5,800	5,800.00
25% Contingency, Engineering, etc.	1	L.S.	27,010	27,010.00
TOTAL				**$135,050.00**

Table #10

COLUMBUS STREET - COMPLETE RECONSTRUCTION
Opinion Of Probable Cost [1]

STORM & ROADWAY COSTS Description	Est. Quantity	Unit	Unit Price	Estimated Amount
Traffic & Erosion Control	1	L.S.	$2,500.00	$2,500.00
8-inch Mini-Storm Main	600	L.F.	23.00	13,800.00
48-inch Storm Manholes	2	Each	1,500.00	3,000.00
2x3 Storm Inlets	5	Each	1,150.00	5,750.00
24-inch Storm Manholes	3	Each	900.00	2,700.00
12 or 15-inch Storm Sewer	100	L.F.	27.00	2,700.00
4-inch Storm Laterals	510	L.F.	17.00	8,670.00
Remove Curb & Gutter	1,420	L.F.	4.00	5,680.00
New Machine Curb & Gutter	1,420	L.F.	9.00	12,780.00
Spot Replace 4-inch Concrete Sidewalk	1,375	S.F.	3.75	5,156.25
Spot Replace 6-inch Concrete Apron	250	S.F.	4.25	1,062.50
Common Excavation	920	C.Y.	8.75	8,050.00
Unclassified Excavation	250	C.Y.	9.00	2,250.00
12-inch Stone Base	1,800	Ton	8.25	14,850.00
Breaker Run	500	Ton	8.50	4,250.00
3.5-inch Asphalt Paving	475	Ton	56.00	26,600.00
Seeding / Restoration	1	L.S.	3,000.00	3,000.00
25% Contingency, Engineering, etc.	1	L.S.	30,699.69	30,699.69
TOTAL				**$153,498.44**

TOTAL - Both Projects **$288,548.44**

d. Time Of Sale Clearwater Inspection Ordinance

The City has adopted a Clearwater Inspection Ordinance that requires that when a one or two-family residential buildings constructed prior to 2000 is sold, a clear water inspection must be conducted. The Building Inspector conducts an inspection of the building for illegal surface or groundwater connections into the sanitary sewer system. The owner is required to correct deficiencies. A copy of this ordinance is provided in Appendix F.

e. Public Education

The City has already implemented a Public Education Program related to the sanitary sewer system and I/I reduction. An article about the Compliance Agreement between the City and the DNR was included in the Summer 2011 Edition of the City Newsletter. Various articles have been published in the Brillion News about proper sump pump installation and connection, and the causes of sewer backups. The City will continue to

provide information to the public. Samples of the Public Education Program are presented in Appendix G.

4. I/I Reduction Program Costs:

At this time, it is not known how many private laterals would need to be remediated. It is likely that a good majority of the laterals on buildings constructed prior to 1970 do not have plastic laterals. The Opinion Of Probable Cost(1) for a lateral remediation program is presented on Table #11. The various assumptions made to develop this cost are also listed on the table.

Table #11

LATERAL REMEDIATION PROGRAM
Opinion Of Probable Cost [1]

Remediation / Replacement Of Laterals	$3,500 For Lateral Replacement
From Sewer Main To Flood Dain:	$1,500 For Sump Replacement
No. Of Residential & Commercial Laterals:	1,174

	Option #1	Option #2
Percent To Be Replaced / Remediated:	50%	70%
No. Of Laterals	587	822
Cost Of Replacement / Remediation @ $4,500/Lateral	$2,641,500	$3,699,000
Assume 80% of Properties where Laterals were Replaced / Remediated Need Sump Pumps	470	658
Cost Of Sump Pumps with Installation @ $1,500/Property	$705,000	$987,000
SUBTOTAL	$3,347,000	$4,686,000
Investigations, Coordination, Contingencies (25%)	$837,000	$1,172,000
TOTAL Opinion Of Probable Cost [1]	**$4,184,000**	**$5,858,000**

Typical Cost For Sewer Lateral Replacement / Remediation
Assume Homes Setback From Right-Of-Way Approx. 25-Feet

Lateral Replacement / Remediation (Private Property) - $30/LF	$1,700-$2,200
Add for Work in the Basement	$800
Lateral Replacement / Remediation (in right-of-way, not including roadway restoration)	$1,500
Typical Cost	$4,000-$4,500
	Use $4,500

VI. ALTERNATIVE COMPARISON

The two alternatives available to the City to address the wet weather flows are to increase the capacity of the Main Lift Station and the Treatment Plant, or implement an Infiltration/Inflow (I/I) Reduction Program.

Construction of the proposed Main Lift Station and Wastewater Treatment Facility improvements, as previously described in this Facilities Plan, to significantly increase the hydraulic capacity of each is neither a feasible nor cost effective alternative for peak wet weather wastewater flow mitigation in the City of Brillion. The low frequency of peak wet weather flow events and the extremely high peaking factor, compared to the Wastewater Treatment Facility's average design flow do not justify the gross oversizing of pumping and other unit processes; whereas, the current facility design average and maximum month flow criteria are in line with estimated future design flows. In addition, oversizing of these units would likely create operational difficulties and loss of treatment efficiency under normal wastewater flows and loadings conditions. Furthermore, construction of the proposed Wastewater Treatment Facility improvements would expand well beyond the current footprint of the existing facilities.

The second option of implementing an I/I Reduction Program over a period of years is something that the City can reasonably implement and would effectively reduce peak wet weather flows.

VII. RECOMMENDED PLAN

Based on the previous I/I studies, wet weather televising, and manhole observations, it is recommended that the City implement a long term I/I Reduction Program. As required by the Compliance Agreement, the City needs to meet with the DNR to finalize the scope and schedule for an I/I Reduction Program. The proposed program should include the following elements:

A. City-Wide Private Sanitary Sewer Lateral Remediation Program

1. Implement a program to replace/remediate non-plastic material laterals on private property. Portions of laterals located in public right-of-way would be completed as part of future street or utility replacement projects. The property owner would be responsible for lateral remediation costs from sewer main into building. Properties without sump pumps would be required to have sump pumps installed. The remediation costs would be assessed to the property owner and could be paid back to the City with interest over a 3-year period.

2. Finalize and adopt Ordinances to Implement I/I Reduction Program.

3. Present the Lateral Remediation Program to the Public:

   a. Letters notifying property owners.
   b. Public meetings with property owners.

4. Implement Lateral Remediation Program. It is recommended that the Lateral Remediation Program be implemented in Areas A, B and C, initially, as outlined on Figure #9.

5. Review and revise plan, as needed, as projects are completed or based on specific area situations. Identify the next area to be implemented.

B. Other Projects

1. Replacement of manhole covers with open pickholes (completed 2011).

2. Horn Park sewer rehabilitation/replacement. Replace approximately 300 L.F. of sanitary sewer and two manholes in Horn Park.

3. Columbus Street, north of HWY '10', street and utility replacement. If the City decides to move forward with the reconstruction of Columbus Street the sanitary system, including laterals, sewer mains and manholes should be replaced.

4. Continue to enforce the Ordinance to eliminate illegal discharges to sanitary sewer when house is sold. (Time of Sale - Clear Water Inspection Ordinance)

5. Continue to educate the public by providing information about I/I, illegal connections, minimizing grease discharge to sanitary sewer, backflow preventer installation, and homeowner insurance coverage. Public information can be distributed via the Brillion News, the City Newsletter, City website, handouts at City buildings, and Public Information meetings.

6. Conduct property inspections for illegal connections when City personnel enter buildings for meter changes, cross-connection survey, etc. Require property owners to eliminate illegal connections.

7. Implement future sanitary sewer and lateral replacement/remediation projects as part of other street and/or utility replacement projects.

8. Rehabilitate/reconstruct manholes as part of sewer replacement projects and eliminate previously proposed manhole grouting project.

C. Storm Water Management Plan

As required by the Compliance Agreement, a Storm Water Management Plan has been prepared and was presented to City Council, the Utility Commission and interested property owners on October 17, 2011. A critical component of the I/I Reduction Program is requiring that property owners have sump pumps installed. Initially, the sump pumps may discharge to ground surface but, eventually, it is hoped that the sump pump discharges could be connected directly to the storm sewer system. The operation of the storm sewer system is significantly restricted by the water level in the Brillion Marsh located directly west of the City. In the Peters Park area, the storm sewers do not drain because of the water level in the Marsh.

The DNR has indicated that it is willing to meet with the City to discuss the impact the Marsh is having on the City. The Storm Water Management Plan will not be completed until that meeting is held. At this time, that meeting has not been scheduled.

(1) **Disclaimer:** The Opinion Of Probable Cost was prepared for use by the Owner in planning for future costs of the project. In providing Opinions Of Probable Cost, the Owner understands that the Design Professional has no control over costs or the price of labor, equipment or materials, or over Construction Professionals' method of pricing, and that the Opinions Of Probable Costs provided herewith are made on the basis of the Design Professional's qualifications and experience. It is not intended to reflect actual costs, and is subject to change with the normal rise and fall of the local area's economy. This Opinion must be revised after every change made to the project or after every 30-day lapse in time from the original submittal by the Design Professional.

APPENDIX A

NOTICE OF VIOLATION COMPLIANCE AGREEMENT

Mailed to DNR on 12-13-10

COMPLIANCE AGREEMENT BY
THE DEPARTMENT OF NATURAL RESOURCES
AND
THE CITY OF BRILLION
OF APPLICABLE REGULATIONS AND
ACTIONS REQUIRED TO RETURN TO COMPLIANCE

Gary Deiter, Mayor
City of Brillion
130 Calumet Street
Brillion, Wisconsin 54110

Calumet County
WPDES Permit WI-0020443-08
CT # 2010-NEEE-055

The following is an agreement between the Department of Natural Resources (DNR) and the City of Brillion (Brillion) regarding permit requirements that apply and the actions that Brillion is required to undertake in response to unscheduled sanitary sewer overflows. Brillion is the owner/operator of a sanitary collection system.

Signing of this agreement does not excuse past violations by Brillion nor preclude the Department from taking enforcement action for any past violations.

APPLICABLE PERMIT REQUIREMENTS

1. Brillion's wastewater collection system currently operates under the authority of WPDES Permit WI-0020443-08, effective October 1, 2010. The violations outlined in the Notice of Violation occurred under permit WI-0020443-07 (Permit).

2. Section 5.2.6 of the Permit prohibits Brillion from unscheduled sanitary sewer overflows with limited exceptions.

3. Section 5.2.6 of the Permit requires Brillion to notify verbally the Department within 24 hours of initiation of the sanitary sewer overflow and in writing within 5 days of the conclusion of the sanitary sewer overflow of the items outlined in the Permit.

4. For the occurrences outlined in the October 29, 2010 Notice of Violation, Brillion did not meet any of the sanitary sewer overflow exceptions outlined in the Permit.

5. On November 24, 2010, Brillion submitted a list of past and proposed actions to address sanitary sewer overflows.

AGREEMENT

Brillion acknowledges that the actions listed below are necessary in order to eliminate sanitary sewer overflows in the future and to comply with the Permit, and accordingly agrees to do the following with regard to Brillion's sewage collection system:

1. Notify the Department both verbally and in writing of any sanitary sewer overflows as required by the Permit.

2. Brillion completed some wet weather televising in 2008. The manholes on the televised sections were visually observed, and the condition of the manholes recorded. Brillion determined numerous manholes to be a source of infiltration/inflow (I/I). McMahon, on behalf of Brillion, developed a Corrective Actions report dated November 9, 2010. Based on the information presented in Table #1 (attached) of the Corrective Actions report, Brillion shall identify when the manhole corrective actions will be completed. Brillion shall submit its action plan, to Dave Gerdman, 2984 Shawano Avenue, Green Bay, Wisconsin 54313, by no later than March 15, 2011.

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Ronald W. Kazmierczak, Regional Director

Northeast Region Headquarters
2984 Shawano Ave.
Green Bay, Wisconsin 54313
Telephone 920-662-5100
FAX 920-662-5413
TTY Access via relay - 711

RECEIVED
NOV 02 2010
CITY OF BRILLION

October 29, 2010

Gary Deiter, Mayor
City of Brillion
130 Calumet Street
Brillion, Wisconsin 54110

HAND DELIVERED
Casetrack # 2010-NEEE-055
WPDES Permit: WI-0020443-07
Calumet County

Subject: **NOTICE OF VIOLATION / NOTICE OF CLAIM / ENFORCEMENT CONFERENCE – December 9, 2010**

Dear Mayor Deiter:

The Department of Natural Resources (Department) has reason to believe the City of Brillion (Brillion) is in violation of its Wisconsin Pollutant Discharge Elimination System (WPDES) permit, number WI-0020443-07 (the Permit) effective July 1, 2004. The Permit authorizes Brillion to discharge from a facility located at 1201 Clearwater Drive, Brillion, Calumet County to Black Creek in the North Branch of the Manitowoc River Watershed in accordance with the effluent limitations, monitoring requirements and other conditions set forth. A renewed Permit was issued to Brillion on October 1, 2010.

The Department alleges Brillion violated the following specific Permit requirement:

1. **Section 5.2.6 of the Permit, Unscheduled Bypassing – any unscheduled bypass or overflow of wastewater at the treatment woks or from the collection system is prohibited.**

On July 22, 2010, Brillion provided the Department with verbal notification of two unscheduled bypasses of domestic sewage. These included:

- Bypass began July 22, 2010, and ended later that same day, at the wastewater treatment plant. Brillion provided written notification to the Department on July 27, 2010. According to Brillion's written documentation, Brillion bypassed approximately 816,000 gallons of sewage to the ground. An exact location of the bypass was not identified.

- Bypass began July 22, 2010 and ended later that same day, at the manhole by the main lift station on Elm Street. Brillion provided written notification to the Department on July 27, 2010. According to Brillion's written documentation, Brillion bypassed approximately 152,000 gallons of sewage to Spring Creek.

On July 24, 2010, Brillion provided the Department with verbal notification of two unscheduled bypasses of domestic sewage. These included:

Please be advised that the Department is authorized to seek injunctive or other appropriate relief for violations of pollution discharge elimination laws, including forfeitures of no more than $10,000 per day of violation, pursuant to s. 283.91(2), Wis. Stats. Any person who willfully or negligently violates laws relating to pollution discharge elimination may be fined not more than $25,000 per day of violation or imprisoned for not more than 6 months or both, pursuant to s. 283.91(3), Wis. Stats. Each day of violation is considered a separate offense.

This letter also serves as a Notice of Claim. The Department hereby gives notice of its intent and reserves its right to seek corrections, injunctive relief, and monetary penalties as allowed by ch. 283, Wis. Stats., for the above alleged violations. This Notice of Claim fulfills the requirements of s. 893.80(1), Wis. Stats., which requires a written notice of the circumstances of a claim be served within 120 days after the happening of the event which gave rise to the claim

If you have technical questions regarding your wastewater system, please contact Wastewater Engineer Mr. Dave Gerdman at (920) 662-5133. If you have questions regarding this notice, please contact me at (920) 662-5163.

Sincerely,

Anne M. Van Grinsven
Environmental Enforcement Specialist - Leadworker

Enc: Map

Cc: D. Gerdman – Green Bay
M. Hoefer - LC/8
D. Nikolai - Appleton
WT/3

APPENDIX B

POPULATION DATA

Amy Vaclavik

From: Kara Homan <Khoman@eastcentralrpc.org>
Sent: Tuesday, May 17, 2011 2:59 PM
To: Amy Vaclavik
Cc: Lori Gosz; Chad Olsen; Eric Fowle; Todd Verboomen; Joe Huffman
Subject: RE: Brillion Population Projections
Attachments: CityofBrillion_ProjectionConcurrence.pdf

Amy,

Attached, please find ECWRPC's official response to your request.

As stated in the letter, please make sure you send us a copy of the final Wet Weather Facility Plan so we can maintain it for our records, and to consult when we do our next population projections report (several years out at this point) and brillion SSA plan.

I've mailed the original copy of this correspondence via usps directly to your office.

Sincerely,

Kara Homan, AICP, Principal Economic Development Planner
East Central Wisconsin Regional Planning Commission
400 Ahnaip St, Suite 100 | Menasha, WI 54952
Phone: 920.751.4770 x 6817 | Fax: 920.751.4771
khoman@eastcentralrpc.org | www.eastcentralrpc.org
http://www.linkedin.com/in/karahoman

From: Amy Vaclavik [mailto:AVACLAVIK@mcmgrp.com]
Sent: Monday, May 16, 2011 1:09 PM
To: Kara Homan
Cc: Lori Gosz; Chad Olsen
Subject: Brillion Population Projections

Kara – The attached population projections are submitted on behalf of our client, the City of Brillion. The City has retained the services of McMAHON to prepare a Wet Weather Facility Plan. We propose to use the attached population projections in the facility plan. We developed these population projections because the projections currently available from East Central and Wisconsin DOA do not take into account the 2010 Census data. A comparison to East Central and DOA projections are provided on the attached. We have also included a brief explanation of the projections.

We request that these projections be reviewed and accepted by East Central for use in the Facility Plan. Please let me know if this email submittal is sufficient or if I need to send hard copies. Thank you for your consideration of this request & please let me know if there are questions. Thanks, Amy

Amy J. Vaclavik, P.E.
McMAHON
920-751-4200
P.O. Box 1024
Neenah, WI 54957
McMAHON
ENGINEERS ARCHITECTS

EAST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

400 Ahnaip Street, Suite 100 Menasha Wisconsin 54952 (920) 751-4770 Fax (920) 751-4771
Website: www.eastcentralrpc.org Email: staff@eastcentralrpc.org

An Economic Development District and Metropolitan Planning Organization
Serving the East Central Wisconsin Region for over 30 years
-A Recipient of the 2010 Greenways Partnership Award-

May 17, 2011

Ms. Amy Vaclavik, P.E.
McMahon, Corporate Headquarters
1445 McMahon Drive
Neenah, WI 54956

RE: Concurrence with Population Projections

Dear Ms. Vaclavik:

After internal review by ECWRPC staff, I am pleased to inform you that we concur with the customized population projections (hereinafter "McMahon Projections") you plan to utilize for the City of Brillion's *Wet Weather Facility Plan* (proposed projections attached). Although ECWRPC's original projections for the City of Brillion, as included in our *Population Projections Report* (2004), will remain our officially recognized projections for the City until a new report is created and adopted, we support your modifications and their use in your plan, for the following reasons:

- The recent strong growth in the industrial, commercial, and health sector within Brillion;
- The anticipated addition of Fawn Ridge, a 54 lot subdivision, to the city;
- The City of Brillion's 2010 Census Population was 3,148; ECWRPC's projections anticipated the city's population in 2010 to be 3008; our projections are currently 140 persons short (as were those of the DOA's Demographic Services Center); and
- The proposed population projections are very modest, and fall well within ECWRPC's and DOA's 2030 projected population, as illustrated below:
    - ECWRPC 2030 Projection: 2,577
    - McMahon 2030 Projection: 3,308
    - DOA 2030 Projection: 3,381

To ensure that we incorporate your study and its findings into future sewer service plans and population projection reports, we ask that you send us a final copy of the *Wet Weather Facility Plan* when completed. It is a pleasure to be of assistance to your firm and the city of Brillion. Please let me know if you have any questions regarding this correspondence.

Sincerely,

Kara Homan

Kara Homan, AICP, Principal Planner – Demographic Specialist

Cc: Eric Fowle, Executive Director
Joe Huffman, SSA Planner
Todd Verboomen, Enviromental Planner
Lori Gosz, Administrator, City of Brillion
Chad Olsen, McMahon

City of Brillion Population Projections

	1970	1980	1990	2000	2005	2010	2015	2020	2025	2030
East Central Regional Planning Commission	2588	2907	2840	2937	3022	3008	2949	2866	2741	2577
WI Demographic Services Center, May 2008				2937	2980	3045	3138	3231	3315	3381
							3.1%	3.0%	2.6%	2.0%
Census	2588	2907	2840	2937		3148				
Proposed for Facility Plan, May 2011						3148	3179	3243	3276	3308
Percent Increase							1%	2%	1%	1%

Population Increase 2000 to 2010	211
Percent Change 2000 to 2010	7.2%
Annual Increase	0.7%

A modest population increase is projected for the City of Brillion. The First Addition to Fawn Ridge consisting of 54 lots total is planned to be developed in the near future. Employment opportunities continue to be strong in the community, which will attract residents. Also the City has experienced development of new services including medical facilities which makes the community attractive for new residents.

Amy J. Vaclavik, P.E.
McMAHON 920-751-4200
May 16, 2011

APPENDIX C

'DRAFT' PRIVATE SEWER LATERALS ORDINANCE

APPENDIX C

PRIVATE SEWER LATERALS ORDINANCE

SUBDIVISION I. PRIVATE SEWER LATERALS

Sec. 98-197. Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Management means the sewer utility commission, city staff, or contracted services.

Private Lateral means the segment of the sanitary sewer system located on private property that connects a resident or business to the City sanitary sewer system.

Sec. 98-198. Purpose.

The purpose of this division is to prevent significant water inflow and infiltration into the City's sanitary sewer system and to protect public health, safety and welfare by assuring that private laterals are tested, inspected, maintained and repaired or replaced.

Sec. 98-199. Applicability.

This division applies to all private laterals located on premises served by the City municipal sewer system.

Sec. 98-200. Owner Maintenance Required.

The owner of property containing a private lateral shall maintain the private lateral. Maintenance under this section includes;

(a) clearing obstructions from the private lateral;

(b) repairing a defect in the private lateral that allows the introduction of extraneous flow or debris into the sanitary sewer system;

(c) repairing a defect in the private lateral that allows the discharge of sewage on the property; and

(d) keeping a manhole cover in place or a clean out cap tight and in place.

Sec. 98-201. Testing and Notice of Defective Private Laterals.

(a) The manager may periodically perform special test to confirm the integrity of the sanitary sewer system, including smoke testing, dyed water testing, air testing, hydraulic testing, closed circuit television inspection, and other testing and inspection techniques approved by the sewer utility commission.

(b) The manager may enter private property to inspect or test a private lateral.

(c) The manager shall give the property owner no less than 24 hours written notice before city personnel enter private property to conduct an inspection or test, unless;

(1) city personnel are conducting an investigation of a complaint or responding to a customer request to test or inspect a private lateral; or

(2) sewage is exposed on the property in a manner that creates a potential public health hazard.

(d) The manager may identify defects in a private lateral that allow extraneous flow or debris to enter the private lateral or the discharge of sewage on the property, or a condition that may interfere with the proper operation of the private lateral.

(e) A defect under this section may include;

(1) evidence of piper or joint deterioration;

(2) root intrusion into a pipe that separates a pipe joint or enlarges an existing crack;

(3) a misaligned pipe segment, sag, or lack of positive gradient;

(4) a lack of a necessary cleanout cap or manhole cover;

(5) a downspout, drain, or other connection that allows storm water or other extraneous water to enter the sanitary sewer system; or

(6) a flaw that allows the discharge of sewage on the property or the introduction of extraneous water into the sanitary sewer system.

(f) Except as provided in section 98-202, if the manager identifies a defective private lateral or a condition that interferes with the proper operation of the private lateral, or the lateral is not Schedule-40 PVC or CPVC or ABS material, the manager shall send the property owner written notice of the defect or condition, including a statement that the private lateral must be replaced or repaired, or the condition corrected, not later than 120 days after the date of the notice.

Sec. 98-202. Repair or Replacement Required.

(a) A property owner shall be responsible to repair or replace a defective private lateral from the property line to the building. The property owner shall pay the appropriate fee and obtain a permit from the City before performing the repair or replacement of a defective private lateral.

(b) If sewage is exposed on the property in a manner that makes it a potential public health hazard, a property owner must:

(1) stop the discharge of sewage immediately;

(2) remediate the site not later than 24 hours after the owner has notice of the exposed sewage; and

(3) complete all necessary repairs or replacement of a private lateral immediately, but not later than 30 days after the owner has notice of the exposed sewage.

(c) A person who repairs an existing private lateral or installs a new or rehabilitated private lateral shall perform the repair or installation as prescribed by the sewer utility's sanitary sewer connection standards and the state plumbing code.

Sec. 98-203. Post-Repair and Post-Replacement Inspection and Testing Requirements.

(a) After a property owner has repaired or replaced a defective private lateral, the manager shall:

(1) inspect the private lateral to determine that it complies with the sewer utility's sanitary sewer connection standards and the state plumbing code; and

(2) test the private lateral in a manner approved by the manager.

(b) If a private lateral fails the post-repair or post-replacement inspection or test, the property owners shall perform additional repairs as required by the manager to correct the defect.

Sec. 98-204. Financing Program.

(a) The City may establish a private lateral finance program to assist a property owner in financing the repair and replacement of a defective private lateral.

(b) A property owner may apply for assistance from the program by filing an application with the director on the form prescribed by the manager.

(c) If a property owner complies with the application requirements, the manager may authorize the owner to obtain financing under the program.

Sec. 98-205. Offense and Penalty.

(a) A property owner commits an offence if the owner fails to repair or replace a defective private lateral in compliance with the plumbing code or to correct a condition interfering with the proper operation of a private lateral on or before the date specified by the manager in the manager's written notice of the defect or as required by section 98-202.

(b) A property owner commits an offense if the owner fails to stop the discharge of sewage and to remediate the site not later than 24 hours after the owner receives notice from the City of exposed sewage on their property.

(c) A property owner who violates this chapter commits an offense, punishable under section 1-17 by a fine not to exceed $500.

DRAFT

APPENDIX D

STORM WATER REGULATION (SUMP PUMP) ORDINANCE

APPENDIX D

CHAPTER 10

STORM WATER REGULATION

98-191-1 Declaration Of Purpose
98-191-2 Definitions
98-191-3 Storm Water Discharges
98-191-4 Penalties And Enforcement

98-191-1 Declaration Of Purpose.

The purpose of these regulations is to prevent safety hazards caused by inappropriate discharge of storm water and reduce the unnecessary cost and burdens associated with treatment of storm water by the Wastewater Utility. The City Council of the City of Brillion finds that the discharge of storm water from private properties onto public rights-of-way creates a safety hazard to pedestrians and motorists. The City Council also finds that the discharge of storm water to the sanitary sewers adds to the cost of treating sewerage and it detracts from the available capacity of the Wastewater Treatment Facility. All homes, business, and industries in the City of Brillion with below ground rooms shall have a sump pump. Further, the City Council declares that violations of this Chapter regulating storm water shall constitute a public nuisance.

98-191-2 Definitions.

(a) 'Storm Water' means water runoff from downspouts, roof, sump pumps, and surface water runoff and drainage; provided none of the foregoing is combined with sewerage or other pollutants requiring treatment by the Wastewater Utility.

(b) 'Outfall' means the point at which storm water is discharged to the City storm sewers, to the surface of the ground, or to any other collection system.

(c) 'Discharge' means a discernible, confined and discrete conveyance of storm water.

(d) 'Person' means an individual, owner, operator, corporation, partnership, association or entity.

98-191-3 Storm Water Discharges.

(a) No person may discharge storm water from an outfall by combining such discharge with the sanitary sewer distribution or collection system of the City.

(b) No person may discharge storm water from an outfall in such a manner that the discharge disperses directly onto the surface of any public sidewalk or paved portion of any street.

(c) Person may discharge storm water directly to a storm sewer, provided the manner of connection has been approved in writing by the Building Inspector.

(d) If no storm sewer is adjacent to the property, storm sewer discharges from roof downspouts may discharge to the paved portion of the street, provided no obstruction to any public sidewalk is created; and provided the outfall location and plan, therefore, are approved in writing by the Building Inspector and, if also required by law, by the Plumbing Inspector.

(e) Property owners, whose properties are not adjacent to a storm sewer, may apply for compliance deferral until such time a storm sewer is available for connection.

98-191-4 Sump Pump Required.

(a) All homes, business and industries in the City of Brillion with below-ground rooms shall have a sump pump.

(b) All building foundation drains shall terminate in a sump pit. A sump pump shall be maintained to be functional.

(c) All sump pump discharge pipes shall be located 1-foot above the permanent ground grade to a point at least 3-feet out from the building. A pipe disconnect coupling shall be installed 3-feet out from the building, so the above-ground portion of the discharge pipe can be disconnected from the underground portion during freezing weather, if necessary.

(d) The sump discharge pipe shall be to the front of the building.

(e) All sump pumps installed to discharge clear water from foundation drains and ground infiltration must be directly connected to a storm sewer, when available. Where a storm sewer drainage ditch or other drainage facility is on another side of the property, the sump pump discharge may be made to such storm sewer, drainage ditch or other drainage facility only with the written approval of the Plumbing Inspector.

(f) All sump pumps installed for the purpose of discharging clear waters from foundation drains and ground infiltration, and where the building is not serviced by a storm sewer, shall either discharge into a conduit leading to a drainage ditch or shall discharge onto the ground at least 3-feet out from the building and 1-foot above the permanent grade. The sump discharge pipe shall be to the front of the building, except where a public drainage ditch, street or drainage easement is on another side of the property, it may be located on that side of the building at least 3-feet from the corner of the building, and be located in such a manner that the drainage shall be across the owner's property toward a street or drainage easement so as not to run on adjacent properties or to create a nuisance.

(g) The Plumbing Inspector or his/her designee, upon identification, may enter any building or premises supplied with public water service or public sewer facilities for the purpose of inspecting and testing all plumbing, together with all forms of clear water drainage, to ascertain quantity, quality and condition of sanitary and clear water sewage facilities.

98-191-4 Penalties And Enforcement.

(a) The Building Inspector is empowered to investigate any suspected violations of this Chapter through any lawful means.

(b) Upon finding a violation of this Chapter, the Building Inspector may issue a Notice of Non-Compliance to the property owner. Such notice shall state that the non-compliance is required to be corrected within 30-days of receipt of notice, or within such longer time deemed reasonable by the Building Inspector, taking into consideration such factors as the nature of outfall, weather conditions that may interfere with any likely corrective measures, and any relevant difficulties presented by the topography and configuration of the property.

(c) Upon failure to correct the non-compliance within the time stated in the notice, the Building Inspector shall issue an order directing the property owner to correct the violation within 30-days of receipt of the notice or otherwise be subject to possible municipal citations and forfeitures of up to $500.00 per violation per day, plus costs.

(d) In addition to the foregoing, or as an alternative in cases of immediate hazard to public safety, the City Attorney may seek other lawful remedies in effort to abate a public nuisance.

DRAFT

APPENDIX E

MANHOLE CORRECTIVE ACTION PLAN
March 23, 2011

Brillion WI
SMALL CITY, BIG HEART

City of Brillion
130 Calumet Street
Brillion, Wisconsin 54110-1199

March 23, 2011

Mr. David Gerdman
Wastewater Engineer
Wisconsin Department Of Natural Resources
2984 Shawano Avenue
Green Bay, WI 54313-6727

Re: City Of Brillion
Manhole Corrective Action Plan
Project No. B0004-930121.00

Dear Dave:

This Manhole Corrective Action Plan is being submitted as required by the Compliance Agreement between the Wisconsin DNR and the City of Brillion. The plan is intended to address the manhole defects identified on the attached Table #1.

Spring 2011: Review the condition of the manholes that have been identified as having open pick holes in the lids and manholes that need gasketed manhole lids; Prioritize manhole lids for replacement; Develop a schedule for manhole lid replacement based on priority.

Summer/Fall 2011: Grouting of manhole leaks listed as follows on Table 1:
Inlet/Outlet Pipe Connection Leaks in Manholes
Seal Manholes with Bad Barrel Joints
Repair Active Manhole Leaks as necessary

The following work will be done in combination with future utility projects that may be done in 2011 or 2012:

Raise Castings & Covers Above Grade
Seal or Replace Block Manholes

Please call if there are questions or if additional information is needed.

Phone (920) 756-2250 Fax (920) 756-2351 www.ci.brillion.wi.us

Table #1

MANHOLE CONDITION REPORT
Infiltration / Inflow (I/I) Corrective Actions
CITY OF BRILLION

Revised: March 16, 2011

Repair Method	Qty.	Description	Repair Cost		Projected Clearwater Range			Total Clearwater Range			Removal Approx. 75% Effective Range		
			Each	Total	Each (gpm)			Each (gpm)			Each (gpm)		
D	37	Installation of Chimney Seals	$330	$12,210	0.5	to	5	19	to	185	14	to	139
C	3	Replace Open Pick Hole Lids	$250	$750	1	to	3	3	to	9	2	to	7
A	8	Inlet/Outlet Pipe Connection Leaks in Manholes	$200	$1,600	2	to	6	16	to	48	12	to	36
A	29	Seal Manholes with Bad Barrel Joints	$400	$11,600	0.5	to	5	15	to	145	11	to	109
B	2	Raise Castings & Covers Above Grade	$500	$1,000	1	to	3	2	to	6	2	to	5
C	34	Install Gasketed Manhole Lids *	$150	$5,100	0.5	to	5	17	to	170	13	to	128
B	4	Seal or Replace Block Manholes	$3,000	$12,000	0.5	to	5	2	to	20	2	to	15
A	15	Repair Active Manhole Leaks as Necessary	$230	$3,450	0.5	to	5	8	to	75	6	to	56
		Mobilization		$10,000									
		Coordination/Engineering/Contingency		$20,000									
		Opinion of Probable Cost		$77,710									
								Projected Clearwater Reduction, gpm			60	to	494

Order Of Importance / Effectiveness: **Repair Method**

1. A) Grout work by Contractor.
2. B) Replace manhole or raise casting - Require excavation work by Contractor.
3. C) Work could be done by MCO on a time and material basis.
4. D) Contractor to install chimney seals.

* Note: This work item has been changed from installing seals on lids to installing gasketed manhole lids. Further investigation indicated that the seals were not an effective repair method. The repair cost increased from $50 each to $150 each.

APPENDIX F

TIME-OF-SALE CLEARWATER INSPECTION ORDINANCE

ORDINANCE NO. OR09-__

AN ORDINANCE AMENDING THE MUNICIPAL CODE, CHAPTER 106, ZONING, ARTICLE II. GENERAL PROVISIONS, SECTION 106-49, CLEARWATER SEPARATION AS IT RELATES TO CLEARWATER SEPARATION REQUIREMENTS AND INSPECTIONS IN THE CITY OF BRILLION, CALUMET COUNTY, WISCONSIN

The Common Council of the City of Brillion do ordain as follows:

SECTION I: Chapter 106, Zoning, Article II. General Provisions, Section 106-49, Clearwater Separation, is hereby amended to add the following

Sec. 106-49 Clearwater separation requirements and inspection of pre-2000 residential properties.

(a) No person shall sell, transfer or convey ownership of any one-(1)- or two (2-) family residential building, constructed before January 1, 2000 and serviced by a sanitary sewer, until such time as a clear water inspection has been made or approved by the building inspection department as provided in this section. Changing ownership or accepting change of ownership without such an inspection shall constitute a violation of this section and shall be subject to the penalties set forth in section 106-70.

(b) The building inspection department shall, upon request, conduct an inspection of the premise to ensure compliance with the provisions of this section relating to illegal surface or ground water connections into the sanitary sewer system. Such inspection shall occur on or before the sale, transfer or conveyance of title of any such building but may occur thereafter if for some reason not requested earlier by the owner.

(c) A notice of noncompliance shall be issued by the building inspection department to the owner of record of any residential building not to be found in compliance with the provisions of this section. The notice shall set forth areas of noncompliance and shall order the owner to bring the building into compliance within an established period of time, in the noncompliance order.

(d) Where a request for inspection is made pursuant to this section, and if it is found that the premises was subject to a clear water inspection within the prior year, the owner may verify in writing that no changes have been made since the last inspection that would cause the premises to be noncompliant with this section and a re-inspection will not be required.

(e) In order to avoid delay or prevent a pending sale of a property affected by this section, a buyer or other transferee may file with the building inspection department evidence of a contract or accepted bid for work which, when

complete, will bring the property into compliance with this section. Compliance shall be met within the time limits set forth in subsection (c) above, along with evidence that adequate funds have been escrowed to complete said work. Also, a signed stipulation shall be on record agreeing to bring the property into compliance with this section with the applicable time limits. Said evidence and stipulation may only be filed after the inspection provided for in subsection (b) above is made. Failure by the buyer or transferee to bring the property into compliance within the applicable compliance period shall constitute a violation of this section and shall be subject to the penalties set forth in section 106-70.

(f) No warranty. An inspection meeting compliance only indicates that so far as can be reasonably determined by a visual inspection of the premises and review of City records, the premises meets the requirements of this section. Neither the City nor its inspectors assume any liability in the inspection findings, whether compliant or not and we do not guarantee or warrant the condition of the premises inspected.

(g) Not liable. The City of Brillion will not be liable for any unsafe or sanitary conditions that exist in any building inspected for Clearwater compliance. However, if any such conditions exist, and are noticed by an inspector, authority shall be granted to issue orders to correct such conditions.

(h) Fees, and re-inspection. The inspection fee will be the minimum fee for special projects as per Section 14-123.

SECTION II: This ordinance shall take effect upon passage and publication as required by law.

Ordinance Number OR09-__ introduced and its adoption moved by Alderperson _____; and seconded by Alderperson _____.

Upon a pole vote thereon, the result was as follows:

____ Votes Cast
____ Votes Yes
____ Votes No

The Mayor declared Ordinance Number OR09-__ adopted, approved and signed the same this _____ day of December, 2009.

_____
Gary Deiter
Mayor

Attested:

_____
Lori M. Gosz, CMC
City Administrator/Clerk-Treasurer

APPENDIX G

PUBLIC EDUCATION - SAMPLES

Brillion WI
SMALL CITY, BIG HEART

The City Connection

A quarterly publication for the City of Brillion

Volume 14 Issue 2 — July—September 2011 Edition

City of Brillion Imposed Mandates by the DNR

In December 2010 the Wisconsin Department of Natural Resources imposed mandates on the City of Brillion requiring Brillion to eliminate excessive clear water from entering the City's sanitary sewer. The City of Brillion's Water & Sewer Utility Commission has been taking on this project called the Inflow & Infiltration Program (also known as the I/I Program). One portion of this Program is the Manhole Corrective Action Plan. MCO Utility Staff will be replacing some manhole covers in the City. Also, the Water & Sewer Utility Commission has asked McMahon Associates to prepare a Scope of Services for repairs to other manhole covers. What does this all mean? The goal is to eliminate clear water from entering the City's sanitary sewer through manhole covers and leaks in the manholes.

The Water & Sewer Utility Commission is asking City of Brillion residents for their assistance to help meet the mandates imposed by the DNR. It is being required that any homeowner that has their sump pump or downspouts connected to the sanitary sewer **disconnect them immediately**!!! When a sump pump or downspout is connected to the sanitary sewer, clear water is entering the sanitary sewer which then ends up at the Wastewater Treatment Plant. City of Brillion residents are then paying to have clear water treated. This is not cost effective and during high rain events, the Wastewater Treatment Plant cannot handle the flow, causing backups. Through televising done on certain laterals in the City it was noticed that clear water is entering the City's sanitary sewer system through defective laterals, sump pumps, and down spouts.

The Brillion City Council has also imposed a requirement that when any street is reconstructed that mini storm sewers are installed in the street and affected property owners will connect their sump pump to this mini storm sewer at the property owner's expense.

The Water & Sewer Utility Commission is also considering when a street is being reconstructed that the homeowner's laterals be televised for any defects. If there are defects in the laterals, those laterals must be slip lined or replaced at the property owner's expense. It is also being discussed that property owners may be required to install sump pumps in their homes if there is no existing sump pump. If you are considering having a sump pump installed or are in the process of water proofing your basement, contact the Building Inspector for guidance.

All of these requirements are being proposed due to the mandates by the DNR on the City of Brillion. The City must remove as much clear water from entering the sanitary sewer as possible. By doing this, we will not be treating clear water at the expense of property owners. Any help the residents of the City of Brillion can give on this would be greatly appreciated.

2011 Recycling Schedule

West of Main Street

July	13, 27
August	10, 24
September	8, 21
	(collection on the 8th due to holiday)
October	5, 19
November	2, 16, 30
December	14, 28

East of Main Street

July	7, 20
	(collection on 7th due to holiday)
August	3, 17, 31
September	14, 28
October	12, 26
November	9, 23
December	7, 21

2011 Curbside Chipping

Curbside Chipping will be done the first Monday of each month. Curbside chipping dates are as follows:

July 5th (Tuesday) **August 1st**
September 12th **October 3rd**

Branches and limbs must be no longer than 6 ft in length and no more than 6 inches in diameter. The brush must be neatly piled!

Compost Site Reminder

The City's Compost Site located on USH 10 is open 24 hours a day. City residents can bring their brush, leaves, and other yard debris to the site. This is a service exclusively for City of Brillion residents.

Brillion City Hall

City Hall Hours: Mondays 7:30 am – 6 pm, Tuesdays – Thursdays 7:30 am – 5 pm, Fridays 7:30 am – 3 pm

2011 Trick or Treat Hours:

Halloween Trick or Treat hours in the City of Brillion will be on Sunday, Oct. 30 from 4-6 p.m.

2012 Garbage and Recycling User Fees:

The annual Garbage and Recycling User Fees for the City of Brillion residents will be applied to your 2011 Property Tax bills which are payable in 2012. This amount will be added to the first installment of the property tax bill and will be due by January 31, 2012. The 2012 garbage and recycling user fees are: 45 gallon = $107.00; 65 gallon = $111.00; 95 gallon = $119.00.

If you would like to change the size of your barrel for 2012, please contact City Hall by October 31, 2011. If you have any questions please contact Lori or Joy at City Hall.

Curbside Leaf Pickup:

Curbside Leaf Collection will begin the week of October 10th and will end Nov. 17 or with the first snow fall. The schedule may change somewhat due to the time demands of collections.

Leaf Pickup Schedule:

Monday - Wards 1 and 2, Tuesday - Ward 3; Thursday - Ward 4.

When raking leaves into the street, please place them into shallow/small piles along the curb line, one foot away from the curb if possible. Leaves in the terrace area will not be picked up.

Please do not mix branches, limbs or brush with the leaves, for they clog street sweeper. If you wish to get rid of the leaves in a timelier manner, you may take them to the City Compost Site.

2012 Free Large Item Pickup Date:

The City of Brillion in coordination with the contracted services of Veolia Environmental Services will once again hold a free large item pickup for residents of the City. The 2012 Large Item Pick-up is scheduled for Monday, April 2. Residents should place items on the curb prior to the morning of April 2. Veolia will not clean up messes left by improperly prepared material or left by scavengers. All electronic items and items containing Freon will not be picked up. Items containing Freon may be taken to Midshore Recycling in New Holstein (920-898-5498). Please note that this Free Large Item pickup is only offered once a year. There will not be a fall pickup date in 2011.

Do You Part – Your Sump Pump Affects Everyone:

The City of Brillion Utility Commission is working on cost effective efforts to remove clear water from the sanitary sewer system. Property owners can help in these efforts by making sure their sump pumps are working correctly which can save all the users money in the long run.

Spring is the most important time of the year to have a sump pump that works correctly. With the snow melting and the frost in the ground changing from ice to water, the ground around your home becomes saturated. Add the spring rains to the equation, and the foundation drain that surrounds a basement becomes very active. The water accumulating in this underground tube is directed into your sump pit. When full, the sump pump discharges the water to a storm water system or to the lawn. This water eventually makes its way to the Brillion Marsh. If all is working as designed, the basement will remain dry and comfortable.

However, there are many homes that have sump pumps that work as intended but discharge the water to the wrong sewer system. If the sump pump is discharging to a floor or sink drain in your basement, it is contributing clean, clear water to the wrong system.

If during the Spring thaw or right after heavy or long periods of rain, the sump pump does not activate more frequently, the foundation drain system may have a cross connection. These cross connections in most cases direct the water to the sanitary sewer system. When this happens it causes overflows at the Waste Water Treatment Facility because too much clean, clear water is in the system. By making sure the sump pump is working properly and discharging the water to the correct sewer, residents can rest assured that they are doing their part to save money and help the environment.

Anyone who is unsure where their sump pump water is going may contact the Building Inspector at (920)756-2250.

Facts About Sewer Backup Incidents:

Sanitary sewer overflows can be caused by a number of factors. They usually involve sewer pipe blockages in either main sewer lines or service laterals (lines between buildings and the main line). Causes may include pipe breaks or cracks due to tree roots, system deterioration, insufficient system capacity due to residential or commercial growth, or construction mishaps. In homes and office plumbing systems, the main cause is accumulation of grease, tree roots, hair, or solid materials, such as disposable diapers or sanitary napkins that are too large for wastewater pipes to handle. Such materials may cause major backups in City lines as well as in residents' lateral lines

The following are preventive measures you can take to prevent sewage backup in your home.

- Avoid putting grease down your garbage disposal or household drain. It can solidify, collect debris and accumulate in City lines, or build up in your own system.
- Never flush disposable diapers, sanitary napkins or paper towels down the toilet. They could stop up your drains and may damage your plumbing system.
- If the lateral line in your older home has a jointed pipe system, consider whether the roots of large shrubs or trees near the line could invade and break pipes. It is a good idea to know the location of your lateral line(s).
- If the lowest level of your home is below ground level, such as a basement floor drain, it may one day be affected by a backup. One way to prevent sewage backup through such below ground areas is to install a "back-flow valve" on the lowest drain(s). You can also use a plumber's test plug to close these drains when not in use.
- Check with your insurance agent to make sure you have adequate insurance coverage. The City cannot assume financial responsibility for damages resulting from sewage backups, since most stoppages are related to conditions that are beyond the City's control. That is why it is important that property owners confirm that they are adequately insured.

Large Item Pickup:

Items too large to fit into the polycart garbage container, such as furniture, will be collected on Tuesday, only if a sticker is attached. Stickers may be purchased from City Hall during regular business hours. Stickers must be purchased by 12 noon on Friday in order to be picked up the following Tuesday. Stickers for appliances WITHOUT FREON such as stoves, washers, dryers, furniture, carpeting, TV's, etc. are $25 per item. Items containing Freon will not be accepted.

Virginia as a Department Head on a two-star admiral's staff, Navy Expeditionary Logistics Support

Infiltration/Inflow Report

Prepared For The
CITY OF BRILLION
CALUMET COUNTY, WISCONSIN

Brillion WI
SMALL CITY, BIG HEART

Copies of this report were previously provided.

SEPTEMBER 16, 2010

McM. No. B0004-900117
JLS:car

McMAHON
ENGINEERS ARCHITECTS

Stormwater Management Plan
Executive Summary

Prepared For The
CITY OF BRILLION
CALUMET COUNTY | WISCONSIN

Prepared By
McMAHON
NEENAH, WISCONSIN

NOVEMBER 30, 2011
McM. No. B0004-910177.02

EXECUTIVE SUMMARY

The Wisconsin Department of Natural Resources (DNR) and the City of Brillion entered into a Compliance Agreement in December of 2010 due to unscheduled sanitary sewer overflows at the City's Wastewater Treatment Facility. As part of the Compliance Agreement, the City is required to prepare a Stormwater Management Plan.

At the request of the City, McMAHON prepared a Stormwater Management Plan for a 215 acre or 0.34 square mile study area located within a portion of the Spring Creek Watershed. The study area is depicted in Figure E-1. The study area contains older segments of sanitary sewer infrastructure and older residential homes. An Infiltration / Inflow Report (dated September 2010) identified the study area as having the highest rates of Infiltration and Inflow (I/I) in to the City's sanitary sewer system.

The purpose of the Stormwater Management Plan is to evaluate stormwater system performance, identify flood prone areas which may contribute to sanitary I/I problems, and evaluate potential stormwater system impacts which may result from installation of residential sump pumps and mini-storm sewers. The City estimates that 80% of residential homes within the study area currently do not have a sump pump. As part of the City's infiltration and inflow reduction strategy, basement foundation drains will be disconnected from sanitary laterals and sump pumps will be installed to prevent basement flooding during periods of high groundwater. Sump pumps and mini-storm sewer will discharge additional flow into the City's existing stormwater system.

As shown in Figure E-2, seven sub-watersheds discharge into Spring Creek near Glenview Avenue. Combined, the seven sub-watersheds are approximately 5,123 acres or 8.0 square miles in size. Spring Creek discharges into the Brillion Marsh, which is located just west of the study area. Historically, the Brillion Marsh and Spring Creek have influenced the hydraulic performance of the City's stormwater system. Portions of the City's storm sewer system contain standing water at all times.

The City's stormwater system and Spring Creek were evaluated using the XP-SWMM hydrologic and hydraulic computer model. The XP-SWMM model was calibrated to past flooding events and the FEMA Flood Insurance Study which is based on a HEC-1 hydrologic model and HEC-RAS hydraulic model. Figure E-3 depicts current flooding limits within the study area based on the XP-SWMM model that was developed for the existing condition.

Several alternatives were evaluated to improve flooding and to handle the future flows to be added to the system by new sump pump installations. The proposed alternatives would be a significant financial burden for the City and the success of the improvements may be hampered by the water level in the Brillion Marsh. For purposes of the Compliance Agreement, McMAHON recommends a follow up meeting with DNR to discuss and mutually agree upon a stormwater plan of action.

Respectively Submitted,

McMAHON

Nicholas A. Vande Hey, P.E., CPESC
Associate / Senior Project Engineer

McMAHON
ENGINEERS ARCHITECTS
1445 MCMAHON DRIVE - NEENAH, WI 54956
P.O. BOX 1025 - NEENAH, WI 54957-1025
PH. 920.751.4200 | FX. 920.751.4284 | WWW.MCMGRP.COM

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Brillion WI
SMALL CITY, BIG HEART

Study Area

Other Mapped Features

Surface Water

Parcel Line

Municipal Boundary

Source: Calumet County, 2010.

Disclaimer: The property lines, right-of-way lines, and other property information on this drawing were developed or obtained as part of the County Geographic Information System or through the County property tax mapping function. McMAHON does not guarantee this information to be correct, current, or complete. The property and right-of-way information are only intended for use as a general reference and are not intended or suitable for site-specific uses. Any use to the contrary of the above stated uses is the responsibility of the user and such use is at the user's own risk.

0 600 1,200 Feet

McMAHON ENGINEERS ARCHITECTS

FIGURE E-1
STUDY AREA
SPRING CREEK STORMWATER MANAGEMENT PLAN
CITY OF BRILLION
CALUMET COUNTY, WISCONSIN

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Brillion WI
SMALL CITY, BIG HEART

Sub-Watersheds

- Spring Creek: Northern Subwatershed
- Spring Creek: East BIW Subwatershed
- Spring Creek: Horn Park Subwatershed
- Spring Creek: Southeast Subwatershed
- Spring Creek: Peters Park Subwatershed
- Spring Creek: Main Branch Subwatershed
- Spring Creek: W. Wolfschmidt Subwatershed

Other Mapped Features

- Surface Water
- Parcel Line
- Municipal Boundary

Source: Calumet County, 2010.

Disclaimer: The property lines, right-of-way lines, and other property information on this drawing were developed or obtained as part of the County Geographic Information System or through the County property tax mapping function. McMAHON does not guarantee this information to be correct, current, or complete. The property and right-of-way information are only intended for use as a general reference and are not intended or suitable for site-specific uses. Any use to the contrary of the above stated uses is the responsibility of the user and such use is at the user's own risk.

N

0 1,000 2,000 Feet

McMAHON ENGINEERS ARCHITECTS

FIGURE E-2
SUB-WATERSHEDS
STORMWATER STUDY
CITY OF BRILLION
CALUMET COUNTY, WISCONSIN

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Brillion WI
SMALL CITY, BIG HEART

Mapped Features

- Study Area
- 100 Year Flooding Limits*
- Point of Interest
- Storm Sewer System
- Culvert
- Surface Water
- Parcel Line
- Municipal Boundary

*Flooding Limits reflect current conditions and are used for calculations. 2009 FEMA Flood Insurance Rate Maps (FIRM) reflect conservative mapping analysis.

Source: Calumet County, 2010.

Disclaimer. The property lines, right-of-way lines, and other property information on this drawing were developed or obtained as part of the County Geographic Information System or through the County property tax mapping function. McMAHON does not guarantee this information to be correct, current, or complete. The property and right-of-way information are only intended for use as a general reference and are not intended or suitable for site-specific uses. Any use to the contrary of the above stated uses is the responsibility of the user and such use is at the user's own risk.

0 600 1,200 Feet

McMAHON ENGINEERS ARCHITECTS

FIGURE E-3
FLOODING LIMITS - EXISTING
SPRING CREEK STORMWATER MANAGEMENT PLAN
CITY OF BRILLION
CALUMET COUNTY, WISCONSIN

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EAST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

Robert Hermes, Chair
Donna Kalata, Vice-Chair
Eric Fowle, Secretary-Treasurer

COMMISSION MEMBERS - 2013/2014

CALUMET COUNTY

Bill Barribeau
Pat Laughrin
Merlin Gentz

MENOMINEE COUNTY

Muriel Bzdawka
(Jeremy Johnson, Alt.)
Ruth Winter
Robert Hermes, Chair

OUTAGAMIE COUNTY

Tom Nelson
Judy Schuette
(Peter Stueck, Alt.)
Tim Hanna
Carl Anthony
Kevin Sturn
Michael Thomas

SHAWANO COUNTY

Jerry Erdmann
Ken Capelle
Marshal Giese

WAUPACA COUNTY

Dick Koeppen
Gary Barrington
Brian Smith
DuWayne Federwitz

WAUSHARA COUNTY

Donna Kalata
Larry Timm
Neal Strehlow

WINNEBAGO COUNTY

Mark Harris
David Albrecht
Ernie Bellin
Burk Tower
(Mark Rohloff, Alt)
Jim Erdman
Ken Robl