2040 Comprehensive Plan

Greenfield

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DRAFT - June 2019

Greenfield

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Acknowledgments

The City acknowledges the following groups and individuals in the preparation of its Comprehensive Plan:

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Executive Summary

Located on the western edge of Hennepin County and the Twin Cities Metropolitan Area, Greenfield, MN is a growing community with a population of almost 3,000 people in 2018. Residents enjoy the rural character of the community as well as the close connection to Minneapolis and the Twin Cities metropolitan region via State Highway 55. Greenfield's natural resources and rolling landscapes have given the City its cherished rural character.

Three Big Ideas Envisioned

Three big ideas that you will find emphasized and woven through the comprehensive plan include the Village Center, Preservation of Rural Residential Character, and Optimizing the Use of Existing Capital Investments.

1 The Village Center

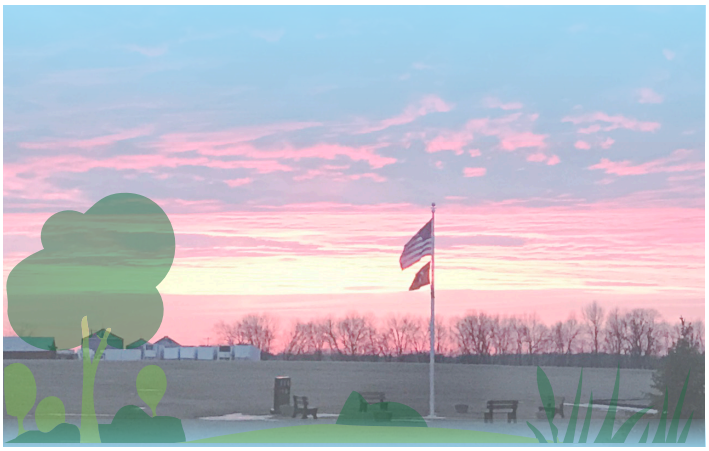
This concept carries forward and advances prior comprehensive planning concepts of creating a downtown. The Village Center concept:

- Creates opportunity to strengthen Greenfield's identity;
- Includes a mix of uses that support one another;
- Allows for a type of housing that does not exist in Greenfield;
- Provides a critical mass of people who might work in local businesses;
- Creates a more viable and sustainable place for retail (goods and services such as restaurants);
- Creates a place that is more than just a collection of stores but a destination within the City of Greenfield and the broader region; and,
- Supports the desire for a more sustainable tax base by offering a broader land use pattern and opportunity for economic development.

2 Preserving a Rural Residential Character

The idea of rural residential has long been a vision for the City of Greenfield. Key components of Rural Residential Character include:

- Having open space (natural resources and habitat areas mostly) and homes with lots of space around them;
- Balancing the desires for rural character with the recognition that providing quality roads and services requires a land use pattern and density of development that supports a reasonable tax base; and,
- Enabling the concept of "cluster housing" through a flexible zoning district that preserves the integrity of valued open spaces while enabling a development pattern that supports a sustainable tax base.



3 Optimize the Use of Existing Capital Investments

This concept recognizes past decisions to invest in municipal infrastructure systems and the need to continue to support a responsible growth pattern that optimizes the use of municipal sanitary sewer and potable water infrastructure. This idea includes:

- Enabling cost effective development near the core in order to preserve Greenfield's desired future;
- Guiding and zoning land that is proximate to existing infrastructure and that is more readily developable to higher density land uses; and,
- Leveraging existing investments to achieve economic development objectives.

What is the catalyst to implementing the plan?

Through the plan review process, a key question was raised. "What is the catalyst to make this plan be implemented?" Aside from being approved by the City Council, there is not one key catalyst to making sure the comprehensive plan is implemented.: rather, there are many. However, it is most important to have the Comprehensive Plan be the forefront of all decision making processes. This can happen in many ways including the following:

1. Promote the vision of the City of Greenfield and make it accessible – post it prominently on the web site – provide paper copies of executive summary at the front counter – highlight key elements in the city newsletter.

2. Provide copies of the plan to all elected and appointed officials and have a copy available at every meeting for reference.

3. Link all decisions to the plan.

4. Use the plan to help inform the city budget – include reference to initiatives, goals, and policies within the budgeting process.

5. Develop annual work plans for the Council, EDA, advisory boards and commissions, using the comprehensive plan initiatives and goals as a basis.

6. Annually review progress and report out achievements in an annual report that gets posted on line and published through the City Newsletter and then update the plan when initiatives have been completed or when substantial progress towards a goal has been achieved.

7. Celebrate successes.

Adoption of the comprehensive plan is the first step to implementation.

1 Vision & Guiding Principles

A "Vision" statement captures a community's aspirations for the future and provides a framework upon which the comprehensive plan and strategic initiatives can be built and carried out. The Vision seeks to describe how the community will look, feel, and function over the next 20 years. The guiding principles highlight those elements that are important to the community and which are keys to the achievement of the community's Vision.

Vision: The Greenfield community recognizes that preserving a rural residential character in a growing metropolitan area requires thoughtful planning and delicate balance. By being thoughtful, engaged, and aware, the City of Greenfield in 2040 will be an economically, fiscally, and environmentally sustainable community. Greenfield will continue to be a great place to live, work, and play.

Guiding Principles:

- Rural Residential Character
- Housing Diversity
- Supportive of Commercial & Business Development
- Sense of Community
- Sustainability

2 Intro to the Plan

This is the fourth major comprehensive plan update for the City of Greenfield, with previous plans adopted in 1995, 2002, and 2013. The 2040 Comprehensive Plan seeks to find the balance between retaining Greenfield's rural character and accommodating growth within the City.

What is a Comprehensive Plan?

- Broad in scope
- A tool to guide a community's physical and socio-economic growth
- Conceptual
- Visionary
- Dynamic – responsive to changing needs, conditions, information, and trends

What is the Comprehensive Plan Used For?

- Provides guidance for landowners and developers
- Informs and engages the public
- Serves as a framework for local decision-making
- Establishes general goals and policies
- City Staff resource

3 Community Context

The planning process involved reviewing previous planning efforts, analysing demographic and economic data, and gathering existing conditions of the community to gain an understanding of Greenfield today. Some highlights and findings from this process include:

Natural Resources: An abundance of natural resources, including lakes and parks, is central to Greenfield's identity

Rural Character: Greenfield is a rural community with an abundance of natural resources and remaining agricultural

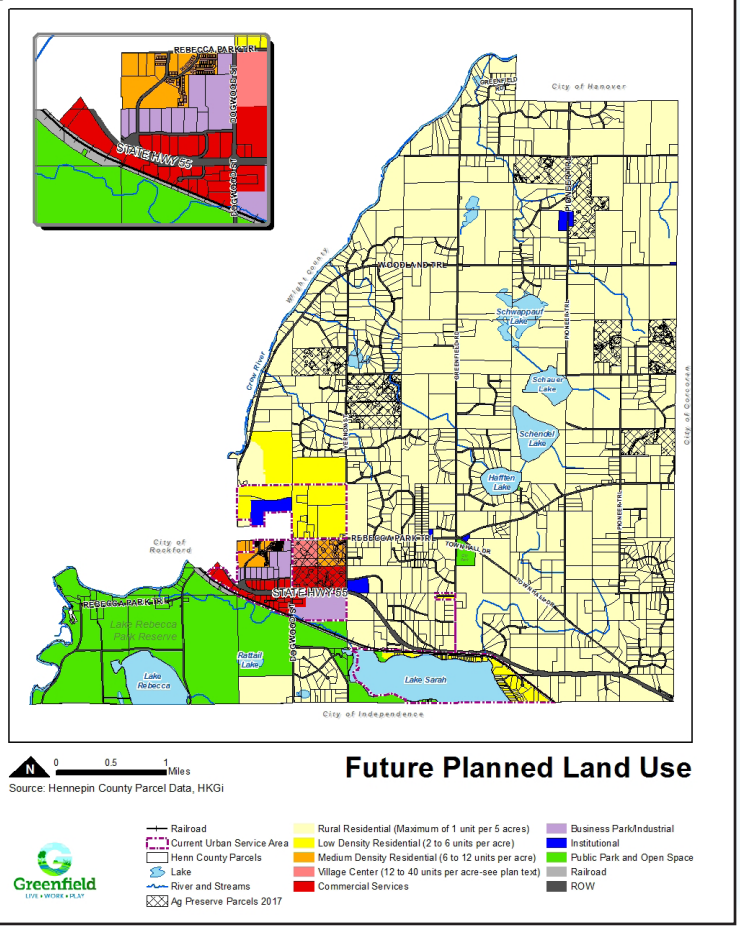
New Growth: As a result of its location on the edge of the Twin Cities metro region Greenfield has a prime opportunity to capture new growth that will provide commercial services to its residents and help contribute to a sustainable and resilient future for the city.

4 Land Use Plan

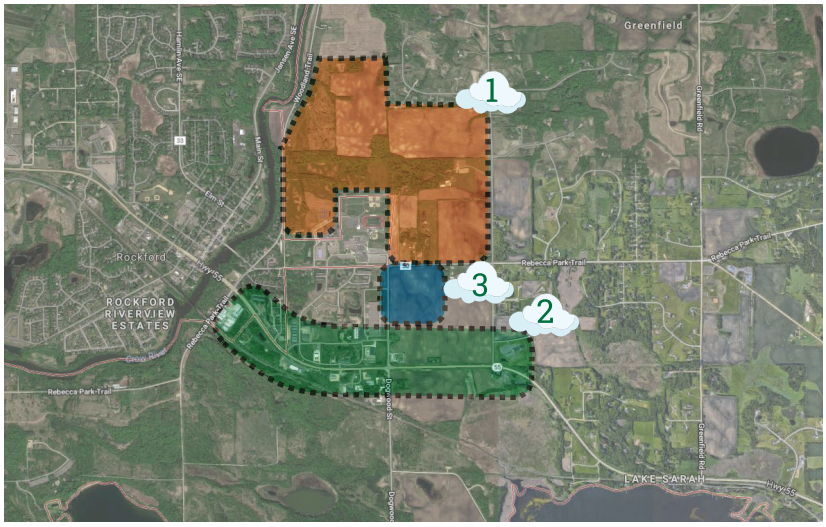
This chapter provides the framework for how land will be used in the future. The Land Use Plan, as seen in (Figure 4-1), seeks to reinforce desirable land use patterns, identify places where change is needed, and guide the form and location of future growth. The Plan's main goal is to preserve the community's rural character while protecting the long-term ability for the City of Greenfield to emerge as a strong, thriving community on the edge of a growing metropolitan region.

Currently, the predominant form of residential development in Greenfield is single-family, rural residential development. As the City grows, development with municipal sewer and water is anticipated to continue to occur in the core area of Greenfield. There is adequate land planned and available in this area to accommodate forecasted population, household, and employment growth projected for Greenfield.

"Figure 4-1. Future Land Use"



The City has identified three focus areas that could be considered for expansion of infrastructure services (Figure 4-2):



1 North Greenfield Sewered Residential

– comprised of lands that have not been platted to a rural residential lot pattern and that are adjacent or near existing municipal services.

2 Highway 55 Corridor

– Comprised of lands fronting or near State Highway 55 with municipal sewer and water services. A coordinated approach is needed to ensure quality commercial uses and development.

3 Village Center

– Creation of a core downtown area that could serve the community with a walkable center and a mix of uses including life cycle housing. The logical location for this concept is a parcel scheduled to be removed from the Agriculture Preserve Program in 2022.

5 Community Development

This chapter includes elements of economic development and housing. The chapter provides a framework to create a supportive sustainable environment to serve existing and future Greenfield residents and businesses.

Currently, 93% of homes in Greenfield are detached single-family homes with higher median home values than the county-wide average. The Plan suggests providing a variety of housing options at different price points that will be more accessible to various population groups, including senior housing for retirees and starter housing for young people entering the labor force. A diversity of housing also supports a stronger labor pool for local businesses and strengthens the local school district.

6 Parks, Trails and Open Space

This chapter provides a long term plan for the development and maintenance of parks and trails and the preservation of open space. A key component of this plan is ensuring that appropriate parks, trails, and open space are provided and planned for as the city grows and develops. This includes a 5 to 10 acre neighborhood park in the north and northeast sewered area of the city and a plaza-like park to serve the "Village Center" area of Greenfield

In order to provide a safe environment for residents to move through the community on bike or foot, it is important to establish a connected network of streets and trails. As development continues, major through streets in Greenfield should be considered for future on-road trails. Building trails along these roads could be treated as a public improvement as roads are reconstructed.

7 Local Surface Water Management

The purpose of this chapter is to protect the water resources in and adjacent to Greenfield and to manage and prevent damages from flooding. This chapter serves as the required Local Surface Water Management Plan for the City. The City of Greenfield is located within the Pioneer Sarah Watershed Management Commission and has adopted the goals and standards of the Pioneer Sarah Watershed Management Commission Third Generation Plan as its local surface water management plan goals and standards.

The expected gradual conversion of farmland into rural residential uses provides opportunities to restore areas along wetlands and other environmentally sensitive locations to natural vegetative habitat that could significantly reduce run-off and other pollution. As development occurs, storm water infrastructure must be developed to manage the increase in runoff.

The City of Greenfield is home to several water bodies, as seen in Figure 7-1. Several of these water bodies can be publicly accessed, including Lake Sarah, Lake Rebecca, and Hafften Lake. Four of these water bodies are listed as impaired by the Minnesota Pollution Control Agency. The City of Greenfield also works to preserve and protect wetlands by requiring buffers around wetlands, encouraging voluntary wetland banking, and working with developers to minimize wetland impacts.

8 Transportation

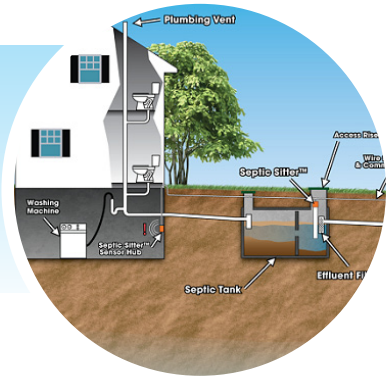
This chapter provides guidance to make transportation-related decisions that will facilitate development, direct the maintenance or upgrade of the transportation system, and address transportation problems when they arise. The City's roadways are pictured in Figure 8-1.

As the City transitions from a more rural character to a developed rural residential area, road use and consumer expectations of road quality and type will change. Expansion of the local roadway system will be development-driven and should be designed with considerations for bike and pedestrian transportation needs. Current preservation of the right-of-way will be important for future road expansions or realignments to accommodate growth.

The plan discusses the immediate need to upgrade the City's highly-traveled gravel roads to pavement. These improvements are expensive and the City must carefully evaluate each project to determine benefit and a funding strategy.

9 Infrastructure Systems

This chapter provides a plan for the delivery of potable water and sanitary sewer service to Greenfield. Greenfield is served by a City-provided municipal system and by a sanitary sewer system provided by the Metropolitan Council Environmental Services. In addition, many properties in Greenfield are served by private water wells and individual subsurface sewer treatment systems (SSTS). Both the sanitary sewer and potable water systems in Greenfield are expected to meet the needs of City growth through 2040.



10 Implementation

The plan is only effective based on how it is implemented. This chapter identifies recommendations for public and private actions which are meant to work in tandem with the goals, policies, and implementation strategies outlined throughout the plan. As conditions change in Greenfield, it is crucial that the city, and therefore the plan, adapt to these changes using a transparent public process.

These recommendations include:

- Regular reviews of the comprehensive plan (2 years)
- Regular use of the comprehensive plan in daily decision-making
- Develop Marketing and Promotional Materials
- Understanding available financial resources
- Updating official controls and regulations
- Reviewing and amending park dedication ordinance
- Establishing a detailed CIP and updating it annually

Greenfield may be quite different several decades into the future. But its core values and features will be protected and preserved through careful and forward looking planning. The Greenfield community will continue to grow and change and planning will be an important part of that growth and change.

Population Growth Projections at Full Build Out

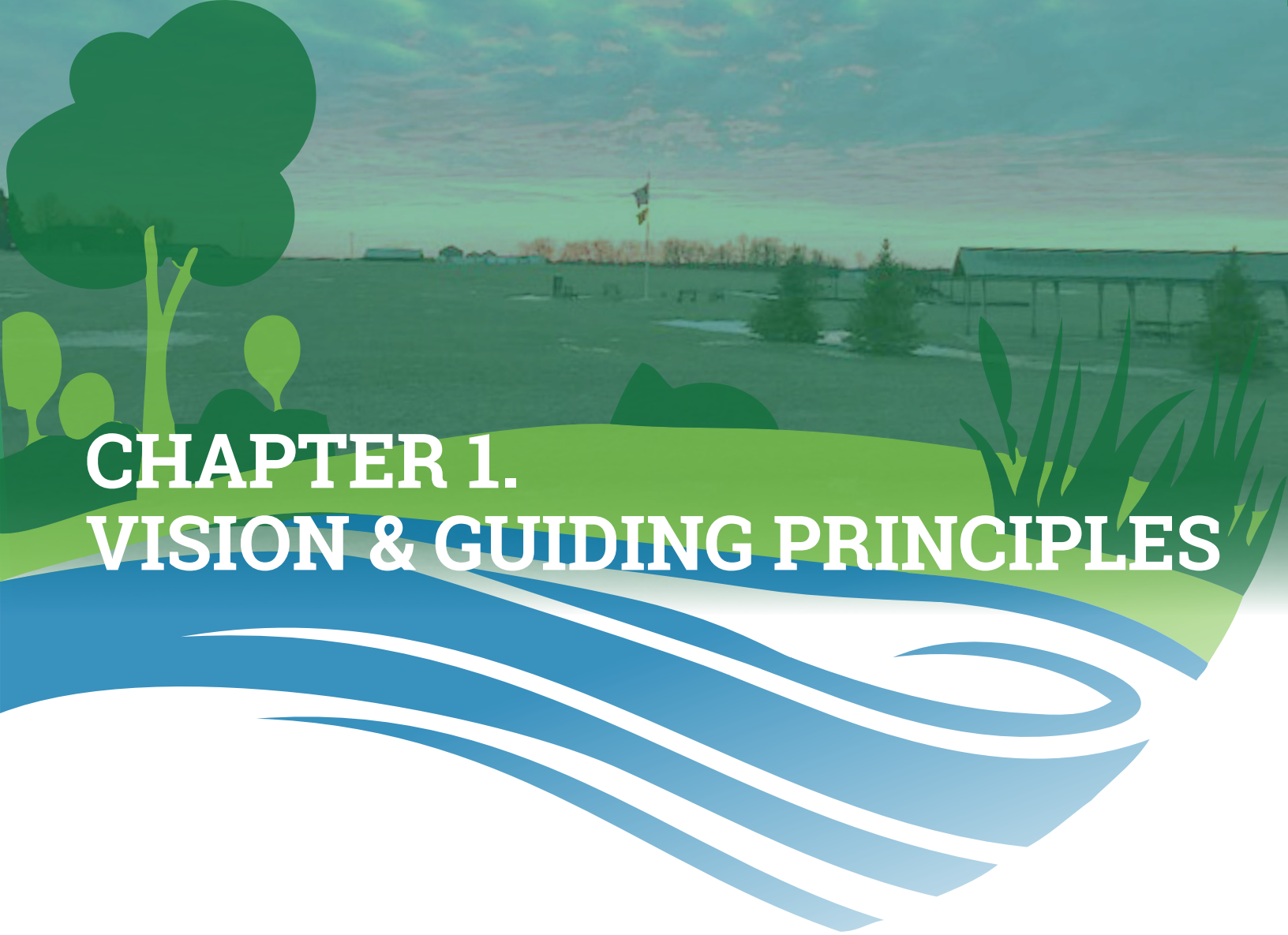
POPULATION GROWTH PROJECTIONS					
LAND USE CATEGORY	PEOPLE PER HH	2016 EST.	PROJECTION - EXISTING SERVICE AREA		
			LOW	HIGH	AVERAGE
Low Density Residential	3.0	165	939	2,816	1,880
Medium Density Residential	2.7	385	271	543	410
Village Center	2.5	-	-	-	-
Rural Residential	3.2	2,309	-	-	-
Total		**2,859**	**1,210**	**3,359**	**2,290**

POPULATION GROWTH PROJECTIONS					
LAND USE CATEGORY	PEOPLE PER HH	2016 EST.	PROJECTION-EXPANSION AREA		
			LOW	HIGH	AVERAGE
Low Density Residential	3.0	165	840	2,521	1,680
Medium Density Residential	2.7	385	409	818	610
Village Center	2.5	-	500	1,667	1,080
Rural Residential	3.2	2,309	-	-	-
Total		**2,859**	**1,750**	**5,007**	**3,370**

POPULATION GROWTH PROJECTIONS					
LAND USE CATEGORY	PEOPLE PER HH	2016 EST.	PROJECTION AT FULL BUILD OUT		
			LOW	HIGH	AVERAGE
Low Density Residential	3.0	165	1,940	5,500	3,730
Medium Density Residential	2.7	385	1,070	1,750	1,410
Village Center	2.5	-	500	1,670	1,080
Rural Residential	3.2	2,309	4,710	5,830	5,270
Total		**2,859**	**8,220**	**14,750**	**11,490**

A key factor in projecting and planning for future growth for the City of Greenfield is the ability to build and maintain future sanitary sewer and water infrastructure to accommodate growth. Ample capacity exists to accommodate growth in the 2040 planning horizon . Long term improvements will be needed to accommodate demand projected at full build out. The following table depicts estimated sewer flows for a full build out scenario (see Chapter 9 for methodology). Greenfield is currently permitted for up to 200,000 gallons per day of sewer flows.

PROJECTED SANITARY SEWER FLOWS - AT FULL BUILD OUT (GALLONS PER DAY - GPD)				
LAND USE CATEGORY	% OF TOTAL PERMITTED PLANT CAPACITY (BASED ON AVERAGE)	PROJECTION AT FULL BUILD OUT		
		LOW	HIGH	AVERAGE
Low Density Residential	107%	106,700	320,200	266,800
Medium Density Residential	37%	52,800	93,700	99,650
Village Center	33%	30,000	100,000	80,000
Commercial/Business/Industrial	27%	45,200	61,400	75,900
Total	**203%**	**234,700**	**575,300**	**522,350**



CHAPTER 1. VISION & GUIDING PRINCIPLES

Purpose of Vision and Guiding Principles

In order to effectively plan, a community must define its aspirations for the future. A community's "Vision" statement captures those aspirations and provides a framework upon which the comprehensive plan and strategic initiatives can be built and carried out. Furthermore, the Vision, when combined with a set of Guiding Principles, becomes a yardstick by which to measure progress. Greenfield's Vision Statement recognizes the past but looks to the future depicting how the community will look, feel, and function over the next 20 years.

The Vision and Guiding Principles were generated using past comprehensive plans, information gleaned from prior community planning efforts, and through the community engagement process. While the vision and guiding principles capture the general intent and desire, the plan recognizes that there are divergent opinions on some of these topics. It is important to recognize that the Comprehensive Plan is not a static document and that change happens. However, change to the vision and guiding principles should be done carefully and through a transparent, inclusive planning process.

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Guiding principles support the vision and define the values and priorities of the community. They act as an ongoing measurement tool for evaluating the appropriateness and effectiveness of future initiatives. In general, guiding principles:

- Orient the community to the future
- Require imagination, recognizing that the direction set for the community may be aspirational
- Look to current conditions and community traditions to inform the appropriate future
- Identify what the community desires for itself based on shared understandings
- Serve as a tool for evaluating proposals, projects, ideas, and future directions
- Provide an anchor during conflict; a way of finding common ground and shared values
- Become a basis for coordination and cooperation
- Offer a source of energy and enthusiasm for maintaining a commitment to the future

A set of guiding principles has been crafted to provide additional clarity to Greenfield's Vision. These guiding principles highlight those elements that are important to the community and are key to the achievement of the community's Vision.

The 2040 Vision for Greenfield

Characterized predominantly by an abundance of open space, historical but transitional farms, and spacious residential neighborhoods, the City of Greenfield remains the quintessential rural residential community in western Hennepin County.

It is a rural residential community with views of protected open space, and a quality natural environment.

Greenfield is a community that understands that the desired level and quality of services, infrastructure, and community identity come with a cost that is directly related to the City's land use and development pattern. The Greenfield community recognizes that preserving a rural residential character in a growing metropolitan area requires thoughtful planning and delicate balance.

By being thoughtful, engaged, and aware, the City of Greenfield in 2040 will be an economically, fiscally, and environmentally sustainable community. Greenfield will continue to be a great place to live, work, and play.

The Guiding Principles For Greenfield

Preserve and maintain a rural residential character

Greenfield's rural character is defined by the preservation of Greenfield's natural features, including rolling terrain, woods, wetlands and wildlife habitat; the protection of scenic views which provide separation between existing and future uses; open viewsheds; and active agricultural uses such as traditional farming, landscape nurseries, vegetable gardens, horse farms, and pastures.

Provide opportunities for a diversity of housing options

Greenfield has established a large lot rural residential development pattern as the dominant housing pattern in the city. This pattern will continue to evolve and fill in as agricultural land uses transition over time. However, Greenfield will continue to plan alternative housing types and patterns to allow existing and future residents to remain part of the Greenfield community as they move through life; to accommodate the needs of the growing local labor supply needed to keep commercial and business development vibrant; to provide options for varying degrees of affordability; and to ensure a development pattern that supports the financial sustainability of existing and planned infrastructure investments.

Provide an environment supportive of commercial and business development

Commercial and business development in Greenfield serves three predominant purposes.

1. It provides local options for basic goods, services, and jobs reducing the need to travel far for basic needs and jobs.
2. It contributes to a diverse and growing tax base to help offset existing infrastructure investments and to ensure long term fiscal sustainability.
3. It helps create a sense of place and identity where businesses call home or where community members gather.

Greenfield's rural character attracts commercial and business development that is less traditional, desires a rural character/ambiance/environment, or requires greater land resources than an urban environment offers. Such uses can contribute

positively to the City of Greenfield so long as they are designed to minimize negative impacts on the rural residential character of the community.

Traditional commercial and business development patterns will occur where municipal sewer and water is readily available and where roadway access is conducive to higher traffic volumes. However, the City of Greenfield also recognizes that the world is changing. Advances in technology enable residents to live in Greenfield and work regionally, nationally, and even globally. To that end Greenfield supports development of technology and infrastructure that provides high quality, efficient data connections to the entire community.

Preserve and strengthen a sense of community

A sense of community encompasses both physical development (places) and non-physical activities (civic and social interaction).

Greenfield will invest in the planning, development, maintenance, and programming of Central Park as the central gathering place of the community. Opportunities to create unique gathering spaces as part of future development in Greenfield's core area will be explored as future development becomes a reality.

Greenfield recognizes its relationship to surrounding communities, within Hennepin County, and the metropolitan area at large. Greenfield also recognizes its role in supporting the local school district and its facilities and Three Rivers Park District facilities. Greenfield will actively collaborate and partner with regional agencies to plan and invest in regional improvements.

Contributing to the ongoing growth and change in Greenfield requires a dedicated and engaged citizenry. Volunteerism and civics will continue to be an important part of Greenfield's future.

Practice sustainability

Greenfield is a community with a rich history and a desirable character. Its future is one that requires thoughtful planning in order to preserve and protect the qualities that make it a great place while managing growth pressures from an expanding metropolitan area. Sustainability in Greenfield refers to:

- Protected and preserved natural environment: The city is fortunate to have a variety of natural amenities to enjoy. Future growth and development will occur in an environmentally responsible manner, protecting both the views and the functioning of the natural environment (ecological, habitat, water quality, storm water, etc.)
- A healthy and reasonable long term fiscal/financial forecast: The desired character and level of services, (including maintaining the resources, facilities and services essential for a safe community) requires consideration for both the capital investments needed to build public improvements and the ability to

maintain and replace them when their useful life span is over.

» A balanced tax base: Housing and business development should be diverse, supporting the city with a tax base that is not overly reliant on one industry or use.

In addition to serving as the basis for the development of this plan, the Vision and Guiding Principles can be used to evaluate ideas and proposals that may not have been addressed or may be the result of changes not anticipated by the Plan. To ensure that the Vision and Guiding Principles still capture the community's aspirations for the future, the community should review its Vision and Goals every few years.

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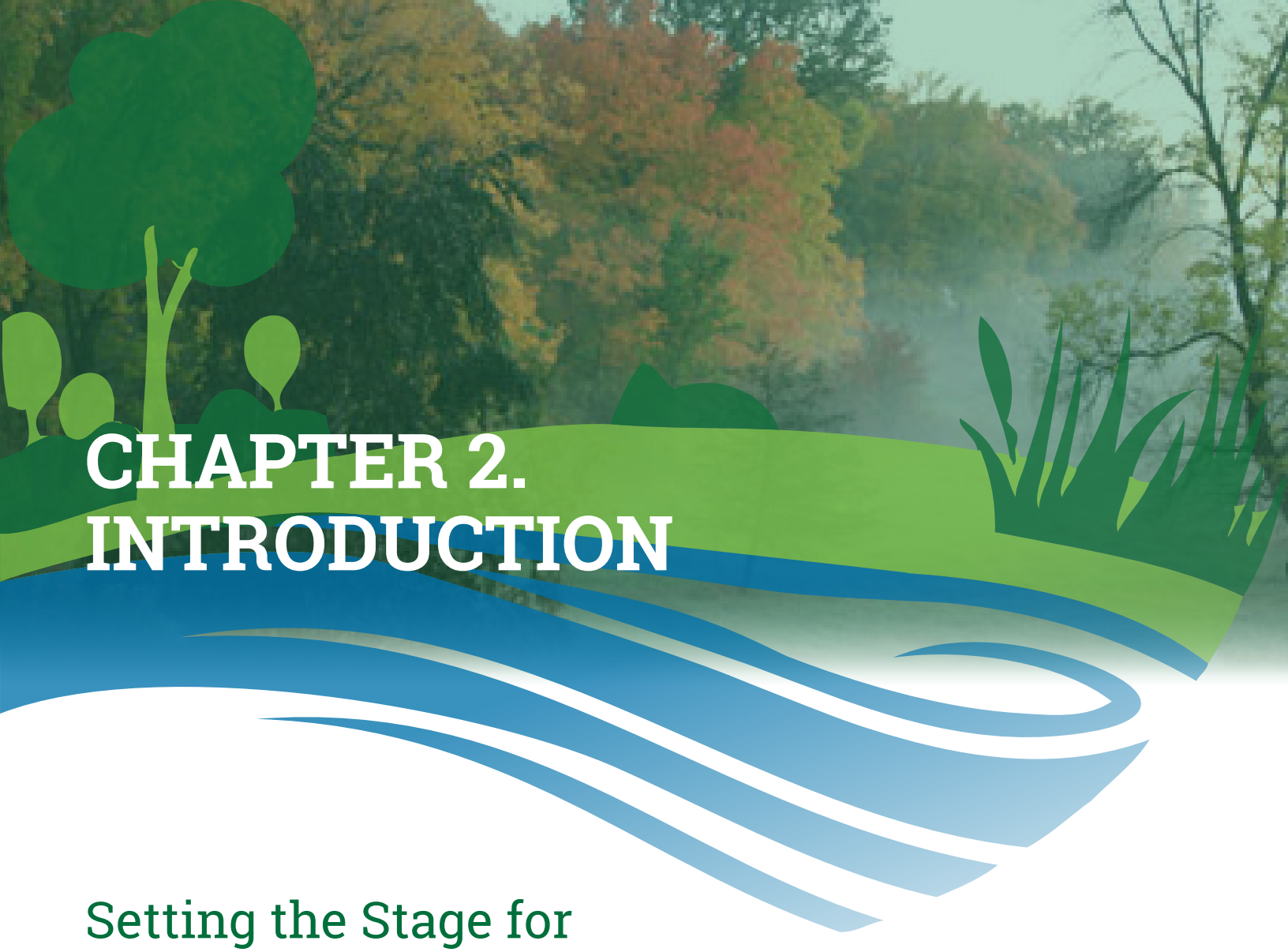

CHAPTER 2. INTRODUCTION

Setting the Stage for Greenfield's Comprehensive Plan Update

In the book, *Crabgrass Frontier: The Suburbanization of the United States*, Kenneth Jackson quotes from a letter to the King of Persia written in 539 B.C. that reads, "Our property seems to me the most beautiful in the world. It is so close to Babylon that we enjoy all the advantages of the city, and yet when we come home we are away from all the noise and dust." In the same book, Jackson highlights that "the desire to combine the best of both farm and city is even older than the letter…"

This sentiment seems to provide an appropriate setting for Comprehensive Planning in the City of Greenfield, a community with two highly valued assets: the rural character of the land and the proximity to a major metropolitan center. However, Greenfield is a community faced with the challenges of balancing the desired rural character of today with pressures for growth and development. This plan seeks to find the delicate balance between retaining a rural character (that can be many things depending on the lenses one looks through) and accommodating growth that supports an existing municipal infrastructure system, a desire by many for paved roads, a diverse tax base, and more convenient goods and services.

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Conflict will almost always occur when these forces come together and the City has recognized this for quite some time as evident in past comprehensive planning work. The challenge of a Comprehensive Plan is to achieve a balance recognizing the logical growth and development of a metropolitan region and preserving what the letter to the King of Persia recognized over 2,500 years ago or rephrased more recently by Kenneth Jackson as combining the best of both rural and city.

Rural Character as expressed through the engagement process mostly refers to the predominant views of open space and natural resources. While agriculture fields are part of that view, the predominant expression of rural character is natural resource and open space based.

Clearly, this conflict is not unique to City of Greenfield, but why does it exist here? We can hypothesize a number of reasons:

- As property owners in Greenfield we have different objectives based on if we are a resident of Greenfield, a business owner or a landowner, how long we have owned land in Greenfield, the amount of land we own, and the reasons why we own land in Greenfield (our home, our business, our farm, our retirement savings, our investment).
- Development pressures must respond to factors that typically do not have the same objectives, including; land economics, political forces, physical characteristics of the land, and a community's vision.
- There are varying (and continually evolving) levels of expectations for what a *"minimum level of government services"* means to different people. Through the public engagement process, we heard many people express the desire for certain roads to be paved and for development of commercial services more proximate to the community. We also heard the sentiment that "this is Greenfield;" "this is what we moved here for;" and, "services are not more than a 15 to 20 minute drive".

Balancing the demands of diverse viewpoints and a changing demographic will mean that not all decisions will have overwhelming community support. This Comprehensive Plan will look principally at 2040 as a horizon year. However, a number of the topic areas and examinations of land patterns and desired development character were explored as ultimate plans (i.e. full build out scenario).

Comprehensive Plan Document Organization

The Comprehensive Plan for the City of Greenfield confirms a vision for the community that has been carried forward for decades. The plan takes ideas identified in prior plans and establishes a course of action to move that idea forward. The plan also identifies new directions and charts a path forward to further vet the new ideas and figure out how they might apply in Greenfield consistent with the community's vision.

The Comprehensive Plan serves as a guide for the ultimate growth and development of the community and outlines the set of tools needed to move the community toward achieving consistency with its vision. The Comprehensive Plan is first written to provide a direction for the community of Greenfield, but it also recognizes Greenfield's place in a growing region and adheres to regional development objectives and policies as required by Minnesota State Statutes and the Metropolitan Land Planning Act. The plan is organized in the following parts:

1. "**Introduction**" provides an introduction to the comprehensive plan and overview of the planning process.
2. "**Community Context**" provides a summary of the social, economic and physical features and forces that are influencing land use and community development patterns at the time in which the Plan was developed.
3. "**Vision for the Future**" summarizes the community's desires for the future and serves as the basis for the development of the remainder of the Plan.
4. "**Land Use Plan**" describes the community's desired land use and development patterns and establishes related goals and public policy related to land use.
5. "**Community Development**" describes the community's approach to economic development and housing and related goals, policies, and actions.
6. "**Parks, Trails, and Open Space**" summarizes the park and open space features of the community and a plan for a trail system that connects to the regional trail network.
7. "**Surface Water Management Plan**" identifies the drainage patterns of the community and establishes policies that protect the function of the regional drainage system.
8. "**Transportation Plan**" describes the planned modes and networks of public transportation which provide mobility and access, as well as describes related goals, policies, and actions.
9. "**Infrastructure Systems Plan**" describes plans and policies for potable water supply and sanitary sewer services.
10. "**Implementation/Strategic Initiatives**" identifies how the Plan will be implemented to achieve the community's Vision by posing recommendations for public and private actions.

Comprehensive Plan Chapters

1 - Introduction

2 - Commuity Context

3 - Vision for the Future

4 - Land Use Plan

5 - Community Development

6 - Parks, Trails and Open Space

7 - Surface Water Management Plan

8 - Transportation Plan

9 - Infrastructure Systems Plan

10 - Implementation

What is a Comprehensive Plan?

A comprehensive plan is a tool used to guide the physical and socio-economic growth of a community. It is intended to be broad in scope while establishing general goals and policies. It is a guide for developers, landowners, citizens, elected and appointed officials, business owners, and investors as they make decisions about land use. The Plan is developed based on input from the community (its citizens, landowners and business owners) and careful studies of the land merged into a broad consensus on land use, the location of future development, and community systems that support development and growth. The engagement process included three phases: an initial visioning phase; a concept and idea exploration phase; and a formal review and approval phase. A summary of the engagement process and findings is available as supporting documentation.

Why is it important?

As the guide for community development, the Comprehensive Plan influences many decisions. It is intended to be a dynamic document that is regularly reviewed and updated. The updated Comprehensive Plan:

- Establishes a vision developed through a community process
- Provides a nexus for zoning regulations, subdivision controls and other land use and development related policies
- Influences the form, pace and location of new development
- Protects property investment by ensuring consistency and compatibility of land uses and development policy
- Promotes the maintenance and enhancement of existing neighborhoods and commercial districts
- Determines and reinforces approaches for protecting natural resources and open spaces
- Guides the expenditures of scarce resources for capital investments in roads, utilities and the city park
- Lends a greater degree of predictability to change
- Promotes the City and demonstrates a share vision to those wishing to invest in the community, start a business, or establish residency.

Authority and Requirement to Plan

The power to create and employ a comprehensive plan comes from State Law. Minnesota Statutes, Sections 462.351 to 462.364 contain the planning powers granted to Minnesota cities and townships. Specifically, M.S. Section 462.353, Subd. 1 authorizes communities to "carry on comprehensive municipal planning activities for guiding the future development and improvement of the municipality and may prepare, adopt and amend a comprehensive municipal plan and implement such plan by ordinance or other office measure."

The City of Greenfield is required to complete and keep updated a Comprehensive Plan under the Metropolitan Land Planning Act of 1976 and all subsequent amendments to that act (Minnesota Statute Chapter 473). The Metropolitan Land Planning Act (MLPA) addresses the interdependence of local units of government within the Twin Cities Metropolitan Area and requires the adoption of coordinated plans and programs. In preparing the plan, the planning body is required to work with other governmental agencies, adjacent communities, school districts and counties in order to ensure coordinated regional planning.

The MLPA also requires the Metropolitan Council to prepare a comprehensive development guide for the metropolitan area. The Metropolitan Council's 2040 Thrive MSP fulfills this requirement and provides local units of government with direction on how to plan for development, transportation, water resources management and parks. Local governments within the seven county metropolitan are required to amend local comprehensive plans so that they are consistent with the goals and policies established in the 2040 Regional Development Guide.

Planning Process

The Comprehensive Plan for the City of Greenfield is as much about the planning process as it is the plan itself. Attitudes and opinions change over time as does the direction from political leadership. If the Planning Process is truly reflective of the full community, then the plan itself becomes stronger in its application. It is not realistic to expect that every land use or development decision will receive 100% agreement from all affected parties. Through an inclusive and transparent planning process, the Comprehensive Plan becomes a unifying element to difficult decisions. The following tasks provide a summary of the planning process to prepare the 2040 Comprehensive Plan.

- **Task 1. Organize the Effort:** Task 1 oriented the various participants in the planning process and began collecting information about the community. This task included assembling a 15 person Working Group which provided a sounding board for ideas and ensured the planning process recognized all varying opinions being expressed by the community.
- **Task 2. Define the Context:** Task 2 focused on developing a thorough understanding of the physical, economic, social and natural forces that influence development in City of Greenfield. Understanding the statutory requirements and analysis of Greenfield's current Comprehensive Plan were also a key part of this step in the process.
- **Task 3. Explore and Define the Vision:** This task included a 2017 survey of the community completed by approximately 95 residents/landowners and a public workshop on May 25th 2017 attended by approximately 30 residents, landowners, developers and investors. Using this input, a vision statement was prepared, evaluated by the Working Group and ultimately refined for use during the planning process.
- **Task 4. Explore Possibilities for Future Growth:** This task included analysis of alternative development patterns stemming from a convergence of the community input (from the survey and the public workshop) and the careful examination of the land and forces influencing development patterns. Transportation systems, drainage patterns, opportunity for sewer service from the Metropolitan Council Environmental Services were all considered in this task.
- **Task 5. Converge on a Preferred Alternative:** Alternative concepts and ideas were presented at a public open house on December 14th 2017 which was attended by over approximately 20 people. A follow up survey was posted on line to allow for further input, drawing another 15 responses. Using the input from this phase of work, guidance from the Working Group, and additional technical planning analysis, alternatives were converged to present a preferred concept for land use in the community.
- **Task 6. Prepare the Final Plan—Seek Approvals:** This task includes assembling a complete draft of the Plan to include the community assessment, vision, assumptions and projections, land use plan, parks/trails/greenway plan, transportation plan, infrastructure plans, public policy statements, strategic initiatives, and implementation actions. It also involves review of the Plan by all those who have been involved throughout the process with final approval by the City Council.

References

The following documents were used as references or quoted directly in this Plan:

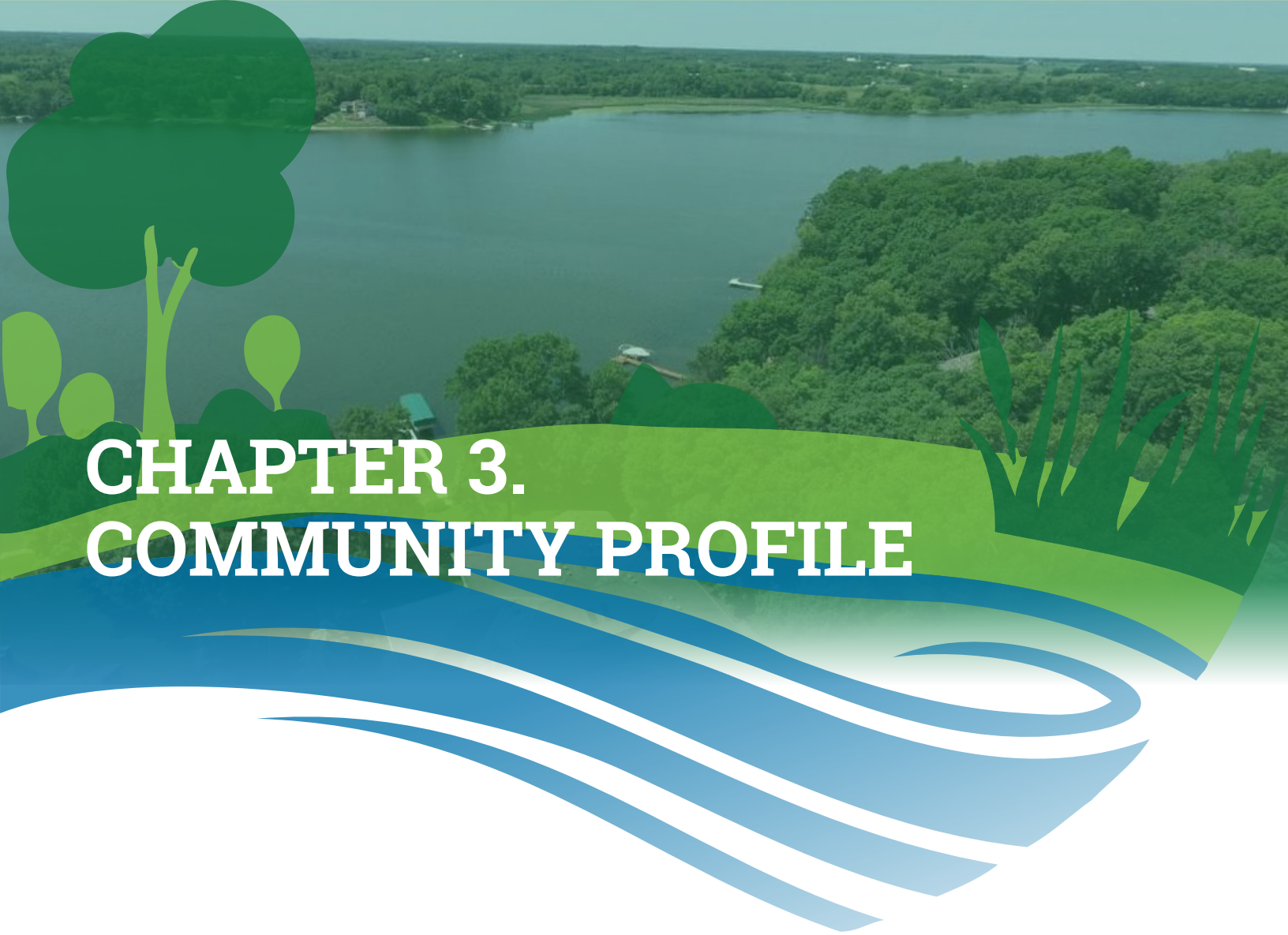
- **Comprehensive Plan for the City of Greenfield, Parts I, II, and III, Revised October 3, 1995. James R. Hill, Inc.**
- **Comprehensive Plan Update. City of Greenfield, November 2002**
- **Comprehensive Plan Update. City of Greenfield, January 2013**
- **System Statement, City of Greenfield. Metropolitan Council, September 17, 2015.**
- **Local Planning Handbook [Online]. Metropolitan Council, 2017.**

Previous Planning Efforts

This updated Comprehensive Plan represents the fourth major plan update for the City of Greenfield. Previous Comprehensive Plans were adopted in 1995, 2002, and most recently in 2013. The City developed a park master plan for the Central Park and continually maintains the master plan as funds become available for installation of plan components. The comprehensive plan also utilized a number of other planning and technical study efforts conducted over the years such as recommendations from the Open Space Planning Committee (2007), historical and current Water Supply Plans and sanitary sewer system reports, and business park planning initiatives.

The planning process also incorporated regional planning directions established as follows:

- Highway 55 long term improvement plans prepared by MnDOT
- Hennepin County Roadway System and regional bike trails
- Hennepin County Comprehensive Planning update for 2040 and associated materials
- Pioneer Sarah Creek 3rd Generation Watershed Management Plan and associated technical studies completed by the watershed, MPCA and Three Rivers Park District
- Three Rivers Park District for the Crow River Regional Trail Master Plan and Lake Sarah Regional Park
- Metropolitan Council Regional Development Guide (Thrive MSP 2040) and associated policy plans for Transportation, Water Resources, Regional Parks, and Housing
- Metropolitan Council 2015 System Statement and associated comprehensive planning guides and checklists



CHAPTER 3. COMMUNITY PROFILE

Introduction

This chapter of the Comprehensive Plan summarizes the information reviewed and analyzed as part of the planning process and provides a snapshot of the community as it is today. More detailed community context is available through supporting documents. The data was gathered from a variety of sources, including existing plans, websites, interviews with stakeholders and staff, and technical planning analysis. The maps included in this chapter are intended to serve as a general reference. Digital versions of all maps are available for viewing at a greater detail upon request or on the City's website.

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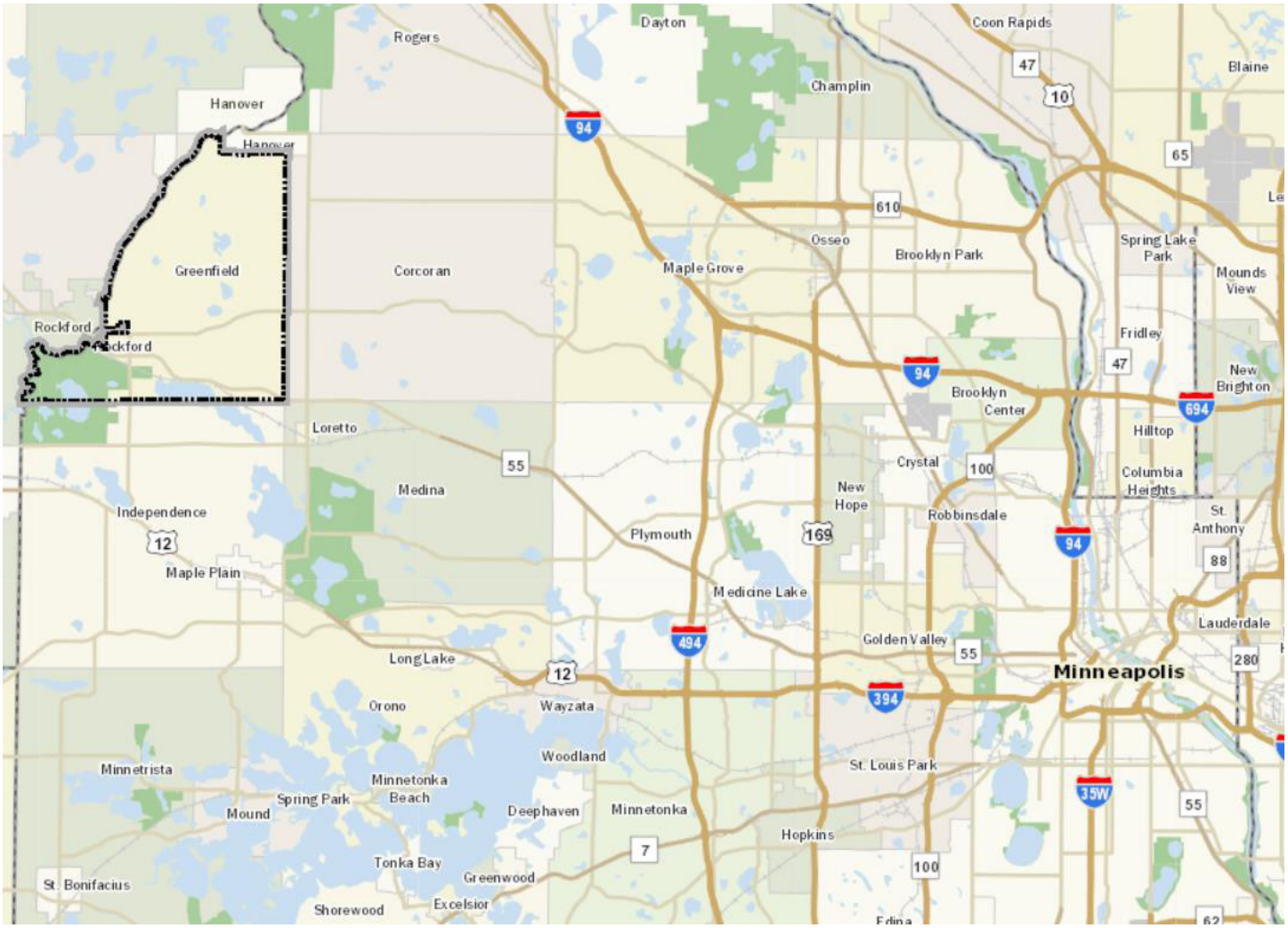
Regional Setting

The City of Greenfield is located along the banks of the Crow River on the western edge of Hennepin County. It is directly connected to the more densely populated metropolitan area by State Highway 55, approximately 14 miles to Interstate 494 and 25 miles to downtown Minneapolis. Greenfield's rolling landscape is comprised of farmsteads; cultivated fields; scattered homes; and rural estate subdivisions interspersed with wetlands and woodlands. The city borders Corcoran, Medina, Independence, as well as Hanover and Rockford. With the exception of a small portion of Rockford, the Crow River is the western edge of Greenfield. Franklin Township and Rockford Township are in Wright County across the Crow River. (Figure 3-1)

Figure 3-1. General Location



Metropolitan Council Regional Planning Area Designation

In the Metropolitan Council's Regional Development Guide, communities are identified according to their regional planning area designation. These designations correspond to various strategies used by the Metropolitan Council to accommodate expected growth. The Metropolitan Council designated Greenfield as both diversified rural and emerging suburban edge (for those areas served by municipal sewer and water).

Diversified rural communities are areas that are intended to be protected for rural lifestyles and potential long-term urbanization. These areas consist of farm and non-farm land uses including large lot housing, cluster housing, hobby farms, and agriculture uses.

Emerging suburban edge communities are those areas of the metropolitan area that are in transition from rural/agriculture uses to more suburban patterns of development. This means that municipal sewer and water facilities are available or planned to be extended to serve these areas. Greater density/intensity of development, available urban services, and a greater level of transportation infrastructure supports a more diverse land use pattern including commercial services, industrial, institutional, and higher density residential development.

Greenfield is served by its own wastewater treatment facility which has ample capacity to serve expected growth to 2040. A small portion of the city around Lake Sarah is connected to the regional sanitary sewer system managed by Metropolitan Council Environmental Services (MCES). Sanitary sewer systems and service is discussed further in Chapter 9 Infrastructure Systems Plan. Greenfield's geographic location is unique, in that any possible scenario for extending metropolitan urban services to it from the North, East, or South, puts service to Greenfield at the "end of the system" or line. Extension of MCES sewer service is beyond the planning horizon (2040) of this plan update. The cost of building new treatment facilities in Greenfield, with discharge to the adjacent Crow River for future needs, if determined necessary, would likely be more cost effective than extending service from the MCES. (Figure 3-2)

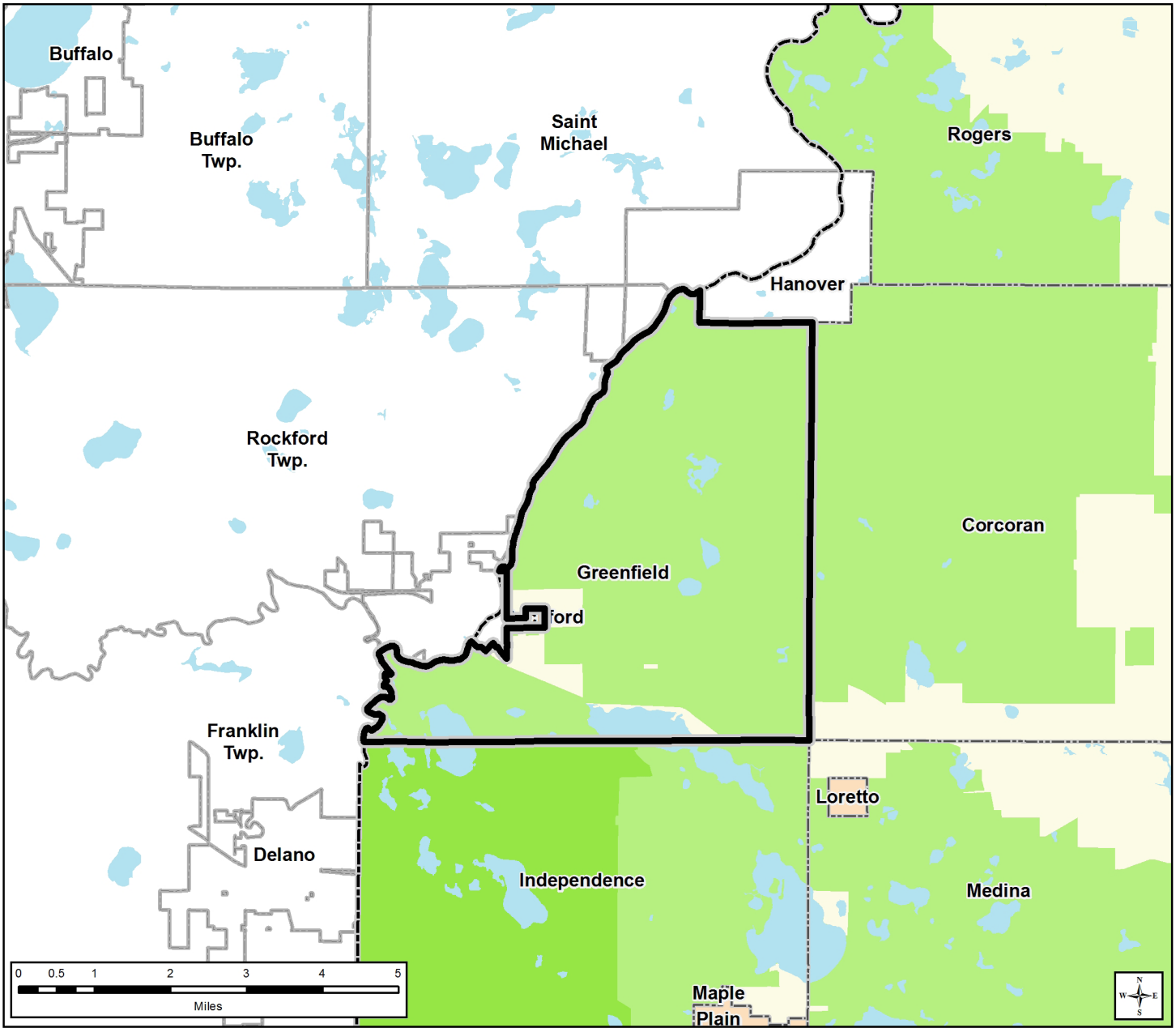
Diversified Rural Policies

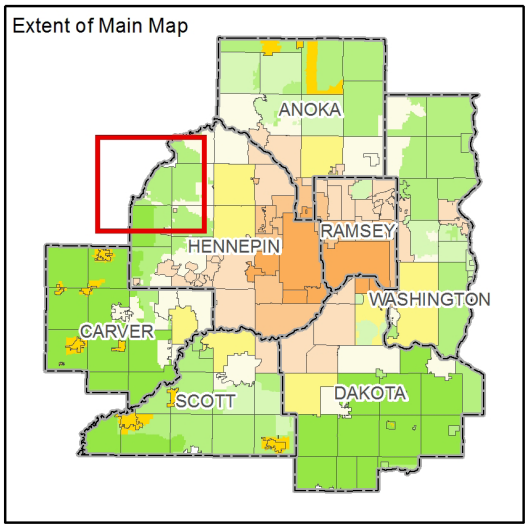
- **Plan for growth not to exceed forecasts and in patterns that do not exceed 4 units per 40 acres**
- **Preserve areas where post-2040 growth can be provided with cost-effective and efficient urban infrastructure**
- **Manage land uses to prevent the premature demand for extension of urban services, and so that existing service levels will meet service needs**
- **Plan development patterns that incorporate the protection of natural resources**

Emerging Suburban Edge Policies

- **Plan and stage development for forecasted growth at overall average net densities of at least 3-5 dwelling units per acre in the community**
- **Identify and protect an adequate supply of land to support growth for future development beyond 2040, with regard to agricultural viability and natural and historic resources preservation**
- **Incorporate best management practices for stormwater management and natural resources conservation and restoration in planning processes**
- **Plan for local infrastructure needs including those needed to support future growth**

Figure 3-2. Community Designation





Community Designations

- Outside Council planning authority
- Agricultural
- Rural Residential
- Diversified Rural
- Rural Center
- Emerging Suburban Edge
- Suburban Edge
- Suburban
- Urban
- Urban Center

- County Boundaries
- City and Township Boundaries
- Lakes and Major Rivers

Source: Metropolitan Council

Historical and Cultural Resources

There are no sites within Greenfield that are maintained on either the national or state register of historic places. However, a few sites standout as having important historical significance on the landscape in Greenfield. Salem Lutheran Church, an organization that dates back to pre-1900s, maintains a landmark building in the northern part of the City off of Pioneer Trail; the shores of Lake Sarah that established an early draw to the area as resort cabins, now permanent residential home sites; and original farmsteads (family farms and barn structures) that reflect the early agrarian settlement pattern and rural character of the community. Prior Comprehensive Plans provide a greater detailed narrative on the history of the City of Greenfield.

Salem Lutheran Church
Source: Churches in Minnesota

Lake Sarah
Source: LakeSarah.com - Brad L Spencer

Natural Resources

Greenfield's natural resources have defined its character and remain an important and desired feature of the landscape for future years. A land cover and natural resource inventory report completed in September of 2005 by Hennepin County on behalf of the City of Greenfield, provides a more detailed account and inventory of Greenfield's natural resources. This study is available electronically from the City of Greenfield. The information is largely still relevant today and provides a good back drop for future planning in Greenfield. Following up from that inventory work, the City of Greenfield formed a committee of citizens in 2006 interested in working on an open space plan for the City. The Opens Space Committee worked with Hennepin County and the University of Minnesota Extension exploring conservation and open space planning strategies. In June, 2007, the recommendations of the Greenfield Open Space Planning Committee were presented and acknowledged by the City Council; however no specific recommendation was endorsed. Discussions and recommendations from this group are documented in a June 2007 report available in electronic form from the City. Additional natural resource information is available through the Pioneer Sarah Creek Watershed Management Commission's Third Generation Watershed Management Plan.

When these resources are combined together, they form an interesting picture that begins to shape the optimal location for future development within Greenfield. The natural resources are an open space amenity that adds value to future development. They also present a constraint when seeking to optimize the future development of the city. Figure 3-3 presents a composite layering of the various natural resources and how they relate to land use and development potential in the City. (Figure 3-3)

Surface Waters

Protected surface water resources in Greenfield include a number of lakes, wetlands and watercourses or drainage ways. These resources include Public Waters Inventory (PWI), wetlands (as identified by the National Wetlands Inventory – NWI and Hennepin County wetlands inventory), and flood plains. These resources are protected by various federal (wetland conservation act), state, and local (shore land and floodplain ordinances) regulatory tools.

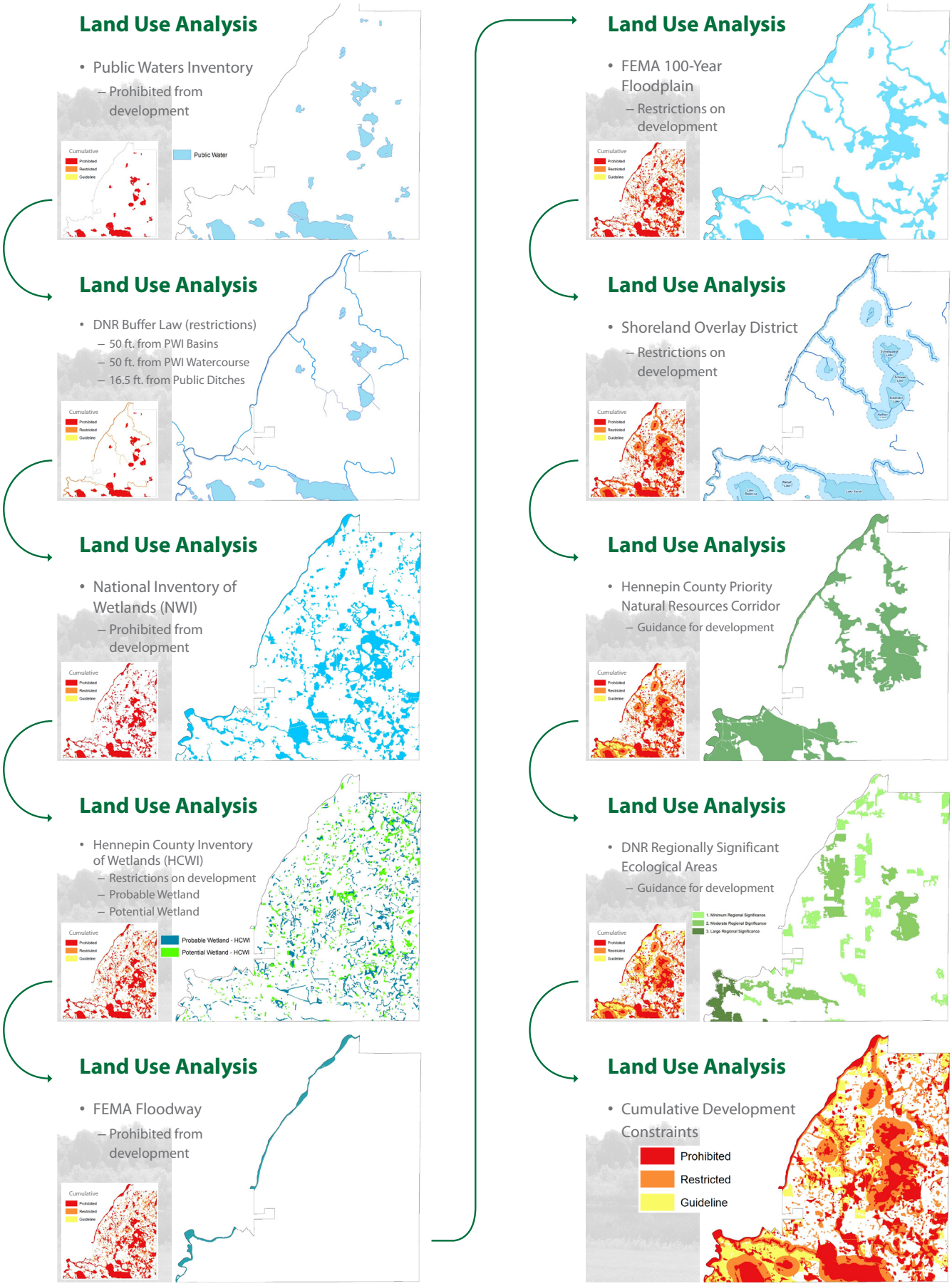
Topography

Most of Greenfield is comprised of nearly level farmlands and wet meadows, marshes and lakes with a few gently rolling and undulating hills, knolls and ridges. Generally, steep slopes are not prohibited from being developed with the exception of bluffs located within shoreland areas. However, they present practical constraints to development and often are preserved through the platting and subdivision process as part of a sites natural open space amenities.

Vegetation and Habitat

The pre-settlement vegetation of Greenfield was comprised primarily of maple-basswood forest (referred to as "Big Woods"), with small inclusions of wet prairie and lakes. Occasional tamarack bogs were also recorded in historical natural resource surveys. Oak openings and barrens (oak savanna and oak woodland-brushland and prairie were more common in eastern Hennepin County. The City of Greenfield was dominated mostly by Big Woods, consisting of oak species, elm, basswood, ash and maple, with areas of oak openings and barrens. Today, remnants of these features still exist; however, much of the habitat and vegetative patterns have been converted over time to row crop or development. Generally, sensitive habitat and vegetation are not prohibited from being developed with the exception of those located near/adjacent wetlands or public water bodies. However, they are often are preserved through the platting and subdivision process as part of a sites natural open space amenities.

Figure 3-3. Natural Resource Composite



Source: DNR, City of Greenfield, and Hennepin County

Table 3-1. Existing Land Use 2017

EXISTING LAND USE	GROSS ACRES	%
Agricultural / Vacant	6,344	46.15%
Rural Estate	4,387	31.91%
Residential - Sewered	51	0.37%
Residential Multi-Family	21	0.15%
Commercial	72	0.52%
Industrial	57	0.41%
Institutional	94	0.68%
Park	1,280	9.31%
Railroad	58	0.42%
Road Right of Way	629	4.58%
Lake	754	5.49%
TOTAL	**13,748**	**100.00%**

Source: HKGi, City of Greenfield

Existing Land Use

Categorizing existing land use provides a valuable synopsis of Greenfield's current conditions and patterns. The existing land use pattern in Greenfield consists of a limited amount of retail and service commercial, industrial/manufacturing, civic/institutional, and a combination of rural and suburban forms of residential development distinguished mostly by availability of municipal sewer and water systems and density of development (lot sizes and proximity of homes to one another). Non-residential (with a few exceptions) and the higher density residential land uses are concentrated in the southwest area of the City where sewer and water is readily available. A limited number of single family homes along Lake Shore Drive are served with municipal sewer also. Lands identified as Park include the City Central Park, a parcel owned by the DNR (Schendel WMA), Lake Rebecca Park Preserve, and Lake Sarah Regional Park. Parks are further discussed in the Parks Chapter. (Figure 3-4)

The City of Greenfield has a number of properties that are enrolled in the Agriculture Preserves Program. These properties total approximately 770 acres and are intended to be developed in the long term; however, development of the property will occur when property owners withdraw from the Agriculture Preserves designation and develop their property. A number of properties have petitioned to withdraw from the program and will be removed within the near term. (Figure 3-5)

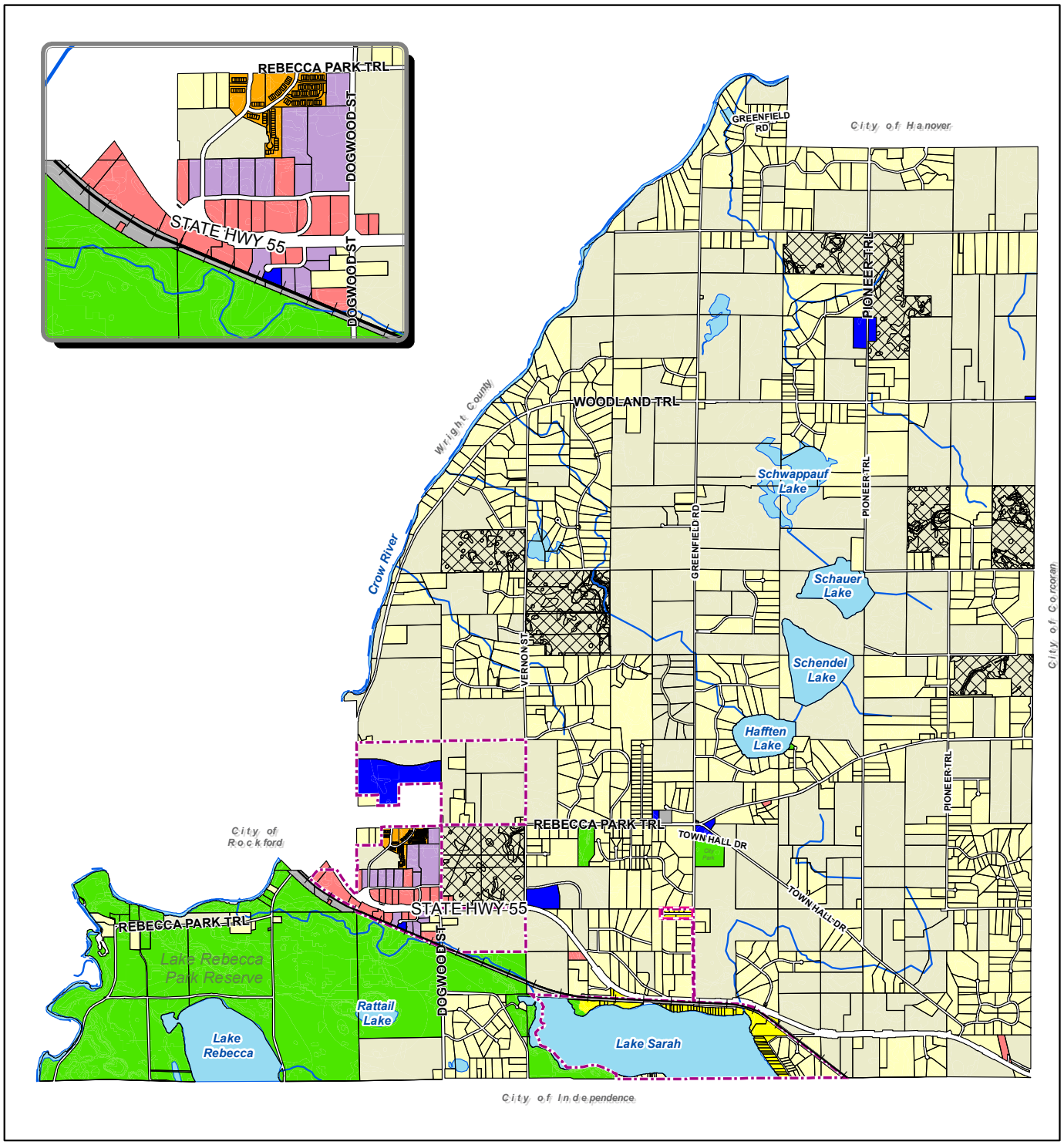
Development potential exists for lands that are identified as agriculture/vacant and residential un-platted. Some larger lots identified as residential estate platted also have additional development potential however these parcels are limited due to environmental constraints, poor soils, roadway access, or challenging lot dimensions resulting from prior platting patterns. Development capacity is further discussed in the Land Use Chapter.

Table 3-2. Current Enrollment in Agriculture Preserve Program

PARCEL NUMBER	ADDRESS	APPLIED TO REMOVE	EXPIRATION DATE
11-119-24-11-0001	10085 Pioneer Tr		
12-119-24-23-0001	5525 Harff Rd		
13-119-24-31-0002	5280 Salem Ln		
13-119-24-41-0001	4820 Salem Ln		
24-119-24-42-0003	8055 Fern Ln		
16-119-24-43-0001	8605 Vernon St	Yes	12/26/2021
22-119-24-21-0001	Unassigned		
22-119-24-23-0001	Unassigned		
22-119-24-24-0001	Unassigned		
22-119-24-24-0002	8180 Vernon St		
28-119-24-41-0001	7375 Rebecca Park Tr	Yes	10/28/2022

Source: HKGi, City of Greenfield

Figure 3-4. Existing Land Use 2017



N 0 0.5 1 Miles

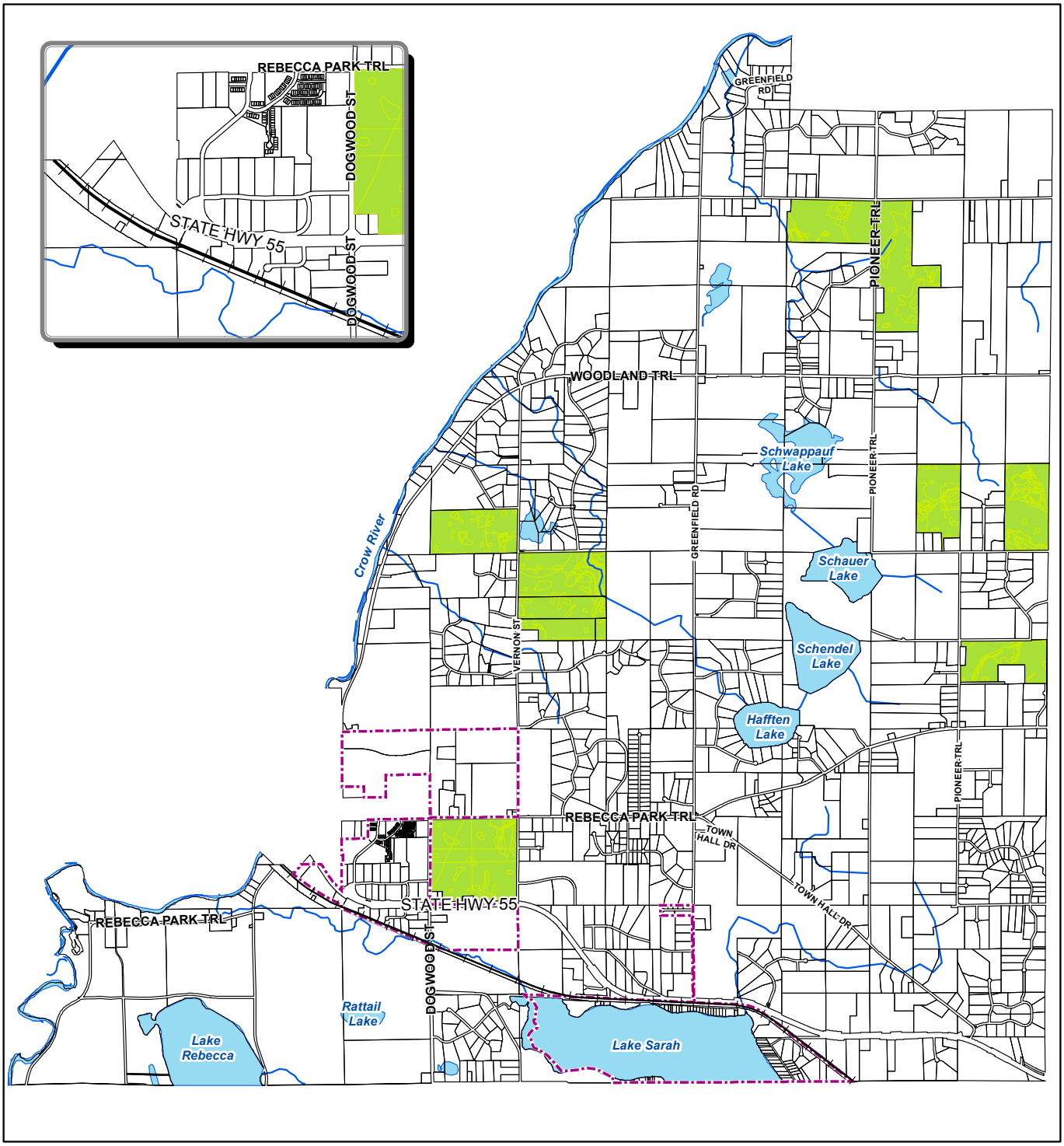
Source: Hennepin County Parcel Data, HKGi

Existing Land Use 2017

Railroad
Current Urban Service Area
Henn County Parcels
Lake
River and Streams
Ag Preserve Parcels 2017
Agricultural / Vacant
Rural Estate
Residential Sewered
Residential - Multifamily
Commercial
Industrial
Institutional
Park
Railroad
Utility

Greenfield
LIVE • WORK • PLAY

Figure 3-5. Properties Enrolled in Agriculture Preserves



N 0 0.5 1 Miles

Parcels in Agriculture Preserve

Source: Hennepin County Parcel Data, HKGi

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- Railroad
- Current Urban Service Area
- Henn County Parcels
- Lake
- River and Streams
- Ag Preserve Parcels 2017

Demographics

An examination of population and housing characteristics provides information useful for planning for city services and anticipating changing population needs. Data was primarily gathered from the United States Census, State Demographer, City Building permit data, and the Metropolitan Council.

Population, Households, and Employment Growth

In 2016, it is estimated that Greenfield had a population of 2,859 residents with 963 total households and approximately 800 to 900 jobs in the city (per 2014 Census). Growth has continued since 2016 with Greenfield averaging 12 new single family homes built per year. Little to no commercial growth has occurred. All of the recent new residential construction has occurred in the rural areas of Greenfield. The majority of homes in Greenfield are detached single family homes. More information on housing can be found in the housing chapter.

Future land use planning involves looking to the future and making informed assumptions about how the community is going to growth. For this planning process, three alternative methodologies were used to extrapolate growth to 2040 using least squares methodology.

Scenario 1, the first alternative is based on a best fit trend line for "population values" and projects out accordingly. Scenario 2 is based on best fit trend for the "rate (percent change) of growth" then applies the projected rate to the current population value to project future values. Scenario 3 looks at Greenfield as a portion of Hennepin County and extrapolates that relationship to arrive at future values. Based on this analysis, a reasonable projection for future growth in Greenfield is approximately 880 to 1,450 new residents by 2040 bringing Greenfields population to somewhere in the range of 4,000 residents.

These projections can be converted to a rough proportion of households by assuming a person per household ratio of 3.0 (2011-2015 American Community Census data indicated that Greenfield had a 3.01 person per household ratio for comparison purposes.) Thus 880 to 1,450 new residents would translate to roughly 290 to 480 new households by 2040. In the last 5 years, Greenfield has averaged nearly 11 units of new construction per year with a recent uptick in new construction. Achieving these projections would assume some absorption of existing vacant housing units within the city but most of the new growth would be a result of new construction.

Job growth is more difficult to project and there is less available data to provide good projections on for the City of Greenfield. As Greenfield is predominantly a bedroom community to the metro area, significant job growth is not projected for the city. Job growth will mostly be in the service economy. As new households emerge, growth in retail and service commercial will naturally occur. Limited business development will occur depending on local economic development efforts and land availability.

Metropolitan Council Forecasted Growth

An additional scenario that is used in planning, which falls within the range of the three methodologies explored, is the scenario provided by the Metropolitan Council. The Metropolitan Council prepares forecasts for growth in conjunction with each community. These growth forecasts are prepared to plan for wastewater, transportation and other regional system investments. Planning is conducted at a regional level to ensure efficiency in the development and operations of regional systems needed to accommodate the regions projected growth by the year 2040.

As we plan for the future of Greenfield, the regional growth projections provide a baseline. However, growth depends on a number of factors, many of which are beyond the City's control such as market, economy, and property owner interest. Within the City's control are factors such as planning, zoning and entitlements, infrastructure improvements, economic development policies, and the management of development fees. Depending on the City's efforts and priorities to implement the plan, growth projections could be exceeded. Maintaining and updating the comprehensive plan as initiatives and actions are completed, and as market conditions or property owner interests change, provides the avenue and process to adjust growth projections as needed. (Figure 3-6)

The City of Greenfield will continue to work with the Metropolitan Council to stay informed and to coordinate future growth projections for development that utilizes Metropolitan Council regional sewer systems.

As Greenfield is currently part of the Tri-City Agreement with Independence and Medina, sewer flows to the regional sewer system are restricted. A small portion of Greenfield is served by that system. Greenfield recognizes the need for the City of Loretto to be connected to the regional system and that the connection will require modifications to the Tri-City agreement in 2019. As a partner in this agreement, the City of Greenfield will work closely with all parties to ensure future growth is adequately planned and managed through the Tri-City agreement as may be amended from time to time.

Figure 3-6. Population Projection Scenarios to 2040

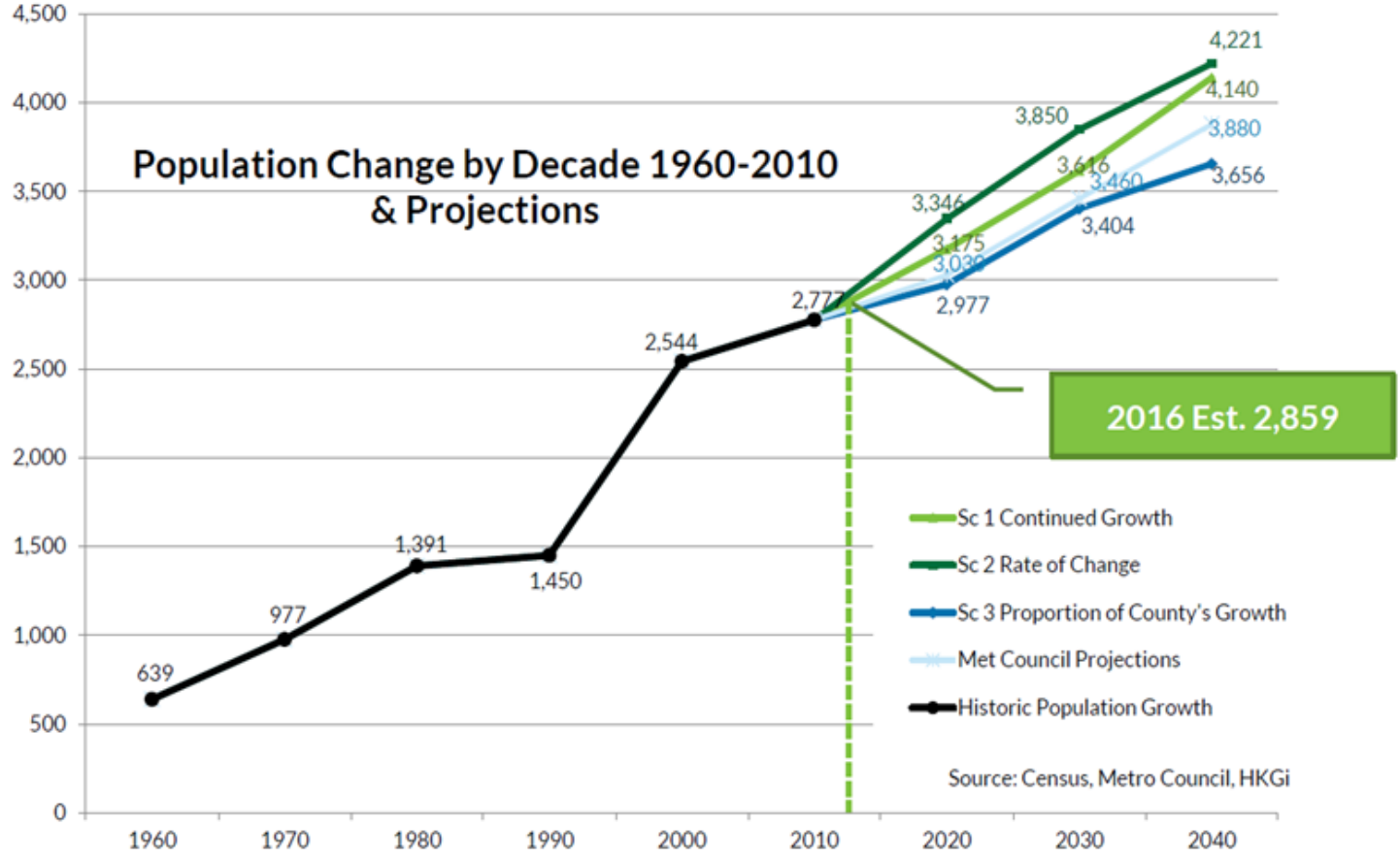


Table 3-3. Regional Growth Forecasts

YEAR	FORECAST COMPONENT	POPULATION	HOUSEHOLDS	EMPLOYMENT
2020	Municipal Sewered	450	160	550
2020	MCES Sewered	160	60	0
2020	Whisper Creek	60	20	0
2020	Unsewered (SSTS)	2,360	860	200
Total 2020		3,030	1,100	750
Projected Growth from 2016 to 2020		**253**	**137**	**na**
2030	Municipal Sewered	610	240	630
2030	MCES Sewered	150	60	0
2030	Whisper Creek	90	30	0
2030	Unsewered (SSTS)	2,610	1,030	190
Total 2030		3,460	1,360	820
Projected Growth from 2020 to 2030		**430**	**260**	**70**
2040	Municipal Sewered	690	280	720
2040	MCES Sewered	140	60	0
2040	Whisper Creek	120	40	0
2040	Unsewered (SSTS)	2,930	1,220	180
Total 2040		3,880	1,600	900
Projected Growth from 2030 to 2040		**420**	**240**	**80**

Parks and Trails

Greenfield has a limited number of park and trail features in the community. They include the following: (Figure 3-7)

Greenfield Central Park

Greenfield Central Park is approximately 22-acres in size located at the intersection of Town Hall Drive, Greenfield Road and Rebecca Park Trail. The park is planned as the primary community park in the city with planned or existing amenities including play fields (softball, baseball, soccer, etc.), one-half basketball court, sand volleyball, playground, picnic shelter, band shell, looped trails and parking areas. The current master plan concept for the park also includes space for a potential new City Hall facility that would be centrally located within the community. (Figure 3-8)

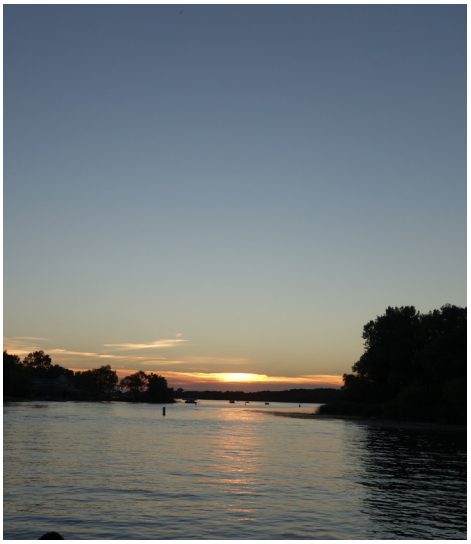
Hafften Lake Access

The City owns a park parcel on Lake Hafften. A gravel surface parking area, boat launch, and public dock provides public access to the lake.

Lake Rebecca Park Reserve
Source: Google - m vh, 2017

Lake Rebecca Park Reserve and Lake Sarah Regional Park

Three Rivers Park District owns and operates the 2,200-acre Lake Rebecca Park Reserve located in southwest Greenfield and in Independence. The park offers outdoor activities and opportunities for glimpses of wildlife. Lake Rebecca Park Reserve's gently rolling Big Woods landscape, with numerous wetland areas provides a haven for wildlife. Lake Rebecca is a popular water recreation area. Park facilities include paved bike/hike trails, swimming beach, mountain bike trail, boat launch, public and group picnic, creative play area, group camps, horse trails, dog trails, dog off-leash area, boat rental and rental building and a fishing pier. Lake Sarah Regional Park is undeveloped. It is located on the western edge of Lake Sarah and extends into Independence. At this time, the park contains a dog off-leash area that is used by Greenfield residents in addition to surrounding community residents. The Lake Sarah Regional Trail will connect the Crow River and Lake Independence Regional Trails via Lake Rebecca Park Reserve and Lake Sarah Regional Park and beyond to the Medicine Lake Regional Trail in Plymouth. This trail is planned to be contained within the Park District facilities. (Figure 3-9)

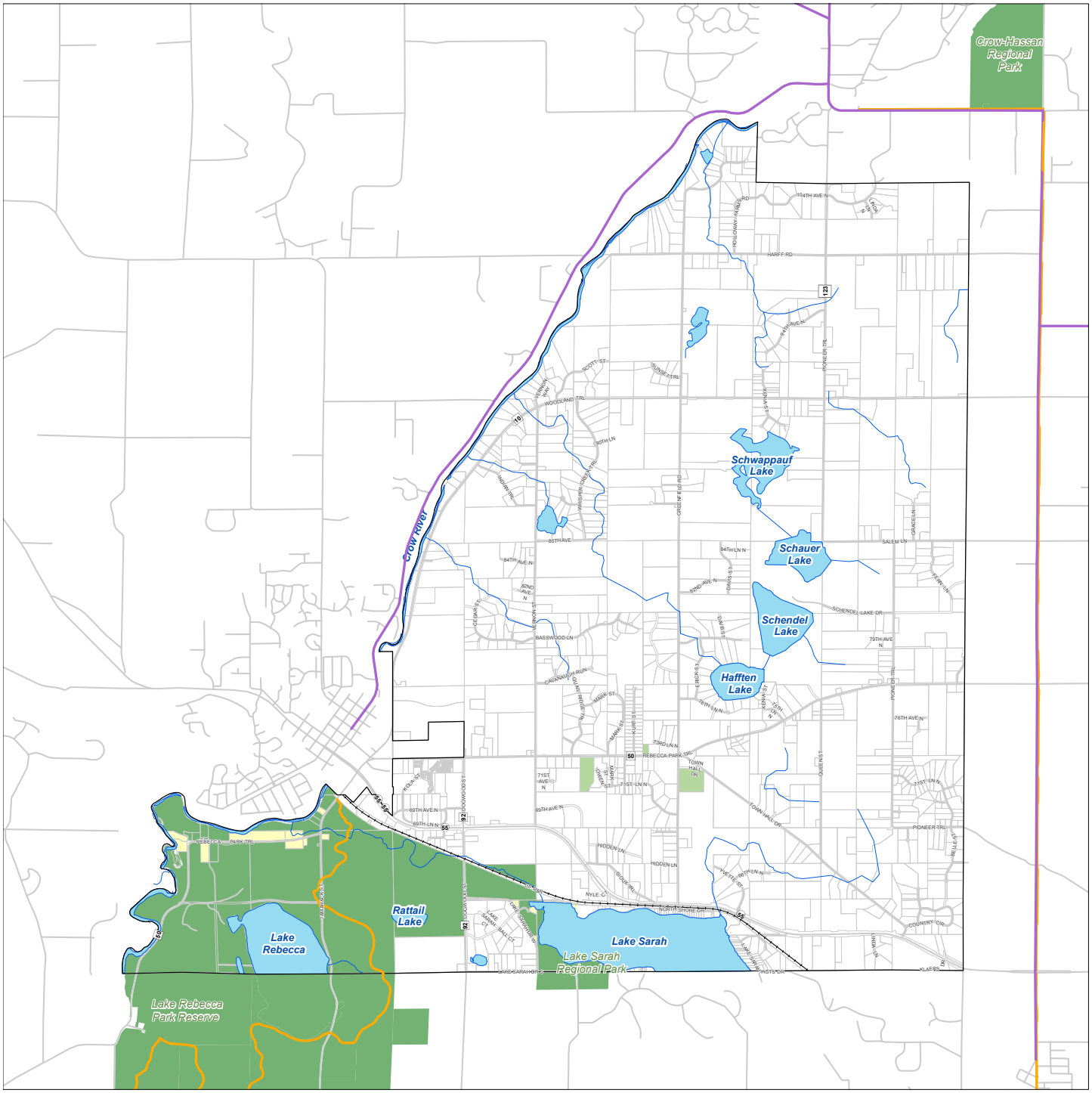


Lake Sarah Regional Park
Source: Google - Jeremy Brown, 2016

Trails

There are currently no existing trails serving the City of Greenfield other than the loop trail within Central Park and the trail systems within the Lake Sarah Regional Park and Lake Rebecca Park Preserve. Regional trails exist near Greenfield and provide opportunities for connections as part of future roadway corridor improvements in Greenfield. (Figure 3-100)

Figure 3-7. Existing Park Facilities within Greenfield



Open, On-Street
Open, Off-Street
Open Water
Three Rivers Park Inholdings
Regional Parks

Source: HKGi - Hennepin County, Three Rivers Park District

Figure 3-8. Central Park Master Plan Preferred Concept

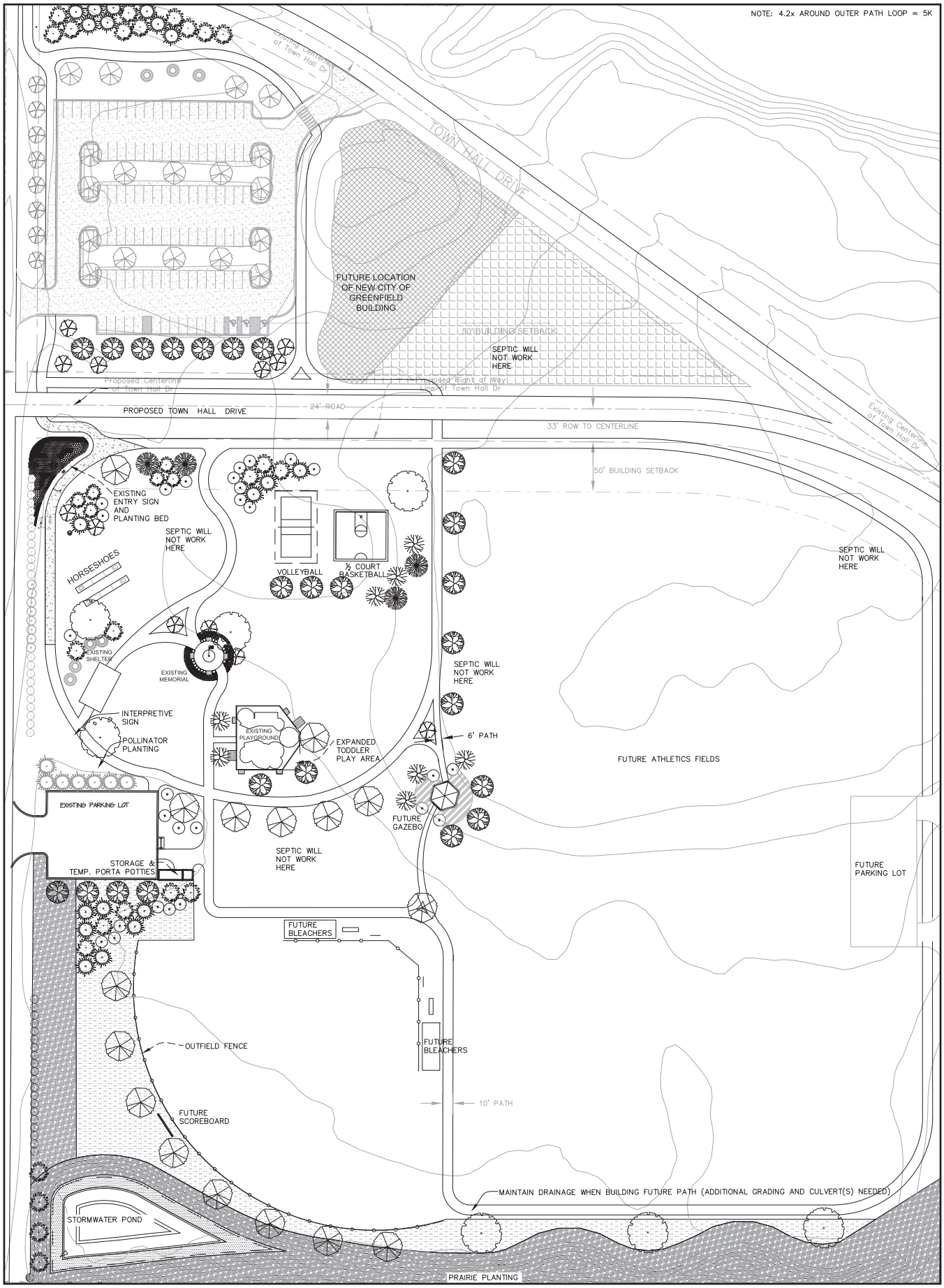
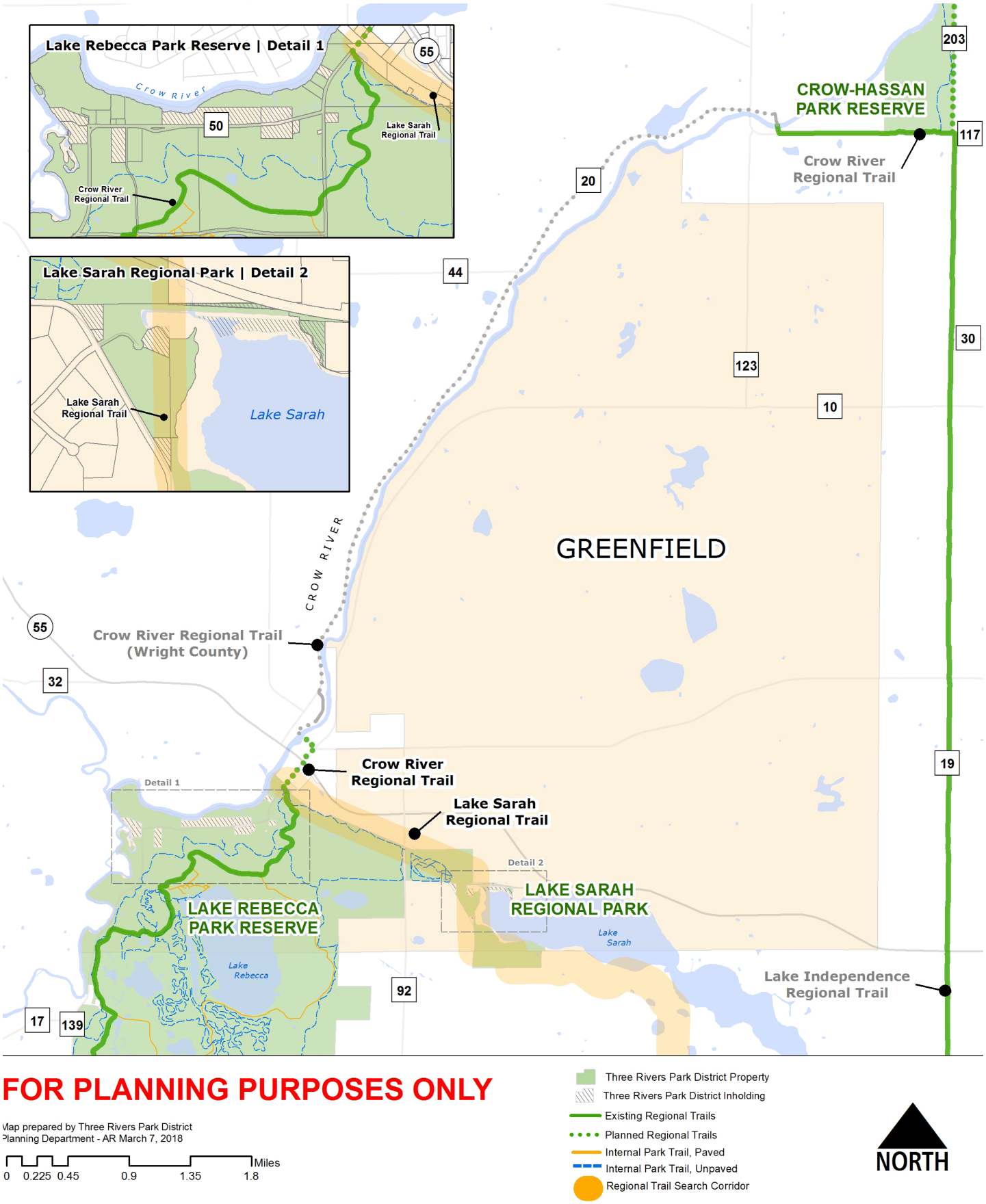


Figure 3-9. Three Rivers Park District Facilities



FOR PLANNING PURPOSES ONLY

Map prepared by Three Rivers Park District
Planning Department - AR March 7, 2018

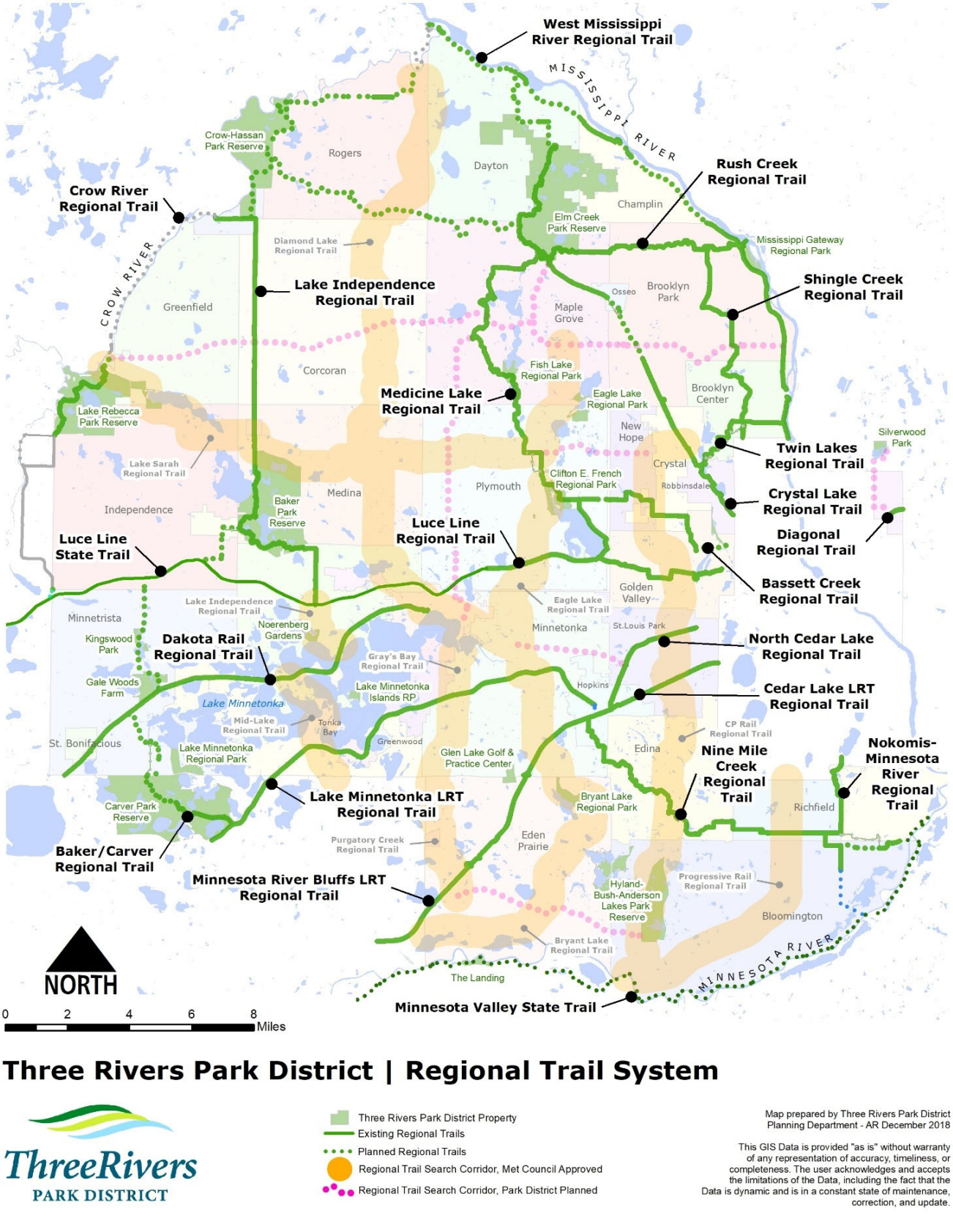
0 0.225 0.45 0.9 1.35 1.8 Miles

- Three Rivers Park District Property
- Three Rivers Park District Inholding
- Existing Regional Trails
- Planned Regional Trails
- Internal Park Trail, Paved
- Internal Park Trail, Unpaved
- Regional Trail Search Corridor

NORTH

Source: Three Rivers Park District

Figure 3-10. Regional Trails Existing Near Greenfield



Source: Three Rivers Park District

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Transportation System

The existing transportation system has been developed over time and has served primarily rural agricultural and residential uses. The following sections describe Greenfield's existing transportation system.

Roadway System & Jurisdiction

There are approximately 60 miles of public roadways within the City of Greenfield. Of these there are roughly 43 miles of municipal streets operated and maintained by the City of Greenfield, with the remaining 19 miles of roadway classified as county or state roadways, which are maintained by their respective entity. Proper operation, maintenance and upgrading of the City's roadway system are not only important for public travel safety but also serve as an important facilitator of growth within the City. (Figure 3-111)

Functional Classification of Roadways

Part of defining a roadway system includes classifying roadways by the role that they play in the overall transportation system, both locally and regionally. The following roles define the functional classification system in Greenfield.

Table 3-4. Major Roads within the City of Greenfield (Functional Class and Jurisdiction)

ROADWAY	CLASSIFICATION
MN Trunk Highway 55	Principal Arterial 2 lane highway existing and future
County State Aide Highway 50	A – Minor Arterial 2 lane existing and future
County State Aide Highway 92	A – Minor Arterial - 2 lane existing and future
County State Aide Highway 10	Major Collector
County State Aide Highway 123 (North of County State Aid Highway 10)	Major Collector
Greenfield Road (South of County State Aid Highway 10)	Minor Collector
Pioneer Trail (South of County State Aid Highway 10)	Minor Collector (Local)
All Other Streets	Local Streets

Source: HKGi, City of Greenfield

Principal Arterials

Principal arterials are part of the metropolitan highway system and provide high-speed mobility between the Twin Cities and important locations outside the metropolitan area. They are also intended to connect the central business districts of the two central cities with each other and with other regional business concentrations in the metropolitan area. Principal arterials are generally constructed as limited access freeways in the urban area, but may also be constructed as multiple-lane divided highways.

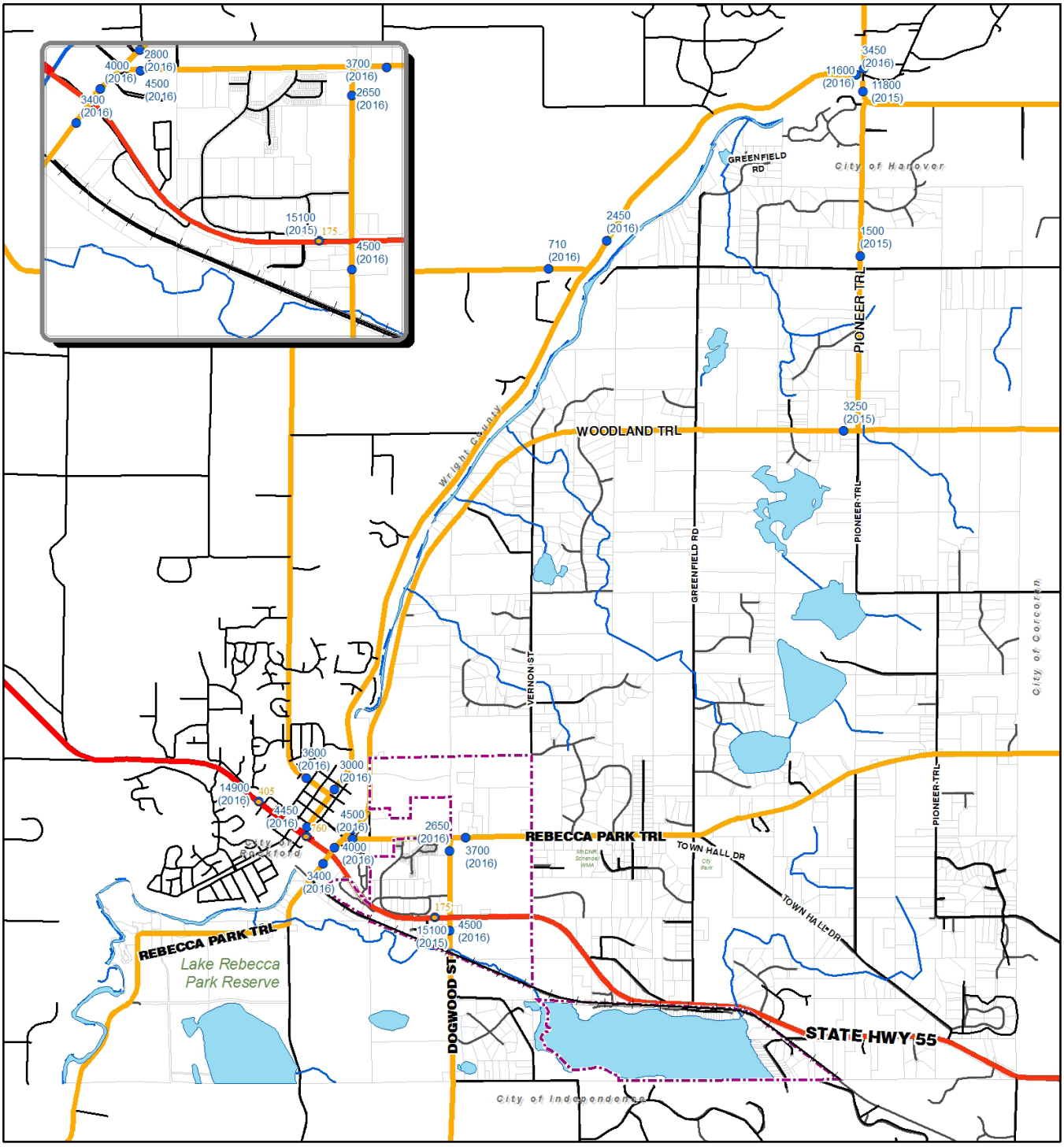
A Minor Arterials

'A' minor arterials are roadways that are of regional importance because they relieve, expand or complement the principal arterial system. Minor arterials also emphasize mobility over land access, serving to connect cities with adjacent communities and the metropolitan highway system. Major business concentrations and other important traffic generators are typically located on minor arterial roadways.

Collectors

Collectors are designed to serve shorter trips that occur within the city and to provide access from neighborhoods to other collector roadways and the arterial system. They are expected to carry less traffic than arterial roads and to provide limited access to individual properties. Collectors are sometimes designated as either major or minor collectors. Major collectors supplement the arterial system by emphasizing mobility over land access. In Greenfield, major collectors are typically pat of the County Roadway system. However, because of their location, they are lower-volume roads than arterial routes. Minor collectors emphasize land access over mobility and provide connections to major collector and minor arterial routes.

Figure 3-11. Roadway Jurisdiction and Traffic Volumes



N 0 0.5 1 Miles

Jurisdiction & Traffic Volumes

Source: MnDOT, Hennepin County and City of Greenfield

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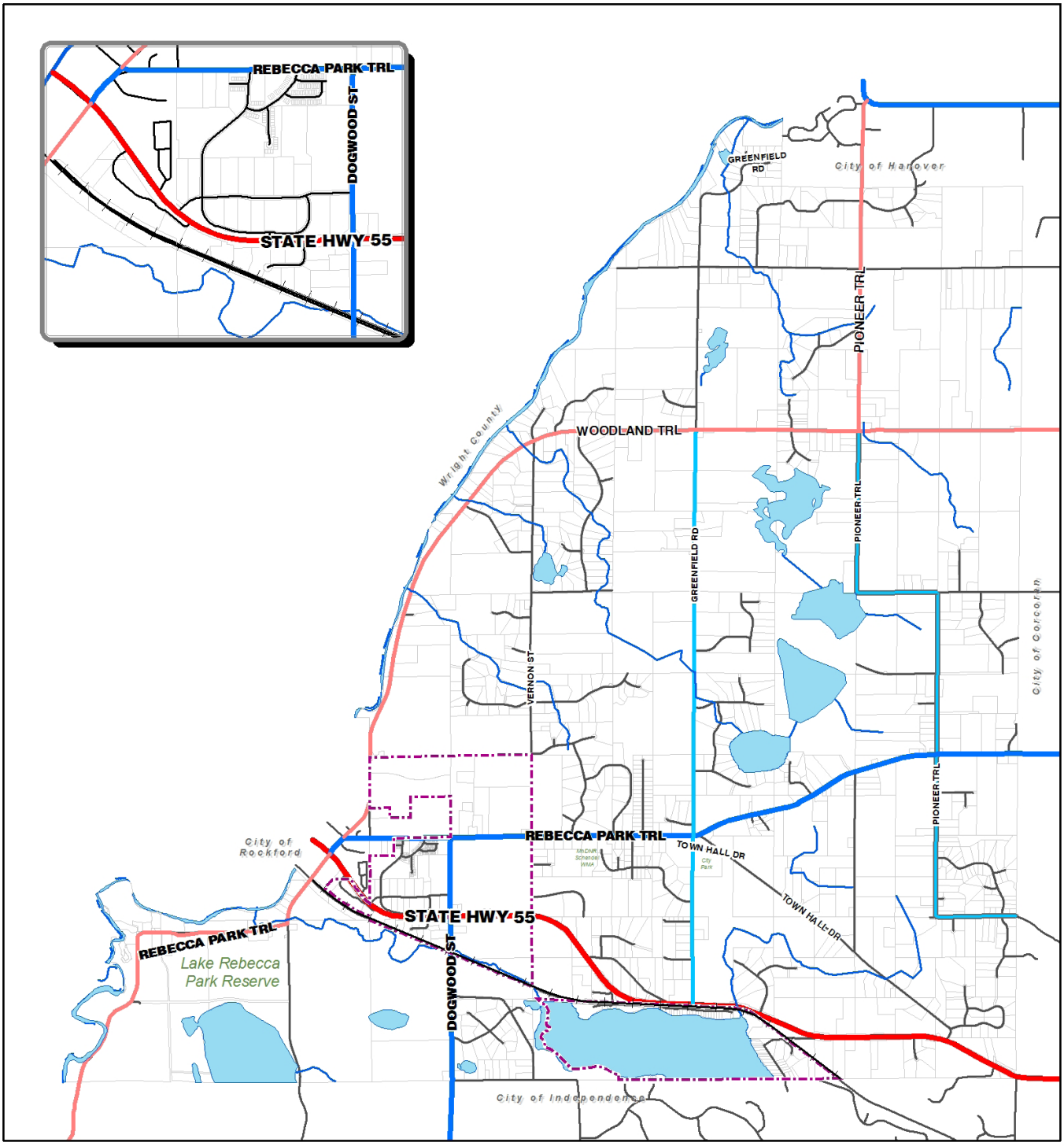
Railroad
Current Urban Service Area
Lake
River and Streams

Ownership
Local/City Street
CSAH
Highway
HCAADT 2016 Counts
= AADT - (XXX) = Year

Figure 3-12. Functional Classification



N 0 0.5 1 Miles

Functional Classification

Source: Metropolitan Council and City of Greenfield

Railroad
Current Urban Service Area
Lake
River and Streams

Regional Classification
Principal Arterial
A-Minor Arterial
Major Collector
Minor Collector

Local Classification
Local Minor Collector

Local Streets

Local streets provide access to adjacent properties and neighborhoods. Local streets are generally low speed and designed to discourage through traffic. All of the remaining roadways in the city that were not listed under the previous functional classifications above fall under the local road designation. (Figure 3-122)

Transit

There are presently no fixed route transit routes nor any park-and-pool lots located in Greenfield. Greenfield is located in Transit Market Area V (per Appendix G of the 2040 Transportation Policy Plan. Transit Market Area V has very low population and employment densities and tends to be primarily Rural communities and Agricultural uses. General public dial-a-ride service may be appropriate here, but due to the very low-intensity land uses these areas are not well-suited for fixed-route transit service.

Aviation

There are no aviation facilities in or proximate to the City of Greenfield. Greenfield's only role in the provision of air transportation in the metropolitan area is to ensure that structures of significant height are compatible with air traffic.

Railroad

A Major Class I railroad line (Canadian Pacific Soo Line) runs through the southern portion of Greenfield essentially paralleling Highway 55. Roughly 20 trains per day (in 2016) make their way through Greenfield heading to yards in Minneapolis/St. Paul and on east to the Great Lakes or west to destinations in the Dakotas, Montana, or Canada. There are no truck or intermodal freight facilities in Greenfield. The commercial and business park areas along Highway 55 generally are the areas that generate truck traffic and will have continued growth. There are no bridges with in adequate height and major railroad crossings have crossing controls.

Infrastructure Systems

Water

Most of Greenfield is served by individual private wells. However, a portion of the city is on a municipal system comprised of storage (a water tower), supply (a well), treatment (a plant), and distribution components (water pipes-mains). The City also has an interconnect agreement with the City of Rockford for emergency purposes. The City has completed the Local Water Supply Plan Template Third Generation 2016-2018 and submitted this information to the DNR. This document provides key detail and information on the local water supply system serving the City of Greenfield municipal services area.

Untreated water is currently supplied by the City well. The well is drilled to a depth of 469 feet, located in the Franconia, Ironton, Galesville (known as the FIG) aquifer. The production capacity of the City well is 250 gpm, which equates to 131.4 million gallons per year. In 2016, the city produced just over 13 million gallons, just under 10% of the overall capacity. The City's water treatment plant is used to remove iron and manganese from the water, as well as control taste and odor. The capacity of the water treatment plant equals the capacity of the well. Additionally many residences in the agricultural areas of the City use private wells to meet their needs. Based on population growth forecasts and the unused capacity of the water treatment plant, the City Greenfield anticipates being able to meet the water needs to residents and businesses through the year 2040.

The Greenfield water tower has the capacity to store 250,000 gallons of water. It is recommended that total storage equal or exceed daily demand. 2017 daily demand was estimated at approximately 30,000 to 35,000 gallons per day. The water tower provides sufficient volume storage to meet projected growth demand over the horizon of this plan update 2040.

Sanitary Sewer

Most of Greenfield's development is within the rural service area and is served through private individual Subsurface Sewage Treatment Systems (SSTS). The SSTS Program for Greenfield is managed by Hennepin County Environmental Services. The City also allows for private, small treatment plants or package plants where private development is willing to utilize such technology.

The City has two separate wastewater systems, the North Shore Drive (Lake Sarah) collection system and the City wastewater treatment plant and associated collection system. The North Shore Drive system is part of the Tri-City Agreement. Greenfield, Medina, and Independence contribute to the MCES system (Metershed M440) through the Tri-City Agreement. The City of Greenfield recognizes that the City of Loretto requires connection to the regional system. The City recognizes this will require an amendment to the Tri-City agreement in 2019. The City will work collaborative with the parties of that agreement to make sure that existing and long term sewer needs are met. The city has worked over the years to reduce inflow/infiltration (I/I) issues and will continue to implement policies to reduce I/I in collaboration with the Tri-City partners.

Waste water is conveyed through trunk sewers to the City plant at the southwest corner of the City. The plant is rated at 100,000 gallons per day. The average daily flow is approximately 13,000 gallons per day. The City has additional permitting authority to expand the plant to 200,000 gallons per day capacity should it be needed. With projected growth, it is not anticipated that expansion will be need within this planning horizon (2040). (Figure 3-133)

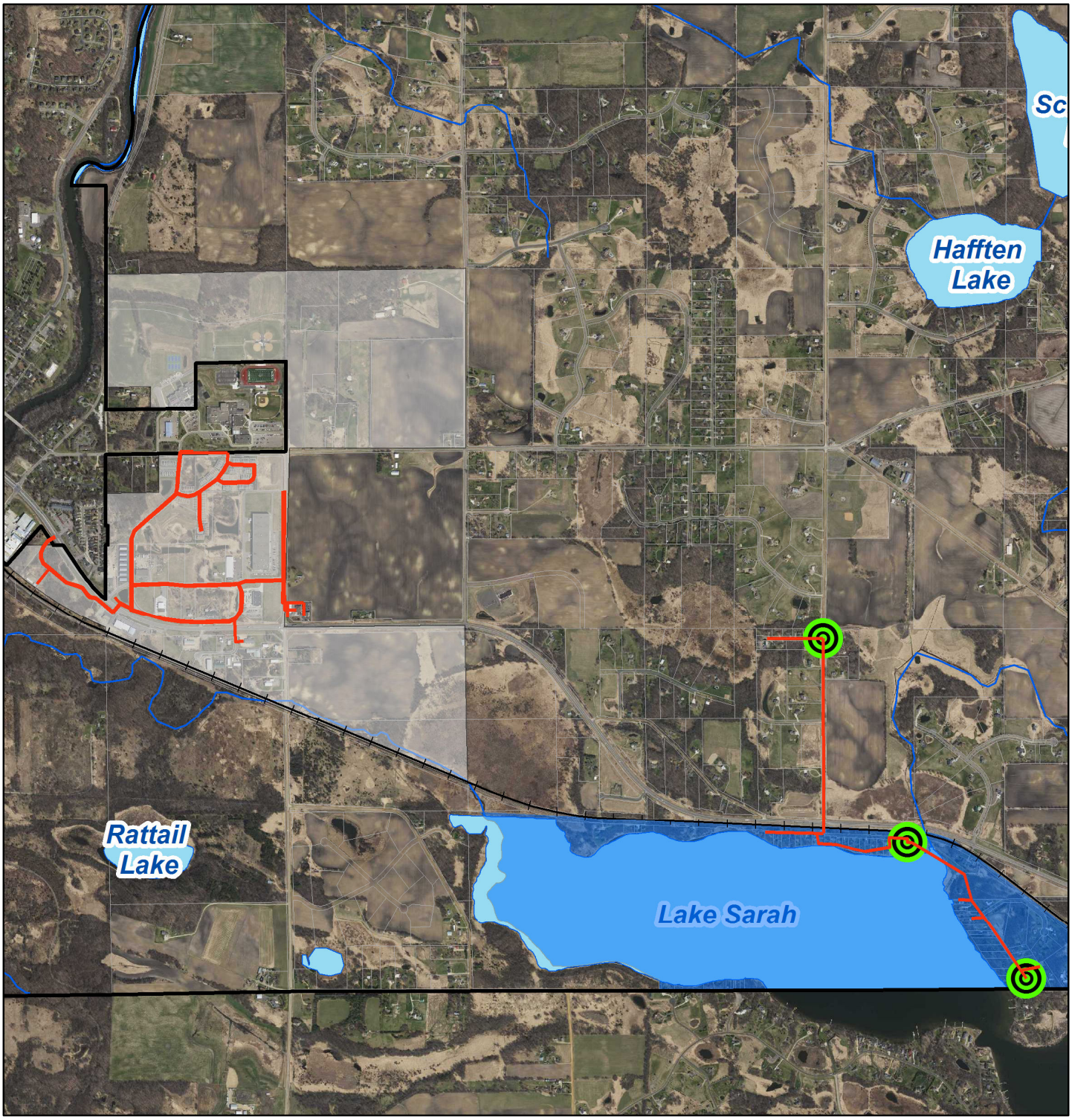
Watersheds and Storm Water

Surface water is managed in Greenfield through a system of ditches, ponds, culverts, and outlets. The City of Greenfield has recently implemented a storm water improvement ordinance intended to provide a funding source for such improvements. The township falls within the two watersheds: Pioneer/Sarah Creek and a small portion in Elm Creek Watershed. The City has designated all watershed authority to the Pioneer Sarah Creek Watershed Management Commission (PSCWMC). (Figure 3-144)

City Facilities

The City of Greenfield operates one facilities: City Hall located at 7700 69th Avenue N. City hall has limited opportunities for growth in staff or services.

Figure 3-13. Existing Sewer and Water Infrastructure Systems



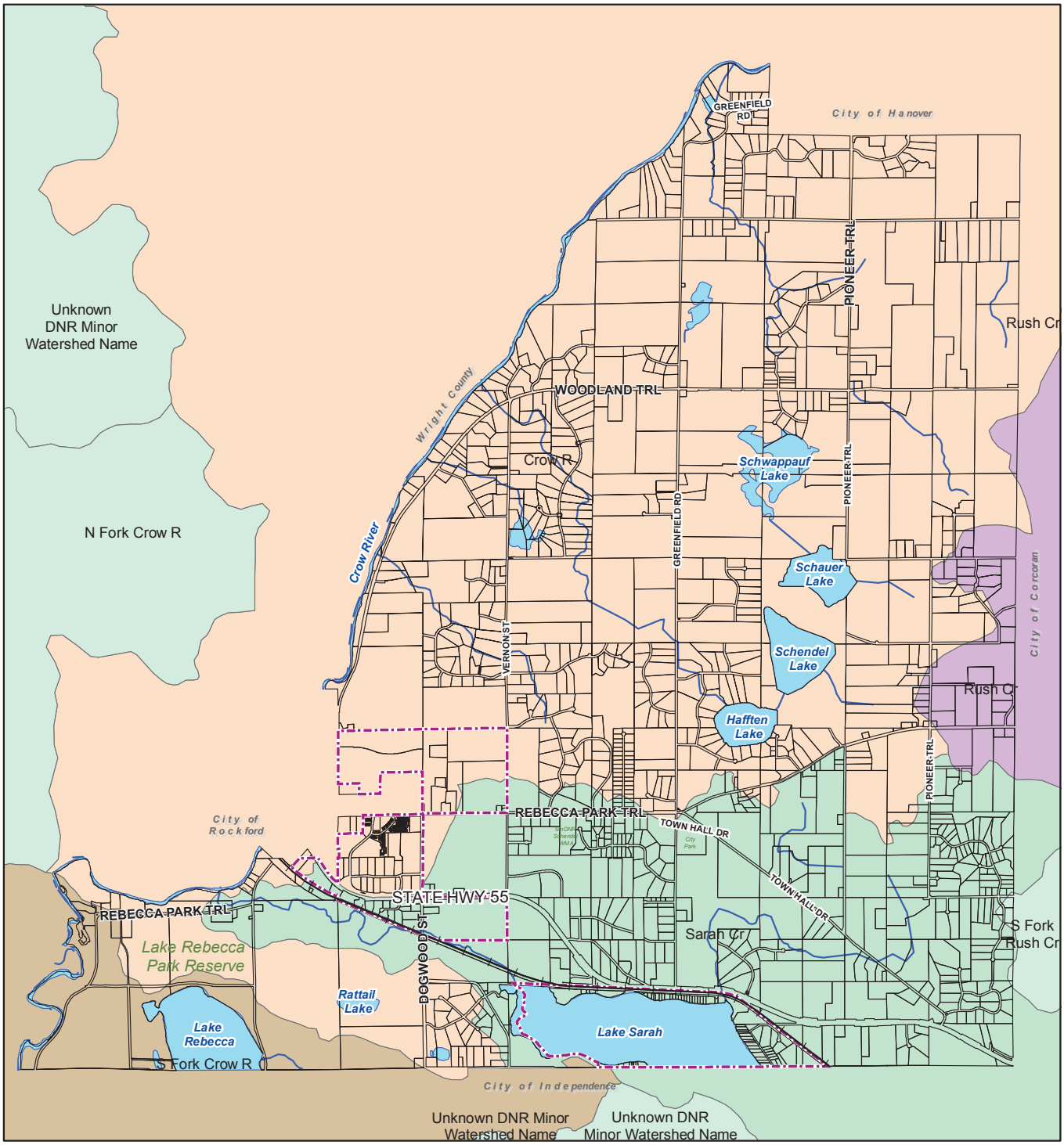
To Meter 434 - MCES Wastewater Treatment Plant

Municipal Sewer and Water Service Area

- Current Service Area
- MCES-M434
- Existing Water and Sewer Mains
- LiftStations

Source: City of Greenfield, Metropolitan Council

Figure 3-14. Watersheds and Sub-Watersheds



N 0 0.5 1 Miles

Subwatershed Boundaries (DNR)

Source: Hennepin County Parcel Data, HKGi

Greenfield
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- Railroad
- Current Urban Service Area
- Henn County Parcels
- Lake
- River and Streams
- <all other values>

Subwatershed Geography
- Crow R
- Pioneer Cr
- Rush Cr
- S Fork Crow R
- Sarah Cr

Source: DNR - Hennepin County

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CHAPTER 4. LAND USE PLAN

Introduction

The Vision and Guiding Principles provide the foundation for the development of the Comprehensive Plan and specifically, the Land Use Plan. The Land Use Plan, in turn, provides the framework for how land will be used in the future. The Land Use Plan seeks to reinforce desirable land use patterns, identify places where change is needed and guide the form and location of future growth. The anticipated development and/or redevelopment detailed in the land use plan drives the need for city infrastructure, including sewer, water, roads, utilities, parks or other community services.

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Greenfield's Land Use Plan was shaped by a numbered of factors, including (but not limited to):

- Vision and Guiding Principles described in Chapter Three.
- Community Context, the snapshot of the community described in Chapter Two.
- Community input gathered through surveys, public workshops, working group discussions, one on one property owner discussions, and past planning efforts.
- Metropolitan Council's Regional Development Guide, system plans, and policy plans for housing, water resources, parks and open space, and transportation.
- Hennepin County Transportation Planning including roads, bike, and pedestrian infrastructure systems.
- Pioneer Sarah Creek Watershed Management Commission Third Generation Plan
- Three Rivers Park District planning efforts including the Crow River Regional Trail Master Plan and long term plans for Lake Sarah Regional Park and Lake Rebecca Park Reserve
- A careful examination and analysis of the City of Greenfield landscape.

The Land Use Plan guides adequate land to meet or exceed the regional forecasts for Greenfield. (Table 4-1)

Table 4-1. Forecasted Population, Households and Employment

FORECAST YEAR	POPULATION	HOUSEHOLDS	EMPLOYMENT
2010	2,777	936	613
2020	3,030	1,100	750
2030	3,460	1,360	820
2040	3,880	1,600	900

The land use plan consists of the following components:

- **Land Use Goals and Policies** identify the community's general land development goals and policies established to move the City towards achieving its Vision and Guiding Principles.
- **Official Land Use Map**, Figure 4-1, shows the land uses assigned to each parcel of land. It provides a basis for establishing (or amending as needed) zoning district boundaries and regulatory tools.
- **Land Use Categories** provide a general description of all the land use categories used to the intended use, character, and intensity of future growth.
- **Staging of Future Growth** summarizes the translation of population, household and employment projections to land demand and established a concept for staging growth to 2030 and 2040.
- **Focus Areas** provide a more detailed discussion of the characteristics and plans for specific areas of the community such as business park areas, planned growth areas, and the concept of a "village center".

Land Use Goals and Policies

In addition to the Vision and Guiding Principles, an important component of the Comprehensive Plan is its Goals and Policies. A community's goals are statements about what it wants to achieve through the implementation of the Comprehensive Plan. Following the goals, policies are identified that describe the proposed methods of achieving the goals. The community's goals and policies are located throughout remaining chapters of the Plan.

Greenfield is a community that has been in transition from a rural agrarian town to one that is more of a rural residential city with a center where commerce and services are concentrated. This transition has been occurring as far back as the 1940's when people looked to Lake Sarah for cabins and resorts. This change and pressure peaked in the 1990's during Greenfields most rapid decade of growth and has continued since. The transition from rural to more of a suburban pattern is anticipated to continue occurring at least in character, beyond the life of the 2040 planning horizon. As such, there are portions of the City which are anticipated to develop in the short-term with municipal services, while others are anticipated to remain rural until after 2040.

Sustaining agriculture over the long-term will become increasingly difficult as land prices demand a rural residential pattern and as conflicts between more intensive agriculture production and residential living become increasingly challenged. The Comprehensive Plan strives to protect natural resources and open spaces as a means to capture the historic and desired rural character of the community. Here the guiding principle of "practice sustainability" tells us that this plan must focus on encouraging a development pattern and land use policy which endures over time, meeting both near-term and long-term needs.

Land Use Development Goals

The overriding goal of this plan is to: ***preserve the community's rural character while protecting the long-term ability for the City of Greenfield to emerge as a strong, thriving community on the edge of a growing metropolitan region***. Preserving rural character will achieve the goal of protecting and preserving the natural environment. The following subset of goals supports this overarching statement:

GOAL 4-1.

To provide a land use pattern that protects existing property investments (public and private) and embraces community amenities (open space, natural resource base, and proximity to metropolitan area).

GOAL 4-2.

To establish patterns for commercial and industrial development that supports a job base, provides services to the community, establishes a sense of identity for Greenfield, and builds a balanced base for property taxes.

GOAL 4-3.

To achieve a coordinated and connected pattern of land use development with the local and regional transportation system that ensures safe, convenient, and efficient mobility for both auto and pedestrians.

GOAL 4-4.

To preserve the financial integrity of the City by promoting thoughtful and sustainable development patterns that support the level of investment needed

Goals

Goals are broad statements that describe a desired outcome or end-state. Goals are often long-term in scope. (e.g. have a diverse and balanced tax base.)

Policies

Policies describe the general course of action or way in which programs and activities are conducted to achieve a stated goals. Policies speak to underlying values, context, or principles, and are sometimes place-specific. There may be a range of specific strategies that support the implementation of a given policy. (e.g. ensure a balance of land uses that includes commercial, industrial, residential, and civic institutional development opportunities)

Implementation Strategies

Strategies are projects, programs, and practices that support one or more of the plan's goals and policies. Strategies address the "who, what, when, where, and how" of reaching a goal, and may involve multiple sub-strategies. They may include physical initiatives that directly correlate to the vision and guiding principles and are intended to carry out an idea or policy identified through the planning process and memorialized in the adoption of the plan. Implementation Strategies may be on going (program/practice) or have definitive start and completion dates (project). (e.g. amend the zoning ordinance to enable rural cluster housing developments.)

to build and maintain quality roads and infrastructure systems. (I.e. new development should pay for itself and not burden existing tax payers.)

GOAL 4-5.
To provide opportunities for a diversity of housing choices (styles, types and price points).

GOAL 4-6.
To efficiently accommodate projected household and population growth.

GOAL 4-7.
To satisfy regional planning requirements as established by the Metropolitan Land Planning Act.

Land Use Development Policies

Land use policies are numerous. They are statements of action that serve as a guide for decision making regarding land use. The following are generalized land use policies for City of Greenfield:

Design

POLICY 4-1. Encourage future rural residential development projects to utilize site design and master planning approaches that preserve rural character and natural resources.

a. In rural areas, provide for greater setbacks from arterial and collector roadways to preserve views.

b. Consider incentives for the use of conservation development techniques and open space preservation (cluster housing).

c. Support patches of open space that are large enough for a sustainable agricultural use (either row cropping or truck farming/gardening).

d. Minimize street widths, while maintaining consistency with accepted roadway standards.

e. Support the retention of remnant pieces of farmsteads as an integral part of the development project where such pieces add value and historical character to the project.

POLICY 4-2. Support the continuation of agricultural uses (both traditional and alternative agricultural uses) by requiring adequate buffers (setback and landscaping) from active agricultural uses that exist at the time of proposed development.

POLICY 4-3. Encourage needed infrastructure features, such as stormwater ponds, to be designed as natural amenities and integrated into site design, and not relegated to left over parcels.

POLICY 4-4. Create and enforce site design and performance standards to avoid conflicts and ensure compatibility between different land uses.

POLICY 4-5. Require screening and berming between commercial uses (and parking areas) and residential uses in locations that do not hinder logical pedestrian access to the sites.

POLICY 4-6. Transition the more intense structures (building mass and height) and uses (truck intensive, outside storage intensive, noise generation) furthest away from residential neighborhoods and where access is most direct to the regional roadway system.

POLICY 4-7. As new residential development is designed that is adjacent to existing low density rural residential development, encourage a transitioning in density from higher to lower density patterns.

POLICY 4-8. Encourage thoughtful design of commercial centers that promote:

a. Sense of place unique to the community

b. Safe, logical and convenient pedestrian circulation and access.

c. Safe, logical and convenient vehicular circulation and access.

d. Efficient use of land resources – promote vertical development where possible and encourage more critical mass with a smaller footprint.

POLICY 4-9. Require lighting plans for non-residential development and new residential subdivisions that minimize impacts on adjacent development, while ensuring adequate visibility for emergency management needs. Lighting should be downward facing or full cut-off fixture types.

POLICY 4-10. For all projects in Greenfield, require lighting design to promote **dark skies.** Dark sky policies reduce the consumption of energy by promoting efficient outdoor lighting technologies and by keeping nighttime **skies dark** by reducing glare and putting the right amount of light in the right place and at the right time to ensure the safety of all.

Community/Economic Development Land Use

POLICY 4-11. Provide land use patterns that accommodate a variety of housing types (attached and detached) and styles to accommodate alternative life style needs and desires.

POLICY 4-12. Guide land uses in areas with available municipal services to densities that lessen land costs and allow for more affordable housing options.

POLICY 4-13. Plan for adequate levels of service for commercial and industrial development in locations conducive to a strong economic environment.

POLICY 4-14. Maintain an adequate supply of commercial and industrial land use to allow for continued opportunities for job growth and services.

Historic/Cultural Resource Preservation

POLICY 4-15. Collaborate with private property owners and support efforts to incorporate and preserve historical elements of sites into the development pattern through design or interpretation.

POLICY 4-16. Encourage the protection of cultural and historic resources by integrating them into new development projects.

Solar Access and Renewable Energy

POLICY 4-17. Encourage and support roof top solar systems as an alternative energy source to reduce reliance on non-renewable resources.

POLICY 4-18. Explore opportunities for solar system investments and systems that utilize non-buildable and non-residential areas or can be located on roof structures within industrial or business park areas.

POLICY 4-19. Carefully examine and consider land use proposals introducing emerging technologies that offer energy cost savings and environmental benefits without detracting from or negatively impacting the rural residential character of the community.

Sense of Place

Characteristics of a given area that make a place special or unique, as well as to those that foster a sense of authentic human attachment and belonging.

History and Heritage

The City recognizes the importance of safeguarding the heritage of the City and promoting the continued use of historic sites and structures for the education and general welfare of residents. Due to the limited number of historic structures and sites, the City does not anticipate the need for a preservation ordinance or the establishment of a commission to oversee historic structures.

Solar Access

Ensuring that all properties have adequate access to sunlight is important not only for potential solar energy systems but for the protection of property and aesthetic values as well. Solar access protection is provided for within the building performance standards of the zoning ordinance and implementation of the uniform building code. Requirements such as maximum building height and yard setback standards are implemented in part for the purpose of ensuring sunlight access such that a property is not in the shadow of an adjacent building.

Environment/Resource Management

POLICY 4-20. Provide tools for alternative site design and master planning techniques that protect patches of uplands which can help link together protected open space areas (wetlands, floodplain) to provide a non-fragmented corridor of open space (open space design, cluster housing, park dedication).

POLICY 4-21. Enforce regulatory provisions and implement best management practices that are geared towards protecting the environment (erosion control measures, wetland buffers, reduction of storm water runoff).

Infrastructure and Transportation

POLICY 4-22. Ensure land use patterns provide densities that are sustainable with long term plans for municipal sewer service and water services in areas guided for municipal services.

POLICY 4-23. Locate non-residential uses in areas that have good transportation access to regional transportation systems and that are compatible with adjacent land uses.

POLICY 4-24. Collaborate with property owners in planning infrastructure systems to serve growth areas that are anticipated to have future public sewer and water systems.

POLICY 4-25.Adhere to county and state access management guidelines for county and state roadway corridors when considering land use and development proposals.

POLICY 4-26. Support neighborhood subdivision designs that provide connections via destination minded multi-modal trail systems that encourage alternative travel options for both mobility and recreational purposes.

POLICY 4-27. In rural areas where municipal infrastructure does not exist, ensure lot sizes and characteristics are adequate for individual well and septic systems consistent with state laws and best practices.

POLICY 4-28. Evaluate long term serviceability (sewer, water, storm, roads) of all rural properties proposed for development through the sketch plan review process (prior to application of plat) to ensure thought is given to long term development (full build out) possibilities.

POLICY 4-29. In rural areas, support the use of community sewage treatment systems that can be designed to sustainably manage sewage treatment systems within the state and county rules for community septic systems. Greenfield has adopted by ordinance, permitted use of neighborhood wastewater collection and treatment facilities (community systems or package plants) in place of individual subsurface sewage treatment systems (SSTS) for use where practical.

Official Land Use Map

Figure 4-1 represents the official Land Use Map for City of Greenfield to the planning horizon year of 2040. It provides a basis for establishing zoning district boundaries and regulatory tools and for guiding private and public land investments. Changes to this map must be made through the Comprehensive Plan Amendment process after careful analysis and examination against the broader community vision, guiding principles, goals and policies within this plan.

Table 4-2. Future Land Use

FUTURE LAND USE	GROSS ACRES	%
Business Park/ Industrial	120	0.87%
Commercial Services	149	1.09%
Low Density Residential	459	3.34%
Medium Density Residential	90	0.65%
Village Center	36	0.26%
Institutional	71	0.52%
Rural Residential	10,061	73.18%
Public Park and Open Space	1,324	9.63%
Open Water	754	5.49%
ROW	629	4.58%
Railroad/Utility	54	0.40%
Grand Total	**13,748**	**100.00%**

** Ag Preserve lands are represented by their underlying guiding. See Table 4-3 for land within Ag Preserve.*

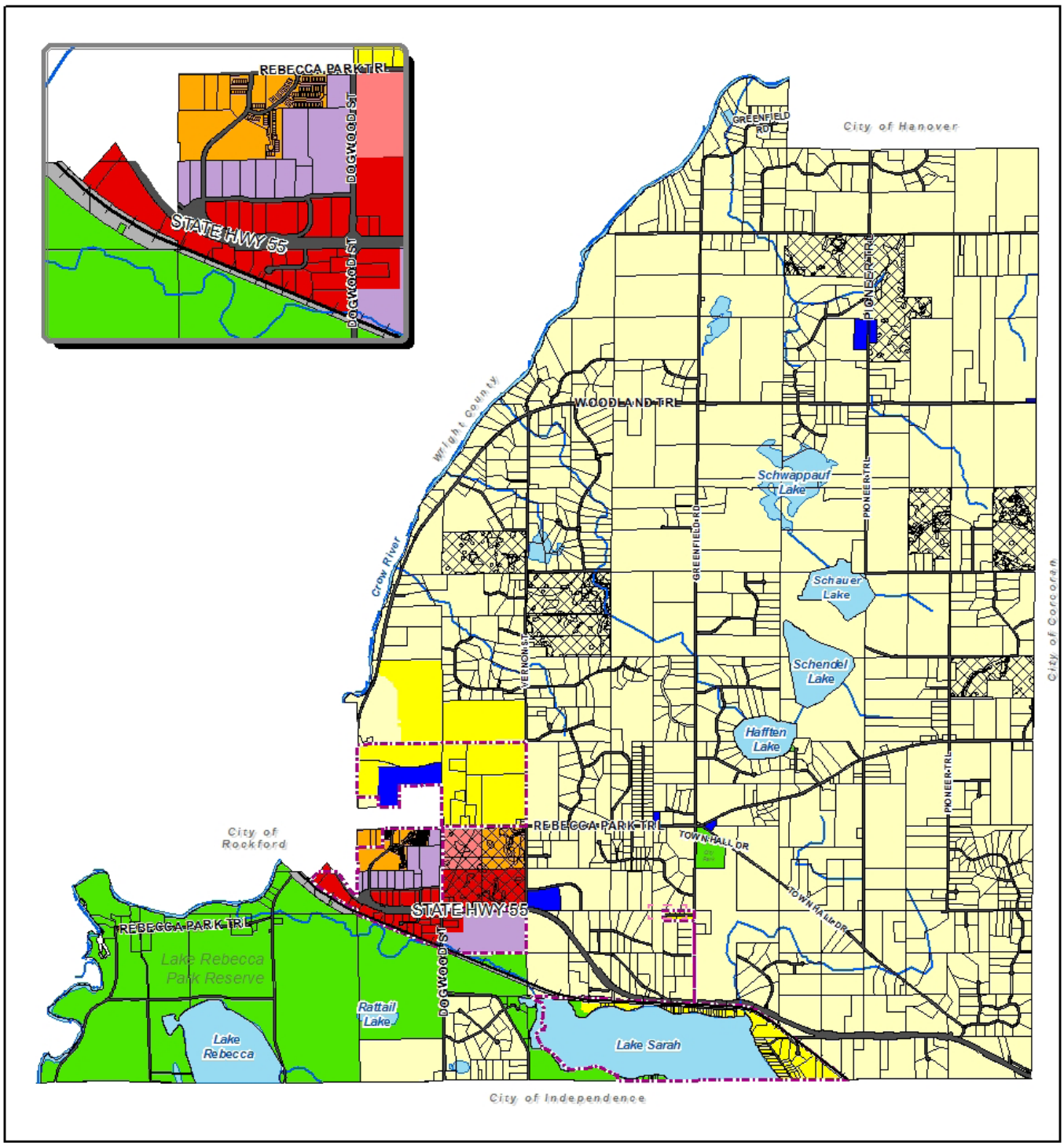
Source: HKGi, City of Greenfield

Table 4-3. Future Land Use Areas Enrolled in Ag Preserves Program

FUTURE LAND USE DESIGNATION - LANDS WITHIN THE AG PRESERVE PROGRAM	ACRES
Commercial Services	65.69
Medium Density Residential	39.96
Village Center	36.16
Rural Residential	627.80
Grand Total	**769.61**

Source: HKGi, City of Greenfield

Figure 4-1. Future Land Use



N 0 0.5 1 Miles

Source: Hennepin County Parcel Data, HKGi

Future Planned Land Use

Railroad
Current Urban Service Area
Henn County Parcels
Lake
River and Streams
Ag Preserve Parcels 2017

Rural Residential (Maximum of 1 unit per 5 acres)
Low Density Residential (2 to 6 units per acre)
Medium Density Residential (6 to 12 units per acre)
Village Center (12 to 40 units per acre-see plan text)
Commercial Services

Business Park/Industrial
Institutional
Public Park and Open Space
Railroad
ROW

Greenfield
LIVE • WORK • PLAY

Land Use Categories

The Land Use Plan contains fourteen (14) land use categories. The amount of land which is designated in each category is summarized in Table 4.2.

Ag (Agriculture) Preserve

This designation is intended to maintain productive farm operations in the City of Greenfield consistent with the intent of and rules outlined in the Metropolitan Agricultural Preserves Act (Minnesota Statute Chapter 473H). This designation is made available to those property owners who are currently enrolled (2017) in the Ag Preserve program and committed to preserving their property's long-term agricultural use. . Uses within this land use designation are agricultural uses and farmsteads related to the operations of the agricultural use at a maximum residential density of 1 unit per 40 gross acres. See Table 3-2 and Figure 3-5 for properties enrolled in the Ag Preserve program. Table 4-3 shows total acres enrolled within the Ag Preserve program by future land use category.

There will be no expansion of the Ag Preserve land use category beyond properties that are currently enrolled.

When parcels expire from the program, the Plan will be amended to no longer show them as Agricultural Preserve parcels. There will be no expansion of the Ag Preserve land use category beyond properties that are currently enrolled.

Ag Preserve

Rural Residential

The Rural Residential category is intended to maintain the existing pattern of larger lot rural development established in previous Comprehensive Planning efforts. Areas classified as Rural Residential are intended to provide single-family residential development while affording a rural lifestyle. Clustering of development is encouraged to preserve existing natural resources, i.e., wetlands, prairie, woodlands, habitat corridors, and viewsheds. Key characteristics include a maximum density of one (1) unit per five (5) gross acres (Note: this density is unchanged from the 2013 Comprehensive Plan). Lot sizes may vary; however, properties are required to maintain enough buildable land to accommodate the construction of permitted structures, including primary and secondary septic systems or community systems in the case of cluster housing.

Uses appropriate to this district would be predominantly single family detached homes; however, consideration should be given to alternative housing forms provided the overall density is preserved and proper infrastructure and building code requirements can be met. See the Metropolitan Council's Flexible Residential Development fact sheets for alternative ways to develop rural residential.

Limited cottage industries could be considered in the rural residential district. However, key design policy should be adhered to that manages impacts on roads and potential incompatibilities between residential and commercial uses.

Rural Residential

Low Density Residential

Low density residential is a land use pattern that is intended to be served by municipal sewer and water service. Densities within this category range from a minimum of two (2) units per net acre to six (6) units per net acre. This land use category aligns with the Metropolitan Council's developing community geographic planning area which has a goal of achieving a net density of three (3) to five (5) units per net acre on average across all sewered residential areas. Key uses in this district would be primarily single family detached homes and some attached multi-family housing so long as the overall density range is preserved. As new development is designed that is adjacent to existing low density rural residential development, the intent is that density transitions from higher (up to 6 u/a) to lower (2 u/a) density

Low Density Residential

patterns as it approaches existing rural residential patterns.

Medium Density Residential

Medium density residential is intend to reflect a residential land use pattern to be served by municipal sewer and water services at a density range of six (6) to twelve (12) units per net acre. The objective of this land use designation is to accommodate a range of more moderate density housing types. This density range can accommodate small lot detached single family housing types; however, the predominant housing pattern would be attached side by side housing forms such as twinhomes or townhomes. Smaller limited stacked housing forms may also fit within this category depending on the sites context and adjacent uses.

Medium Density Residential

The Village at Mendota Heights

Mendota Heights, Minnesota

Project Year	2004
Project Type	Civic Center/Campus
Project Size	23 acres
Developer	RMF Group
Land Uses	Residential (39 townhomes, 36 condominiums, 60 senior apartments) Retail (47,575 sf) Office (40,375 sf) Park and Open Space Surface Parking (310 stalls - 39 residential, 195 commercial, 76 on street) Underground Parking (350 stalls - 200 residential, 150 commercial)
Surrounding Land Uses	-
Commercial Tenants	Bank Financial Services Salons and Spa Ice Cream Shop Cheese Shop Wine Store Coffee Shop Specialty Grocer Wine Bar
Commercial Square Footage	87,950
Commercial Density	3,823.9 sf/acre
Residential Units	135
Residential Density	5.86 units/acre
Home Prices	$300,000 - $600,000

Village Center

The Village Center land use pattern is intended to serve as the core area for the Greenfield community. The area would be designed as a walkable center with a mix of uses oriented around a common green/park amenity. Land use in the Village Center is envisioned to be approximately:

- 45% commercial/office services such as restaurants, grocery, convenience goods, and professional services
- 50% higher density residential (stacked housing configuration) with a density range compatible with high density residential at densities of 12 to 40 units per acre (1-4 story buildings)
- 5% open space (private or public space) for gathering or small events.

The development character in this area should consist of higher density concentrated design pattern that offers a high degree of walkability and convenience. Parking and other infrastructure services would be designed to be shared so as to minimize infrastructure footprints and maximize development and open space and economic sustainability. The following images represent an example project of what a Village Center could emulate. This project is located in Mendota Heights, MN.

Village Center

Cottage Industries / Home Based Businesses

Cottage Industries/Home Based Businesses are small, individual-owned businesses conducted primarily by residents of the property; that functions without altering the rural character of the neighborhood; and, which does not create negative impacts on the public health, safety, and general welfare of adjacent property owners.

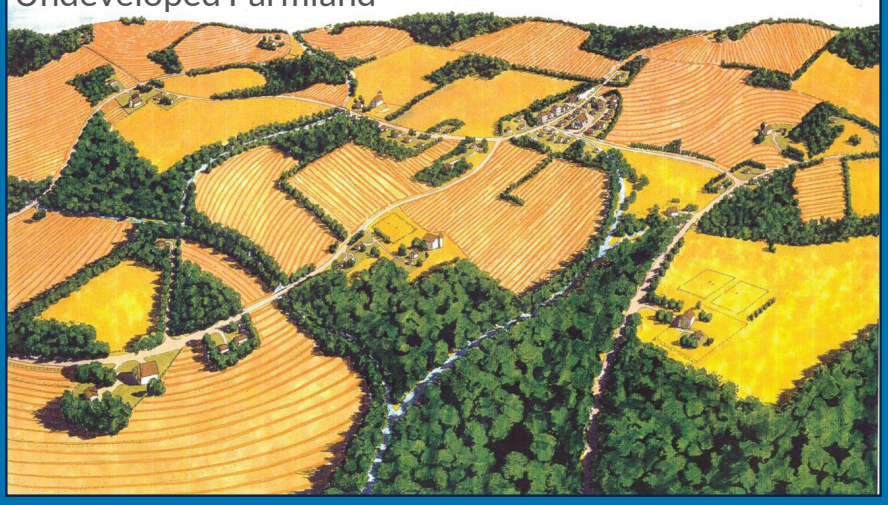
- Contractor businesses
- Landscape / nursery businesses
- Winery/vineyards
- Orchards/truck gardens (farm where vegetables are grown for market)
- Wedding/event centers that seek connection to open space and rural character (such as restoration of a barn or building a space that is more characteristic of a rural setting).
- Manufacturing artistic, handicraft, or other craft items.

Allowance for such uses should carefully consider the following policy areas as part of the city's development code:

- **Building and activities** should be located an appropriate distance away from neighboring residences so as not to invade privacy or cause noise or littering issues.
- **Hours of operation** should be mostly limited to day light hours with special conditions for gatherings/events that extend beyond daylight hours.
- The commercial use must be housed in a separate detached structure from the residential structure on the property.
- **Storage** of both goods and trash during non-daylight hours must occur within the commercial structure.
- **Parking** should be provided entirely on site and clearly visible from the roadway, with sufficient room for car queuing on site to minimize impacts tro traffic movement on adjacent roadways.
- **Access** to the site should occur via existing site access points, and a **traffic** management plant should mitigate impacts on adjacent roadways.
- **Restrooms** should be provided on site and can be either permanent or temporary (portable toilet) with adequate hand washing facilities as defined by state health and safety regulations.
- **Trash** receptacles should be provided near the entrance of commercial structure and should be clearly visible to patrons.
- **Signage** should be clearly visible from the roadway, tasteful and unobtrusive, of appropriate size and height, and located entirely within the site. No more than one sign per street edge (frontage) should be allowed.
- **Awning and shelters** should be located immediately adjacent to the commercial structure and of material and construction able to withstand high winds.
- Where **prepared food** is sold, local and state food safety guidelines must be followed and appropriate seating, tables, and trash receptacles should be provided near the commercial structure.

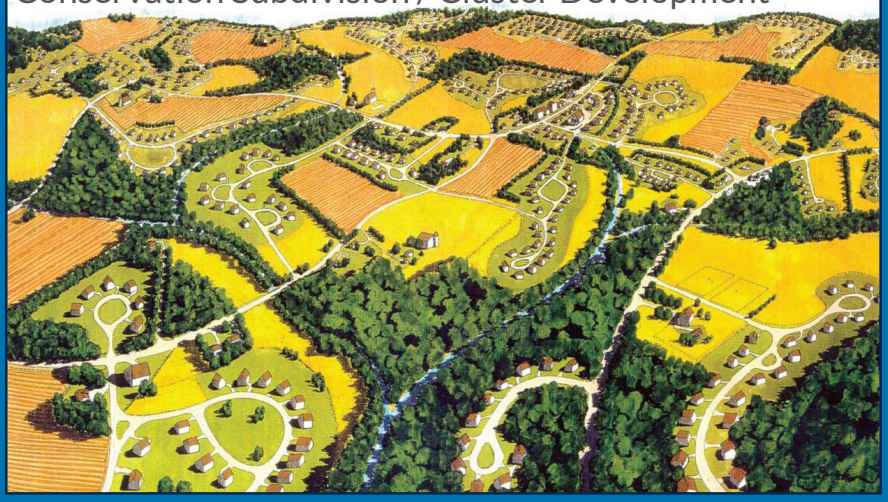
Cluster Housing/Conservation Design

Undeveloped Farmland



Typical Subdivision

Conservation Subdivision / Cluster Development



As a small city grows, farmland usually faces pressures from development. Often these rural estate developments have large lots that consume significant tracts of farmland. In addition, wildlife habitat and natural areas are lost because they become too small as they are chopped up between individual lots and are not protected from individual landowner development. Given the spacing between the lots, road and utility infrastructure, such as sewer services, requires significant investment.

In an effort to better protect natural areas and increase efficiencies, the development community has begun to use conservation subdivision techniques. Conservation subdivision, also called cluster development, seeks to cluster development areas to retain and protect open spaces such as farmland and natural areas.

The process of creating a conservation subdivision begins with identifying the natural features on the site, including waterways, forest, prairie, and topography. It may also include farmland. These areas are then linked with green strips to create a connected open space system. With the areas to protect identified, the process of locating streets, utilities, and home sites can begin.

The use of conservation design should be strongly encouraged in rural areas with signficant natural habitat and resources (see Figure 2-3.) Conservation design should also be used in areas where farming is a desired pattern to retain for the development project.

Commercial Services

Commercial Services

Areas classified as Commercial Services are intended to provide for commercial retail goods and services, professional offices, and other destination oriented commercial uses. Commercial land uses are to be served by municipal sanitary sewer and water and have good visibility and access to Highway 55.

Business Park/Industrial

Business Park/Industrial

Areas classified as Business Park/Industrial are intended to provide for employment intensive development (places to work and produce) served by municipal sanitary sewer and water. These areas should also be planned with good access to regional road infrastructure and where possible be master planned to utilize coordinate storm water infrastructure and internal transportation infrastructure.

Institutional

City owned facilities, churches, school, etc., are insignificant in overall total but shown for mapping purposes. Some institutional uses are currently located in the non-serviced rural area of Greenfield. This category supports the continued existence and growth of those facilities; however, future institutional development should be in areas served by municipal sewer and water facilities.

Public Park and Open Space

Park lands include active and passive lands that are part of the City's park system, are protected open space areas, or are part of the Three Rivers Park District System. No additional public park and open land is shown on the future land use plan other than lands that are part of the future inholdings of Lake Rebecca Regional Park Reserve or Lake Sarah Regional Park. Future park land will be determined and guided consistent with proposed and approved development projects.

Railway/Utility

Railway right-of-way (ROW) and Utility uses are lands utilized for railroad related activities and public/private utilities such as power stations, sub-stations or radio towers/antennas.

Open Water

Open water bodies include permanently flooded open water, Lakes, rivers, and streams included in the public waters inventory maintained by the DNR. This category also includes the floodway designated by the Federal Emergency Management Agency (FEMA).

Right-of-Way (ROW)

Right-of-way includes existing platted right-of-way. There are no major roads with identified ROW planned in the 2040 planning horizon.

Staging of Future Growth

Projecting future growth is an important part of the Comprehensive Planning process. Planning ensures that growth occurs in a logical manner protecting natural resources and efficiently utilizing public investments in roadways and municipal services such as public water supply, wastewater infrastructure, and stormwater management systems. Identifying staging of future growth is challenging because it requires a community to pre-determine where development might go without always having the benefit of an up to date understanding of market pressures and demands including property owner intent to sell land.

In Greenfield, development with municipal services is dependent on the availability of capacity within the existing municipal plant. The current plant is operating at just under 15% capacity (2017) and has permitted authority to expand, approximately doubling its plant capacity. Therefore projected growth within the 2040 planning horizon is not limited due to capacity of the city waste water treatment plant.

A small portion of the city (along the shores of Lake Sarah generally) is served by sanitary sewer service extending from the regional sewer system managed by the Metropolitan Council Environmental Services (MCES). The system serving this area is at its permitted capacity and no additional growth is envisioned to this system.

Long term growth in Greenfield is limited by the current and permitted expansion capacity of the City's waste water treatment plant.

Sewered Development Projections

Sewered development is anticipated primarily in the core area of Greenfield. The land use plan will accommodate the population, household and employment forecasts as established by the Metropolitan Council within the 2040 Planning Horizon (see Table 2-3 in Community Context). The following narrative and tables demonstrate adequate land is planned and available to meet and exceed regional development projections for the City of Greenfield to 2040.

Regional Density Measure

The Metropolitan Council identifies lands served with sewer and water facilities in Greenfield as "emerging suburban edge." The density policy for sewered residential development within the "emerging suburban edge" is 3 to 5 units per acre. Using the Metropolitan Council guidelines for determining density, Greenfield's future growth for all sewered residential (Low Density, Medium Density and Village Center) will average 3.01 units per acre .

Serving Growth Within the Current Service Area

Planned land uses within the current service area are constrained by a number of factors including wetlands, poor soils, topographical constraints, and a property ownership pattern that may result in some areas not being connected to municipal services for some time. The following table provides a summary of net developable land areas remaining by planned land use within the **current service area.** The following bullet points document key findings pertaining to projected growth to 2040 within the current sewered areas:

- To meet Metropolitan Council projections for sewered residential growth for the year 2040 would require approximately 30 – 40 acres of developable land.
- Minimal employment growth is projected for Greenfield by 2040. An additional 10 acres would accommodate employment projections.
- The City of Greenfield has adequate lands guided and zoned to meet and exceed future growth projections to 2040. Approximately 57 net developable acres are guided and zoned for commercial/business uses, 140 net developable acres guided and zoned for single family residential, and 17 net developable acres guided and zoned for medium density with a portion of this area already platted for townhome lots.
- Full build out of the current service area could consume 80 to 100% of the permitted local sanitary sewer plant capacity (existing and expanded capacity.) More information is provided on sewer capacity in Chapter 9.

Long Term Planning for Expansion of Infrastructure Services

Development constraints, market demand, and property owners willing or not willing to sell and develop, all impact the ability to achieve growth projections. Guiding additional land areas for expansion of urban services will be necessary to facilitate planned growth that will help achieve two key planning objectives: 1 – enhance usage and offset carrying costs of the existing built infrastructure and 2 – enhance the market support for desired level of commercial services. Based on analysis of land characteristics, parcel ownership, and development constraints an area has been planned for future expansion of urban services. This area is not needed to meet the projected growth as articulated by the Metropolitan Council. However, should market forces change, and growth opportunity is presented, these areas are logical areas where growth with municipal sewer and water could be considered. These growth areas require additional planning and analysis to determine development and infrastructure system expansion feasibility.

Table 4-4. Full build out assumptions of the remaining "developable" lands in the current service area

FUTURE LAND USE CATEGORY	NET DEVELOPABLE LANDS	DENSITY ASSUMPTIONS*	BUILD OUT IN UNITS (SQ FT OR HOUSING UNITS)	POPULATION ESTIMATE (RANGE)
Business Park / Industrial	38.80	0.25-0.35 FAR	420k – 590k sq. ft.	
Commercial Services	18.75	0.15-0.20 FAR	120k – 165k sq. ft.	
Low Density Residential	156.42	2 – 6 units per acre	310 – 940 units	930 - 2,820
Medium Density Residential	16.76	6 – 12 units per acre	100 – 200 units	250 - 500
Grand Total	**226.86**	**NA**	**540k – 755k sq ft of commercial/industrial 410-1,140 housing units**	**1,180 - 3,320**

** Non-Residential density is determined based on a Floor Area Ratio (FAR) measurement. FAR is determined by taking the total gross leasable square footage of a building divided by the total site area. Acres referenced net out wetlands, floodways, existing and planned arterial ROW, and existing developed properties.*

Based on the proposed future land use plan, the long term, full build population can be projected using industry based assumptions. Table 4-6 takes the growth projections from tables 4-4 and 4-5 and applies an assumed persons per household ratio. These population projections are then applied to the 2016 estimated population provided by the Metropolitan Council.

Table 4-5. Long Term Development Potential of Expansion Area – Full Build Out of Area Assumed

FUTURE LAND USE CATEGORY	NET DEVELOPABLE LANDS	DENSITY ASSUMPTIONS*	BUILD OUT IN UNITS (SQ FT OR HOUSING UNITS)	POPULATION ESTIMATE (RANGE)
Commercial Services	59.13	0.15-0.20 FAR	385k – 515k sq. ft.	
Low Density Residential	140.06	2 – 6 units per acre	280 – 840 units	840-2,520
Medium Density Residential	25.26	6 – 12 units per acre	150 – 300 units	410-820
Village Center	33.34	50% Residential (12-40 u/a) 45% Commercial/ Business (.25-.35 FAR) 5% Split Other	200 – 670 units 165k – 230k sq. ft	500 - 1,660
Grand Total	**257.79**	**NA**	**550k to 745k sq. ft. of commercial space 630 – 1,810 new housing units**	**1,750-5,000**

** Non-Residential density is determined based on a Floor Area Ratio (FAR) measurement. FAR is determined by taking the total gross leasable square footage of a building divided by the total site area. Acres referenced net out wetlands, floodways, existing and planned arterial ROW, and existing developed properties.*

Table 4-6. Population Growth Projections at Full Build Out

POPULATION GROWTH PROJECTIONS					
LAND USE CATEGORY	PEOPLE PER HH	2016 EST.	PROJECTION AT FULL BUILD OUT		
			LOW	HIGH	AVERAGE
Low Density Residential	3.0	165	1,940	5,500	3,730
Medium Density Residential	2.7	385	1,070	1,750	1,410
Village Center	2.5	-	500	1,670	1,080
Rural Residential	3.2	2,309	4,710	5,830	5,270
Total		**2,859**	**8,220**	**14,750**	**11,490**

The following table (Figure 4-7) represents a best guess at land absorption in Greenfield over the planning periods current to 2020, 2021 to 2030, and 2031 to 2040. This table representation is a requirement of the Metropolitan Council. The table represents net developable acres by "future" land use designation. Net developable nets out wetlands, floodways, arterial road right of way, and already developed lands. The growth in land use for each category represents an assumption of how much land may be ***platted*** or improved in each period not necessarily built units. Absorption of non-rural residential land uses will occur in any of the areas with existing municipal sewer and water services available from the City of Greenfield or within areas shown as "expansion" areas for municipal sewer and water. Actual land use absorption will be based on market demands, when land owners decide to sell, and when developers plat and develop land. The City of Greenfield will monitor development on a regular basis to make sure municipal infrastructure is adequate to accommodate development. The estimate of land use by decade is for information purposes only and not a policy..

Table 4-7. Projected Land Use Staging in NET ACRES- platted or improved lands (table required by Metropolitan Council)

LAND USE CATEGORY	CURRENT TO 2020 ACRES	% OF TOTAL	2021 - 2030 ACRES	% OF TOTAL	2031-2040 ACRES	% OF TOTAL
Business Park/Industrial	5	2.60%	15	1.85%	18	2.15%
Commercial Services	5	2.60%	15	1.85%	20	2.39%
Low Density Residential	30	15.63%	45	5.55%	60	7.18%
Medium Density Residential	27	14.06%	30	3.70%	33	3.95%
Village Center	-	0.00%	6	0.74%	5	0.60%
Institutional	-	0.00%	-	0.00%	-	0.00%
Rural Residential	125	65.10%	700	86.31%	700	83.73%
Public Park and Open Space	-	0.00%	-	0.00%	-	0.00%
TOTAL Vacant LAND AREA	192	100.00%	811	100.00%	836	100.00%

Table 4-8. Projected acres expected to develop in residential land use categories that support affordable housing goals.

LAND USE CATEGORY	2021-2030 ACRES	UNITS
Medium Density Residential (6 to 12 u/a density ranged)	30	180
Village Center (50% residential 12 to 40 u/a)	6	36

Figure 4-2 illustrates future phasing assumptions of sewered growth in Greenfield. The following areas are represented:

1. Current Service Area: this area reflects the area currently planned for sanitary sewer and potable water service provided through the City of Greenfield's sanitary sewer treatment plant and its permitted expansion capacity. As previously noted, full build out of this area will utilize the majority of the current and permitted expansion capacity.
2. Proposed Expansion Area: this area reflects future growth areas that could potentially be served by extending the sanitary sewer system and expanding the Greenfield permitted plant capacity.

    a. Development in these areas will depend on the development markets ability to fund the extension of sanitary sewer systems and potential treatment plant improvements.

    b. Feasibility studies will be necessary to determine how services can be extended, the costs/benefits of expanding the plant and extending the system, and the financial feasibility.

    c. The process to study the extension of infrastructure systems and future development should be a collaborative effort between interested land owners, development community, and the City of Greenfield.
3. MCES service area: this service area is the area served by the MCES interceptor. No additional expansion within this area is envisioned beyond permitted connections.

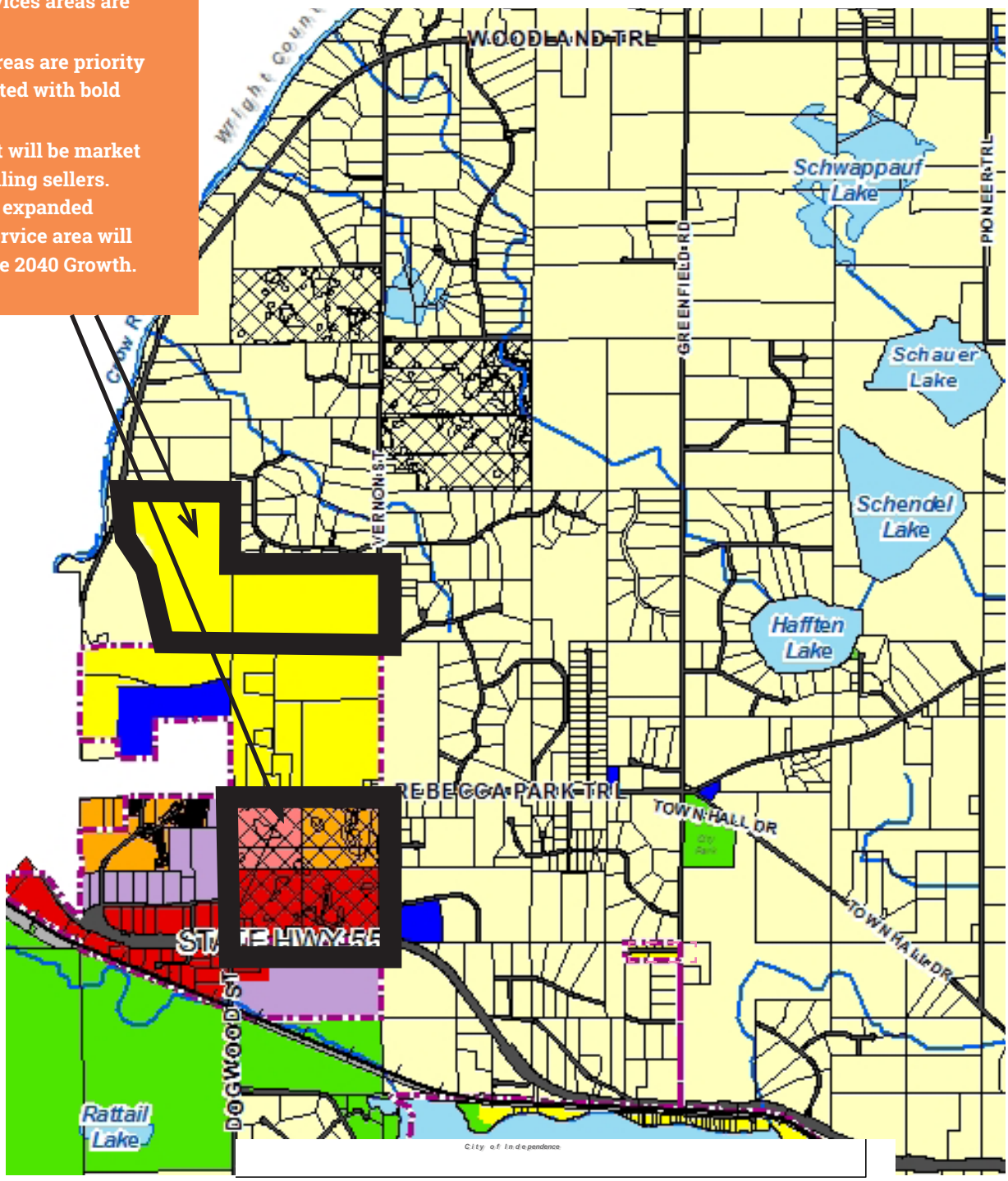
The following key assumptions inform the future growth patterns/phases.

» Enabling development to occur sooner than later will provide a financial benefit to the city by better utilizing existing built infrastructure and supporting a desire for more services.

Figure 4-2. Development Staging - Greenfield Sewer Service Area Map

Development Staging

- Existing services areas are priority #1.
- Expansion areas are priority #2 - highlighted with bold line.
- Development will be market driven by willing sellers. Existing and expanded municipal service area will accommodate 2040 Growth.



1 Miles

ty Parcel Data, HKGi

Future Planned Land Use

- Railroad
- Current Urban Service Area
- Henn County Parcels
- Lake
- River and Streams
- Ag Preserve Parcels 2017
- Rural Residential (Maximum of 1 unit per 5 acres)
- Low Density Residential (2 to 6 units per acre)
- Medium Density Residential (6 to 12 units per acre)
- Village Center (12 to 40 units per acre-see plan text)
- Commercial Services
- Business Park/Industrial
- Institutional
- Public Park and Open Space
- Railroad
- ROW

- Guiding more land than is presently in demand for services will allow greater opportunity to align development opportunities with willing sellers.
- Lands that are more easily served (larger parcels with fewer owners and adjacency to existing services) should be considered within the early phases of development potential.
- Providing services to the Village Center would facilitate planning and marketing for commercial services and provide higher density residential housing opportunities not currently available in Greenfield.

Unsewered Residential Development

The Land Use Plan envisions the rural portions of Greenfield to remain unsewered through 2040 if not indefinitely. These areas are identified with the land use category of Rural Residential. The pace and form of development in these areas will be largely determined by availability of land, the interest of property owners to develop, and the suitability of the soils for private well and septic systems.

Using existing zoning standards and when applying existing development constraints (wetlands and road access), it is projected that the rural residential area has a build out capacity of approximately 750 to 800 additional residential lots. This represents vacant lands (including lands in agriculture production) and platted lots over 10 acres that have additional development capacity. This represents approximately 65 to 75% percent of the total development potential using a straight gross density of 1 unit per 5 acres.

If a cluster housing approach were to be used, dimensional standards were to be modified, and alternative approaches to sanitary sewer systems were applied, it is realistic to assume that closer to 90-95% of a sites development capacity of 1 unit in 5 acres could be realized. In this scenario, future build out capacity could be 1,050 to 1,100 new rural residential units (as opposed to 750-800).

However, it should be noted that just providing a mechanism to enable cluster housing approaches does not always yield greater development. Often, property owner interests and market demand will drive subdivision design to a more traditional pattern of development. The numbers represented above provide a reasonable range of full build out development potential that can be used for more detailed system planning efforts.

Metropolitan Council projections account for approximately half of the buildout capacity of the rural area by 2040 (roughly 400 -450 new housing units within the rural area by 2040). The land use plan guides enough land to meet or exceed the regional projections for Greenfield.

Focus Areas and Implementation Strategies

Achieving the community's Vision is more than simply guiding the types of acceptable land uses. It also involves ensuring that the character and qualities sought by the community are preserved and/or a part of future development. The community has been divided into a series of focus areas based on common land uses and development issues. The focus areas are: North Greenfield Sewered Residential, South Greenfield Sewered Residential, Highway 55 Corridor, and

Village Center. Each focus area includes a brief description and identification of key growth considerations.

North Greenfield Sewered Residential

North Greenfield Sewered Residential includes the area generally between Rebecca Park Trail and the more established rural development pattern as well as some area to the east of Vernon Street south to Riverwood Covenant Church. This area contains some larger vacant parcels that present logical development potential. A number of challenges to consider with growing or extending services to this area are as follows:

1. The pattern of development must be designed to transition in density from undeveloped areas to existing development in order to blend in with the existing rural residential development patterns. This includes connection of roads/streets. Efforts will need to minimize impacts on existing rural residential development patterns.
2. There are some significant topographic features of the landscape that will impact how and where infrastructure can be extended in a cost effective way. Design of new subdivisions should be protective of existing natural features, sensitive habitat, and quality views.
3. All property owners seeking to develop (either presently or possibly in the long term) need to be collaborators in exploring the mechanics and timing of future development.

    a. How and where do services get extended and what is the feasibility?

    b. What is the benefit, cost, and how is it assessed?

    c. What is the timing of the project and how do we accommodate private property owner interests and timing? (a phasing plan)

Highway 55 Corridor within the Urban Services Area

The Highway 55 Corridor includes the lands essentially fronting on Highway 55. These land uses along the corridor have consistently been planned and zoned for business/commercial uses and continue to be in this plan update. The following represent key challenges and considerations for the Highway 55 Corridor.

1. Until the market matures, development pressures within the Highway 55 corridor will continue to be for lower end/valued commercial and business development with little desire to invest in infrastructure or site amenities. Examples of this include parking lots without curb/gutter, simple buildings with little architectural differentiation, uses looking for significant outside storage opportunities, minimum landscaping standards, re-use of deteriorated or obsolete buildings with minimal reinvestment, etc… Often, City standards require many of these features. City standards are then sited as 'deal killers' do to the costs not being in line with the developers desired development. The challenge is to find the balance between ensuring a high standard and quality of development while not creating a situation where development is deterred due to cost. This type of process may require a "development guideline" approach where there is a performance based approach to achieving entitlements vs. having a rigid set of zoning standards.
2. Being flexible to the types of uses within the corridor but more cognizant of design, aesthetics, and quality may provide a 'kick-start' to business and service development within the Highway 55 corridor. Again, this suggests an approach

to zoning that may be more "form" based as opposed to "use" based.

3. Aging and economically obsolete uses sitting vacant cause an eye sore and often are a market deterrent to development nearby. A coordinated approach to clearing underutilized and obsolete sites for future redevelopment opportunity should be considered. Consideration of municipal redevelopment financial tools and strategies is warranted for site redevelopment.
4. A coordinated marketing strategy for the business park development has experienced starts and stops over the years. A consistent and coordinated approach to marketing of business park sites could yield development sooner. Of particular importance is having a plan or strategy for improvements and entitlements on undeveloped sites.

Village Center

The village center concept was born several comprehensive plans ago. Community sentiment and past planning expressed an interest in creating a place similar to a downtown where commerce and social interaction can occur in a way that helps create identity for Greenfield. This idea was further vetted and discussed through the public process as part of this plan update. The idea received continued support, but also recognition that downtown Rockford provides some of what is desired. However, the desire for a higher degree of commercial services and unique Greenfield identity suggest exploring the idea of a "village center" that would be more of a modern downtown.

There is wide recognition that the concept of a village center will not happen overnight, if even within the life of this comprehensive plan update. However, identifying it as a land use category and presenting a unified vision behind the idea is a starting point. The logical location of this concept is the parcel currently enrolled in the Ag Preserve program but schedule to be removed in 2021. The concept will not be a reality until such time as a property owner chooses to proceed with the vision and master planning. Implementation of this idea will require the following components:

1. Coordination and collaboration with the land owner as master planning partners.
2. A transparent and open planning process to help shape the ultimate vision and plan details.
3. A master plan that highlights:

    a. key street patterns and character (circulation plan for vehicles and pedestrians)

    b. development blocks (preliminary plat concept)

    c. desired development character and form

    d. public realm/open space/pocket park

    e. infrastructure services (storm, sanitary sewer, water)

    f. implementation strategy – high level cost estimates, zoning/entitlement tools and processes, marketing strategy

Implementation Strategies

Key implementation strategies include the following:

1. Conduct a feasibility study for extension of trunk sanitary sewer and water

infrastructure to serve growth expansion areas. This should be done in collaboration with willing property owners/developers. Expansion areas should take into consideration the impact of capacity and timing based on the ultimate future land use plan. Two areas for study include the areas north of Rebecca Park Trail (west of Vernon Street), and the area east of CR 92 and north of Highway 55 that includes the Village Center.

2. Evaluation and update of zoning and subdivision codes to address:
    a. Cluster housing in rural residential areas
    b. Commercial and business area standards and entitlement processes
    c. Residential district modifications to allow greater variety of housing types and to align density and housing types with land use categories
    d. Cottage industries within rural residential areas – types, development standards, entitlement process
3. Master Plan for the Village Center area
4. Master Plan and marketing strategy for Highway 55 Business Corridor

More information on implementation is provided in Chapter 10 Implementation/ Strategic Initiatives.

Resource Protection

Solar Access Protection

The Metropolitan Land Planning Act (Minnesota Statutes 473.859, Subd. 2) requires that local comprehensive plans include an element for the protection and development of access to direct sunlight for solar energy systems. The City will protect such access by requiring minimum standards for lot sizes, amounts or open space, yard setbacks and maximum height of buildings for residential development. Land uses should not preclude the possible use of solar energy systems. The City will review and revise, as necessary, the Zoning and Subdivision Ordinances to ensure protection of solar access. Currently the structure setback and height standards within the Zoning Ordinance are sufficient to prevent potential interference to solar collectors from adjacent structures and vegetation.

Gross and Rooftop Solar Resource Calculations

The gross solar potential and gross solar rooftop potential are expressed in megawatt hours per year (Mwh/yr), and these estimates are based on the solar map for Greenfield (Figure 4-3, Table 4-9). These values represent gross totals; in other words, they are not intended to demonstrate the amount of solar likely to develop within Greenfield. Instead, the calculations estimate the total potential resource before removing areas unsuitable for solar development or factors related to solar energy efficiency.

The gross solar generation potential and the gross solar rooftop generation potential are estimates of how much electricity could be generated using existing technology and assumptions on the efficiency of conversion. The conversion efficiency of 10% is based on benchmarking analyses for converting the Solar Suitability Map data to actual production, and solar industry standards used for site-level solar assessment.

Table 4-9. Gross Solar Generation Potential (Source: Metropolitan Council)

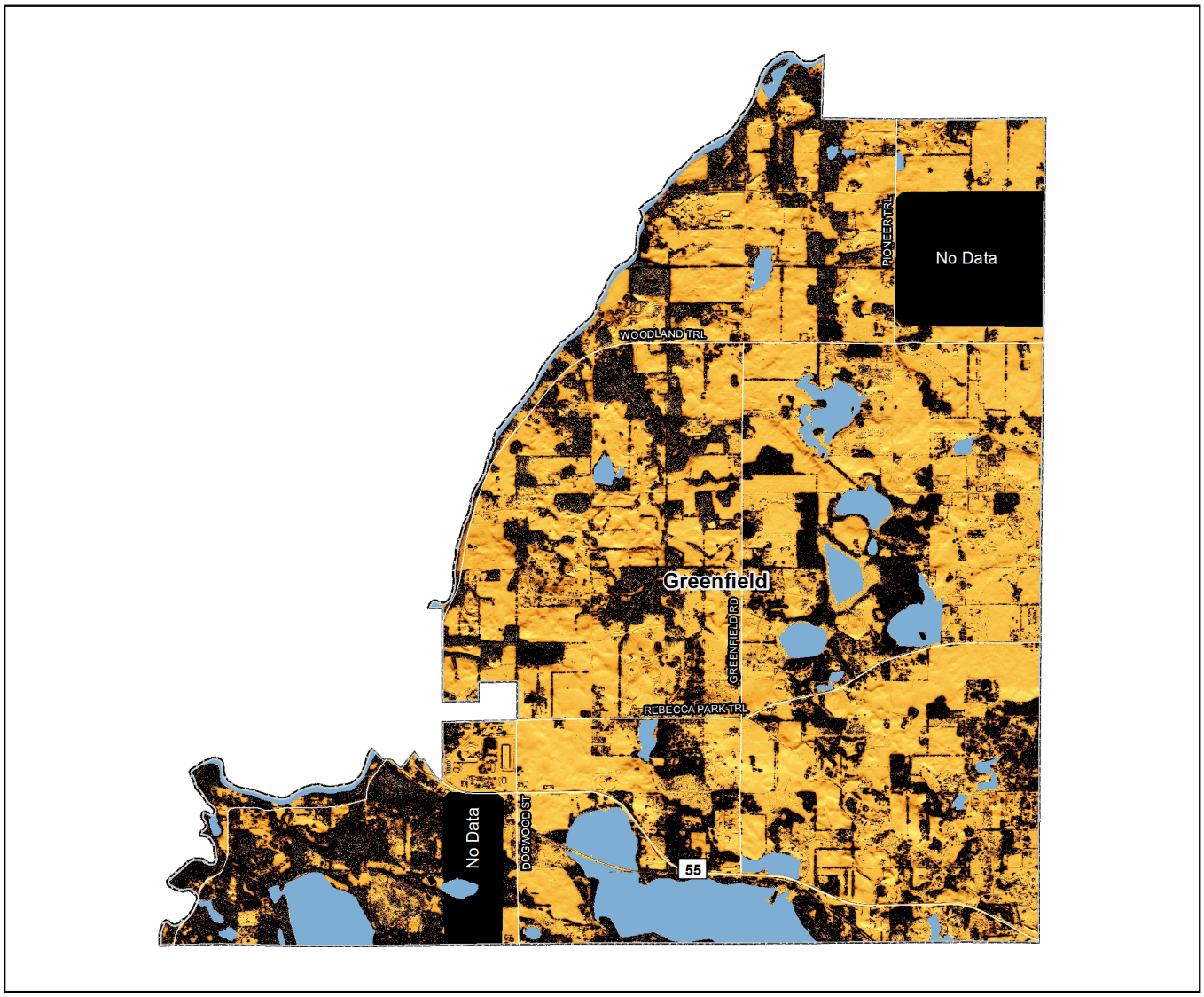
GROSS POTENTIAL (MWH/YR)	ROOFTOP POTENTIAL (MWH/YR)	GROSS GENERATION POTENTIAL (MWH/YR)*	ROOFTOP GENERATION POTENTIAL (MWH/YR)[2]
36,467,054	255,908	3,646,705	25,590

** In general, a conservative assumption for panel generation is to use 10% efficiency for conversion of total insolation into electric generation. These solar resource calculations provide an approximation of each community's solar resource. This baseline information can provide the opportunity for a more extensive, community-specific analysis of solar development potential for both solar gardens and rooftop or accessory use installations. For most communities, the rooftop generation potential is equivalent to between 30% and 60% of the community's total electric energy consumption. The rooftop generation potential does not consider ownership, financial barriers, or building-specific structural limitations.*

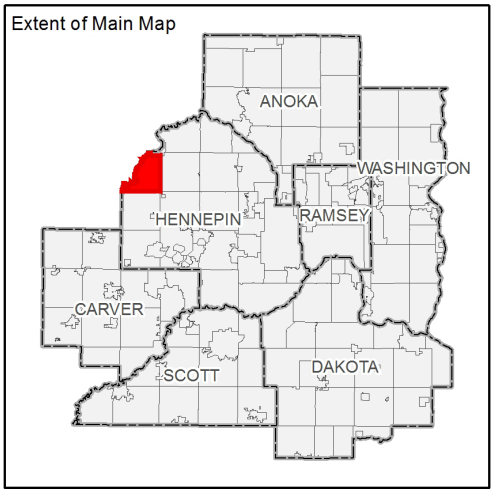
The City supports solar systems within its business/industrial park areas as accessory uses and not as the primary use of a parcel.

Figure 4-3. Solar Suitability Map

Gross Solar Potential
City of Greenfield, Hennepin County



12/13/2016



0 0.5 1 2 3 4
Miles

Gross Solar Potential
(Watt-hours per Year)

High : 1275138

Low : 900001

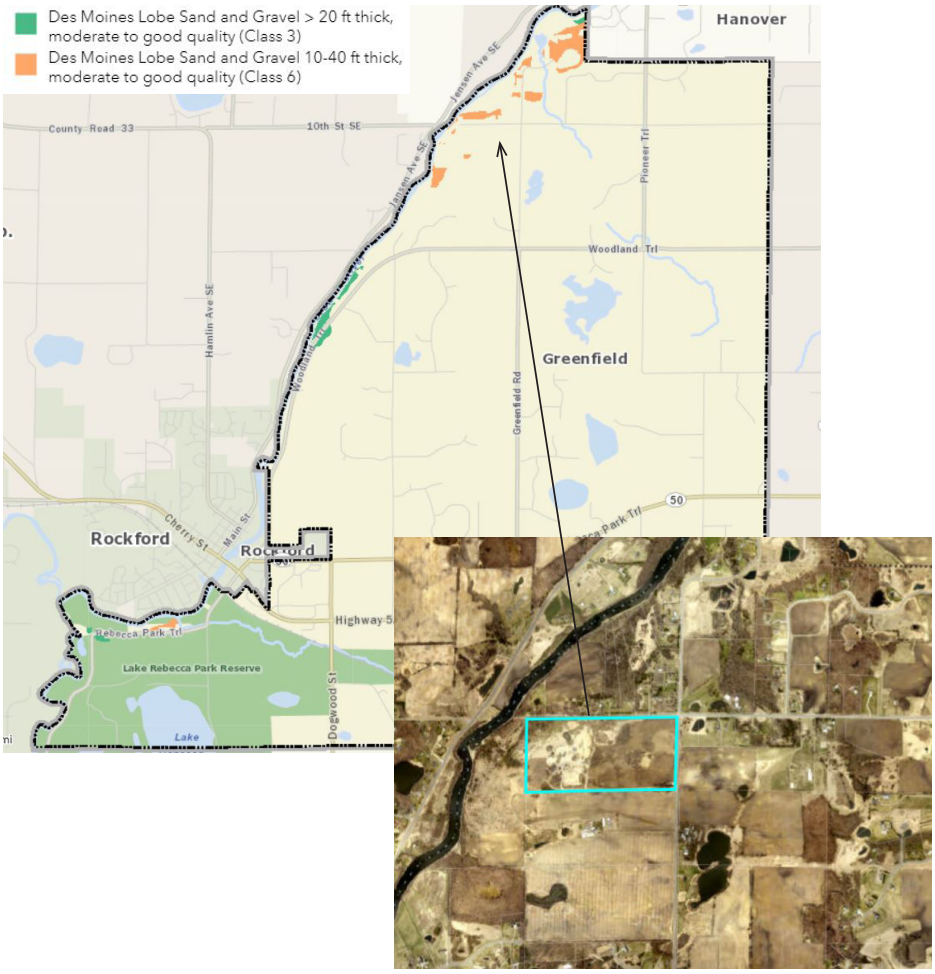
Solar Potential under 900,000 watt-hours per year
County Boundaries
City and Township Boundaries
Wetlands and Open Water Features

Source: University of Minnesota U-Spatial Statewide Solar Raster.

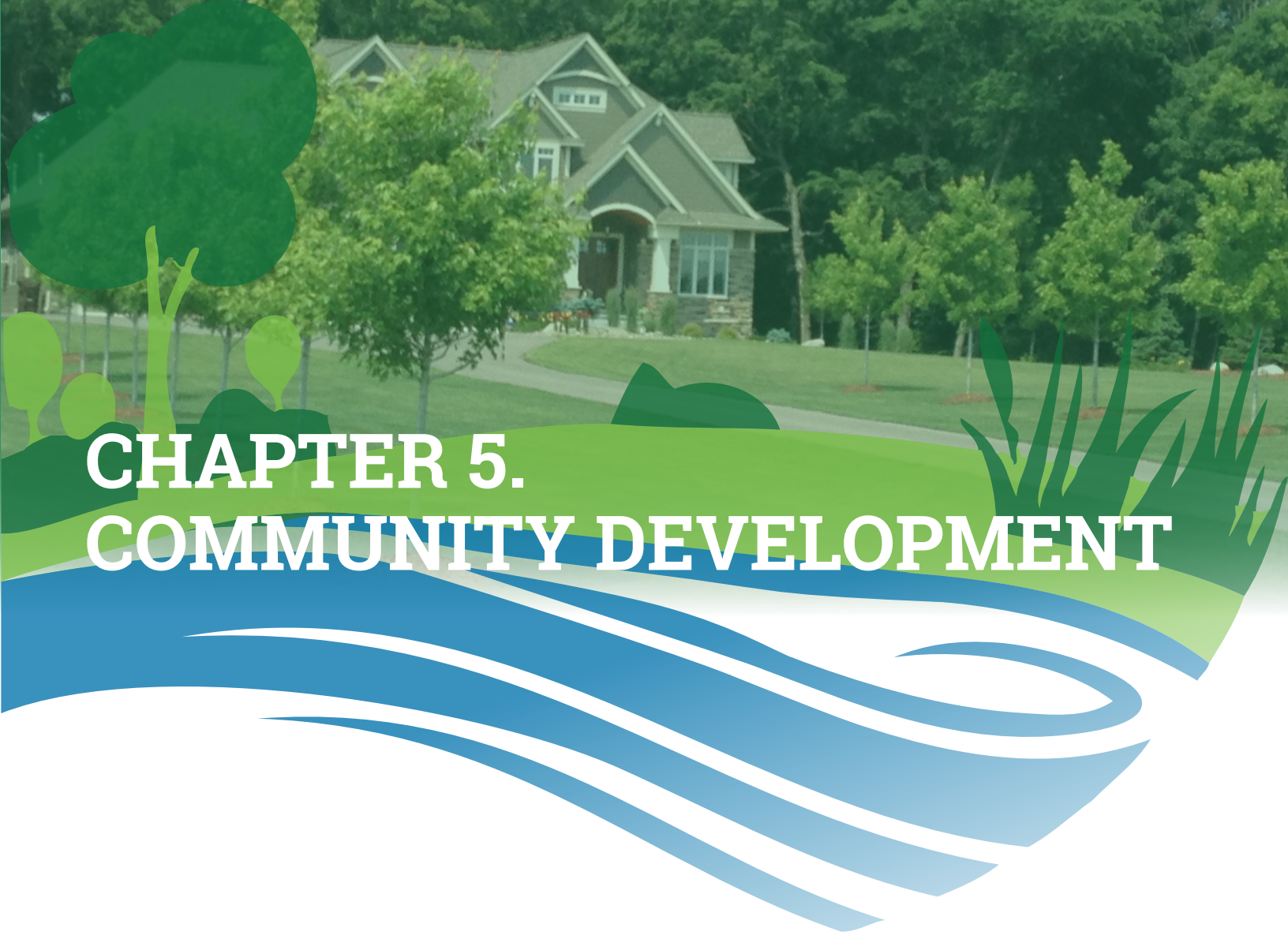
Aggregate Resources

State legislation enacted in 1978 requires local comprehensive plans to address aggregate resources. The law requires that communities include the local government's goals, intentions, and priorities concerning aggregate resources as part of their land use plan. Aggregate resources identified in City of Greenfield are limited. There is one remaining active aggregate production facility in operation located at the westerly terminus of Harff Road near the Crow River. Mineral extraction is allowed within rural areas through a conditional use permit. The City does have a conditional use permit (CUP) process to preserve the ability to extract mineral resources. The existing sand and gravel operation is anticipated to continue to operate consistent with its conditional use permit as the community transitions from rural to urban. Remaining areas of significant aggregate resources have been mined, restored, and developed to rural residential land use. (Figure 4-4)

Figure 4-4. Mineral Extraction Operation and Ag Resources



Approximately 80 Acre Gravel Extraction operation active in Greenfield through a Conditional Use Permit. Other areas shown on the map have either completed mining operations or are no longer available.



CHAPTER 5. COMMUNITY DEVELOPMENT

Introduction

This chapter titled Community Development provides guidance on Economic Development and Housing for the City of Greenfield. The two subjects are combined because of their direct relationship to one another. Economic development is an important function for the City of Greenfield. Without a strong tax base, there is insufficient revenue to make the types of investments that successful communities require including investments in safety, protection of water resources (clean water), provision of potable water, road and street maintenance/ reconstruction, and other community amenities. This section of the plan provides a framework for economic development activities consistent with the guiding principle of "Providing an environment supportive of commercial and business development;" "Preserve and strengthen a sense of community;" and, "Practice sustainability."

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The City of Greenfield Economic Development Authority (EDA) was established to help strengthen the community's businesses, partner with community organizations, and attract new businesses to the City of Greenfield. Economic development in general is about building and growing the job base, increasing the tax base, and offering economic development services to its citizens and businesses. The City strives to foster an attractive environment for economic development by retaining existing businesses, assisting businesses with start-up operations or expansion, attracting new businesses to the community, and enabling the rehabilitation and redevelopment of commercial areas within the City. However, economic development is more than jobs, services, and tax base. A strong community offers great neighborhoods to live in, a strong park and recreation system, quality infrastructure (including communication technology), a safe and connected transportation system, and sustainable/efficient government. As such, Economic Development and Housing are intrinsically linked. The Greenfield City Council serves as the Board of the EDA and directs economic development activities.

Economic development and housing will continue to be heavily reliant on the free market. The City of Greenfield is not a developer. Because economic growth, when guided in the right way, provides value added to the people of Greenfield, both economically and through an improved quality of life, the City of Greenfield has a vested interest in seeing development happen. Greenfield's role in supporting and encouraging community development is by providing supportive infrastructure systems and land use entitlement guidance through clear land use planning, zoning, and subdivision controls.

Economic Development and Housing Goals and Policies

Economic Development and Housing Goals

The following are Greenfield's goals for economic development and housing:

GOAL 5-8.
Grow the non-residential tax base to provide residential tax base relief in the city.

GOAL 5-9.
Attract basic goods and service commercial to the city to provide local shopping, dining, and services.

GOAL 5-10.
Establish a policy and regulatory framework that is supportive of economic development and that protects the economic and aesthetic integrity of the community.

GOAL 5-11.
Have quality housing that is affordable to all income levels and to people at all stages of the life cycle.

GOAL 5-12.
Have a diversity of housing types and forms within the City of Greenfield to meet the life-cycle housing needs for all spectrums of the socio-economic scale.

GOAL 5-13.

Have housing and neighborhoods that are well maintained.

Economic Development and Housing Policies

POLICY 5-30. Support initiatives to redevelop underutilized, outdated or aging commercial or industrial areas to more efficient and higher quality commercial and industrial uses.

POLICY 5-31. Consider use of available financial tools and special legislation to provide financial assistance in cases where redevelopment serves public need (i.e. extension of services, facilitation of traffic improvements, clean up of environmental contamination).

POLICY 5-32. Collaborate with property owners and developers in master planning larger development projects (i.e. Business Park, village center) especially in places where a market study indicates demand for growth that can help support and sustain existing city infrastructure investments.

POLICY 5-33. Work collaboratively with adjacent or affected jurisdictions (cities, county, state) towards mutually beneficial economic development and affordable housing initiatives.

POLICY 5-34.Encourage economic development initiatives within existing or planned business park areas with a focus on energy conservation or alternative energy sources.

POLICY 5-35. Encourage use of renewal energy resources to capture job and tax base creation opportunities and diversify local economic base.

POLICY 5-36. Support the development of zero net energy buildings and use of local renewable and energy efficiency resources.

POLICY 5-37. Collaborate with utility providers and encourage investment in electric grid infrastructure, emerging technologies, and alternative energy systems that increase reliability and resilience to weather-related disruptions.

POLICY 5-38. Accommodate the housing needs of persons of all stages of life including alternative housing forms and styles, housing occupancy (rental and owner), and price ranges.

POLICY 5-39. Allow a range of density and housing type choices as reflected in the medium and high density residential land use categories.

POLICY 5-40. Maintain and enhance the quality of existing and future housing and preserve residential land values.

POLICY 5-41. Ensure the provision of adequate municipal services and infrastructure in sewered neighborhoods.

POLICY 5-42. Ensure a balance of land use that supports a balance of jobs and housing.

POLICY 5-43. Work collaboratively with regional and local agencies whose mission is to assist with the creation of affordable housing.

POLICY 5-44. Monitor available land supply and lot inventories to better understand the relationship of land planning to affordable housing.

POLICY 5-45. Collaborate with developers and regional agencies to support the integration of affordable housing in new developments near Greenfield's core community services (schools, shopping, jobs).

Housing Assessment

Information on the housing stock within Greenfield is readily available from a variety of sources. Methodologies for how data is assembled can vary by each source. Sources used for this information include:

- ESRI - More than 2,000 variables on current-year estimates and five-year projection of demographics including population, households, income, age, and ethnicity. Data on education, labor force, journey to work, marital status, languages spoken, home value, and more. ESRI uses US Census Bureau and American Community Survey data as base information and professional estimate/projection methodologies.
- Metropolitan Council – Metropolitan Council uses a combination of US Census data, American Community Survey data, HUD, and the MetroGIS Regional GIS parcel data.

The following data provides a snapshot of the City of Greenfield and its housing stock:

Table 5-1. Housing Tenure

HOUSING UNITS BY OCCUPANCY STATUS AND TENURE	CENSUS 2010		2016		2021	
	NUMBER	%	NUMBER	%	NUMBER	%
Total Housing Units	970	100.0	1,014	100.0	1,061	100.0
Occupied	936	96.5	979	96.5	1,024	96.5
Owner	885	91.2	882	87.0	923	87.0
Renter	51	5.3	97	9.6	101	9.5
Vacant	34	3.5	35	3.5	37	3.5

Source: ESRI

Table 5-2. Population by Age

POPULATION BY AGE	CENSUS 2010		2016		2021	
	NUMBER	%	NUMBER	%	NUMBER	%
0 - 4	150	5.4	133	4.6	133	4.4
5 - 9	230	8.3	177	6.1	156	5.1
10 - 14	273	9.8	239	8.2	209	6.8
15 - 19	236	8.5	233	8.0	223	7.3
20 - 24	128	4.6	157	5.4	134	4.4
25 - 34	184	6.6	325	11.1	342	11.2
35 - 44	383	13.8	288	9.9	369	12.1
45 - 54	651	23.4	544	18.7	414	13.6
55 - 64	344	12.4	502	17.2	601	19.7
65 - 74	155	5.6	227	7.8	332	10.9
75 - 84	41	1.5	80	2.7	123	4.0
85 +	2	0.1	10	0.3	19	0.6

Source: ESRI

Table 5-3. Household Incomes

HOUSEHOLDS BY INCOME	2016 NUMBER	2016 %	2021 NUMBER	2021 %
< $15,000	33	3.4	35	3.4
$15,000 - $24,999	54	5.5	55	5.4
$25,000 - $34,999	45	4.6	40	3.9
$35,000 - $49,999	89	9.1	97	9.5
$50,000 - $74,999	130	13.3	118	11.5
$75,000 - $99,999	131	13.4	121	11.8
$100,000 - $149,999	172	17.6	185	18.1
$150,000 - $199,999	136	13.9	160	15.6
$200,000 +	189	19.3	212	20.7
Median Household Income	$101,462		$108,937	
Average Household Income	$137,552		$147,315	
Per Capita Income	$47,258		$50,400	

Source: ESRI

Table 5-4. Housing Value

ESTIMATED MARKET VALUE	NUMBER OF UNITS	% OF TOTAL UNITS
< 100,000	9	1%
100,000 to 199,999	172	17%
200,000 to 299,999	263	26%
300,000 to 399,999	213	21%
400,000 to 499,999	185	19%
500,000 to 599,999	83	8%
>600,000	74	7%
TOTAL	999	100%

Source: Hennepin County Assessor – Through 2016)

** Approximately 29% of the housing units in Greenfield have an estimated market value below $236,000 which was identified as an housing value affordable in 2017 to households with an income of 80% of the Area Median Income (AMI).*

Table 5-5. Affordability

UNITS AFFORDABLE TO HOUSEHOLDS WITH INCOME AT OR BELOW 30% OF AMI	UNITS AFFORDABLE TO HOUSEHOLDS WITH INCOME 31% TO 50% OF AMI	UNITS AFFORDABLE TO HOUSEHOLDS WITH INCOME 51% TO 80% OF AMI
1	34	244

Source: Metropolitan Council staff estimates for 2016 based on 2016 and 2017 MetroGIS Regional Parcel Datasets (ownership units), 2010-2014 Comprehensive Housing Affordability Strategy data from HUD (rental units and household income), and the Council's 2016 Manufactured Housing Parks Survey (manufactured homes). Counts from these datasets were adjusted to better match the Council's estimates of housing units and households in 2016 as well as more current tenure, affordability, and income data from the American Community Survey, home value data from the Federal Housing Finance Agency, and rents from HousingLink's Twin Cities Rental Revue data .

Table 5-6. Housing Cost Burdened Households

INCOME AT OR BELOW 30% OF AMI
30
INCOME 31% TO 50% OF AMI
31
INCOME 51% TO 80% OF AMI
48

Housing cost burden refers to households whose housing costs are at least 30% of their income. Source: U.S. Department of Housing and Urban Development, 2010-2014 Comprehensive Housing Affordability Strategy (CHAS) data, with counts adjusted to better match Metropolitan Council household estimates.

There are no publicly subsidized housing units in the City of Greenfield. The Metropolitan Council provides the following data on the affordability levels of Greenfield's housing stock.

The City of Greenfield's housing stock consists of approximately 68 townhome units (out of a total of 999). These units were all developed between 2004 and 2007. The estimated market values of these units ranged from 137,000 to 178,000 in 2017 (Source: Hennepin County Assessors Data). Approximately 41 platted lots remain to be developed in town home area and two outlots remain to be platted.

The remainder of Greenfield's housing stock is detached single family housing, or 93% of its total housing stock. This equates to approximately 931 housing units. Collectively, these units have an average estimated market value per Hennepin County Assessor's Data of $365,000. (note: estimated market value is the value established by the County Assessor for tax purposes and may not reflect actual sales valuations).

Table 5-7. Age of Housing Stock

YEAR BUILT	NUMBER OF UNITS	% OF TOTAL UNITS
Pre-1910	53	5%
1910-1970	143	14%
1970-1990	255	26%
1990-2000	278	28%
2000-2010	230	23%
2010 Through 2016	40	4%
Total	999	100%

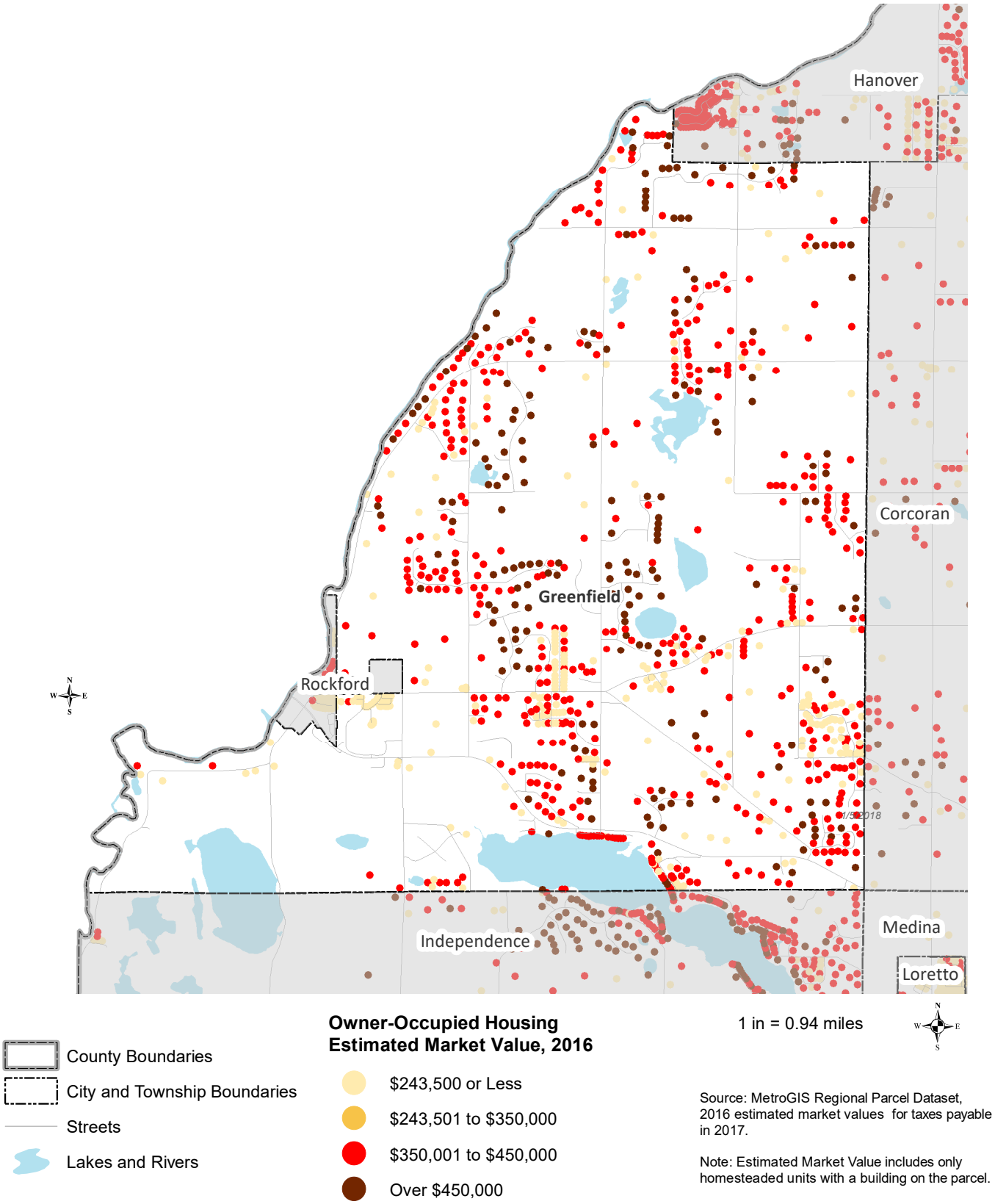
Source: Hennepin County Assessor – Through 2016)

Aerial Imagery of Greenfield

Townhomes

Greenfields housing stock consists of approximately 68 townhome units. Approximately 41 platted lots remain to be developed in town home area and two outlots remain to be platted.

Figure 5-1. Owner Occupied Housing Values



Source: MetroGIS Regional Parcel Dataset, 2016 estimated market values for taxes payable in 2017.

Note: Estimated Market Value includes only homesteaded units with a building on the parcel.

Housing Needs

At present, Greenfield is mostly developed to large lot subdivisions with higher median home values than the county wide average. Affordable single family housing opportunities for entry level housing and move-up housing for younger families is very limited. These housing options will help the city in establishing a stronger market (and labor pool) for desired commercial services and business development. The housing type of housing in Greenfield is limited to single family detached homes and a limited number of attached townhomes. The housing needs for the City of Greenfield include introducing a land use pattern that would allow for stacked housing options. Such housing options would support senior housing lifestyles, empty nesters, and starter housing for young people entering the labor force. The City of Greenfield is guiding lands for mixed use that includes approximately 16 net developable acres of higher density (12 unit acre +) residential as part of the Village Center concept. This land is currently in Ag Preserve, and not currently within the city's sewer service area. However, the land has been withdrawn from the Ag Preserve program and is scheduled to be eligible by 2021. The land is also adjacent existing urban services and could be easily served. Additional medium density lands (approximately 17 acres) guided for a minimum of 6 units per acre is immediately available for development potential. These lands provide the needed guidance for the City of Greenfield to accommodate the identified share of affordable housing per the Metropolitan Council.

Table 5-8. Metropolitan Council Affordable Housing Allocation (2021 – 2030)

INCOME RANGE	UNITS NEEDED
At or below 30% of AMI	19
from 31% to 50% AMI	3
from 51% to 80% AMI	9
Total Units	31

Source: Metropolitan Council

Table 5.6 shows housing cost burden for Greenfield. While not a high number of households are burden, the City recognizes the need to provide housing opportunities that are more affordable in order to provide housing for a work force and to keep housing affordable for the younger and older generations where finances are more limited. Guiding more lands for more moderate density and establishing tools to enable that development is part of Greenfield's strategy.

Village Center

The village center concept includes 33 acres, of which 50% is guided to be higher density housing at a minimum density of 12 units per acre. The village center concept will be available for development when the property owner decides to move forward. However, all municipal services are at the property.

For information on staging showing land projected to be available for 2021-2030 please see the Land Use Chapter Table 4.8 which provides a "best guess" at when and how much land may be platted and how many units might be built.

Implementation Initiatives

This section of the Chapter 5, Community Development, gives specific implementation actions and tools that can be utilized by the City, residents, developers, and financers to meet the Economic Development and Housing Needs in Greenfield. Table 5-9 identifies each widely-available tool/action, when it would be considered, and what need(s) it addresses.

Table 5-9. Community Development Implementation Tools and Actions

TOOL OR ACTION	CIRCUMSTANCES & SEQUENCE OF USE	IDENTIFIED NEED
Economic & Development Authority (EDA)	The City Council, through its role as the EDA, will review the Community Development Implementation Initiatives on an annual basis to ensure resources are being utilized most effectively.	NA
Tax Increment Financing (TIF)	The City would consider Tax Increment Financing (TIF) for redevelopment projects in the areas served by city sewer and water for commercial or industrial development. TIF will also be considered for new growth in the Village Center area were funding assistance is needed to meet housing goals and provide a number of units that are affordable to very low, low, or moderate income households.	Need of housing that is affordable to a range of income levels, especially very-low, low, and moderate income households
Housing Bonds	The City would consider issuing Housing Bonds for residential projects that are eligible for TIF and the use of Housing Bonds would make more units affordable to very low-, low-, or moderate-income households. However, there are competing priorities and limitations to city bonding authority.	Need of housing that is affordable to a range of income levels, especially very-low, low, and moderate income households
Tax Abatement	The City would consider tax abatement for housing projects that increases the number of affordable units available to very low-, low-, or moderate-income households	Need of housing that is affordable to a range of income levels, especially very-low, low, and moderate income households
Consolidated RFP through the MHFA	The City would consider supporting/sponsoring an application to the Consolidated RFP programs through MHFA for residential project proposals in areas guided for high density residential uses and mixed uses	Need of housing that is affordable to a range of income levels, especially very-low, low, and moderate income households Need for a variety of housing types for all stages of life
Land Bank Twin Cities	The City would encourage developers and property owners to work with the Land Bank of the Twin Cities. It is unlikely that the City will become an active partner with the Land Bank for development	Need of housing that is affordable to a range of income levels, especially very-low, low, and moderate income households
Local Funding Resources: Livable Communities Demonstration Account (LCDA) through Metropolitan Council	The City is not currently a participant in the LCDA program. If the opportunity presents it, the City may consider future participation in the program.	Need for a variety of housing types for all stages of life
Local Funding Resources: Community Development Block Grant Funds (CDBG) through Hennepin County	The City will consider the use of a portion of our CDBG funds to prioritize projects if they provide units affordable to very low-, low-, or moderate-income households, and are located in the high density or mixed use locations on the City's future land use map	Need of housing that is affordable to a range of income levels, especially very-low, low, and moderate income households
Local Funding Resources: Affordable Housing Incentive Fund (AHIF) through Hennepin County	The City will explore with Hennepin County the application for AHIF funds to provide incentives for developers to develop affordable units for very-low income households	Need of housing that is affordable to a range of income levels, especially very-low, low, and moderate income households
Guiding land at densities that support affordable housing	See the future land use plan and projected housing needs section of the housing chapter of this comprehensive plan	Tool to address multiple housing needs and improve our housing strategy capacity in general
Zoning and Subdivision Ordinances	The City will be reviewing its zoning and subdivision ordinances to identify any regulations that inhibit the housing priorities in this document.	Tool addresses multiple housing needs and improve our housing strategy capacity in general
Small Area Master Planning	The City will engage in Small Area Master Planning in a collaborative effort with land owners to establish a vision and program for infrastructure investments for the following areas: - Village Center - Highway 55 Corridor (redevelopment/new development)	Action addresses multiple economic development and housing needs.

TOOL OR ACTION	CIRCUMSTANCES & SEQUENCE OF USE	IDENTIFIED NEED
Partnership with local Community Land Trust	The City will consider partnerships that are brought forth through proposed development projects on a project basis.	Action address multiple economic development and housing needs.
Support for and/ or partnerships with providers of homeownerhsip assistance programs	The City will consider partnerships that are brought forth through proposed development projects on a project basis.	Action address multiple economic development and housing needs.
Site Assembly	The City is currently not in a position to assist with site assembly for housing.	NA
Rental License Inspection Program	The City is currently not in a position to establish a rental license program and does not foresee such a need during the 2040 planning horizon.	NA
A Fair Housing Policy	NA - Should the City determine a Fair Housing Policy is needed it will consider and adopt it accordingly.	NA

The City has limited staffing resources to be proactive with housing and economic development tools and actions. Typically, additional funding resources are required to secure outside consulting services or support from other organizations in order to utilize many of these programs.

CHAPTER 6. PARKS, TRAILS, OPEN SPACE

Introduction

Parks, trails, and natural resources (open space) are some of the most identifiable and cherished features in a community. It is necessary to plan for the future preservation and maintenance of these spaces to keep the character of the city in line with the vision for the community.

Park, trail, and open space facilities have a significant impact on shaping the quality of life and leisure time activities in Greenfield. This chapter of the comprehensive plan provides a long term plan for the development and maintenance of parks and trails and the preservation of open space in the City. The chapter also provides a framework for the establishment of park dedication fees through the subdivision and platting processes.

Parks, trails, and open space areas:

- offer a sense of identity to the community;
- provide recreation and opportunities to enjoy the outdoors;
- help preserve desired open space views that contribute to "rural character";
- help preserve ecological functions and habitat for wildlife
- attract visitors that contribute to the economic vibrancy of the City by patronizing commercial and retail establishments (existing and potential future establishments); and,
- add value to lands in close proximity to the resource and to the City as a whole.

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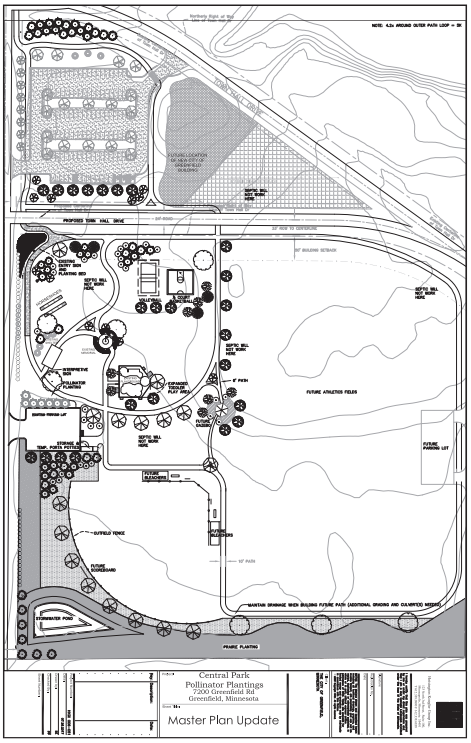
Existing Conditions

Chapter 2 highlights the existing parks, regional trail plans, and natural resource system that comprises the City of Greenfield's system of parks, trails, and open space. A significant amount of land area in Greenfield is consumed by parks (namely the Lake Rebecca Park Reserve and Lake Sarah Regional Park), and the natural resources (wetlands, floodways, and other areas unsuitable for development).

Most if not all of these acres do not directly produce property tax revenues. However, these amenities provide other values to the City of Greenfield that warrant their continued preservation, management, and maintenance.

Thumbnail of Figure 3-8



History and Overview of Park and Trail Planning

In 2000, the Minnesota Design Team met with approximately 400 residents of Greenfield, Rockford, and Rockford Township. Based on that citizen input and an evaluation of the community, the Design Team recommended that Greenfield consider a community trail network. A community survey was conducted in 2001 to determine resident park and recreation needs and desires. The survey showed a general desire for a community park and trails. A park master plan was prepared in 2003 for Greenfield Community Park. Since that time the Parks Commission has worked to maintain and continually update that master plan, and as funding becomes available, improvements have been implemented. This plan in its updated form continues to be relevant today in providing a long term vision for the park and a short term implementation guide.

In 2006, the City of Greenfield formed an Open Space Committee to identify and assess natural resources/open spaces for potential preservation. Recommendations of the Open Space Committee were presented to the City Council; however no particular recommendation was fully endorsed. The information within the Open Space Committee report merely provides a backdrop to the future of parks, trails, and open space in Greenfield.

Past comprehensive planning efforts have established a long term plan for a system of city trails to link Greenfield neighborhoods to key destinations such as the city park, regional park facilities (Lake Sarah Regional Park and Lake Rebecca Park Reserve), Rockford Area school facilities, and nearby regional trail corridors. The trail network is intended to serve non-motorized users (walking, running, biking, etc.) Past comprehensive plans included concepts for trails on existing local low-traffic volume streets as well as new off-road trails primarily along collector roads. The plan suggested identifying actual trail corridors and preserving rights of way through the dedication process as new development occurs.

Park, Trails, and Open Space Assessment, Needs, and Framework

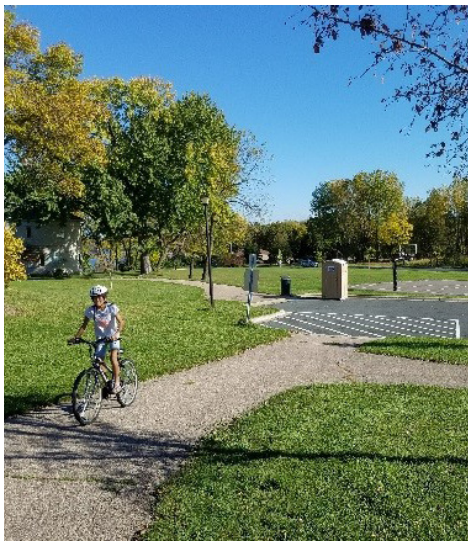
Rural Areas of Greenfield and Open Space Preservation

Central Park: Given the low density development pattern within the rural areas of Greenfield, future park development serving the rural areas of Greenfield will be focused on building out improvements planned for Central Park. (See Figure 3-8). Planned improvements for Central Park include trail improvements, landscaping/plantings, parking lot improvements, athletic courts, and associated park structures such as a gazebo and restroom/storage facilities.

Open Space: As development occurs in the rural area, emphasis will be placed on working with property owners and developers to balance the need to optimize development yields while preserving open space areas that contribute to the desired rural character. Preservation of open space should emphasize

- buffer areas along surface waters where such buffers can have the greatest impact towards improving water quality;
- prominent views of open space from collector road corridors (views that include wetlands, intact wood stands, or other significant habitat areas); or,
- agricultural uses including pastures, vineyards, vegetable gardens, or other cover crops.
- See Figure 3-3 (Natural Resource Composite) for development constraints in open space priority areas

Open space: areas are not intended to be owned by the City of Greenfield. Long term management and maintenance of open spaces should be accomplished through easements and maintenance agreements with private property owners and associations.



Neighborhood Park Precedent (5-10 acres)

Suburbanizing Areas (areas with municipal sewer and water)

As the City begins to grow and residential neighborhoods develop in the municipal sewer and water service area, future park needs should be carefully evaluated concurrent with development proposals. Two key park needs are identified with future urban services growth:

Traditional Neighborhood Scale Park – As low density residential development grows to the north and north east area of the city a future neighborhood park should be evaluated to serve this area. A 5 to 10 acre neighborhood park could be coordinated with future development and preserved through the subdivision and platting process as a public park facility. Future improvement costs and land acquisition should be covered through the park dedication process/ordinance.

Pocket Park/Plaza – As the "Village Center" concept emerges, a more urban 'plaza' like park would provide a unique identity to the "Village Center" and to the City of Greenfield as a whole. The pocket park/plaza would serve as an attraction to help create a vibrant and successful commercial area. Such a space could host smaller community events and gatherings that would benefit by closer proximity to retail services. Because the "Village Center" concept includes housing, this park would also provide a small open space/gathering area for residents.

Pockect Park / Plaza Precedent

Regional Parks

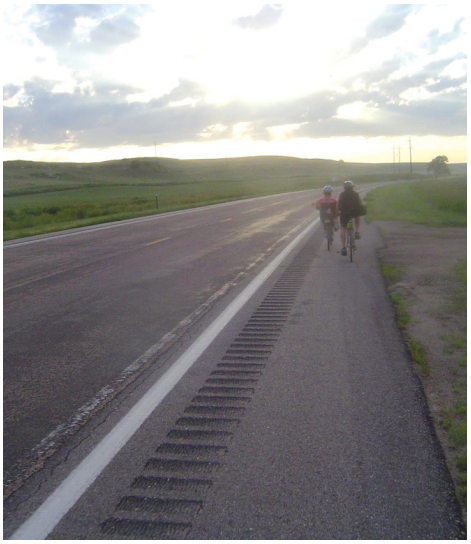
Three Rivers Park District is responsible for planning and managing regional parks within Greenfield. The City will cooperate with the park district on land use and entitlement processes associated with acquiring future in-holdings consistent with the current plans. (See Figure 3-9)

Trail Plan

The 2040 Comprehensive Plan recognizes the importance of establishing a connected network of streets and trails so that residents have a safe and comfortable environment to move throughout the community on bike or foot (walking/jogging/other). At the same time, the planning process recognizes the

challenges of dedicating trail right-of-way and securing funding to construct and maintain trails.

Regional Trails – A number of regional trail corridors skirt the edges of Greenfield. The Crow River Regional Trail corridor is guided by the Crow River Regional Trail Master Plan completed in 2017 by Three Rivers Park District. The master plan places the planned trail corridor on the Wright County side of the Crow River with a connection to the City of Greenfield through the City of Rockford via a future regional trail corridor envisioned along Rebecca Park Trail (CR 50), which would also link Greenfield to the Lake Independence Regional Trail (an off road facility along CR 19) and beyond.



Onroad Bike Trail Precedent

The regional trail along Rebecca Park Trail would ideally be an off road trail within the county road right of way; however, it is recognized that significant challenges will need to be overcome associated with ditch and driveway design. This trail will be a long term trail under Hennepin County jurisdiction.

The Lake Sarah Regional Trail, An off road regional trail corridor, is planned that will link the Crow River Regional Trail to the Lake Independence Regional Trail and traverse through Three Rivers Park District lands within the City of Greenfield.

The City of Greenfield supports regional trail planning efforts and ultimately the implementation of these trails. Impacts on Greenfield residents and property owners should be carefully evaluated and mitigated to the degree possible during the planning, design, and construction process.

See Figure 3-10 for regional trails linking to Greenfield.

The Regional Bicycle Transportation Network (RBTN) was established in the last Transportation Policy Plan update as the official regional bikeway network that sets the region's priority vision for planning and investment. The network was based on a Regional Bicycle System Study analysis and prioritization of potential corridors based on factors such as bicycle trip demand, network connectivity, social equity, population and employment density, and connections to transit. Further details on the study completed in 2014 can be found on the Metropolitan Council's website. There are no RBTN corridors in Greenfield.

Local Trails in the RURAL areas of Greenfield – Currently the City of Greenfield does not have any local trails outside of the Central Park. The rural low density nature of development in Greenfield suggests that biking and walking can safely and easily be accommodated on local streets in the Rural Area. As future rural development patterns continue to develop, future subdivisions need to incorporate a connected street network so residents can use less busy local streets to move through the community via bike as an option. However, there are cases where a public street connection is impractical due to an abundance of sensitive environmental features or challenging natural features where a public street would do more harm than benefit, or cases in which the density of development might not warrant a physical street. In these cases, smaller trail rights-of-way should be considered where such connections can be made without the impact or cost of a full street corridor.

Major through streets in Greenfield (Woodland Trail, Vernon Street, Greenfield Road, Pioneer Trail) should all be considered for future on road trails to be designed as enhanced shoulders with signage and striping. While many of these roads have higher speed limits, an education and awareness campaign, as well as signage,

protective pavement markings, flexible bollards, and/or rumble strips, can increase comfort and usability of bicycle/pedestrian facilities along key roads.

Building the trails could be treated like a public improvement through the platting process or as roads/streets are reconstructed. Longer term maintenance and replacement would require further study and establishment of a longer term dedicated funding source.

Local Trails in the area guided for municipal sewer and water – As the area with municipal sewer and water develops at a higher density than the rural areas, the City should require major neighborhood streets that move the most traffic (i.e. the ones that generally connect to the collector roadway system) to have a paved multi-purpose trail on one side of the street, particularly on the side with the fewest driveway and intersection crossing conflicts.

Multi-purpose trail on one side of the street

Multi-Purpose Trail Precedents

System Goals and Policies

The goals, policies, and implementation strategies that follow provide a plan for future park and trail system improvements and plans.

Park, Trails, and Open Space Goals

The following are Greenfield's goals for park, trails, and open space:

GOAL 6-14.
Provide high quality park and open space amenities for City residents.

GOAL 6-15.
Provide a central gathering place(s) for community events and recreational programming.

GOAL 6-16.
Create a connected trail corridor system linking Greenfield neighborhoods to local and regional amenities.

GOAL 6-17.
Protect quality open space areas for their functional (habitat and water quality) and visual (rural character) appeal.

Park, Trails, and Open Space Policies

POLICY 6-46. Prioritize near-term park dedication funding towards improvements to the City's Central Park.

POLICY 6-47. Continue to coordinate park improvements consistent with the master plan for Central Park.

POLICY 6-48. Continue to collaborate with volunteer entities and with the school district to coordinate improvements and program use of Central Park.

POLICY 6-49. Explore and consider new park types to serve future higher density residential growth, such as in the proposed "Village Center," or as new suburban density residential growth expands.

a. Evaluate and modify park dedication fees concurrently with park system plan updates that will provide a different level of parks for the community.

POLICY 6-50.Cooperate with regional entities (Hennepin County, Three Rivers Park District) on the continued planning and maintenance of regional parks and trails within the City of Greenfield.

POLICY 6-51. Collaborate where possible with Rockford Area Schools to provide community meeting space and shared recreational/athletic fields.

POLICY 6-52. As major roadway corridors are planned for improvements, consider bike and pedestrian trail facilities as "on street" or "off street" facilities, depending on the road characteristics and physical constraints along the corridor.

POLICY 6-53. Continue to collaborate with the PSCWMC on the preservation of wetlands and buffers as valuable open space amenities.

POLICY 6-54. Encourage (through the sketch plan review process and platting process) private developers to preserve and protect valuable open space and natural resource amenities while achieving an optimal development density.

POLICY 6-55. Encourage (through the sketch plan review process and platting process) private developments to provide off street trail corridors that provide links to neighborhoods where a logical street connection might exist but that is impractical due to environmental or financial constraints.

POLICY 6-56. As the core area (area with municipal sewer and water) of Greenfield continues to develop, require off street sidewalks on local streets and trail elements along minor collector streets.

Implementation Strategies

Implementation strategies fall into three key categories: regulatory, master planning, and advocacy/partnership.

- Regulatory: Review and modify the subdivision and park dedication ordinance to consider trail system improvements and park dedication.
- Regulatory: Update the park dedication ordinance to ensure adequate park dedication to cover land and capital costs consistent with state laws.
- Master Planning: Prepare individual park master plans to serve future growth demands in the area with municipal sewer and water services. Develop a Capital Improvement Plan to adequately budget and fund future improvements.
- Advocacy/partnership: Collaborate with Hennepin County Transportation, Three Rivers Park District, and local and regional bike/run/walk advocates to implement regional trail plans.

Capital Improvement Plan

The City does not maintain a CIP for park improvements. The City has one item in that could be programmed as a Capital Improvement and that is Central Park. The City maintains a master plan for the park and makes improvements to the park as funds become available through grants, volunteering, philanthropy, or other sources.

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CHAPTER 7. LOCAL SURFACE WATER MANAGEMENT

Introduction and Executive Summary

This chapter of the Comprehensive Plan serves as the required Local Surface Water Management Plan for the City of Greenfield as required by Minnesota Rules and Statutes and the Pioneer-Sarah Creek Watershed Management Commission following the adoption of its Third Generation Watershed Management Plan (adopted by the commission on March 4, 2015). Local water plans must be prepared by metropolitan cities and towns and a local water plan must become part of the local comprehensive plan for a municipality.

More importantly, the purpose of this chapter of the plan is to protect the water resources (water quality) in and adjacent to the City of Greenfield and to manage and prevent damages from flooding. The challenges facing the City include maintaining water quality, protection of wetlands, streams, and other natural resources and flood control.

The City of Greenfield is located within the Pioneer Sarah Watershed Management Commission (PSCWMC), with a small area hydrologically in the Elm Creek

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Watershed. The City of Greenfield is part of the Joint Powers Agreement forming the Pioneer Sarah Creek Watershed Management Organization (WMO). The Commission drafted their third generation watershed management plan in 2015 and the plan was finalized and signed by all of the communities within the watershed. With the approval of the Commission Plan, it is the requirements of the communities within the watershed to draft their own local surface water management plan in alignment with the local comprehensive plan schedule. This chapter of the comprehensive plan is intended to fulfill this requirement.

The City of Greenfield recognizes the necessity of adopting land use policies that compliment water resource management, by implementing best management practices and land use policies that work towards the conversion of farmland and highly erodible lands to covered (natural vegetation) areas and other highest and best uses, including managed growth and cluster housing. Due to the unique rolling and hilly topography common in much of Greenfield, phosphorous loading into the watershed from primarily agriculture uses is of great concern and is problematic. The gradual conversion of farmland into rural residential uses provides opportunities to restore areas along wetlands and other environmentally sensitive locations to natural vegetative habitat that significantly reduces phosphorous run-off from fertilizers and animal waste. The land use policy of 1 unit in 5 acres helps afford conservation and restoration activities.

City Adopts PSCWMC Standards

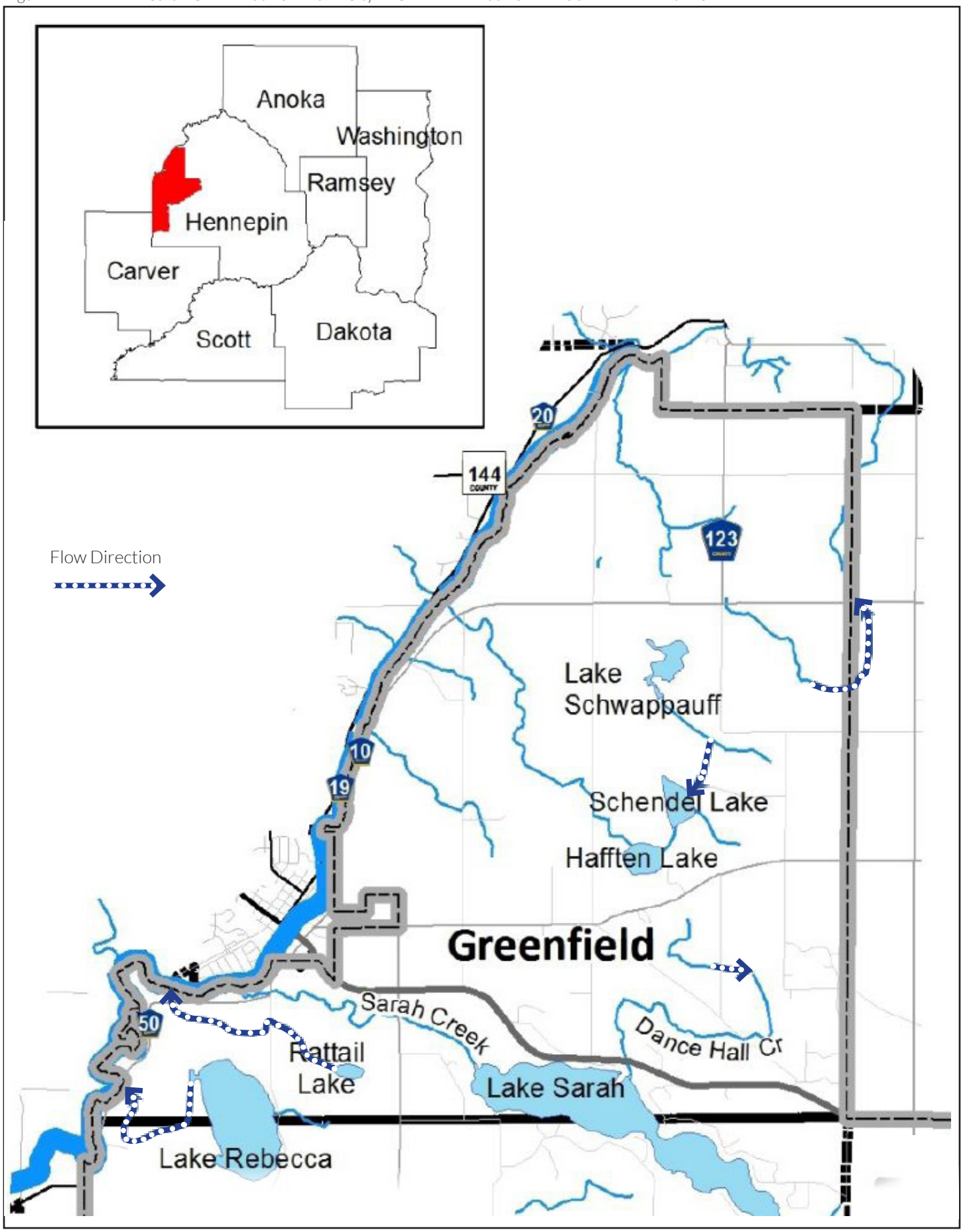
The City of Greenfield adopts the goals and standards of the Pioneer-Sarah Watershed Management Commission Third Generation Plan as its local surface water management plan goals and standards. These include 18 goals covering water quantity (flood control), water quality protection, groundwater protection/recharge, wetland preservation/enhancement, drainage systems, and PSCWMC operations and programming. Policy and implementation of the City's plan is further detailed in following section.

The City of Greenfield adopts the goals and standards of the Pioneer-Sarah Watershed Management Commission Third Generation Plan (Appendix G.) as its local surface water management plan goals and standards.

Joint Powers Agreement

The City is a participant in the Joint Powers Agreement with the PSCWMC. The philosophy of the Joint Powers Agreement is that the PSCWMC establishes certain common goals and standards for water resources management in the watershed, agreed to and implemented by the member cities and the PSCWMC. Successful achievement of the goals in this Plan is dependent on all member cities and their dedication to this effort.

Figure 7-1. Pioneer Sarah Creek Watershed and City of Greenfield Waters Bodies and flow directions



Existing and Proposed Physical Environment and Land Use

This section of the Plan will review and discuss the City's natural features and conditions. They are fundamental elements through which land use design patterns are shaped.

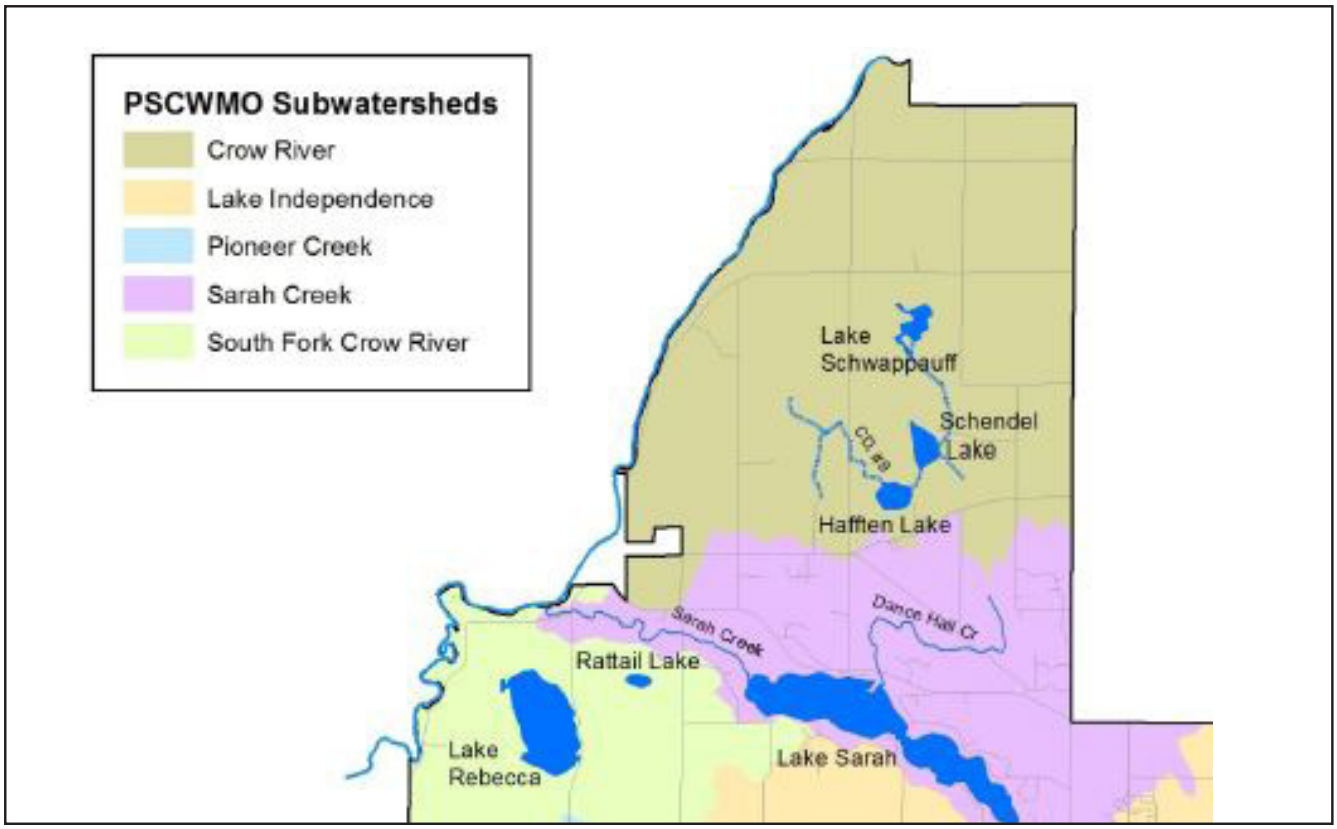
Major Water Bodies

The major natural water bodies are shown on Figure 7-2. The drainage ways move water from highlands to lowlands toward holding areas, wetlands, lakes, and rivers. Development activities in these areas are governed by the City, MPCA, and the Pioneer-Sarah Creek Watershed Management Organization.Water from the Sarah Creek Watershed drains south to Lake Sarah. This Lake has an outlet on the west to Sarah Creek, and also drains to the Crow River in the southwest corner of the City. Water from the Elm Creek Watershed drains northeast to the Mississippi River via Rush Creek and Elm Creek.

Floodplain

The Federal Emergency Management Agency (FEMA) has a national flood insurance rate program which includes flood boundary and floodway maps for Greenfield. The federal program is monitored by the Minnesota DNR and is administered through the City's zoning ordinance. Floodplains are shown in Figure 7-3.

Figure 7-2. Major Natural Water Bodies



Topography

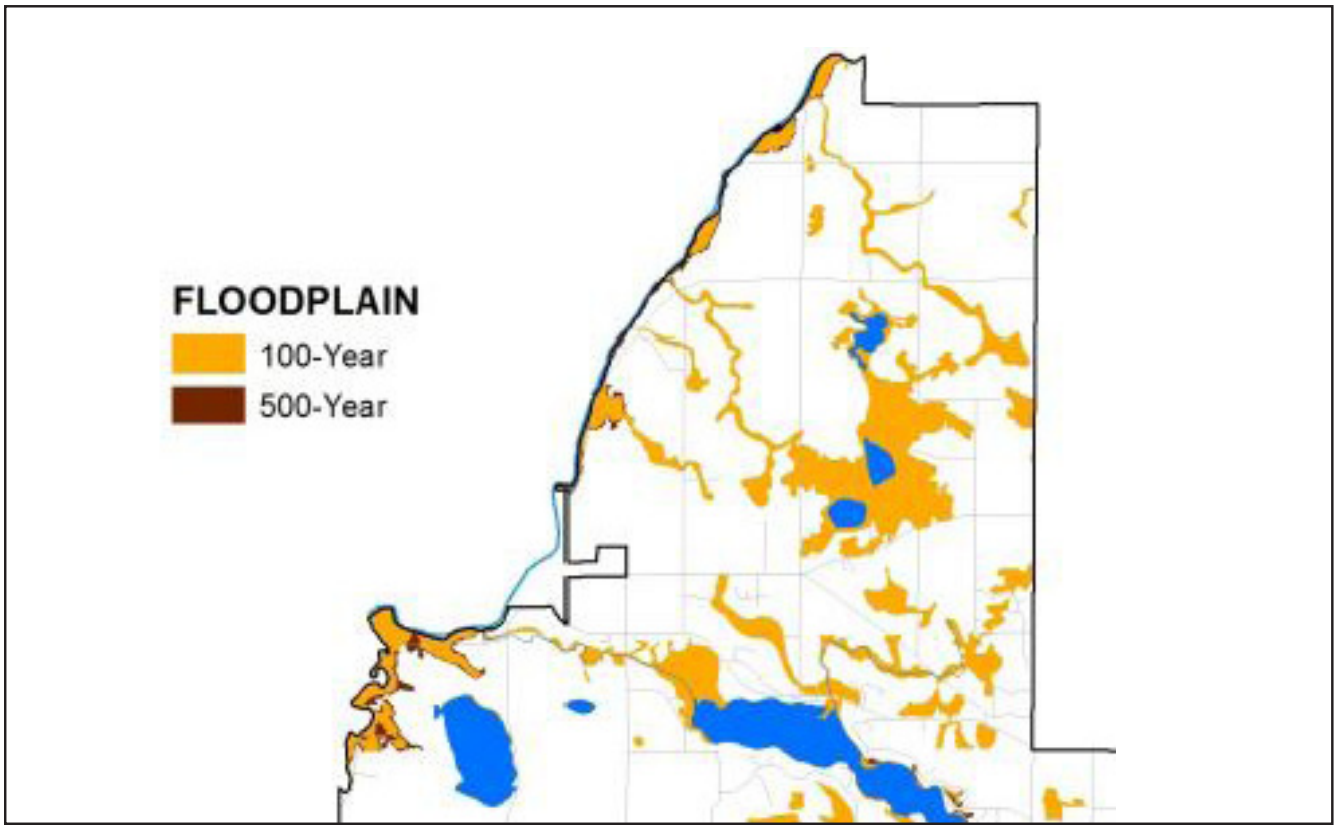
Greenfield is located in the Grantsburg Loamy Till/Rogers Plain and Grantsburg Clayey Till/Loretto Plain. These land forms were created by the Grantsburg lobe of the last ice sheet, which formed the landscape of western Hennepin County. The predominant features of this landscape are rolling hills, wet low lands, and areas of steep slopes. Slopes throughout the City are gently rolling with few areas having slopes of greater than 18%. Managing water in the soil and on the land poses the greatest challenge to land use and development. Seventy percent (70%) of this land has a seasonal high water table within three (3) feet of the ground's surface. This seasonal high water table affects building design, on-site sewer systems, roads, and parking areas.

The Rogers Plain, located in the northeast corner of Greenfield, has formations of plateaus and broad lowlands. It is seen as a broad, flat plain with small lakes. There is a concentration of prime agricultural soil in this area.

The majority of Greenfield is in the Loretto Plain. Here a clayey mantle soil covers the loamy till soil. This land accommodated early settlers who needed land that could be farmed. It has long views, open space and secluded sites. Steep slopes bound sides of low slung hills which hide low marsh and swamp areas. These slopes make this area of Greenfield quite distinctive.

As with the Rogers Plain, a near ground level water table is found in the Loretto Highlands area. This area has a perched water table. Water soaks into and moves downward into the soils of the Loretto Highlands slowly because of the tightly packed clayey soils. This unique landscape can accommodate both agriculture and urban development.

Figure 7-3. Floodplain



Greenfield is divided into five distinct geographic regions. The first, in the northwest, is a belt of steep hills flanking the Crow River. It is approximately one mile wide and runs from Rockford to Hanover. The second area, in the northeast, consists of nearly level areas to gently rolling hills. The land is well drained with few marshes. The third area, central Greenfield, is poorly drained and has some steep slopes. This area contains the Hafften, Schandel and Schwappaauff chain of lakes. The extreme southeast is the fourth geographic region in Greenfield. It is characterized by areas of very steep slopes, ravines, and marshes. This is not good farm land. The last geographic region, the southwest section of the City, is characterized by a river, steep slopes, and ravines. Much of this area is within the Lake Rebecca Park Reserve.

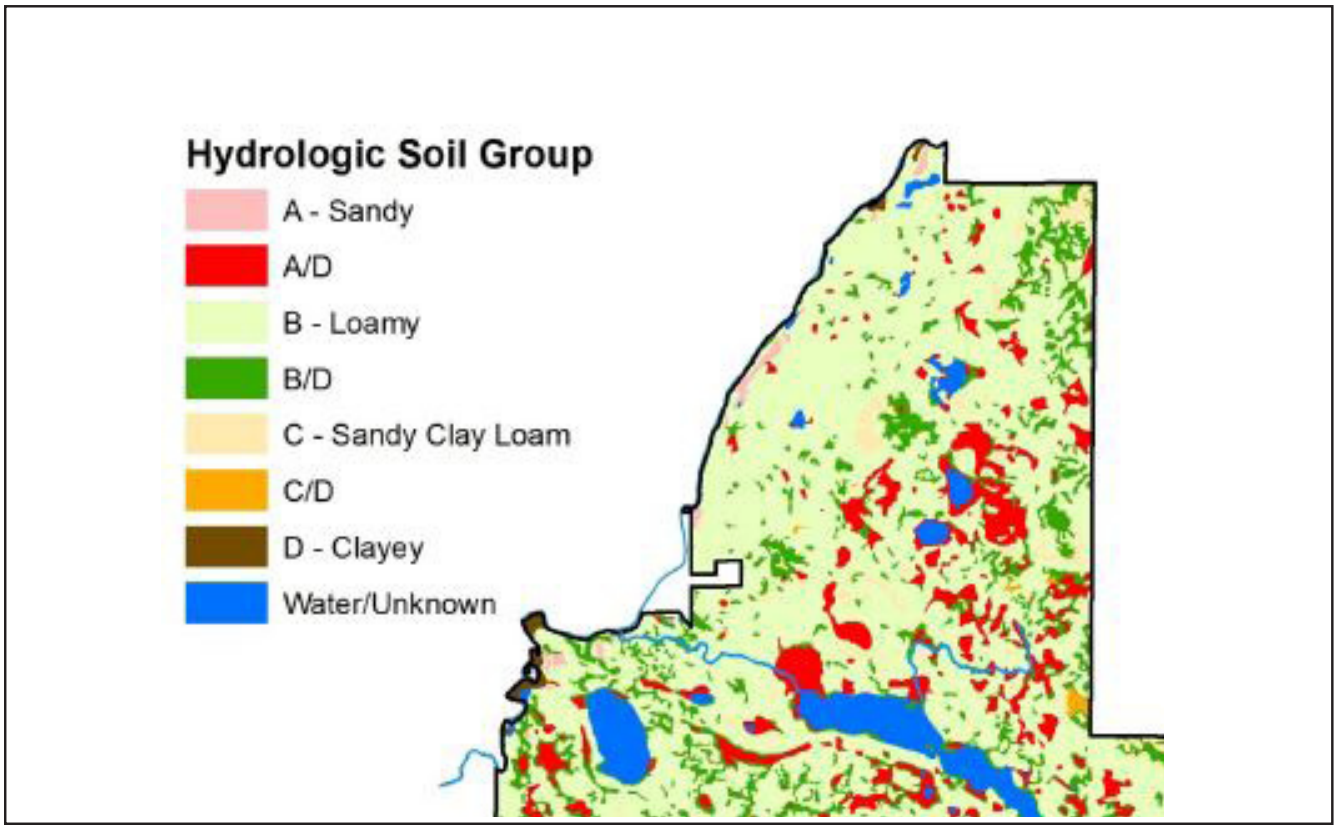
Soils

According to the Hennepin County Soil Conservation Service (SCS), Greenfield has three primary soil associations; (1) Cordova-Hayden-Nessel association, (2) Hayden-Cordova-Peaty Muck association, and (3) Lester-Peaty Muck association.

General Soil Type One

The soils of the Cordova-Hayden-Nessel association, located in northeast Greenfield, are nearly level to gently undulating. They are moderately fine and medium textured soils that developed in deep friable loam glacial till. Dairy farms and cash grain crops are typical land uses for this area. Drainage and maintenance of soil tilth are the primary farm management needs. Wetness and moderate to moderately slow percolation rates limit urban use. Wet soils have low bearing capacity and high frost heaving, and need special consideration for road and street planning.

Figure 7-4. Hydrologic Soils



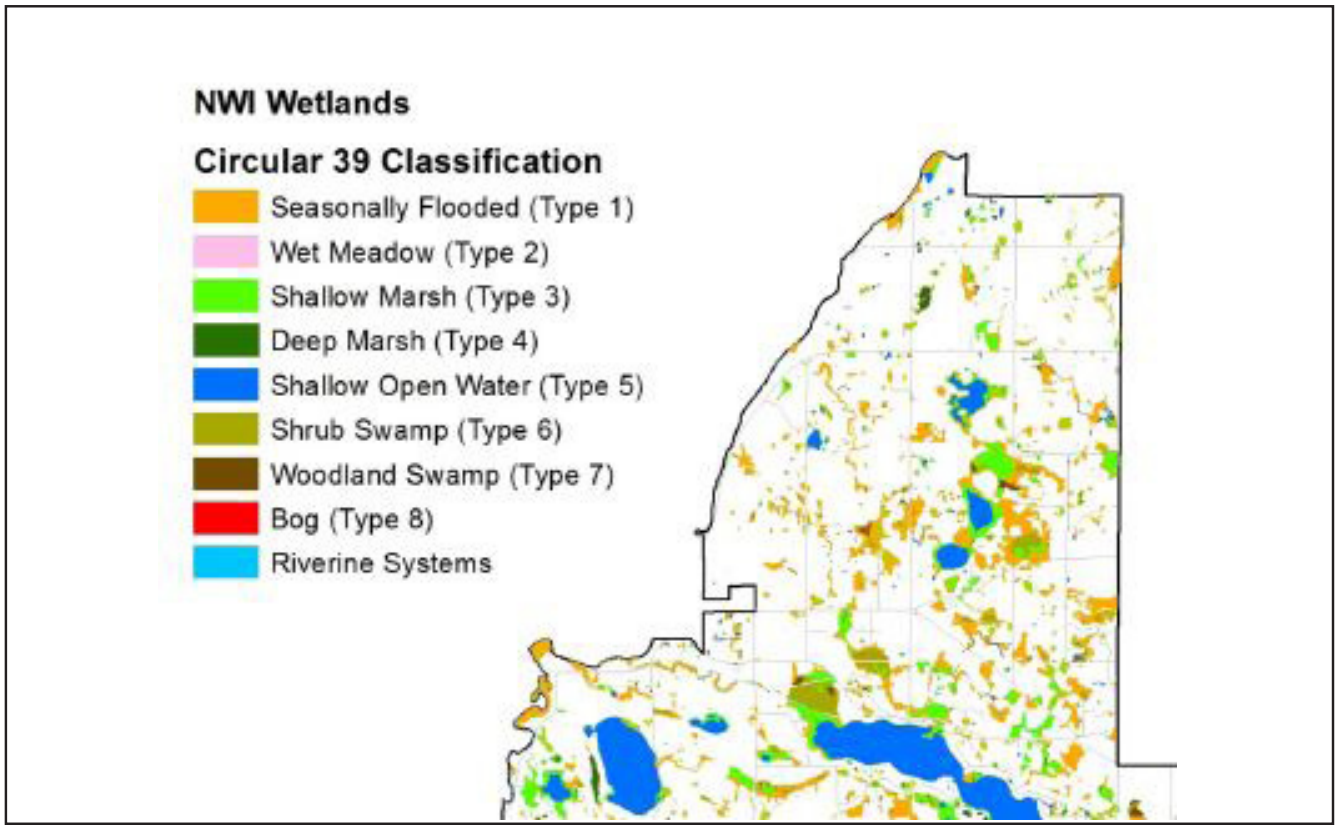
General Soil Type Two

The soils of the Hayden-Cordova-Peaty Muck association are nearly level to rolling, and are medium to moderately fine textured soils that developed in glacial till and level organic soils. These areas consist of undulating to rolling soils on low, irregular hills and knolls that are separated by nearby level soils in broad drainage ways. Length of slopes range from 75 to 200 feet with many small steep slopes around lakes and large depressions. Most of this area is crop land with some scattered woodland and pastures. The major farm management needs are control of erosion, drainage and maintenance of soil tilth. Thirty to forty percent (30% to 40%) of these soils are poorly drained.

General Soil Type Three

The soils of the Lester-Peaty Muck association are rolling and hilly, medium and moderately fine textured soils that developed in glacial till and level organic soils. The area consists of rolling to hilly well-drained soils on hills and knolls that are separated by very poorly drained soils in swales and in large closed depressions. Areas of steeper soils occur mainly near large depressions. The length of slope ranges 75 to 200 feet. Dairy farming is the major land use, although this is declining. Crops range from corn, soybeans, alfalfa, and small grains. Slopes pose a moderate to severe limitation for use, and frost heaving is a hazard on the wet soils. High run-off rates can be expected in urban areas.

Figure 7-5. National Wetland Inventory



Prime Agricultural Soils

Prime agricultural soils are the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oil seed crops. These soils are primarily suited for crop land, pasture land, and forest. These areas have the soil quality and moisture supply needed to economically produce sustained high yields of crops when managed according to acceptable farming methods. Although these soils are located in most parts of Greenfield, the largest concentration is in the north and east.

Soils with Severe Building Limitations

These are areas where frost action is a serious limitation to development and construction activities. Uniformity of soil material is important in grading design. Frost heaving occurs if there is high capillary action in a material that is in close proximity to a water table. Soils with severe building limitations are typically corrected during development

Wetland Hydric Soils

Wetland soils are soils that show mottling and remain wet all year long or for long periods of time. These soils are found in wetland basins, shallow to moderate deep wet flats, and shallow drain ways on the loamy glacial till plains

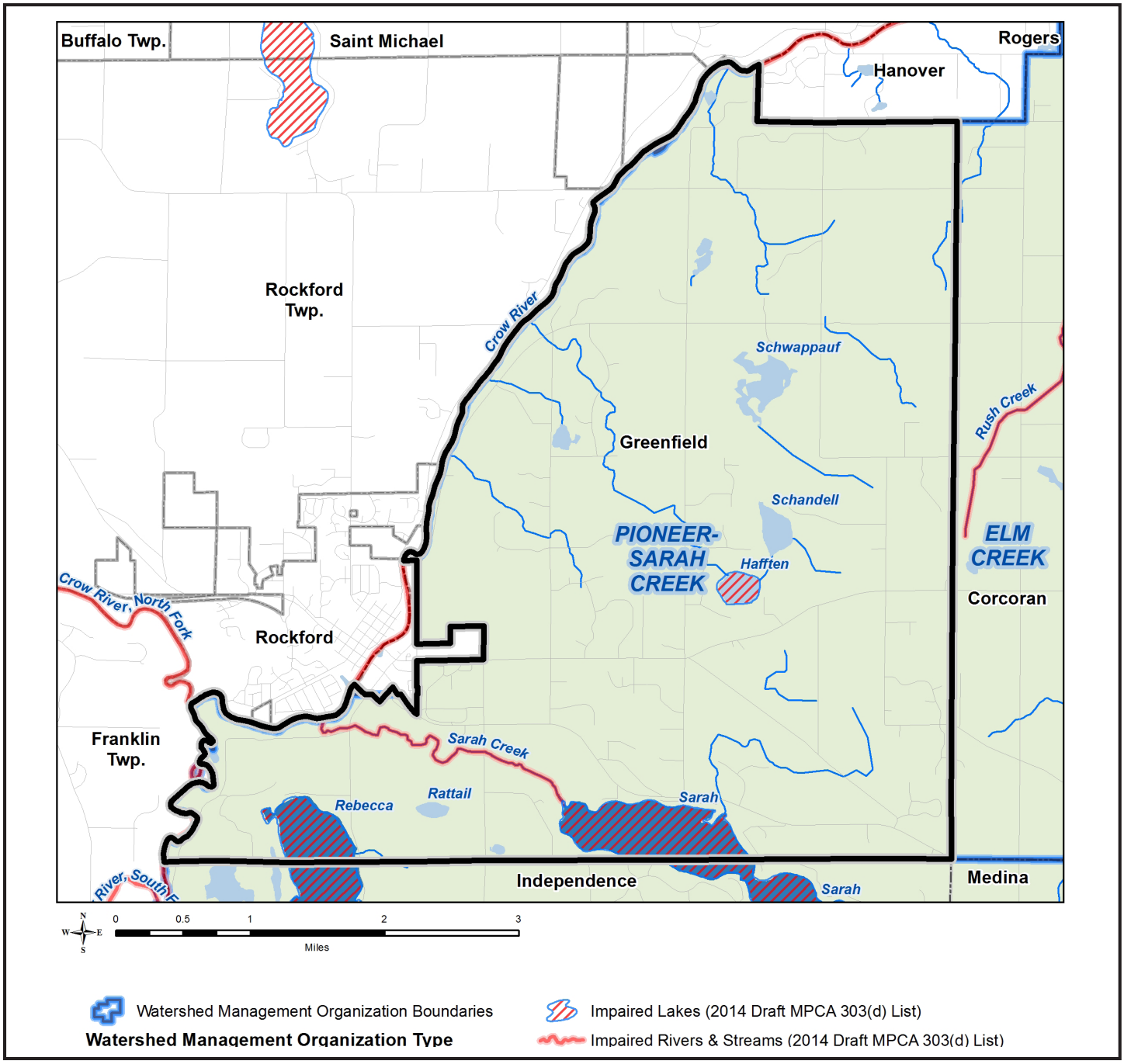
Land Use

The majority of Greenfield is currently in agricultural land use or rural residential. While agriculture will continue to be a component of the future landscape in the City, over time, much of this land will be invariably converted to other land uses such as rural residential and suburban residential, commercial, or industrial uses within the municipal services area of the city. Developed land uses increase runoff due to compaction of soil during development and the creation of impervious surfaces. As individual residential or commercial developments are constructed, storm water infrastructure (i.e. storm sewers or ponds) will be developed to properly manage storm water volumes (flood protection) and protect water quality both within Greenfield and downstream receiving water bodies. The City will work with the PSCWMC in implementing development regulations.

A significant contributor to water quality within the City of Greenfield is the agricultural use of the land including both row cropping and livestock. The preferred strategy for achieving the reductions in the watershed waste loads involves implementing a series of Best Management Practices related to row crop agriculture, feedlot and manure management, and residential and commercial development, supplemented with restoration of stream, wetland and shoreline habitat. The City will continue to support and promote voluntary efforts of land owners to implement BMPs. As agricultural land uses transition over time, the city will continue to implement its zoning and subdivision ordinances and collaborate with the PSCWMC to ensure protection and enhancement of wetlands and drainage ways.

The long term future condition of the city is for a rural residential pattern and a core urban (suburban) area of the City with municipal services. Table 7-1 provides a summary of Planned Land Uses based on the future land use plan as found in Chapter 4, Land Use (see Figure 4-1.).

Figure 7-6. Impaired Waters



Drainage areas and paths of stormwater flow can be seen in Figure 7-1. Volumes and rates of runoff for each district are typical of suburban or rural land uses. The city does not currently have data for volumes and rates for stormwater flow for sub-watersheds. The City will work with the PSCWMC to establish volumes and rates for sub-watersheds by the end of 2019.

Table 7-1. Land Use by Subwatershed in the City of Greenfield

	CROW RIVER NORTH		CROW RIVER SOUTH		SARAH CREEK	
LAND USE CATEGORY	ACRES	%	ACRES	%	ACRES	%
Business Park/Industrial	54	0.6%	66	1.8%	-	0.0%
Commercial Services	28	0.3%	113	3.0%	8	0.6%
Institutional	53	0.6%	18	0.5%	-	0.0%
Low Density Residential	397	4.6%	114	3.0%	-	0.0%
Medium Density Residential	50	0.6%	40	1.1%	-	0.0%
Open Water	244	2.8%	328	8.7%	182	12.9%
Public Park and Open Space	1	0.0%	352	9.4%	971	69.1%
Railroad	-	0.0%	46	1.2%	8	0.6%
ROW	341	4.0%	235	6.2%	53	3.8%
Rural Residential	7,398	86.2%	2,427	64.6%	184	13.1%
Village Center	21	0.2%	15	0.4%	-	0.0%
Grand Total	8,587	100.0%	3,755	100.0%	1,407	100.0%

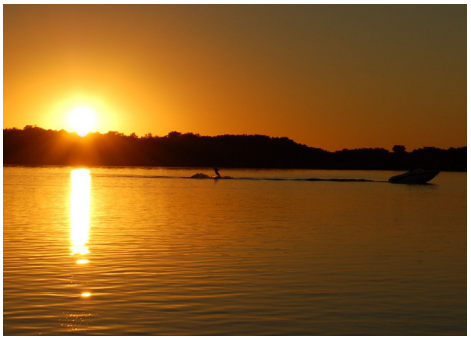
Water Bodies

There are a variety of water bodies lying within the City of Greenfield including lakes, creeks and streams. Significant water features as well as the Minnesota DNR sub-watershed are presented in Figure 7-1. In July of 2017, the PSCWMC in collaboration with the MPCA completed a Watershed Restoration and Protection Strategy Report for the Pioneer Sarah Creek Subwatershed. This report, also called a WRAPS report, analysed the waters within the watershed, conducted Total Maximum Daily Load (TMDL) studies, an identified strategies and actions to address both restoration and protection of important water resources. All lakes within the City of Greenfield (except Lake Sarah and Lake Rebecca) were included in this study effort.

A Total Maximum Daily Load (TMDL) is a regulatory term in the U.S. Clean Water Act, describing a plan for restoring impaired waters that identifies the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards.

Lake Sarah

A TMDL plan was completed for Lake Sarah in 2011. The City considers the Lake Sarah TMDL implementation plan a high priority for water quality within the City of Greenfield. However, budget and fiscal constraints prevent CIP monies from being dedicated toward specific activities at this time. The City's reduction plans generally focus on programs and projects within the agricultural sector. These programs have historically have been and are continuing to be voluntary in nature and outside the realm of a CIP expenditure. Although the City does not have specific CIP money dedicated for the Lake Sarah TMDL, the City continues to work to meet load allocation goals through following voluntary programs such as those provided by the Natural Resource Conservation Service (NRCS) to implement agricultural best management practices within the Lake Sarah Watershed. The city also works with the PSCWMC to implement wetland buffer strips through its subdivision and platting processes. Lake Sarah also has adjacent lands that are part of Lake Sarah Regional Park. The City will work collaboratively with Three Rivers Park District towards goals to improve water quality of the lake.



Sunset on Lake Sarah
Source: Brenda Kruse

Lake Rebecca

Lake Rebecca
Source: Adam Johnson

Lake Rebecca is a 254-acre basin with a maximum depth of the 30 feet and a littoral zone of 138 acres. Lake Rebecca is completely contained within Lake Rebecca Park Reserve with surrounding lands including a mix of wooded, wetland, rural residential and agricultural uses. There is one small un-named channel that flows into Lake Rebecca from the east and a public boat launch on the northwest bay of the lake that is operated by Three Rivers Park District. Lake Rebecca receives a moderate to high amount of public activity, including boaters, fisherman and trail hikers within the park reserve. Lake Rebecca currently meets water quality standards and fully supports recreational uses. Being fully within Three Rivers Park District and the Lake Rebecca Park Reserve helps preserve the water quality. The City of Greenfield supports the protection strategies identified in the WRAPS working in collaboration with the PSCWMC and Three Rivers Park District:

- Continue efforts to decrease impact of livestock operations in the watershed
- Firmly apply PSCWMC standards for new development as it occurs
- Periodically assess effectiveness of internal load controls and supplement if necessary
- Continue annual water monitoring, aquatic plant surveys, and CLPW control efforts

Hafften Lake

Hafften Lake is a small, deep 43-acre basin with a maximum depth of the 44 feet and a littoral zone of 26 acres. The land surrounding Hafften Lake is a mix of wooded, wetland, rural residential and agricultural uses. A creek channel flows from Schendel Lake into the northeast corner of Hafften Lake and the outflow of the lake is a creek which exits at the northwest corner and flows to the Crow River. There is one public boat launch located on the southeast corner of the lake. Hafften Lake receives a moderate amount of public use, mainly in the form of fisherman.

TMDL and WRAPS studies were completed in 2014 for the North Fork Crow River that includes the Hafften Lake drainage area. Detailed TMDL allocations and implementation strategies were developed for Hafften Lake as part of these efforts.

The following goals have been identified for Hafften Lake:

- Prevent degradation of existing lake water quality.
- Use the results of the TMDL and WRAPS to determine the need for a detailed lake management plan for Hafften Lake.
- Determine the need to develop implementation projects specifically targeting improved water quality of Hafften Lake.

Rattail Lake

Rattail Lake is a small, deep 12-acre basin with a maximum depth of the 63 feet and a littoral zone of approximately four acres. Rattail Lake lies within the Lake Rebecca Park Reserve and the land surrounding the lake is comprised mainly of wooded and wetland areas. There is no public boat access to Rattail Lake. However, the lake likely receives limited public use as a result of it lying within the regional park reserve. Rattail Lake was included in the TMDL and WRAPS completed in 2017 by the MPCA and PSCWMC.

The following goals have been identified for Rattail Lake:

- Use the results of the TMDL and WRAPS to implement BMPS to prevent degradation of existing lake water quality.
- Use the results of the lake assessment to determine the need for a detailed lake management plan for Rattail Lake.

Schwappauff Lake

There is little information available describing the existing condition of Schwapauff Lake. The lake basin is approximately 74 acres in size. There is no available information describing the lake depth or littoral area. The land surrounding Schwapauff Lake is comprised mainly of agriculture areas including fields and pastures. There is no public access to the lake. The outlet of Schwapauff Lake is County Ditch 9 which exits from the southern end of the lake and flows south into Schauer Lake.

Schauer Lake

There is little information available describing the existing condition of Schauer Lake. The lake basin is approximately 46 acres in size. The lake is shallow basin, classified as a type-3 shallow marsh wetland. Schauer Lake is dominated by emergent vegetation with very little open water present in the basin. The land surrounding Schauer Lake is comprised mainly of agriculture areas including fields and pastures, with some wooded areas also present. There is no public access to the lake. County Ditch 9 flows into Schauer Lake in the northwest corner and exits the lake along the east side.

Schendel Lake

There is little information available describing the existing condition of Schendel Lake. The lake basin is approximately 63 acres in size. Based on USGS topographic maps the lake is moderately deep, with a maximum depth of 25 feet. The land surrounding Schendel Lake is comprised mainly of wooded and agriculture areas including fields and pastures. There is no public access to the lake. There is one un-named channel that enters Schendel Lake from the east and exits the lake at the south end where it flows to Hafften Lake. The following goals have been identified for Schwappauf, Schauer, and Schendel Lakes:

- Work with the PSCWMC to conduct an assessment of the lake within five years of plan approval.
- Use the results of the lake assessment to prevent degradation of existing lake water quality.
- Use the results of the lake assessment to determine the need for a detailed lake management plan for Schendel Lake.

Streams and Rivers

The Crow River is a tributary of the Mississippi River and forms the western border of Greenfield and Hennepin County. Other streams include Sarah Creek and Dance Hall Creek. The Crow River and Sarah Creek streams are listed as impaired waters and are subject of further study and strategies to help reduce pollutants and clean up the waters.

Impaired Waters List (MPCA's 303(d))

Impaired waters within the State of Minnesota are documented by the Minnesota

Pollution Control Agency (MPCA) under the Total Maximum Daily Load (TMDL) program. The MPCA's 303(d) Impaired Waters list contains waters that receive runoff from the City of Greenfield including: Lake Sarah, Hafften Lake, Lake Rebecca, and Sarah Creek. The Crow River was delisted in 2016.

Table 7-1. Impaired waters located within City of Greenfield

WATER BODY	STATE ID	AFFECTED USE	IMPAIRMENT
Lake Sarah	27-0191-01	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators
Crow River	07010106	Aquatic Consumption (S Fork), Aquatic Life Aquatic Recreation (N Fork)	Mercury in Fish Tissue
Hafften Lake	27-0199-00	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators

Assessment of Existing or Potential Water Resource Related Problems

Like any city on the fringe of a growing metropolitan area, the City of Greenfield is faced with existing water resource problems that are a result of an agrarian land use pattern and a rural estate/rural residential land use pattern. Those problems include agriculture related runoff (mostly from row cropping operations) and a proliferation of private well and septic systems. As the area continues to develop, opportunities exist to transition away from agriculture uses to a land use that enables filtering of pollutants. Stronger monitoring, educational efforts, and management of private well and septic systems will help prevent problems normally associated with such systems. The city will work collaboratively with PSCWMC and other local and regional agencies to continue to assess and address water resource related problems.

Goals, Policies, and Implementation Program

The City adopts by reference the goals and standards of Pioneer Sarah Creek Watershed Management Commission (PSCWMC) as outlined in the Third Generation Plan in section 4 of the document. (For detail on these goals, please see the PSCWMC's Third Generation Watershed Management Plan adopted in 2015). Furthermore, Greenfield will consider and encourage use of Minimal Impact Design Standards (MIDS) where appropriate to minimize stormwater runoff and pollution and preserve natural resources in a cost effective and environmentally responsible manner.

The PSCWMC is governed by a Board of Commissioners that is comprised of one member appointed from each community by their respective City Councils. The Commission's purpose is set forth in Minnesota Statutes 103B.210, Metropolitan

Surface Water Planning, which codified the Metropolitan Surface Water Management Act of 1982:

- (1) protect, preserve, and use natural surface and groundwater storage and retention systems;
- (2) minimize public capital expenditures needed to correct flooding and water quality problems;
- (3) identify and plan for means to effectively protect and improve surface and groundwater quality;
- (4) establish more uniform local policies and official controls for surface and groundwater management;
- (5) prevent erosion of soil into surface water systems;
- (6) promote groundwater recharge;
- (7) protect and enhance fish and wildlife habitat and water recreational facilities; and
- (8) secure the other benefits associated with the proper management of surface and ground water.

Furthermore, the City supports many of the strategies that are referenced in the PSCWMC WRAPS Strategy Report for South and North Whaletail Lakes and Deer and Unnamed Creeks including:

- Conducting assessments to determine appropriate dose and cost of chemical precipitant treatment and executing chemical precipitant treatment to reduce phosphorus release from sediments
- Conducting follow-up monitoring to track effectiveness and longevity of treatments
- Performing rural subwatershed assessment studies to identify and implement livestock/agricultural BMPs in areas where livestock/agriculture uses may continue for the long term
- Establish livestock managed access control areas near streams, alternative watering sources and/or pastureland runoff controls/buffers on farms in shoreland areas
- Improve riparian vegetation by enforcing minimum buffer standards (50' along streams)

Wetland Management Plan

The City's goal is to preserve and protect the wetlands in Greenfield. The City will work with the PSCWMC, who is the designated Local Governmental Unit to administrator the Wetland Conservation Act (WCA). The City views wetland health as an integral part of future water quality improvements and also improving progress towards TMDL implementation.

Pioneer Sarah WMO utilizes MnRAM 3.0 which classifies wetlands into four categories (Preserve, Manage 1, Manage 2, and Manage 3). Placement into categories requires an assessment of function and value (via MnRAM 3.0) of fifteen functions.

The Wetlands Conservation Act underlines the State's mandate to control the filling of wetlands. Wetlands are important to the City and are protected by the City's zoning ordinance. Streams and wetlands provide the structure for the City's storm water management system. National Wetland Inventory and Hennepin County Wetland Inventory data for Greenfield is shown on Figure 7-5. These data sets

provide a general planning resource for the City in implementing its zoning and subdivision ordinances. Detailed wetland inventories are required where wetlands are evident and could be affected by proposed development.

Key Strategies

1. **Buffers**-- The City implements the PSCWMC buffer requirement of an average of 25 feet for all wetlands, watercourses, and lakes and will incorporate this into local subdivision and zoning ordinances. The buffers will maintain the minimum average distance that is "natural" with forbs, grasses and woody vegetation (following Board of Water and Soil Resources recommended seed mixes and plant types).
2. **Financing**-- The wetland function and value assessment will be self-financing through wetland delineations required as part of the development process. The City will cooperate and participate with the PSCWMC as part of any additional assessments within the City.
3. **Banking**--The City of Greenfield encourages voluntary wetland banking at no cost to the City or PSCWMC The City will continue to encourage private efforts.
4. **Implementation**—Developers shall submit MnRAM3 analysis to the PSCWMC and City along with typical wetland delineations to be reviewed and approved by the City. Developers shall work with the City and PSCWMC throughout the site-design process to minimize wetland impacts as required by the Wetland Conservation Act and conform to buffers and setbacks.

City plans and related ordinances

Capital Improvement Plan

The City does not maintain a formal Capital Improvement Plan. As part of annual budgeting the City forecasts public improvement expenditures and maintains a project list. It is recommended the City inventory existing storm water infrastructure, outline an ongoing maintenance and management strategy in collaboration with PSCWMC, and identify needed public improvements to establish a long range capital improvement plan for storm water and surface water improvement needs.

» *The City will work to establish a CIP for stormwater related improvements by end of 2019.*

Storm Water Utility Plan

The City's Storm Water Utility plan was created and funded in 2015. The creation of the storm water utility provides a dedicated funding source for the development, operations, and ongoing maintenance of the municipal storm drainage system consisting of ponding and ditches in the rural areas of Greenfield and ponding and piping in the municipal services area of the city. The utility also provides funding for contributing to water quality improvement projects and pays for the City's annual watershed dues.

Wetland Management Plan

The city works with the PCWMC to administer compliance with the Wetland Conservation Act and associated rules. The City also implements wetland buffer rules consistent with state laws and PCWMC policy. These are implemented through the subdivision and building permit process by the City with consultation

and advice offered by Hennepin County Environmental Services staff.

Shorelands and Floodplains

The City has an existing shoreland ordinance in place consistent with state shoreland rules and a recently updated floodplain ordinance consistent with federal and state floodplain rules. The City is responsible for administering the Shoreland and Floodplain ordinances.

CHAPTER 8. TRANSPORTATION

Chapter Purpose

The Transportation Plan provides the guidance needed to make transportation related decisions that will facilitate development, direct the maintenance or upgrade of the transportation system and address transportation problems when they arise. There are approximately 60 miles of public roadways within the City of Greenfield. Of these there are approximately 43 miles of municipal streets operated and maintained by the City of Greenfield, with the remaining 19 miles of roadway classified as county or state roadways, which are maintained by their respective entity. Proper operation, maintenance and upgrading of the City's roadway system are not only important for public travel safety but also serve as an important facilitator of residential and economic growth within the City.

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Key Issues

Transportation is an important topic to the City of Greenfield. The transitioning from a more agrarian rural character to a developed rural residential character significantly changes how roads are used and also changes the consumer expectations of the type, quality, and sometimes function of the road. The Low density residential pattern creates financial challenges in upgrading and maintaining roads as the costs to upgrade or maintain a road is spread over fewer numbers of benefiting properties.

The transportation chapter relied on past planning efforts in Greenfield, regional planning resources (Hennepin County, MnDOT, and Metropolitan Council), and the community engagement process conducted as part of the 2040 Comprehensive Plan Update. Through the planning process, the following key issues are identified with regard to future transportation needs:

- Expanding traffic volumes are somewhat due to increased residential and commercial development; however, traffic pressure also is felt from vehicles not originating in Greenfield.
- Declining physical conditions of streets, including needs to improve rural gravel roads to paved roadways.
- Increasing construction costs and limited financial resources to address transportation needs and specifically to upgrade rural gravel roads.
- A number of existing platted rights of way (ROW) exist that were not built when originally platted. As property owners look to develop to a rural density, smaller developments are unable to rationalize the financial benefit of building new roads. Many of these segments provide important inter connectivity, while others do not.

Roadway System Plan

Roadways provide for an integrated transportation system that will serve the future needs of its residents, businesses and visitors, support the City's development plans and complement the portion of the regional transportation system that lies within the City's boundaries. Maintaining and improving this system is important to the ongoing economic health and quality of life of the City, as well as for people to travel easily and safely to work and other destinations, to develop property and to move goods.

Functional Classification

Roadway functional classification categories are defined by the role they play in serving the flow of trips through the overall roadway system. Within the Twin Cities metropolitan area, the Metropolitan Council has established detailed criteria for roadway functional classifications. The classifications assigned to specific roadways in Greenfield are presented in Table 3-4 (Major Roads within the City of Greenfield). The intent of the functional classification system is to create a hierarchy of roads that collect and distribute traffic from neighborhoods to the regional highway system. A balance of all functions of roadways is important to any transportation network.

There are five identified roadway classifications for streets located within Greenfield including: Principal Arterial, A-Minor Arterial, Major Collector, Minor Collector and Local Street. The functional class is also mapped in Figure 3-12. No updates or changes are currently being recommended to the functional class map for the City of Greenfield.

Jurisdiction

As with all municipalities, jurisdiction over the roadway system is shared among three levels of government: state, county, and city. The Minnesota Department of Transportation (Mn/DOT) maintains the trunk highway system on behalf of the state; Hennepin County maintains the County State Aid-Highway (CSAH) and County Road (CR) systems and the remaining streets in the city are the responsibility of Greenfield (see Figure 3-11 Roadway Jurisdiction and Traffic Volumes). The City of Greenfield collaborates with Hennepin County Transportation Department and MnDOT's Metro District Planning department in the review of development projects or transportation improvements that affect the relevant jurisdiction. No changes to the roadway jurisdiction are being proposed or requested with this comprehensive plan update.

The re-construction, maintenance and/or upkeep of roadways is the responsibility of the entity with jurisdiction over that roadway (i.e., MnDOT is responsible for Trunk Highway 55). The City of Greenfield is committed to the maintenance of minor collectors and local roads under its jurisdiction. Additionally, the City will continue to coordinate with MnDOT and Hennepin County during re-construction and maintenance efforts of State or County roadways.

Traffic Forecasts

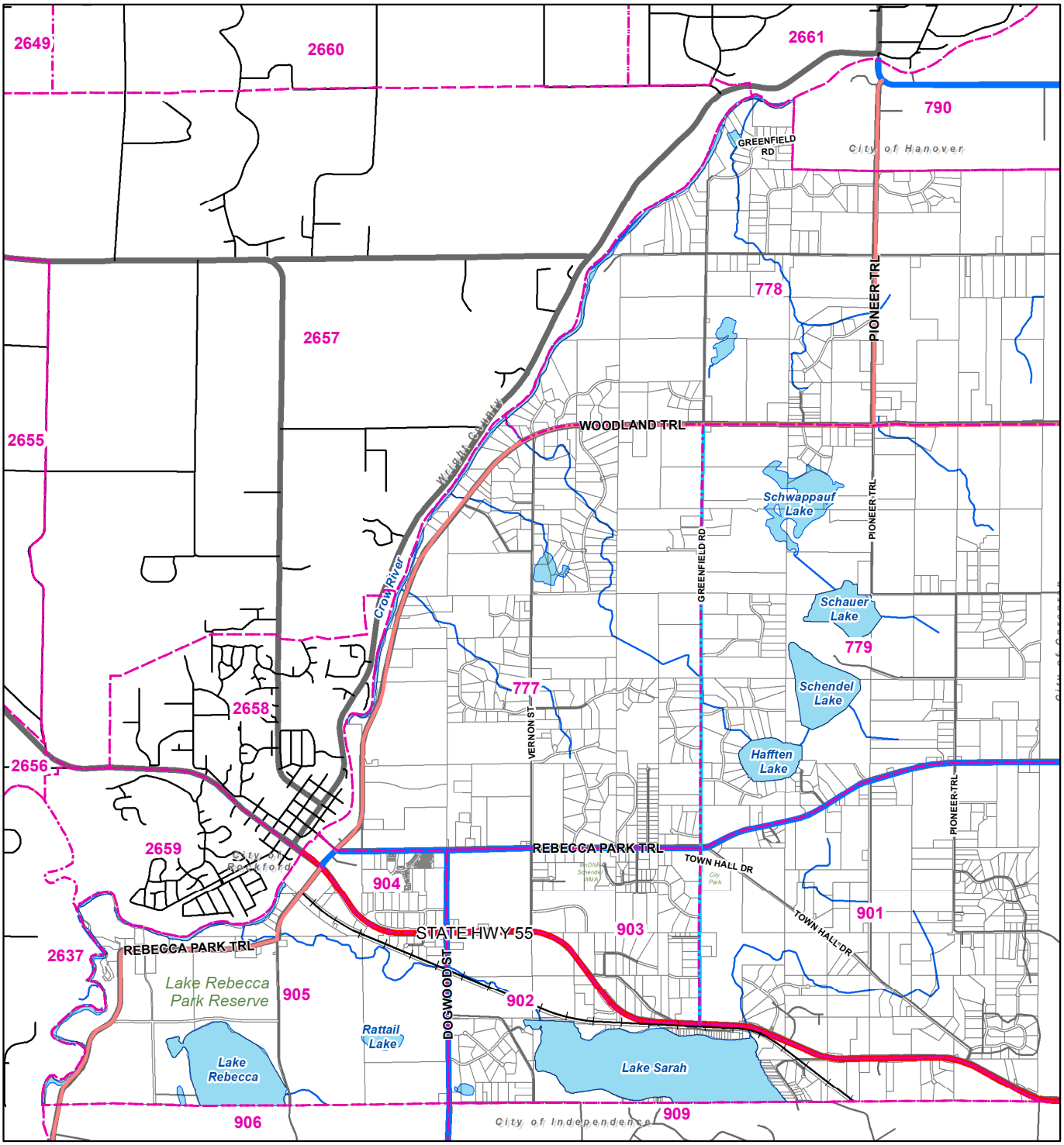
Table 8-1 summarizes Greenfield's socioeconomic forecasts by traffic analysis zone (TAZ). TAZ's are an analysis tool used to project where growth is likely to occur, generate anticipated trips and associated trip characteristics, and then assign those trips to the roadway network based on logical destinations. The TAZ's are coordinated at a regional level. Table 8-1 distributes the 2040 regional growth projections for the City of Greenfield through each TAZ zone.

Traffic forecasts on roadways through the City of Greenfield have been identified as part of the Hennepin County Transportation Planning process. The City will coordinate with Hennepin County in regard to traffic forecasting to identify areas where roadways need to be upgraded, expanded or redesigned.

Table 8-1. Greenfield Socioeconomic Forecast by TAZ

TAZ	2020			2030			2040		
	POP	HH	JOBS	POP	HH	JOBS	POP	HH	JOBS
777	720	268	180	945	381	185	1,233	518	190
778	403	135	12	434	140	4	425	147	2
779	470	150	14	493	161	5	485	161	2
901	563	180	20	587	189	6	564	189	6
902	290	100	20	280	110	30	270	120	40
903	320	120	50	410	160	80	490	200	125
904	220	127	342	268	203	365	320	245	375
905	44	20	112	44	16	145	94	20	160
Total:	3,031	1,100	750	3,460	1,360	820	3,880	1,600	900

Figure 8-1. Traffic Analysis Zones (TAZ)



N 0 0.5 1 Miles

Traffic Analysis Zones

Source: Hennepin County Parcel Data, HKGi

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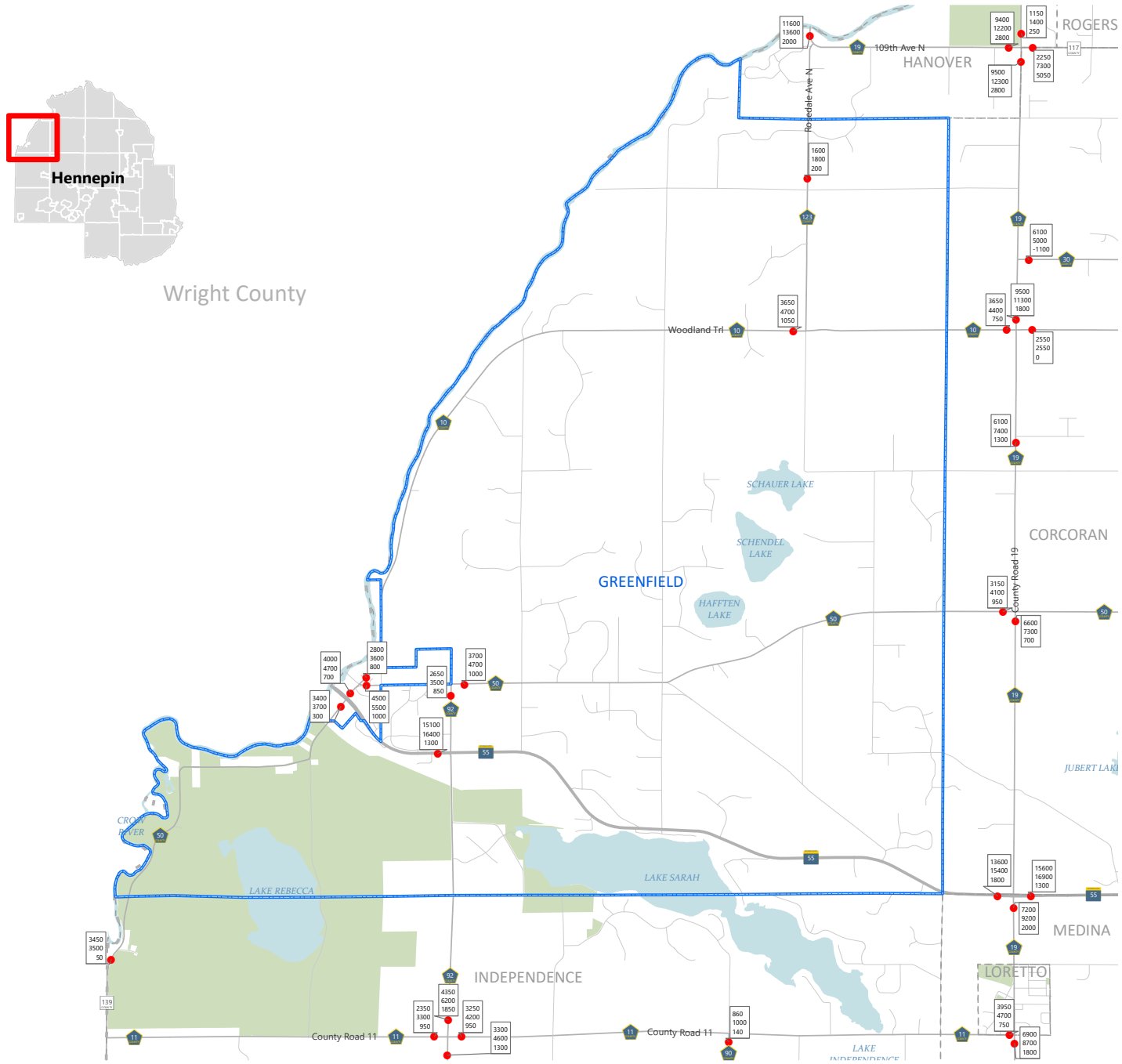
- Traffic Analysis Zones
- Railroad
- Henn County Parcels
- Lake
- River and Streams
- Principal Arterial
- A-Minor Arterial
- Major Collector
- Minor Collector

Figure 8-2. Traffic Forecasts



Disclaimer: This map (i) is furnished "AS IS" with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this map.

Publication date: 5/4/2018 Data sources: SRF Consulting

N 0 1 2 Miles

2040 Forecasted AADT

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Current Volume
2040 Forecast
Growth

Future Roadway System Improvements

The existing roadway system provides important east-west and north-south connections throughout the community. However, this network is somewhat limited given the physical and natural environment. At the regional level, there are no county or state improvements programmed within the community. Programmed improvements within proximity to Greenfield are listed in Table 8-2.

Table 8-2. MnDOT Programmed Improvements Affecting Greenfield

AGENCY	PROJECT	PROGRAMED YEAR	DESCRIPTION	PLANNING DOCUMENT
MnDOT	Highway 55 Resurfacing	2018	Resurfacing from Division Street in east Buffalo to the Wright/Hennepin County line in Rockford.	MnDOT 10-Year Capital Highway Investment Plan

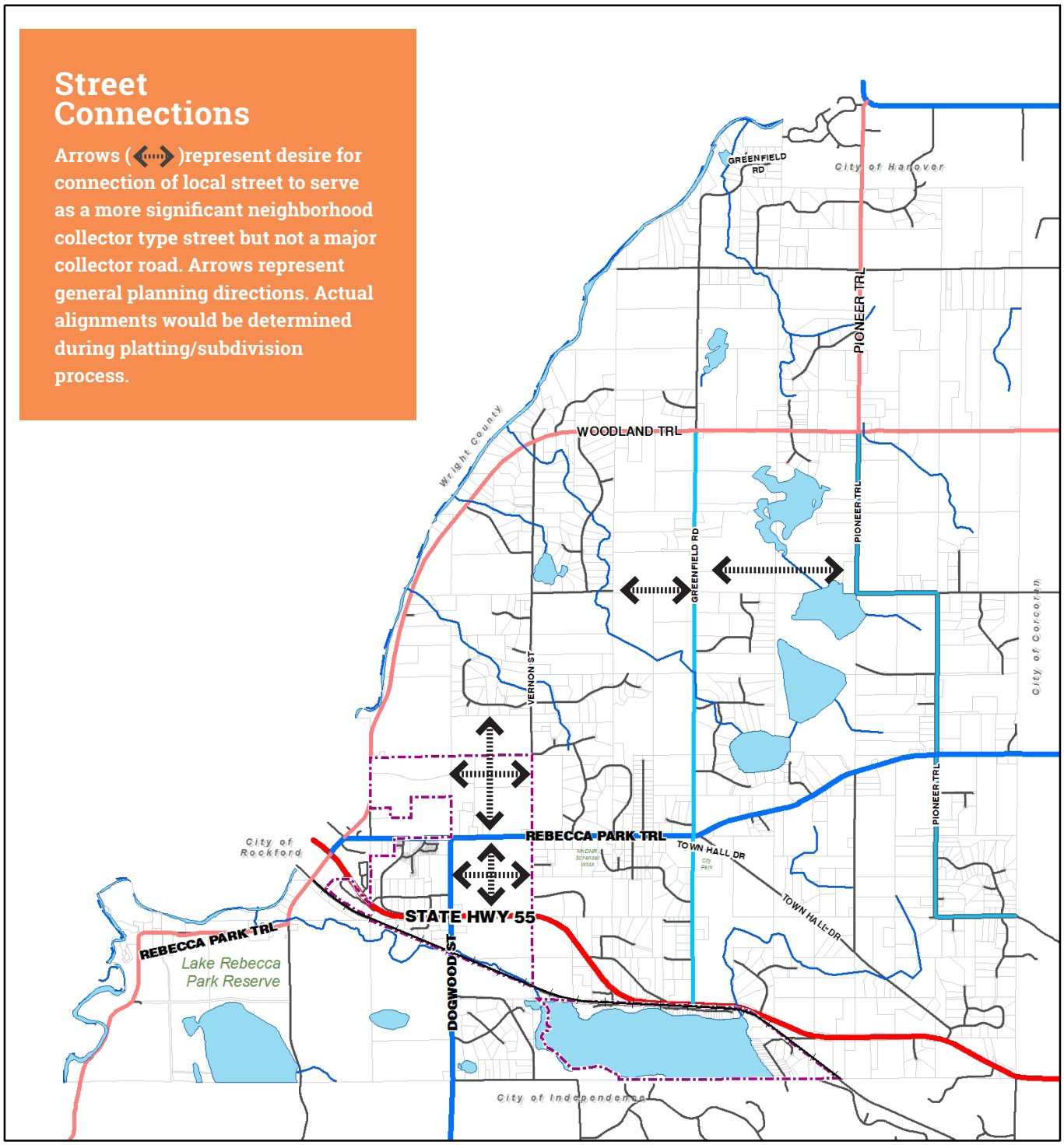
Expanding the local roadway system will be development driven. The City of Greenfield's authority lies with the local streets and minor collector roadways. Local streets are designed for the lowest speeds and greatest degree of access. Local streets are developed through private development projects and coordinated through the platting process.

Minor collector streets provide a greater degree of connectivity through the City. These streets generally have a lower level of access allowed on them and should be designed with considerations for bike and pedestrian transportation needs. This can be done by shoulder design, managing parking on street, striping, and signage.

As a standard, the minimum spacing for minor collector streets is approximately ½ mile. In other words, every half mile or so you will come across a street that is designed to move people out of a neighborhood and connect them to more higher volume through roads (i.e. major collectors and arterials). In Greenfield, creating the connected network of collector streets is difficult due to the significant number of wetlands and natural resources that have to be crossed. Because of the environmental features in the city and the existing development pattern, spacing of these collector streets will not be uniform and will likely be closer to a mile or more in some cases within the rural areas and closer to the minimum standard of ½ mile in the area served by municipal sewer and water. Given the low density rural residential land use, the need for minor collector streets to connect is still important. However these connecting streets may be acceptable designed more as local streets as their primary function is to move local traffic to the major roadway network and not traffic moving through Greenfield. A connected roadway network of streets provides better emergency management coverage and also provides opportunities for biking and walking on more pedestrian friendly streets as opposed to major collector or arterial streets. Figure 8-3 illustrates desired locations for local street connections. No major collector street connections are identified for Greenfield.

As discussed in the park, trail, and open space chapter, where the benefit of developing a roadway across significant natural resources does not outweigh the capital cost, long term maintenance costs and environmental/natural resource impact consideration should be given to maintain only a trail corridor versus a collector street. Each situation is unique and should be closely evaluated through the development platting process.

Figure 8-3. Desired Street Connections



N 0 0.5 1 Miles

Functional Classification

Source: Metropolitan Council and City of Greenfield

Railroad
Current Urban Service Area
Lake
River and Streams

Regional Classification
Principal Arterial
A-Minor Arterial
Major Collector
Minor Collector

Local Classification
Local Minor Collector

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Transit System

The Metropolitan Council established Transit Market Areas to indicate the likely cost effectiveness of transit in each area. The determination of Transit Market Areas is based on population and employment density, residents' automobile ownership rates, and the inter-connectedness of the local street system. The City of Greenfield is located in Market Area V, which is defined as having very low population and employment densities. Based on this designation, the most appropriate type of transit service for this area includes dial-a-ride service. Other transit service in the area includes Transit Link. Transit Link is a curb-to-curb minibus or van service for the general public that operates on weekdays throughout the seven-county metropolitan area. It is a shared-ride service, which must be reserved in advance.

Bicycle System

The bicycle system is shown in the Parks, Trails, and Open Spaces (Chapter 7). The City will collaborate with Three Rivers Park District and Hennepin County Transportation to establish bike facilities that connect Greenfield to the regional system.

Aviation

There are currently no public aviation facilities in the City of Greenfield. Lake Sarah is a permitted seaplane use area as defined in state rules. Greenfield is within the region's general airspace, which needs to be protected from potential obstructions to air navigation. Minnesota Statute 360 regulates the height of structures as they are defined and enforced under Aeronautics Rules and Regulations 8800.1200 Criteria for Determining Air Navigation Obstructions, which states:

"Objects more than 200 feet above the ground or more than 200 feet above the established airport elevation, whichever gives the higher elevation, within three nautical miles of the nearest runway of an airport, and increasing in the proportion of the 100 feet for each additional nautical mile of distance from the airport but not exceeding 500 feet above ground," is a general obstruction.

Notification to Mn/DOT Aeronautics is unlikely to be required; however, the City will include the following requirements with all permit applications.

Notification: Any construction or alteration that would exceed a height of 200 feet above ground level at the site, or any construction or alteration of greater height than an imaginary surface extending upward and outward at a slope of 100:1 from the nearest point of the nearest runway of a public airport, shall notify the Commissioner at least 30 days in advance. Local reporting is in addition to any Federal

Freight

A major component of Greenfield's freight system is the roadway network. Key freight corridors within Greenfield include TH 55 and the Canadian Pacific Railway. The county system also provides freight connections between farms and other freight generators throughout the region.

System Goals and Policies

The goals, policies, and implementation strategies that follow provide a framework for future transportation systems.

System Goals

GOAL 8-18.
Maintain a quality, cost effective road system that provides appropriate and sufficient access to all land uses within the City.

GOAL 8-19.
Maintain and preserve the local roadway network in a state of good repair.

GOAL 8-20.
Enhance the connectivity of the roadway network to provide easier mobility throughout the City (bike and vehicle).

GOAL 8-21.
Develop a safe roadway system that minimizes traffic collisions and property damage that result from unsafe roadway systems.

GOAL 8-22.
Develop a sustainable funding mechanism that provides for the long term life cycle maintenance of the existing and future roadway network.

System Policies

POLICY 8-57. Upgrade existing gravel roadways to pavement when financially feasible in order to increase the quality of public travel.

POLICY 8-58. Encourage interconnections between development projects where connections do not cause significant negative impacts on wetlands or other significant natural resources.

a. Use ½ mile spacing of minor neighborhood collector streets where feasible.

POLICY 8-59. Weigh the social, economic, and environmental impacts (cost) in addition to financial impacts against the mobility benefits when planning for future transportation connections.

POLICY 8-60. When planning improvements and upgrades to the collector and local roadway system, consider designs that accommodate appropriate bicycle and pedestrian infrastructure (on street or off street).

POLICY 8-61. Plan beyond a specific development projects boundaries to recognize longer term development needs and the interconnectivity.

POLICY 8-62. Prohibit direct access of individual parcels to arterial and major collector roadways except in cases where no feasible alternative exists.

a. Temporary access should be considered on a case by case basis when development timing and phasing of a larger area may span a longer time frame and traffic patterns and volumes can support such temporary access.

POLICY 8-63. Coordinate with the Minnesota Department of Transportation (MnDOT) and Hennepin County on future roadway improvements to the regional roadway system.

POLICY 8-64. Consider the mobility needs of all persons in the planning and the development of the transportation system.

POLICY 8-65. Coordinate with regional roadway agencies on the preservation, maintenance, and potential expansion of the regional transportation system from a safety, mobility, multi-modal function, and access perspective.

Implementation Strategies

a. Prepare a street specification guide to establish standards for the design and construction of future city streets. Include by roadway function the cross section, pavement materials (tonnage), travel lanes, stormwater, street lighting, landscape, bike/ped facilities, etc. Different standards should be applied based on the land use it is serving and function of the street and if that street is within the rural areas of Greenfield or within the areas served by municipal sewer and water.

b. Update the City's long range Capital Improvement Program (CIP) on an annual basis.

c. Study and establish a dedicated funding mechanism and policy for future roadway improvements and ongoing maintenance. This study should include a cost analysis that can be evaluated and update on a regular basis to reflect current construction costs.

d. Work with Hennepin County to identify and facilitate needs to expand, maintain and/or reconstruct of county roads within the City.

e. Work with MnDOT and communities along the Highway 55 Corridor to facilitate long term plans for improvements to Highway 55.

Funding and Implementation

This section of the Plan provides valuable strategies, tools and practices that can assist the City of Greenfield to implement the Transportation Plan's recommendations and make wise long term decisions.

Capital Improvement Plan

The immediate and long term need for the City is to upgrade the highly traveled gravel roads to pavement. The cost of these improvements can vary depending on the design of the roadway including the roadway surface and necessary right of way improvements. The following roads (Table 8-3) have been identified through previous planning initiatives as priority projects:

Table 8-3. Projected Roadway Improvement Projects

ROADWAY SEGMENT	APPROXIMATE LENGTH
Greenfield Road	18,600 feet
Pioneer Trail from CR10 to CR50	13,200 feet
Town Hall Drive from CR50 to HWY 55	10,400 feet
Total	42,200 feet

Paving of gravel roads is a costly initiative. Determining benefit and a funding strategy will require a detailed evaluation and assumptions regarding benefit including properties that have direct access onto subject road, subdivisions that have direct access on to the road, broader community traffic, and regional traffic that comes from outside the community. Funding for roadway improvements will ultimately include a range of funding sources. A detailed feasibility study and funding strategy should be prepared for each desired roadway segment in consideration of both current and longer term planned land uses.

Right-of-Way Preservation

Right-of-way (ROW) is a valuable public asset. Therefore, it needs to be protected and managed in a way that respects the roadway's intended function, while serving the greatest public good. The City of Greenfield may need to reconstruct, widen, and construct new roadway segments to meet future transportation needs. Such improvements will require adequate ROW be maintained or secured. The City will coordinate with MnDOT and Hennepin County for ROW acquisition along county or state routes if and when those needs are required. ROW is traditionally secured through the subdivision platting process.

When future expansion or realignment of a roadway is proposed, but not immediately programmed, the City will consider ROW preservation strategies to reduce costs and maintain the feasibility of the proposed improvement. Several different strategies may be used to preserve ROW for future construction, including advanced purchase, subdivision dedication techniques, official mapping, and corridor signing.

Direct Purchase

One of the best ways to preserve ROW is to purchase it. Unfortunately, agencies rarely have the necessary funds to purchase ROW in advance, and the public benefit of purchasing ROW is not realized until a roadway or transportation facility is built. Most typically, local jurisdictions utilize various corridor preservation methods prior to roadway construction and then purchase the ROW if it is not dedicated, at the time of design and construction.

Planning and Zoning Authority

The City of Greenfield may use the following to regulate existing and future land use. Under this authority, agencies have a number of tools for preserving right-of-way for transportation projects. These tools include:

- **Platting and Subdivision Regulations**: Platting and subdivision regulations give the city authority to consider future roadway alignments during the platting process because most land must be platted before it is developed. The city may use their authority to regulate land development to influence plat configuration and the location of proposed roadways. In most instances, planning and engineering staff work with developers to formulate a plat that meets development objectives and that conforms to a long-term community vision and/or plans.
- **Official Mapping**: A final strategy to preserve ROW is to adopt an Official Map. An Official Map is developed by the city and identifies the centerline and ROW needed for a future roadway. The city then holds a public hearing

showing the location of the future roadway and incorporates the official map into its thoroughfare or community facilities plan. The official mapping process allows the City to control proposed development within an identified area, and to influence development on adjacent parcels. However, if a directly affected property owner requests to develop his/her property, the city has six months to initiate acquisition and purchase of the property to prevent its development. If the property is not purchased, the owner is allowed to develop it in conformance with current zoning and subdivision regulations. As a result, the official mapping process should only be used for preserving key corridors in areas with significant growth pressures.

Access Management

Access management is an important aspect of providing a safe and efficient roadway network. Access management measures include:

- Providing adequate spacing between access points and intersecting streets to separate and reduce conflicts.
- Limiting the number of driveway access points to reduce conflicts.
- Aligning access with other existing access points.
- Sharing access points, through internal connectivity between property owners.
- Encouraging indirect access rather than direct access to high volume arterial roads.
- Constructing parallel roads and backage or frontage roads.
- Implementing sight distance guidelines to improve safety.
- Using channelization to manage and control turning movements.

Access review is a major aspect of the City's development review process. The goal is to maintain the safety and capacity of the city's roadways, while providing adequate land access.

Access management also involves balancing the access and mobility functions of roadways. Access refers to providing roadway access to properties and is needed at both ends of a trip. Mobility is the ability to get from one place to another freely or easily. Most roadways serve both functions to some degree, based on their functional classification. The four levels of functional classification and their corresponding mobility and access traits are as follows:

- Principal Arterials have the highest mobility with no direct land access.
- Minor Arterials have a high mobility with limited land access.
- Collector Streets have moderate mobility with some land access.
- Local Streets have low mobility with unrestricted land access.

The City of Greenfield will continue to support MnDOT and Hennepin County's Access Management guidelines on the Principal and Minor Arterial roadway network in the City through the measures listed above. It is also important to note the City of Greenfield has current driveway access management standards in place to govern individual driveway access to the various types of roadways within the City. These standards should be incorporated into the City Code.

Table 8-4. Driveway Access Standards

ROADWAY FUNCTIONAL CLASSIFICATION	PRIMARY ROAD FUNCTION	RESIDENTIAL DRIVEWAY ACCESS AND LOT FRONTAGE	COMMERCIAL-INDUSTRIAL DRIVEWAY ACCESS
Arterial	Traffic Movement	Not allowed	Not allowed
Collector	Traffic Movement	Not recommended	As per spacing and sight distance standards
Local	Access	Preferred	Preferred

Coordination with Other Jurisdictions

Greenfield should coordinate with relevant adjacent jurisdictions, as well as Hennepin County, Wright County, and Mn/DOT when planning future improvements to the roadway system. Coordination among jurisdictions may provide opportunities for collaboration that could benefit all agencies and the public. This may result in financial and time savings through economies of scale as well as potentially reducing construction impacts to residents through the coordination of projects.

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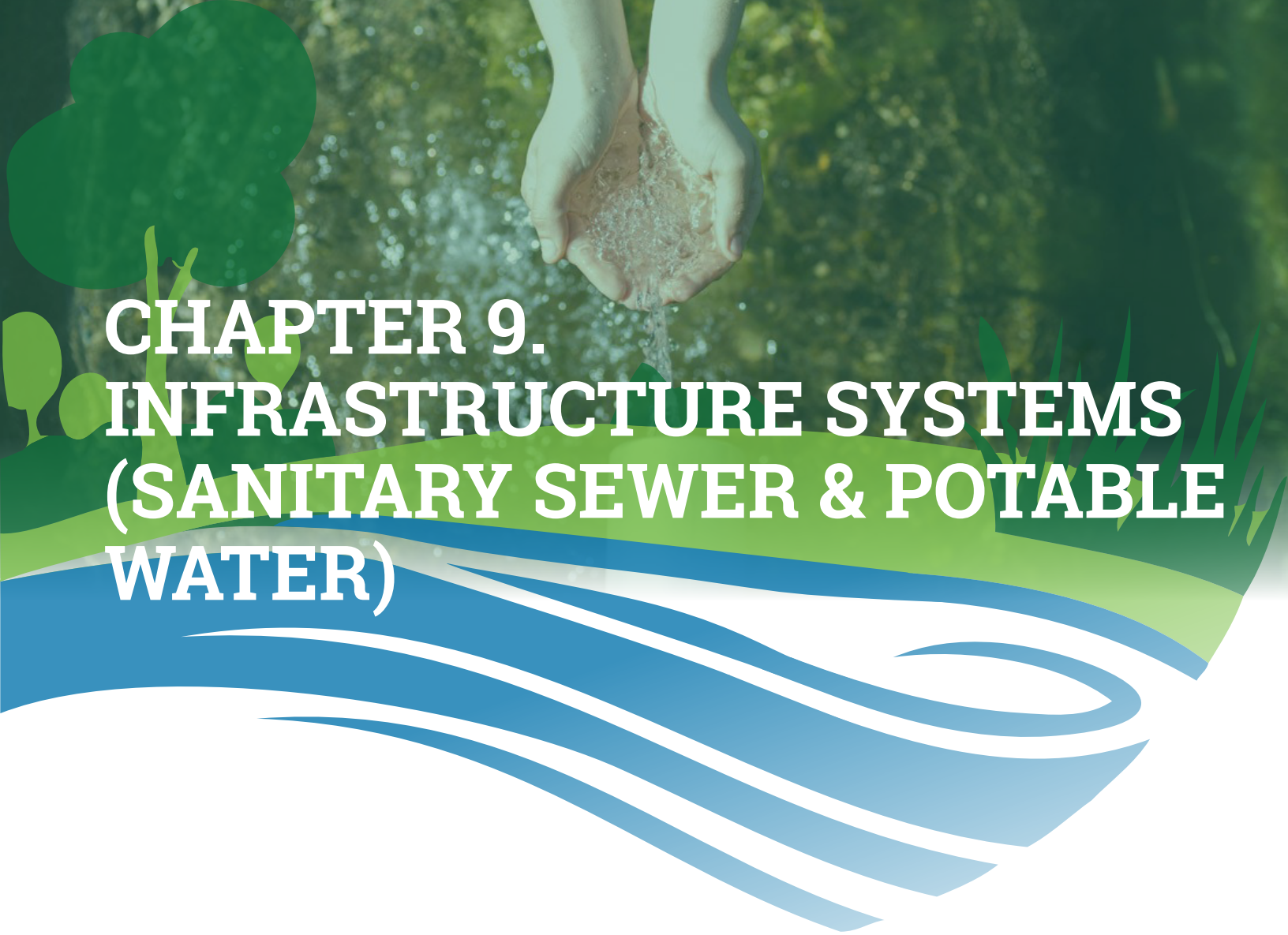

CHAPTER 9. INFRASTRUCTURE SYSTEMS (SANITARY SEWER & POTABLE WATER)

Introduction and Service Framework

The infrastructure systems chapter provides a plan for the delivery of potable water and sanitary sewer service to Greenfield. Greenfield's system includes a municipal system where the City is the provider of well water for household use and the city is a provider of a collection system for waste water. The system includes an area on the east side of Lake Sarah that is served by the Metropolitan Council Environmental Services (or MCES) for sanitary sewer. A small area on Elmwood Drive, west of Greenfield Road is also connected to this system due to failing septic systems. Greenfield also has a number of properties in the region that are served by private water wells and individual subsurface sewer treatment system (SSTS). One particular development in the city is served by a community (or central) septic systems that serves approximately 40 homes sites "Meadows of Whisper Creek". Use of central septic system are a strategy to continue exploring where opportunities to protect rural character, natural resources, and open space can be realized by clustering homes and designing a central septic system consistent with MPCA rules.

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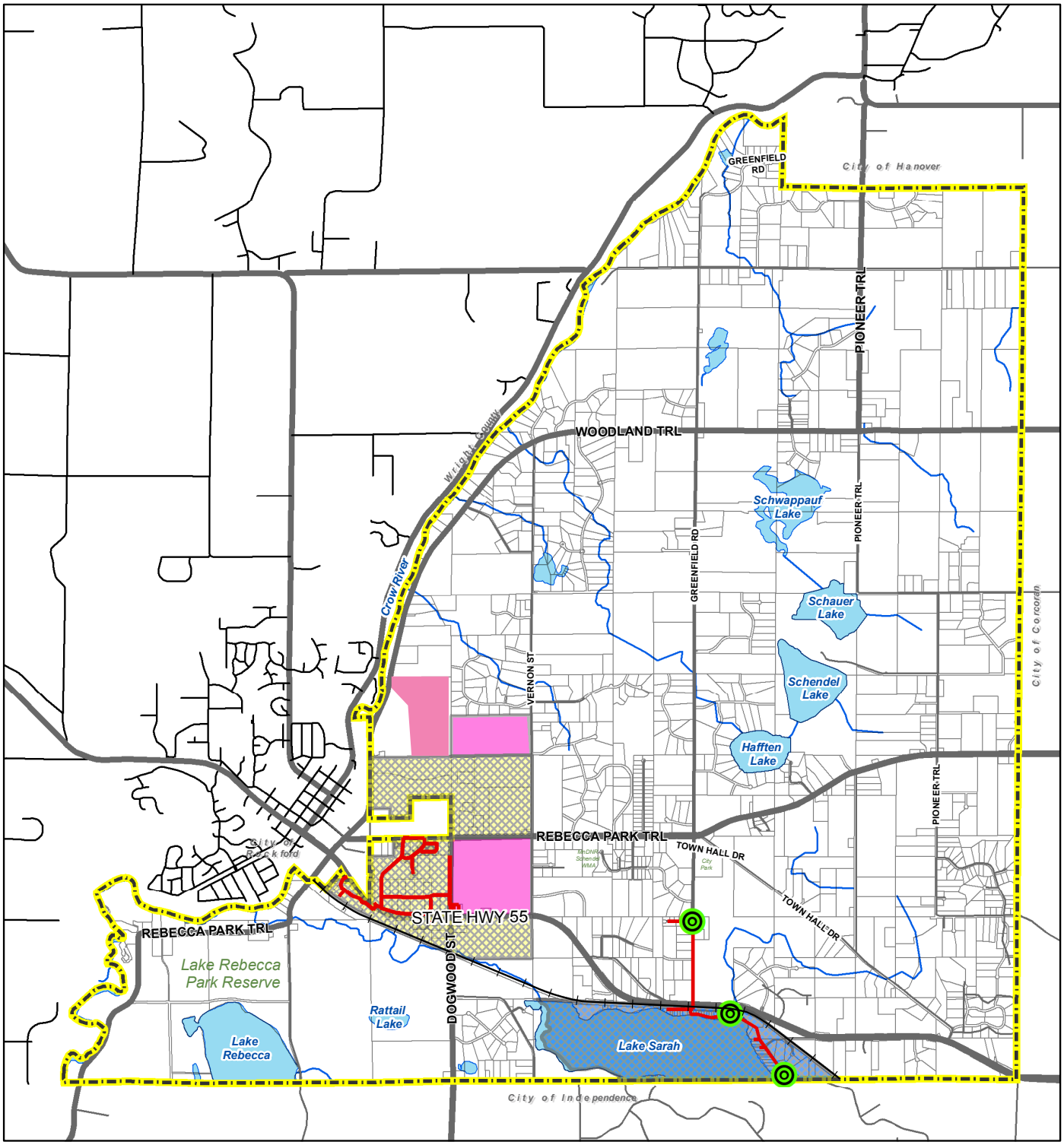
Figure 9-1. Existing Service Areas and Planned Expansion Areas for Municipal Sewer and Water Systems



N 0 0.5 1 Miles

Municipal Sewer & Water Service Area

Source: Hennepin County Parcel Data, HKGi

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Railroad
Henn County Parcels
Lake
River and Streams
Lift Station
Existing Water and Sewer Mains
Current Service Area
MCES-M434
Expansion Areas

Infrastructure System Goals and Policies

The City of Greenfield recognizes the need to ensure that infrastructure systems are managed to protect public health, support economical growth and development, and maintain habitat and ecosystem health all of which are essential to Greenfield and the region's quality of life. The following are key principles that should guide sewer and water infrastructure systems:

- Resilience – systems should be designed to be able to respond and adapt to changing conditions and demands;
- Quantity – water is a finite resource needed for both today and in the future;
- Quality – federal and state standards need to be met for the designated end user; and,
- Sustainability – infrastructure systems should be designed and maintained to accommodate the future of Greenfield.

The following are goals and policies for the City's sewer and water infrastructure systems:

Infrastructure System Goals

GOAL 9-23.
Provide a cost effective and a financially sustainable municipal infrastructure system for the areas served by municipal sewer and water.

GOAL 9-24.
Provide safe drinking water and adequate water supply and pressure to areas served by municipal sewer and water services.

GOAL 9-25.
Provide sanitary sewer service to developing areas of the City in a planned manner.

GOAL 9-26.
In collaboration with respective agencies (Metropolitan Council, MPCA, DNR, Hennepin County Environmental Services, utility providers) ensure Greenfield's core infrastructure systems (sanitary sewer, storm sewer, potable water, electricity, and telecommunications) meet the needs of current residences and businesses, and facilitate future growth without compromising the quality of the natural environment.

Infrastructure Policies

Water System

POLICY 9-66. Ensure clean, safe drinking water to all residents by protecting groundwater aquifers from contamination, treating drinking water, and protecting treated drinking water during distribution in order to minimize individual and widespread health risks.

POLICY 9-67. Ensure that water supply will meet current and projected water demand through efficient management activities.

POLICY 9-68. Implement strategies in the wellhead protection program to protect current well fields with compatible land uses and development.

Regional Guidance from Metropolitan Council System Statements

Metropolitan Council - 2040 Water Resources Policy Plan includes policies and strategies to achieve the following goal: To protect, conserve, and utilize the regions groundwater and surface water in ways that protect public health, support economical growth and development, maintain habitat and ecosystem health, and provide for recreational opportunities, which are essential to our region's quality of life.

POLICY 9-69. Use city communications to create awareness of groundwater protection and contamination prevention.

POLICY 9-70. Test and monitor the water distribution system on a regular basis to ensure the absence of contaminants.

POLICY 9-71. Provide upgrades to the water system as needed to ensure reliable water supply in compliance with fire protection standards.

POLICY 9-72. Identify additional well locations to ensure a water source if needed to meet additional demand.

POLICY 9-73. Manage demand by supporting water saving strategies for both residential and commercial users (watering policies, efficient fixtures, etc.)

POLICY 9-74. Support alternative landscaping options that require less water for parks and other city properties.

POLICY 9-75. Support water conservation and emergency preparedness measures as spelled out in the Water Supply Plan Template 2017.

Sanitary Sewer

POLICY 9-76. Collaborate with Hennepin County Environmental Services in the review and regulation of private subsurface sewer treatment systems (SSTS) for developments in unsewered areas of the City.

POLICY 9-77. Collaborate with adjoining communities through the Tri-City Agreement (or future subsequent agreements) to provide a cooperative sanitary sewer system serving the North Lake Sarah sewer area.

POLICY 9-78. Investigate opportunities for use and re-use of non-potable water (rainwater, graywater, etc.) for appropriate uses.

POLICY 9-79. Ensure reliable wastewater collection and treatment to meet current and future demand.

POLICY 9-80. Prohibit discharges or connections to the sanitary sewer system that discharge clean water which does not require treatment. This may include stormwater, runoff, cooling water, sump pumps, or other unpolluted sources. (reduction of Inflow and Infiltration). Encourage and promote the disconnection of existing illegal connections.

POLICY 9-81. Prohibit discharges and connections to the sanitary sewer system that are not recommended for treatment at the City's sewage plant. This may include industrial wastewater or other sources.

POLICY 9-82. Encourage the use of waste water reduction strategies to manage demand on the sanitary sewage system.

POLICY 9-83. Periodically complete sanitary sewer system inspections and repairs to identify and fix sources of inflow and infiltration (I&I).

POLICY 9-84. Develop and periodically review a crisis response plan for sewage operations to minimize impacts to the City in case of emergencies. Ensure employees are trained for emergency response.

Sanitary Sewer Plan

This section of the plan provides a framework for how the City's sanitary sewer system will be positioned to serve future growth anticipated by the future land use plan. The City has two separate wastewater systems, the North Shore Drive (Lake Sarah) system (MCES served) and the City wastewater treatment plant. The plan is intended to meet the requirements established by the Metropolitan Council Environmental Services.

A complete wastewater plan that meets the comprehensive planning requirements of the Metropolitan Land Planning Act and regional system planning needs includes the following:

- Forecasts of employment and households growth in 10-year increments through 2040.
- A system map (Figure 9.1) that describes Greenfield's existing wastewater infrastructure and expansion of the system to serve the 2040 land use plan.
- A system map showing areas that have or will receive public sewer and those areas that are not planned to have public sewer. (Figure 9.1)
- Tabulation of design flows, projected flows and capacity for the City's sanitary sewer infrastructure. The MCES system is not projected to receive additional flows beyond those properties already served.
- Description of the management program for subsurface sewage treatment systems.
- Discussion of the extent, source and significance of inflow and infiltration into Greenfield's sanitary sewer system and associated requirements and standards for minimizing inflow and infiltration and for the disconnection of sump pump and foundation drain connections to the sanitary sewer system.
- An implementation plan that contains strategies, priorities, scheduling and financing mechanisms for eliminating and preventing excessive inflow and infiltration.

Growth Projections

The city's growth projections are as shown in Table 9-1.

Greenfield Municipal Sewage System

Waste water is conveyed through trunk sewers to the City plant at the southwest corner of the City. The plant is currently rated at 100,000 gallons per day. The City has additional permitting authority to expand the plant to 200,000 gallons per day capacity should it be needed.

With projected growth to 2040, it is not anticipated that expansion will be needed within this planning horizon (2040); however, this depends greatly on market and economic conditions. If growth was to pick up and demand for new commercial users or residential development was to occur, the City could reach its rated capacity sooner than later. Periodic evaluation of flows and capacity is monitored and managed by a private contractor.

Table 9-1. Household and Employment Forecasts

YEAR	FORECAST COMPONENT	POPULATION	HOUSEHOLDS	EMPLOYMENT
2020	Municipal Sewered	450	160	550
2020	MCES Sewered	160	60	0
2020	Whisper Creek	60	20	0
2020	Unsewered (SSTS)	2,360	860	200
Total 2020		3,030	1,100	750
Projected Growth from 2016 to 2020		**253**	**137**	**na**
2030	Municipal Sewered	610	240	630
2030	MCES Sewered	150	60	0
2030	Whisper Creek	90	30	0
2030	Unsewered (SSTS)	2,610	1,030	190
Total 2030		3,460	1,360	820
Projected Growth from 2020 to 2030		**430**	**260**	**70**
2040	Municipal Sewered	690	280	720
2040	MCES Sewered	140	60	0
2040	Whisper Creek	120	40	0
2040	Unsewered (SSTS)	2,930	1,220	180
Total 2040		3,880	1,600	900
Projected Growth from 2030 to 2040		**420**	**240**	**80**

Municipal Sewage Usage

Waste Water Treatment Rating

- **100,000 Gallons per day**

2015 Usage

- **13.1k gallons per day**

2016 Usage

- **13.2K gallons per day**
- **Current Plant Usage**
- **IS LESS THAN 15% of TOTAL TREATMENT CAPACITY**
- **Trunk line is 15" with capacity to handle 1,616,861 gpd or 2.5 cfs**

Whisper Creek Wastewater system

- **20,000 gallons per day design capacity**

Design Flows and Capacities

The City's waste water plant projections are summarized in Table 9-2. The flows are based on anticipated residential and commercial growth rates within the area serviced by Greenfield's municipal system and projected increased industry standard flow generation. Flow projections are based on growth as follows:

- Filling in growth areas with existing service available: The first priority for growth should be to fill areas currently served by sewer and water infrastructure. These are the areas where investments have already been made with city sewer and water infrastructure and where the greatest financial benefit can be had. However, willing sellers, market forces, and economic conditions often present opportunities that should be studied carefully and considered for expansion to meet broader community objectives.
- Future Village Concept. This area bound by CR 92 (Dogwood), Rebecca Park Trail, Vernon Street, and Highway 55 has long been envisioned as a future extension for growth served by municipal sewer and water. The site is currently enrolled in Ag Preserve but scheduled to expire from the program by the end of 2021. Development potential depends on willing buyers/sellers

*** action plan – the City should coordinate development projections with the sewer and water systems manager to ensure adequate capacity for existing and future development needs.*

and market conditions. The 2040 land use plan envisions the area to develop over a long term with the idea of a village center supported by commercial uses and more moderate density housing. This area will require City sewer and water infrastructure systems and is desired to see development in the 2020-2030 period.

» **Expansion areas surrounding Rockford High School**. This area has been planned in prior comprehensive land use plans for extension of sewer and water. The 2040 plan expands this area to include a vacant 80 acre parcel to the north. This parcel has expressed interest in development. Because it is not contiguous to the existing system, careful study needs to be done to determine the physical and financial feasibility of extending trunk sewer and water systems to serve the site. Planning for long term service should consider this site within the context of future expansion area land uses.

Table 9-2. Wastewater flow forecasts for the City of Greenfield and MCES are based on forecast household and employment forecasts presented in Table 9-1

YEAR	MCES – NORTH SHORE DRIVE (MGD)	GREENFIELD WWTP (MGD)			
		RESIDENTIAL	NON-RESIDENTIAL	TOTAL FLOWS	% OF CURRENT RATED CAPACITY
2020	0.012	0.011	0.005	0.016	16%
2030	0.012	0.027	0.005	0.032	32%
2040	0.012	0.034	0.006	0.040	40%

Note: Projections are based on residential estimates of 225 to 180 MGD per residential unit connection and 20 MGD per employee for non-residential uses. Past records for the City of Greenfield indicate that these flow assumptions are substantially less in actuality. This is presumably due to a lower person per household ratio for townhome development and the fact that Greenfield's system is relatively newer and has lower inflow and infiltration (I/I). Greater flow estimates (more conservative estimates) were used for planning purposes.

Regional projections showed job growth as being flat from 2030 to 2040. These flow projections assumed similar job growth as the 2020-2030 period assuming new commercial retail growth will follow household growth.

Metropolitan Council Environmental Services (M440) – North Shore Drive System

The North Shore Drive system is part of the Tri-City Agreement with (Greenfield), Medina, and Independence and contributes to the MCES system (Metershed M440). This system currently serves a very limited area and there is **no expansion envisioned or planned to that system during the 2040 planning horizon**. There are 53 residential properties that are connected to the North Shore Drive sanitary sewer collection system along the north side of Lake Sarah. This sewerage flows to the MCES system. The sanitary sewer pipe within Greenfield is a 6" pipe with a capacity to handle 261,482 gallons per day or 0.4 cfs. The system serving this area has three lift stations that are maintained by the City. The lift station that connects to Independence has a capacity of 50,400 gpd with one pump running on average. 2040 design flows are presented in table 9-2 above. The City has ample capacity within this system; however, capacity is limited through the Tri-City Agreement.

Housing Stock with Municipal Sewer and Water

- **100% of housing stock served by Greenfield's municipal sewer system is post 2003 year built.**
- **The vast majority of the housing stock served by the MCES in Greenfield is pre 1970 with some dating back as early as 1920s. A number of homes filled in since the 1970s as well.**
- **Recently, the City has disconnected all septic tanks from the system greatly reducing I/I.**

Infiltration/Inflow (I/I)

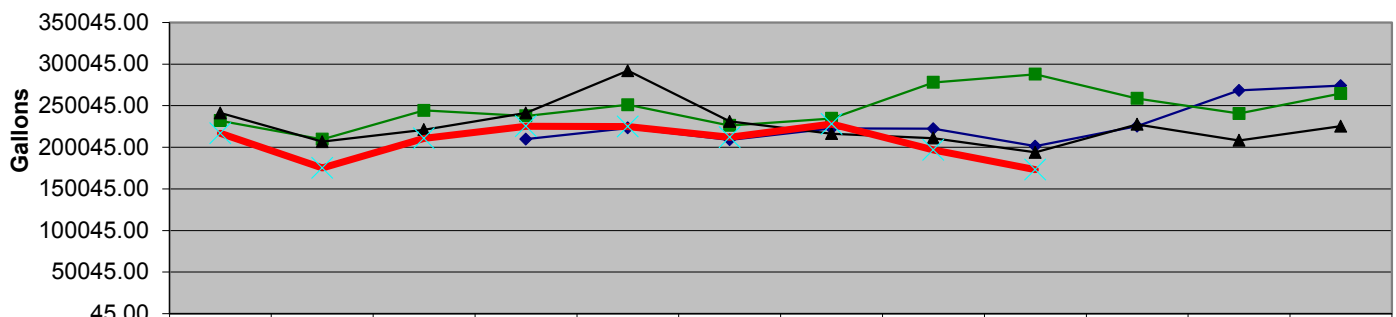
Inflow and Infiltration (I/I) are the ways that clear water makes its way into sanitary sewer pipes potentially causing basement backups and taking up capacity in sewers and wastewater treatment plants. MCES has developed a program to limit I/I into the sanitary sewer system. Communities that have excessive I/I are required to eliminate excessive I/I over a period of time. The City of Greenfield has not been identified as a community with excessive I/I.

The sewer system consists of up-to-date construction materials and standards such as the use of poly-vinyl chloride (PVC) pipe installed in accordance with the City Engineers Association of Minnesota's "Standard Specifications for Sanitary Sewer and Storm Sewer Installation". These sewers are pressure tested for leak tightness before being placed in service. The sanitary sewer system is periodically televised to assess condition and identify I/I problems for repair. In addition, the sanitary sewer system located in any street reconstruction project areas is televised before the project begins and repairs performed concurrent with the street reconstruction project.

The City prohibits existing and future development from discharge of stormwater into the sanitary sewer including roof drains and sump pumps. When identified, the City requires that such discharges be disconnected from the sanitary sewer system and redirected.

The city has not done any specific studies to determine the sources and extent of I/I. Infiltration and inflow to the MCES system could occur in the North Shore Drive system through manhole coves or leaking pipes. The City is part of the Tri-City Agreement, and therefore the MCES Surcharge program is in effect. Activities the City has conducted include televising of the system, smoke testing, and removal in 2007 of a stormwater cross-connection to the sewer along North Shore Drive. The City will continue to work with Medina and Independence on further I/I reductions.

Table 9-3. Monthly Flow data for Greenfield MCES System



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015				209,838	223,228	208,982	222,683	222,234	201,348	225,372	268,378	274,154
2016	231,915	209,599	244,337	237,795	251,026	226,276	234,752	277,976	287,747	258,629	240,581	264,670
2017	241,228	206,748	221,124	241,330	292,078	231,109	216,387	211,052	193,905	227,501	208,295	225,387
2018	216,688	175,255	210,601	225,389	224,904	212,181	228,008	196,904	173,310			

The City has a current 2017-2019 work plan with the MCES to remove additional I/I through Mitigation addressing the suspected sources of I/I. Many of the planned improvements have been completed. In 2019 the City will repair a valve vault in Elmwood Drive at a cost of $3,000.

Table 9-5. Estimated I/I for MCES System

CATEGORY	MILLION GALLONS PER DAY (MGD)
Average Flow (MGD)	0.007
Peak Month Flow (MGD)	0.009
Base Flow (MGD)	0.007
Average Annual I/I (MGD)	0.001
Peak Month I/I (MGD)	0.003

For goals and policies regarding I/I see pages 9-117 and 9-118.

City Ordinance 50.074 prohibits discharges of clean water to the sanitary sewer system. The city does not have any resolution or ordinance requiring disconnections but does encourage property owners to make sure no illegal connections exist.

Strategies and programs intended to mitigate I/I from both public and private sources include posting educational information on the City web site, within the city newsletter and within utility bills. The city will also encourage private property owners to televise lateral connections when performing home improvements.

Lastly, the city will include in any street reconstruction activities inspections and maintenance of trunk lines and manholes to mitigate I/I.

Ordinance 50.074

Unpolluted water. No person shall discharge or cause to be discharged directly or indirectly any stormwater, groundwater, and roof runoff, subsurface drainage, waste from on-site disposal systems, unpolluted cooling or processing water to any sanitary sewer except shall be permitted by the city. Stormwater and all other unpolluted water shall be discharged to a storm sewer if available or to the ground surface, or other natural outlet approved by the city and other regulatory agencies. Industrial cooling water or unpolluted process waters may be discharged to a storm sewer or natural outlet on approval and the issuance of a discharge permit by the M.P.C.A.

Subsurface Sewer Treatment Systems

The rural areas of the City will continue to be served by subsurface sewer treatment systems. The City of Greenfield passed an ordinance in 2015 to partner with Hennepin County Environmental Services for regulating individual sewage treatment systems (ISTS). Standards and regulations of individual sewage treatment systems (ISTS) and septic disposal, including the proper location, design, construction, operation, maintenance and repair to protect surface water and ground water are regulated and enforced by Hennepin County Environmental Services to comply with Minnesota Rules Chapters 7080-7083. There are currently approximately 912 individual sewage treatment systems in Greenfield per Hennepin County records. (Figure 9-2)

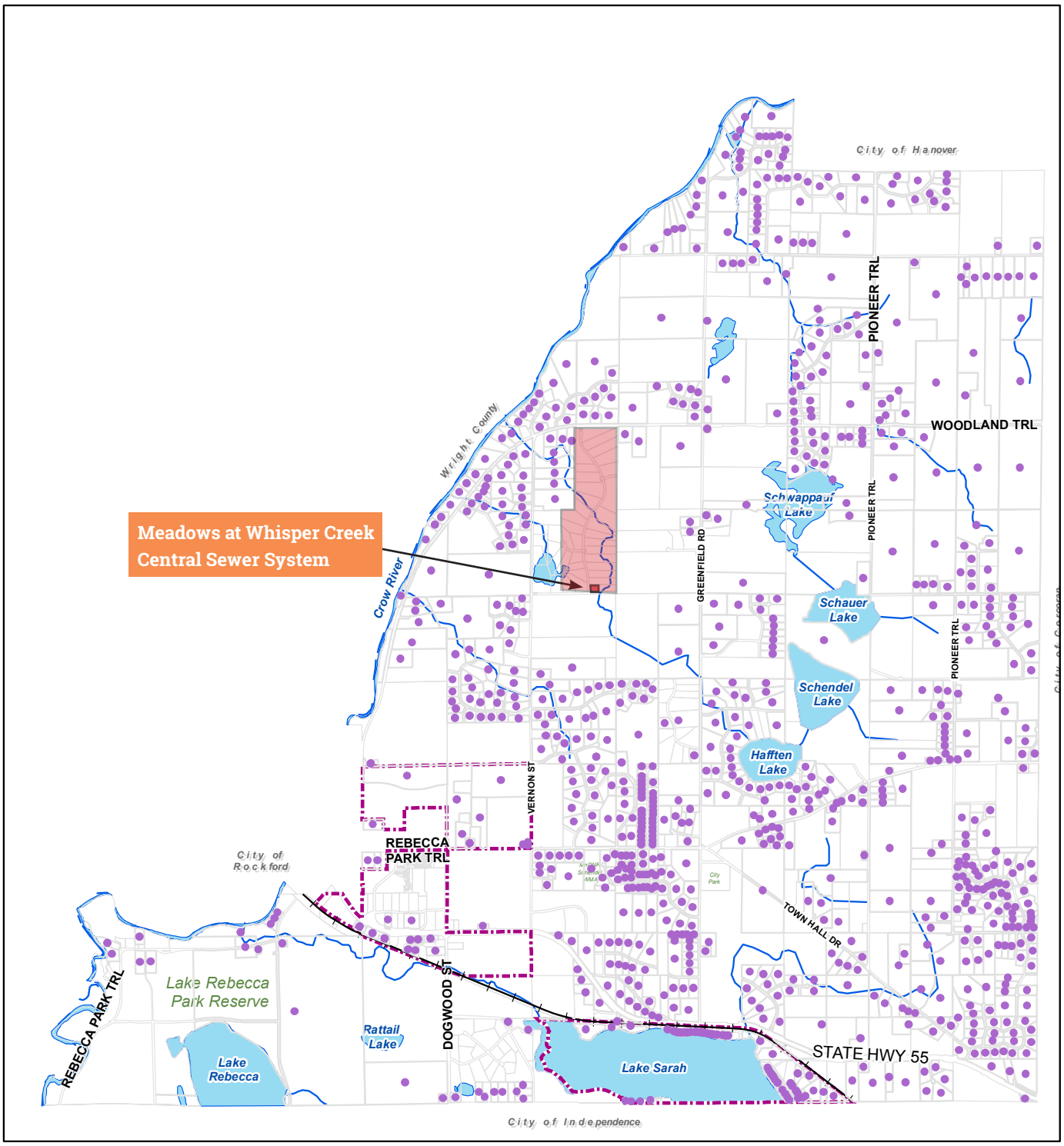
Private Communal Systems

The land use plan promotes the use fo private communal systems or package plans in rural areas where clustering of housing can be used to preserve rural character and natural resource areas. Facilitation of these systems will follow county and state rules and will be implemented through a PUD approach.

Potable Water Systems

The purpose of the Water Supply and Distribution Plan is to examine the capacity of the City's water system to provide safe, reliable drinking water and meet current and future water needs. The City completed its Water Supply Plan (WSP) template in December of 2017 and submitted the plan to the DNR. This DNR Water Supply Plan (WSP) contains a detailed analysis of the water system and projects annual

Figure 9-2. Subsurface Sewage Treatment Systems in Greenfield



N 0 0.5 1 Miles

Subsurface Sewage Treatment Systems

Source: Hennepin County Parcel Data, HKGi

SSTS Parcel Locations

- Current Urban Service Area
- Henn County Parcels
- Lake
- River and Streams
- Railroad

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water demand to 2040. The projections used for the Water Supply Plan align with the projections established for the 2040 Comprehensive Plan update. Key goals outlined in the WSP address long term water sustainability and conservation measures and emergency preparedness measures. Findings from the WSP indicate that Greenfield's existing water supply, storage, and treatment plan can adequately handle projected growth to 2030 and likely 2040 depending on economic/market conditions.

The City also has a Well Head Protection Plan that was completed in 2009 and a recently updated implementation table for 2018-2028.

The City of Greenfield does not contain any areas identified as Moderate to Highly Vulnerable Drinking Water Supply Management Areas (MDH).

Extension of future water distribution trunk lines will be done concurrently with the future sewer and water growth systems.

Implementation

The City has identified the following items as part of the implementation of the Sanitary Sewer and Water System Plans:

Capital Improvements Program (CIP)

Annually review the need for capital improvements, including maintenance expenditures to the City sewer and water systems and North Shore Drive's sewer system and adjust the project and capital improvement needs to schedule to meet the system needs. The City currently does not have an official CIP. The City is committed to preparing an official CIP as an implementation strategy of this comprehensive plan update.

Sewer Use Charges

Review the current sewer use charges on an annual basis to ensure the charges are sufficient to fund the costs of future operations, maintenance and treatment costs for the sewer system.

On-Site Sewage Disposal Systems

Continue to implement the current City ordinances and policies relating to on-site sewage disposal systems through collaboration with Hennepin County Environmental services and when needed, the MPCA. At the end of 2017, Hennepin County records indicate approximately 912 registered septic sites within the City of Greenfield.

Funding Mechanisms

The City uses the following sources of funding to pay for the City and North Shore sanitary sewer system:

- Trunk Area charges,
- Connections fees,
- Sewer rates, and
- Ad valorem levy

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CHAPTER 10. IMPLEMENTATION

Introduction

Implementation is the final component of the Greenfield Comprehensive Plan. This section identifies how the Plan is to be implemented by posing recommendations for public and private actions. These initiatives work in tandem with the goals, policies, and implementation strategies identified throughout the Plan.

Over the next decade Greenfield will experience a number of changes as it's character continues to evolve from a more agrarian to a more rural residential character. Some of the changes will be foreseen by this Plan and some will be entirely unanticipated. Adapting to these changes will require flexibility. Since not all ideas and proposals will conform to the specific directions of the Plan, the Vision and Guiding Principles serve as "yardsticks" to assess those ideas and proposals with the bigger picture. Decisions makers may find a proposal to be compatible with the Vision and Guiding Principles and therefore, find changes to the Comprehensive Plan to be appropriate. Changes to the Plan require a meaningful and transparent public process and depending upon the nature and magnitude of the changes may require review by the Metropolitan Council and adjacent units of government.

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Comprehensive Plans are not static documents. Rather they are dynamic documents intended to inspire creativity and innovation. Changes should be made when the public process has found that the proposal furthers the community's Vision and Guiding Principles.

Conduct Regular Reviews of the Comprehensive Plan

Greenfield will continue to grow and change in the foreseeable future. As this growth continues to occur, data will emerge through evaluation of development projects and planning analysis that will help with understanding the impacts on the community. The Comprehensive Plan should be formally reviewed on a more regular basis than the 10 year cycle mandated by the Metropolitan Land Planning Act. Evaluation of the plan is needed to assess progress on attaining the community's Vision and to continue a dialogue about the community's future. The review should focus on both the successes and failures of the Plan. The review should be informed by development projects, observations of change and technical analysis. The results of this dialogue, evaluation and analysis should lead to potential modifications or amendments to the plan. This review should include widespread community participation, including members of the City Council and commissions, school district, residents, business owners and other interested parties. The 2017/18 Comprehensive Plan Working Group could also serve as an ongoing group bringing continuity and institutional knowledge to the table. Depending on the type of change, an amendment may also involve review by and discussions with adjacent communities and the Metropolitan Council.

Use the Comprehensive Plan Daily

An effective Comprehensive Plan is one that suffers from excessive use as demonstrated by worn edges, coffee stains and scribbled notes in the margin. The Comprehensive Plan should be used on a frequent basis not only by the community's planner, but by other city staff, decision makers, developers and property owners. The Comprehensive Plan can be used as a:

- Guide and educational tool for other community organizations – The growth of Greenfield is facilitated by many community interests, including the school districts, developers, special interest or advocacy groups, entrepreneurs and business interests. The Plan should be promoted to these groups, not simply as a marketing tool, but as a resource in the development of their own plans which articulate the community's Vision and directions.
- City Staff Resource – The Plan should be used most often by City Staff. The Plan is a guide for staff's recommendations and responses to inquiries from the community about development. It is the responsibility of Staff to ensure that the Plan is being kept current and, when inconsistencies arise, to facilitate resolution through a community forum.
- Policy Guide to Decision Makers and Advisors – Advisory Boards, particularly the Planning Commission, Park Commission, and City Council are charged with making recommendations and decisions about the growth and development of the community. The Comprehensive Plan should be used in conjunction with the Development (Zoning and Subdivision) Code to evaluate the merits of every development proposed. In addition, the Comprehensive Plan's Vision, goals and policies should be the "yardstick" to which innovative ideas are measured as to how well they achieve the community's shared vision.

- **Basis for Setting Annual Goals and Work Programs** – the community's advisory boards, commissions, and City Council should establish goals and work programs on an annual basis. The Comprehensive Plan, and particularly the strategic implementation initiatives, should serve as a basis for identifying future projects and directions.
- **Guide for Ongoing Regulatory Changes** – Following the adoption of the Comprehensive Plan, an update to the City's Zoning and Subdivision Code will commence to determine and correct any inconsistencies with the directions outlined in the Comprehensive Plan. Regardless of the degree of change that occurs in the near future, requests to further amend the Development Code will likely be brought forward. The Comprehensive Plan should be used to evaluate the merits of such change requests.

Understand Available Financial Resources

Implementation of the Comprehensive Plan requires a combination of public and private actions, many of which require public investment. While there is not a bottomless pot of money to tap into, there are a variety of financial resources available to implement the Comprehensive Plan. However, the tools of today may become outdated and should be reviewed on a regular basis. City staff and decision makers will need to retain a current working knowledge of all of the tools that can be used to implement specific strategic initiatives and apply them appropriately.

Update of Official Controls and Regulations

Greenfield's Zoning and Subdivision Regulations, are the official regulatory tools to implement the Comprehensive Plan. The Comprehensive Plan provides the "nexus" to the specific laws in the city's ordinances and allows implementation of ideas that help the City reach the goals outlined in the various plan chapters. Greenfield's existing zoning map and list of zoning districts are provided in Figure 10-1 and Table 10-1

According to Minnesota Statutes 473.865, Subd. 3, communities have nine months from the formal adoption of their plan to bring their local controls into alignment with their Comprehensive Plan. One of the first implementation initiatives should be a thorough review of the Zoning and Subdivision Code to identify where changes are needed to bring it into alignment with the Comprehensive Plan. Some areas where changes or updates are needed include, but are not limited to:

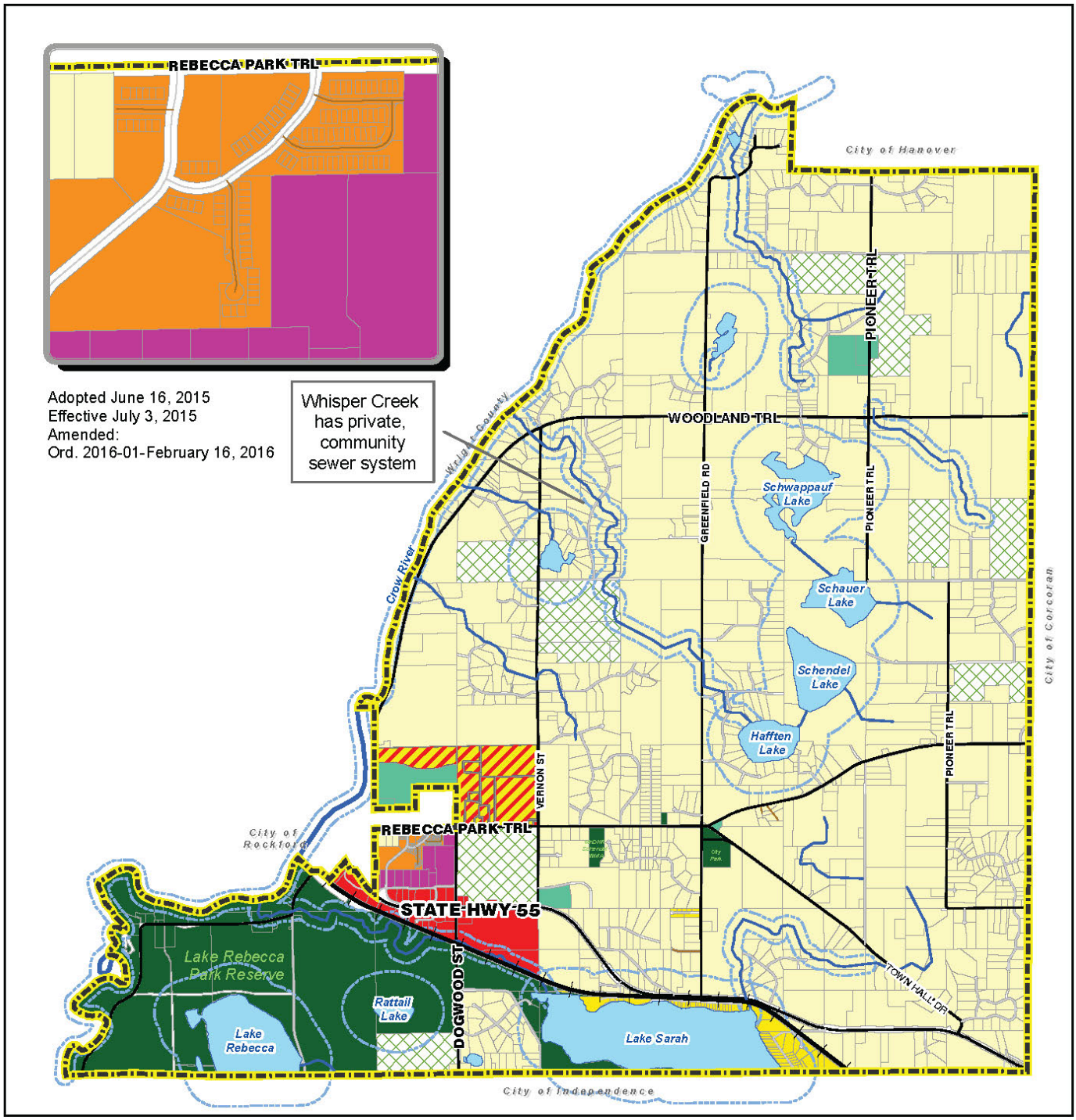
- Modify zoning districts to more closely align with the stated description and intent of the land use categories identified in the plan. Of particular importance are the residential districts within the area served by municipal sewer and water.
  - Update of zoning map to conform to new districts

- Establishment of a new district or a planned unit development mechanism to enable cluster housing or conservation design developments within rural areas. This would serve as a floating district and be used as an optional development tool.
- Consideration of cottage industries as conditional uses within rural residential areas and establishment of key performance or design conditions.
- Review of commercial standards and entitlement processes.
- Establishing a new district or a planned unit development mechanism for the Village Center concept that allows for the mixing/integration of uses.
- To promote sustainable development, Greenfield should consider revisions to the zoning and subdivision code where appropriate to regulate design features such as hard surface coverage, installation of native landscaping, renewable energy systems (solar and wind energy), and use of alternative stormwater management strategies.
- Review and update as necessary the Street Engineering Standards to incorporate street lighting and dark sky principles
- Review and update as necessary the Storm Water Drainage regulations to ensure they meet currently accepted standards.

Table 10-1. Existing Zoning Districts Relative to Future Land Use Designations

CURRENT ZONING DISTRICT	RESIDENTIAL STRUCTURES PERMITTED	EXISTING ZONING DENSITY AND LOT AND BULK STANDARDS	FUTURE LAND USE CATEGORY ALIGNMENT
Agriculture Preserve	Farmsteads/Single Family Dwelling Manufactured Home	1 unit per 40 acres	Agriculture Preserve (applies only to existing enrolled parcels)
Rural Residential	Single Family Dwelling Manufactured Homes	1 unit per 5 acres (gross) 2.5 acre min lot size 200 feet min frontage on street	Rural Residential (cluster or conservation district, PUD, or overlay recommended)
Lake Sarah Sewer Residential	Single Family Dwelling Manufactured Homes	3 units per acre (maximum) 10,000 sq. ft. min lot size 75 foot min lot width at setback	Low Density Residential
Sewered Single Family Residential	Single Family Dwellings Manufactured Homes	3 units per acre (maximum) 14,520 sq. ft. min lot size 90 feet min lot width at setback	Low Density Residential
Residential Townhouse	Townhouses Senior housing Manufactured Homes	6-8 units per acre 5,000 sq. ft. per unit	Medium Density Residential
General Business District	None		Commercial Services
Industrial District	None		Business Park/Industrial
Institutional District	None		Institutional
Parks	None		Public Park and Open Space

Figure 10-1. Current Zoning Map (2017)



N 0 0.5 1 Miles

February 24, 2016
Source: City of Greenfield

*Shoreland Overlay District location is approximate. Final determination shall be made in review process.

Legend

- Agriculture Preserve
- Rural Residential
- Lake Sarah Sewer Residential
- Sewered Single Family Residential
- Residential Townhouse
- General Business
- Industrial
- Insitutional
- Park
- City Boundary
- Railroad
- Lake
- River and Streams
- Shoreland Overlay District*

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Zoning

Review and amend the Park Dedication Ordinance

Park dedication is an important tool for implementing Greenfield's plans for central park, future park needs in the area served by municipal sewer and water systems, and local trail connections. The baseline objective of the park dedication ordinance is to acquire land needed for any additional municipal park or local trail connections and to generate capital to build out Central Park, any other planned park improvements, and local trail system connections. In addition to ensuring that the park dedication ordinance is structured to best meet Greenfield's vision, it may also need to be amended to ensure it complies with recent changes to Minnesota State Statutes.

Capital Improvement Program

A Capital Improvement Program (CIP) is an implementation tool which establishes schedules and priorities typically within a five-year period. As the City's financial resources will always be limited, the CIP allows the City to provide the most critical public improvements, yet stay within budget constraints. A CIP is created by first listing all public improvements that will be required in the next five years, including transportation, surface water, and park infrastructure. Then all projects are reviewed, priorities are assigned, cost estimates prepared and potential funding sources identified.

The City maintains a short term project list that functions like a CIP and identifies smaller local projects. The City does not have any anticipated capital improvements planned between 2019-2023 that would have potential to impact regional transportation systems, sewers, parks, water supply, and open space facilities. The City will establish a formal detailed CIP through 2023 and will update the CIP annually during budgeting processes. The CIP will be created within 9 months of adoptoin of the plan and will be prepared and reveiwed consistent with state statutes.

Future growth will be market driven. Public improvements will be extended to serve those areas concurrent with proposed development plans and consistent with a feasibility study demonstrating market, physical, and financial support/feasibility of a proposed project. The LWMP Implementation program is located within the LWMP chapter of this plan.

Develop Marketing and Promotional Materials

The City of Greenfield has a number of areas in the community that are available for

commercial development. A key to successfully attracting quality development to the community is to 'sell' the city. Promoting the community's vision, strengths, and assets will help in portraying a positive message to the development community. This implementation initiative includes assembling a handout brochure that includes key information about the City of Greenfield: demographic profile and future growth projections, availability of sewer and water infrastructure systems, local schools, and a vision for the future of the city. The brochure can be used by city officials to promote the city, distributed to regional trade or industry groups, and posted on line where many people start the search for prospective development sites.

Strategic Initiatives Summary Table

The following table summarizes the initiatives listed above and other key initiatives identified throughout the plan document. These initiatives are more planning level projects. As annual goals and work programs are established, these initiatives would be anticipated to expand and become more specific/detailed.

Table 10-2. Implementation Strategic Initiatives

INITIATIVE	TIME FRAME *IMMEDIATE* *NEAR TERM 0-3 YEARS* *LONGER TERM 3-5 YEARS*	COST *$ LOW COST/VOLUNTEER LED,* *$$ MODERATE COST – OUTSIDE CONSULTING SERVICES NEEDED;* *$$$ OUTSIDE SERVICES & POTENTIAL CAPITAL INVESTMENTS NEEDED*
Conduct periodic reviews and assessments of the Comprehensive Plan	Near term (every two years)	$
Understand available financial resources	Immediate	$
Develop Marketing and Promotional Materials	Immediate	$
Update zoning and subdivision controls	Immediate	$$
Create CIP (Streets, Sewer, Water, Stormwater)	Immediate	$$
Conduct a feasibility study to determine how sewer and water can serve expansion areas – extend infrastructure as market supports.	Near Term	$$$
Highway 55 Corridor Master Plan Update	Near Term	$$
Village Center Master Plan	Near Term	$$
Park Master Planning in Municipal Service Area – Concurrent with development planning	Near Term to Long Term	$-$$