ROSENDALE 2035

SEWER SERVICE AREA PLAN

WDNR CERTIFICATION DATE: June 28, 2018

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:	Rosendale 2035 Sewer Service Area Plan
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SUBJECT:	Sanitary sewer service area delineation for future community growth.
DATE:	June 28, 2018 (WDNR Approval/USEPA Certification Date)
PLANNING AGENCY:	East Central Wisconsin Regional Planning Commission
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This plan updates and supersedes the *1999 Rosendale Sewer Service Area Plan* which is an element of the *Water Quality Management Plan*, Upper Fox River/Lake Winnebago Watershed, Wisconsin. This plan was prepared by the East Central Wisconsin Regional Planning Commission and was certified by the Wisconsin Department of Natural Resources on June 28, 2018 as an amendment to the *State of the Upper Fox Basin Report, 2001.* It provides population and land use projections and delineates future growth areas for the Rosendale Sewer Service Area. Also identified are environmentally sensitive areas which are prohibited from development. This plan contains policy recommendations encouraging cost-effective and environmentally sound development patterns.

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CHAPTER 1: INTRODUCTION

This report represents the second update of the *Rosendale Sewer Service Area Plan*, a formal element of the *State of Wisconsin's Water Quality Management Plan*, which for this area includes the *State of the Upper Fox Basin Report, 2001.* 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 2035 Rosendale 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, (Map 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 *Rosendale Sewer Service Area Plan* update amends the *February, 1999 Rosendale 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 2035.

- 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 Map 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 75), 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 *Rosendale Sewer Service Area Plan* was adopted by the Rosendale Village Board on May 22, 2017 and by the Town of Rosendale on May 16, 2017 and the Town of Springvale on June 5, 2017 East Central's Sustainable and Efficient Community Services and Facilities Committee adopted the plan via Resolution 10-17 on June 14, 2017 and subsequently by its full Commission. The plan update was certified by the Wisconsin Department of Natural Resources and became effective on June 28, 2018 (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 www.ecwrpc.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 *2035 Rosendale 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. Allowances are also made for local circumstances.

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, (Map 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 Rosendale Sewer Service Area is located within a "designated" area and wholly within the Fond du Lac River watershed, (UF03), being part of the Upper Fox River Basin Watershed Management Unit ultimately draining to the Lake Michigan Basin.

Map 1
Fox River Water Quality Management Area

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CHAPTER 2: ROSENDALE SEWER SERVICE AREA PLAN OVERVIEW

PLAN ASSUMPTIONS AND READER NOTES

The beginning year for this update was 2014-2015, and hence; data was finalized mid-2015 to coincide with this starting timeframe. The plan itself looks out 20 years into the future (2035). The reader should further note that all references to SSA boundaries and acreages are associated with the 'updated' (2014) land use conditions, not with the 'current' (2000) plan features. Basically, the plan is written as if it has already obtained WDNR approval.

2035 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 early, 2015. 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 2035 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: ROSENDALE 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). Regionalization with a major wastewater treatment facility, (City of Fond du Lac), has been deemed premature and infeasible at this time. This circumstance is addressed through this plan's "Goals, Objectives and Policies" section of this report, (Urban Service Delivery, page 1- 6). It should also be noted East Central administers a sewer service area plan for the City of Fond du Lac with these same goals, objectives and policies. Future updates to this plan will continue to explore the concept of regionalization where and if practical.

The Rosendale planning area and sewer service area are located in the northwest part of Fond du Lac County. State Highway 23 and State Highway 26 create a major crossroad in the heart of downtown Rosendale. State Highway 23 also serves as the township boundary for the Town of Rosendale north of STH 23 and the Town of Springvale south of STH 23. The Rosendale planning area measures 2, 620.8 acres or 4.1 square miles, (Map 2). The Rosendale planning area includes the W ½ of Section 1, Section 2 and the E ½ of Section 3, T15N, R15E; the E ½ of Section 34, Section 25 and the W ½ of Section 36, T16N, R15E.

Planning Area Additions/Expansions

There were no portions deleted or added to the current planning area, (Map 2). The function of the planning area, among others, is to identify potential areas with private on-site systems that may require or request sewer service due to those systems failing. One such area located south of the Village of Rosendale east of STH 26 and north of Triple Kay Road. There are eight existing single family residential homes within a CSM-created subdivision along Marchant Drive whose development can be traced to the 1980's. While the condition of those private on-site systems is undetermined it is, however, reasonable to assume there may be requests from these property owners for service.

LAND USE AND DEVELOPMENT

Map 3 illustrates the 2014 existing land use for the Rosendale SSA confined within the current 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 2014 with minor updates based on newer 2015 aerial photography.

In this update, the 2035 SSA contains 570.4 acres, an increase of approximately 18% over the last plan period or 102 acres, (The 2035 SSA has not allocated additional acreage for development and therefore the discrepancy of 102 acres is due to inaccurate acreage tabulation in the 1999 plan update. Today's GIS technology allows for a more precise accounting of actual land use conditions). There being no additional acreage added to this plan update the developed lands

within the 2035 SSA can be described as follows, (Appendix B, Table B-1): 369.09 acres are considered to be the total developed areas within the SSA and comprise the following land uses; 175.08 acres of single family and multi-family residential land use (30.7% of total SSA); 6.34 acres of commercial land use (1.11% of total SSA); 7.0 acres of industrial land use (1.23% of total SSA); 98.1 acres of transportation/road use (17.2% of total SSA); 82.09 acres of public/institutional/use (14.39% of total SSA) and .48 acres of utility use, (.08% of total SSA). This update also contains 39.23 acres of environmentally sensitive areas which can be broken down by the following categories; 19.17 acres of stream/wetland buffers, 17.59 acres of wetlands and 2.47 acres of open water.

Residential Development

As can be expected, residential development within the 2035 Rosendale Sewer Service Area is the dominate land use category. There are considered to be 3.16 acres of multi-family residential found south of West Midway Street and east of North STH 26. The bulk of single family residential development can be found concentrated in neighborhoods north of East STH 23, south of Rose-Eld Road and east of North STH 26. A somewhat newer subdivision, (Spring Rose Estates), of residential development is found south of East STH 23 along Donovan Circle. This particular subdivision is nearly 90% developed. The total developable acreage within the Rosendale SSA is 162.08 acres. The Village of Rosendale anticipates to develop approximately 96.9 acres, (single/multi-family), or 60% of the developable acreage. This type of development is planned for and area north of East STH 23 and east of Wilson Street and a larger area planned west of Spring Rose Estates. Additionally, scattered residential in-fill throughout the village will occur for this planning period.

Commercial Development

Existing commercial development accounts for 1.11% of the total developed areas within the 2035 Rosendale Sewer Service Area. Commercial areas are concentrated at the STH 23 and STH 26 intersection in downtown Rosendale. Scattered commercial development is also found south of Rose-Eld Road within the northern limits of the village. Future commercial development is anticipated west of North Grant Street along with highway commercial along the STH 23 corridor. Future commercial development may manifest themselves as a matter of enhancements of existing businesses, re-development of vacant storefronts or new start-ups.

Industrial Development

The *2035* Rosendale *Sewer Service Area Plan* will have approximately 14.33 acres for the purposes of industrial expansion in addition to their existing 7 acre industrial base. A major Industrial employer located on Clark Street, Power Packaging, is the bulk of existing industrial development. Smaller industries are few and are scattered throughout the village.

Public/Institutional Uses

Public and institutional land uses comprise 82.09 acres or 14.39% of the land covers within the 2035 Rosendale Sewer Service Area. Three particular developments, (Rosendale Intermediate School, Laconia High School, Rosendale Primary School and the Rosendale Cemetery), account for 48.7 acres or 59% of all public or institutional uses. Future public/institutional uses include an area south of a wetland complex near the wastewater treatment facility and the possibility of expanding of the cemetery.

Map 2 - 2050 Planning Area Boundary

BACK OF MAP 2

Map 3 - Year 2014 Existing Land Use

BACK OF MAP 3

LIMITING ENVIRONMENTAL CONDITIONS

Limiting environmental conditions for development are found within the Rosendale planning area as indicated on Map 4. Steep slopes are, for the most part, confined outside of the village corporate limits and are more prominent in the southern one-quarter of the 2035 planning area. Bedrock features are virtually non-existent within the planning area boundary accounting for a 1.26 acre area just northeast of Triple Kay Road. Groundwater within two feet of the surface is prevalent throughout the area dominating the eastern half of the 2050 planning area.

Watersheds and Water Features

The 2050 Rosendale planning area is located within the Upper Fox River Sub-Basin being part of the Lake Michigan Drainage system. The Upper Fox River Basin drains an area of approximately 2, 090 square miles. The sole watershed within the 2050 Rosendale planning area is the Fond du Lac River watershed, (UF03).

The West Branch of the Fond du lac River is situated just northeast of the 2050 Rosendale planning area. Two main perennial unnamed streams are present within the 2050 Rosendale planning area. The first of these flows from the southwest portion of the planning area and flows generally in a diagonal fashion skirting the east side of the wastewater treatment facility serving as the receiving waters for treated effluent. The second perennial stream flows from the western 2035 Rosendale planning area from STH 23 northeasterly exiting the planning area east of STH 26. Other unnamed intermittent stream corridors are found within the 2050 planning area. These features are all considered to be environmentally sensitive, and as such, are buffered 75 feet from their centerlines.

Additional information on basins and watersheds in this region can be found in a 2001 Wisconsin Department of Natural Resources publication, *State of the Upper Fox Basin Report, (2001).* Further*, w*ith respect to impaired waters, a report titled *Rosendale Tributary Stream Reclassification, December 2006,* (WDNR), can be found in Appendix D in this report.

Wetlands

Wetlands, (Map 4), 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 stream banks. Wetlands within the 2050 Rosendale planning area are primarily classified as forested, emergent wet meadow and scrub/shrub types.

The 2050 Rosendale planning area contains a total of 192.61 acres of designated, mapped wetlands and a total of 82.92 acres of associated fifty foot buffers. The most significant wetland complex is located in the northern portion of the planning area. Including the wetland buffers this complex accounts for 49.6% or 136.72 acres of the total wetland/buffers within the 2050 Rosendale planning area. This particular designated wetland is associated with a larger wetland complex found in and around the West Branch of the Fond du Lac River. The Village of Rosendale has within its corporate limits approximately 28.14 acres of designated wetlands and buffer areas. The most significant complex, (with buffer areas), within the approved 2035 Rosendale sewer service area totals approximately 21.9 acres stretching from the wastewater treatment to STH 23 in a southwesterly fashion. Wetlands are considered to have development limitations and development within these areas is discouraged. The Village of Rosendale, Town

of Rosendale and Town of Springvale are committed to the preservation and protection of designated wetlands via their various comprehensive land use planning and adopted zoning ordinances. Absent local regulations or ordinances these communities would necessarily adhere to Fond du Lac County Zoning and Shoreland codes or Wisconsin Department of Natural Resources and U.S. Army Corp of Engineers regulations. The jurisdictions within the 2050 Rosendale planning area are encouraged to implement the goals, objectives and policies found in Chapter 1 of this report and more particularly the Growth Management element pertaining to Environmentally Sound Development.

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 Floodways and flood prone areas are illustrated on Map 4. A floodway determination is found within the heart of the Village of Rosendale involving a segment of an unnamed stream. This segment begins just south of Willow Creek Road and meanders in a southwesterly direction crossing STH 23 and 26 and exits the 2035 sewer service area in the village's southwest quadrant. The Village of Rosendale enforces and maintains a floodplain ordinance within its corporate limits while the Towns of Rosendale and Springvale operate under the Fond du Lac County Floodplain Ordinance. Generally speaking, areas susceptible to flooding are considered unsuitable for any type of development due to the potential health risks and property damage.

Soils

Soils support the physical base for development within the 2050 Rosendale 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 Fond du Lac County*, prepared by the USDA in 1973, two major soil associations are present within the 2050 Rosendale planning area:

- **Lomira-Virgil Association:** This association is part of a ground moraine underlain by a calcareous loam glacial till. Soils comprising the Lomira-Virgil association are well-

drained to poorly drained, silty and moderately permeable. This association includes the Lomira, Virgil and Pella soil series characterized by nearly level to moderately sloped and are somewhat poorly drained with the exception of the Lomira series which tend to be deep and well drained. Found predominately in the western portion of Fond du Lac County the Lomira-Virgil association is most abundant between the villages of Rosendale and Brandon. Prior to wide-spread cultivation this soil association supported forests of oak, sugar maple and basswood.

- **Plano-Mendota Association:** As a well-drained, silty and moderately permeable soil the Plano-Mendota association rests on a ground moraine underlain by a calcareous loamy glacial till. This association only makes up between 8-9 per cent of the county's total area. Soil types include Plano, Mendota, Elburn and Pella which are all nearly level to gently sloping and are well-drained with the exception of the Elburn and Pella soil types which are poorly drained. The Elburn and Pella types tend to have a high water table. Generally, prairie grass originally covered the landscape and, to a lesser extent, supported marsh grasses and water tolerant shrubs. This association is predominately in agricultural use.

Additionally, based on this soils information, steep slopes, (6%-12% and greater), have been identified within the planning area, (Map 4). Identifiable steep slopes are scattered throughout the 2050 Rosendale planning area and accounts for 170.3 acres or 6.5% of the total 2050 planning area. Groundwater within two feet of the surface totals 39.4% or 1, 033.1 acres of the total 2050 planning area and just 1.3 acres of identified bedrock has been mapped.

Groundwater

The Upper Fox River Basin's groundwater aquifers were formed during the Cambrian-Ordovician Period, (commonly referred as the Cambrian-Ordovician aquifer system), that includes a crystalline aquifer from the Precambrian period, a Silurian or Niagara dolomite aquifer and a sand and gravel aquifer. The bedrock geology is comprised is comprised of the sandstone and dolomite aquifer and overlain by the shallow, mostly unconsolidated, sand and gravel aquifer.

The majority of groundwater uses for residential, Industrial/commercial and agriculture are taken from the sand and gravel aquifer. The unconsolidated surface aquifer is the most environmentally at risk given the shallow depth to groundwater and the high permeability of most of the subsurface material. This may increase the possibility that contaminants at the surface will percolate through the ground to contaminate groundwater. While there are sandy soils there are also large areas of high groundwater particularly in the eastern and southern portions of the 2035 Rosendale planning area. These conditions limit development via the use of conventional, individual septic systems.

Failing on-site waste disposal systems, abandoned or active landfills, agriculture practices and certain other land uses can have a direct contribution of contaminants to the groundwater resources. Currently, the Village of Rosendale relies on private wells for their source of potable drinking water. As a somewhat longer term objective, the Village of Rosendale may embark on a feasibility study to determine the cost of developing a municipal water distribution system. As the village continues to develop in the future careful land use planning could help in minimizing groundwater contamination potential. Planned subdivisions and industrial parks, for example, would benefit by locating them within areas where sewer service could be easily extended.

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Map 4 - ESA's and Limiting Environmental Conditions

BACK OF MAP 4

DESIGNATED MANAGEMENT AREAS

Map 5 illustrates the existing Designated Management Areas (DMAs) within the 2035 Rosendale 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 2050 Rosendale planning area there are four governmental entities that exist, one of which is the Designated Management Agency.

- Village of Rosendale*
- Town of Rosendale
- Town of Springvale
- Fond du Lac County

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

Village of Rosendale – The Village of Rosendale incorporated in 1915 and to date its' corporate limits encompass 785.5 acres or 1.22 square miles and is considered to be rural in nature. The City of Fond du Lac is less than 15 miles east of the village along STH 23. The major crossroads within the heart of the village are STH 23, (east-west), and STH 26, (north-south). While the actual corporate limit area totals 1.22 square miles only 546.1 acres or .85 square miles are considered to be within the approved sewer service area. The Village of Rosendale, for the most part, has compact and orderly development patterns which benefits the existing sewer infrastructure. The Village of Rosendale's residents and businesses utilize individual wells for their water supply needs. The efficient transportation routes provided, (STH's 23&26), and the close proximity to the City of Fond du Lac to the east, City of Ripon to the northwest and, to a certain extent, the City of Oshkosh to the north provide ample opportunity for employment and development. The *Village of Rosendale Comprehensive Plan 2010-2030,* adopted in April, 2010, was used in this report from a base data standpoint. This base data included the village's insights to future growth area scenarios and future land use patterns among others. In addition, environmental, geological and general village characteristics described within the comprehensive plan were used to accurately describe the Village of Rosendale.

Town of Rosendale – A very small portion of the Town of Rosendale is within the *2035 Rosendale Sewer Service Area Plan*. These areas existed prior to this plan update and were not altered as a consequence. The town lands within the sewer service area are located along Rose-Eld Road in the northern most portion of the service area. In total there are 13.4 acres of the Town of Rosendale within the 2035 Rosendale Sewer Service Area. Included in this total are 5.7 acres of existing development making up 84% of the total in the form of roadways. Based on the Town of Rosendale Comprehensive Plan there were no traditional future land use designations and therefore no additional sewer service area allocations were appointed. The Town of Rosendale oversees zoning issues via the towns' adopted zoning ordinance. Shoreland, subdivision ordinances, among others, are administered by Fond du Lac County.

Town of Springvale – The Town of Springvale has a small area of existing development within the 2035 Rosendale Sewer Service Area. Four existing residential structures are located along

* Indicates DMA designation

Hill Boulevard that has access south of STH 23 adjacent on the village's eastern corporate limits. The total service area involved is approximately 10.9 acres including the road right of way. There currently is no public sewer serving this area and to do so would require an annexation by the Village of Rosendale. An additional area of existing development is located directly south of the village corporate limits east of STH 26. Eight single family residential structures along Marchant Drive and Triple Kay Road have existed for nearly two decades and the potential for sewer service may arise. It is for this reason this area will remain within the 2050 planning area boundary. It is unclear the status of The Town of Springvale Comprehensive Land Use plan, however, the Village and Town of Rosendale are committed to striving towards consistency among the communities regarding long-term strategic planning. Absent any of its own adopted ordinances, the Town of Springvale would rely on guidelines set forth through Fond du Lac County established ordinances.

Fond du Lac County – Fond du Lac County has certain jurisdictional authority within the townships in the county, particularly with those that have no ordinances of their own. County ordinances, among others, include land subdivisions, on-site sanitary systems and various ordinances pertaining to shoreland, wetlands and floodplains. In addition, Fond du Lac County oversees the maintenance of county roadways.

Map 5 - Political Jurisdictions and DMA's

BACK OF MAP 5

SEWERAGE COLLECTION AND TREATMENT SYSTEM

There is no public sewerage system present within the Towns of Rosendale and Springvale. Developments within these townships rely on private, individual on-site septic systems that may include conventional types, mound systems or approved holding tanks. Existing developments adjacent to the Village of Rosendale may have the opportunity for public sewer by meeting certain criteria set forth by the Village of Rosendale. These systems may fail due to poor soil conditions related to slow permeability and/or the presence of high groundwater. This report identifies areas of groundwater within two feet of the surface which could help to determine areas susceptible to failing on-site systems.

The Village of Rosendale wastewater treatment facility is located in the village's northeast corner along the southern right of way on Rose-Eld Road. Originally constructed as a Walker Process activated sludge package plant in 1963 an upgrade with a Sanitaire package was constructed in 1982 to augment the existing Walker tank. In 1990, the Village of Rosendale installed a new aeration tank and the Walker tank was converted into an aerobic digester/sludge holding tank. According to the 2014 Compliance Maintenance Annual Report, (CMAR), routine maintenance to the plant ranks very high. Additional wastewater facilities' planning was conducted in 2009 to address issues facing the existing plant. Chief among those factors that support the construction of a new plant include; the existing facility is over 30 years old and much of the equipment has exceeded its useful life; inadequate hydraulic treatment capacity for heavy precipitation events or future wastewater flows; an anticipated growth of population and housing units and; the possibility of stringent effluent quality limits based on the development of the Total Maximum Daily Loads, (TMDL), criteria. A new wastewater facility would necessarily have a design capacity of 300,000 gallons per day, (.30 mgd). Future planning for a new facility is also documented in the 2014 CMAR. At the time of this writing the Village of Rosendale is actively engaged with the Wisconsin Department of Natural Resources to reissue the village's Wisconsin Pollutant Discharge Elimination System, (WPDES), with modifications.

Treated wastewater is currently discharged to a tributary of the West Branch of the Fond du Lac River. This receiving tributary was studied in a report titled, *Rosendale Tributary Stream Reclassification, December 2006,* (WDNR). Recommendations from this document were further supported by the *2010 Water Quality Management Plan Update,* regarding the Fond du Lac River Watershed that including among other things that; 1) the Rosendale wastewater treatment facility discharge point remain downstream of the high quality area near the Mascoutin Valley State Trail and 2) elevated temperatures and degraded habitat be monitored and those conditions be compared to state standards to determine if the tributary be included on Wisconsin's impaired waters list. At the time of this writing it is unclear whether the tributary, (Rosendale Creek), has been reclassified.

The Village of Rosendale provides sanitary sewer service to residents and businesses throughout the village. The entire infrastructure system consists of 8-inch, 10-inch, 12-inch and fifteen inch gravity sewer mains. The total sewer system totals approximately 38,811 linear feet or 7.4 miles. A combination of 10, 12 and fifteen inch sewer mains collect all wastewater and directs it to the treatment plant. There are no lift stations within the existing collection system and none are anticipated in the immediate future. Annually, the Village of Rosendale performs maintenance activities for their sewer infrastructure including cleanings, sewer line televising, manhole inspections and remedies for inflow/infiltration removal. The Rosendale treatment facility grades out excellently in its operation and maintenance performance.

There are no serious issues with respect to inflow/infiltration, (I/I) of clearwater into the plant or sewer infrastructure system. While all treatment facilities and sewer systems experience this phenomenon during heavy wet weather conditions the Rosendale sewer network is currently subjected to a regular maintenance schedule effectively lowering the I/I rate. There is no requirement in the current WPDES permit for a Capacity, Management, Operation and Maintenance Plan, however, an Operating and Maintenance program is in effect.

In summary, the permit and design information for the Rosendale treatment plant is as follows:

- **WPDES Permit Number:** WI 0028428, Expiration Date December 31, 2011
- **Receiving Water:** Tributary, (Rosendale Creek), West Branch Fond du Lac River Watershed, (UF03)
- **Design Flow:** .216 mgd
- **Average Flow (Jan.- Dec., 2014):** .126 mgd
- **Design BOD (lb./day):** 1,056
- **Average BOD Influent (lb./day, Jan.-Dec., 2014):** 305
- **Average BOD Effluent (lb./day, Jan.-Dec., 2014):** 15
- **Treatment Type:** Aerobic Digestion
- **Sludge Treatment:** Hauled to another permitted facility for processing and disposal

Table 1 - ROSENDALE 2014 WWTF 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	0.0977	397	324	15	7	96.22%
FEB	0.1050	356	312	15	11	95.79%
MAR	0.1421	249	295	15	18	93.98%
APR	0.1735	243	352	15	10	93.83%
MAY	0.1440	274	329	15	7	94.53%
JUN	0.1778	253	374	15	10	94.07%
JUL	0.1309	300	327	15	13	95.00%
AUG	0.1084	320	290	15	13	95.31%
SEP	0.1002	335	280	15	9	95.52%
OCT	0.1045	302	264	15	12	95.03%
NOV	0.1131	265	250	15	11	94.34%
DEC	0.1120	287	268	15	13	94.77%
Total	**1.51**	**3,581**	**3,665**	**180**	**134**	
Average	**0.126**	**298.4**	**305**	**15.0**	**11.2**	**94.87%**

Map 6 - WWTF and Infrastructure Locations

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FORECAST GROWTH AND DEVELOPMENT

The 2035 Rosendale Sewer Service Area is expected to have only a slight increase rate of growth as compared to the previous 1999 Rosendale Sewer Service Area Plan, (Table 2). The total sewer service area is projected to increase by 147 people, thus bringing the population of 1,063 in 2010 to 1,210 persons in the year 2035, (the Towns of Rosendale and Springvale population projections actually show a decrease in the rate of growth for the same period. For the purposes of this report only the Village of Rosendale population forecasts are used as the towns' involvement in actual sewer service is negligible). Department of Administration population projections are stated in this plan update for the Village of Rosendale. Given the minimal impact of the Towns of Rosendale and Springvale in this planning period it is anticipated that any growth or development would be directed within the village and associated sewer service area. Based on the 2010 Census the Village of Rosendale population share of Fond du Lac County using a total county population of 101,633 is 1.05%. The sewer service area is projected to increase by 147 bringing the estimated figure 1,210 therefore elevating their share by .04% to 1.09% by the year 2035. This plan update uses 2.44 units/per/acre for single family residential densities equating a need for 22 acres, (30 acres if infrastructure or market factors are calculated), for future residential acreage needs and less than 1 acre for multi-family residential needs are projected for this plan period. This plan identifies 91.33 vacant acres for future single family and multi-family development. Given this excess of acreage there were no additional lands allocated for these land use types.

Projections for industrial and commercial development within the service area show a need of an additional two acres for future development. This update identifies 42.38 acres being available for future commercial and industrial development which may be a more realistic figure. It is therefore determined no additional commercial/industrial land allocations are necessary. The year *2035 Rosendale Sewer Service Area Plan*, as revised and updated, (Map 8), now has a total of 570.4 acres of land, a zero increase of in acres from the 1999 plan.

Table 2: ROSENDALE SSA, PROJECTED POPULATION BY DMA, 2010 -2035

MCD	DOA Projections							Difference 2010 - 2035	Difference '10-'35 w/10% Increase
	2010*	2015**	2015	2020	2025	2030	2035		
V.Rosendale	1,063	1,048	1,070	1,115	1,155	1,195	1,210	147	162
T. Rosendale	695	703	690	685	675	665	645	(50)	-50
T. Springvale	707	715	710	715	715	715	705	(2)	-2
Total	2,465	2,466	2,470	2,515	2,545	2,575	1,855	97	110

Source: *2010 Census Bureau; **DOA 2015 Final Estimate; (Town population not prorated to SSA)

ESTIMATED ROSENDALE SSA HOUSEHOLDS, 2010-2035

(Based on DOA Projections)

MCD	2010*		2015**		2015		2020		2025		2030		2035		Difference 2010 - 2035
	No. HH	Persons per HH	No. HH	Persons per HH	No. HH	Persons per HH	No. HH	Persons per HH	No. HH	Persons per HH	No. HH	Persons per HH	No. HH	Persons per HH	
V. Rosendale	417	2.55	411	2.55	420	2.55	437	2.55	453	2.55	469	2.55	475	2.55	58

Source: *2010 Census data; ** DOA 2015 Estimate;

Source: 2010 Census data; * DOA 2015 Estimate; DOA 2015 - 2040 Pop Projections (2013)**
Based on total housing units not occupied housing units
Persons per household held constant through the planning period

GROWTH ALLOCATION AREAS AND 2035 SSA

The policy basis for allocating acreage for future development is outlined in the Sewer Service Area Delineation and Planning Process found in Chapter 4. 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. Current vacant lands available for development within the updated SSA boundary total 162.1 acres.

Priority Development Area Mapping

During the SSA plan update an assessment regarding the phasing, or 'priority' areas of development was determined by the Village of Rosendale. During the working meetings and email exchanges with the Village of Rosendale the desire of the village was to maintain its current sewer service area boundary. Subsequently, a map was developed which indicates their general thoughts of development based on their local comprehensive plan and planned capital improvements. The Village of Rosendale, will instead, prioritize development within their residential neighborhoods and zoned commercial/industrial areas through in-filling. Therefore, no allocations for additional sewer service area are in this plan update.

Map 7 illustrates the 'priority areas' for development and their location, (numbered as 'areas' for clarity). There are four significant areas within the village whereby single/multi-family residential, commercial/industrial and public institutional are proposed to occur. There was no need to administratively alter the sewer service area boundary due to situations where sewer mains were inconsistent with the approved sewer service area boundary. Additionally, no areas of the existing sewer service area were removed; in essence, the sewer service area boundary will remain as it was in 1999. These areas are more generally described below:

- **Area #1 -** This area totals approximately 21.4 acres of vacant developable lands. This development area is located west of North Grant Street and north of West STH 23 and is designated for commercial development. A smaller area of approximately 2.5 acres located at the intersection of Rose-Eld Road and N. Grant Street is expected to develop as multi-family residential.
- **Area #2 -** The southern portion of this proposed development, (north of W. Midway Street and east of N. Grant Street), totaling 11.2 acres is a proposed multi-family designated area. The northern portion, (south of Clark Street and east of N. Grant Street), is slated for light industrial development. Existing industrial development can be found along Clark Street and south of Rose-Eld Road.
- **Area #3 -** Exclusively designated for single family residential development Area #3 totals approximately 32.2 acres. Located north of East STH 23 and east of Wilson Street this area provides the village with ample opportunities to develop single family residential homes.
- **Area #4 -** This area has been set aside for public or institutional uses and is located south of the existing wastewater treatment facility and north of the Mascoutin Valley Trail. This area is also bounded by a wetland complex on its northern border and its eastern border consists of a stream buffer both considered to be environmentally sensitive. A total of approximately 11 acres are identified for potential developments

to include, among others, governmental uses, expansion or new construction of the wastewater treatment facility or various recreational community facilities.
All of the areas described above have the same development premise which is to in-fill these areas as defined by the village's comprehensive plan. Additionally, the areas described are anticipated to be served via gravity sewer mains thus eliminating the need for additional infrastructure. This prudent approach is the basis for not expanding the existing sewer service area boundary during this update. There are approximately 243 acres of village lands that are not part of the current 2035 sewer service area and represents 31% of the village. The vast majority of this acreage is undeveloped or considered to be environmentally sensitive areas. The Village of Rosendale will have the array of amendment policies should these non-sewered areas experience shifting development pressures

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Map 7 - Priority Development Areas

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TABLE 3: - SUMMARY OF 2020 & PROPOSED 2035 SSA CONDITIONS

SSA Characteristic	2020 SSA***	2035 SSA	2020-2035 Difference
Developed Land Uses	297.00	368.47	71.47
Vacant Lands (see below for breakdown by proposed land use)	**171.46**	**159.03**	**-12.43**
Vacant/Undevelopable Lands	0.00	0.00	0.00
Environmentally Sensitive Areas*	25.10	36.76	11.66
Water Areas	0.00	2.47	2.47
Total SSA	**468.46**	**566.73**	**98.27**

Vacant Land By Proposed Land Use Type	2020 SSA ***	2035 SSA	2020-2035 Difference
Single Family Residential (incl. duplex)	68.36	82.53	14.17
Multi-Family Residential		14.33	14.33
Commercial/Industrial	15.30	39.70	24.40
Public Institutional**	56.10	15.42	-40.68
Agriculture/Woodlands/Undevelopable/Unplanned	6.60	7.42	0.82
Total Vacant Acreage	**146.36**	**159.40**	**13.04**

Source: ECWRPC, 2014-15 Land Use
* Includes wetland, stream & wetland buffers
** Includes Open Space, Utilities, Roadways,Other Public uses
*** ESA acreage not part of total claculations

Year 2035 Sewer Service Area

The year 2035 Sewer Service Area for the Rosendale WWTF is illustrated in Map 8 and contains a total of 570.4 acres. Of this total, 39.2 acres, including open water areas, have been designated as environmentally sensitive areas (ESAs) and 162.08 acres are considered to be vacant/developable areas. Public or institutional uses based on the village's comprehensive planning have been identified in this plan update in the amount of 15.42 acres thus leaving 146.66 acres to accommodate traditional residential, commercial, and industrial development, (non-designated land uses such as resource protection areas, unplanned areas, conservation areas and rural preservation areas totaling approximately 16.1 acres further reducing developable lands to approximately 139.24 acres). Table B-1, Appendix B details the 2035 existing land use figures for this update.

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 5-6 referencing Addendum Policy 1.4.

Development decisions within these areas are further enhanced through the village's use of its' extraterritorial plat and zoning review powers. This policy targets primarily urbanized developments, however, the Village of Rosendale could well benefit from its stated purpose.

Holding Tank Service Areas

According to the *2014 Compliance Maintenance Annual Report* the Rosendale wastewater treatment facility received no outside sewage from holding tanks, septic tanks or grease trap material. At the time of this writing it is unclear on the number of registered holding tanks within the Towns of Springvale or Rosendale. Additionally, there are no policies being formulated or agreements being considered to accept holding tank waste.

Map 8 - Year 2030 Sewer Service Area

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WATER QUALITY ASSESSMENT AND DEVELOPMENT IMPACTS

As urbanization continues of the Rosendale planning area impacts to surface and groundwater resources would be imminent. 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 in areas prone to 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.

The identification of impaired waters is crucial when determining future development scenarios. Within the 2035 Rosendale Sewer Service Area the West Branch of the Fond du Lac River has been assessed for many years and more recently in 2016. Although temperature and phosphorous samples exceeded the 2016 WisCALM thresholds the lack of biological data do not indicate an impaired situation. While not considered to be an impaired waterway the West Branch of the Fond du Lac River has been determined to be of poor quality. Wastewater effluent to a tributary to the West Branch of the Fond du Lac River has been previously mentioned in this report in a study titled, *Rosendale Tributary Stream Reclassification, December 2006,* (WDNR) and through another publication, *Rosendale Tributary to the West Branch of the Fond du Lac River.* Recommendations found in these reports are supported by East Central and continued monitoring of this waterway is essential.

The Plan Implementation and Recommendations section of this plan addresses and promotes sound development practices for future development, (see page 3-37). Additional information and detail regarding impaired waters can be researched by visiting the WDNR's Water Condition Viewer by following this link: http://dnrmaps.wi.gov/sl/?Viewer=water.

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 West Branch of the Fond du Lac River. 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 .074 mgd.

Non-Point Source Water Quality Impacts

The 2050 Rosendale planning area is located within the Upper Fox River Sub-Basin being part of the Lake Michigan Drainage system. The Upper Fox River Basin drains an area of approximately 2, 090 square miles. The sole watershed within the 2050 Rosendale planning area is the Fond du Lac River watershed, (UF03).

It is anticipated that surface runoff and pollutant loadings will increase with the forecast growth for the 2035 Rosendale 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 2035 Rosendale SSA, four pollutants, (sediment, phosphorus, zinc and lead), have been analyzed for seven generalized 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 2014 land use), within the 2035 Rosendale 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 2035 within the Rosendale 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 Map 9, Year 2035 SSA and 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.

The majority of the village utilizes an underground storm sewer system to handle stormwater during run-off events. Beyond the corporate limits in the adjacent townships, a series of roadway ditches reliably transport stormwater runoff. In addition, the Rosendale Drainage District 1 is situated west of the corporate limit area of Rosendale. Approximately one fourth odf this district lies within the Rosendale 2050 planning area. East Central has designated environmentally sensitive areas, (75 foot stream buffers), throughout the 2050 Rosendale planning area and strongly urges maintaining the integrity of these buffered areas. The Village of Rosendale is encouraged to pursue specific actions to minimize water quality degradation chief among them are watershed planning, land conservation techniques, aquatic buffers, site design techniques, stormwater best management practices, erosion and sediment control and more broadly coordination with Fond du Lac County on land management policies.

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.

Table 4: Wastewater Flow Projections

Table 4.1 : Rosendale SSA - Projected 2035 Residential Wastewater Flows

SSA	2010 Population	2035 Population	2010-2035 Increase	2010-2035 SSA Population 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)
Rosendale	1,063	1,210	147	162	12,960	0.013	51,840	0.052

Source: Eden 2013 CMAR; ECWRPC

Table 4.2: Rosendale SSA - Projected 2035 Commercial/Industrial Flows

SSA	2010-2035 Employee Increase	2035 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)
Rosendale	**159**	**2**	**2**	**2,640**	**0.0026**

Source: Eden 2013 CMAR; ECWRPC

Table 4.3: Rosendale SSA - Summary OF PROJECTED FLOWS & WWTF CAPACITIES

SSA	Additional Residential Flows (mgd)	Additional Comm/Ind. Flows (mgd)	Total Additional Flows (mgd)	Existing WWTF Flows (Avg. of 2014 mo. Avg. flows - mgd)*	Existing / Planned** WWTF Design Capacity (mgd)	Difference (Ex. / Planned Capacity - Existing & Projected Flows)
Rosendale	**0.013**	**0.003**	**0.016**	**0.13**	**0.216**	**0.074**

Notes:

Source: Eden 2013 CMAR; ECWRPC
* 10% increase not calculated - Town pop not prorated to SSA
* *WWTF design flow based on 2014 CMAR

Table 5: Rosendale SSA - Existing (1999) Non-Point Source Pollution Loading Estimate

2014 Acres	Unit Area Loads by Land Use (lbs/acre/yr)					Calculated Loadings			
	Development Type	Sediment	Phosphorus	Zinc	Lead	Sediment	Phosphorus	Zinc	Lead
68.4	Medium Dens Res. (2-6 units/ac, no alleys)	190.0	0.5	0.2	0.2	**12,988.4**	**34.2**	**13.7**	**13.7**
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**
15.3	Commercial (strip/downtown)	1,400.0	1.5	2.1	2.7	**21,420.0**	**23.0**	**32.1**	**41.3**
0.0	Industrial	900.0	1.5	2.1	2.4	**0.0**	**0.0**	**0.0**	**0.0**
0.0	Transportation	600.0	0.9	1.9	2.5	**0.0**	**0.0**	**0.0**	**0.0**
146.4	Undeveloped / Vacant	25.0	0.0	0.0	0.0	**3,659.0**	**0.0**	**0.0**	**0.0**
0.0	Institutional / Governmental / Utilities	700.0	0.5	0.6	1.1	**0.0**	**0.0**	**0.0**	**0.0**
230.0	**TOTALS**					**38,067.4**	**57.1**	**45.8**	**55.0**
					Tons	**19.03**	**0.03**	**0.02**	**0.03**

Table 6: Rosendale SSA - Future (2035) Non-Point Source Pollution Loading Estimate*

2035 Acres	Unit Area Loads by Land Use (lbs/acre/yr)					Calculated Loadings			
	Development Type	Sediment	Phosphorus	Zinc	Lead	Sediment	Phosphorus	Zinc	Lead
52.5	Medium Dens Res. (2-6 units/ac, no alleys)	190.0	0.5	0.2	0.2	**9,980.7**	**26.3**	**10.5**	**10.5**
14.3	Multi-Family Res. (3+ units / 1-3 stories)	420.0	1.0	0.7	0.8	**6,018.6**	**14.3**	**10.0**	**11.5**
0.0	Mobile Home/Trailer Park	190.0	0.5	0.2	0.2				
28.1	Commercial (strip/downtown)	1,400.0	1.5	2.1	2.7	**39,270.0**	**42.1**	**58.9**	**75.7**
14.3	Industrial	900.0	1.5	2.1	2.4	**12,897.0**	**21.5**	**30.1**	**34.4**
0.0	Transportation	600.0	0.9	1.9	2.5	**0.0**	**0.0**	**0.0**	**0.0**
162.1	Undeveloped / Vacant	0.0	0.0	0.0	0.0	**0.0**	**1.6**	**0.0**	**0.8**
15.4	Institutional / Governmental	700.0	0.5	0.6	1.1	**10,794.0**	**7.7**	**9.3**	**17.0**
286.7	**TOTALS**					**78,960.3**	**113.5**	**118.8**	**149.9**
					Tons	**39.48**	**0.06**	**0.06**	**0.07**

Source: ECWRPC, 2014-15 Existing Land Use, 1998 SSA Plan data
*Note: Total SSA acres is less than previously noted due to water features and ESA land uses not being included in these calculations.

Map 9 Year 2030 SSA and Proposed Land Use

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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 village 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 Village of Rosendale and the Towns of Rosendale and Springvale.

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 Village of Rosendale 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 village should do the following:

1. Adopt the *2035 Rosendale 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.

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 a request falls outside of the SSA Boundary and moreover initiates an SSA Amendment Request for 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.

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 (in this instance through the year 2050). 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 Map 4. All wetlands shown on the State of 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.

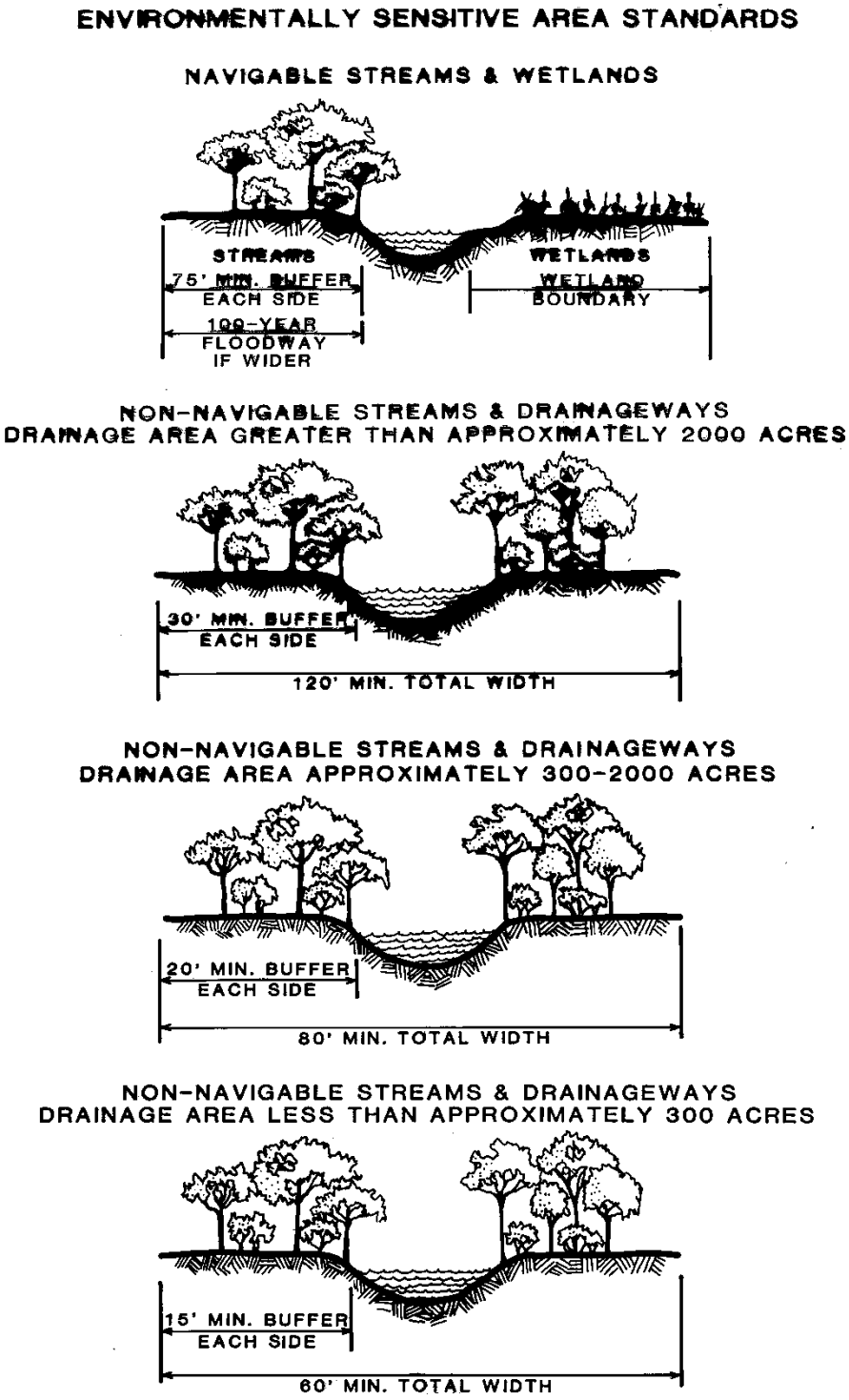
The purpose of designating environmentally sensitive areas is to preserve significant environmental features from encroachment by sewered development. Environmentally sensitive areas perform a variety of important environmental functions including stormwater drainage, flood water storage, pollutant entrapment, 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:

- 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.

- 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.

- 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:

- Improved or revised WDNR certified floodway delineations resulting from revised flood studies.

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

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

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

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

- Adjustments to the widths of shoreland buffer strips along non-navigable streams and drainageways within the guidelines established in Map 4.

- 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.

- 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 is 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 important in forecasting urban growth. The projections used are the 2010-2040 Department of Administration (DOA) population projections by five year increments for individual counties and municipalities. 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 Department of Administration by municipality. These population projections are in five year increments from 2010 to 2040. This report has also been approved by the Wisconsin Department of Natural Resources on June 28, 2018.

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:

- 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.

- 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.

- 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.)

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

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

- 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 be disposed of in accordance with NR-113.

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

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

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

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

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

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

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

- 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.

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

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

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

- 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 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 Sustainable and Efficient Community Services and 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 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 Map 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 Sustainable and Efficient Community Services and 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 Sustainable and Efficient Community Services and Facilities Committee meeting if there are significant issues involved. The Sustainable and Efficient Community Services and 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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Map 10 - SSA Amendment Standards and 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 Map 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 and 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 Sustainable and Efficient Community Services and 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 Map 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 provide a full range of services as spelled out in the "Long-Range Transportation/Land Use Plan Addendum's" density standards;

    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;

    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 Sustainable and Efficient Community Services and 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 Sustainable and Efficient Community Services and 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); and
    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); and
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; and
    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; and

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 Town of Brillion and the Rosendale Utility District 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 the WDNR certification date of 1997, (or subsequently), 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); and

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; and

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):

A. Definition and mapping of environmentally sensitive areas, (ESA's);

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

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

D. Facilities plan listed projects and improvements;

E. Projected available 20 year capacity of interceptor sewers, force mains and lift stations;

F. Location of existing sewer lines;

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

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

I. Ability to provide recommended levels of urban service per the addendum matrices;

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

K. The boundary itself is located, for administrative purposes, on the location of:

1. Environmentally Sensitive Area (ESA's);
2. Watershed, sub-watershed and drainage basin boundaries;
3. One lot depth, (300 feet), buffer from existing sewer line locations;
4. Quarter-section lines based on the Public Land Survey System, (PLSS);
5. Municipal and Sanitary District Boundaries;
6. Road centerlines;
7. Lift station service areas, (topography and depth); and
8. 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):

A. Definition and mapping of environmentally sensitive areas, (ESA's);

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

C. Projected available 50 year capacity of interceptor sewers, force mains and lift stations;

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

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

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

G. Intergovernmental growth/service agreements; and

H. The boundary itself is located for, administrative purposes, on the location of:
1. Environmentally sensitive areas, (ESA's);
2. Watershed, sub-watershed and drainage area boundaries;
3. Nearest quarter-section lines of the Public Land Survey System, (PLSS);
4. Municipal and Sanitary District boundaries;
5. Wastewater treatment plant service areas, (when multiple plants available);

6. Road centerlines;
7. Lift station service areas, (topography and depth);
8. Proposed and existing interceptor sewer service areas, (topography and depth); and
9. 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 of Wisconsin Wetland Inventory Maps and floodways as delineated on the official Federal Emergency Management Administration Flood Boundary and Floodway Maps.

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Appendix A

Rosendale Sewer Service Area Plan Update Meeting Record

Date	Description
Winter 2015-2016	Initiated contacts for the Towns of Rosendale, Springvale and Village of Rosendale to kick-off the 2035 Rosendale Sewer Service Area Plan update
February 4, 2016	Working meeting with the Village of Rosendale Public Works Director to update the Rosendale Sewer Service Area Plan
October 7, 2016	Working meeting with the Village of Rosendale
November 4, 2016	Working meeting with the Village of Rosendale
March 21, 2017	Town of Rosendale Plan Commission meeting approved 2035 Rosendale Sewer Service Area Plan update contingent on a favorable public hearing. Will recommend approval to Town of Rosendale Board.
April 10, 2017	Town of Springvale Board meeting to overview the 2035 Rosendale Sewer Service Area Plan update prior to the public hearing
April 27, 2017	Public/Informational Hearing for the Draft 2035 Rosendale Sewer Service Area Plan update
May 11, 2017	Follow-up correspondence with Village of Rosendale with public hearing results. Subsequent meetings with the Towns of Rosendale & Springvale scheduled
May 16, 2017	Town of Rosendale Board meeting approving the 2015 Rosendale Sewer Service Area Plan update
May 22, 2017	Village of Rosendale Board meeting approving the 2035 Rosendale Sewer service Area Plan update
June 5, 2017	Town of Springvale Board meeting approving the 2035 Rosendale Sewer Service Area Plan update

In addition to the meetings written correspondence was also used to communicate with the Village of Rosendale and adjacent townships. There were also numerous emails to the stakeholders in this process to clarify certain issues and to provide explanations throughout the process.

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SUMMARY OF PROCEEDINGS

COMMUNITY FACILITIES COMMITTEE

East Central Wisconsin Regional Planning Commission

ECWRPC Offices

June 14, 2017 – 10:00 A.M.

Committee Members Present:

Ernie Bellin ..... Winnebago County

Tim Hanna ..... Outagamie County

Tom Kautza ..... Shawano County

Jim Lowey ..... Menominee County

Brenda Schneider ..... Fond du Lac County

Committee Members Excused:

Brian Smith ..... Waupaca County

Staff Present:

Kathy Thunes . ..... ECWRPC Staff

Joe Huffman ..... ECWRPC Staff

1. Welcome & Introductions

Mr. Bellin called the meeting to order at 10:00 a.m. Everyone was welcomed and introductions were made.

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

There being no motions to deviate Mr. Hanna moved to approve the agenda. Mr. Kautza made the second. Motion carried.

5. Action Item: Nomination & Election of Committee Chairperson and Vice-Chairperson

Mr. Bellin called of nominations for to Chairperson and Vice-Chairperson for this committee. Mr. Kautza then nominated Ernie Bellin for Chairperson of this committee. Mr. Hanna made the second. There being no further nominations or discussion Mr. Bellin assumed the position of Chairperson. Mr. Bellin then nominated Mr. Hanna as Vice-Chairperson of this committee. Mr. Lowey made the second. There being no further nominations or discussion Mr. Hanna assumed the Vice-Chairperson position.

6. Approval of March 8, 2017 Summary of Proceedings

A motion was called to approve the summary of proceedings from the March 8, 2017 Community Facilities committee meeting. Mr. Hanna moved to approve the summary of proceedings. Mr. Kautza made the second. Motion carried.

7. Public/Guest Comment

None offered.

8. Announcements

There were no announcements.

Action Items

a) Discussion & Approval of the 2017-2018 Community Facilities Committee Meeting Schedule

Ms. Thunes described the current meeting schedule and the lack of meetings in the latter part of the year especially when dealing with work program items. Ms. Thunes then looked to committee members for input regarding the current schedule which meets the 2nd Wednesday of a schedule committee meeting. All the members were agreeable to the current scheduling of meetings. Ms. Thunes also remarked about the long time in between meetings late in the year and potential issues that arise during that time. As an example, Mr. Huffman relayed to the committee the potential changes to the 2030 Freedom Sewer Service Area that may occur this fall. The possibility of an amendment request, for commercial development, seems fairly imminent for the schedule September, 2017 meeting. In addition, the Freedom School District is proposing a new school site which will be on a November, 2017 voting referendum. The discussion turned to a possible SECSF meeting date for the second Tuesday of November, 2017. It also appeared, through discussion, that a December, 2018 meeting is unavoidable. Upon

further discussion it was decided that since the outcome of the referendum was in doubt the committee would tentatively schedule a meeting for December 13, 2017 at 10:00 am at East Central's offices. This may provide an opportunity to address other items proposed for late in the year.

b) Proposed Resolution No. 09-17 Updating the Forest Junction Sewer Service Area Plan

Mr. Huffman addressed committee members regarding the 2035 Forest Junction Sewer Service Area plan update. This draft plan proposal updates the 2001 Forest Junction SSA plan. Mr. Huffman overviewed the significant changes to this service area among them bringing the wastewater treatment facility into conformance with the plan. It was pointed out that approximately 182 acres were allocated for future development within the sewer service area. The environmentally sensitive areas associated with this plan update were also outlined. It was also acknowledged that the Forest Junction Utility District approved the 2035 Draft Forest Junction Sewer Service Area plan on March 7, 2017 and by the Town of Brillion on March 14, 2017. There being no further questions or discussion Mr. Hanna moved to approve Resolution No. 9-17 updating the Forest Junction Sewer Service Area. Ms. Schneider made the second. Motion carried.

c) Proposed Resolution No. 10-17 Updating the Rosendale Sewer Service Area Plan

Mr. Huffman addressed committee members regarding the 2035 Rosendale Sewer Service Area plan update. This draft plan proposal updates the 1999 Rosendale SSA plan. Mr. Huffman explained this plan update did not expand the existing sewer service area boundaries. The available vacant developable acreage was deemed sufficient for the Village's future growth. Mr. Huffman explained the statistical data regarding treatment plant data, population/housing projections, future wastewater loadings, existing and future land use acreage summaries and other technical data were updated. It was also pointed out the Village of Rosendale, in cooperation with the Wisconsin Department of Natural Resources, is studying the options for their wastewater treatment facility. Mr. Huffman informed committee members that the Town of Rosendale approved this draft version on May 16, 2017 and the Town of Springvale approved this plan at their June 5, 2017 meeting. At this time, staff awaits the approval confirmation from the Village of Rosendale. There being no further discussion Mr. Hanna moved to approve Resolution 10-17 updating the Rosendale Sewer Service Area plan contingent upon receiving approval documentation from the Village of Rosendale. Mr. Kautza made the second. Motion carried. (Subsequent to this meeting East Central received an approval from the Village of Rosendale, in the form of meeting minutes, whereby the Village Council approved the 2035 Draft Rosendale Sewer Service Area plan).

9. Program/Project Updates and Discussions

a) Review of 2017 Work Program & Discussion on 2018 Work Program - 1200 Program Element: Sustainable and Efficient Community Services & Facilities

Ms. Thunes began the review of the 2018 Work Program by addressing three technical assistance projects for the next year. The first project involved the City of Neenah's Greenhouse Gas Emissions Study which is a hold-over project from the previous year. Ms. Thunes explained that this project is essentially completed even though portions of the data were unavailable. A final report, without recommendations, will be issued to the lead committee on the project therefore completing this technical assistance project. Mr. Huffman explained the technical assistance project for the Town of Winchester involving drainage mapping for the town. This project will produce a map book that identifies all the environmentally sensitive areas in the town in addition to Digital Elevation Model mapping showing water drainage routes and patterns affecting the town. Mr. Huffman also explained how LIDAR data was used for this project. Ms. Thunes overviewed the final technical assistance project involving a Greenhouse Gas Reduction Targets for the City of Oshkosh. Final reporting and presentations were produced for the City; though, the city council did not adopt the plan. Ms. Thunes explained that two of the four interim reports were completed and the City of Oshkosh will act on all four reports as one project. This project was completed during the first part of this year. The discussion then turned to the 1230 Major Work Program Element - Sewer Service Area Planning, whereby Mr. Huffman began to outline the function and scope of the element. Work Items under this program, as explained, were routine in nature and the circumstances in performing these functions were unchanged. Mr. Huffman explained the sewer related review activities all remained intact with respect to oversight reviews of plats, sewer extension/lateral reviews and wastewater facilities planning. A key component of this major work program is the sewer service area plan updates. A brief overview of the ongoing updates, including the Fond du Lac area, was given. It was also mentioned that the major update for the Fond du Lac area will be the focus for the next calendar year. A short discussion on treatment plant efficiencies with respect to potential or future regulations and the impacts on contributing sanitary districts ensued. The regulatory environment often dictates the policy decisions for wastewater treatment operators and prospective users of the system.

10. Roundtable Discussion/Sharing on County/Local Issues & Activities

Mr. Bellin raised the new school issue in the Town of Freedom and asked what type of school was being proposed. Mr. Huffman couldn't say for certain if this new facility would include all school-aged children or if a split in the elementary school population and middle school was being proposed. Mr. Huffman agreed to investigate the particulars of the proposed school development and report the results.

11. Next Meeting: TBD

The next meeting date was scheduled for September 13, 2017 at 10:00 am at the Menasha Public Library.

12. Adjourn

There being no further business Mr. Kautza moved to adjourn. Mr. Hanna made the second. Motion carried.

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Village Board Meeting Minutes – May 22, 2017 at 6:00 PM – Rosendale Municipal Building

Duane Ciske, Village President
Trustees: Kurt Caramanidis, Elizabeth Crook, Chuck Feldner, Randy Redmann, Mark Simon & Tricia Yeager

AGENDA ITEM 1 – **Call Village Board meeting to order** – May meeting was called to order at 6:00 PM by President Duane Ciske and the following were present at this meeting:

Trustees: Kurt Caramanidis, Elizabeth Crook, Chuck Feldner Randy Redman, Mark Simon & Tricia Yeager
Staff: Public Works Director Dan Holdridge, Chief of Police Kevin Verdine & Clerk Emily Wirkus
Guests: No Guest

Trustee Mark Simon led the Village Board meeting in saying the Pledge of Allegiance.

AGENDA ITEM 2 – **Approve minutes of 4-24-17 meeting as circulated**- President Ciske would like to amend the minutes in agenda item #13 and strike out last sentence. Motion made by Caramanidis/Crook to approve the minutes of the 4-24-17 after the changes have been make. Motion carried by a 6-0-1 roll call. Trustee Simon was not present at the April meeting to approve the minutes.

AGENDA ITEM 3 – **Public Comments**– Nothing mentioned.

AGENDA ITEM 4 – **Approve Rosendale 2035 Sewer Service Area Plan** – Public Works Director Dan Holdridge explained the 2015 Sewer Service Plan. Motion made by Caramanidis/Redmann to approve the Rosendale 2035 Sewer Service Area Plan carried by a 7-0-0 roll call.

AGENDA ITEM 5 – **Discuss & approve, if necessary, an increase in the pet license fee** – President Ciske and Clerk Wirkus explained what the fees are now and how next year we are going "live" with the County and using a different program. The current pet license fees are $3 for spayed and neutered and $8 for non spayed and neutered. It was suggested to increase the fees to $5 for spayed and neutered and $10 for non spayed and neutered. The program that will be used next year will cost $150 and we currently get 25 cents per tag issued. The increase will help pay for the program used for pet licensing. It should be noted that there are a lot of unlicensed dogs and cats in the Village and they have received reminder notices in the mail by the police department.

AGENDA ITEM 6 – **Authorize Street & Sidewalk Committee to award contract for street chip & seal & cold mix overlay to lowest bidder, not to exceed $62,000**- President Ciske stated that there will be a Streets & Sidewalks meeting and by allowing the committee to approve a bid, the bid can get approved prior to the next Village Board meeting in June, if necessary. Motion made by Caramanidis/Simon and carried by a 7-0-0 roll call to allow the Street & Sidewalk Committee to award contract for street chip & seal & cold mix overlay to the lowest bidder, not to exceed $62,000.

AGENDA ITEM 7 – **Appoint Mark Simon as the Village of Rosendale TID Representative** – Motion made by Caramanidis/Redmann to appoint Mark Simon as the Village of Rosendale TID Representative. Mark is also on the Joint Review Board. Motion was carried by a 7-0-0 roll call.

AGENDA ITEM 8 – **Recognize Mitchel Reese Huff with his Eagle Scout Ranking**– Clerk Emily Wirkus mentioned that Mitchel Huff has earned his Eagle Scout Ranking. She mentioned that she made a certificate from the Village of Rosendale acknowledging his accomplishment.

AGENDA ITEM 9 – **Approve checks dated April 1, 2017 through April 30, 2017** – Motion made by Crook/Caramanidis to approve checks dated April 1, 2017 through April 30, 2017 carried by a 7-0-0 roll call.

AGENDA ITEM 10 – **Next Village Board Meeting will be held on Monday, June 26, 2017 at 211 N. Grant Street** – ****New Village Board meeting time - 6:00 pm*****

AGENDA ITEM 11 – **Correspondence** – Nothing mentioned.

AGENDA ITEM 12 – **President's Report** – President Ciske mentioned that there were some wells being tested in the Village and all is going well with the testing.

AGENDA ITEM 13 – **Any other business pertinent to efficient Village operation** – Nothing mentioned.

AGENDA ITEM 14 – **Recess the Open Session and convene in Closed Session pursuant to Wisconsin Statutes 19.85(l)(e) for the purpose of conducting specified public business when reasons require a closed session** – Chief Verdine explained the "police presence" in Donovan Circle.

AGENDA ITEM 15 – **Adjourn the Closed Session and reconvene in Open Session for Closed Session vote if pertinent** – Closed session was adjourned at 6:51 pm.

AGENDA ITEM 16 – **Adjourn the meeting** – Meeting was adjourned at 6:52 pm.

Rosendale Town Board Regular Meeting May 16, 2017

The regular meeting of the Rosendale Town Board was held on May 16, 2017 in the Rosendale Town Hall. The agenda for this meeting was posted at the Town Hall on the bulletin board and front door and the town website: www.townofrosendalewi.com.

The meeting was called to order by Chairman Kamps at 7:30 p.m. The Pledge of Allegiance was recited. Supervisors Ronald Goeden and Matt Zimmerman as well as Clerk/Treasurer Roxanne Tarnow were present. There was 1 elector, 0 landowners and 1 guest present (see attached list.) A motion was made by Supervisor Goeden and seconded by Supervisor Zimmerman to approve the agenda. Motion carried (3 ayes). The minutes of the April 18, 2017 meeting were read by Clerk Tarnow. A motion was made by Supervisor Goeden and seconded by Supervisor Zimmerman to approve the minutes. Motion carried (3 ayes).

PUBLIC COMMENTS
-Michael Krause-gravel at end of Griffiths Road possibly being blacktopped. Chairman Kamps to check with county because that may be a county issue. Also problems with creek backing up. Suggested he work with DNR because culvert is clear.

CORRESPONDENCE
-On April 6, 2017 Badger Laboratories & Engineering did site work to obtain water samples at the old landfill. They documented deficiencies in groundwater monitoring devices. It is the towns responsibility to correct the items on the list.
-Several emails were received from Matt Morgan regarding the condition of Morgan Drive. He feels that the grading that has been done in the past hasn't been sufficient. Morgan Drive is on the list for gravel and grading.

FINANCIAL REPORT
-The financial report was given by Clerk Tarnow. Vouchers 10964 thru 10972 were paid for a total disbursement of $7,049.53. A motion was made by Supervisor Zimmerman and seconded by Supervisor Goeden to approve the financial report as given and to pay the vouchers. Motion carried (3 ayes).

Balance as of May 16, 2017

Checking:	$ 129,141.64
Money Market	$ 103,293.79
Total	$ 232,435.43

REPORTS
-None at this time.

OLD BUSINESS
-At the March 21, 2017 town board meeting a motion was made and carried to accept the public hearing results of the draft 2035 Rosendale (village) Sewer Service Area Plan as presented contingent on a favorable public hearing. A public hearing was held in the Village of Rosendale on April 27, 2017. Joseph Huffman, SSA Planner from ECWRPC felt that the requirements have been met based on the public hearing results. A motion was made by Supervisor Goeden

and seconded by Supervisor Zimmerman to accept the results of the public hearing and approve the draft 2035 Rosendale Sewer Service Area Plan. Motion carried (3 ayes).

NEW BUSINESS
-James Van Houten has submitted an application for a Temporary Operator's Licenses for Pickett Steam and Gas Engine Club. All necessary paper work has been submitted and fee paid. A motion was made by Supervisor Zimmerman and seconded by Supervisor Goeden to grant the Temporary Operator's Licenses to James Van Houten. Motion carried (3 ayes).
-A reminder that the date of the Board of Review will be Tuesday, June 20, 2017. The assessor will be available from 3:00 p.m. to 5:00 p.m. with the Board of Review to follow from 5:00 p.m. to 7:00 p.m.
- Chairman Kamps will look over the Request for Bids for road work and will let Clerk Tarnow know if there are any changes or additions so she can get it in the paper.
-An estimate was received from Mike Rabe Trucking, Inc for grading and tree and brush trimming. The estimate was for $4,100.00 and included grading parts of Center Road, Porter Road, Box Elder Road, Morgan Drive, Pierstorff Road, Griffith Drive and Getzel Road. Tree and brush trimming included parts of Rose Eld Road, Hill Road, Triangle Road and an area near Springbrook and Forest Lane. A motion was made by Supervisor Zimmerman and seconded by Supervisor Goeden to have Mike Rabe trucking, Inc do the above work. Motion carried (3 ayes).
- A motion by Supervisor Zimmerman and seconded by Supervisor Goeden was made for gravel and extra work if needed to not exceed $4,000.00. Motion carried (3 ayes).

AGENDA ITEMS FOR NEXT MEETING
-Opening of Road Bids and Discussion of Road Work
-Liquor License-Shorties Sports Bar & Grill LLC
-Operator's Licenses-Shorties Sports Bar & Grill LLC
-Estimate from Badger Laboratories

Next meeting is scheduled for June 20, 2017 at 7:30 p.m. at the town hall.

A motion was made by Supervisor Goeden and seconded by Supervisor Zimmerman to adjourn the meeting. Motion carried (3 ayes). The meeting was duly adjourned at 8.10 p.m.

Respectfully submitted,
Roxanne Tarnow
Roxanne Tarnow, Clerk
Town of Rosendale

(Town of Springvale Approval)

Town of Springvale
Board Meeting
June 5, 2017

Present: Dan Dahlke, Barb Hollander, Terry Madigan, Pat Heyer, Rose Riedeman, Mike Oskola, Marilyn Oskola, Gordy Montey, Joseph Huffman
Meeting called to order by Chairman Dahlke.
Agenda properly posted
Roll call – quorum present

Prior Minutes: Minutes of May 1 and 15 and the Board of Review Minutes of May 15 were approved with the correction to the Board minutes of May 15 to state that Chairman Dahlke (not Chairman Hollander) read the preamble and resolution to borrow money.
Invoices were approved.
Treasurer's Report as of May 31, 2017:

Checking Account	$6,420.65
General Money Market	140,548.88
Highway Money Market	34,408.55
Fire Money market	72,587.49
Total	$261,465.47

All invoices presented were approved for payment.
Letters from Clerk None
Letters to Chairman: None

Rosendale Sewer Plan: Joe Hoffman appeared and stated that the sewer plan as presented has been approved by the Town of Rosendale and Village of Rosendale. He asked for a motion of approval from the Town of Springvale as well. After discussion and it being noted that the there is no impact to the Town of Springvale from the Plan Motion by Hollander to approve the Plan as presented. Second by Madigan. Motion carried 3-0.

Opening of Bids for Roadwork for summer of 2017: The only bid received was from Scott Construction, a copy is attached to these minutes, and the Board determined to accept the bid from Scott Construction as follows:
1 – Forest Avenue from Highway 26 to town line – 1/52 miles Option 1 at a cost of $45,825
2 – Curtis Road from County T north .54 mile at a cost of $13,250
3 – Metovale Road from County KK south .77 miles Option 1 at a cost of $20,325
4 – Pommering Road from Metovale Road east .34 miles at a cost of $9750 which includes double hot oil seal coat
5 – Center Road repair about 925 of the edge at a cost of $4000. This is damage done by Seneca Canning
Motion to accept the bid as noted was by Madigan, second by Hollander, passed 3-0

Property on Bell School Road: Jensen property on Bell School Road is zoned Business and Clerk received a call from BMO Harris Bank regarding the reason for the zoning and what the effects of the zoning are as they become a lender for this property. Clerk had sent an email to Attorney Parmentier and asked the Board's permission to forward the response to the Bank. Clerk advised to do so.

Dog License late fees: Treasurer has been informed by the County Treasurer that by statute, the Town should be assessing a late fee of at least $5 for dog licenses issued after April 1. After discussion, since the statutes state the Town "shall" assess a late fee, on motion by Madigan, second by Dahlke, the Town will assess a late fee of $5 s required by the statutes. Pass 2-0 with a nay vote by Hollander.

Personnel Matters: Mike Oskola turned in his keys, but was asked if he would be willing to continue to help Gordy and answer questions on processes and procedures. Mike agreed to do so through the month of June.

Highway equipment: Only as noted in loan for truck

.
Motion by Hollander to adjourn. Second by Madigan. Passed 3-0

Respectfully submitted,

Pat Heyer, Clerk

(WDNR Certification Letter)

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

Scott Walker, Governor
Daniel L. Meyer, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

June 28, 2018

DNR Project No. EC-0142

Mr. Huffman, WQM Planning
Mr. Fowle, Executive Director
400 Ahnaip Street, Suite 100
Menasha, Wisconsin 54952

Subject: 2035 Rosendale Sewer Service Area Comprehensive Plan Update

Dear Sirs,

We have completed our review of *the Rosendale Sewer Service Area Plan Comprehensive Update and approve of this amendment. This update replaces the 1999 Rosendale Sewer Service Area Plan which is an element of the Water Quality Management Plan, Upper Fox River/Lake Winnebago Watershed, Wisconsin.* The Rosendale Sewer Service Area Plan was adopted by the Rosendale Village Board on May 22, 2017 and by the Town of Rosendale on May 16, 2017 and the Town of Springvale on June 5, 2017. East Central's Sustainable and Efficient Community Services and Facilities Committee adopted the plan via Resolution 10-17 on June 14, 2017 and subsequently by the full Commission.

This update involved identification of four overall issue areas around which goals, objectives and policies were documented. The topical areas include growth management, urban service delivery, environmental resources, and open space. Objectives and policies highlight the significant interrelationship between urban growth/land use, sanitary sewerage planning, and environment sustainability. Together, these four focus areas demonstrably affect a community's future development.

The 2050 Rosendale planning area is located within the Upper Fox River Sub-Basin in the Lake Michigan Drainage area. The Upper Fox River Basin drains an area of 2,090 square miles. The sole watershed within the 2050 Rosendale planning area is the Fond du Lac River watershed (UF03). The West Branch of the Fond du lac River is situated just northeast of the 2050 Rosendale planning area. This area is the subject of restoration planning, monitoring and habitat improvement work.

Wastewater Capacity

The Village of Rosendale provides sanitary sewer service to residents and businesses throughout the village. The infrastructure system consists of 8-inch, 10-inch, 12-inch and fifteen-inch gravity sewer mains. The total sewer system totals 38,811 linear feet or 7.4 miles. A combination of 10, 12 and fifteen-inch sewer mains collect all wastewater and directs it to the treatment plant. There are no lift stations within the existing collection system and none are anticipated in the immediate future. Annually, the Village of Rosendale performs maintenance activities for their sewer infrastructure including cleanings, sewer line televising, manhole inspections and remedies for inflow/infiltration removal. The Rosendale treatment facility grades out as excellent in its operation and maintenance performance.

Treated wastewater is currently discharged to a tributary of the West Branch of the Fond du Lac River. This receiving tributary was studied in a report titled, Rosendale Tributary Stream Reclassification, December 2006, (WDNR). Recommendations from this document were further supported by the 2010 Water Quality

(WDNR Certification Letter back)

Management Plan Update, regarding the Fond du Lac River Watershed that including among other things that; 1) the Rosendale wastewater treatment facility discharge point remain downstream of the high-quality area near the Mascoutin Valley State Trail and 2) elevated temperatures and degraded habitat be monitored and those conditions be compared to state standards. The West Branch of the Fond du Lac River is listed as impaired for elevated water temperature and water quality use restrictions from excess phosphorus.

Statewide AWQM Plan Amendment
This amendment is a formal update to the state's Areawide Water Quality Management Plan, the *2035 Rosendale Sewer Service Area, and the* and the Upper Fox River Areawide Basin Plan, and will be sent to the US Environmental Protection Agency to meet the requirements of the Clean Water Act of 1987 (Public Law 92-500 as amended by Public Law 95-217) and outlined in the federal regulations 40 CFR, Part 35. This review is an integrated analysis action under s. NR 150.20 (2) (a) 3, Wis. Adm. Code. By means of this review, the Department has complied with ch. NR 150, Wis. Adm. Code, and with s. 1.11, Stats. The approval of this sewer service area amendment does not constitute approval of any other required local, state, or federal permit for sewer construction or associated land development activities.

Appeal Rights:
Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to sections 227.52 and 227.53, Wis. Stats., a party has 30 days after the decision is mailed, or otherwise served by the Department, to file a petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to section 227.42, Wis. Stats., a party has 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 does not extend the 30-day period for filing a petition for judicial review.

Sincerely,

Timothy R. Asplund
Monitoring Section Chief
Bureau of Water Quality
Division of Environmental Management

EC:
Lisa Helmuth, WY/3
DNR – NER Oshkosh - Mark Stanek, Wastewater engineer
DNR – NER Kelly O'Connor – Wastewater Supervisor
DNR – NER Marsha Burzynski – Water Resources Supervisor
DNR – NER Andy Hudak

CFC Resolution 10-17

PROPOSED RESOLUTION NO. 10-17

UPDATING THE ROSENDALE SEWER SERVICE AREA PLAN

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 Agency is preparing updated sewer service area plans for communities through the year 2035, and;

WHEREAS, the East Central Wisconsin Regional Planning Commission has held numerous 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 Wisconsin 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 updated plan for the 2035 Rosendale Sewer Service Area Plan Update and recommend Wisconsin Department of Natural Resources certification of the plan update, and;

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

Effective Date: June 14, 2017
Submitted By: Community Facilities Committee
Prepared By: Joseph W. Huffman – Sewer Service Area Planner

Ernie Bellin, Chair - Winnebago County

Tim Hanna, Vice-Chair- Outagamie County

Tom Kautza - Shawano County

Brenda Schneider - Fond du Lac County

James Lowey - Menominee County

Brian Smith - Waupaca County

Commission Resolution 10-17

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Effective Date: June 14, 2017
Submitted By: Community Facilities Committee
Prepared By: Joseph W. Huffman – Sewer Service Area Planner

Jerry Erdmann, Chair - Shawano County

Appendix B

Back of Appendix B

Table B1

TABLE B-1: Existing Year 2020 SSA Acreage Characteristics (Based on 2014-15 Land Use)

	Total SSA		V. Rosendale		T. Rosendale	
	Acres	%	Acres	%	Acres	%
EXISTING 2020 PLANNING AREA BOUNDARY	**2,620.77**	**63.67%**	**785.48**	**29.97%**	**883.06**	**33.69%**
Square Miles	**4.1**		**1.2**		**1.4**	
2014 Sewer Service Area Total	**566.73**	**100.00%**	**542.46**	**95.7%**	**13.36**	**2.4%**
Single Family & Duplex Residential (incl. mobile homes & accessory buildings)	**172.29**	**30.40%**	168.50	31.1%	0.76	5.7%
Multi-Family Residential	**3.16**	**0.56%**	3.06	0.6%	0.10	0.7%
Commercial	**5.84**	**1.03%**	5.84	1.1%	0.00	0.0%
Industrial	**6.72**	**1.19%**	6.72	1.2%	0.00	0.0%
Public/Institutional (includes park & recreation)	**81.88**	**14.45%**	81.88	15.1%	0.00	0.0%
Utilities (incl. WWTP)	**0.48**	**0.08%**	0.48	0.1%	0.00	0.0%
Transportation/Roads/Railroads (incl. Parking Facilities)	**98.10**	**17.31%**	90.68	16.7%	4.80	35.9%
Existing/Planned Stormwater Detention Ponds	**0.00**	**0.00%**	0.00	0.0%	0.00	0.0%
Vacant, Developable (includes woodlands, agric. or undeveloped uses)	**159.03**	**28.06%**	146.69	27.0%	7.69	57.6%
Total Vacant SSA Acreage	**159.03**	**28.06%**	**146.69**		**7.69**	
ESA - Stream Buffer and Wetland Buffer	**19.17**	**3.38%**	18.63	3.4%	0.01	0.1%
ESA - Wetland	**17.59**	**3.10%**	17.51	3.2%	0.00	0.0%
Open Water	**2.47**	**0.44%**	2.47	0.5%	0.00	0.0%
Total SSA Developed Acres	**368.47**	**65.02%**	**357.16**	**65.8%**	**5.66**	**42.4%**
Total SSA ESA/Water Acres	**39.23**	**6.92%**	**38.61**	**7.1%**	**0.01**	**0.1%**

Year 2020 SSA Vacant Acres by Proposed Land Use Type	Total of All SSAs		V. Rosendale		T. Rosendale	
	Acres	%	Acres	% of	Acres	% of
SF Residential	**82.53**	**51.8%**	77.00	93.3%	0.87	1.05%
MF Residential & Medium Density Development	**14.33**	**9.0%**	14.33	100.0%	0.00	0.0%
Commercial	**26.71**	**16.8%**	26.71	100.0%	0.00	0.0%
Industrial	**12.99**	**8.1%**	12.99	100.0%	0.00	0.0%
Public/Institutional (includes Parks/Churches/Utilities/Roadways)	**15.42**	**9.7%**	15.42	100.0%	0.00	0.0%
Conservation Areas	**0.00**	**0.0%**	0.00	0.0%	0.00	0.0%
Unplanned	**0.03**	**0.0%**	0.03	0.0%	0.00	0.0%
Remains as Agriculture	**7.18**	**4.5%**	0.00	0.0%	7.18	100.0%
Remains as Woodlands	**0.21**	**0.1%**	0.21	0.1%	0.00	0.0%
TOTALS	**159.40**	**100.0%**	**146.69**	**92.0%**	**8.05**	**2.9%**

Table B2

TABLE B-2: Proposed Year 2035 SSA Acreage Characteristics

	Total SSA		V. Rosendale		T. Rosendale	
	Acres	%	Acres	%	Acres	%
EXISTING 2050 PLANNING AREA BOUNDARY	**2,620.77**	**63.67%**	**785.48**	**29.97%**	**883.06**	**33.69%**
Square Miles	**4.1**		**1.2**		**1.4**	
2035 Sewer Service Area Total	**566.73**	**100.00%**	**542.46**	**95.7%**	**13.36**	**2.4%**
Single Family & Duplex Residential (incl. mobile homes & accessory buildings)	**172.29**	**30.40%**	168.50	31.1%	0.76	5.7%
Multi-Family Residential	**3.16**	**0.56%**	3.06	0.6%	0.10	0.7%
Commercial	**5.84**	**1.03%**	5.84	1.1%	0.00	0.0%
Industrial	**6.72**	**1.19%**	6.72	1.2%	0.00	0.0%
Public/Institutional (includes park & recreation)	**81.88**	**14.45%**	81.88	15.1%	0.00	0.0%
Utilities (incl. WWTP)	**0.48**	**0.08%**	0.48	0.1%	0.00	0.0%
Transportation/Roads/Railroads (incl. Parking Facilities)	**98.10**	**17.31%**	90.68	16.7%	4.80	35.9%
Existing/Planned Stormwater Detention Ponds	**0.00**	**0.00%**	0.00	0.0%	0.00	0.0%
Vacant, Developable (includes woodlands, agric. or undeveloped uses)	**159.03**	**28.06%**	146.69	27.0%	7.69	57.6%
Total Vacant SSA Acreage	**159.03**	**28.06%**	**146.69**		**7.69**	
ESA - Stream Buffer and Wetland Buffer	**19.17**	**3.38%**	18.63	3.4%	0.01	0.1%
ESA - Wetland	**17.59**	**3.10%**	17.51	3.2%	0.00	0.0%
Open Water	**2.47**	**0.44%**	2.47	0.5%	0.00	0.0%
Total SSA Developed Acres	**368.47**	**65.02%**	**357.16**	**65.8%**	**5.66**	**42.4%**
Total SSA ESA/Water Acres	**39.23**	**6.92%**	**38.61**	**7.1%**	**0.01**	**0.1%**

Year 2020 SSA Vacant Acres by Proposed Land Use Type	Total of All SSAs		V. Rosendale		T. Rosendale	
	Acres	%	Acres	% of	Acres	% of
SF Residential	**82.53**	**51.8%**	77.00	93.3%	0.87	1.05%
MF Residential & Medium Density Development	**14.33**	**9.0%**	14.33	100.0%	0.00	0.0%
Commercial	**26.71**	**16.8%**	26.71	100.0%	0.00	0.0%
Industrial	**12.99**	**8.1%**	12.99	100.0%	0.00	0.0%
Public/Institutional (includes Parks/Churches/Utilities/Roadways)	**15.42**	**9.7%**	15.42	100.0%	0.00	0.0%
Conservation Areas	**0.00**	**0.0%**	0.00	0.0%	0.00	0.0%
Unplanned	**0.03**	**0.0%**	0.03	0.0%	0.00	0.0%
Remains as Agriculture	**7.18**	**4.5%**	0.00	0.0%	7.18	100.0%
Remains as Woodlands	**0.21**	**0.1%**	0.21	0.1%	0.00	0.0%
TOTALS	**159.40**	**100.0%**	**146.69**	**92.0%**	**8.05**	**2.9%**

Table B3

Table B-3: Rosendale SSA Employment Forecasts 1998-2035

Geographic Area	2014 C/I Acreage	Employment Density	Employees	Projected 2035 C/I Acreage	Employment Density	Employees	2010 - 2035 Employee increase
V. Rossendale	13.34	10.1	134.734	42.38	10.1	428.038	293.304
Employee Increase							158.57

Source: ECWRPC Estimates

ECWRPC Long-Range Plan

Standard Employment Densities

Land Use	Employees/acre
Industrial	14.5
Wholesale	14.5
Commercial	12.0
Service	12.0
Trade	12.0
TCPU	4.1
Park & Rec	1.6
Average	**10.1**

Source: ECWRPC Long-Range Plan

Table B4

Table B-4 : Rosendale SSA - Commercial / Industrial Acreage Projections (YEAR 2035)**

EXISTING SSA (2020)

Rosendale SSA

13.34	Acres of existing commercial/industrial (C/I) development
1,121	2020 Population
0.01	2020 C/I Per Capita

2035 - PROJECTED SSA (2035 projected minus 2010 existing)

Rosendale SSA

1,237	2035 Population projection
116	Population Increase (2010-2035)
0.01	2035 C/I Per Capita
1	**Projected Need*** *(2035 C/I Per Capita * Pop. Increase)*

ESTIMATED ACREAGE NEEDS

Rosendale 2035 SSA C/I Projection

1 C/I Acres Needed

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

1	*	1.15	=	1.6

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

2	*	1.2	=	**2**

Note: This figure to be used as a guide for 2035 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 Village will assume all industrial/commercial development

Table B6

TABLE-B6: VILLAGE OF ROSENDALE SSA - RESIDENTIAL ACREAGE PROJECTION, (2035)*

162 2010-2035 Population Increase
58 2010-2035 Household Increase

FORMULA: **1) Total Households (Dwelling Units) Needed x Percentage Split of Unit Type (based on 2010 Census Units splits) = Projected Units by Type**

58	x	*88.5%*	=	*51 Single Family Units*
58	x	*1.4%*	=	*1 Duplex Units*
58	x	*10.1%*	=	*6 Multi-Family Units*

2) Projected Units by Type x Development Densities (based SSA Average) = SSA Acreage Needs for Residential Uses**

51	*Single Family Units*	/	2.4	units/acre	=	21.0
1	*Duplex Units*	/	2.4	units/acre	=	0.3
6	*Multi-Family Units*	/	14.0	units/acre	=	0.4
	Total V. Rosendale SSA Vacant Acres Needed					22

3) Application of 15% Infrastructure Factor = Gross Acreage Needs for Residential Uses

22 Acres Single Family Units	X	1.15	=	25.3
0 Acres Duplex Units	X	1.15	=	0.0
0 *Acres Multi-Family Units*	X	1.15	=	0.0
				25 TOTAL ACRES

4) Application of 20% Market Factor = Adjusted Gross Acreage Needs for Residential Uses

25 Acres Single Family Units	X	1.2	=	30
0 *Acres Duplex Units*	X	1.2	=	0.0
0 *Acres Multi-Family Units*	X	1.2	=	0.0
				30 TOTAL ACRES

Source: ECWRPC, 2014-15 Existing Land Use - V. Rosendale SSA
Table 2 - Projected Population by DMA; **Table 3** - Estimated V. Rosendale Households

***Includes 10% Increase**
****Single Family densities calculated at 2.44 units per acre**

Table B7

Table B-6: Fond du Lac Population Projections 2010-2040

MUNICIPALITY		2010 CENSUS	2013 DOA ESTIMATE	2015 PROJECTION	2020 PROJECTION	2025 PROJECTION	2030 PROJECTION	2035 PROJECTION	2040 PROJECTION
T Alto	Fond du Lac	1,045	1,041	1,035	1,030	1,020	1,010	980	940
T Ashford	Fond du Lac	1,747	1,749	1,755	1,785	1,815	1,835	1,825	1,795
T Auburn	Fond du Lac	2,352	2,356	2,395	2,510	2,620	2,715	2,770	2,790
T Byron	Fond du Lac	1,634	1,639	1,650	1,685	1,720	1,740	1,740	1,715
T Calumet	Fond du Lac	1,470	1,480	1,485	1,505	1,530	1,540	1,530	1,500
T Eden	**Fond du Lac**	**1,028**	**1,031**	**1,035**	**1,060**	**1,080**	**1,090**	**1,090**	**1,075**
T Eldorado	Fond du Lac	1,462	1,463	1,470	1,495	1,515	1,530	1,520	1,495
T Empire	Fond du Lac	2,797	2,808	2,840	2,935	3,030	3,105	3,135	3,130
T Fond du Lac	Fond du Lac	3,015	3,381	3,475	3,720	3,965	4,185	4,345	4,455
T Forest	Fond du Lac	1,080	1,061	1,055	1,045	1,035	1,020	990	950
T Friendship	Fond du Lac	2,675	2,686	2,730	2,845	2,960	3,060	3,110	3,130
T Lamartine	Fond du Lac	1,737	1,746	1,765	1,820	1,870	1,915	1,930	1,920
T Marshfield	Fond du Lac	1,138	1,135	1,135	1,155	1,165	1,175	1,160	1,140
T Metomen	Fond du Lac	741	740	745	760	780	790	790	780
T Oakfield	Fond du Lac	703	704	700	690	680	665	645	615
T Osceola	Fond du Lac	1,865	1,859	1,875	1,920	1,965	2,000	2,005	1,985
T Ripon	Fond du Lac	1,400	1,402	1,405	1,430	1,455	1,470	1,460	1,440
T Rosendale	**Fond du Lac**	**695**	**696**	**690**	**685**	**675**	**665**	**645**	**615**
T Springvale	**Fond du Lac**	**707**	**709**	**710**	**715**	**715**	**715**	**705**	**685**
T Taycheedah	Fond du Lac	4,205	4,275	4,370	4,615	4,865	5,085	5,220	5,305
T Waupun	Fond du Lac	1,375	1,376	1,380	1,405	1,425	1,435	1,425	1,400
V Brandon	Fond du Lac	879	874	870	875	875	870	850	825
V Campbellsport	Fond du Lac	2,016	2,009	2,025	2,080	2,130	2,170	2,180	2,160
V Eden	**Fond du Lac**	**875**	**882**	**905**	**965**	**1,030**	**1,085**	**1,125**	**1,150**
V Fairwater	Fond du Lac	371	369	370	385	395	400	405	400
V Kewaskum	Fond du Lac	0	0	0	0	0	0	0	0
V Mount Calvary	Fond du Lac	762	570	565	560	550	540	520	495
V North Fond du Lac	Fond du Lac	5,014	5,078	5,160	5,390	5,610	5,795	5,895	5,930
V Oakfield	Fond du Lac	1,075	1,088	1,100	1,140	1,175	1,205	1,220	1,215
V Rosendale	**Fond du Lac**	**1,063**	**1,054**	**1,070**	**1,115**	**1,155**	**1,195**	**1,210**	**1,215**
V St. Cloud	Fond du Lac	477	469	465	460	455	445	430	410
C Fond du Lac	Fond du Lac	43,021	43,100	43,430	44,510	45,540	46,300	46,370	45,920
C Ripon	Fond du Lac	7,733	7,664	7,690	7,800	7,895	7,945	7,875	7,725
C Waupun	Fond du Lac	3,476	3,490	3,535	3,665	3,790	3,895	3,940	3,945
Totals		**101,633**	**101,984**	**102,685**	**105,755**	**108,485**	**110,590**	**111,040**	**110,250**

Source: DOA 2010 -2040 Population Projections by MCD; October, 2013

V. Rosendale share of the County (2010) = 1.05%
V. Rosendale share of the County (2035) 1.09%

APPENDIX C: ENDANGERED RESOURCE PROTECTION AND 2035 SSA ALLOCATIONS

The Rosendale 2035 SSA have no additional allocations, however, four development areas are identified within the sewer service area. Environmental issues are elements to this planning process are described below. If known, aquatic invasive species, elevated nitrate levels in groundwater, loss of natural shorelines, etc., are identified.

Rosendale 2035 SSA – Development Area 1	
Location	Village of Rosendale, T16N R15E, SW ¼, Section 35. This area totals 21.4 acres.
General Physical Features	This area is currently in agricultural/open space use.
Current Development	No existing development is present.
Planned or Proposed Development	The southern allocation area, (W STH 23 and Grant Street), has the potential for some highway commercial and light industrial. The northern allocation is slated for commercial and light industrial.
Limiting Environmental Conditions*	No known or mapped environmentally sensitive areas are located within this area.
Water Features	None present.
WDNR Natural Heritage Inventory	According to the WDNR Natural Heritage Inventory data two areas of concern are recognized within the township which include a migratory bird concentration site and the Southern Dry Forest designation. It is unclear any of these conditions exist within the village limits. A more detailed analysis may be required to determine the extent of these conditions prior to development. (The ER Preliminary Assessment can be found at the end of this appendix).

Rosendale 2035 SSA – Development Area 2	
Location	Village of Rosendale, T16N, R15E, NE ¼, Section 35. This area totals 11.2 acres.
General Physical Features	Generally level to gently sloped this allocation has minimal limitations for development.
Current Development	This area may have some agricultural use, however, is considered open space
Planned or Proposed Development	This particular area is planned for light industrial/commercial in the northern portion and multi-family residential in its southern quadrant.
Limiting Environmental Conditions*	No known or mapped environmentally sensitive areas are located within this area
Water Features	None present.
WDNR Natural Heritage	According to the WDNR Natural Heritage Inventory data two areas of concern are recognized within the township which include a migratory bird concentration site and the Southern Dry Forest designation. It is unclear any of these conditions exist within the village limits. A more detailed analysis may be required to determine the extent of these conditions prior to development. (The ER Preliminary Assessment can be found at the end of this appendix).

Rosendale 2035 SSA – Development Area 3	
Location	Village of Rosendale, T16N, R15E, SW ¼, Section 36. This area totals 32.2 acres.
General Physical Features	This area is generally level or gently sloping and may currently be in agricultural use.
Current Development	Generally categorized as an open meadow there is no significant development that exists.
Planned or Proposed Development	Single family residential will dominate the future development in this area. This area is the logical extension of the established subdivision west of Wilson Street.
Limiting Environmental Conditions*	A small wetland complex is present on the eastern boundary of this area. Adverse impacts to this wetland is minimal as it is not within the current sewer service area.
Water Features	None present.
WDNR Natural Heritage	According to the WDNR Natural Heritage Inventory data two areas of concern are recognized within the township which include a migratory bird concentration site and the Southern Dry Forest designation. It is unclear any of these conditions exist within the village limits. A more detailed analysis may be required to determine the extent of these conditions prior to development. (The ER Preliminary Assessment can be found at the end of this appendix).

Rosendale 2035 SSA – Development Area 4	
Location	Village of Rosendale, T16N, R15E, NW ¼, Section 36. This area totals 11 acres.
General Physical Features	This area is generally level or gently sloping and the surrounding lands are currently in agricultural use.
Current Development	There is no development present.
Planned or Proposed Development	This area is slated for public/institutional uses that may include recreational, government facilities or other related developments.
Limiting Environmental Conditions*	The northern portion of this area is bordered by a wetland complex and its associated wetland buffers. It is also bounded on the east by an unnamed stream and buffer area.
Water Features	No open water features are evident in this allocation.
WDNR Natural Heritage	According to the WDNR Natural Heritage Inventory data two areas of concern are recognized within the township which include a migratory bird concentration site and the Southern Dry Forest designation. It is unclear any of these conditions exist within the village limits. A more detailed analysis may be required to determine the extent of these conditions prior to development. (The ER Preliminary Assessment can be found at the end of this appendix).

**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), and WDNR's Natural Heritage Inventory Working List.*

ENDANGERED RESOURCE PROTECTIONS

Species listed as Threatened or Endangered under Wisconsin's Endangered Species Law **(s. 29.604 Wis. Stats)**:

- **State-listed animals** - Vertebrates and invertebrates are protected on all lands and waters of the state.

- **State-listed plants** – Protected on public lands and on lands that the person does not own or lease, except in the course of forestry, agriculture, bulk sampling associated with mining or utility actions.

Species protected by the Federal Endangered Species Act of 1973, as amended includes those federally-listed as endangered or threatened and their designated critical habitats:

- **Federally-protected animals** – Protected on all lands.
- **Federally-protected plants** – Protected on federal lands and in the course of projects that include federal funding. They are also protected on other lands if they are removed, cut, dug up or damaged in knowing violation of any law or regulation of any state or in violation of a criminal trespass law.

Special Concern Species, High-Quality Examples of Natural Communities

High Conservation Value areas and unique natural features such as caves or animal aggregation sites are not legally protected by state or federal endangered species laws. However, other laws and policies related to Forest Certification or master planning or granting and permitting processes may require or strongly encourage protection of these resources. The main purpose of the Special Concern classification is to focus attention on species about which some problem of abundance or distribution is suspected before they become endangered or threatened.

State Natural Areas

SNA's protect outstanding examples of Wisconsin's native landscape of natural communities and significant geological formations. Endangered species are often found within SNA's. SNA's are protected by law from any use that is inconsistent or injurious to their natural values, **(s. 23.28 Wis Stats)**.

Appendix C includes data on the township range areas included in the sewer service area plan. Prior to development or land disturbance these lists should be consulted to determine if there might be endangered resources in the area. If endangered resources are indicated the developer or municipality should take the project area through the **Natural Heritage Inventory Public Portal** prior to requesting an Endangered Resources Review to ensure a review is necessary. If the Endangered Resources Preliminary Assessment you receive from the NHI Public Portal indicates that no further actions are necessary, you can submit the Endangered Resources Preliminary Assessment report with other WDNR permit applications to indicate the Endangered Resources issues have been addressed. If, on the other hand, the Endangered Resources Preliminary Assessment indicates further actions are recommended or required, the next step would be to complete the Endangered Resources Review Request Form. By including

the Endangered Resources Preliminary Assessment report with the Endangered Resources Review Request the Endangered Resources reviewer will have the ability to call up the project area from the NHI Public Portal ensuring the project area is accurately accessed thus reducing the time needed to complete the review. To learn more about the Natural Heritage Inventory please use this link: http://dnr.wi.gov/topic/nhi/.

ENDANGERED RESOURCE PRELIMINARY ASSESSMENT

(NHI_Prelim Report)

Migratory Bird Concentration Site

Migratory bird concentration sites are important resting and feeding areas for birds as they fly between their breeding and wintering grounds. These areas also can be locations where large numbers of migrating birds often become concentrated due to prevailing winds and or water barriers. Sites are used by many different species, both rare and non-rare.

Southern Dry Forest

Oaks are the dominant species in this upland forest community of dry sites. White oak (*Quercus alba*) and black oak (*Quercus velutina*) are dominant, often with admixtures of northern red and bur oaks and black cherry. In the well-developed shrub layer, brambles (*Rubus* spp.), gray dogwood, and American hazelnut are common. Frequent herbaceous species are wild geranium, false Solomon's-seal, hog-peanut, and rough-leaved sunflower. This community type intergrades to Oak Woodland, which has similar canopy composition but a more open forest floor due to relatively frequent ground fires and possibly also due to grazing by elk, bison, or deer prior to EuroAmerican settlement.

NATURAL HERITAGE INVENTORY PROTECTED LIST

Natural Heritage Inventory data

township tool

Data for Township 16N, Range 15E

The following is a list of species and natural features on the Natural Heritage Working List that have been documented for T16N, R15E. Bald eagles are not represented, and sensitive species have been removed, where applicable, including cave bats. The data presented here **should not** be used for screening or reviewing a proposed land development or land management project for potential impacts to endangered resources. Learn about other methods for obtaining data, including project-specific data here.

Click on the table headings to sort the table, and click on a heading again to change the sort order. Each species or community on the list has been documented in at least one location (but possibly many locations) within the township. The scientific names link to pages with more information about each species or feature. Also, these data were last updated on **May 13, 2016**, so there may be more recent county records not reflected here. Return to the township tool.

Scientific Name	Common Name	WI Status	Federal Status	Group
Migratory Bird Concentration Site	Migratory Bird Concentration Site	SC		Other~
Southern dry forest	Southern Dry Forest	NA		Community

Last revised: May 13, 2016

UF03_FDL River WQM Plan Update

Wisconsin Watersheds

Fond du Lac River Watershed

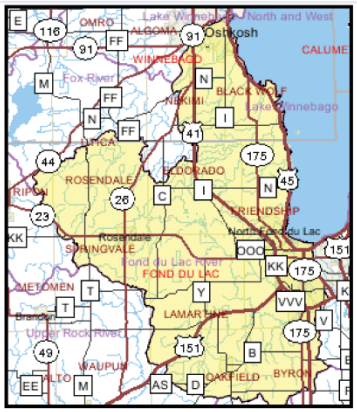
2010 Water Quality Management Plan Update

Upper Fox River Basin , Wisconsin

August, 2010

The Fond du Lac River Watershed is located primarily in Fond du Lac County, but extends north into the southeast portion of Winnebago County along the western shore of Lake Winnebago (Map 1). While part of the Upper Fox River Basin, the waters in the Fond du Lac River watershed flow into either the East or West Branches of the Fond du Lac River or directly into Lake Winnebago.

The watershed encompasses approximately 245 square miles (156,642 acres) and contains 461 miles of streams and rivers, 775 acres of lakes and 22,373 acres of wetlands. The watershed includes a mixture of land uses. Agriculture and wetlands are the most dominant features of the landscape.



Map 1: Fond du Lac Watershed

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Watershed Details

Population and Land Use

The watershed is dominated by agriculture (68%), wetlands (14%) and is ranked high for nonpoint source issues affecting streams and groundwater (Table 1).

Land Use	*Total Acreage*	*Percentage*
Agriculture	106,383	67.9
Urban	4,578	2.9
Suburban	8,813	5.6
Wetland	22,373	14.3
Barren	233	0.2
Grassland	1,302	0.8
Forest	7,319	4.7
Open Water	775	0.5
Open Space	4,866	3.1
Total	156,642	

Table 1: Land Use Fond du Lac Watershed

Municipalities in the watershed include Fond du Lac, North Fond du Lac, Oakfield, Rosendale, and portions of Oshkosh. The Rosendale and Oakfield wastewater treatment facilities discharge into the watershed. Additionally, a number of industrial facilities also discharge into the watershed. There are large and growing urban areas in the watershed; however these currently only make up 3% of the watershed. Major urban areas in the watershed include large parts of the Cities of Fond du Lac and Oshkosh and a corridor along the lakeshore and U.S. Highway 41 between Oshkosh and Fond du

Lac. Other urban areas in the watershed include North Fond du Lac, Oakfield, and Rosendale.

Hydrology

The dominant rivers and streams in the watershed include the West Branch of the Fond du Lac River and the East Branch of the Fond du Lac River. A number of small streams populate the watershed with most of them flowing directly into Lake Winnebago's west shore. There are no named lakes in the watershed, only a number of unnamed ponds and millponds. The major wetland feature is the Eldorado Marsh State Wildlife area, a 36 square mile wetland complex managed by the Wisconsin Department of Natural Resources (Appendix).

Eldorado Marsh State Wildlife Area, WDNR Photo

Rivers and streams in the southern part of the watershed are impacted by the Niagara Escarpment, a prominent dolomite bedrock formation that supports numerous cold water springs. Streams which originate in this area, such as Campground Creek and Parsons Creek, are capable of supporting trout populations. The northern part of the watershed is generally flatter and streams there are dependent on runoff and seepage sources. These creeks, including Van Dyne Creek, Anderson Creek, and Mosher Creek, are often intermittent in nature.

Ecological Landscapes

The Southeast Glacial Plains Ecological Landscape makes up the bulk of the non-coastal land area in southeast Wisconsin. This Ecological Landscape is made up of glacial till plains and moraines. Most of this Ecological Landscape is composed of glacial materials deposited during the Wisconsin Ice Age, but the southwest portion consists of older, pre-Wisconsin till with a more dissected topography. Soils are lime-rich tills overlain in most areas by a silt-loam loess cap. Agricultural and residential interests throughout the landscape have significantly altered the historical vegetation. Most of the rare natural communities that remain are associated with large moraines or in areas where the Niagara Escarpment occurs close to the surface.

Map 2: Fond du Lac Watershed

Historically, vegetation in the Southeast Glacial Plains consisted of a mix of prairie, oak forests and savanna, and maple-basswood forests. Wet-mesic prairies, southern sedge meadows, emergent marshes, and calcareous fens were found in lower portions of the Landscape. End moraines and drumlins supported savannas and forests. Agricultural and urban land use practices have drastically changed the land cover of the Southeast Glacial Plains since Euro-American settlement. The current vegetation is primarily agricultural cropland. Remaining forests occupy only about 10% of the land area and consist of maple-basswood, lowland hardwoods, and oak. No large mesic forests exist today except on the Kettle Interlobate Moraine which has topography too rugged for agriculture. Some existing forest patches that were formerly savannas have succeeded to hardwood forest due to fire suppression.

History Note

The Fond du Lac River watershed drains the western portion of the City of Fond du Lac, at the southern tip of Lake Winnebago. The historical Octogon House can be found here. The site of the house was part of a Native American

village in the early 1800s. It was originally on the banks of the Fond du Lac River, but the river has been rerouted since then and so no longer flows past the building. In 1956, Isaac Brown, a carpenter and trader with the Native Americans, grew concerned about his safety, so he built an Orson Fowler-designed eight-sided house which was designed for hiding. The house was a wedding gift to Isaac's son, Edwin Brown and his bride, Ruth Pier. It was their home until his death in the battle of Antietam in 1862.

The house contained secret passageways, and a tunnel was built between the house and a woodshed. This tunnel and woodshed were later used to hide slaves as they made their way north to safety on the Underground Railway. Although the house was placed on the National Register of historic places in 1972, it was just days away from demolition when a private buyer placed a bid on the house and saved it from being destroyed. Marlene Hansen and her family have restored the house, and it is open for private tours.

Octogon House. Photo credit: http://commons.wikimedia.org/wiki/User:Dspradau

Watershed Condition

Priority Issues

Issues of concern in the watershed include:

- Sediment and nutrient (nitrogen and phosphorus) delivery to waterbodies.
- Impacts of aquatic invasive species.
- Continued urbanization of the watershed. Erosion from road construction and commercial and residential construction sites delivers significant amounts of sediment to surface waters.
- Water quality and habitat problems from specific agricultural practices.
    - Barnyards adjacent to streams
    - grazing and trampling of stream banks
    - fall tillage practices appear to be the main problems
    - A number of concentrated animal feeding operations (CAFOs) are located in the watershed (Appendix).
- Ditched and drained wetlands: wetland areas have been ditched and drained to accommodate farming, which can impact their quality. Many of the streams have been also been ditched to facilitate field drainage.

Water Quality Goals

- Monitor highest priority waters to develop a clear understanding of overall water conditions, pollutant loads, and reduction goals.
- Prevent the spread of aquatic invasive species in the watershed.
- Identify and reduce sediment and nutrient loads from agricultural and urban sources.
- Identify opportunities for wetland restoration and reestablishment.

River and Stream Condition

Fond du Lac River, East Branch

The East Branch of the Fond du Lac River (WBIC 135900) begins in south central Fond du Lac County and flows northeasterly to its junction with the West Branch in the City of Fond du Lac. There is intense agriculture throughout much of the watershed. Runoff from plowed fields and barnyards and erosion of heavily grazed and exposed stream banks along the East Branch and its tributaries are adding tons of sediment and nutrients to the river and to Lake Winnebago. Critical soil erosion rate from agricultural lands has been estimated as being 6 tons per acre per year. The East Branch is the largest single sediment contributor to Lake Winnebago (Bruch, 1988).

Recommendations

- Additional water quality monitoring data should be collected to develop a clearer picture of the overall water quality of the river. In particular, total phosphorus, suspended solids, and macroinvertebrate data should be collected so that effective management strategies can be developed.
- The East Branch of the Fond du Lac River does not have much data for total phosphorus, suspended solids, or macroinvertebrates. Having a good set of data is important so that effective management strategies can be developed.

Fond du Lac River, West Branch

The West Branch of the Fond du Lac River (WBIC 134000) begins in northwest Fond du Lac County and flows generally southeast to its confluence with the East Branch. The West Branch has four distinct segments. The first segment is the upper headwater segment, including all its tributaries upstream from Eldorado Marsh. The second segment is contained within Eldorado Marsh. The third segment is downstream from Eldorado Marsh to the City of Fond du Lac, while the fourth segment is in the City of Fond du Lac.

The segment upstream from Eldorado Marsh has a relatively low gradient. There are numerous small wetland complexes and areas of drained wetlands. Many of the unnamed tributaries and drainageways have been ditched or straightened. There are areas of very intensive farming, including the state's largest concentrated animal feeding operation (CAFO), but there are also large areas of farmland which have been set aside as part of the Conservation Reserve Program (CRP). The seemingly large CRP lands in the sub-watershed of this segment act as buffers to the stream in many areas. Water quality is good enough to allow wild rice to be present in the stream channel at least one location upstream from Eldorado Marsh (WDNR SCR-Files, 1996). All the CRP land also reduces the amount of sediment and nutrients that would otherwise find their way into Eldorado Marsh. There is a dam on the river at the Community of Eldorado. Ownership of the dam is unclear according to DNR records. As a result, it is unknown how the dam is being managed or ought to be managed.

The Eldorado Marsh segment of the river is within the boundaries of the Eldorado State Wildlife Area. There is a water control structure that is used to manipulate water levels and control flow out of the marsh. The marsh acts as a sediment and nutrient sink, where much of the incoming sediment is deposited.

The segment of the river from State Highway 23 at the south edge of the wildlife area downstream to U.S. Highway 41 has a steeper gradient and possesses a series of runs and riffles. In stream habitat looks very good and perhaps may be capable of supporting a smallmouth bass fishery (WDNR SCR-Files, 1996). There is not as much intensive agriculture in this segment and there is rural, low-density residential development along portions of the river that may be offering even more buffer from agricultural nonpoint source impacts. Macroinvertebrate monitoring indicates fair to good water quality conditions (Sorge, 1996).

The segment from U.S. Highway 41 downstream to its confluence with the East Branch is an urban stream. There are urban nonpoint sources of pollution, which affect the water quality of the stream.

Recommendations

- Additional water quality monitoring data should be collected to develop a clearer picture of the overall water quality of the river. In particular, total phosphorus, suspended solids, and macroinvertebrate data should be collected so that effective management strategies can be developed.
- The dam on the West Branch of the Fond du Lac River in the hamlet of Eldorado should be inspected and ownership issues should be resolved.

Fond du Lac River

The Fond du Lac River (WBIC 133700) is formed by the juncture of the East and West Branches of the Fond du Lac River in the City of Fond du Lac. It flows approximately two miles to Lake Winnebago. It is a completely urban waterway whose pollutant load includes the urban and rural loading of the East and West Branches. There are a number of industries either along the river or nearby which contribute stormwater runoff. Fond du Lac River water was used as background control water during bioassay monitoring done at the Galloway West Company (currently Saputo Cheese USA, Inc.) facility in Fond du Lac. Organisms in the control water failed the chronic toxicity test indicated there may be some problem with water quality in the river. Additional monitoring will be done to try to determine if this "failure" of

the chronic toxicity test was an anomaly or if nonpoint sources of pollution are causing the problem (WDNR SCR-Files, 1996).

Campground (Byron) Creek
Campground Creek (WBIC 137400) rises from several springs at the base of the Niagara escarpment in southeast Fond du Lac County (Weber et al., 1969). It is considered a Class II trout stream from Fond du Lac County Highway Y to a point near its headwaters, approximately 3.3 miles upstream (WDNR, 1980). The stream has a good gradient through this reach. The stream flattens from about mile 0.6 through a main wetland complex just downstream from its origin area (Reif, 2010). The Creek can be considered cold water to that 0.6 mile point and has potential to sustain a brook trout population. The man-made ponds in the large wetland as well as man-made diversions in the wetland degrade it to the point that it warms to near 30 Deg. C in the summer and also results in periodic anoxic conditions that cause fish kills. Much work needs to be done on this wetland problem to restore the trout migration capabilities (Reif, 2010).

The gradient flattens and the stream is dominated by a warm water forage fishery downstream of County Highway Y. The municipal wastewater treatment facility and Seneca Foods discharge to it below County Highway Y. Nonpoint sources of pollution, particularly bank erosion due to cattle grazing, are the main water quality problem in the trout waters reach. Sedimentation from farm tillage practices is also a problem in the downstream reach. Runoff due to excessive spray irrigation by a canning company near Oakfield has occasionally reached the stream and caused water quality problems. There are also some unnamed tributaries to the creek which have intensive agricultural operations on land adjacent to them. Some of these operations may be affecting water quality in Campground Creek (WDNR SCR-Files, 1996). There is one cold water spring-fed tributary (WBIC 137600) that feeds into Campground Creek below the main wetland and is potentially capable of sustaining a trout population (Reif, 2010). Trout have been documented in this tributary in the past (Hacker, 1956).

Recommendations

- The main wetland complex in the Campground Creek sub-watershed needs to be studied and restored to a natural stream channel. Many useful cold springs enter the wetland but are warmed extensively in the summer. Much of this does not appear to be a natural condition and has been the result of man-made modifications such as mining peat in the wetland.
- Groundwater use appears to be a serious concern. High capacity wells, such as those of the City of Fond du Lac and several area Concentrated Animal Feeding Operations (CAFOs) may be having a significant impact on the flows of springs feeding steams. This needs to be extensively studied to develop water use determinations.
- Groundwater protection areas need to be formally identified for the springs that feed Campground Creek.
- The origin spring area of Campground Cr. is a major source of cold water for that area of the Creek and is important in that it has potential to meet cold trout water conditions. This needs to be protected and restored.

Parsons Creek
Parsons Creek (WBIC 136000) is a small cold to coolwater tributary to the East Branch of the Fond du Lac River. The stream, originating along the Niagara escarpment, is designated as Class I trout water for 1.9 miles of its length and is an Exceptional Resource Water. An additional 2.4 miles of the stream is classified as Class II trout waters (DNR, 1980). The segment upstream from Hickory Road flows from some main springs down through a wetland complex and a small county park (Hobbs Woods) and appears to have good water quality though heavily impacted by habitat modifications (Reif, 2009). Downstream from Hickory Road, Parsons Creek was, at one time, heavily impacted by agricultural practices, particularly barnyard runoff and excessive grazing along the streams banks. These impacts were addressed as part of a Priority Watershed project of the late 1990s and early 2000s.

There is an unnamed tributary (WBIC 135200) from the east that

Parsons Creek, Photo by Chad Cook UW Extension

joins Parsons Creek in Hobbs Woods County Park. This tributary had good water quality at one time (Weber et al., 1965). Recent macroinvertebrate monitoring indicating poor water quality conditions (Sorge, 1996). This tributary was found to vary a lot in quality though appears to be heavily impacted by habitat modifications, agricultural runoff, water loss and quarry discharges (Reif, 2009). In the spring of 2010 while macroinvertebrate sampling the east tributary upstream from the confluence an excellent population of the stonefly Clioperla clio was found. A visual survey found significant spring inputs to the tributary near the railroad tracks to the east of Hobbs Woods County Park (Reif, 2010b).

Recommendations

- The Parsons Creek watershed has a TMDL developed to address the sources of impairments. A thorough watershed inventory should be completed to determine with more specificity the sources of pollution.
- In stream habitat in Parsons Creek, specifically Hobbs Woods County Park, should be restored and improved to support trout populations.
- An implementation plan for Parsons Creek should be developed and implemented to remove the Creek from the 303(d) impaired waters list.
- Parsons Creek is classified as a Class I to Class II trout stream. At present it does not sufficiently support a significant and/or reproducing brook trout population due to extensive habitat modifications and wetland degradation. Habitat improvements and wetland restoration projects should be undertaken to improve conditions.
- Groundwater Protection Areas need to be formally identified for the springs that feed Parsons Creek and the unnamed tributary.
- The unnamed tributary that enters Parsons Creek and the upper part of Hobbs Woods contains a dense population of the stonefly Clioperla clio. The cold water of the tributary and the uniqueness of this biota are important to protect. This tributary subwatershed contains quarries that have the potential to reduce flow and negatively modify temperatures. It is necessary that temperature limits be established for these quarries.

Rosendale Creek

Rosendale Creek (local name) is an unnamed tributary (WBIC 134900) to the West Branch of the Fond du Lac River that originates to the Southwest of the Village of Rosendale and flows 5.2 miles, through Rosendale, to its confluence with the West Branch of the Fond du Lac River. The lower approx. 1 mile is spring fed and can be classified as coolwater according to the fish biota found there as well as continuous summer temperature data collected. These springs are potentially subject to degradation due to urban construction since they are within the Village limits (Reif, 2006).

Recommendations

- Proposed targeted monitoring is recommended to address elevated temperatures and degraded habitat. Water quality conditions should be compared to state standards to determine whether the creek should be included on Wisconsin's impaired waters list.
- The Village of Rosendale Wastewater Treatment Facility discharge should remain downstream from the high quality area that is near the Mascoutin Valley State Trail.
- The wooded area near the Mascoutin Valley State Trail should be maintained as a green corridor to protect the high water quality conditions of this part of Rosendale Creek.
- The poor habitat downstream from Rose Eld Road should be restored. It was heavily ditched in the past, which has had a negative impact on the biota. Also, there was a small dam upstream from the Mascoutin Valley State Trail that could be a boundary for fish migration. There is also an impoundment downstream from State Highway 23 in Rosendale that is a clear boundary to fish migration. The removal of this dam could allow seasonal migration of gamefish like northern pike to move all the way to the wetland upstream from the Village Park for spawning.
- The groundwater pressure that supplies the springs in the high quality area near the Mascoutin Valley State trail should be maintained and the confining layer that creates this pressure should not be punctured by things like construction.
- The high quality portion of Rosendale Creek near the Mascoutin Valley State Trail has the potential to be classified as an Exceptional Resource Water. Monitoring and evaluation should continue to determine if the segment should be nominated for this designation.

Lake Health

There are no named lakes in the Fond du Lac River watershed and only about 775 lake surface acres, according to the National Land Cover Dataset. Most of the lakes are small, shallow, man-made ponds or small impoundments of the numerous streams in the watershed.

Wetlands

The Fond du Lac River watershed contains 22,373 wetland acres. The largest contiguous tract of wetland in the watershed is contained in the Eldorado State Wildlife Area. This 6,381-acre property located in central Fond du Lac County. The wildlife area is 5 miles west of the City of Fond du Lac. The wildlife area consists of a rich mosaic of wetland types, small oak openings, shrubland, grasslands and agricultural land. The West Branch of the Fond du Lac River flows through the wildlife area. The original species rich sedge meadow wetlands have converted to reed canary grass and cattail vegetation because of human disturbance.

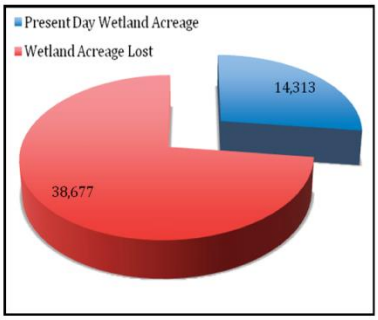

Figure 1: Fond du Lac Watershed Wetlands Lost

Eldorado Marsh was created by glacial activity from the Wisconsin glacial period, about 10,000 years ago. Native Americans utilized this area for hunting and gathering as evidenced by artifacts found on the property. In 1912, an unsuccessful attempt was made to drain the marsh for agriculture. By the 1920's, farmers realized that they could only cut marsh hay. In 1932, a severe fire burned over much of the area creating numerous deep holes in the peat. Hunters and conservation mined citizens quickly recognized the value of the marsh for wildlife and initiated its protection. The area was established as a project by the Wisconsin Conservation Commission in 1951. Land acquisition began in 1952 and continues today.

Despite the watershed being 14% wetland today, a significant acreage has been lost due to conversion to agricultural land. (Figure 1). Recent analysis of soil conditions suggest that historically, the watershed contained 51,190 acres of wetland which was about 33% of the entire watershed. This translates to a loss of 76% of the historic wetland acreage. Analysis also suggests that 68% of these "lost" wetlands are potentially restorable (Figure 2). The remaining wetland acres are often impacted due to excessive sediment and nutrient inputs.

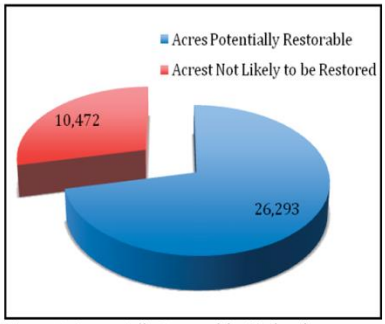

Figure 2: Potentially Restorable Wetlands

Groundwater

Groundwater use appears to be a serious concern in specific areas of the watershed, such as near Campground Creek. High capacity wells, such as those of the City of Fond du Lac and several area Concentrated Animal Feeding Operations (CAFOs) may be having a significant impact on the flows of springs feeding steams. This needs to be extensively studied to develop water use determinations.

Groundwater protection areas need to be formally identified for the springs that feed Campground Creek. The origin spring area of Campground Cr. is a major source of cold water for that area of the Creek and is important in that it has potential to meet cold trout water conditions. This needs to be protected and restored.

Waters of Note:

Exceptional Resource Waters, Trout Waters

Parsons Creek is identified as an Exceptional Resource Water (ERW). In addition two segments of Parsons Creek are listed as Class II trout waters and an unnamed tributary is listed as a Class I trout water. A portion of Campground Creek is also designated as a Class II trout water (Table 2).

Table 2. Exceptional Resource and Classified Trout Waters

Water Name	Exceptional Resource Water	Trout Class	Start Mile	End Mile
Parsons Creek		Class II	2.58	3.49
Parsons Creek	ERW	Class II	3.49	5.68
Campground Creek		Class II	1.67	7.26
Unnamed East Tributary to Parsons Creek		Class I	0.01	1.89

Impaired Waters

A number of rivers and streams in the watershed are currently on Wisconsin's impaired waters list as required by section 303(d) of the federal Clean Water Act (Table 3). A majority of these suffer from low dissolved oxygen and degraded habitat due to nonpoint source pollution impairment. The Fond du Lac River has elevated levels of polychlorinated biphenols (PCBs) which results in contaminated fish tissue and chronic aquatic toxicity. A Total Maximum Daily Load (TMDL) has been developed for Parsons Creek and its unnamed east tributary. This TMDL was approved by EPA in 2007 but some additional refinements need to be done with regards to waste load allocations. A full listing of impaired waters is provided in Table 3.

Table 3: Impaired Waters, UF03

Name/Details	Local Name/Map	Start Mile	End Mile	Impairment	Pollutant
Anderson Creek	Anderson Creek	0	7.26	Degraded Habitat	Sediment/Total Suspended Solids
Campground Creek	Byron Creek	0	1.66	Degraded Habitat	Sediment/Total Suspended Solids
Campground Creek	Byron Creek	1.67	7.26	Low DO, Elevated Water Temperature, Degraded Habitat	Sediment/Total Suspended Solids
Fond Du Lac River	Fond Du Lac River	0	1.56	Contaminated Fish Tissue, Chronic Aquatic Toxicity	PCBs, Unspecified Metals
Lake Winnebago	Lake Winnebago			Contaminated Fish Tissue, Low DO, Eutrophication, Turbidity	PCBs, Total Phosphorus, Sediment/Total Suspended Solids, Mercury
Mosher Creek	Mosher Creek	0	3	Degraded Habitat	Sediment/Total Suspended Solids
Parsons Creek	Parsons Creek	0	2.58	Degraded Habitat	Total Phosphorus, Sediment/Total Suspended Solids
Sevenmile Creek	Sevenmile Creek	0	11	Degraded Habitat	Sediment/Total Suspended Solids
Unnamed	East Trib. to Parsons Cr	0.01	1.89	Low DO, Degraded Habitat	Elevated Water Temperature, Sediment/Total Suspended Solids
Van Dyne Creek	Van Dyne Creek	1	9.11	Degraded Habitat	Sediment/Total Suspended Solids

Watershed Actions

Projects and Grants

The following Nonpoint Source Grants have been secured over the years to fund projects within the watershed.

- City of Fond du Lac for a water quality pond on Sullivan Drive. 2008.
- City of Fond du Lac for stormwater pollution prevention practices at municipal buildings. 2008.
- Village of North Fond du Lac for phase 2 of Mosher Creek rehabilitation. 2004.
- City of Fond du Lac for stormwater planning activities. 2004.
- Village of North Fond du Lac for Mosher Creek rehabilitation. 2003.

Recommendations Summary

Fond du Lac East Branch

- Additional water quality monitoring data should be collected to develop a clearer picture of the overall water quality of the river. In particular, total phosphorus, suspended solids, and macroinvertebrate data should be collected so that effective management strategies can be developed.
- The East Branch of the Fond du Lac River does not have much data for total phosphorus, suspended solids, or macroinvertebrates. Having a good set of data is important so that effective management strategies can be developed.
- Fond du Lac West Branch: Additional water quality monitoring data should be collected to develop a clearer picture of the overall water quality of the river. In particular, total phosphorus, suspended solids, and macroinvertebrate data should be collected so that effective management strategies can be developed.

Fond du Lac West Branch

- The dam on the West Branch of the Fond du Lac River in the hamlet of Eldorado should be inspected and ownership issues should be resolved.
- The main wetland complex in the Campground Creek sub-watershed needs to be studied and restored to a natural stream channel. Many useful cold springs enter the wetland but are warmed extensively in the summer. Much of this does not appear to be a natural condition and has been the result of manmade modifications such as mining peat in the wetland.

Campground Creek:

- Groundwater use appears to be a serious concern. High capacity wells, such as those of the City of Fond du Lac and several area Concentrated Animal Feeding Operations (CAFOs) may be having a significant impact on the flows of springs feeding steams. This needs to be extensively studied to develop water use determinations.
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Parsons Creek

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temperatures. It is necessary that temperature limits be established for these quarries.

Rosendale Creek

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- The wooded area near the Mascoutin Valley State Trail should be maintained as a green corridor to protect the high water quality conditions of this part of Rosendale Creek.
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- The groundwater pressure that supplies the springs in the high quality area near the Mascoutin Valley State trail should be maintained and the confining layer that creates this pressure should not be punctured by things like construction.
- The high quality portion of Rosendale Creek near the Mascoutin Valley State Trail has the potential to be classified as an Exceptional Resource Water. Monitoring and evaluation should continue to determine if the segment should be nominated for this designation.

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Parsons Creek, Photo by Chad Cook, UW Extension

DNR PUB WT- 947

UW Extension
Basin Education Initiative

Wisconsin DNR's mission involves preserving, protecting, and restoring natural resources. Watershed Planning provides a strategic review of water condition to enhance awareness, partnership outreach, and the quality of natural resource management.

Fond du Lac River Watershed

Appendix D

Appendix D

Back Page

ROSENDALE TRIBUTARY STREAM RECLASSIFICATION

ROSENDALE TRIBUTARY STREAM RECLASSIFICATION,

FOND DU LAC COUNTY, WISCONSIN

WDNR

By Michael D. Reif

December 2006

Photo of Rosendale Tributary to the West Branch of the Fond du Lac River at Site 5 below HWY 23.

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SUMARY OF FINDINGS

The Rosendale Trib. **(WBIC 134900)** was studied between 2001 and 2005 to update the Stream Reclassifications. The Trib. was found to be separated into three different definable Sections with two separate current and potential classifications. These classifications are defined in the following table.

Table 1. Summary of Rosendale Trib. Use Classifications.

Section	Current Use Classification	Potential Use Classification
Section I-Rosendale Trib. from the origin in the wetland at SW1/4, NE1/4, Sec. 8, T15N, R15E down to Center Rd.	Limited Forage Fishery with current classification/Tolerant Fish and Aquatic Life under the Proposed Classification Guidelines	The same as the Current Use. Agricultural uses need to be improved for a a Seasonal Potential Use Classification of Warmwater Game Fish/Diverse Fish and Aquatic Life/GF to be attained.
Section II-Rosendale Trib. from Center Rd. down to Hill Rd. in the Village of Rosendale	Limited Forage Fishery with current classification/Tolerant Fish and Aquatic Life under the Proposed Classification Guidelines	The same as the Current Use but with the elimination of the Rosendale Impoundment dam (located downstream from HWY 23) and improved urban and agricultural uses a Seasonal Potential Use Classification of Warmwater Game Fish/Diverse Fish and Aquatic Life/GF can be attained.
Section III-Rosendale Trib. from the spring area below Hill Rd. down to the confluence with the W. Br. of the Rosendale Trib.	Warm Water Forage Fishery/Diverse Fish and Aquatic Life-Cool Water under the Proposed Classification Guidelines	Warm Water Forage Fishery/Diverse Fish and Aquatic Life-Cool Water with Seasonal Diverse Fish and Aquatic Life-Game Fish with the elimination of the dam in the Section as well as reclaimed habitat below E. Rose Bud Rd. and maintained green corridor in the Section.

Section 303(d) of the Clean Water Act requires states to submit a list of waters that are unable to meet water quality standards. The results of this Stream Classification indicate a recommendation that the Rosendale Trib. be put on the 303d list for inability to meet the dissolved oxygen capability of the Trib., habitat degedation and urban and agricultural problems that are identified in the main section of this report. The Rosendale Trib. has a potentially high quality cold water habitat that is part of Section III. This area, as is explained in the main section, is cabable of maintaining cold water temperatures

through the summer due to the working springs that came out of the underground escarpment (ledge) along Hill Rd. I am requesting that this spring fed part of Section III be established as an Exceptional Resouce Water (ERW).

INTRODUCTION

A stream reclassification of the Tributary to the West Branch of the Fond du Lac River, called the Rosendale Tributary (**WBIC 134900**) to the West Branch of the Fond du Lac River (or Rosendale Tributary for short), was conducted from the summer of 2001 through the fall of 2004. Other general observations were made in 2005. The Rosendale Wastewater Treatment Facility was considering going into Facility's Planning and it was apparent that current stream classification data with modern protocols were not available and were needed. Past stream classifications were reported by Weisensel and Mazanet (1975) and Sesing and Dreher (1993). Weisensel classified the Tributary as noncontinuous, intermediate aquatic life which is the coded classification in Wisconsin Administrative Code NR 104. Sesing and Dreher classified the Tributary as a continuous flowing Warm Water Forage Fishery (WWFF). This study confirms the continuous WWFF classification under the current coded classification scheme for thte lower reaches near the WWTF. It also expands the classifications for the entire watershed and establishes the classification under the newly adopted (but not yet codified) 2004 classifications (WDNR 2004) which will change the lower part of the Rosendale Tributary from Hill Rd. below HWY 23 downstream to Diverse Fish and Aquatic Life-Cool Water (DFAL-CW). Also, data collected determined the potential for increased water quality and needed protection in the section below HWY 23. General upstream above Rosendale non-point source concerns as well as urban runoff concerns were addressed.

During this study the Village of Rosendale WWTF operated an extended aeration activated sludge plant with nominal capacity of 216,000 gpd. This package plant was constructed in 1981 to augment the original Walker Tank. In 1990, a new aeration tank was constructed and the original Walker Tank was converted into an aerobic sludge storage tank. There was no chlorination during this study. No other point sources existed to the Rosendale Trib. during this study. Non-point source and stormwater was apparently a significant concern and was noted but not studied. All residents of the Village of Rosendale have their own wells. Average daily water usage is estimated at 122,000 gpd or 0.189 cfs (Rosendale, Village of. 2006). I point this out in particular since it could be a significant factor in how stable the spring input to the Trib. is maintained (i.e. more well-water use would equate to more water taken from the aquifer that feeds the Trib. via springs resulting in less spring flow and/or less stable spring flow). This could have a major effect on the biota of the Trib.

ROSENDALE SURVEY METHODS AND STUDY AREA OVERVIEW

The site descriptions for this Rosendale Trib. stream classification study are in Table 1. The sites are illustrated on the map in Figure 1. The Rosendale Trib. is 5.0 miles long originating in the wetland in the SW1/4, NE1/4, Sec. 8, T15N, R15E TN of Rosendale. Unlike some of the other streams in Fond du Lac County (such as Campground and Parsons Cr.) it doesn't clearly originate from an open escarpment area. From that point

to the wooded area between Sites R5 and R6 the Trib. was intermittent in the driest year of the study (2005) but was found to be continuous in the other study years of 2001-2004 from Site R2 downstream. The types of analyses conducted at each site are tabled in Table 1 with the Site Descriptions. The total area of the Rosendale Subwatershed was 3705 acres as determined from the Arcview Map shown in Figure 1.

Fish Community Assessment

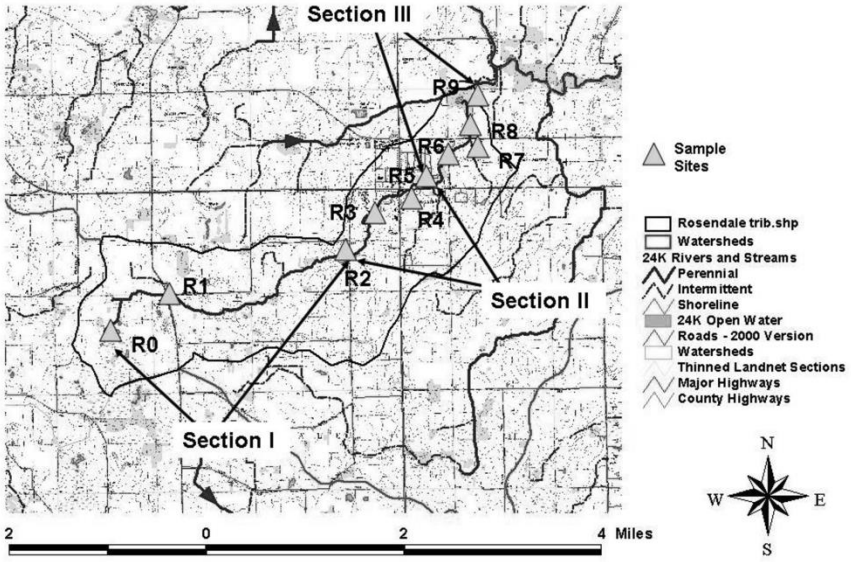
Fish Surveys were conducted as described in Guidelines for Assessing Fish Communities of Wadable Streams in Wisconsin (WDNR, 2000). Fish surveys were conducted (summer 2001) using a backpack shocker. Fish surveys were conducted by DNR personnel Michael Reif, Keith Otis and Mark Stanek. All fish were field identified by Keith Otis.

Table 1. Rosendale Trib. Site descriptions.

Site	Distance From Confluence With W. Rosendale Trib. (feet)	Site Analyses Done	SWIMS Station ID	Lat-Long	Site Description
R0	27460	V	10022638	-88.735364 43.787561	Rosendale Trib. Origin location in wetland at SW1/4, NE1/4, Sec. 8, T15N, R15E
R1	23528	V	10022639	-88.7230404 43.7926746	Rosendale Trib.-immediately above HWY M (NW1/4, NW1/4, Sec. 9, T15N, R15E)
R2	12858	V, F, T, D, C	10022640	-88.6858847 43.7985073	Rosendale Trib.-immediately above Center Rd. (NE1/4, SE1/4, Sec. 3, T15N, R15E)
R3	9863	V, TP, T, D	10022641	-88.6793882 43.8059371	Rosendale Trib.-immediately above bridge in Taylor Park (NW1/4, Sec. 2, T15N, R15E)
R4	7242	V	10022642	-88.673224 43.8071165	Rosendale Trib.-immediately above HWY 29 (NW1/4, NE1/4, Sec. 2, T15N, R15E)
R5	6493	V, H, C	10033643	-88.6712761 43.8083447	Rosendale Trib.-immediately below spillway of Rosendale Pond (SW1/4, SE1/4, Sec. 35, T15N, R15E)
R6	3685	V, F, H, C, M, T	10022644	-88.6650377 43.8127192	Rosendale Trib.-starts below old RR bridge (NW1/4, SW1/4, Sec. 36, T15N, R15E)
R7	2748	V, T	10022645	-88.6607732 43.8146149	Rosendale Trib.-75 ft. above WWTF outfall (Temp. Probe Site (NW1/4
R8	2370	V	10022646	-88.6607514 43.8155875	Rosendale Trib.-500 ft. below Rose-Eld Rd. (SW1/4, NW1/4, Sec. 36, T15N, R15E)
R9	700*	V	-	-88.661363 43.820396	Rosendale Trib.-above confluence with Graphic Packaging Trib. 2000 feet below Rose-Eld Rd (NW1/4, NW1/4, Sec. 36, T15N, R15E)

*It is 2621 feet between confluence of E. and W. Br. of Rosendale Trib. and the confluence with the W. Br. of the Fond du Lac R.

Figure 1. Rosendale Subwatershed Map with Sample Sites and Classification Sections.



Habitat Assessment

Habitat assessment was conducted in the summer of 2001 at Site R6 according to the Guidelines for Evaluating Habitat of Wadable Streams (WDNR, 2000). The habitat survey was conducted by Michael Reif, Greg Moeller and Jennifer Huffman. Instantaeous flow was conducted during the habitat assessment with a Swoffer Instruments, Inc. Model 2100 Services current meter. D.O. and Temp. were conducted as well using a YSI 55 D.O. temp. meter. Data was evaluated and scored according to Fish Habitat Rating-Stream (FHR-Streams) as described in Guidelines for Evaluating Fish Habitat in Wisconsin Streams (Simmons, Lyons and Kanehl, 1994).

Macroinvertebrate Community Assessment

Macroinvertebrates were collected at Site R6 in the fall of 2001 and the spring of 2002, and fro Site R5 in the fall of 2001. Site R6 was selected for macroinvertebrate analyses since it was the highest quality site found in the Subwatershed and could be used as a reference for the overall subwatershed potential. The R6 samples were delivered to the University of Wisconsin-Stevens Point Aquatic Entomology Lab for identification. A

Hilsenhoff Biotic Index (HBI) was calculated and ratings assigned for each sample. The R5 sample was picked and identified by me. The samples analyzed by the UW-ST. Pt. Entomology Lab were picked accorindg to a grid subsample. I identified and counted the entire sample from R5 so the total numbers listed in this report are much greater for R5 than R6. Also in the summer of 2002 several individuals of Pycnopsyche sp that were in diapause were collected from site R6 where they were always found in good numbers and reared in aerated water in half-gallon wide-mouth mason jars at the DNR Oshkosh Area Office. As each hatched in the fall of 2002 it was preserved along with its pupal exuviae and case. Adults were identified to species used the adult key of Betten (1951).

Water Quality Assessment

Onset temperature loggers were placed at Sites R7 in 2001, R6 in 2003 and 2004, and R3 in 2003. Loggers were attached inside PVC canisters (see Photo1) that had slits cut in 2 sides to allow water to freely pass through and create a continuous flow past the probe. The canisters were attached to rebar pounded into the stream bottom. The canisters were either allowed to lay on the stream bottom (in riffles as at Site R6) or were tied to the sides of the rebar in deeper runs/pools (as with Sites R3 and R7) to keep them in the flow and from sedimenting over. Instantaneous measurements were taken throughout the study with a YSI 55 meter. A YSI 85 was used in Nov. of 2006 which also includes conductivity and specific conductivity (spec. cond. being corrected for temp.) Chemical samples for T-Hardness, N-series, P and field pH were conducted at Site R6 in 2001.

Photo 1. PVC canister and temperature probe. The probes were placed in the canisters to protect them. The slots in the PVC were to allow flow through. Photo taken by Al Neibur.

RESULTS AND DISCUSSION

The Rosendale Trib. Watershed from the origin wetland at Site R0 to the confluence with the East Trib. to RosendaleTrib. (about 1 mile prior to entering the W. Br. of the Fond du Lac River) can be separated into 3 different sections which function according to the adjacent watershed:

1. From the origin wetland down to Center Rd. at Site R2 it is intermittent during dry summers (e.g. the summers of 2003 and 2005). In this stretch it was heavily affected by agriculture and ditching.
2. In the stretch from Site R2 to R5 it was intermittent only during the driest summers (e.g. Aug. 2005). During summers where flows are sufficient (e.g. 2003 when there was good rainfall in May and June) flows and Temperatures were sufficient to maintain cool/cold water conditions (see Figure 2).
3. In the stretch downstream from Site R5 to the confluence with the W. Br. of the Fond du Lac River is included Site R6 which was considered the reference Site for the Watershed and had the highest quality (habitat and water quality).

Rosendale Trib. Section I

The classification of this Section of Rosendale Trib. can be defined by the fish shocked at Site R2 during the summer of 2001 (see Table 2). The summer of 2001 was a normal summer hydraulically so the fish population was able to be dominated by the cool-water Pearl Dace. However, due to the intermittent conditions during dry years it should be classified Limited Forage Fishery (LFF) from the Origin to Center Rd.

Photo 2. Rosendale Trib. Site R2 above Center Rd. Summer 2001.

Rosendale Trib. Section II

The classification of Section 2 was fairly degraded down to the small impounded pond below HWY 23. I did general macroinvertebrate visual evaluations where it flowed through Rosendale Park in the summer and found the population to be low, or devoid, of higher quality insects such as mayflies or caddisflies. Though during normal flow summers the water temp. was found to be cool/cold (See Figure 2) it appeared oxygen was too low during low D.O. times of the year to sustain higher quality macroinvertebrates. There were panfish, perch and northern pike in the impounded pond below HWY 23. Locals appear to fish this pond occasionally. This section was found to be dry during August 2005 indicating hydraulic concerns. However, higher quality macroinvertebrates in the riffle below the impoundment dam indicated the potential for increased quality if the urban degredation above Site R4 and other hydraulic concerns in the upstream watershed could be addressed. The extent of this study was not sufficient to define these problems other than to generally conclude they are hydraulically and habitat related and due to urban and agricultural modifications of the Trib. and watershed.

Photo 3. Concrete slab across Rosendale Trib. at upstream end of Rosendale Park. This slab appeared to hold back water and partially act as a dam during normal to low flow periods. November 22, 2006).

Photo 4. Rosendale Trib. in Rosendale Park . Looking downstream from concrete slab seen in last photo. The wooded area in the next photo (Photo 8) can be seen in the background. November 22, 2006.

Photo 5. Rosendale Trib. in the woods below Rosendale Park. Looking downstream. Note the distinct meanders. The macroinvertebrate population appeared to improve by this point with observable baetids and hydropsychids. November 22, 2006.

While doing the habitat evaluation in 2003 below the dam I observed at least 2 large northern pike at the downstream base of the dam. It is difficult to know for sure if the gamfish mentioned above would be there if the impoundment were not there. With current urban and agricultural modifications of the watershed above Site R5 and below Site R8 (described in Section III below) I would expect that gamefish would only be available seasonally (spring) and during high flow summers. Since the impoundment existed there during this study and clearly contained gamefish this section should be classified Warm Water Game Fish (WWGF) or (DFAL-GF) with the most recent classification as yet to be codified.

Table 2. Rosendale Site 2 fish survey data (sampled 6/25/2001).

Taxa	Number	Tolerance
Brook Stickleback (Culaea inconstans (Kirtland))	7	T
Central Mudminnow (Umbra limi (Kirtland))	4	T
Creek Chub (Semotilus atromaculatus (Mitchill))	2	T
Fathead Minnow (Pimephales promelas Rafinesque)	5	T
Pearl Dace (Margariscus margarita (Cope))	24	O
White Sucker (Catastomus commersoni (Lacepede))	5	T
Total	**47**	
CW IBI	**10**	**Poor**
WW IBI	**22**	**Poor**

Macroinvertebrates were collected from Site R5 on the same date (Oct. 18, 2001) the Site R6 macroinvertebrate samples was collected. The R5 sample was picked and identified by me. I picked and identified every individual macroinvertebrate from the R5 sample. I was interested in getting the best overall evaluation of existing species. The sample collected at the same time as the R6 sample. Notable were the lack, of Diptera and the lower diversity of Tricoptera as well as the existence of a single individual of the winter stonefly Allocapnia. As was evidenced by the R6 samples, the fall population at the time of sampling, was considerably less diverse. The Tricopteran genera Ceratopsyche and Psychomyia were not present as in the R6 sample. Another significant missing macroinvertebrate was Gammarus which was in good number in the R6 sample. However, this appears to be sufficient evendence to indicate a significant difference in population compared to the R6 sample and the reduction in diversity may have occurred as a result of the upstream impoundment. The existence of the stonefly can be considered a residual of the non-attained use potential of this stream.

Photo 6. Rosendale Trib. impoundment below HWY 23 . Looking downstream from HWY 23. Photo taken in summer 2001.

Photo 7. Dam below Village of Rosendale Trib. impoundment. Photo taken summer of 2003.

Photo 8. Riffle in Rosendale Trib. Site R5. Summer 2003.

Table R5m Rosendale Creek Site 5 macroinvertebrate taxa list (collected 10/18/2001).

Taxa	# Counted	HBI Value
Ephemeroptera		
Baetidae		
Baetis sp	3	6
Baetis brunneicolor	9	4
Baetis phoebus	4	4
Heptageniidae		
Stenacron interpunctatum	8	7
Plecoptera		
Capniidae		
Allocapnia sp	1	3
Trichoptera		
Hydopsychidae		
Cheumatopsyche sp	301	5
Hydropsyche betteni	129	6
Coleoptera		
Elmidae		
Optioservus sp larvae	29	4
Optioservus fastiditus	140	4
Optioservus trintatus	10	2
Stenelmis sp adults	3	-
Stenelmis sp larvae	22	5
Stenelmis crenata	1	-
Isopoda		
Asellidae		
Asellus intermedius	41	8
Total	701	
Biotic Index		5.053

Table 2. Habitat data collected from Rosendale Trib.for Site R5 on July 31, 2001.

Parameter	Calculated Value	Score	Rating
Riparian Buffer Width	3m	5	Fair
Bank Erosion	0.47m	20	Good
Pool Area	31.0%	7	Good
Width:Depth Ratio	13.5 avg. thalweg	20	Good
Riffle:Rifflel Ratio	1.96	25	Excellent
Fine Sediments	22.6%	5	Fair
Cover for Fish	0%	0	Poor
Total		**82**	**Good**
HBI		**5.053**	**Good**

Photo 9. Rosendale Trib. looking downstream past Site R5. The wooden walkbridge was near the bottom end of Site R5. Summer 2003.

Rosendale Trib. Section III

Section III is interesting in that the upper part at Site R6 was clearly of high quality with a cool water fish community dominated heavily by Pearl Dace (see Table 3) and and a high quality macroinvertebrate population (see Tables 4 and 5) with a HBI of 5.56 indicating very good water quality (Hilsenhoff, 1987). The habitat index from the habitat evaluation of R6 indicated good quality (see Table 6). The elimination of the dam in the middle of the site as well as expanding the buffer width could raise the habitat rating the 14 points needed to get to excellent.

The upper part of Section III was found to have a good gradient with many riffle areas containing good grave/rubble bottom down to the downstream end of Site R6. From between R6 and R7 above the Rosendale WWTF the Trib. flattened out more and thus contained more silt bottom. However, it still kept a good natural meander . This condition held until E. Rose Bud Rd. Section III was found to be heavily ditched below E. Rose Bud Rd. We shocked Site R8 below E. Rose Bud Rd. and found the site to be very straight with a very soft silt bottom with no riffles (all due primarily to the ditching). This ditching was found all the way from E. Rose Bud Rd. to the wooded area near the confluence with the E. Rosendale Trib. We shocked only a single fish (a mudminnow) from the 100 meters shocked in 2001. We originally planned to do a formal habitat assessment at R8 but conditions indicated the habitat was clearly poor.

This Section was found to have cool water from the continuous temp. meter recorded data at Site R7 in the Summer of 2001 (Figure 5) and Site R6 in 2003 and 2004 (Figures 7 and 9). These figures illustrate these continuous temp. recordings with the cool range min-max range lines of 22.0-25.0 reference in each. The 2003 temp. probe was placed in

Photo 10. Rosendale Trib. Site R6 looking upstream from the Trail Bridge. Note the difference in stream bank cover from the foreground canary grass vegetated banks to the middle ground eroded lawn bank on the left. Photo taken in summer 2001.

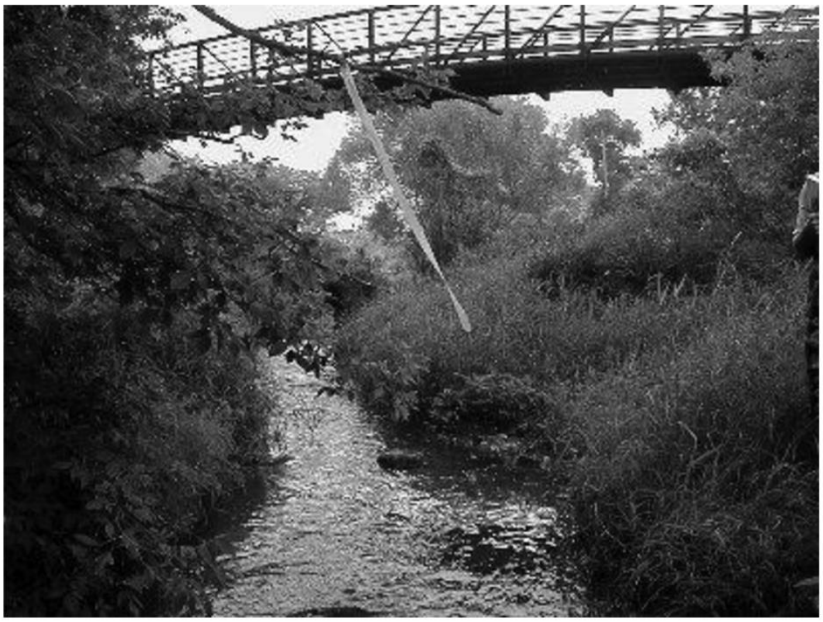


Photo 5. Rosendale Trib. downstream end of Site R6. Looking upstream under the old RR bridge (now part of a bike/walking trail). The pink ribbon identified the downstream end of Site R6. Summer of 2003.

a run area in the upper central part of the site under a large willow while the 2004 probe was placed in the riffle just above the RR tressel that contained the bank with good canary grass growth (see Photo 6) .

All averages of R7 were below the lower range of 22.0 Deg. C and all maximums were below the high cool water level of 25.0 Deg. C. An even greater illustration of cool water condtions were recorded in 2003 and 2004 at Site R6 when all averages and all but one maximum were below the lower 22.0^{o} C level. It is important to note that the flows during the summer of 2004 were likely greater than those of 2003 due to the heavy rainfall that occurred in May and June. The temperature data at R6 even indicate evidence of cold water conditions. The biota found to be present during this study didn't support this however, though they clearly support a conclusion of cool water conditions. As a result, current use all of Section III is being classified Warm Water Forage Fishery (WWFF) with seasonal WWGF. Note, the current codified classifications does not allow for a cool water classification. The new classification is according to the 2004 Use Guidance is Diverse Fish and Aquatic Life-Cool Water (DFAL-CW). I expect a major reason for the cool/cold water conditions of Site R6 were that it was within a stretch of

the Trib. where the adjacent watershed is wooded and sloped much more than other areas resulting in a higher head and tilt of the groundwater table. This would result in more groundwater flow to the stream and thus lower summer stream temperatures.

On November 9, 2006 I did a conductivity survey of Rosendale Cr. to evaluate the changes in conductivity between sites to use as an indicator of groundwater inputs. Due to bedrock being composed mostly of limestone (typical of Fond du Lac Co.) the ground water can be considerd to be high in Ca^{++} ions. Specific conductance follows the change in Ca^{++} and $HCO3^{-}$ concentration in nearly a 1:1 relationship (Wetzel, 1975). These data are in Table 3 below. As I suspected, and other data indicated as described above, Site R6 in Section III had one of the highest specific conductance recorded. The other was at Site R2. It is notable that Site R5 had the lowest spec. cond. Two possibilities arise (both may be true). There may have been much lower groundwater inputs above R5 than R2 or R6 and/or the high organic matter in the impoundment above R5 modified the spec. cond. by tying up and precipitating out carbonates. (Ohle, 1955) demonstrated that calcium complexes with humic acids, especially in the sediments, alter the exchange equilibrium. The same explaination can possibly be used for the lower spec. cond. at R3 compared to R2 since there was a wetland complex influencing the Cr. between those sites.

Table 3. Data from YSI 85 conductivity analyses of Rosendale Cr. on Nov. 9, 2006.

Site	Time	Temp. Deg. C	D.O. mg/l	D.O. % Sat.	Cond. uS Uncor.	Specfic Cond. uS Corrected	ppt
R2	10:37	8.8	8.8	75.7	570	824	0.5
R3	10:30	8.7	7.3	62.7	392	569	0.3
R5	10:20	9.9	10	89	171	297	0.1
R6	10:10	10.4	11.2	101.3	635	881	0.4

It is notable to mention that reference Site R6 was found to always have a good population of the caddisfly Pycnopsyche guttifer (there may have been more than one species of Pycnopsyche). This boarderline coolwater/warmwater species had a HBI of 2 indicating excellent water quality conditions. No individuals were fond in the fall or spring samples of 2001/2002. In the fall most, if not all, were in the egg stage. Pycnopsyche larvae spend the summer in diapause and pupate/hatch in August/September just before leaf fall (its primary source of food). I don't know why none were found in the Spring of 2002 sample other than to say that since Pycnopsyche in the Rosendale Trib. was a boarderline riffle/run, and run species, it may have been missed since the samples was mainly done in riffle areas. Pycnopsyche populations can be a good indicator of the health of Site R6 over time since they were found to be in such good populations and are good indicators of the quality of surface waters (HBI of 4 indicating very good water quality (Hilsenhoff, 1987)). They also need bark to make their cases so a maintenance of the wooded green corridor adjacent to R6 would be important.

Figure 2. Rosendale Trib. upper part of Section III showing start and Site R6.

Photo 12. Major spring area along the upper end of Rosendale Trib. Section III. The water in the photo is the spring area, the Trib. is in the background. The green in the water was a good growth of water cress. November 13, 2006.

Photo 13. Storm sewer outfall across the intersection of Hill and Fern Rd. A major spring outflow was located to the right of the outfall. This spring was one of the first to Section III. November 13, 2006.

On November 13, 2006 I conducted a visual inspection of the springs that feed into the upstream end of Section III. The Village of Rosendale WWTF Operator, Dan Holdridge gave me a tour of the spring areas. Photos 13-16 were taken of these spring areas during that inspection. According to information relayed to me by Dan Holdridge, the springs work via a discharge from the ledge bedrock (escarpment) which underlies a confining layer. He said the confining layer is about 12 feet down in the upper areas of the subdivision adjacent to Hill Rd. It is likely near the surface immediately adjacent to the Trib. This ledge is most likely constructed of dolomitic bedrock which would account for the high conductivities I listed in Table 6 and discussed earlier. Dan Holdrdge relayed to me an informative situation which explains the situation well. He said while putting in the catch basin during construction of the stormsewer adjacent to Fern and Hill Rds. the contractor decided to puncture this confining layer to install the catch basin

Photo 14. Rosendale Trib. looking downstream from near the upper end of Section III. November 13, 2006.

deeper. He said as soon as they puncture the layer the groundwater shot up 6 feet. He said they had to then pump a lot of water to keep the hole open enough to install the storm sewer. It is particularly important that this confining layer be kept intact so the pressure working the springs is maintained. Not doing this would result in greater variation in baseflow and could, if taken too far, significantly effect the cold water resource these springs produce. The temperature data I have illustrated in Figures 5, 7 and 9 clearly define these cold temperatures.

Photo 15. Culvert that delivered the tiled spring water. This was the ground water from the upper residential neighborhood near East Rosebud Rd. November 13, 2006.

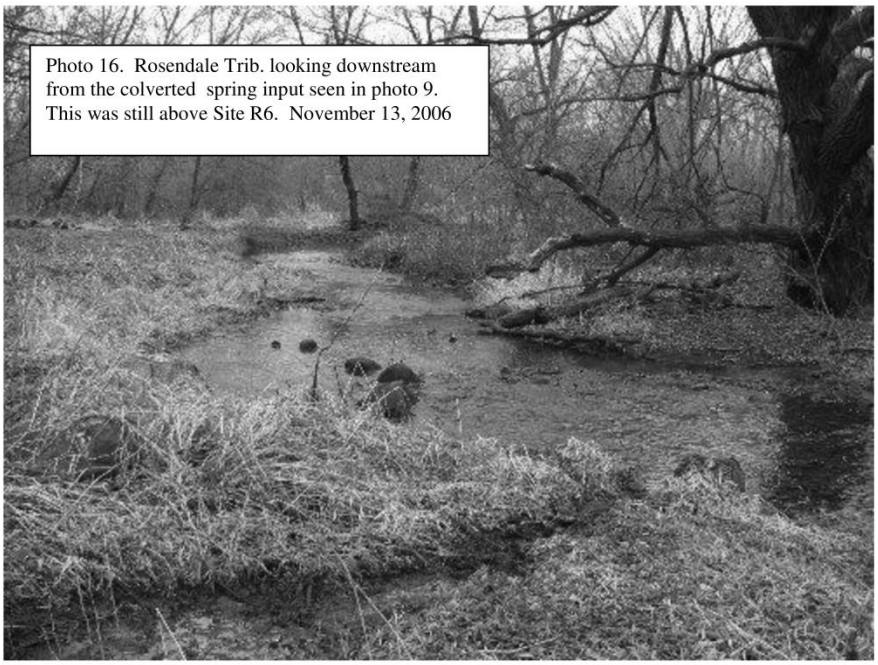


Photo 16. Rosendale Trib. looking downstream from the colverted spring input seen in photo 9. This was still above Site R6. November 13, 2006

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Figure 3. Rosendale Trib. 2005 Aerial Photo of Site R6.

Figure 4. Rosendale Trib. Section III Stretch of Trib. requested for ERW.

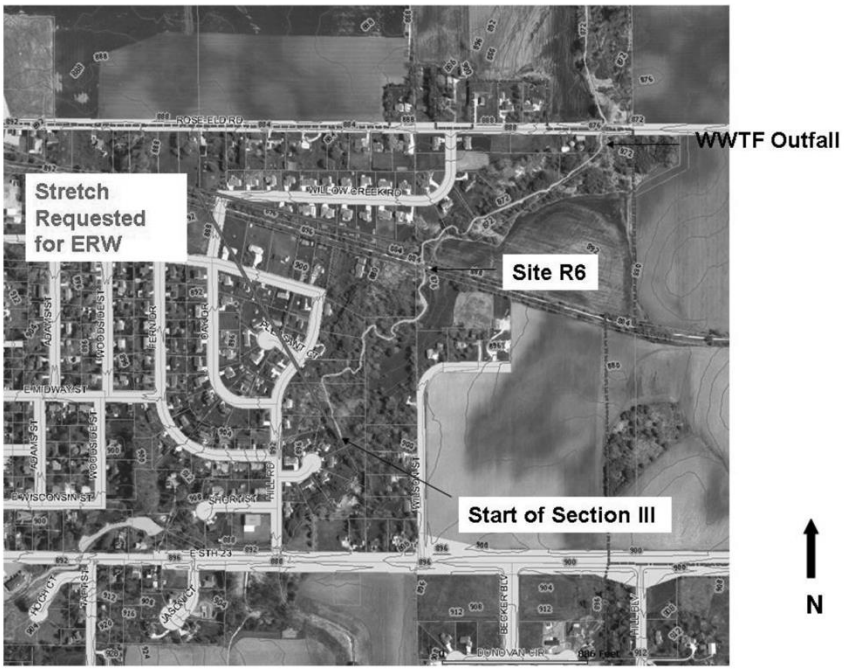
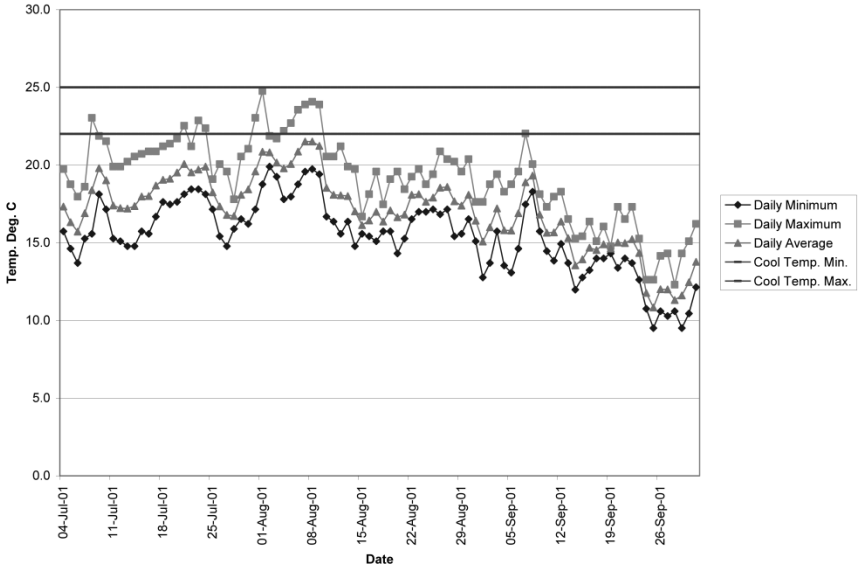


Figure 5. Rosendale Trib. continuous temperature data from Site R7 for the summer of 2001.



It is important to note that no darters were found at Site R6 (or anywhere else in the Rosendale Trib.) This was surprising since coolwater gravel riffles and gravel/rubble bottom existed throughout most of R6 indicating conditions to be very good for darters. It is possible that the poor habitat below E. Rose Bud Rd. combined with the dam within Site R6 provided barriers to darters. It was unknown how well darters populated the Trib. below the study area or the W. Br. of the Fond du Lac R. below the study area. It would be most important now to find out if a source population of darters exists in the W. Br. of the Fond du Lac near the confluence with the Rosendale Trib. Answers to these darter questions could help considerably in understanding how the Rosendale Trib. can meet its full potential.

Figure 6. Rosendale Trib. Site R7 vs air temp. linear regression for summer 2001.

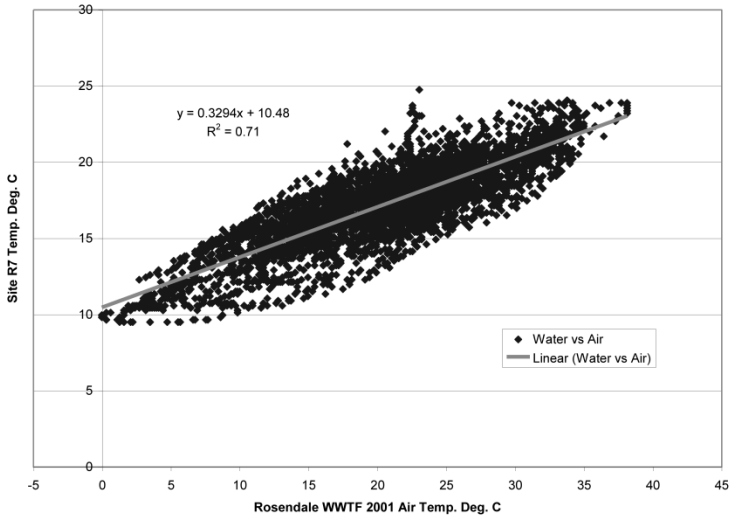


Figure 7. Rosendale Trib. Site R6 continuous temperature data from summer 2003.

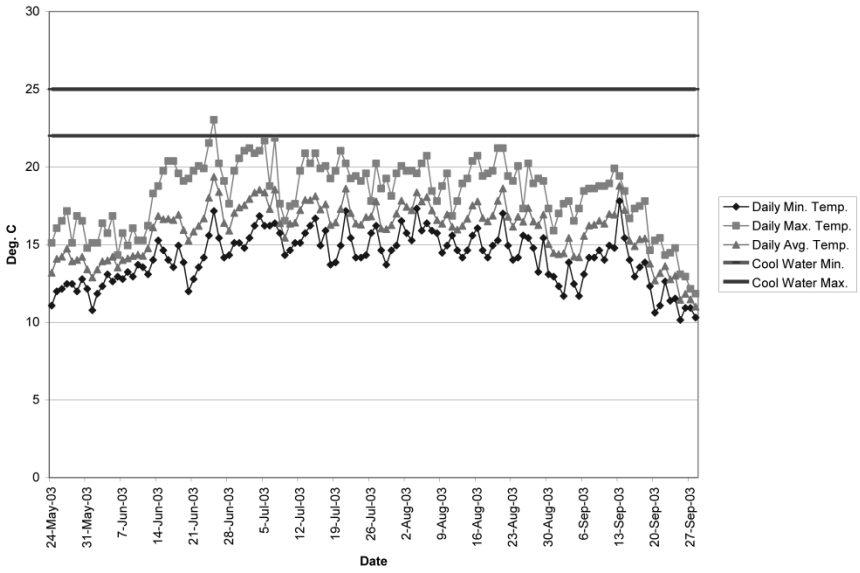


Table 3. Rosendale Site 6 fish survey data (sampled 6/25/2001).

Taxa	Number	Tolerance
Brassy Minnow (Hybognathus hankinsoni Hubbs)	1	O
Brook Stickleback (Culaea inconstans (Kirtland))	4	T
Central Mudminnow (Umbra limi (Kirtland)	9	T
Creek Chub (Semotilus atromaculatus (Mitchill))	8	T
Fathead Minnow (Pimephales promelas Rafinesque)	8	T
Green Sunfish (Lepomis cyanellus Rafinesque)	2	T
Northern Redbelly Dace (Phoxinus eos (Cope))	23	O
Pearl Dace (Margariscus margarita (Cope))	217	O
White Sucker (Catastomus commersoni (Lacepede))	4	T
Total	**275**	
CW IBI	**30**	**Fair**
WW IBI	**36**	**Fair**

Figure 8. Rosendale Trib. Site R6 vs Ripon WWTF air temp. linear regression for summer 2003.

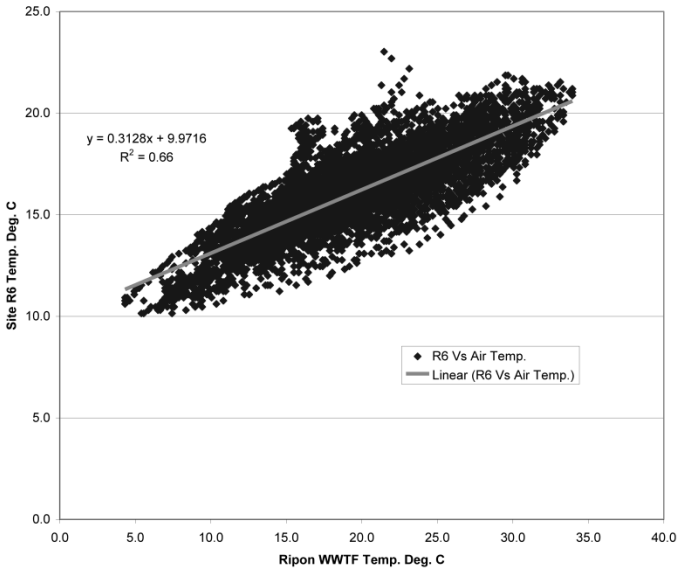


Photo 16. The summer 2004 Site R6 temp. probe. The probe was attached to the rebar seen in the lower center of the photo. This was a well established riffle located immediately above the RR tressel. The beginnings of this riffle can be seen in the lower part of Photo 4.

Table 4. Habitat data for Site R6 collected Aug. 24, 2001.

Parameter	Calculated Value	Score	Rating
Riparian Buffer Width	6.19m	10	Good
Bank Erosion	0.02m	15	Excellent
Pool Area	22.9%	3	Fair
Width:Depth Ratio	13.09 avg. thalweg	10	Good
Riffle:Rifflel Ratio	5.23	15	Excellent
Fine Sediments	40.4%	5	Fair
Cover for Fish	6,4%	5	Fair
Total		**63**	**Good**
HBI		**4.420**	**Very Good**
CW IBI		**30**	**Fair**
WW IBI		**32**	**Fair**

Photo 17. Rosendale Trib. Site R6 dam. This dam was only 12 inches high but was apparently a barrier to fish migration upstream during normal flow conditions. Summer 2001.

Figure 9. Rosendale Trib. Site R6 continuous temp. data for summer 2004.

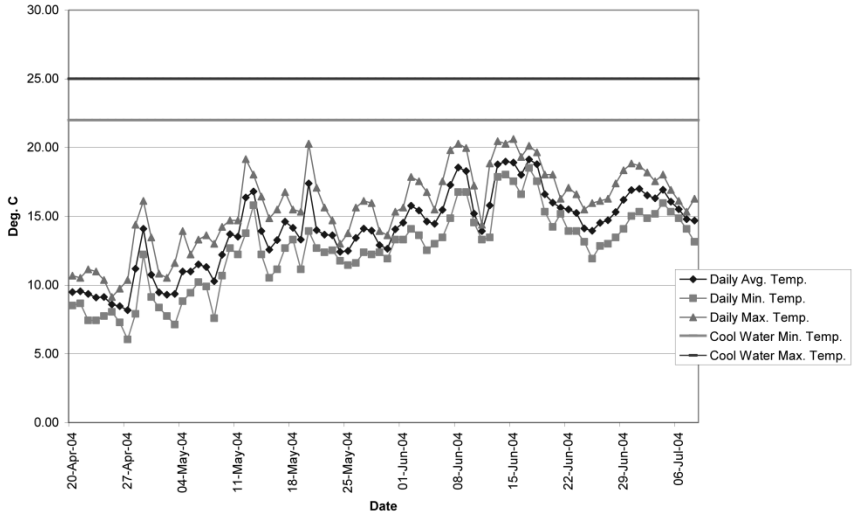


Table 5. Chemical data from Rosendale Trib. Site R6 collected August 20, 2002.

Parameter	Result
Total Calcium (mg/l)	87.5
Total Hardness (mg/l)	433
Total Magnesium (mg/l)	52.2
Ammonia (as N) (mg/l)	0.007
Water Temp. Field (Deg. C)	15.0
Field pH (s.u.)	7.8
Dis. Oxygen (mg/l)	9.2

Photo 18. Rosendale Trib. Site R6 upper end. Looking downstream from the upstream end of the site (designated by the pink ribbon on the tree). Summer 2001.

Table 4. Rosendale Creek Site 6 macroinvertebrate taxa list (collected 10/18/2001).

Taxa	# Counted	HBI Value
Ephemeroptera		
Baetidae		
Baetis brunneicolor	2	4
Trichoptera		
Hydopsychidae		6
Cheumatopsyche sp	43	5
Hydropsyche betteni	12	6
Ceratopsyche sp		1
Ceratopsyche slossonae	9	4
Psychomyiidae		
Psychomyia flavida	1	2
Coleoptera		
Elmidae		
Optioservus sp	41	4
Optioservus fastiditus	34	4
Stenelmis sp	4	5
Psephenidae		
Ectopria leechi (sp. 1)	1	5
Diptera		
Simuliidae		
Simulium sp	1	
Simulium fibrinflatum	1	6
Tanypodinae		
Arctopelopia sp	1	
Tanytarsini		
Rheotanytarsus sp	1	6
Amphipoda		
Gammaridae		
Gammarus pseudolimnaeus	27	4
Isopoda		
Asellidae		
Caecidotea sp	3	
Oligochaeta		
Tubificidae	1	
Hirudinea		
Erpobdellidae	1	
Total	190	
Biotic Index		4.420

Table 5. Rosendale Trib. (Site R6) macroinvertebrate list from the April 29, 2002 sampling.

Taxa	Number Counted	HBI Number
Amphipoda		
Gammaridae		
Gammarus pseudolimnaeus	66	4
Coleoptera		
Elmidae		
Dubiraphia sp	2	6
Dubiraphia quadrinotata	1	5
Optioservus sp	20	4
Optioservus fastiditus	19	4
Stenelmis sp	3	5
Stenelmis crenata	1	5
Diptera		
Chironomidae		
Chironomini		
Cryptochironomus sp	1	8
Microtendipes pedellus group	1	6
Polypedilum nr. convictum	8	5
Polypedilum nr. fallax	10	4
Diamesinae		
Diamesa sp	1	5
Orthocladiinae	5	-
Orthocladiinae pupae	3	-
Brillia flavifrons group	2	5
Chaetocladius piger group	2	5
Corynoneura sp	1	7
Eukiefferiella claripennis group	1	8
Orthocladius sp	10	6
Tventenia sp A	4	4
Prodiamesinae		
Prodiamesa sp	1	3
Tanytarsini		
Paratanytarsus sp A	1	6
Rheotanytarsus sp	12	6
Empididae		
Chelifera ap	2	6
Tipulidae		
Tipula sp	1	4
Ephemeroptera		
Heptageniidae		
Stenacron interpunctatum	5	7
Isopoda		
Asellidae		
Caecidotea sp	2	-
Oligochaeta		
Naididae	1	-
Tubificidae	1	-
Haplotaxoida	1	-
Plecoptera		
Capniidae		
Allocapnia sp	1	3
Trichoptera		
Hydropsychidae	1	-
Ceratopsyche slossonae	7	4
Cheumatopsyche sp	39	5
Hydropsyche betteni	4	6
Psychomyiidae		
Psychomyia flavida	2	2
Uenoidae		
Neophylax sp	4	3
Total Number Counted	248	
HBI		4.592

Photo 19. Rosendale Trib. looking downstream from East Rosebud Road. The WWTF outfall concrete slab can be seen to the upper right. November 13, 2006.

CONCLUSION

The upper two sections (Sections I and II) of the Rosendale Trib. did not have sufficient groundwater inputs to sustain continuous flows in the driest parts of the driest years. As discussed earlier, the Rosendale Trib. starts in a wetland rather than a high groundwater input escarpment as with Campground Cr. and Parsons Cr. in Fond du Lac County. Sufficient inputs to maintain year around flows in the driest years (such as 2003) only exist in the wooded and higher gradient area of Section III below Hill Road near the Village of Rosendale Fire Station down to above the WWTF at East Rose Bud Rd. This Section was defined by Reference Site R6. Also, biota indicate low D.O. in the stretch of stream that flows through the Village of Rosendale Park area. These conditions along with the defined fish population at Site R2 resulted in the appropriate stream classification of LFF under the current coded classification of Wisconsin Administrative Code NR 104 and TFAL with the 2004 Use Guidelines. Section III from the spring area below Hill Rd. down to the confluence with the E. Rosendale Trib. is defined by Reference Site R6 which, due to a cool water fish population, high quality macroinvertebrates population and good habitat and cool/cold water conditions is clear evidence for WWFF under the current coded classification or DFAL-CW under the 2004 Use classification. The impoundment below HWY 23 (above Site R5), due to the gamefish it contained, can be classified as WWGF or DFAL-GF under the new 2004 Use classification. However, it is an artificial condition which cannot define the entire stream as WWGF year around. Section III does have significant problems. The ditched area below E. Rose Bd. Rd. resulted in very poor habitat with little conditions for quality macroinvertebrates or quality fishery. There was a small dam in Site R6 that could have been a boundary for fish migration. Also, the impoundment above Site R5 was a clear boundary to fish migration. A restoration of the habitat in the ditched area at and below Site R8 and elimination of the impoundment would result in a seasonal potential classification of WWGF in Sections II and III and could provide migration in the spring to the wetland area above the Village of Rosendale.

Other recommendations of this study are: 1) that the WWTF discharge remain below the high quality area of Site R6 (preferably that it stays in the area it is in between Sites R7 and R8); 2) that the wooded area adjacent to, and above, Site R6 be maintained as a green corridor so the high quality conditions that were found there can be continued; and 3) that the groundwater pressure that works the springs to Section III be maintained (which means to make sure the confining layer above the ledge is not punctured during any construction).

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