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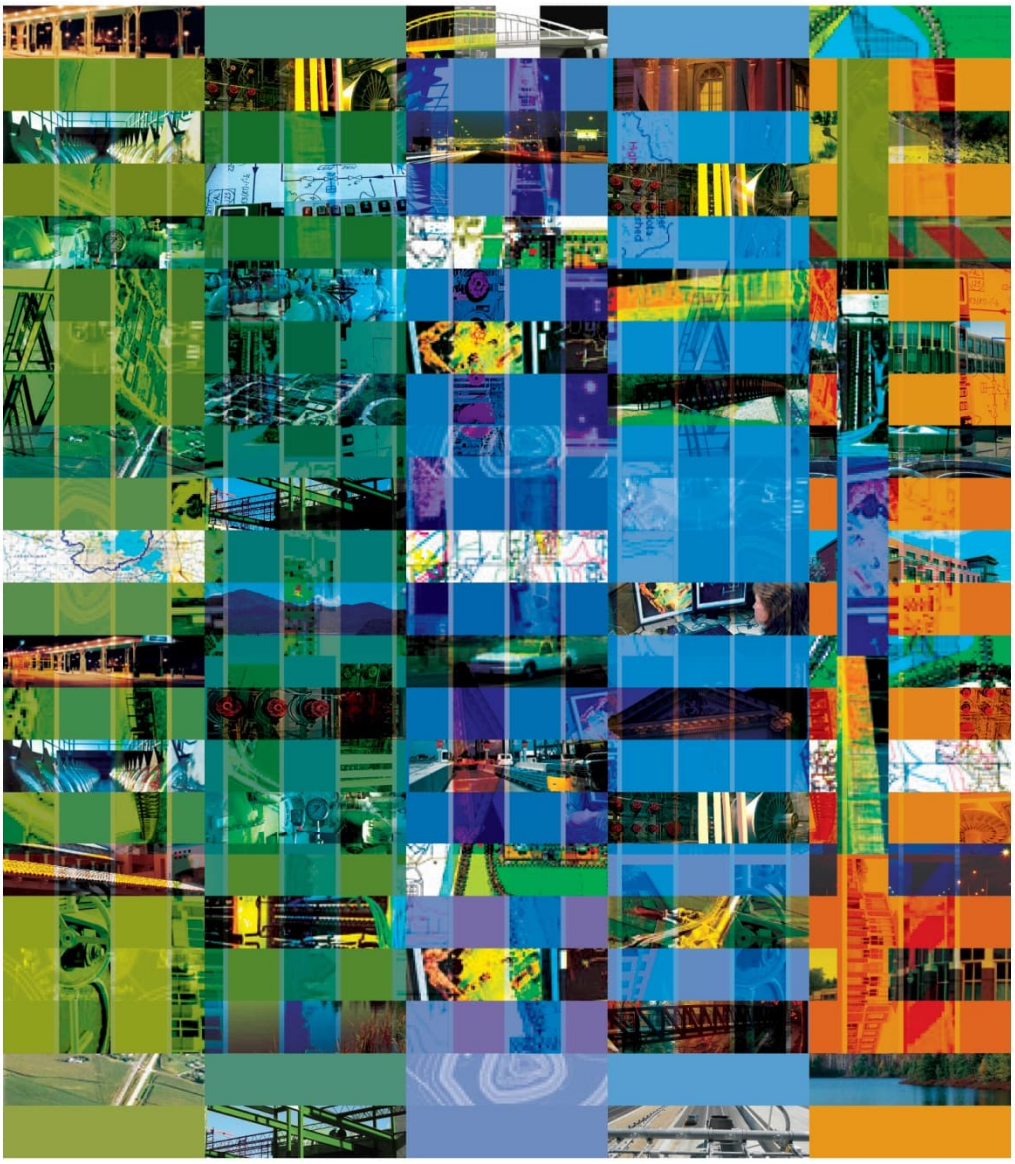
Water Supply Service Area Plan



Report

City of

Two Rivers, WI

December 2025

STRAND ASSOCIATES®

DRAFT FINAL-(12.18.25)

Report for

City of Two Rivers, Wisconsin

Water Supply Service Area Plan

Prepared by:

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December 2025

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TABLE OF CONTENTS

TABLE OF CONTENTS Continued

TABLE OF CONTENTS Continued

SECTION 1
INTRODUCTION

1.01 PURPOSE AND REQUIREMENTS

The purpose of this Water Supply Service Area Plan (Plan) is to satisfy the requirements of the new Wisconsin Department of Natural Resources (WDNR) administrative rule, Chapter Natural Resource (NR) 854. The new rule requires water systems with a service population of greater than 10,000 people to prepare a Plan. The City of Two Rivers, Wisconsin (City) serves approximately 11,214 people. The Plan is intended to provide the City with a means of planning for water supply needs through 2045. The Plan does not require WDNR review and approval unless the City is pursuing a new source of supply from within the Great Lakes Basin, which already includes the City (as shown in Figure 1.01-1). This Plan will need to be reviewed every 5 years and expires at the end of the planning period, or December 2045. A new Plan will be required on or before this date. Strand Associates Inc.® (Strand) also recommends the Plan be reevaluated if an unexpected, new, large user is anticipated to be served by the City or if population trends increase at a rate notably different to those presented in this Plan.

1.02 SCOPE

This Plan will meet each requirement, if applicable, identified in NR 854. The requirements generally include the following information.

1. Prepare an inventory of existing water system facilities.

2. Review historic water system demands.

3. Summarize City population projections using Wisconsin Department of Administration (WDOA) estimates.

4. Review water uses for the water service area through the planning period.

5. Present water demand projections for 2025, 2030, 2035, 2040, and 2045 based on historical water use, population future projections, and water service area.

6. Demonstrate water system capacity needs for design years 2025, 2030, 2035, 2040, and 2045 with respect to average day demand (ADD), maximum day demand (MDD), and maximum day plus fire demands.

7. Review water supply alternatives for meeting water system capacity needs through the planning period.

8. Provide water supply recommendations for meeting water system capacity needs through the planning period.

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

GREAT LAKES BASIN OVERVIEW MAP

WATER SUPPLY SERVICE AREA PLAN
CITY OF TWO RIVERS
MANITOWOC COUNTY, WISCONSIN

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FIGURE 1.01-1
1908.012

1.03 REFERENCES

The following references were used to prepare the Plan.

1. *2022 Comprehensive Plan Update* (2022 Comp Plan), November 2022, prepared by the City of Two Rivers Plan Commission and the Bay-Lake Regional Planning Commission.

2. Public Service Commission of Wisconsin (PSCW) *Water, Electrical, Gas, or Joint Utility Annual Reports* (WEGS Reports).

3. *Water Treatment Facility Modifications Two Rivers Water and Light*, September 2005, prepared by McMahnon Associates, Inc.

4. *Manitowoc Public Utilities Water Production Master Plan*, October 2024, prepared by Strand.

5. *2023 Sanitary Survey Report*, October 2023, prepared by WDNR.

6. *2024 Consumer Confidence Report* (2024 CCR), prepared by Two Rivers Utilities Water Department.

1.04 ABBREVIATIONS AND DEFINITIONS

2022 Comp Plan	*2022 Comprehensive Plan Update*
2024 CCR	*2024 Consumer Confidence Report*
ADD	average day demand
AL	Action Limit
ccf	centum cubic feet
City	City of Two Rivers, Wisconsin
CT	contact tank
EST	elevated storage tank
gpcd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
GST	ground-level storage tank
hp	horsepower
HSP	high service pump
ISO	Insurance Services Office
Manitowoc	City of Manitowoc, Wisconsin
MCL	maximum contaminant level
MDD	maximum day demand
MG	million gallons
MPU	Manitowoc Public Utilities
N/A	not applicable
NR	Natural Resource
pCi/L	picocuries per liter

PFAS	per- and Polyfluoroalkyl Substances
PFOA	perfluorooctanesulfonic acid
PFOS	perfluoroocatance sulfonate
Plan	Water Supply Service Area Plan
ppb	parts per billion
ppm	parts per million
PSCW	Public Service Commission of Wisconsin
psi	pounds per square inch
SDWA	Safe Water Drinking Act
Strand	Strand Associates, Inc.®
TDH	total dynamic head
UF	ultrafiltration
USEPA	United States Environmental Protection Agency
VFD	variable frequency drive
WDNR	Wisconsin Department of Natural Resources
WDOA	Wisconsin Department of Administration
WEGS Report	*Water, Electrical, Gas, or Joint Utility Annual Reports*
WTP	water treatment plant

SECTION 2
SYSTEM OVERVIEW

2.01 SYSTEM OVERVIEW

The City's current service area is included in Figure 2.01-1. The City owns and operates a water treatment plant (WTP), three storage reservoirs, and one booster station that supply water through approximately 72 miles of distribution and transmission main ranging from 1.5 to 16 inches in diameter. The system consists of two pressures zones: the Main Zone and North Zone. The pressure zone boundary is managed by five check valves that can be opened to provide 52 pounds per square inch (psi) of pressure to the high zone if the booster station is out of service. Figure 2.01-2 shows a map of the current water system with the various water utility infrastructure components. Figure 2.01-3 shows a general schematic of the City's water system and interconnections with neighbors.

2.02 LAKE MICHIGAN SUPPLY, INTAKE WELL, AND LOW LIFT PUMPING STATION

The WDNR allows the City to withdraw source water from Lake Michigan as part of the Great Lakes Compact and approved permitting requirements. The boundaries of the water service area are 100 percent within the Lake Michigan watershed. The City draws its water through one 24-inch-diameter, 6,300-foot-long intake pipe that empties into a 20-foot-diameter shore well with fiberglass screens that prevent debris from entering the low lift pumps. Table 2.02-1 summarizes total withdrawal from Lake Michigan over the past 10 years. Three 1,250-gallon-per-minute (gpm) low lift pumps equipped with variable frequency drives (VFD) transfer raw water to the WTP, as described in Table 2.02-2. Withdrawal capacity is equal to the low lift pump capacity.

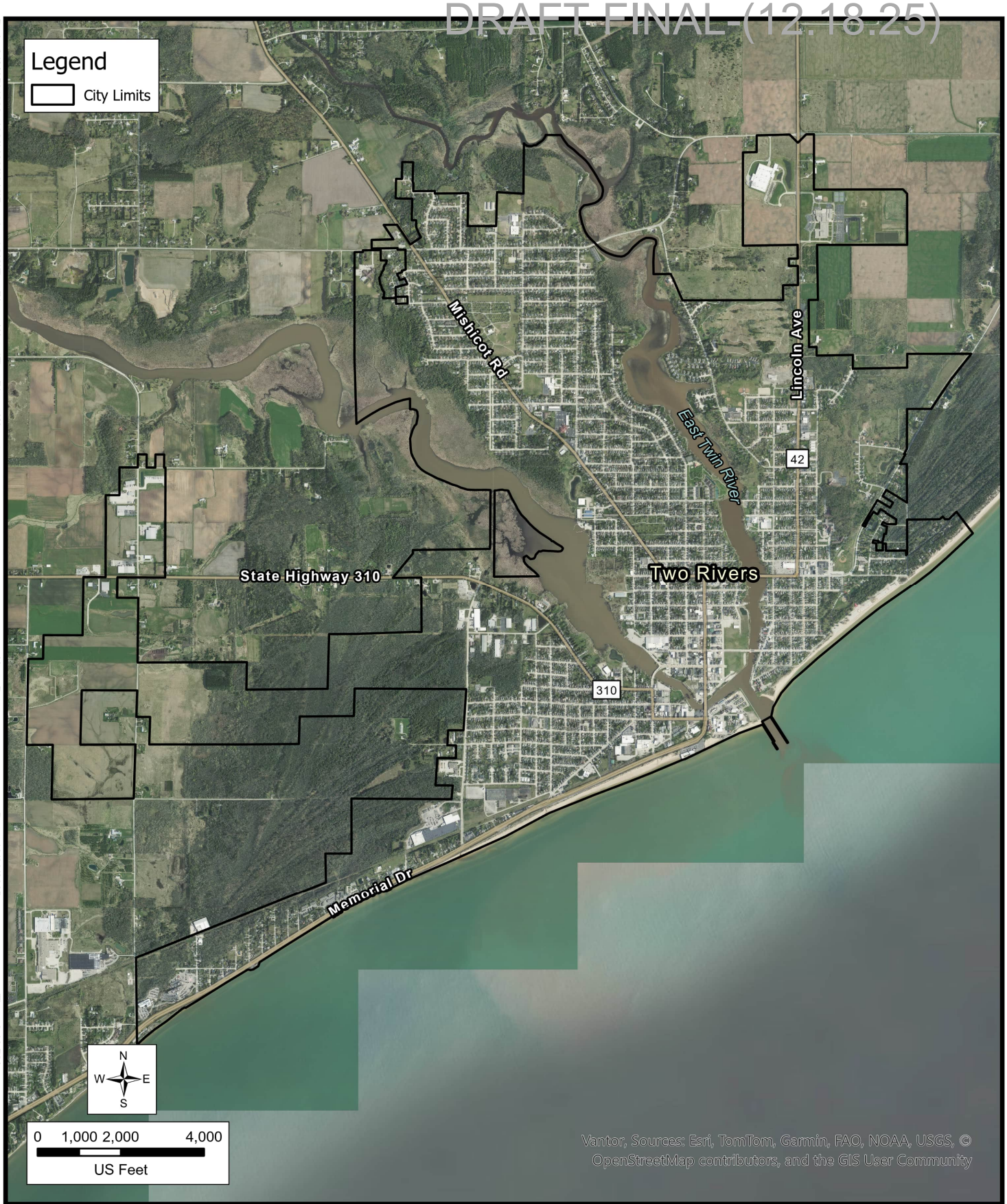
Year	Total Withdrawal Volume (gallons)	Average Daily Withdrawal (gallons)
2015	339,397,980	929,000
2016	325,378,630	891,000
2017	355,908,140	974,000
2018	312,429,670	855,000
2019	357,775,950	980,000
2020	337,979,070	925,000
2021	363,681,070	996,000
2022	392,239,180	1,074,000
2023	413,572,010	1,132,000
2024	353,286,340	967,000

Table 2.02-1 Annual Withdrawal From Lake Michigan

Low Lift Pump No.	hp	Capacity (gpm)	Discharge Pressure (psi)	Installation Year
1	60	1,200	25	2004
2	60	1,200	25	2004
3	60	1,200	25	2004
Total	**180**	**3,600**		

hp=horsepower

Table 2.02-2 Low Lift Pump Summary



EXISTING SERVICE AREA

WATER SUPPLY SERVICE AREA PLAN
CITY OF TWO RIVERS
MANITOWOC COUNTY, WISCONSIN

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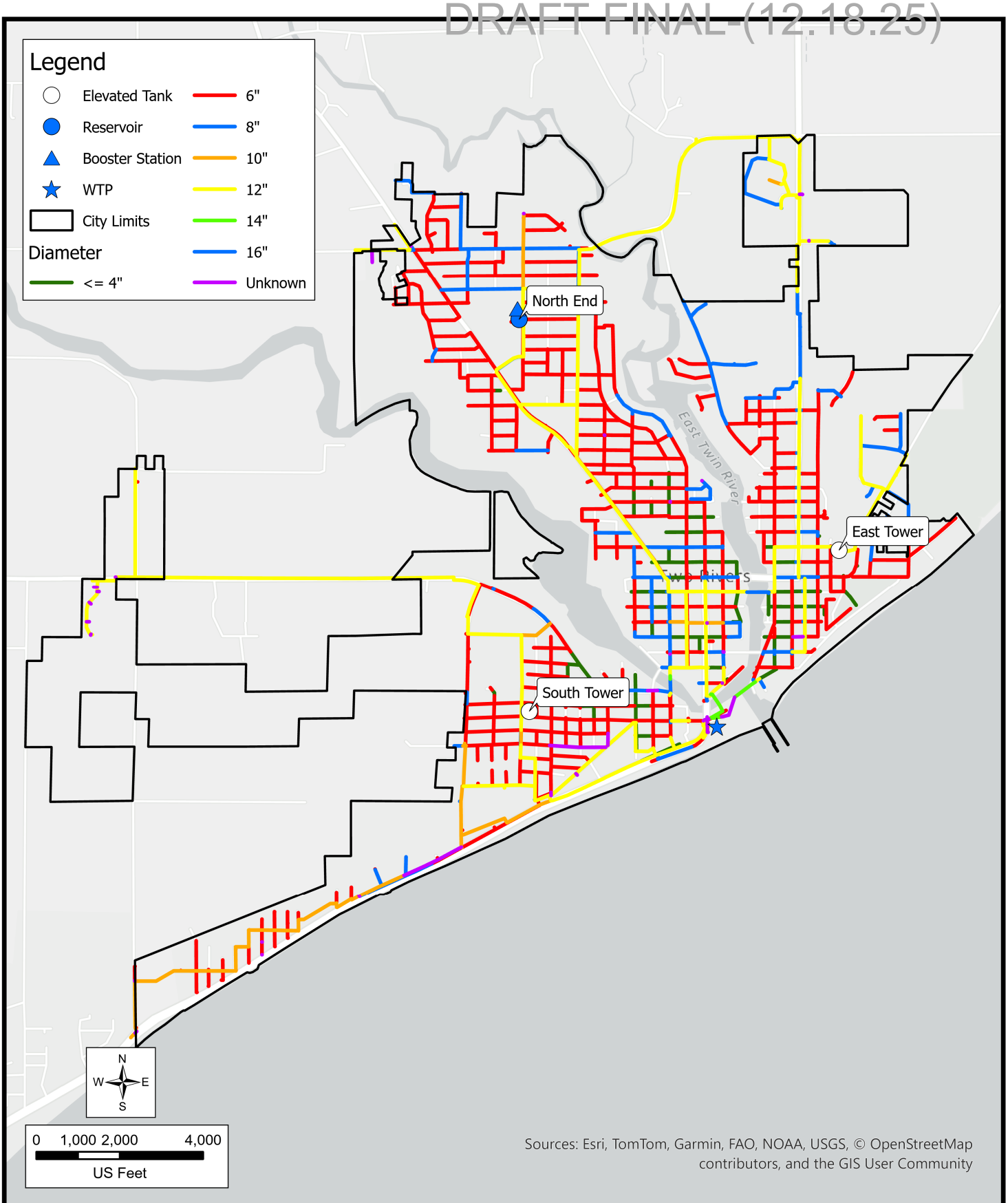
FIGURE 2.01-1
1908.12



EXISTING DISTRIBUTION SYSTEM

WATER SUPPLY SERVICE AREA PLAN
CITY OF TWO RIVERS
MANITOWOC COUNTY, WISCONSIN

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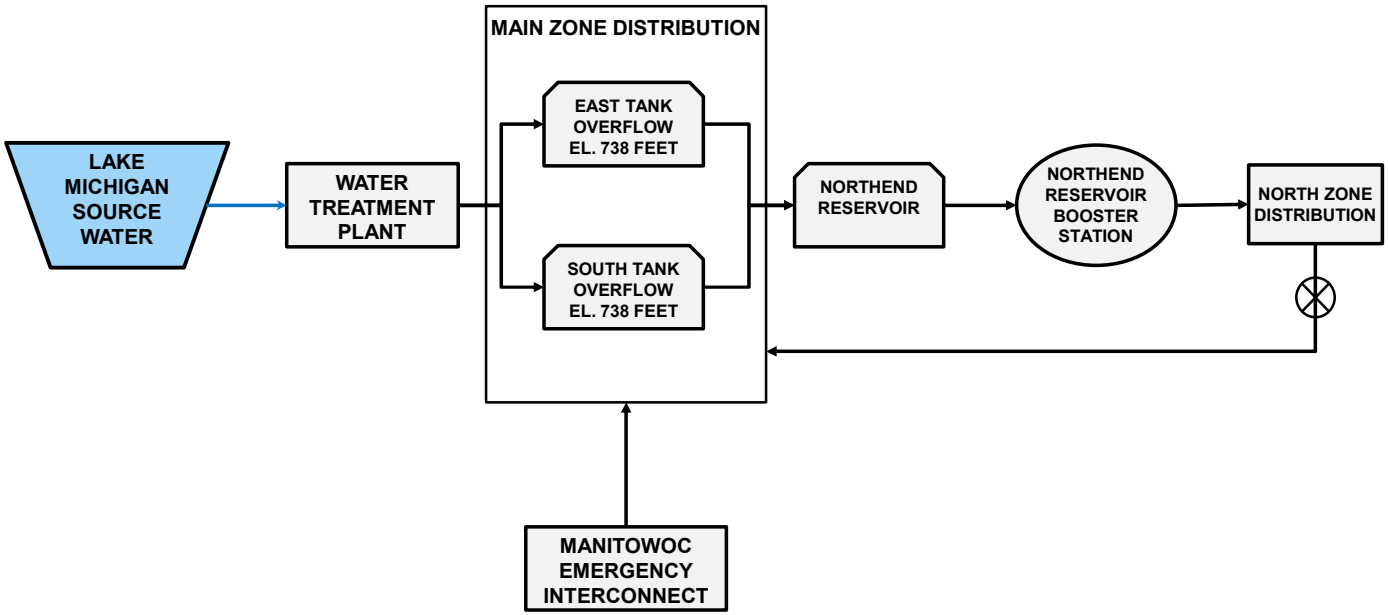
FIGURE 2.01-2
1908.12



Legend

Water Main

Check Valve

WATER SYSTEM SCHEMATIC

WATER SUPPLY SERVICE AREA PLAN
CITY OF TWO RIVERS
MANITOWOC COUNTY, WISCONSIN

STRAND ASSOCIATES

FIGURE 2.01-3
1908.12

2.03 WTP

Water is pumped from the low lift pumps into two 200-micron self-backwashing strainers that remove sand, silt, and biological matter. Pretreated water is mixed with sodium hypochlorite for initial disinfection. Water then flows through five ultrafiltration (UF) membrane skids. Five UF skids with 36 inge-BASF dizzer XL 0.9 MB 60W modules provide direct filtration of the lake water. Waste from membrane system is directed to the Two Rivers Wastewater Treatment Facility via a surge tank. Permeate discharges into a permeate tank. Before entering the distribution system, water is routed from the permeate tank to a 43,922-gallon contact tank (CT) basin through a 24-inch line where sodium hypochlorite and fluorosilicic acid are injected. Finished water is stored in two 160,000-gallon clear wells then pumped into the distribution system. Sodium hydroxide is injected before high service pumps (HSP) for pH control and to reduce corrosive conditions. Orthophosphate is added for corrosion control. Table 2.03-1 provides a summary of each unit process within the WTP along with its corresponding capacity. Table 2.03-2 provides a summary of the HSPs that connect the WTP to the distribution system. The City does not currently have any water quality concerns.

Component	Firm Rated Capacity* (MGD)
Intake Pipe	N/A
Shore Well	N/A
Low Lift Pump Nos. 1, 2, and 3	3.5
Amiad Pre-Filters	3.0 MGD
UF Membranes	3.0 (summer) 1.6 (winter)
Permeate Tank	N/A
CT Basin	3.0
Clear Well	N/A
High Lift Clear Well	5.1

Note: N/A=not applicable
*Firm Rated Capacity: WDNR-rated capacity with largest unit out of service

Table 2.03-1 WTP Components in Order

HSP No.	hp	Capacity (gpm)	TDH (feet)	Installation Year
1	75	1,400	160	2004
2	75	1,400	160	2004
3	40	809	150	2004
4	75	1,400	160	2014
Total	**265**	**5,009**		

Note: TDH=total dynamic head

Table 2.03-2 HSP Summary

2.04 WATER QUALITY

This section provides a summary of the City's 2024 water quality assessment (Appendix B). The City is in compliance with all maximum contaminant levels (MCL) enforced by the WDNR and United States Environmental Protection Agency (USEPA).

A. Inorganic and Radioactive Contaminants

The City monitors for a wide range of contaminants in its water distribution system. A summary of inorganic and radioactive contaminant detection levels from 2024 along with their corresponding MCLs or Action Levels (AL) can be found in Table 2.04-1. The City does not have any disinfection byproduct violations.

Contaminant	MCL or AL*	Detected Level
Barium	2 ppm	0.21 ppm
Fluoride	4 ppm	0.6 ppm
Nitrate	10 ppm	0.34 ppm
Copper	AL = 1.3 ppm	0.18 ppm
Lead	AL = 15 ppb	15 ppb
Gross Alpha	15 pCi/L	0.8 pCi/L
Combine Uranium	30 pCi/L	0.3 pCi/L

Notes:
ppm=parts per million
ppb=parts per billion
pCi/L=picocuries per liter (a measure of radioactivity)
*AL requires treatment if exceeded.

Table 2.04-1 Inorganic and Radioactive Contaminant Detection Levels

B. Per- and Polyfluoroalkyl Substances (PFAS)

PFAS are a category of man-made chemicals that have been used in industrial and commercial products and manufacturing since the 1940s and are still found in products today. According to USEPA, health effects associated with prolonged PFAS exposure include, but are not limited to, an increased risk of certain cancers, developmental effects, and liver disease. PFAS can enter surface waters like Lake Michigan through a variety of sources, including industrial runoff and firefighting foams. USEPA announced its final rule on PFAS in drinking water under the Safe Water Drinking Act (SWDA) on April 10, 2024, and announced updates to the rule on May 14, 2025. Table 2.04-2 lists the regulated levels for two types of PFAS (perfluorooctanesulfonic acid [PFOA] and perfluoroocatance sulfonate [PFOS]), which must be met by 2029. The City is below the 2029 MCL requirement according to its most recent 2024 water quality report.

Compound	2029 MCL (ppt)	Detected Level (ppt)
PFOA	4.0	2.20
PFOS	4.0	2.70

Table 2.04-2 PFAS Detection Levels

2.05 WATER MAIN INVENTORY

Table 2.05-1 summarizes the quantity of water main in the distribution system as reported to the PSCW at the end of 2024.

Water Main Diameter (inches)	Length (feet)	Percentage of Total (%)
1.5	475	0.1
4	24,355	6.4
6	198,011	51.8
8	54,641	14.3
10	22,943	6.0
12	75,920	19.9
14	5,142	1.3
16	580	0.2
Total	**382,067**	**100.0**

Table 2.05-1 Existing Distribution System Water Main Inventory

2.06 DISTRIBUTION STORAGE AND BOOSTER PUMPING FACILITIES

Existing storage infrastructure includes two elevated storage tanks (EST) and one ground-level storage tank (GST) fed by the Main Zone. Three booster pumps transfer water from the GST to the North Zone. This section summarizes these facilities.

A. EST Summary

This City owns and operates two ESTs: the Eastside Tank and the Southside Tank. The Eastside and Southside Tanks supply the Main Zone and are fed by the Main Zone. Table 2.06-1 lists each EST along with its corresponding capacity, construction year, and overflow elevation.

Tank Name	Capacity (gallons)	Year Constructed	Overflow Elevation (feet)
Eastside Tank	500,000	1936	738
Southside Tank	500,000	1936	738

Table 2.06-1 EST Summary

B. GST Summary

The City owns and operates one GST: the Northend Reservoir. The Northend Reservoir supplies water to the North Zone. Table 2.06-2 lists the capacity and construction year for this GST.

Tank Name	Capacity (gallons)	Year Constructed
Northend Reservoir	2,000,000	1963

Table 2.06-2 GST Summary

The City owns and operates one booster pumping station which pulls from the Northend Reservoir. As summarized in Table 2.06-3, three pumps equipped with a VFD operate within this station to maintain desired pressure of 75 psi within the North Pressure Zone.

Booster Pump No.	Horsepower	Capacity (gpm)	TDH (feet)	Installation Year
R7	25	400	185	2012
R8	25	400	185	2023
R9	25	400	185	2012
	Total	**1,200**		

Table 2.06-3 Booster Station and Pump Summary

2.07 INTERCONNECTS

A 10-inch emergency interconnection to the Manitowoc Public Utilities (MPU) exists along the west edge of the City in case of emergency. Metered flow through the interconnect to or from MPU is governed by an intergovernmental agreement between the two utilities.

SECTION 3
HISTORICAL AND PROJECTED DEMANDS

3.01 GENERAL

This section explores historic water demand trends and provides a projection for expected future demands based on corresponding population estimates up to year 2045.

Water demand terminology used in this section is defined as follows:

ADD:	The total volume of water pumped in a year divided by the number of days in the year.
MDD:	The day of the year on which the maximum amount of water is pumped.
MDD and Fire Demand:	The estimated amount of water required in a community to fight a fire. This demand is generally specified as a rate of flow, in gpm, for a given period of time, in hours. The calculated fire demand is added to the domestic demand during the maximum day to obtain the demand on a day that a major fire occurs. Fire demand generally increases the volume of storage that must be available on a maximum day.

The estimation of future water demands is not exact. The best forecast of future water demand was obtained by projecting ADD based on population or customer growth and water use within the service area. Future MDDs were then estimated by analyzing past ratios of MDD to ADD and applying the resulting factor to the average day projections.

Prudent operation of water utility requires that the firm system capacity always be in excess of system demands. Hence, recommended system improvements may be deferred until they become necessary. Or they may have to be implemented sooner if demands increase at a different rate than projected.

3.02 POPULATION

The City spans 6.494 square miles and is currently occupied by 11,214 people. The approximate current population density for the City is 1,727 people per square mile. While a population density map was not available, the most recent zoning distribution map is included in Appendix A.

Past, current, and future population data was available from United States Census data and the WDOA. The WDOA Demographic Service Center provided population projection data through the year 2050, with the most updated estimates being made in 2024. WDOA projections were used to project water demands through 2045.

A summary of past, present, and future population is depicted in Figure 3.02-1.

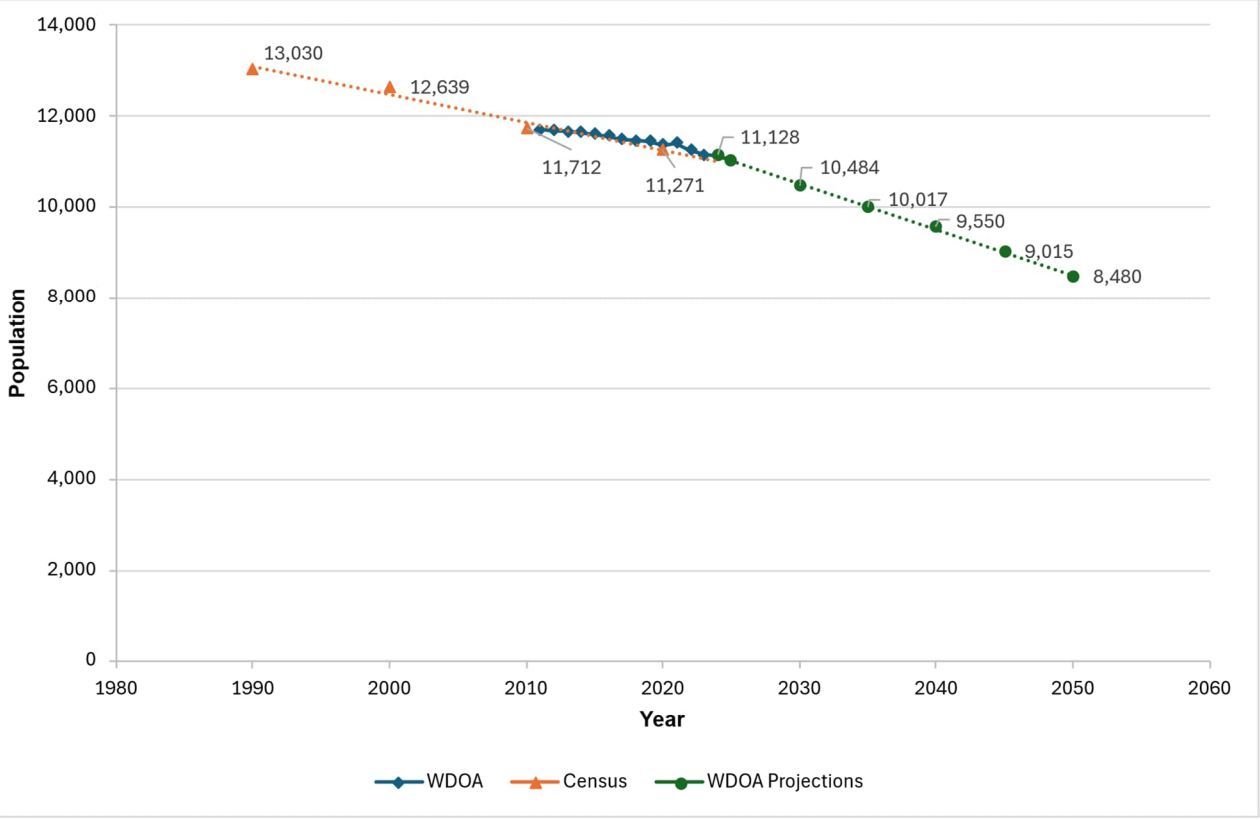


Figure 3.02-1 Population Data

3.03 WATER SALES AND PUMPAGE

This section provides a walk-through of calculations used to determine projected water demands for the City. Water use trends were applied to population projections to estimate future demands up to the year 2045.

A. Water Pumpage

The City's historical water use records were obtained from the PSCW's WEGS Reports for the years 2015 to 2024. A summary of historical water pumpage and sales data is provided in Table 3.03-1.

Year	Annual Pumpage (gallons)	Average Day Pumpage (gpd)	Maximum Day Pumpage (gpd)	Average Day Sales (gpd)	Sales-to-Pumpage Ratio	Maximum to Average Day Ratio
2015	293,135,000	802,560	1,568,000	698,847	0.87	1.95
2016	273,878,000	749,837	1,419,000	663,800	0.89	1.89
2017	287,904,000	788,238	1,276,000	646,694	0.82	1.62
2018	265,667,000	727,357	1,254,000	671,491	0.92	1.72
2019	269,897,000	738,938	1,308,000	665,147	0.90	1.77
2020	287,575,000	787,337	1,345,000	671,551	0.85	1.71
2021	305,837,000	837,336	1,518,000	673,530	0.80	1.81
2022	341,396,000	934,691	1,541,000	697,098	0.75	1.65
2023	359,821,000	985,136	1,810,000	704,712	0.72	1.84
2024	312,208,000	854,779	1,347,000	676,110	0.79	1.58

Note: gpd=gallons per day

Table 3.03-1 Water Pumpage and Sales Data

B. Sales-to-Pumpage Ratio

Figure 3.03-1 illustrates the sales-to-pumpage ratios for the past 10 years. Values range from 0.72 in 2023 to 0.92 in 2018. Ratios less than 1.00 are likely due to accounted for nonrevenue water use, unaccounted water loss, unmetered sales, leakage, hydrant flushing, and water main breaks. To account for variability, the average sales-to-pumpage ratio over the past 10 years of 0.83 was used for calculating future demands.

Figure 3.03-2 presents the number of water breaks recorded over the past 10 years. The inverse relationship between sales-to-pumpage ratio and number of water main breaks indicates a direct correlation between break rate and water loss. In approximately 2019, the break rate began to rise, which correlates with a decrease in the sales-to-pumpage ratio. These trends have continued through 2024. This relationship indicates that the sales-to-pumpage efficiency can be managed and raised, in part, by a robust water main replacement program.

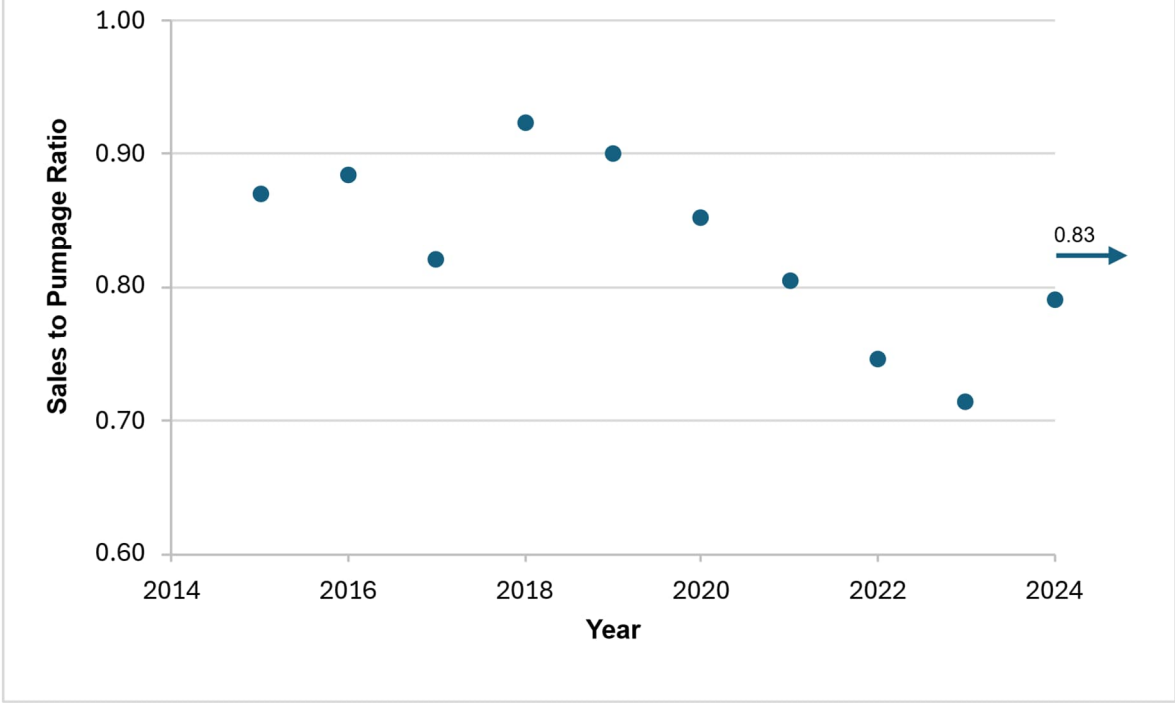


Figure 3.03-1 Sales-to-Pumpage Ratio

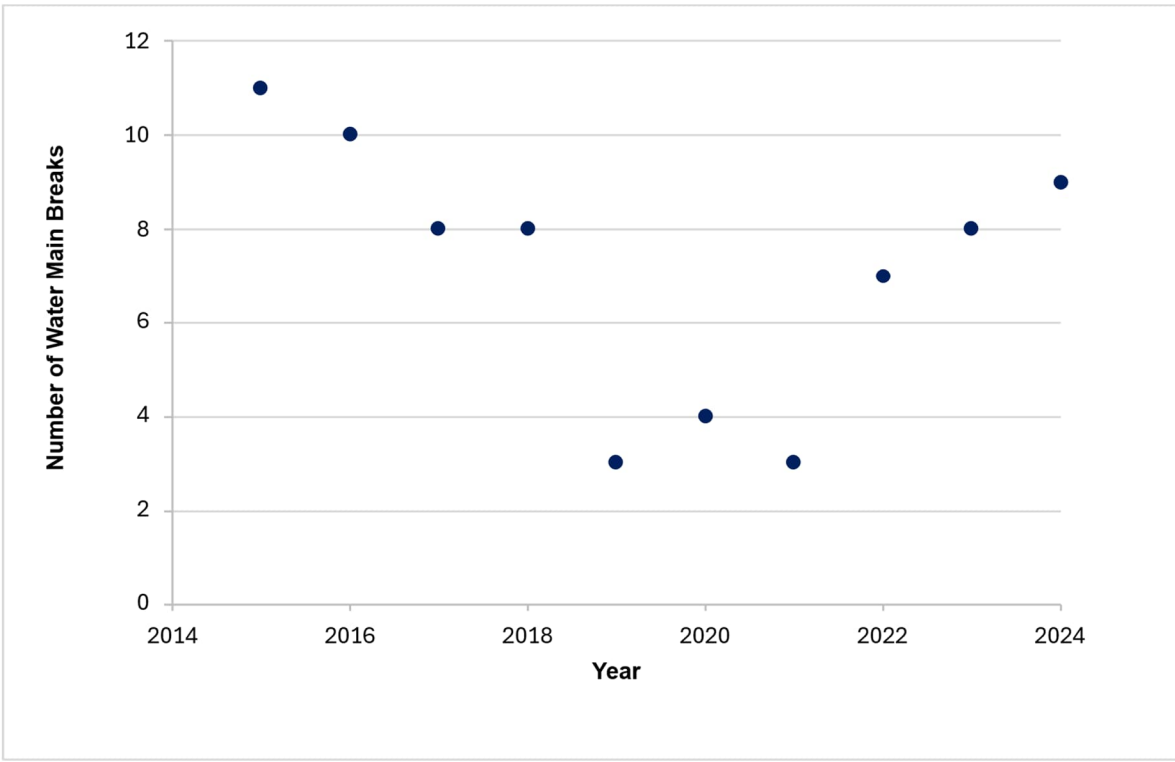


Figure 3.03-2 Number of Water Main Breaks

The City also uses the following methods to measure nonrevenue water:

1. Flushing: Meters are read on flushing instruments or volume is estimated based on time versus flow calculations. If these options are not available, water industry tools are used to help estimate flushing.

2. Water Loss from WTP: Time versus flow calculations are performed comparing input flows to output flows for each instrument within the WTP.

3. Fire Protection: Water is estimated from meter readings on trucks and loads of water hauled by tanker trucks if meters are not available.

4. Leakage from Water Main and Services: Water use is based on pipe condition, size of water main break or hole, and estimated duration of leak. Water industry tools are used to help estimate leakage.

C. MDD to ADD Ratios

Figure 3.03-3 illustrates MDD to ADD ratios over the past 10 years. Values range from 1.58 in 2024 to 1.95 in 2015. As reported by the City, spikes in ratios correlate to summers with hot dry weather. To conservatively incorporate MDD, the largest ratio from the past 10 years of 1.95 was used for future demand calculations.

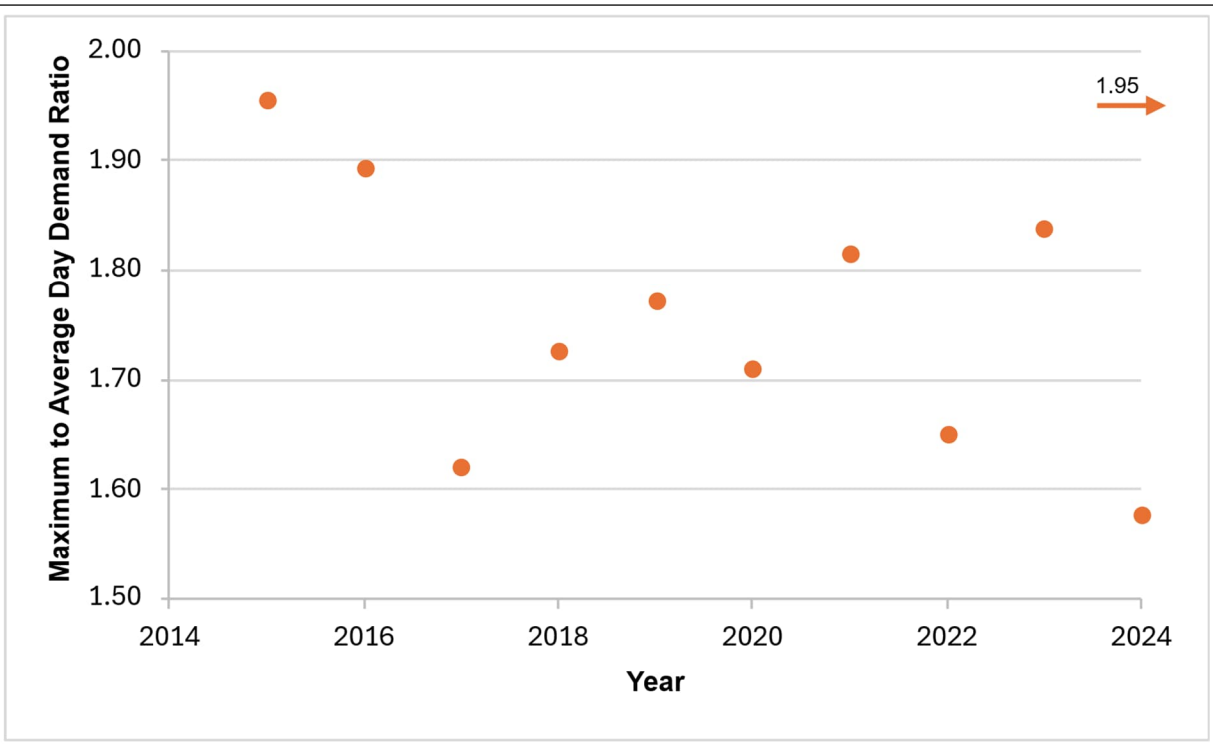


Figure 3.03-3 MDD to ADD Ratios

D. Sales

Table 3.03-2 presents historical water sales and is divided into categories of residential, commercial, public authority, interdepartmental, and industrial sales. Although it does not have its own category, multifamily is accounted for in residential sales. Interdepartmental sales account for sales to other City and utility services. The City does not have any wholesale customers.

Year	Sales by Category (gallons)					Total
	Residential	Commercial	Industrial	Public	Interdepartmental Sales	
2015	189,443,000	48,480,000	7,435,000	5,347,000	3,820,000	**254,525,000**
2016	181,856,000	44,085,000	6,419,000	4,872,000	4,178,000	**241,410,000**
2017	176,622,000	44,302,000	7,087,000	4,232,000	3,962,000	**236,205,000**
2018	183,144,000	42,038,000	9,049,000	4,822,000	6,209,000	**245,262,000**
2019	178,678,000	43,363,000	12,462,000	5,052,000	3,390,000	**242,945,000**
2020	185,359,000	42,015,000	10,132,000	4,375,000	3,403,000	**245,284,000**
2021	181,930,000	45,920,000	10,809,000	4,101,000	3,247,000	**246,007,000**
2022	180,013,000	51,505,000	13,839,000	4,571,000	4,205,000	**254,133,000**
2023	187,603,000	44,671,000	13,927,000	6,266,000	4,929,000	**257,396,000**
2024	180,284,000	43,642,000	12,346,000	6,193,000	4,484,000	**246,949,000**

Table 3.03-2 Sales by Category

Table 3.03-3 presents the customer count for each category. Customer counts were taken from PSCW WEGS Reports and have remained relatively steady with minor increases over the 10-year analysis period.

Year	Customers (Count)				
	Residential	Commercial	Industrial	Public	Interdepartmental Sales
2015	4,683	291	16	26	2
2016	4,697	295	16	27	2
2017	4,706	298	16	27	2
2018	4,718	298	16	26	2
2019	4,722	291	17	28	2
2020	4,733	294	17	26	2
2021	4,749	296	17	27	2
2022	4,752	298	17	28	4
2023	4,770	306	17	32	4
2024	4,776	305	17	33	5

Table 3.03-3 Customer Count

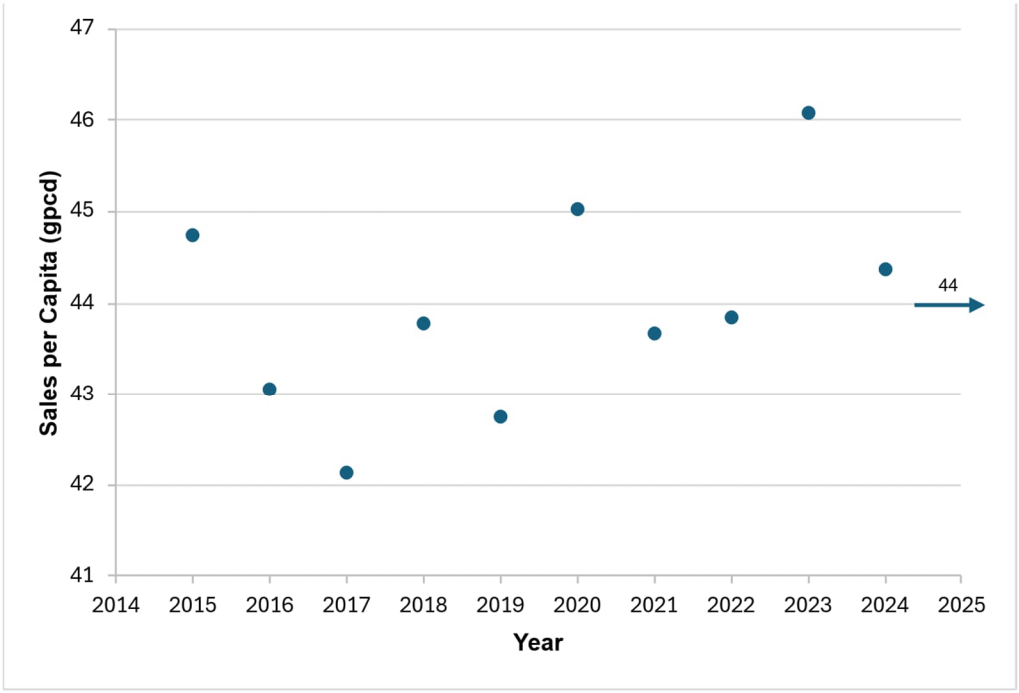
Table 3.03-4 presents the ten largest users in the City and their usage amounts over the 10-year analysis period. The largest water users have remained relatively constant since 2015.

Table 3.03-4 Ten Largest Annual Water Users Since 2015

Customers	Sales (ccf)									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Aurora Health Center	9,971	10,627	10,822	9,063	8,505	7,861	7,580	7,707	7,388	6,775
Metal Ware Corp.	3,372	2,568	4,511	5,469	3,795	7,798	2,918	3,406	5,561	2,169
Susie-Q Fish	4,213	3,700	2,350	1,392	2,337	1,897	2,536	1,742	1,615	1,480
Water Filtration Plant	4,388	4,772	4,728	7,530	4,196	4,354	4,103	5,282	5,824	5,243
TR Aurora Clinic	4,639	4,283	691	3,774	1,305	966	2,692	864	2,860	5,694
Riverside Foods	883	1,492	1,716	1,538	1,881	2,114	1,536	2,110	3,433	3,462
Kwik Trip				2,019	1,943	2,514	2,796	3,031	2,692	2,601
Classic Coatings	617	873	1,464	1,637	1,145	2,072	2,789	2,046	2,557	1,730
Formrite	2,549	1,577	2,333	3,556	4,367	3,868	6,088	8,098	8,761	8,478
Mueller Manor	1,276	1,359	1,484	1,468	1,597	1,494	1,499	1,628	1,470	1,526

Note: ccf=centum cubic feet

Figures 3.03-4 through 3.03-8 represent sales per capita per day values for residential, commercial, industrial, public authority, and interdepartmental sales categories. Sales per capita were calculated by taking the total sales from each category and dividing by the estimated population, as provided in Section 3.02, for the corresponding year. To account for variability over the 10-year period, an average for each category was used for future demand calculations.



Note: gpcd=gallons per capita per day

Figure 3.03-4 Residential Per Capita Sales

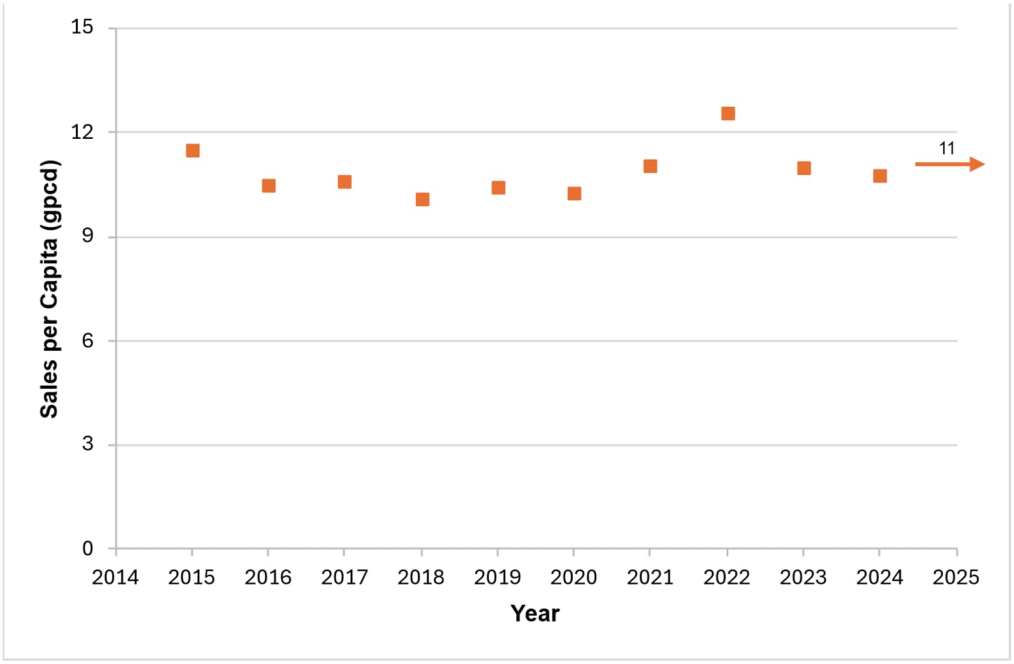


Figure 3.03-5 Commercial Per Capita Sales

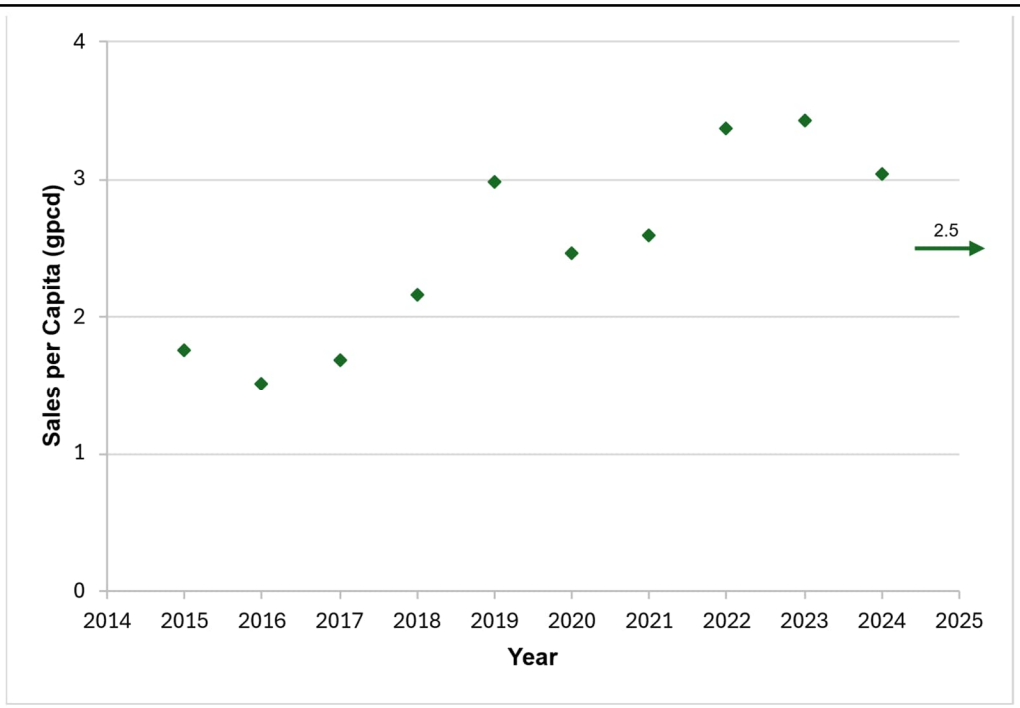


Figure 3.03-6 Industrial Per Capita Sales

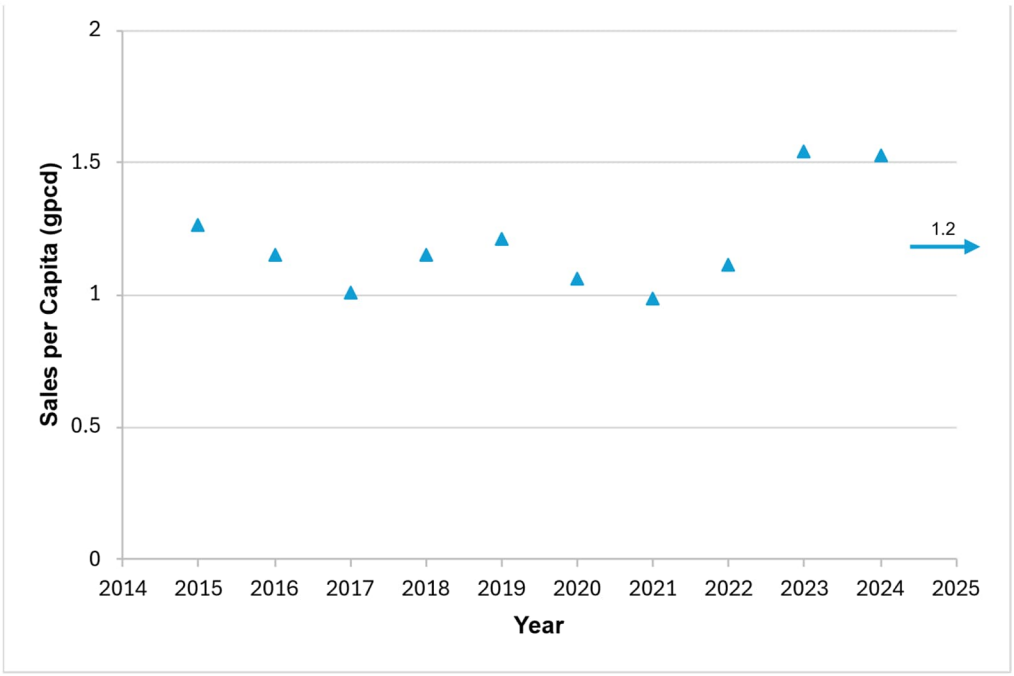


Figure 3.03-7 Public Authority Per Capita Sales

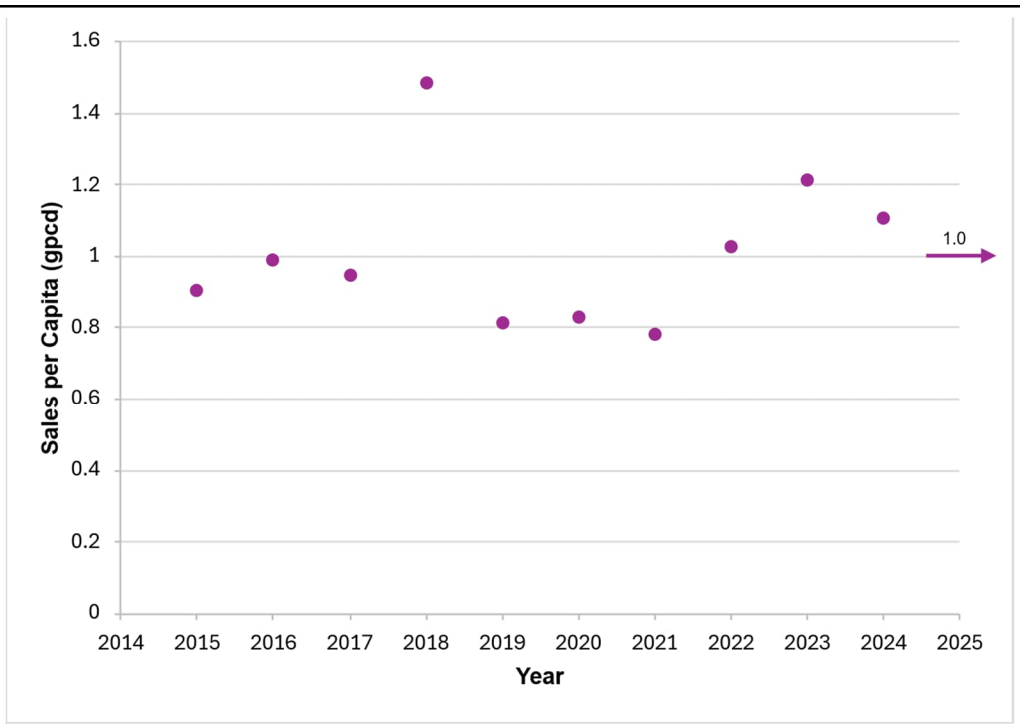


Figure 3.03-8 Interdepartmental Sales Per Capita Sales

Figure 3.02-9 provides a summary of gpcd trends for all categories on the same axis.

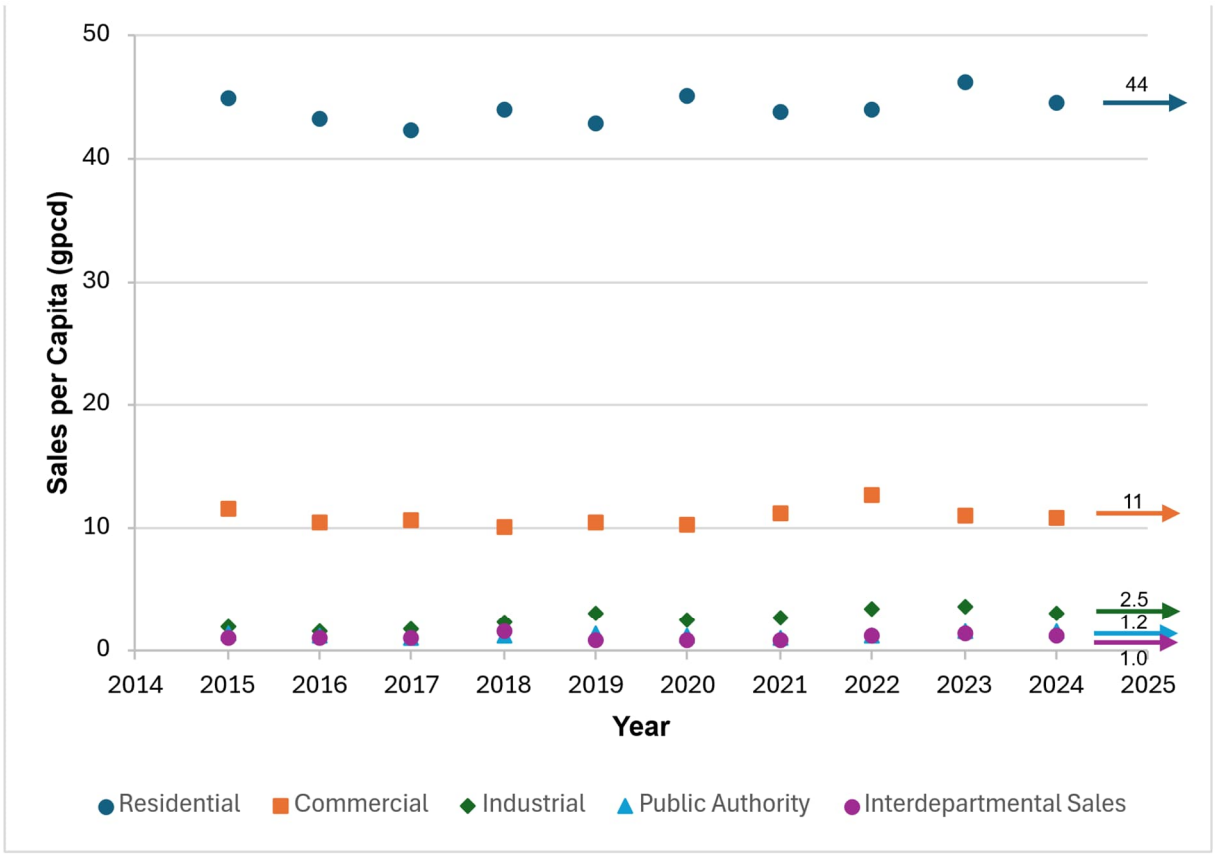


Figure 3.03-9 Per Capita Sales by Category

E. Total Per Capita Sales

Figure 3.03-10 presents the total per capita sales which were determined by combining all sales categories. The sum of the usage category averages (60 gpcd) was used for projected sales and accounts for variability across the 10-year analysis period.

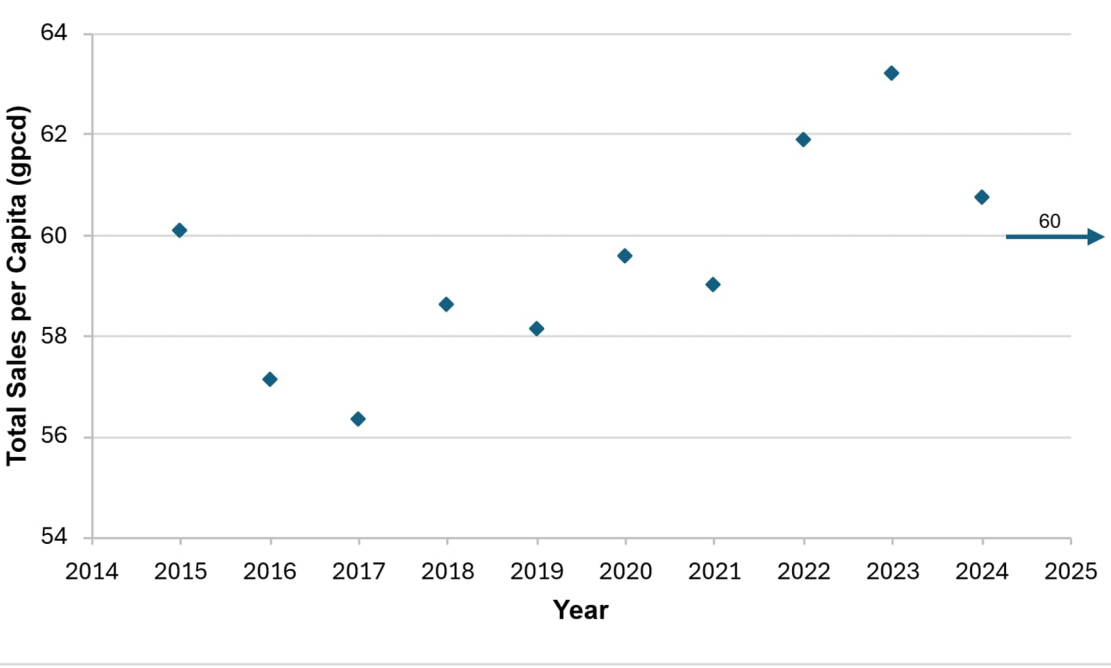


Figure 3.03-10 Total Per Capita Sales

3.04 PROJECTED DEMANDS

Figure 3.04-1 presents projected high- and low-rate water demands through the planning period. The high-rate represents water demands remaining steady throughout the planning period, while low-rate projections represent water demands declining at the same rate as population, as shown in Figure 3.02-1.

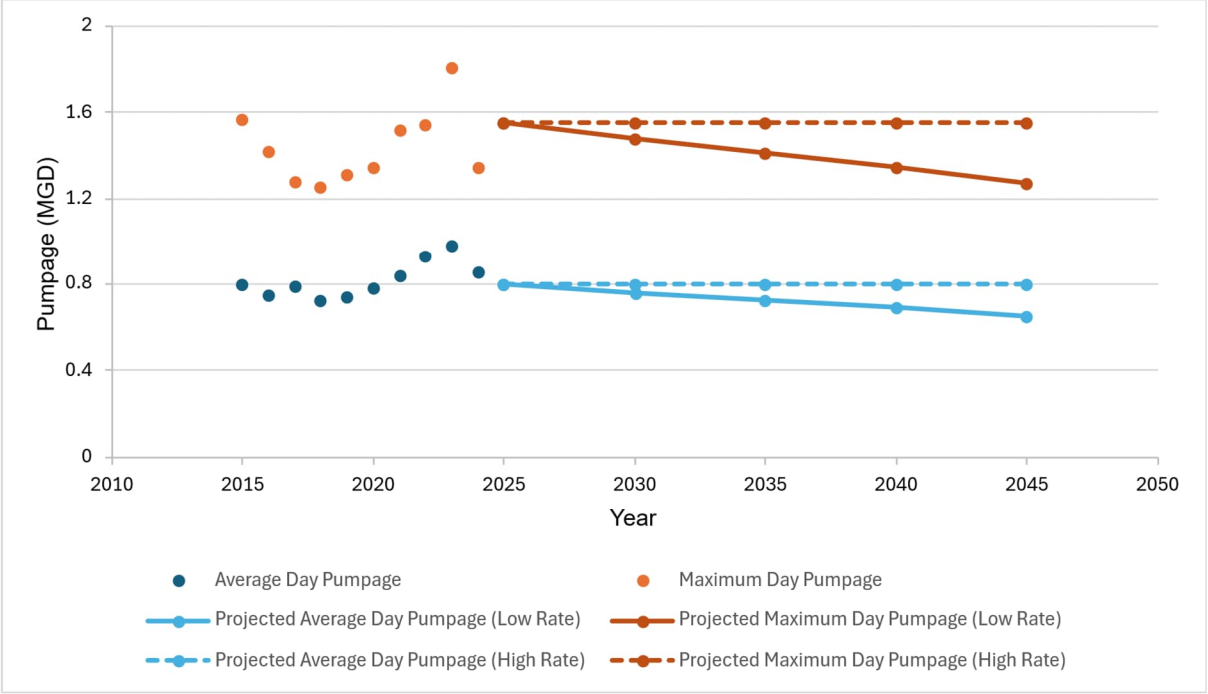


Figure 3.04-1 Projected Domestic Demands

A. Low-Rate Water Demand Projections

1. Domestic Demand

Table 3.04-1 presents the projected low-rate domestic demand during the City planning period. The projected low-rate average day pumpage was calculated by multiplying the design population (see Figure 3.02-1) by the projected total per capita sales per day (60 gpcd) and dividing by the sales-to-pumpage ratio (0.83). The maximum day pumpage was estimated by multiplying the MDD to ADD ratio of 1.95 from Figure 3.03-3 to the average day pumpage.

Design Year	Design Population	ADD		MDD	
		gpm	MGD	gpm	MGD
2025	11,021	550	0.80	1,070	1.55
2030	10,484	530	0.76	1,030	1.48
2035	10,017	500	0.72	980	1.41
2040	9,550	480	0.69	940	1.35
2045	9,015	450	0.65	880	1.27

Table 3.04-1 Projected Low-Rate Domestic Demands

Table 3.04-2 presents the projected low-rate average day nonrevenue water during the City planning period. The nonrevenue water represents an average of 17 percent of the total pumpage in the system, based on the sales-to-pumpage ratio of 0.83.

Design Year	Design Population	Nonrevenue Water (gpm)	Nonrevenue Water (gpd)
2025	11,021	94	135,000
2030	10,484	89	129,000
2035	10,017	85	123,000
2040	9,550	82	117,000
2045	9,015	77	111,000

Table 3.04-2 Projected Nonrevenue Water Use

2. Fire Demand

The Insurance Services Office (ISO) typically recommends basic fire flow requirements that are based on the amount of water a municipality should be able to supply. ISO information for the City requires a fire flow of 2,500 gpm for 2 hours and was used in calculations. Water supply requirements during a fire flow are based on the amount of water the City should be able to supply on the maximum day to obtain maximum credit for the community water system. Water for firefighting can come from a combination of reserve capacity and available water storage. The total volume of water required to fight a fire in the City on a low-rate maximum day in the distribution system for years 2025 through 2045 is presented in Table 3.04-3.

Design Year	MDD (MG)	Fire Demand (MG)	Total (MG)
2025	1.55	0.30	1.85
2030	1.48	0.30	1.78
2035	1.41	0.30	1.71
2040	1.35	0.30	1.65
2045	1.27	0.30	1.57

Note: MG=million gallons

Table 3.04-3 Low-Rate MDD Plus Fire Demand Volume

Table 3.04-4 shows the average rate at which water would be used during the fire.

Design Year	MDD (gpm)	Fire Demand (gpm)	Total (gpm)
2025	1,070	2,500	3,570
2030	1,030	2,500	3,530
2035	980	2,500	3,480
2040	930	2,500	3,430
2045	880	2,500	3,380

Table 3.04-4 Low-Rate Demand Rate During 2-Hour Fire

B. High-Rate Water Demand Projections

1. Domestic Demand

Because the City is planning efforts to combat a declining population, according to the 2022 Comp Plan, a high-rate pumpage projection was created and used in future capacity assessments which shows water demands remaining steady over the planning period, rather than declining with the projected population. Table 3.04-5 presents the projected high-rate domestic demand during the City planning period.

Design Year	Design Population	ADD		MDD	
		gpm	MGD	gpm	MGD
2025	11,021	550	0.80	1,070	1.55
2030	10,484	550	0.80	1,070	1.55
2035	10,017	550	0.80	1,070	1.55
2040	9,550	550	0.80	1,070	1.55
2045	9,015	550	0.80	1,070	1.55

Table 3.04-5 Projected Low-Rate Domestic Demands

Table 3.04-6 presents the projected high-rate average day nonrevenue water during the City planning period.

Design Year	Design Population	Nonrevenue Water (gpm)	Nonrevenue Water (gpd)
2025	11,021	94	135,000
2030	10,484	94	135,000
2035	10,017	94	135,000
2040	9,550	94	135,000
2045	9,015	94	135,000

Table 3.04-6 High-Rate Projected Nonrevenue Water Use

2. Fire Demand

The total volume of water required to fight a fire in the City on a high-rate maximum day in the distribution system for years 2025 through 2045 is presented in Table 3.04-7.

Design Year	MDD (MG)	Fire Demand (MG)	Total (MG)
2025	1.55	0.30	1.85
2030	1.55	0.30	1.85
2035	1.55	0.30	1.85
2040	1.55	0.30	1.85
2045	1.55	0.30	1.85

Table 3.04-7 High-Rate MDD Plus Fire Demand Volume

Table 3.04-8 shows the average rate at which water would be used during the fire.

Design Year	MDD (gpm)	Fire Demand (gpm)	Total (gpm)
2025	1,070	2,500	3,570
2030	1,070	2,500	3,570
2035	1,070	2,500	3,570
2040	1,070	2,500	3,570
2045	1,070	2,500	3,570

Table 3.04-8 High-Rate Demand Rate During 2-Hour Fire

SECTION 4
ADDITIONAL REQUIRED CAPACITY

4.01 GENERAL

This section provides a capacity analysis of the City's existing distribution system. High-rate water demand projections presented in Table 3.04-5 were used to determine pumping and storage capacities up to year 2045. Given the neutral water demand projection (for example, no significant increase or decrease known in demand over the next 20 years), any significant new water users introduced to the City's water system would require a reevaluation of this planning report to understand water system impacts.

4.02 CAPACITY ANALYSIS

A. Maximum Day

The total design demand for a 2025 MDD is 1.55 MGD (1,070 gpm), as determined in Section 3. The existing WTP capacity is adequate to feed a projected 2025 maximum day.

B. Maximum Day Plus Fire

The 2025 maximum day plus fire demand (2,500 gpm) is 5.14 MGD (3,570 gpm), as determined in Section 3. This demand must be met by the WTP capacity plus available storage for 2 hours to provide necessary fire protection.

Because a fire can start at any time, the expected hourly domestic use must be considered. Figure 4.02-1 presents hourly domestic demand throughout a 2025 MDD. The diurnal curve was created using hourly supervisory control and data acquisition information from the MDD in 2024, which occurred on August 1, 2025. When hourly demand exceeds the WTP rated capacity, the difference between the two values must be compensated for by available storage. No additional storage is required to feed a 2025 peak hour because demand does not exceed the WTP capacity.

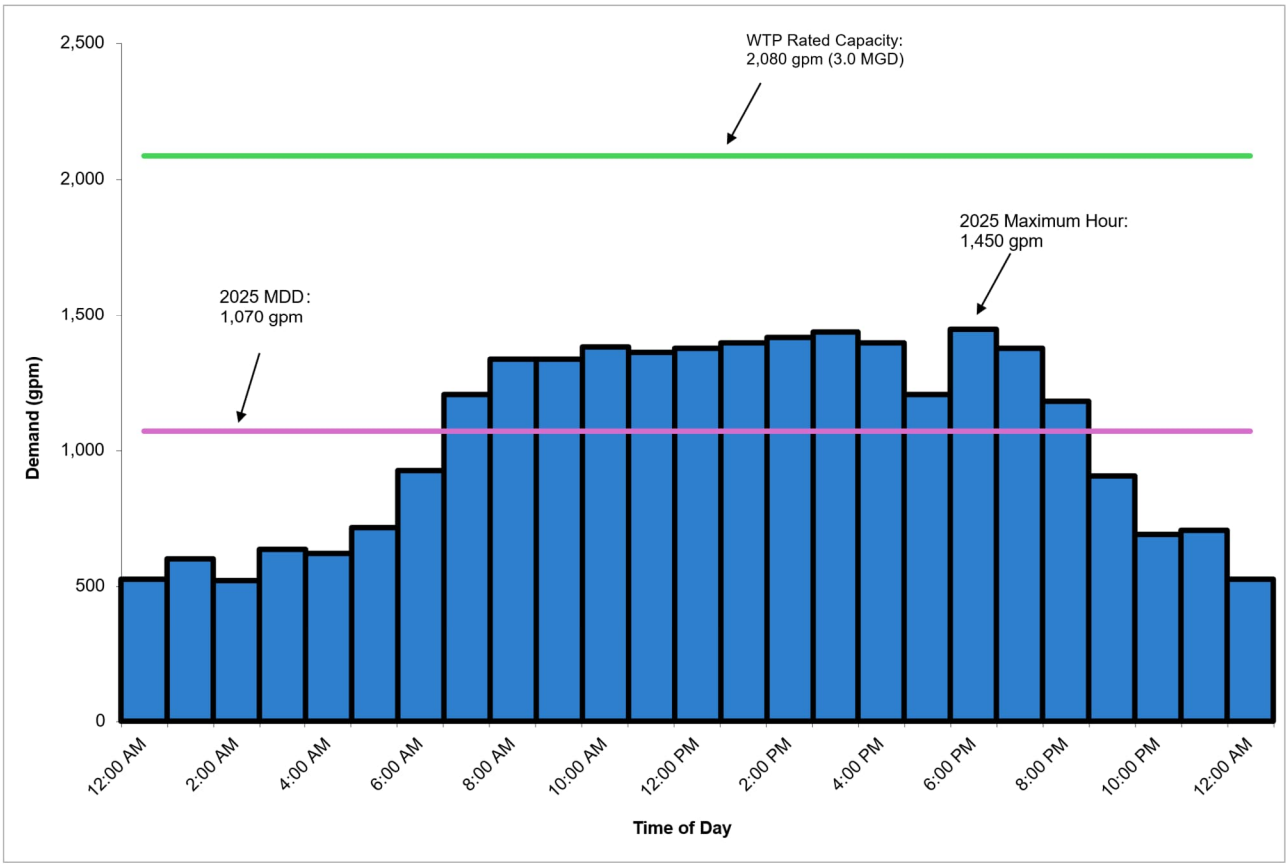


Figure 4.02-1 2025 Projected Maximum Day Hourly Demands

Total elevated storage volume is 1,000,000 gallons. Effective available storage is generally considered 85 percent of total elevated storage to account for operational fluctuations. Available elevated storage (85 percent of total volume) is 850,000 gallons. During a 2-hour period, this volume of storage could provide 7,080 gpm of flow.

Because the Northend Reservoir flows back into the Main Zone, it can provide reserve capacity. Available ground storage (85 percent of total volume) is 1,700,000. If all pumps are on, ground storage can provide 1,200 gpm of flow during a 2-hour period.

2025 Demand Rate				
Domestic	-	1,070 gpm	-	1.54 MGD
Fire	-	2,500 gpm	-	3.60 MGD
Peak Hour	-	380 gpm	-	0.55 MGD
WTP Supply	+	2,080 gpm	+	3.00 MGD
Elevated Storage	+	7,080 gpm	+	10.20 MGD
Ground Storage	+	1,200 gpm	+	1.73 MGD
Total Reserve Capacity	= (+)	6,410 gpm	= (+)	9.24 MGD

Existing capacity is adequate to meet 2025 maximum day plus fire demands, and a reserve capacity of 9.24 MGD over a 2-hour duration is available to meet future needs.

As described in Section 3, ADDs and MDDs are projected to decrease over the planning period. This evaluation demonstrates that the current water system has sufficient capacity to meet required fire and peak hour flow for the next 20 years.

SECTION 5
WATER SOURCE ALTERNATIVES

5.01 OVERVIEW

According to WAC NR § 854.05(7) (2025), "A [water supply service area] plan shall identify possible water supply alternatives available to the public, including… an inventory of alternative existing groundwater and surface water sources available in the region." This section provides an inventory of potential water supply options within the region and assesses each alternative to supply water to the projected service area during the planning period against different criteria. The three alternatives explored in this section include operating unchanged, purchasing water from the City of Manitowoc (Manitowoc), and selling water to Manitowoc.

5.02 ALTERNATIVE NO. 1–CONTINUE EXISTING OPERATIONS

In this alternative, the City would continue normal operation of its WTP and distribution system.

A. Infrastructure Improvements

No new major infrastructure would be required. Current capacity is adequate to meet demand requirements during the planning period. In an emergency, an existing interconnection to Manitowoc could supply up to 28,800 gpd of water to the City. This was amended in 2014 to 2 MGD in order to supply a large industrial customer. However, the proposed customer was not located in the City. In this alternative, the utility is able to make full use of its water system investments and infrastructure.

B. Economic Sustainability

As highlighted in its 2022 Comp Plan, the City is aiming to increase economic sustainability by promoting future development growth in underdeveloped areas. This includes residential, commercial, and industrial zones. To address aging housing infrastructure, northeast and southwest regions of the City may be used for new diverse housing options. Future industrial designation is also planned to accommodate manufacturing and transportation related industries. The City also aims for 4 to 6 net acres of commercially designated land by 2028 to accommodate employment growth. A detailed illustration of projected land use is included in Appendix A. By continuing current operation, the City could continue seeking these goals. If different supplier arrangements are made, the City's existing excess capacity may not be useable for planned developments.

C. Utility Operation

Continuing current operation of the entire distribution system allows the City to maintain full utility autonomy. Additionally, the pre-existing relationship and interconnection with Manitowoc reinforces resiliency of the City's current water system by providing a known quantity of emergency supply with similar water quality to the City's finished water.

5.03 ALTERNATIVE NO. 2–WHOLESALE PURCHASE FROM MANITOWOC

In this alternative, the City would purchase 100 percent of its water supply from Manitowoc. This alternative includes constructing the necessary infrastructure to connect to Manitowoc's existing distribution system, purchasing water as a wholesale customer.

A. Infrastructure Improvements

The existing 10-inch-diameter interconnect between the City and Manitowoc's water systems limits flow availability into the City's system. Therefore, an additional connection point and metering station would need to be constructed to provide adequate flow to meet the City's demand. Pending a water supply modeling analysis, additional water main infrastructure may also need to be implemented on the supplier and purchases sides. Manitowoc does not currently have a reserve capacity to supply the City an MDD of 1.55 MGD. For this reason, this alternative is not considered feasible within the planning period.

B. Economic Sustainability

The ability to meet the City's water demands would depend on Manitowoc's pre-existing supply agreements to surrounding communities. This reduces the City's flexibility to prioritize new residential, industrial, and commercial developments.

C. Utility Operation

Although control would remain within the City's distribution boundary if water were purchased under a wholesale purchase agreement, under this alternative, the City would lose existing autonomy of its water supply and treatment processes.

5.04 ALTERNATIVE NO. 3–WHOLESALE SUPPLY TO MANITOWOC

In this alternative, the City would sell water as a wholesale supplier to Manitowoc through connecting infrastructure.

Manitowoc's preexisting supply agreements with surrounding communities requires its WTP to remain operational. For this reason, this alternative is not considered feasible.

SECTION 6
RECOMMENDATIONS AND CONCLUSIONS

6.01 RECOMMENDATIONS AND CONCLUSIONS

A. Recommended Water Supply

The City's existing water supply and treatment systems are adequate to meet current and projected future demands during the planning period. Excess reserve supply allows flexibility for future development opportunities. The City remains in compliance with both primary and secondary MCLs and its location within the Great Lakes Basin will allow for continued use of Lake Michigan as source water. For these reasons, continuation of current operation is recommended over the planning period. If anticipated development projects occur in greater quantity (extra-territorial areas) or with higher intensity, a reevaluation of the current water distribution's capacity should be performed.

B. Pipeline Prioritization and Annual Water Main Replacement Program

In 2008, the WDNR implemented a mandatory water conservation and water efficiency program for public water systems withdrawing water from the Great Lakes Basin. The WDNR rule required public water systems requesting new withdrawals from the Great Lakes Basin (new well or surface water supply) after December 8, 2008, to create a conservation program. The City does not currently have a conservation program as it has not increased withdrawal since this date. Although no program exists, steps toward reducing water loss may still be taken.

Because of an increasing trend in water main breaks, it is recommended to invest in a pipeline prioritization plan and annual water main replacement plan. A pipeline prioritization plan can expand upon the City's asset management plan, including prioritizing water main replacements based on points of interest, critical customers, condition of adjacent infrastructure (for optimizing projects between departments), right-of-way classification, or others. A water main replacement program is recommended to address a recent increase in water main breaks, and a pipeline prioritization plan is recommended to add efficiencies to the program.

C. Additional Recommendations

No substantial changes to the water system are anticipated during the planning period. If significant changes to water demands or water quality occur, this Plan may need to be amended.

6.02 ANALYSIS OF CONSISTENCY WITH OTHER PLANS AND AGREEMENTS

A. Approved Comprehensive Plans

An approved comprehensive plan, 2022 Comp Plan, was used in the creation of this Plan. Population estimates and land use goals discussed in the comprehensive plan are in agreement with this report.

B. Emergency Interconnect Agreements

Manitowoc and the City have a mutual aid agreement to provide emergency services on an as-needed basis. Emergency connection is on the southwest side of the distribution system.

C. Water Quality Reports

Water quality discussed in this Plan is consistent with the City's 2024 CCR.

D. Land Use Agreements

The City extends extra-territorial zoning over surrounding unincorporated areas of the Towns of Two Rivers and Manitowoc. The City is currently developing agreements to catalyze future planning of extra-territorial areas but are prioritizing growth within current City boundaries, as highlighted in this Plan.

6.03 PUBLIC PARTICIPATION

According to WAC NR § 854.05(7) (2025), "A person developing a plan… shall undertake a public participations process, including public notice of the proposed plan, a minimum of one public hearing on the proposed plan, and an opportunity to provide written comment on the proposed plan." Any public comments will be appended to this Plan upon receipt.

6.04 SUBMISSION OF PLAN TO LOCAL GOVERNMENT

A submission of the Plan to the City and surrounding communities discussed in this report will take place after public participation. Any comments from the local government will be added as an appendix.

6.05 PROCEDURE FOR IMPLEMENTING AND UPDATING THE PLAN

This Plan will need to be reviewed every 5 years and expires at the end of the planning period, or December 2045. A new Plan will be required on or before this date. Strand also recommends the Plan be reevaluated if an unexpected, new, large user is anticipated to be served by the City or if population trends increase at a rate notably different to those presented in this Plan.

6.06 WATER SUPPLY SERVICE AREA PLAN SUMMARY

Table 6.06-1 presents a summary of the required contents of a Water Supply Service Area Plan, as provided by WAC NR § 854.05 and the corresponding section of this Plan.

Table 6.06-1 NR 854 Checklist

NR 854 Requirement[1]	Report Section
1. Establishment of planning period	
The plan shall identify the planning period covered by the plan. The planning period shall be at least 10 years and no more than 20 years. The plan shall include an expiration date that coincides with the end of the planning period.	Section 1.01
2. Delineation of the area	
The plan shall delineate the area for which the plan is being prepared, including all areas to which the public water supply system currently serves retail customers and the projected growth area for the system within the planning period under sub. (1). Identifying an area as a projected growth area for planning purposes does not obligate the public water supply system to provide water to the projected growth area.	Section 2.01
3. Description of the water supply system	
A description of the existing sources serving the system, including all wells, surface water intakes, and any water purchased from any other water system.	Sections 2.02 through 2.06
A description of any identified or documented water quality issues relative to existing sources.	Section 2.04
An identification of all consecutive water systems currently purchasing water from the public water supply system and all consecutive water systems anticipated to purchase water from the public water supply system during the planning period.	N/A
4. Description of existing sources and withdrawals	
A statement identifying the withdrawals used to supply water to the system.	Section 2.02
The average daily withdrawal amount for each source in each of the last 10 years preceding the planning period.	Section 2.02
The maximum withdrawal capacity of each source.	Section 2.02
For any consecutive water system that purchases a portion of its public water supply, the public water supply system's average daily public water supply obtained from each water supplier for each of the 10 years preceding the planning period.	N/A
5. Description of existing water use	
The population and population density of the public water supply system's existing service area.	Section 3.02
A table or summary of the number of retail customers purchasing water for residential use, commercial use, industrial use, and public authority use for each year in the 10 years preceding the planning period.	Section 3.03
A table or summary of sales of water for residential use, commercial use, industrial use, and public authority use for each year in the 10 years preceding the planning period.	Section 3.03
A list of the public water supply system's 10 largest retail customers, other than consecutive water systems, and its water use for each year in the 10 years preceding the planning period.	Section 3.03
A table and summary of the sales of water to consecutive water systems for the 10 years preceding the planning period, if applicable.	Section 3.03
6. Projected water demand	
The projected water demand including the projected growth area over the planning period.	Section 3.04
A description of the methods used to derive the water demand projections.	Sections 3.03 and 3.04
Forecasts of the expected population for the projected growth area during the planning period based on population projections for the existing service area and projected growth area and municipally planned population densities. Population projections shall consider department of administration projections made under s. 16.96, Stats., and shall consider any applicable approved regional or areawide water supply plans or regional water needs assessments and other applicable regional water supply information. The plan shall include a description of the methods used to derive the population forecasts.	Section 3.02
A summary of projected sales of water to any consecutive water systems, if applicable.	N/A
A table showing the projection of total annual daily average and total peak daily withdrawal. The table shall include water demand estimates for the existing service area and projected growth area of the public water supply system, categorized by residential use, commercial use, industrial use, and public authority use.	Sections 3.04 and 4.02
An estimate of the non-revenue water associated with the projected water demand over the planning period.	Section 3.04
An analysis of how the projected water demand is consistent with the public water supply system's past 10 years of water use provided under sub. (5) or a description of how the demand estimate is reasonable based on the purposes for which the demand is forecasted.	Section 3.04
7. Inventory and identification of the sources and quantities of water supplied in the region	
An inventory of alternative existing groundwater and surface water sources available in the region.	Sections 5.02, 5.03, and 5.04
Identification of alternative options for supplying water within the planning area that are approvable under other applicable statutes and rules, and a discussion of the viability and limitations of those options.	Sections 5.03 and 5.04
8. Plan Recommendations	
An analysis of whether to use existing sources, enlargement of existing sources, development of new sources, or the purchase of new or increased water supply to meet projected water demand described under sub. (6).	Sections 4.02, 5.02, 5.03, 5.04, and 6
A demonstration that the plan effectively utilizes the existing public water supply system, wastewater infrastructure, and water storage, treatment, and distribution facilities, to the extent practicable.	Sections 4.02, 5.02, and 6
If the plan recommendations include the developments of new sources, enlargement of existing sources, or the purchase of new or increased water supply, the plan shall include a description of the potential water withdrawal facilities, including the number of wells and surface water intakes and general locations and capacity.	N/A
If the plan recommendations include the developments of new sources, enlargement of existing sources, or the purchase of new or increased water supply, the plan shall include a description or schematic of any potential public water supply system facilities including the general locations of transmission mains, and any water pressure booster stations, water pressure reducing stations, metering stations, and storage reservoirs needed as a result of new or enlarged water withdrawal facilities.	N/A
If the plan recommendations include the developments of new sources, enlargement of existing sources, or the purchase of new or increased water supply, the plan shall include documentation of a consecutive water system's ability to purchase new or increased water supply over the planning period. Documentation may include a copy of letters or resolutions that provide evidence of support from the public water supply system that will provide water to the consecutive water system.	N/A
If the plan recommendations include the developments of new sources, enlargement of existing sources, or the purchase of new or increased water supply, the plan shall include an assessment of potential environmental impacts of carrying out the recommendations of the plan. Factors to consider in evaluating potential environmental impacts may include the following, as applicable:	N/A
a. Geologic setting, including regional hydrogeology and any unique geologic formations or conditions.	
b. General groundwater or surface water quantity and quality conditions.	
c. Analysis of available area aquifer drawdown data.	
d. Identification and description of surface water resources.	

NR 854 Requirement[1]	Report Section
e. Aquifer drawdown and groundwater quantity and quality conditions as a result of projected groundwater withdrawals.	
f. Analysis and summary of any regional hydrogeological studies or assessments and other regional water supply information.	
g. Relevant information in other plans listed under sub. (9).	
h. Land use trends.	
i. Impacts to wetlands.	
j. Floodplains.	
k. Impacts to environmentally sensitive areas.	
If the plan recommendations include the developments of new sources, enlargement of existing sources, or the purchase of new or increased water supply, the plan shall include an assessment of anticipated economic impacts and costs associated with carrying out the recommendations in the plan.	N/A
9. Analysis of consistency with other plans	
Approved comprehensive plans, as defined under s. 66.1001 (1) (a), Stats.	Section 6.02
Approved areawide water quality management plans under s. 283.83, Stats., and ch. NR 121.	Section 6.02
Existing land use agreements between the person who owns or operates the public water supply system and any city, village, or town included within the projected growth area.	Section 6.02
Existing wholesale or retail customer sales agreements between the person who owns or operates the public water supply system and any city, village, or town included within the projected growth area.	Section 6.02
Any other existing agreements or approvals obtained from a governing body related to the implementation of the projected growth area.	Section 6.02

[1]Source: Wisconsin State Legislature, "NR 854.05 Content of a water supply service area plan," *Chapter NR 854, Water Supply Service Area Plans,* https://docs.legis.wisconsin.gov/code/admin_code/nr/800/854 (December 4, 2025).

APPENDIX A
2022 COMP PLAN

DRAFT FINAL-(12.18.25)

TWO RIVERS WISCONSIN

2022 COMPREHENSIVE PLAN UPDATE

City of Two Rivers

Manitowoc County, Wisconsin

2022 Comprehensive Plan Update

Adopted:

November 7, 2022

Acknowledgments

City of Two Rivers Plan Commission

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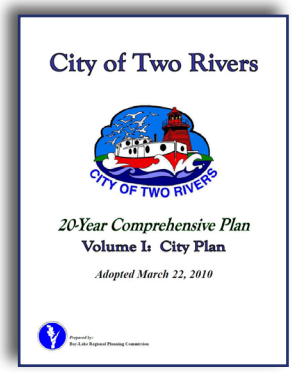
Introduction

Located along Lake Michigan, the City of Two Rivers is a great place to live and work in northeastern Wisconsin. There is a strong sense of Lake Michigan's vibrant past as a fishing and shipping hub. It has a reputation for strong municipal services, waterfront activities and outstanding natural amenities. It has a history grounded in creativity and entrepreneurship. While business, services, and natural amenities remain important defining characteristics of the region, the city's residents have also benefited from its strong manufacturing base.

The need for good city planning is always paramount. Strategic investments and continued transformation over the planning period will allow Two Rivers to reposition itself for growth. This comprehensive plan will help to guide growth and development as Two Rivers evolves and changes over the next 20 years.

PURPOSE OF THE PLAN

This document presents a comprehensive plan for the City of Two Rivers. It is a long-range planning document which uses a 20-year planning period, from 2020 to 2040. The purpose of the comprehensive plan is to guide development through 2040 by reflecting the city's shared vision and priorities for future growth.



The City of Two Rivers is legally obligated to have a comprehensive plan. Wisconsin's Comprehensive Planning Law (Wis. Stats. 66.1001) requires every governmental jurisdiction that regulates the use of land through a land division ordinance, shoreland zoning ordinance, general purpose zoning ordinance, or official map to have an adopted comprehensive plan. As part of the State Statute requirements, a comprehensive plan must be updated every 10 years.

Prior to the establishment of this document, the City of Two Rivers last adopted its Comprehensive Plan in 2010. Given existing statutory requirements, the City of Two Rivers was ready for a plan update, but moreover, they wanted to ensure its policies guiding development and funding decisions still aligned with the community's goals and vision for growth.

Accordingly, this plan establishes new policies to guide decision-making in Two Rivers over the next 20 years and creates a fact base to support the documented policies, any future changes to the zoning code, and other planning initiatives or efforts undertaken through 2040. City planning policies can be found in the Implementation portion of this document (Chapter 7).

PLANNING PROCESS

This plan was prepared by the City of Two Rivers Plan Commission with the assistance of the Bay-Lake Regional Planning Commission. The planning process involved:

- Review of past and relevant planning efforts led by the City of Two Rivers or other entities. Efforts reviewed and considered included Two Rivers previous Comprehensive Plan (2010), Two Rivers Economic & Community Development Strategic Plan (2017), the Manitowoc County Hazard Mitigation Plan 2020-2025 (2020), the Bay-Lake Region's Comprehensive Economic Development Strategy (2017), the NE WI Coastal Resiliency Study (2021).
- Review of the city's existing zoning ordinance and land use maps.
- Discussion with City of Two Rivers staff, specifically around the topic of future facility needs and known infrastructure gaps.
- Discussion with the City of Two Rivers Plan Commission at their regularly occurring meetings to review updates of the plan and discuss feedback on the draft plan elements; maps; and the plan's goals and objectives.
- Public outreach and stakeholder engagement.
- Technical analysis, using data from multiple sources including the State of Wisconsin, the U.S. Census Bureau, and other publicly available data from public and private sources.

The City of Two Rivers should review this plan annually and update it every ten years, or when officials, the public, or stakeholders identify valid rationale. Completing updates will allow the City of Two Rivers to integrate new ideas, developments, and outcomes not known at the time of this planning process.

Table of Contents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TWO
RIVERS
WISCONSIN
#TrueToTwo

Chapter 1

Community Profile

- City Snapshot
- Demographic Trends

TWO RIVERS WISCONSIN


Welcome to Two Rivers
Birthplace of the
Ice Cream Sundae

City Snapshot

TWO RIVERS
WISCONSIN

The Lester Public Library - Walking Path

Population (2020)

11,271

Change from the 2010 US Census 11,712, or -3.8%

Source: U.S. Census, 2020

Total Housing Units

5,638

Source: U.S. Census

Civilian Labor Force

5,934

Source: U.S. Census

Yr. 2040 WDOA Population Projection

9,990

Source: Wisconsin Department of Administration

Yr. 2040 Household Projection

4,715

Source: Wisconsin Department of Administration

Unemployment Rate

4.6 %

Source: U.S. Census

Median Age

44.6

Source: 2020 American Community Survey 5-Year Estimates.

Median Household Income

$49,994

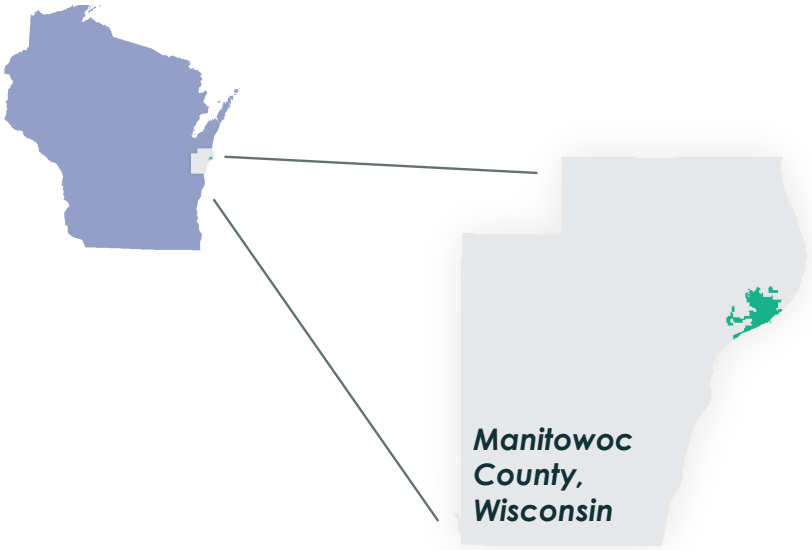
Source: 2020 American Community Survey 5-Year Estimates

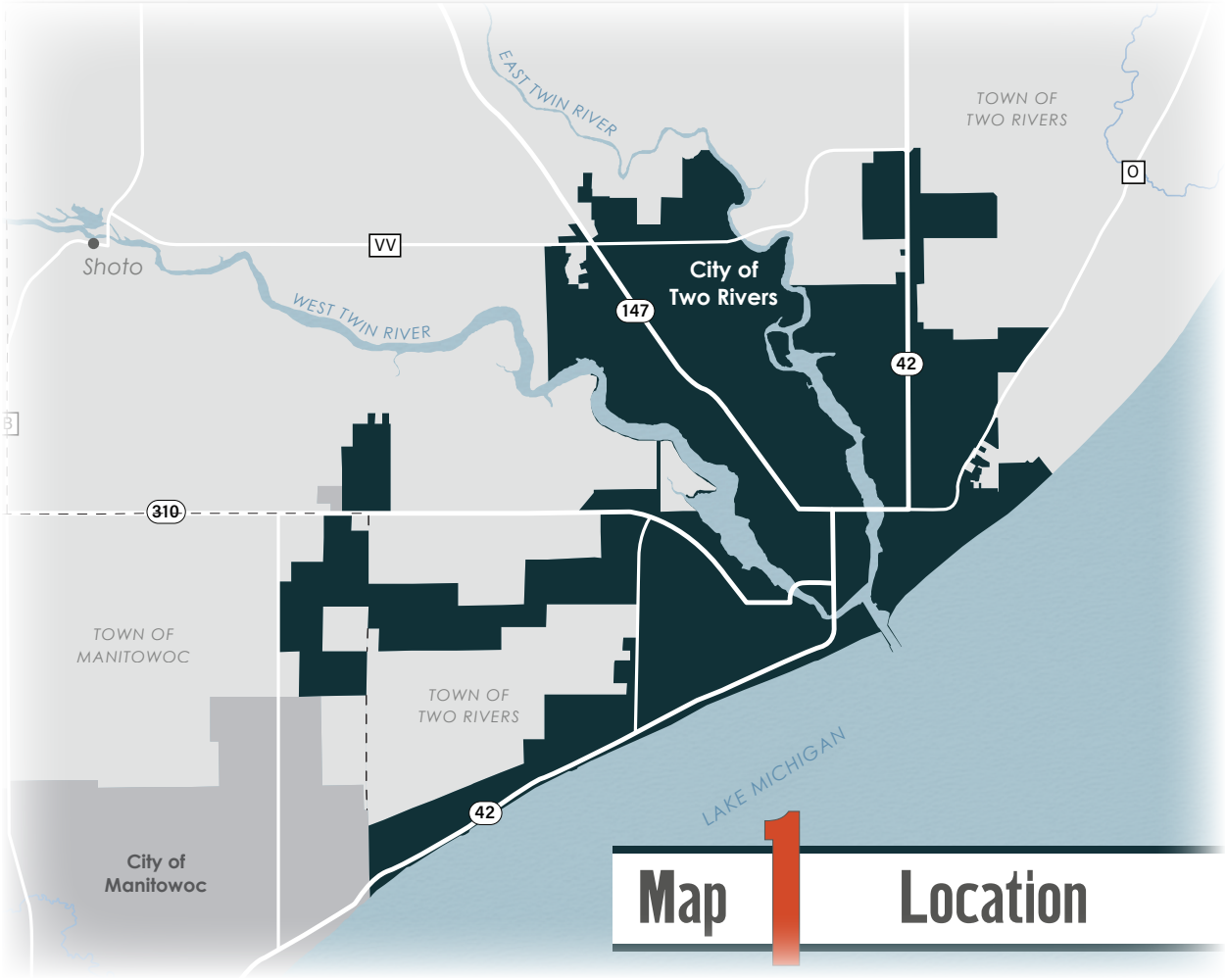
Largest Industry

Manufacturing

Employment: 1,950 or 33.6%

Source: U.S. Census





Map 1 Location

Two Rivers, Wisconsin

Demographic Trends

HISTORIC POPULATION

Two Rivers demographic profile describes resident characteristics and household trends that influence housing choice, and therefore, Two Rivers housing market. The primary factors that influence housing choice and other city needs are income, household size and composition, and the householder's age. This section documents these and other factors relevant to Two Rivers and relative to the State of Wisconsin, Manitowoc County, and nearby local jurisdictions.

Table 1 illustrates the population trends of the city from 1980 to 2020. The information details a clear picture of Two Rivers population decline over the last several decades.

Two Rivers is affected by regional trends. For example, Manitowoc County lost over 1,500 residents from 2000 to 2020.

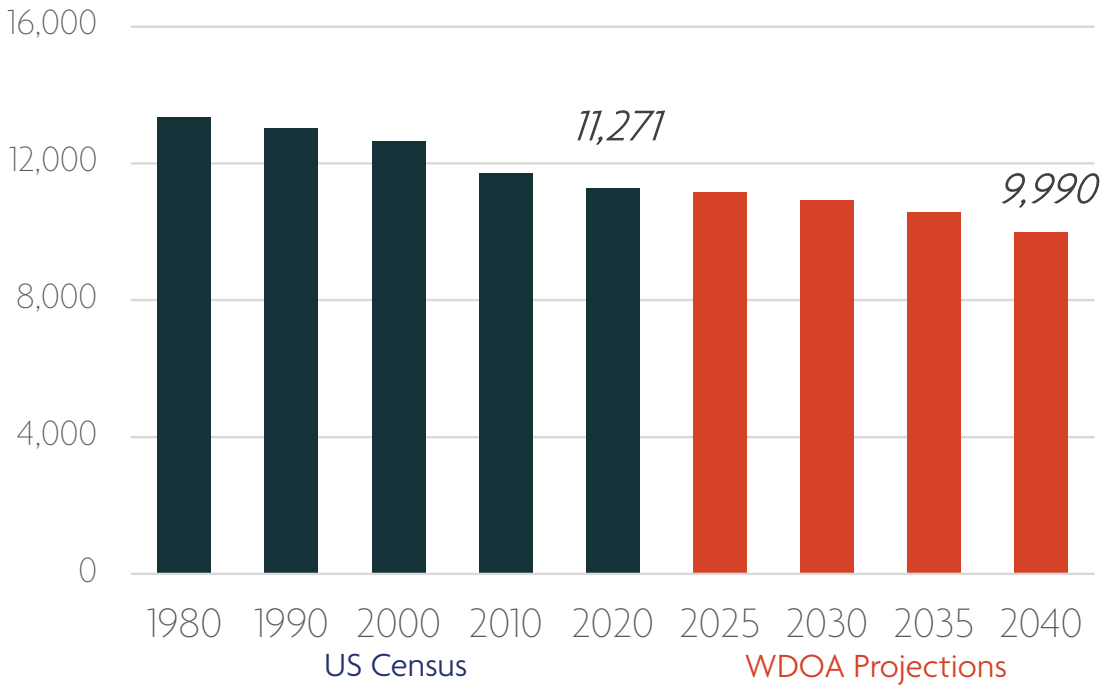
TABLE 1 : HISTORICAL POPULATION TRENDS

	City of Two Rivers	Manitowoc County	Wisconsin
1980	13,354	82,918	4,705,642
1990	13,030	80,421	4,891,769
2000	12,639	82,887	5,363,675
2010	11,712	81,422	5,686,986
2020	11,271	81,359	5,893,718
Change 2010 to 2020			
Number	-441	-63	206,732
Percent	-3.8%	-0.1%	3.6%
Source: 2020 US Census			

POPULATION PROJECTIONS

Wisconsin Demographic Services Center projects that Two Rivers population base will steadily decline to 9,990 people by 2040 (see Figure1).

FIGURE 1 : POPULATION PROJECTIONS



Source: US Census, Source: Wisconsin Department of Administration.

POPULATION DISTRIBUTION BY AGE

Two Rivers median age in 2020 was 44.6 years, compared to the 2000 figure of 38.2 years.

2020 American Community Survey 5-Year Estimates

School Age (5-17)

13.3%

Working Age (16+)

82.8%

Voting Age (18+)

81.0%

Retirement Age (65+)

21.1%

HOUSEHOLD SIZE

Household size describes the number of people living in the household. According to 2020 American Community Survey, From 2000 to 2020 the City of Two Rivers average household size declined, like most other jurisdictions in Manitowoc County and northeast Wisconsin.

- In 2020, about 67 percent of Two Rivers households were one- or two person households.
- Of the single-person households, 17 percent were 65 years of age or older.
- About 23 percent of the city's households (1,179 households) have children.

HOUSEHOLD INCOME

Earnings

Median household income earnings are lower in Two Rivers than the rest of Manitowoc County and the State of Wisconsin.

TABLE 2: MEDIAN HOUSEHOLD INCOME

Municipality	Median Household Income
City of Two Rivers	$49,994
Manitowoc County	$58,464
Wisconsin	$63,293
Source: 2020 American Community Survey 5-Year Estimates	

Income is the factor that most influences housing choice (or lack of choice in instances where households have an inability to afford housing that meets their needs).

The average, household in the City of Two Rivers earns about $8,500 per year less than households in Manitowoc County overall and about $13,300 less than households in Wisconsin.

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Chapter 2

Housing and Neighborhood Development

TWO RIVERS WISCONSIN

HOUSING AND NEIGHBORHOOD DEVELOPMENT GOAL:

Promote investment in new housing and the maintenance of existing housing to meet current and future community needs.

Housing and Neighborhood Development

HOUSING INVENTORY

This section describes Two Rivers housing stock and occupancy characteristics. In some instances, this section compares the city's housing market to the county, state, and nearby local jurisdictions to understand Two Rivers role within the broader region.

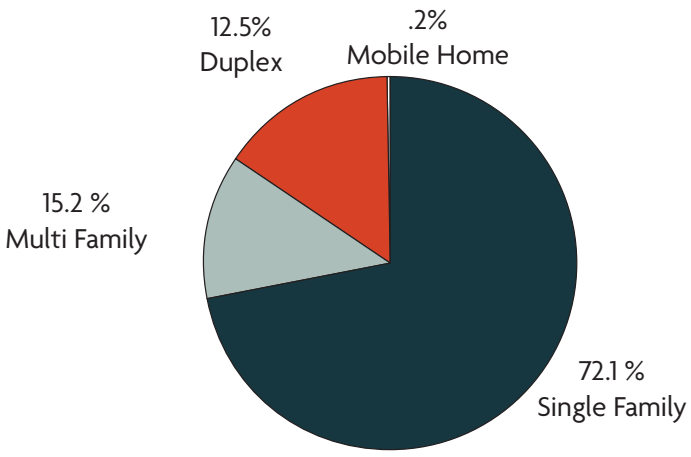
Historic Total Housing Units

1990:	5,414
2000:	5,547
2010:	5,698
2020:	5,638

Two Rivers Occupancy in 2020

- **Occupied 5,119**
- **Vacant 519**
  - Approximately 150 of the city's vacant units are used for seasonal, recreational, or occasional use.

FIGURE 2: HOUSING TYPE



2020 American Community Survey 5-Year Estimates

AGE OF HOUSING

Nearly 74 percent of the housing units in Two Rivers were built prior to 1980. This aging housing stock, if not well-maintained, will impact the availability of quality homes for current and future residents. Housing quality is one of Two Rivers primary challenges.

TABLE 3: AGE OF HOUSING

YEAR HOUSING BUILT	
Built 2014 or later	0
Built 2010 to 2013	3
Built 2000 to 2009	173
Built 1990 to 1999	428
Built 1980 to 1989	201
Built 1970 to 1979	677
Built 1960 to 1969	836
Built 1950 to 1959	912
Built 1940 to 1949	432
Built 1939 or earlier	1,862

Source: 2020 American Community Survey 5-Year Estimates

HOUSING TENURE

Housing tenure describes whether an occupied dwelling unit is owner or renter-occupied. About 71 percent of Two Rivers housing is owner-occupied.

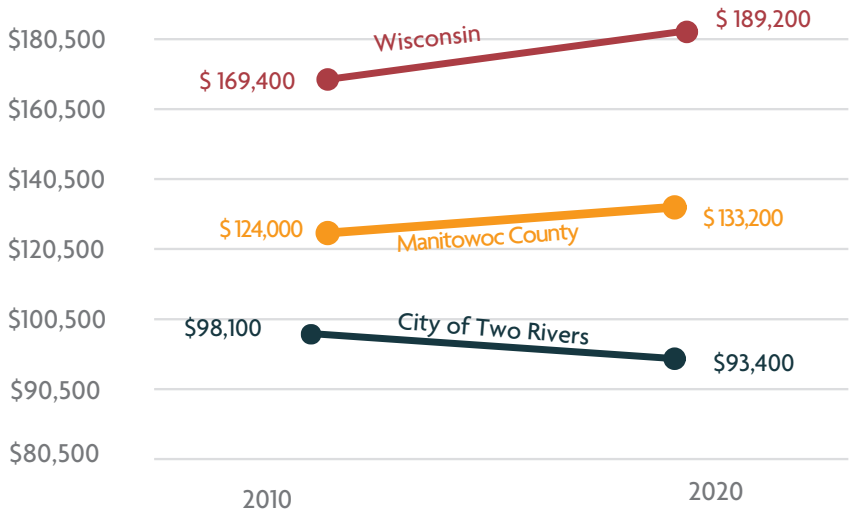
TABLE 4: HOUSING TENURE

Occupied Housing Units by Tenure, 2020		
	Occupied	Rental
Two Rivers	**70.9 %**	**29.1%**
Manitowoc County	**75.9 %**	**24.1%**
State of Wisconsin	**67.1%**	**32.9%**

Source: 2020 American Community Survey 5-Year Estimates

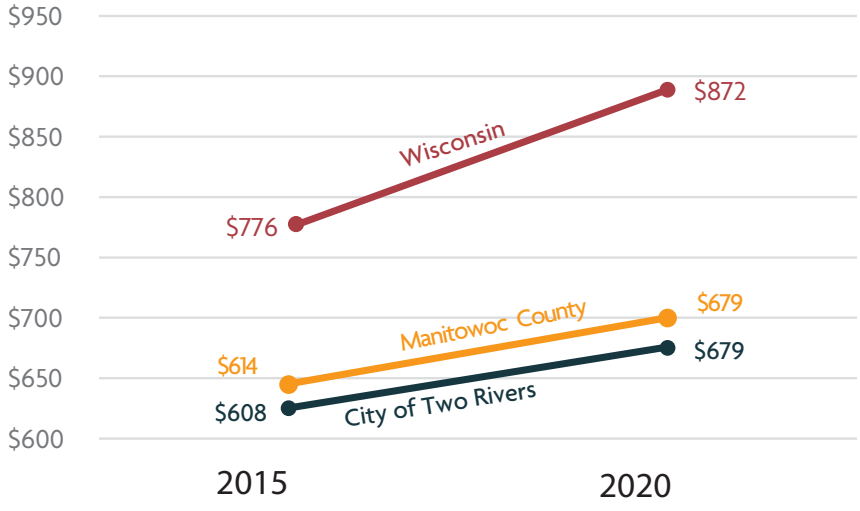
HOUSING COSTS AND AFFORDABILITY

FIGURE 3: MEDIAN HOUSE VALUE
Owner-occupied housing units in Two Rivers 2010-2020.



2020 American Community Survey 5-Year Estimates

FIGURE 4: MEDIAN GROSS RENT
Two Rivers Rental Units, 2015-2020.



2020 American Community Survey 5-Year Estimates

Housing Affordability

The Department of Housing and Urban Development (HUD) defines "cost burden" as households paying 30 percent of their income or more on housing costs and "severely cost burden" as households paying 50 percent of their income or more on housing costs. Understanding rates of cost burden helps to determine the extent to which households are struggling to afford housing in Two Rivers and the region.

Overall, 22 percent of Two Rivers' households are cost burdened or severely cost burdened. Median housing cost for housing units with a mortgage in the City of Two Rivers was $956 in 2020.

Renters are more likely to be cost burdened than homeowners in Two Rivers. In 2020, 30 percent of the city's renters were considered cost burdened.

HOUSING FORECAST

Based on projection's provided by the Wisconsin's Demographic Service Center, Two Rivers' population and number of households is forecast to decline through 2040. While demand for new housing will not be driven by new household growth, the City of Two Rivers will still need to address aging housing stock.

In addition, public intervention can encourage population growth over the planning period, thereby influencing housing demand, by supporting redevelopment of existing housing and development of new housing to (1) retain existing residents and (2) attract new families and people who work but do not currently live in Two Rivers.

Housing Conditions
Some of Two Rivers' housing stock will require complete redevelopment, which could introduce opportunities for well-designed infill projects especially in the opportunity zone on the south side of the city within the classified Priority Growth/Redevelopment Areas in the Future Land Use component of this plan.

DEMAND FOR HOUSING THROUGH YR 2040

High End Housing
Two Rivers has a limited supply of new housing types available for middle and high income households. Households with higher earnings seeking accommodations in the area may choose housing in Two Rivers that costs less than what they can afford that is lower quality than what they would prefer. To address this issue, Two Rivers will need to work or partner with developers to make re/development of higher amenity housing a reality.

Variety of Affordable Housing
Many households struggle to afford housing, particularly renters. The city will need to support these household's efforts to stay in the community. To retain them, Two Rivers should encourage re/development of housing types that are typically more affordable relative to traditional, single-family detached housing. Options may include multiplex housing, cottage cluster housing, micro homes and well-integrated multifamily housing. A wider variety of comparatively affordable housing, dispersed throughout the city (and in high opportunity areas), may also help to attract new residents in Two Rivers.

Seniors
The population aged 60 and older make up Two Rivers' largest age group. Over the planning period, Two Rivers will need to provide opportunities for re/development of smaller units for seniors to downsize into (e.g., accessory dwelling units, cottages, town homes, and apartments), as well as age-restricted retirement communities, assisted living facilities, independent living facilities, and nursing homes.

Developing new housing in Two Rivers is a priority for the city, both to serve the needs of existing residents who may want to downsize or move into a retirement community or assisted living, and to attract young families and workers who are employed in and around the Two Rivers community. Based on community engagement feedback and the perceived market need in Two Rivers, the city's biggest priorities for housing development include:

POTENTIAL HOUSING DEVELOPMENT

- New single-family housing (in existing neighborhoods and future developments).
- Condo style units.
- Apartments and rental units suitable for the Two Rivers workforce and young families.
- Infill development in residential areas that can accommodate more growth with easy access to amenities.

There are several locations within Two Rivers that are adjacent to existing public services and have been identified as possible areas for redevelopment or new residential development. The city has sanitary sewer capacity to accommodate future housing development throughout the city. These sites include:

- **Land Adjacent to the High School**
  This large parcel is privately owned and is currently actively being used as agricultural land. This parcel does not currently have utility connection, but utilities could easily be extended to this area from adjacent development.

- **Former Paragon Site on Memorial Drive**
  This site is approximately 26 acres and is designated as a Priority Growth Area/Redevelopment Site. There has been an effort to market it for industrial use since 1999 with a project coming to fruition in 2021.

- **West River Lofts**
  The project was recently awarded State of Wisconsin LIHTC Tax Credits for a of 54 unit apartment complex. 46 units will be designated as affordable.

A variety of Housing Programs are available through the city, provided by Manitowoc County, the state, and at the federal level. The Brown County Housing Authority administers the Section 8 Housing Choice Voucher Program (HCVP),available to the city a major federal affordable housing program. The programs listed below are resources available to residents of the city:

HOUSING PROGRAMS

State and Federal Agencies that help individuals or families with housing needs include the Wisconsin Housing and Economic Development Authority (WHEDA), U.S. Department of Housing and Urban Development and others. Within the city, it is expected that assistance with home improvements and rent will continue to be a great need as the population continues to age.

The Wisconsin Housing and Economic Development Authority (WHEDA), an independent authority, provides low-cost, fixed interest rate mortgages to low- and moderate-income individuals and families and administers housing grants on a yearly basis to eligible applicants.

City of Two Rivers Housing Rehabilitation Loan (CDBG-Housing) and The Northeastern Wisconsin Housing Rehabilitation Loan Program, provides 0 % interest, 30 year home improvement loans to homeowners and landlords. For homeowners, gross household income must be at or below 80 percent of the median county income. No loan payments are required until the home is sold, refinanced, or no longer the primary residence of the applicant. For landlords, five year pay back loans are available for rental unit repairs provided the unit is/will be rented to tenants who are low/moderate income.

The City of Two Rivers maintains options for seniors and the special needs population. Agencies such as Lakeshore CAP and Manitowoc County Habitat for Humanity help locate, finance, and develop housing for first-time home buyers, along with persons with various physical and mental disabilities or other special needs.

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Chapter 3

Environmental & Cultural Landscape

- Existing Land Use
- Environmental Resources
- Historic and Cultural Resources

TWO RIVERS WISCONSIN

ENVIRONMENTAL AND CULTURAL LANDSCAPE GOAL:

The city's natural, cultural and recreational features are assets to be managed with care to keep them accessible for future generations.

Existing Land Use

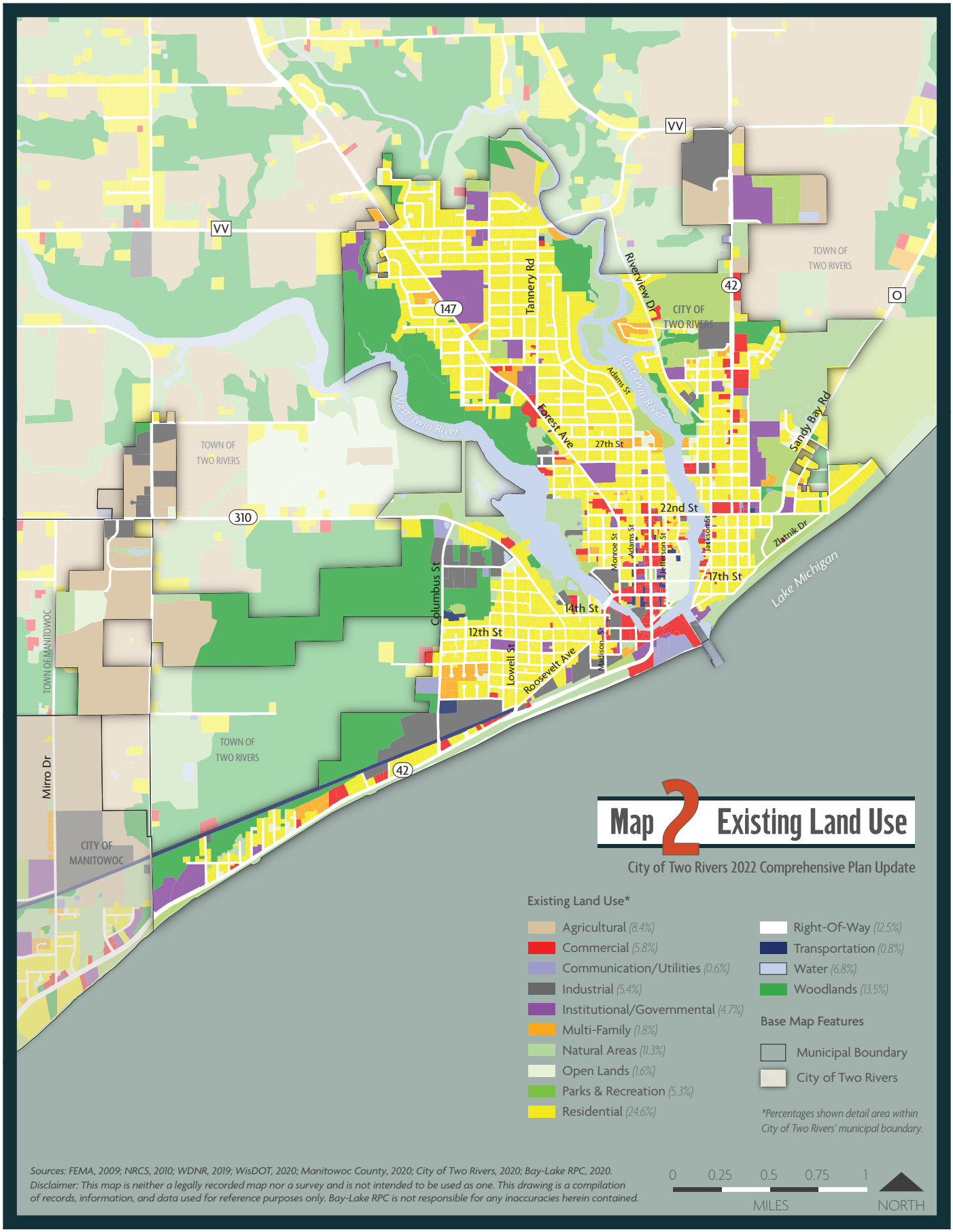
LAND USE PATTERNS

The patterns of development within the city follow those established throughout the City of Two Rivers history. With the city's development at the confluence of two major rivers and on the shores of Lake Michigan; residential, service, commercial, and industrial uses located to conveniently serve the population. Industry, relied on waterways for power and transport of goods and supplies, developed near the rivers. Commerce and social establishments formed at the center of the city. Residences that initially concentrated around the city center began to extend outward, filling vacant areas with uses compatible with the surroundings. Some of these patterns have endured over time, however, transportation and technology improvements have had an impact on future growth patterns.

A detailed field inventory of land uses in the City of Two Rivers was completed by the Bay-Lake Regional Planning Commission in 2008 and updated in 2021.

TABLE 5: EXISTING LAND USE, CITY OF TWO RIVERS

Land Use Type	Total (Acres)	Total Land (Percent)
Agriculture	348.54	8.36%
Commercial	117.47	2.82%
Communication/Utilities	26.68	0.64%
Institutional/Governmental	195.68	4.70%
Industrial	225.20	5.40%
Multi-Family	73.16	1.76%
Natural Area	468.70	11.25%
Open Lands	67.92	1.63%
Parks and Recreation	222.29	5.33%
Residential	1024.54	24.58%
Right-Of-Way	518.76	12.45%
Transportation	33.90	0.81%
Water	283.66	6.81%
Woodlands	561.08	13.46%
Total	4,167.58	100.00%



Map 2 Existing Land Use

City of Two Rivers 2022 Comprehensive Plan Update

Existing Land Use*

- Agricultural *(8.4%)*
- Commercial *(5.8%)*
- Communication/Utilities *(0.6%)*
- Industrial *(5.4%)*
- Institutional/Governmental *(4.7%)*
- Multi-Family *(1.8%)*
- Natural Areas *(11.3%)*
- Open Lands *(1.6%)*
- Parks & Recreation *(5.3%)*
- Residential *(24.6%)*
- Right-Of-Way *(12.5%)*
- Transportation *(0.8%)*
- Water *(6.8%)*
- Woodlands *(13.5%)*

Base Map Features

- Municipal Boundary
- City of Two Rivers

**Percentages shown detail area within City of Two Rivers' municipal boundary.*

Sources: FEMA, 2009; NRCS, 2010; WDNR, 2019; WisDOT, 2020; Manitowoc County, 2020; City of Two Rivers, 2020; Bay-Lake RPC, 2020.
Disclaimer: This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information, and data used for reference purposes only. Bay-Lake RPC is not responsible for any inaccuracies herein contained.

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NORTH

Environmental Resources

This section of the plan contains data and maps reflecting the City of Two Rivers' natural resources. Resources include surface water, floodplains, wetlands, wildlife habitat, parks and open space, historical and cultural resources, recreational areas and other significant natural areas.

The environmental features of Two Rivers define the city's identity and character. These environmental resources help support the natural systems that provide for wildlife and a healthy environment, are a source for economic development opportunities, and provide opportunities for recreation.

WATER RESOURCES

Two Rivers is named for the East Twin and West Twin rivers which flow through the city before joining at the harbor on Lake Michigan. These water features contributed to the history of the City of Two Rivers and continue to define the city's environment.

LAKE MICHIGAN WATER LEVELS

Two Rivers contains roughly five miles of Lake Michigan shoreline. Recently, Lake Michigan rose over six feet from a record low in 2013 to record highs in 2020. Fluctuations in lake levels have had substantial impacts in the Two Rivers planning area. Low water levels reduce water depths, which impairs boat navigation and requires expensive dredging.
High water levels cause flooding and erosion, not only impacting properties along the lake shoreline, but also those properties along the East and West Twin rivers.

COASTAL RESOURCES

The Lake Michigan coastline offers a variety of features for the City of Two Rivers including boating, beaches, shoreland, wetlands, recreation, unique habitats, etc. The city also contains approximately 30 critical facilities (i.e., bridges, utilities, community facilities) in its coastal/shoreland areas and it is important to protect these valuable assets in order to help maintain and improve community health and safety, aesthetics, and economic viability. It is important to consider resiliency when planning along the shoreline areas due to potential impacts that fluctuating lake levels and significant weather events can have on the city's infrastructure and valuable environment.

WETLANDS

Wetlands are a valuable ecological resource that is involved in recharging the underlying groundwater system and are home to a varying combination of plants and animals. Wetland habitats typically contain the highest diversity of plants and animals, including endangered species.

FLOODPLAINS

Floodplains are defined as those areas, excluding the stream channel, subject to inundation by the 100-year recurrence interval flood event. This event has a one percent chance of occurring in any given year. The City of Two Rivers, including its three mile planning area, contains areas of floodplains running predominantly along the East and West Twin rivers

For planning purposes, floodplains in Two Rivers provide for storm water retention, groundwater recharge, habitat for various types of waterfowl and wildlife and are considered a valuable recreational resource. However, the likelihood of flooding can be increased due to increased development and paving which increases the rate in which storm waters run off the land.

ENVIRONMENTAL CORRIDORS

An environmental corridor is a portion of the landscape that contains and connects natural areas, green space, and scenic and historic areas, scientific areas, recreational areas, and cultural resources. Map 3 illustrates the environmental corridors within the City of Two Rivers.

The following criteria was used to delineate environmental corridors within the City of Two Rivers:

1. Wetlands (2 acres or greater);
2. 100-year floodplains;
3. Steep slope (12% or greater); and
4. Surface waters with a 75-foot building setback.

Environmental corridors, along with other identified areas of environmental significance in Two Rivers, should be taken into consideration when making future development decisions in the city and its planning area.

ENVIRONMENTALLY SIGNIFICANT AREAS

Woodland Dunes

Woodland Dunes Nature Center and Preserve is located just southwest of the City of Two Rivers. It contains over 1,500 acres of hardwood & conifer forests, wetlands, and prairies. The area contains 14 ridges and swales that are home to Monarch butterflies, bats, amphibians, mammals, and over 400 plant species. The location is significant for songbirds and other migratory birding. A Butterfly Garden/habitat, along with seven miles of hiking trails (including a 2.25 mile segment of the Ice Age Trail), can also be enjoyed by visitors.

Woodland Dunes attracts thousands of visitors year-round and serves as an interactive outdoor classroom for many students in the area.

WOODLANDS

Woodlands within the City of Two Rivers consist of trees lining most of the streets. The surrounding planning area also contains concentration of woodlands, primarily found in the Woodland Dunes, Point Beach State Forest, and along the East and West Twin Rivers.

The City of Two Rivers also has an urban forestry program established for the planting and sustained management the community's trees.

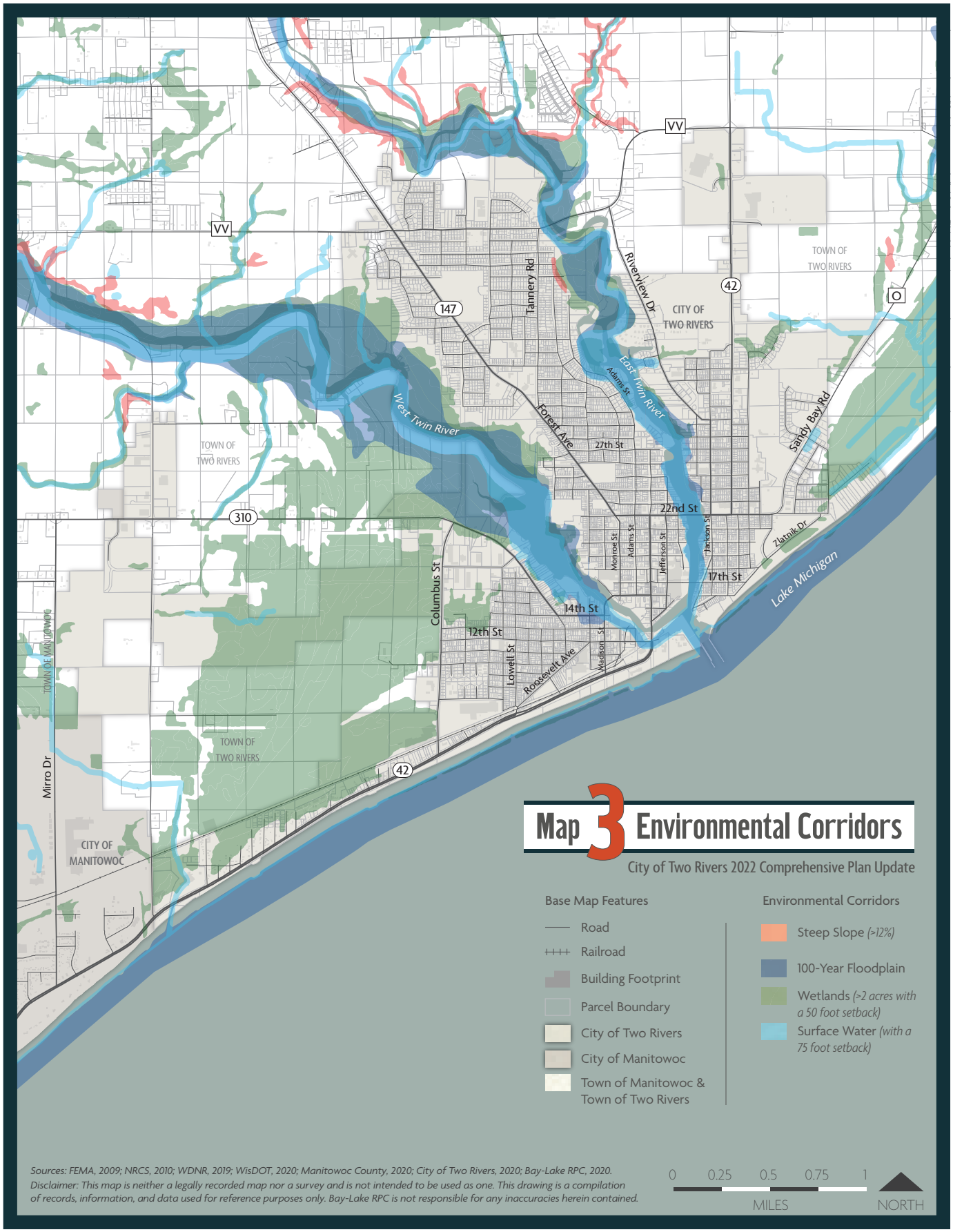
TWO RIVERS COMMUNITY GARDEN

Located at 3801 Mishicot Road in the city, the Two Rivers Community Garden offers gardening plots for a rental fee of $25 per year. Each plot consists of three raised beds measuring 3x20 feet in size. This volunteer operated community garden is fenced and contains amenities and essential gardening tools that can be shared by all users. The Community Garden is usually full each growing season.

AGRICULTURAL RESOURCES

According to a land use inventory conducted by the Bay-Lake Regional Planning Commission in 2021, the City of Two Rivers contains approximately 300 acres of crop and pasture land. Prime agricultural soils are scattered throughout the city's planning area. Although the amount of farmland in the city is small, it does contribute to the significance of agriculture in all of Manitowoc County. Agriculture plays an important role in the economic, cultural, and social structure of Manitowoc County and it is essential to preserve these areas for continued agricultural activities whenever possible.

Farmers Market
Two Rivers Farmers Market is located on West Park Street and operates Saturday morning and Thursday afternoon each week during the growing season.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CITY OF TWO RIVERS
TOWN OF TWO RIVERS
West Twin River
East Twin River
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Forest Ave
27th St
Sandy Bay Rd
22nd St
Monroe St
Jackson St
Jefferson St
Zlatnik Dr
17th St
Lake Michigan
Columbus St
14th St
12th St
Lowell St
Roosevelt Ave
Madison St
TOWN OF MANITOWOC
Mirro Dr
CITY OF MANITOWOC
Map 3 Environmental Corridors
City of Two Rivers 2022 Comprehensive Plan Update
Base Map Features
Road
Railroad
Building Footprint
Parcel Boundary
City of Two Rivers
City of Manitowoc
Town of Manitowoc & Town of Two Rivers
Environmental Corridors
Steep Slope (>12%)
100-Year Floodplain
Wetlands (>2 acres with a 50 foot setback)
Surface Water (with a 75 foot setback)
Sources: FEMA, 2009; NRCS, 2010; WDNR, 2019; WisDOT, 2020; Manitowoc County, 2020; City of Two Rivers, 2020; Bay-Lake RPC, 2020.
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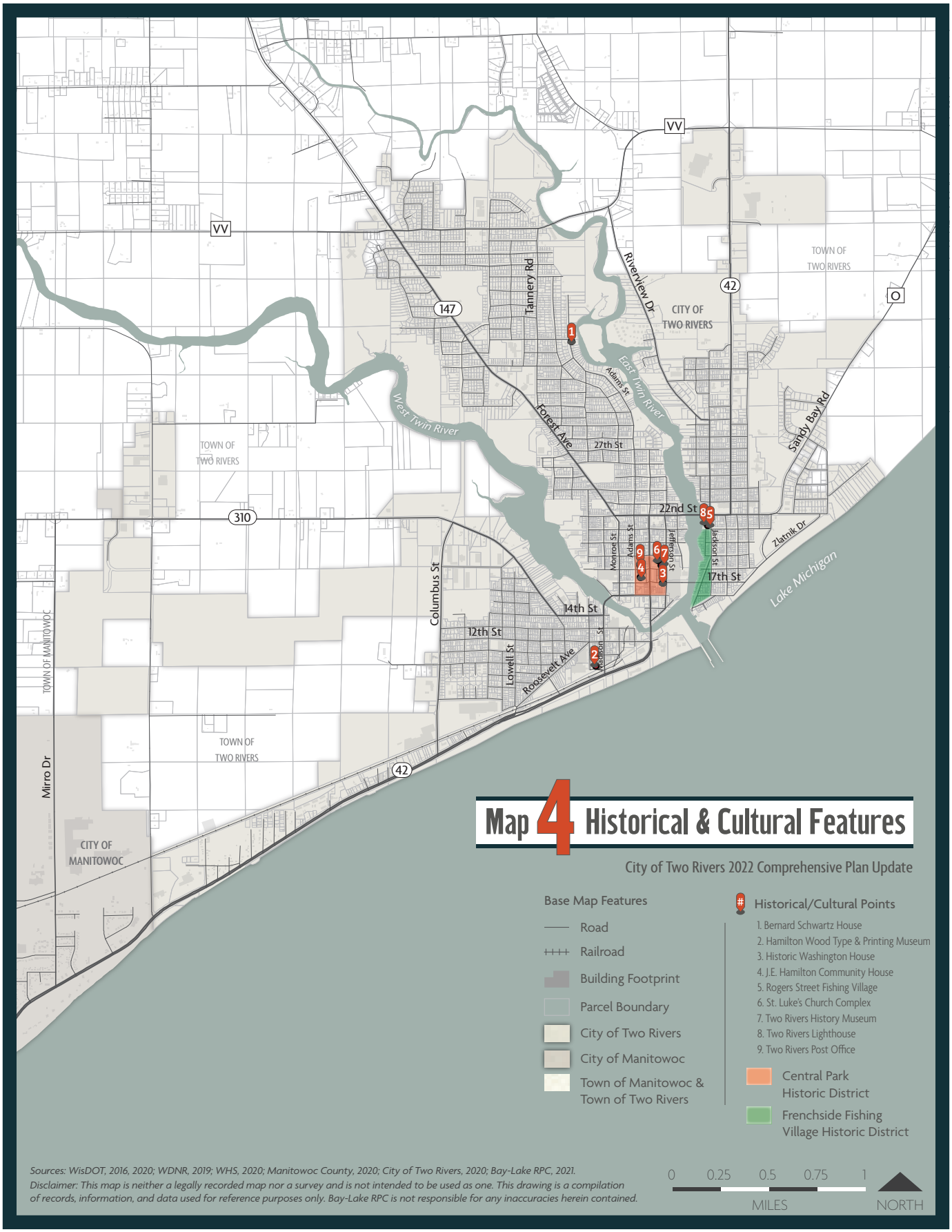
NORTH

Historical and Cultural Resources

HISTORIC AND CULTURAL RESOURCES

The Wisconsin Historical Society, Division of Historic Preservation has numerous sites in Two Rivers that are on the National or State Register of Historical Places. Properties listed in the Register include historic districts, various sites, and buildings. See Map 4 for the location of historic/cultural sites in Two Rivers.

The architecture, scale, and uniqueness of the city's historic buildings have a broad appeal. Future planning of the city should continue to successfully revitalize residential communities and the downtown area where needed and capitalize on the unique assets of the past.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Lake Michigan
Columbus St
14th St
12th St
Lowell St
Roosevelt Ave
Madison St
TOWN OF MANITOWOC
Mirro Dr
CITY OF MANITOWOC
Map 4 Historical & Cultural Features
City of Two Rivers 2022 Comprehensive Plan Update
Base Map Features
Road
Railroad
Building Footprint
Parcel Boundary
City of Two Rivers
City of Manitowoc
Town of Manitowoc & Town of Two Rivers
Historical/Cultural Points
1. Bernard Schwartz House
2. Hamilton Wood Type & Printing Museum
3. Historic Washington House
4. J.E. Hamilton Community House
5. Rogers Street Fishing Village
6. St. Luke's Church Complex
7. Two Rivers History Museum
8. Two Rivers Lighthouse
9. Two Rivers Post Office
Central Park Historic District
Frenchside Fishing Village Historic District
Sources: WisDOT, 2016, 2020; WDNR, 2019; WHS, 2020; Manitowoc County, 2020; City of Two Rivers, 2020; Bay-Lake RPC, 2021.
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Chapter 4

Economic Development

TWO RIVERS WISCONSIN

Economic Development

The City of Two Rivers has identified strategies for economic growth and vitality that will maintain and enhance the identity and quality of life in the City of Two Rivers for years to come. Because the economy is interrelated with all aspects of community life, the economic development priorities have an impact on strategies developed for other community characteristics such as natural resources, housing, transportation, utilities, and land use.

BACKGROUND

As detailed on the city's updated land use inventory, the City of Two Rivers contains over 100 acres of commercial land and over 200 acres of industrial land. Over $200 million spent on construction since 1999 illustrates Two Rivers' growth in infrastructure improvement, residential development, healthcare, and industrial construction.

Businesses in the city are supplied by public utilities, including an ultra-filtration water plant and a fiber optic network. Transportation facilities are maintained in the city, along with Manitowoc County Airport eight miles southwest of the city and Green Bay's Austin Straubel International Airport 33 miles north of Two Rivers. Interstate Highway 43 is located seven miles west of Two Rivers. Attributes that can help attract employees include good public and parochial schools, a library, a hospital and medical center, riverfront property, lakefront property, a low crime rate, moderately priced housing, and a variety of recreation facilities.

TOURISM

Being situated on the shores of Lake Michigan, and having six miles of Lake Michigan beach, the tourism industry plays an important role in the City of Two Rivers economy. Hotels, Point Beach State Forest, seasonal homes, and retail stores complement the walking and biking trails, as well as the many parks, historic sites, and other area attractions.

Two Rivers industries are located primarily in the Woodland Drive and Columbus Street industrial parks. However, VT Industries, Riverside Foods, Metal Ware, and other significant employers are located on their campuses within the community. Industries continue to be attracted to Two Rivers by the city's quality workforce, moderately priced business properties, taxes and utility rates, experienced economic development staff, and several incentive programs. Incentives for business development include the city's Economic Development Revolving Loan Program, an Opportunity Zone, and a Facade Improvement Program to attract investors.

ECONOMIC DEVELOPMENT GOAL:
Grow the local economy while supporting the existing workforce, businesses, and employers.

LABOR FORCE CHARACTERISTICS

According to the Wisconsin Department of Workforce Development, approximately 64 percent of the City of Two Rivers' residents are part of the civilian labor force (i.e., persons sixteen years of age or older who are employed or seeking employment). The national average is around 63 percent.

TABLE 6: EMPLOYMENT STATUS

Municipality	Civilian Labor Force	Employed	Unemployed
City of Two Rivers	5,810	5,676	134
Source: U.S. Census Bureau, 2020 ACS 5-Year Estimates			

TABLE 7: EDUCATIONAL LEVELS

Municipality	% High School Graduate or Higher	% Some College	% Bachelor's Degree or Higher
City of Two Rivers	39.7	20.8	19.5
Manitowoc County	36.4	22.3	21.9
Wisconsin	30.3	20.5	30.8
Source: 2020 American Community Survey 5-Year Estimates			

COMMUTING TRENDS

Identifying and tracking commuting patterns is a labor market concept that refers to worker flows between communities. These commuting patterns highlight the communities that have a strong economic base and are able to attract workers from surrounding communities.

Conversely, it demonstrates which areas lack local employment opportunities for their residents, or perhaps serve as "bedroom" communities with more affordable housing options in comparison to other locations.

Residents that **commute out** of Two Rivers for work:	**72.4%**
Residents living and **working in** Two Rivers:	**27.6%**
Two Rivers residents **working from home**:	**3.7%**

Average travel time to work 20.4 minutes

ECONOMIC BASE

TABLE 8: EMPLOYMENT BY OCCUPATION

Occupation	Two Rivers	Manitowoc County
Management, business, science, and arts occupations	1,376	12,464
Service occupations	1,293	6,449
Sales and office occupations	818	7,479
Natural resources, construction, and maintenance occupations	583	4,149
Production, transportation, and material moving occupations	1,606	9,755
Employed civilian population 16 years and older	5,676	40,306
Source: U.S. Census Bureau, 2020 ACS 5-Year Estimates		

TABLE 9: EMPLOYED PERSONS BY INDUSTRY

Industry	City of Two Rivers	
	2020	2010
Agriculture, forestry, fishing and hunting, and mining	288	35
Construction	150	131
Manufacturing	1,884	1,523
Wholesale trade	82	46
Retail trade	521	303
Transportation and warehousing, and utilities	263	206
Information	55	110
Finance and insurance, and real estate and rental and leasing	160	113
Professional, scientific, and management, and administrative and waste management services	230	147
Educational services, and health care and social assistance	1,089	771
Arts, entertainment, and recreation, and accommodation and food services	606	218
Other services, except public administration	179	59
Public administration	170	166
Total	5,676	3,828
Source: U.S. Census Bureau, 2020 ACS 5-Year Estimates		

EMPLOYMENT FORECAST

Employment Forecast

Wisconsin's Department of Workforce Development projects that employment in the Bay Area Region (in which Two Rivers is located) will grow at an average annual growth rate of 0.35 percent between 2018 and 2028. The City of Two Rivers can monitor business growth and development to better track future employment trends to determine if the city following historic trends of Manitowoc County or future projections for the larger Bay Area Region.

According to the Wisconsin Department of Workforce Development's occupational projections for the state between 2018 and 2028, the following are the top 10 occupations forecast to have the greatest number of total openings:

- Food and Beverage Serving Workers
- Retail Sales Workers
- Personal Care and Service Workers
- Information and Record Clerks
- Material Moving Workers
- Motor Vehicle Operators
- Construction Trade Workers
- Business Operations Specialists
- Production Occupations
- Office and Administrative Support Workers

BAY AREA Workforce Development Board

Serving Brown, Door, Florence, Kewaunee, Manitowoc, Marinette, Menominee, Oconto, Outagamie, Shawano, and Sheboygan counties

TOURISM

Prior to 2022, the Manitowoc Area Visitor & Convention Bureau (MAVBC) served as the city's entity for promoting tourism in the area. Currently, the City of Two Rivers no longer contracts with MAVBC and will likely move forward with creating its own commission for tourism in the near future.

REDEVELOPMENT & BROWNFIELDS

As of July 2022, seven environmental incidences in the City of Two Rivers are classified as open, meaning activities are in need of cleanup or cleanup is still underway. All of the open cases in Two Rivers are Environmental Repair (ERP). ERP's are sites, other than Leaking Underground Storage Tanks, that have contaminated soil and/or groundwater. Examples include industrial spills or releases that require long-term investigation, buried containers of hazardous substances. Community officials should understand the type and location of these incidences within the city. These areas may be prime locations for redevelopment.

Refer to the Bureau for Remediation and Redevelopment Tracking System (BRRTS) on the WDNR website for further details on environmental incident types and status reports.

The city has several brownfield sites or areas that contain the presence or potential presence of a hazardous substance, pollutant, or contaminant. These Priority Growth Areas/Redevelopment Sites are considered prime locations for clean up and revitalization in the City of Two Rivers. Two Rivers, along with the City of Manitowoc, received an EPA Brownfields Assessment Grant in 2021 to assist with activities that will aid with redevelopment.

Map 6 of this document illustrates the following Priority Growth Areas/Redevelopment Sites in the City of Two Rivers.

- Former Industrial Site (Eggers), 3.5 acres
- Former Industrial Site (Fisher Scientific), 12 acres
- Former Industrial Site (U.S. Oil, Others), 24 Acres
- Former Industrial Site (Paragon Electric), 26 Acres
- Former Gas Station
- Former Commercial Site (Hansen Florist),
- Former Concrete Batch Site, 1.1 acres
- CN Rail Acquisition
- Former Industrial Site (Burrows and Neshotah Shores)
- Infill Development Location
- Waterfront Redevelopment Opportunity, 16 acres
- Former Industrial Site (Mirro/Eggers),
- Redevelopment Location (Marina/Commercial)
- Former Industrial Site, 1 acre
- Redevelopment Location

PROGRAMS, RESOURCES & PARTNERS

Economic Development Revolving Loan Program
The City of Two Rivers has a loan program to assist businesses with real estate acquisition, building improvements and/or expansions, and equipment purchases. The program requires a private match of 50%. The program offers a favorable interest rate and up to a 20-year term.

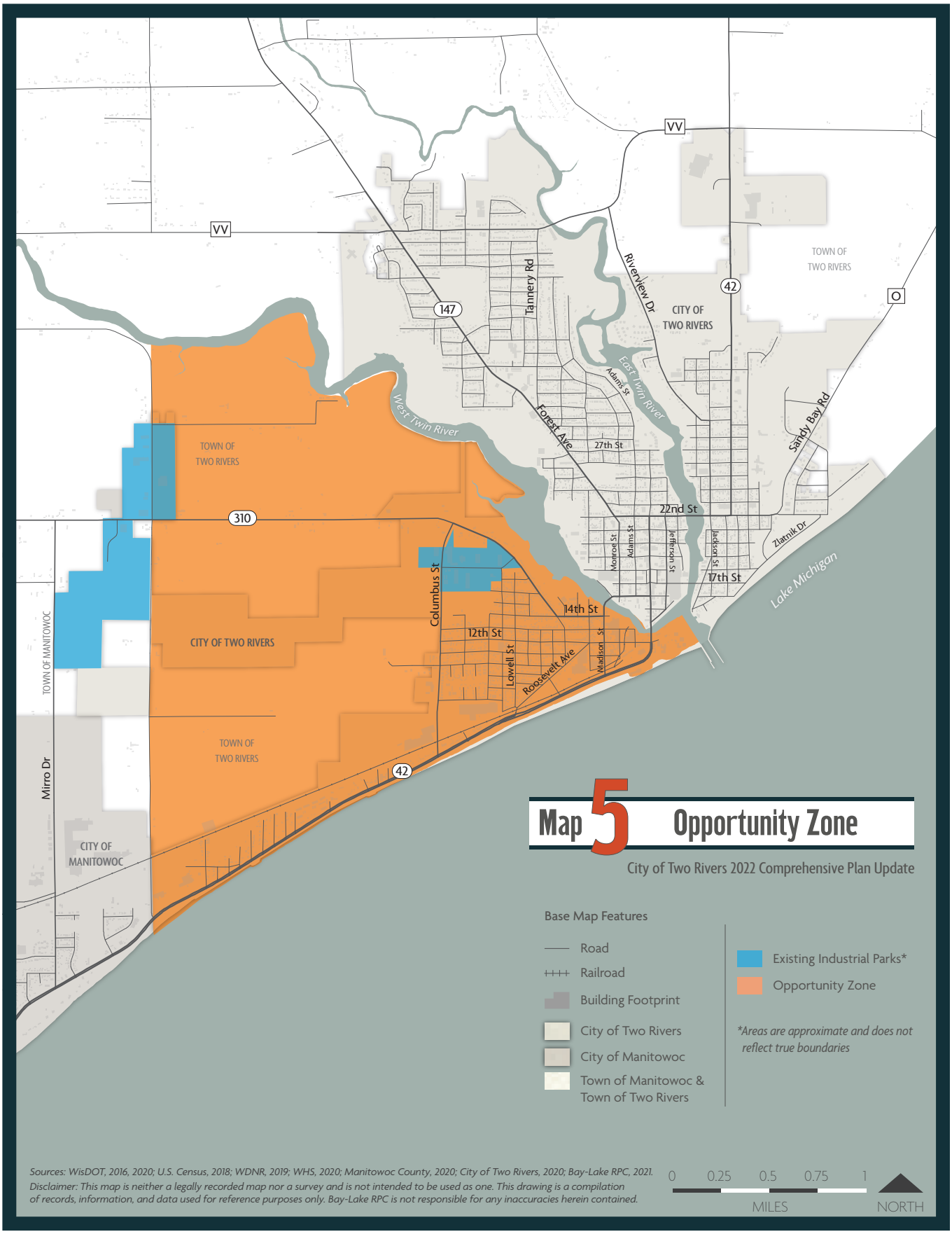
State of Wisconsin Main Street Program
(Two Rivers Main Street)
The City of Two Rivers currently contains **Two Rivers Main Street**. It is an educational, non-profit corporation that was accepted into the Wisconsin Main Street Program in 1995. The Main Street Program is a comprehensive revitalization program that promotes the historic and economic redevelopment of traditional businesses in the downtown areas of Wisconsin communities. Two Rivers Main Street coordinates events and programming within the city.

TWO RIVERS MAIN STREET

TAX INCREMENTAL DISTRICTS (TID)

A TID is the land area associated with development and redevelopment projects. Tax Incremental Financing (TIF) is a tool available to cities and villages in Wisconsin under section 66.1105 of the Wisconsin Statutes for redeveloping blighted areas, promoting redevelopment through environmental remediation, and encouraging new industrial development. TIF can be used to cover costs of public works or improvements including costs for demolition, land assembly, public improvements, and new buildings.

In Two Rivers, three (3) of the existing TID districts have assisted industrial development (i.e., Metal Ware/TIF 3, Woodland Industrial Park/TIF 5, and Eggers Industries/TIF 9). The existing TID districts have assisted with redevelopment of blighted properties for residential uses.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TOWN OF TWO RIVERS
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TOWN OF MANITOWOC
CITY OF MANITOWOC
Tannery Rd
Riverview Dr
West Twin River
East Twin River
Forest Ave
Adams St
27th St
Sandy Bay Rd
22nd St
Monroe St
Adams St
Jefferson St
Jackson St
Zlatnik Dr
17th St
Lake Michigan
Columbus St
14th St
12th St
Lowell St
Roosevelt Ave
Madison St
Mirro Dr
Map 5 Opportunity Zone
City of Two Rivers 2022 Comprehensive Plan Update
Base Map Features
Road
Railroad
Building Footprint
City of Two Rivers
City of Manitowoc
Town of Manitowoc & Town of Two Rivers
Existing Industrial Parks*
Opportunity Zone
*Areas are approximate and does not reflect true boundaries
Sources: WisDOT, 2016, 2020; U.S. Census, 2018; WDNR, 2019; WHS, 2020; Manitowoc County, 2020; City of Two Rivers, 2020; Bay-Lake RPC, 2021.
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OPPORTUNITY ZONES

Created under the 2017 Tax Cuts and Jobs Act (TCJA), Opportunity Zones comprise 8,764 census tracts, nominated by State and Territorial executives and certified by the U.S. Department of the Treasury. The Opportunity Zones tax incentive is designed to spur economic development and job creation. Census Tract 45 in the City of Two Rivers is an eligible development zone.

Businesses that utilize Wisconsin Opportunity Zone Funds may be able to defer federal capital gains tax on the re-invested funds until Dec. 31, 2026. Businesses will have the additional benefit of being able to exclude up to 20% of the deferred gain from Wisconsin tax for investments held for at least five years and 30% from Wisconsin tax for investments held for at least seven years. Lastly, businesses will not be taxed on the appreciation of their investment by the Internal Revenue Service or the Wisconsin Department of Revenue.

Area groups that assist with business promotion and development include the Two Rivers Business Association, Progress Lakeshore, The Chamber Manitowoc County, and the New North.

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Chapter 5

Future Land Use

TWO RIVERS WISCONSIN

Future Land Use

The city's future land use plan details land use needs, along with a basic strategy and physical plan to guide the location of land use development/preservation in Two Rivers over the next 20 years.

This portion of the plan details the suggested development strategy for the city's 20-year planning period. The future land use classifications best represent the common themes for development and redevelopment in the City of Two Rivers.

LAND USE GOAL:

To manage growth and redevelopment in the City of Two Rivers that afford opportunities for efficient development patterns, economic development, sustainable natural resources, and improved quality of life.

20-YEAR LAND USE PLAN

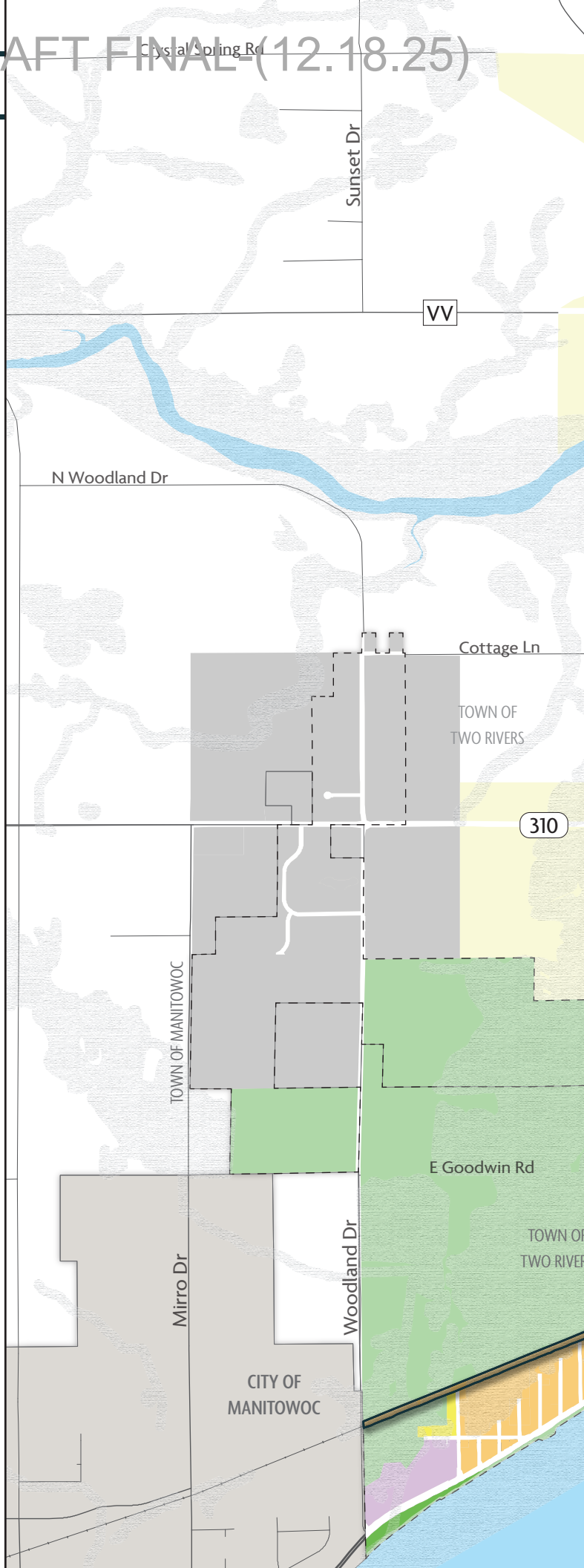
Two Rivers' future land use plan is called "The 20-Year Land Use Plan." It is meant to provide a visual interpretation of what the city envisions to achieve over the next 20 years and beyond within its planning area. The recommended development areas identified on the map extend into the city's three-mile extraterritorial planning area, while primarily staying within the Manitowoc-Two Rivers Sewer Service Area (SSA) boundary which would make public sewer extensions available to new growth. The design is not, however, meant to be a prediction. The map serves as a living asset which can be amended as needed to address the community's current needs and preferences.

The 20-Year Land Use Plan is illustrated in Map 6 and quantified in Table 10.

The purpose of each land use designation is documented on the pages following Map 6. Detailed actions for each land use designation (e.g., type, location, density, etc.) are further described in the Implementation portion of this document (Chapter 7).

Map 6 20-Year Land Use Plan

City of Two Rivers 2022 Comprehensive Plan Update



Future Land Use

- Rural Residential
- Residential
- Mixed Use
- Commercial & Service Business
- Industrial
- Governmental/Institutional/Utilities
- Parks & Recreation
- Natural Areas/Open Space
- Environmental Corridor Overlay

Base Map Features

- Municipal Boundary
- Water
- City of Two Rivers

Priority Growth Areas/Redevelopment Sites

1. Former Industrial Site (Eggers), 3.5 acres
2. Former Industrial Site (Fisher Scientific), 12 acres
3. Former Industrial Site (U.S. Oil, Others), 24 Acres
4. Former Industrial Site (Paragon Electric), 26 Acres
5. Former Gas Station
6. Former Commercial Site (Hansen Florist)
7. Former Concrete Batch Site, 1.1 acres
8. CN Rail Acquisition
9. Former Industrial Site (Burrows and Neshotah Shores)
10. Infill Development Location
11. Waterfront Redevelopment Opportunity, 16 acres
12. Former Industrial Site (Mirro/Eggers)
13. Redevelopment Location (Marina/Commercial)
14. Former Industrial Site, 1 acre
15. Redevelopment Location

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TWO RIVERS WISCONSIN

BAY LAKE Regional Planning Commission | Since 1972

Sources: WisDOT, 2016, 2020; U.S. Census, 2018; WDNR, 2019; WHS, 2020; Manitowoc County, 2020; City of Two Rivers, 2020; Bay-Lake RPC, 2021.

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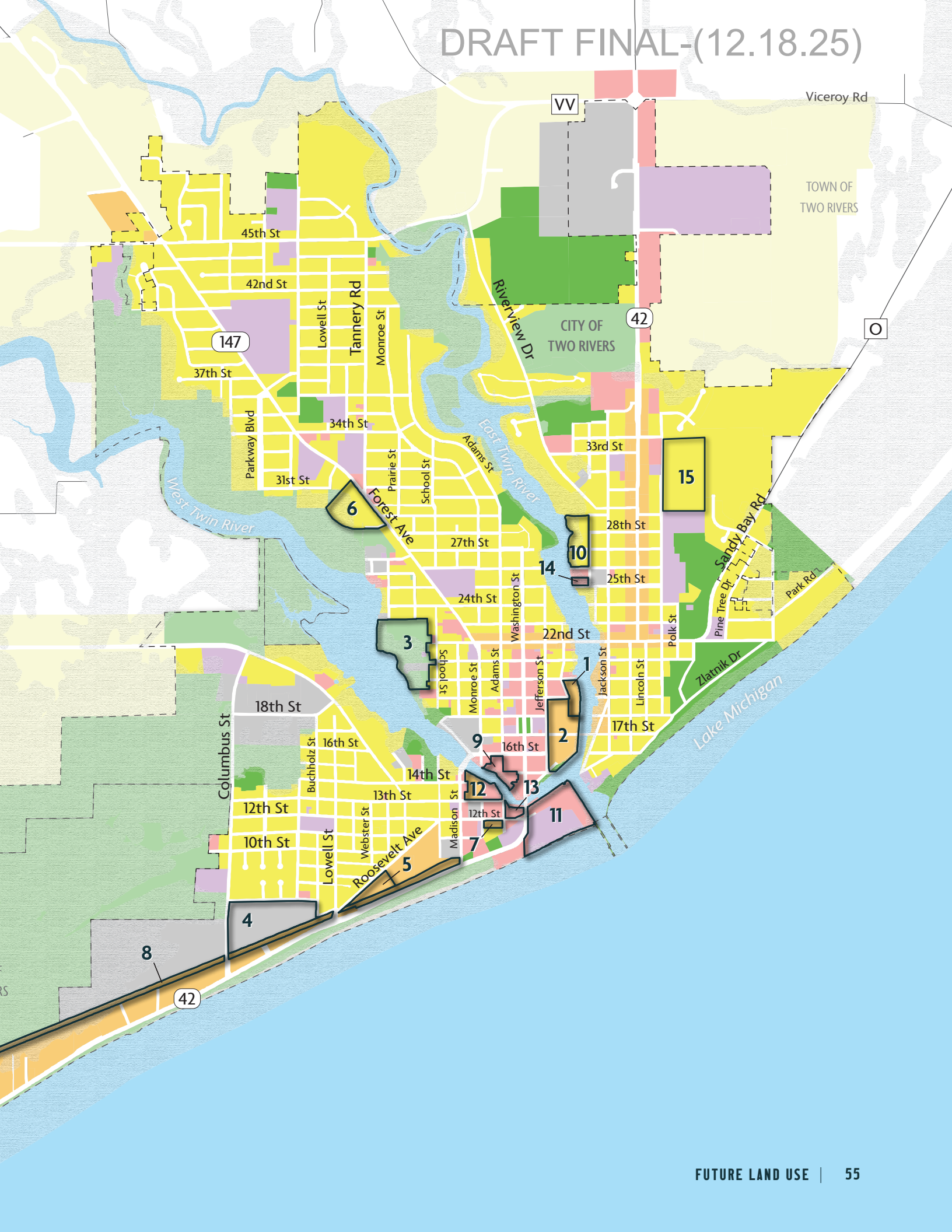

FUTURE LAND USE DESIGNATIONS

The following presents the purpose of each of the future land use designations for the City of Two Rivers. Map 6, found earlier in this chapter, illustrates the general location within the city's planning area where these land uses exist or are envisioned to occur.

20-Year Land Use Plan Designation	Purpose
Residential	The purpose of the Residential designation is to identify areas of the City of Two Rivers which are appropriate for comparatively higher intensity or higher density residential uses, of varying housing types.
Rural Residential	The purpose of the Rural Residential designation is to identify areas on the outer fringe of the City of Two Rivers. These areas observe coordinated growth and promote orderly development patterns for comparatively lower intensity or lower density residential uses, of varying housing types.
Mixed Use	The purpose of the Mixed-Use designation is to provide flexible development and redevelopment opportunities along vital corridors and subareas throughout Two Rivers. This designation can accommodate a range of development types including residential, commercial, and some institutional, and light industrial activities.
Commercial & Service Business	The purpose of the Commercial and Service Business designation is to primarily accommodate office and retail uses. This designation is concentrated in the downtown core area (i.e., Washington Street) since most of its historic character and existing commercial uses and professional services are located here. Existing developments along the STH 42, 310, and 147 corridors are also identified and provide for good accessibility and are highly visible from the major roadways.

FUTURE LAND USE DESIGNATIONS

20-Year Land Use Plan Designation	Purpose
Industrial	The purpose of the Industrial designation is to accommodate a wide range of manufacturing, assembly, office and warehousing, and transportation related industries. Concentrated in the city's industrial park, these areas provide an important employment and economic base for the community and will continue to do so for the foreseeable future. Industrial uses should be physically and/or visibly distanced from adjacent residential neighborhoods to reduce negative impacts.
Governmental/ Institutional/Utilities	The purpose of the Governmental/Institutional/ Utilities designation is to recognize the city's public schools, governmental buildings, publicly operated institutions, and religious institutions as well as the public utilities and select community facilities.
Transportation	The purpose of the Transportation designation is to identify the City of Two Rivers transportation network of streets and highways.
Parks and Recreation	The purpose of the Parks and Recreation designation is to maintain an adequate supply of parks, trails, and other recreational facilities for the city. Parks and recreation facilities, both passive to active, provide valuable opportunities for residents and visitors of the City of Two Rivers and contribute significantly to the city's economy.

FUTURE LAND USE DESIGNATIONS

20-Year Land Use Plan Designation	Purpose
Natural Areas/Open Space	The purpose of the Natural Areas and Open Space designation is to account for natural and undeveloped lands in and around the city. These areas are vital features that define Two Rivers' identity and offer a host of environmental benefits.
Environmental Corridors	The Environmental Corridors designation includes sensitive environmental areas with characteristics critical to the areas ecological stability and sustainability. The purpose of this designation is to strictly limit and strongly discourage development. Environmental corridors include major rivers and drainage ways, 100-Year floodplains, areas with steep slopes (>12%) , floodplains, and wetlands.
Priority Growth Areas/ Redevelopment Sites	Priority Growth Areas/Redevelopment Sites in the City of Two Rivers are considered prime locations for development/redevelopment because they are served by existing infrastructure including sanitary sewer, water mains, storm sewers and adjacent roadways. This minimizes the need for new public investment in additional public services such as police and fire protection, snow removal, road maintenance and public transit. The infill of these sites helps revitalize the city's older neighborhoods by incorporating new/ compatible homes or commercial development next to existing homes, schools, parks and businesses. This helps stabilize neighborhoods and induces reinvestment in these neighborhoods. Map 6 identifies the Priority Growth Areas/ Redevelopment Sites in the City of Two Rivers.

TABLE 10 : 20-YEAR LAND USE PLAN MAP, CITY OF TWO RIVERS PLANNING AREA

20-Year Land Use Plan Designation	Total (Acres)	Total Land (Percent)
Rural Residential	1,331	19%
Residential	1,375	20%
Mixed Use	211	3%
Commercial & Service Business	160	2%
Industrial	820	12%
Governmental/Institutional/ Utilities	264	3%
Parks & Recreation	295	4%
Natural Areas/Open Space	1,493	21%
Transportation	591	8%
Water	282	4%
Total	6,822	100%

Source: Bay-Lake Regional Planning Commission, 2022.

DEVELOPMENT CONSIDERATIONS

This section summarizes a list of considerations that were used in the allocation of future land uses for the city's 20-year Land Use Plan (Map 6).

Supply of Vacant Lands
As detailed in the existing land use portion of this plan, many locations of the city are underdeveloped and contain ample sites for future development while preserving the city's natural features.

Over the 20-year planning period, the supply of vacant lands will decrease as development continues to occur inside city limits. Annexation may happen in the future, however, as a best practice, the city is encouraging development of lands inside city limits before annexing and developing greenfields located just outside of the city limits.

Demand for Land
Demand and price for land is influenced by several factors including the availability of land, the health of the overall economy, public policy and subsidies, and site characteristics (e.g., zoning, type and level of improvements, and other environmental/site constraints).

The city's proximity to larger metro areas, its transportation corridors, historic downtown, quality services, and diverse recreational opportunities make Two Rivers a desirable location to live, recreate, and/or operate a business. As the economy and construction improves following the COVID-19 pandemic, the available supply of vacant parcels in Two Rivers will continue to decrease. As this occurs, land prices will increase, with areas within city limits or closer to services experiencing higher prices per acre.

Redevelopment Opportunities
The city's mixed-use neighborhoods and redevelopment sites offer opportunities for increased tax generation for the 20-year planning period. Site-specific areas primed for growth/redevelopment in Two Rivers are identified in the recommended development strategy and 20-Year Land Use Plan map (Map 6).

FUTURE LAND USE NEEDS

This section summarizes an analysis of future land needs that were used to accommodate the projected growth and development in Two Rivers over the 20-year planning period.

Wisconsin statutes require comprehensive plans to include projections, in five-year increments, for future agricultural, residential, commercial, and industrial land uses in the community over the twenty year planning period. The following summarizes this land needs analysis:

- **Residential Land Demand:** Although Wisconsin's Demographic Service Center (see Population and Housing Element), forecasts a decline in Two Rivers population through 2040, the city will still experience a desire for a variety of housing types. Development of new housing over the planning period is assumed to be accommodated within the City of Two Rivers through existing supply of vacant and residentially-designated lands, or through redevelopment of currently developed lands where housing is a permitted use.
- **Commercial Land Demand:** To accommodate forecasted employment growth in retail, office, and other commercial services (about 83 new employees by 2028), this analysis estimates that about four to six net acres of commercially-designated land will be needed through 2028. This analysis concludes that the City of Two Rivers can accommodate forecasted commercial employment growth, given the existing supply of vacant and commercially designated lands on the Two Rivers future land use plan map (roughly 45 acres).
- **Industrial Land Demand:** To accommodate forecasted employment growth in industrial uses (about 72 new employees by 2028), this analysis estimates that roughly five to eight net acres of industrially-designated land will be needed through 2040. This analysis concludes that the City of Two Rivers can accommodate forecasted industrial employment growth given its existing industrial park and its supply of vacant and industrially-designated lands on the Two Rivers future land use plan map (approximately 595 acres).
- **Agricultural Land Demand:** The supply of agricultural land in Two River city limits has declined over the last several decades in favor of urban development. Consistent with these land use trends, this analysis does not forecast a future land need for agricultural acreage inside city limits. Demand for agricultural land is assumed to be met outside of the Two Rivers city limits.

Table 11: Commercial and Industrial Employment Estimate, Two Rivers, 2021-2028

Land Use Type	New Employees	Assumed Employees per Net Acre		Demand for Net Acres	
		Scenario 1	Scenario 2	Scenario 1	Scenario 2
Industrial	72	10	15	8	5
Retail Commercial	14	15	25	1	1
Office & Commercial Services	69	15	25	5	3
Total	155	-	-	14	9

Source: Wisconsin Department of Workforce Development, QCEW Data, 2019; Wisconsin Department of Workforce Development, 2018-2028 projections for the Bay Area WDA; and Bay-Lake Regional Planning Commission, 2022.

This future land use analysis distributed demand for commercial and industrial needs through 2028 in five-year increments (see Table 12). In summary, about nine to 14 net acres of commercial and industrial lands will be needed to accommodate growth during the planning period, of which six to nine acres will be needed to accommodate growth through 2025.

The determination of acreage is only a generalized estimate to guide planning efforts and discussions. Additionally, since the state of Wisconsin has only forecasted employment growth through 2028, the City of Two Rivers should update this analysis in the next 10 years to identify additional land needs from 2028 through 2040.

Table 12: Commercial and Industrial Land Need Projection Increments, Two Rivers, 2021-2028

Land Use Type	Demand for Net Acres				Total Demand for Net Acreage (2021-2028)	
	2021-2025		2026-2028			
	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Industrial	5	3	3	2	8	5
Commercial (including retail and office)	4	3	2	1	6	4
Total	9	6	5	3	14	9

Source: Bay-Lake Regional Planning Commission, 2022.


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Chapter 6

Systems

- Transportation
- Walking and Biking
- Utilities and Community Facilities/Services
- Parks and Recreation

TWO RIVERS WISCONSIN

Transportation

The city should continue to ensure that its transportation amenities are maintained and improved to allow for safe and efficient movement of not only vehicles, but also for bike and pedestrian traffic.

TRANSPORTATION GOAL:
Maintain and support the development of a safe and efficient transportation system for residents and visitors.

TRANSPORTATION CHARACTERISTICS

Streets and Highways
The City of Two Rivers contains nearly 59 miles of roadway, with the majority of the mileage being under municipal jurisdiction.

FUNCTIONAL CLASSIFICATION

Functional Classification
WisDOT classifies highways and roadways according to character of service. Streets and highways can be divided into three categories: arterial, collector, and local facilities. The three categories of streets and highways are determined by the function that the street or highway in question serves. Map 7 illustrates functional classification.


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CITY OF TWO RIVERS
CITY OF MANITOWOC
TOWN OF MANITOWOC
Tannery Rd
Riverview Dr
West Twin River
East Twin River
Forest Ave
Adams St
27th St
22nd St
17th St
14th St
12th St
Columbus St
Monroe St
Jefferson St
Jackson St
Madison St
Lowell St
Roosevelt Ave
Sandy Bay Rd
Zlatnik Dr
Lake Michigan
Mirro Dr
Map 7 Functional Classification
City of Two Rivers 2022 Comprehensive Plan Update
Base Map Features
Road
Railroad
Building Footprint
Parcel Boundary
City of Two Rivers
City of Manitowoc
Town of Manitowoc & Town of Two Rivers
Functional Class*
Primary Arterial
Minor Arterial
Collector
Minor Collector
Local
*WisDOT Bureau of Planning and Economic Development FHWA Approval Date: 9/29/2016.
Sources: WisDOT, 2016, 2020; WDNR, 2019; Manitowoc County, 2020; City of Two Rivers, 2020; Bay-Lake RPC, 2020.
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REGIONAL TRANSPORTATION SYSTEMS

Rail

There is no rail service available to the City of Two Rivers. An out of service rail line exists between the cities of Two Rivers and Manitowoc. The nearest operating rail line is located in the City of Manitowoc, with service provided by the Canadian National Rail Company.

Air Services

The primary commercial-passenger and air freight service for residents of Manitowoc County is provided by either General Mitchell International Airport located south of the City of Milwaukee or Austin Straubel International Airport located near the City of Green Bay and the Appleton international Airport.

The Manitowoc County Airport, located on Freedom Way in the City of Manitowoc, covers nearly 500 acres. The Airport is classified as a Transport/Corporate (T/C) Airport. According to the WisDOT Bureau of Aeronautics, T/C class airports "are intended to serve corporate jets, small passenger and cargo jet aircraft used in regional service, and small airplanes (piston or turboprop) used in commuter air service."

In Manitowoc County, there are five privately owned airstrips and several helipads. These small, private airport facilities offer minimal services and are generally utilized by recreational fliers. Helipads are available at Aurora Medical Center in Two Rivers and Holy Family Memorial Medical Center in the City of Manitowoc.

Harbor
The Two Rivers Harbor consists of an outer harbor, an inner harbor basin, and a channel one half mile in length. Harbor uses include charter boating, one commercial fishing company and recreational boating and fishing.

Lake Michigan Car Ferry
The Lake Michigan Carferry (i.e., S.S. Badger) carries passengers and autos, and operates from the east side of the slip at the mouth of the Manitowoc River in the City of Manitowoc. The ferry operates between Manitowoc and Ludington, Michigan.

Water Trails
The Twin Rivers Water Trail connects the Village of Mishicot and the City of Two Rivers. This local water trail also leads to the Lake Michigan Water Trail at Seagull Marina in Two Rivers. This connection to Lake Michigan presents a great opportunity for experienced paddlers to transition from the river to the Lake Michigan Water Trail.

In Wisconsin, there are 523 miles of the Lake Michigan Water Trail. Paddlers on this trail have access to a number of other smaller, local water trails to the north and south of the City of Two Rivers.

LOCAL TRANSPORTATION SYSTEMS / FACILITIES

Multi-Model Transportation System
Maritime Metro Transit through coordination with Manitowoc County offers specialized transportation services for residents throughout the City of Two Rivers.

Maritime Metro Transit also provides paratransit service and curb-to-curb transportation for ambulatory elderly individuals 65 years of age and older and ambulatory disabled individuals.

Two Rivers Buses, Inc., provides school transportation service for the city.

Road Conditions
Roads in Two Rivers are inspected every two years and assigned a rating form 1-10 based on appearance of the roadway and how much maintenance is likely needed. Then, each rating level is grouped together to provide a summary of Two Rivers' roadways' overall condition.

Walking and Biking

WALKING AND BIKING

The 2012 Bicycle and Pedestrian Existing Conditions Report for the City of Two Rivers was intended to inform the Two Rivers Bike Committee of recommendations it plans to make to include in a proposed bicycle and pedestrian plan. Goals of creating an existing conditions report to be followed by a bicycle and pedestrian plan included:

- Obtain funding for bicycle/pedestrian infrastructure.
- Implement goals and objectives of the city's comprehensive plan.
- Improve transportation options and the city's transportation system.
- Make walking and biking safer.
- Increase use of bicycles and walking.
- Improve public health.
- Boost tourism in the City of Two Rivers.
- Make the City of Two Rivers a more desirable place to live.

The **Mariners Trail** is seven miles of trail connecting the cities of Manitowoc and Two Rivers along the Lake Michigan shoreline and separated from STH 42.

On the north end of Two Rivers, the **Rawley Point Trail** winds six miles through pine and hemlock forests along Lake Michigan all the way to the historic Rawley Point Lighthouse.

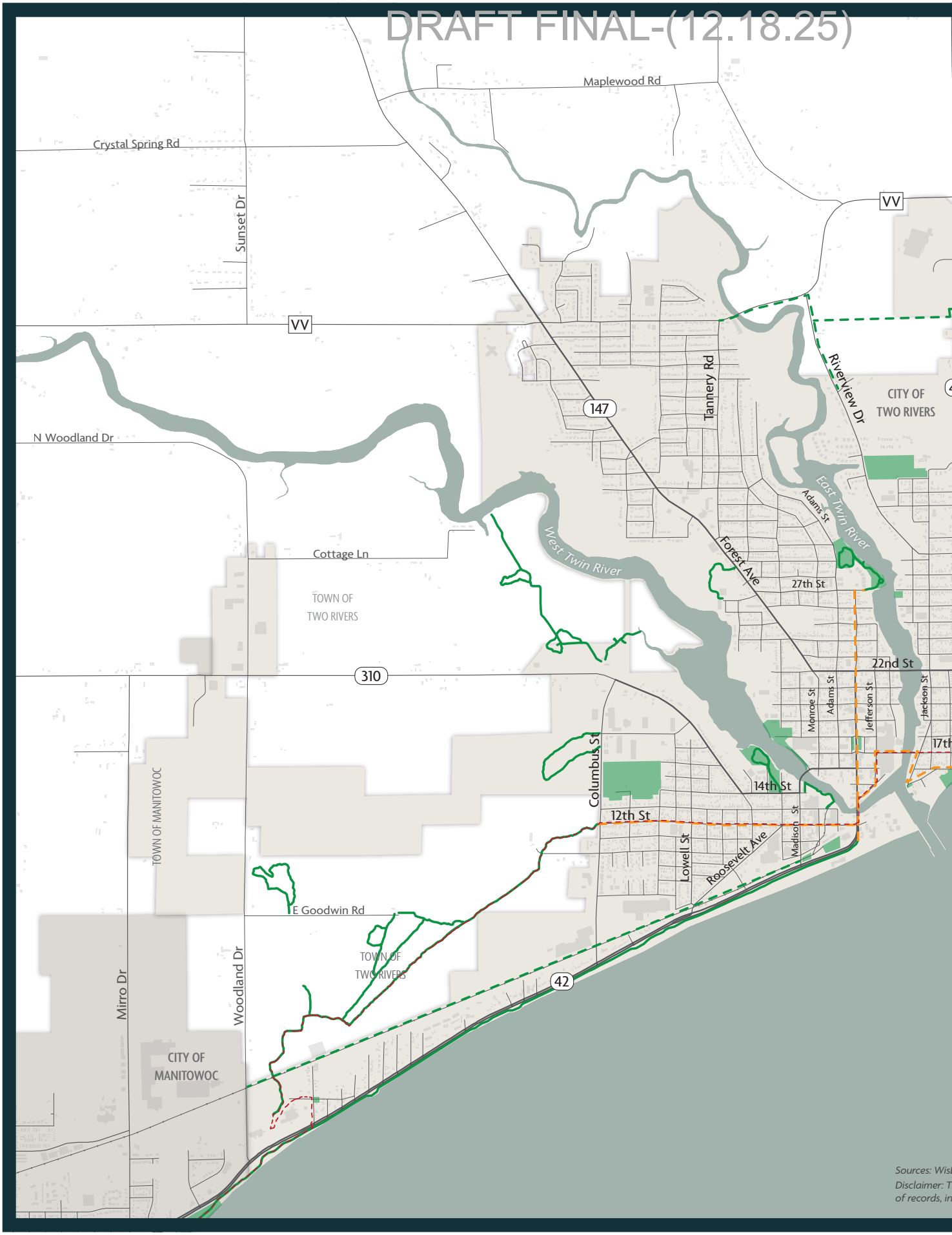
The city lacks on-street infrastructure specific to bicycling, but does have a conventional street grid system, even with two wide riverways converging in the city. Most of these streets are low-volume residential streets with a 25 mph speed limit with conditions suitable for bicycling, but not necessarily bicycle friendly. The principal arteries not well-suited for bicycling include Memorial Drive (STH 42), Lincoln Ave., 22nd St., and Washington St.

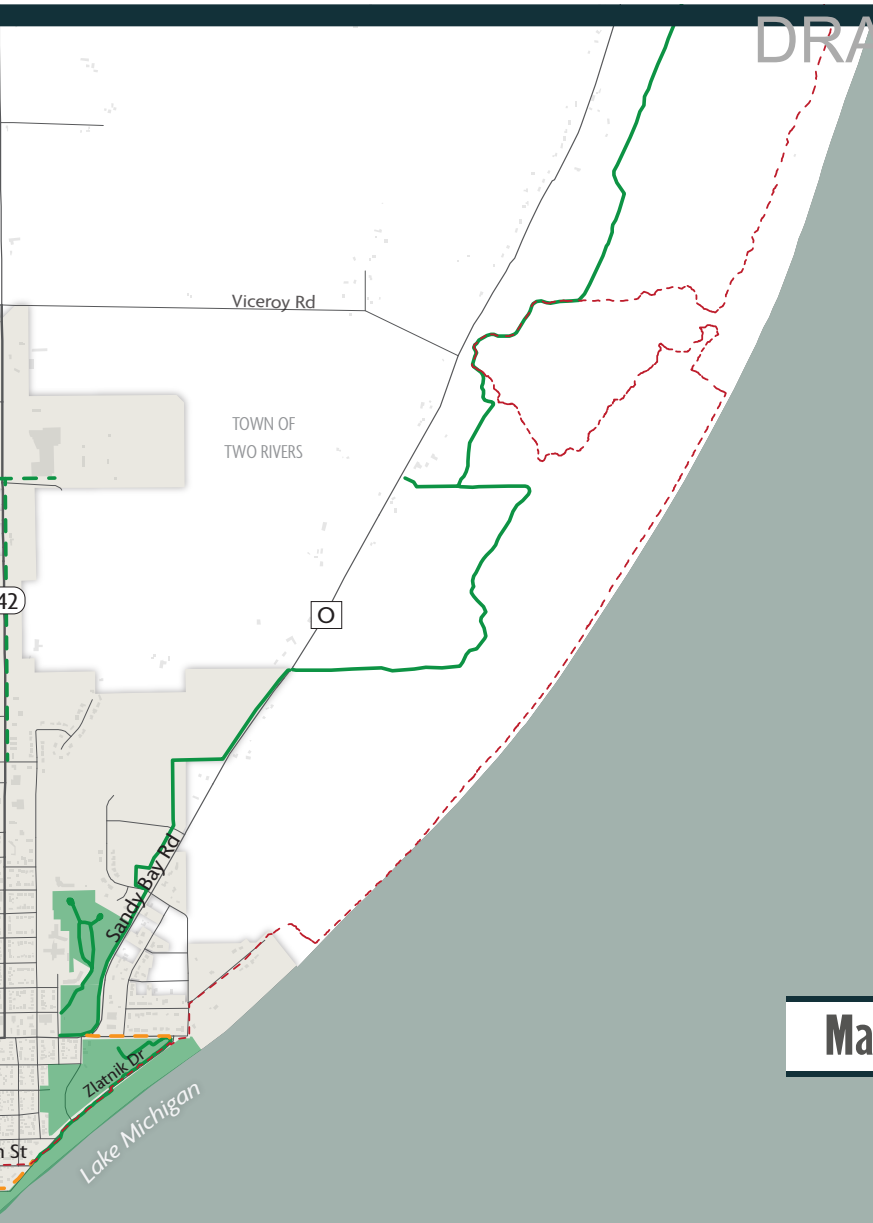
Pedestrian infrastructure overlaps bicycling infrastructure on multi-use paths and some sidewalks where bicycles are permitted. However, it is separate from bicycle infrastructure in much of Two Rivers in that bikes are typically not permitted on the sidewalk.

Bus or transit extends the geographical reach of bicycle and pedestrian transportation modes. Maritime Transit provides bus service within Two Rivers and between Two Rivers and Manitowoc. The buses are equipped to carry bikes.

Map 8 shows potential connectivity improvements to the existing bicycle and pedestrian facilities.

Refer to the *City of Two Rivers Bicycle and Pedestrian Existing Conditions Report* for a detailed inventory of the bicycle and pedestrian network along with recommendations to improve pedestrian safety.





Map 8 Connected Trail Network

City of Two Rivers 2022 Comprehensive Plan Update

- Existing Trail
- Proposed Trail
- Proposed Street Route
- Ice Age Trail
- Park

Base Map Features

- Road
- Railroad
- Building Footprint
- City of Two Rivers
- City of Manitowoc
- Town of Manitowoc & Town of Two Rivers

DOT, 2016, 2020; U.S. Census, 2018; WDNR, 2019; WHS, 2020; Manitowoc County, 2020; City of Two Rivers, 2020; Bay-Lake RPC, 2021. his map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation formation, and data used for reference purposes only. Bay-Lake RPC is not responsible for any inaccuracies herein contained.

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NORTH

Utilities and Community Facilities/ Services

An inventory and assessment of existing facilities is used to determine if there may be condition and capacity issues to meet current and future development needs. Information about the community and public facilities in the City of Two Rivers is outlined here. Map 10 illustrates the location of the community facilities within the city.

UTILITIES AND COMMUNITY FACILITIES/SERVICES GOAL: Establish effective and efficient public facilities and service delivery systems to serve the needs of the community and for the demands of future development.

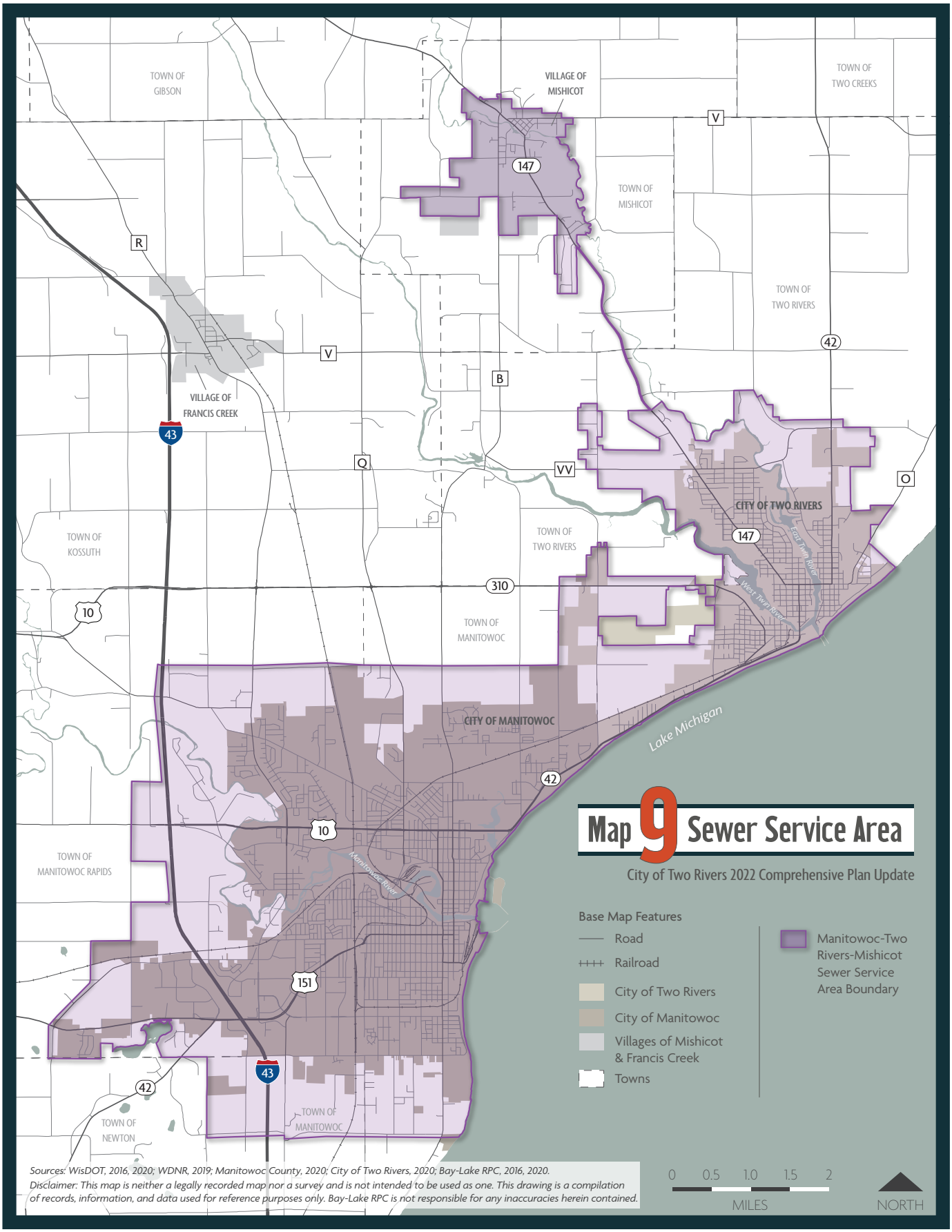
UTILITIES INVENTORY AND ANALYSIS

Sanitary Sewer

The entire City of Two Rivers is served by municipal sewer. The collection system consists of 70 miles of mains and 19 lift stations (Map 9). The municipal sewer system contains an activated sludge treatment plant with an average load of 1.3 million gallons/day, a peak load of 1.7 million gallons/day and a design load of 3.07 million gallons/day. Two Rivers also treats all wastewater from the Village of Mishicot, which pumps sewage to the city via a four-mile pipeline.

The city's sanitary sewer system capacity is considered adequate for the city's existing and future growth.

The Manitowoc-Two Rivers-Mishicot Sewer Service Area identifies the land area intended for sewer services that will be made available during the next 25-year planning period. The service area is delineated using the 25-year population projection, an acceptable residential population density, and a forecast of non-residential (i.e. commercial and industrial) growth, all of which result in acreage demand and allocation.


TOWN OF GIBSON
VILLAGE OF MISHICOT
TOWN OF TWO CREEKS
TOWN OF MISHICOT
TOWN OF TWO RIVERS
VILLAGE OF FRANCIS CREEK
TOWN OF KOSSUTH
TOWN OF MANITOWOC
CITY OF TWO RIVERS
CITY OF MANITOWOC
TOWN OF MANITOWOC RAPIDS
TOWN OF NEWTON
Lake Michigan
East Twin River
West Twin River
Manitowoc River
147
R
V
B
Q
VV
O
42
43
310
10
151
Map 9 Sewer Service Area
City of Two Rivers 2022 Comprehensive Plan Update
Base Map Features
Road
Railroad
City of Two Rivers
City of Manitowoc
Villages of Mishicot & Francis Creek
Towns
Manitowoc-Two Rivers-Mishicot Sewer Service Area Boundary
Sources: WisDOT, 2016, 2020; WDNR, 2019; Manitowoc County, 2020; City of Two Rivers, 2020; Bay-Lake RPC, 2016, 2020.
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Public Water System
Municipal water is supplied by a single inlet from Lake Michigan. The capacity of the system is 3 million gallons per day. The average usage is 1.4 million gallons per day with a peak use of about 2.5 million gallons per day. The municipal water system serves the community and its industrial parks with a ground storage capacity of 2 million gallons and an overhead storage capacity of 1 million gallons. The water distribution system consists of 70 miles of mains, ranging from 2 inches to 12 inches in diameter.

UTILITIES INVENTORY AND ANALYSIS

Two Rivers is currently efforting to remove the remaining lead piping that is found in the city's water distribution system, including the replacement of private lead service lines. Anytime the city replaces a water main, property owners connected to the main would have to pay the cost to replace the water line entering their homes – if made of lead, steel, or copper. The Public Service Commission and the WDNR offer several funding options for private lead service line replacement.

Storm Sewer System
A majority of the city's storm sewer system consists of curbed streets, sewer drainage and different sized mains, in addition to storm water management systems on some developed properties.

Aging storm sewer mains have been replaced in conjunction with other improvements to the infrastructure. However storm sewer inlets and storm water drainage is an ongoing challenge for a city like Two Rivers. One with environmental concerns because it contains numerous natural areas in need of protection.

The City of Two Rivers has a municipal storm water program that manages urban non-point source pollution and protects natural resource features such as the West Twin River, East Twin River, Lake Michigan and other environmentally sensitive areas.

The city references its Storm Water Management Plan and/or Resource Management Plan when considering storm water "Best Management Practices" (BMP) projects.

Electric Service
Citizens and businesses of Two Rivers receive their electricity from Two Rivers Water and Light. The city purchases its electric necessities from Wisconsin Public Power Inc. (WPPI) and Two Rivers Water and Light distributes to its customers. Three-phase power is also provided to the city's industrial parks.

ENERGY AND ENERGY EFFICIENCY

Natural Gas

Wisconsin Public Service and ANR Pipeline Company supply natural gas to the area. ANR owns the main line which enters the City of Two Rivers. Wisconsin Public Service then distributes the natural gas to its customers. The capacity of the system is considered adequate for current and future growth of the area.

Point Beach Nuclear Plant

The Point Beach Nuclear Plant occupies 1,200 acres of land north of Two Rivers in the Town of Two Creeks. NextEra Energy Resources owns and operates the plant and other types of energy producers for electricity.

Renewable Energy Facilities

- Point Beach Solar Energy Center features 315,000 solar panels that convert the sun's energy into electricity, with the capacity to generate 100 megawatts of electricity. The project is located on approximately 1,300 acres in the Town of Two Creeks, just north of the City of Two Rivers.
- The Lakeshore Technical College Wind Generation Facility is located in the Village of Cleveland.

Point Beach Solar Energy Center

Source: RENEW Wisconsin

Telecommunications

Telephone service is available to the City of Two Rivers through Lakefield Communications. It offers local and long distance telephone service along with high-speed DSL Internet on an all fiber-optic digital network. Verizon Telephone also offers local and long distance service with digital switching equipment and is linked to a fiber optic/digital microwave network.

The city-wide fiber optic system has 96 strands of fiber available. The City of Two Rivers and the Two Rivers School District cooperated on the installation of the fiber optic system. All city and school buildings are connected to the shared fiber optic system. The network is also available to local businesses.

The City of Two Rivers does not endorse a specific cable or internet provider. Charter Communications along with various satellite dish providers and streaming services are available for enhanced television viewing. Internet is provided by CenturyLink, Charter Communications and satellite companies.

The telecommunication facilities and service are considered adequate for the city.

Solid Waste Disposal

The city contracts with a private hauler for curbside pickup of the city's garbage.

Recycling Facilities

The City of Two Rivers has a recycling program that allows for weekly curbside pickup of recyclables including: paper, cardboard, metal, glass, etc. In addition, the Manitowoc Recycling Center at 3000 Basswood Road in the Town of Manitowoc Rapids also maintains a residential recycling drop-off area that is intended for use by all county residents.

Services are considered adequate and will continue to be monitored for satisfaction and cost effectiveness.

COMMUNITY FACILITIES INVENTORY AND ASSESSMENT

Many of the City of Two Rivers' departments and facilitates are located within the city limits including government and public institutional centers, police services, fire protection and emergency rescue services, public and private schools and healthcare and assisted living facilities.

Administrative Services
Two Rivers City Hall, located at 1717 E. Park Street, houses the Police Department, Two Rivers Municipal Court, and other administrative offices. The building is utilized primarily for administration, community meetings, and elections. The structure is handicapped accessible, has adequate parking, and is suitable for the future needs of the city.

Library
Residents of the City of Two Rivers utilize the Lester Public Library located at 1001 Adams Street in Two Rivers. Lester Public Library is part of the Manitowoc-Calumet Public Library System which is a cooperative network of six (6) public libraries in east central Wisconsin.

Road and Other Maintenance
Maintenance for the city's road network and other community facilities is provided by Two Rivers Public Works located at 1415 Lake Street. The city has the necessary machinery to conduct maintenance including snowplows, loaders, dump trucks, street sweeper, mowing equipment, and other types of equipment
.
The Forestry Department trims and plants trees in city parks, cemeteries, and in the terrace area of city streets.

Police Services
Police protection is provided by the Two Rivers Police Department. The police department is located in the Two Rivers City Hall. The Police Department has a staff of 27 full-time officers. There is an active Crime Stoppers program, bicycle patrols, school resource officer, crime prevention committee, K-9 program, and a Junior Police Cadets. Currently, the city's police protection is felt to be adequate and will continue to be evaluated as the city grows.

PROTECTIVE SERVICES

Fire and Emergency Services
Fire and emergency services are provided by Two Rivers Fire/Rescue located at 2122 Monroe Street. The fire station, constructed in 2001, is strategically located to provide rapid response time to the over six (6) square miles of city territory. The fire department performs paramedic intercepts and mutual aid with several surrounding fire and EMS providers. The department has 19 full-time personnel, 18 of which are trained to the level of EMT-Paramedic. There are 10 paid-on-call firefighters. Overall, the fire protection services and emergency medical services provided by Two Rivers Fire/ Rescue are considered adequate.

The City of Two Rivers has an Insurance Service Office (ISO) rating of three (3). ISO is a rating of one to ten, with one representing the best protection. While ISO does not presume to dictate the level of fire protection services, it generally contains deficiencies found. The ISO rating is used as guide by municipal officials in planning improvements to their fire fighting services.

EDUCATION

Schools

The City of Two Rivers is located within the Two Rivers Public School District. Two Rivers Public Schools maintains the following facilities:

- Magee Elementary School
- Koenig Elementary School
- L. B. Clarke Middle School
- Two Rivers High School (grade 9-grade 12), 4519 Lincoln Avenue

PRIVATE SCHOOLS

Two(2) private schools are also found in the City of Two Rivers which may be utilized by families:

- Children House of Manitowoc School
- St Johns Lutheran School

Post-Secondary Institutions

There are three post-secondary institutions in Manitowoc County to offer City of Two Rivers residents:

- Lakeshore Technical College, 1290 North Avenue, Cleveland
- University of Wisconsin Green Bay - Manitowoc Campus 705 Viebahn, Manitowoc

Other higher education institutions located in nearby counties include UWGB - Sheboygan Campus, Lakeland College in Sheboygan and Northeast Wisconsin Technical College and UW-Green Bay in Green Bay.

Community House
The J.E. Hamilton Community House, located at 1520 17th Street, is home to the Parks and Recreation Administrative offices, as well as to the Senior Center. The facility includes a gymnasium, racquetball court, fitness room, meeting rooms, and kitchen facilities.

CARE FACILITIES

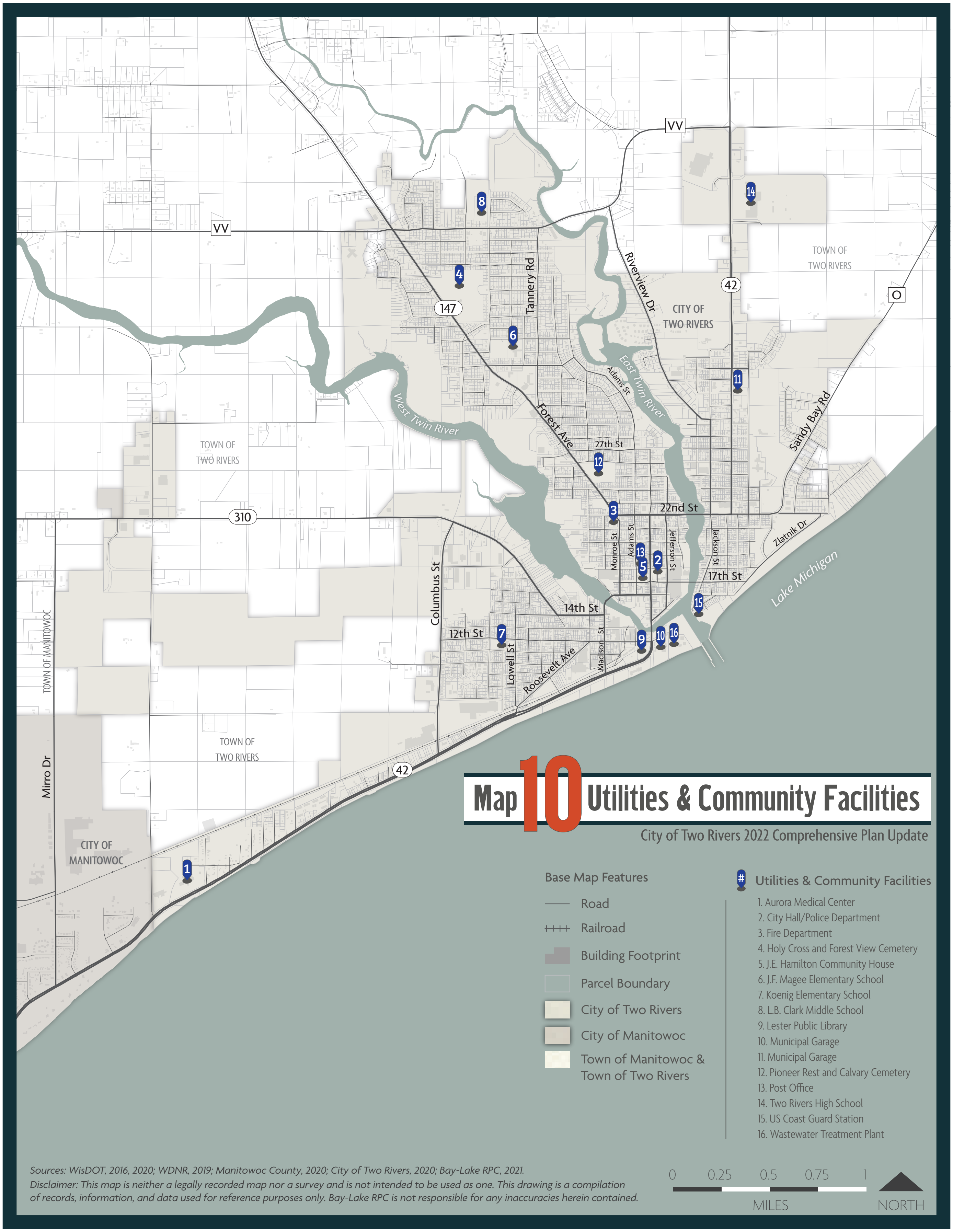
Health Care
Residents of the city can utilize the Aurora Medical Center situated at 5000 Memorial Drive in the City of Two Rivers for their medical needs. Holy Family Memorial Medical Center located at 2300 Western Avenue in the City of Manitowoc also serves the community of Two Rivers. There are three medical clinics in the city along with various chiropractic, dental, and vision practitioners.

Child Care Facilities
There are six (6) child day care centers and a number of in-home day care providers that serve the residents of the community.

Adult/Elderly Care Facilities
The City of Two Rivers contains several long-term care and elder care facilities including a nursing home, four (4) Community Based Residential Facilities (CBRF), one (1) Adult Family Home (AFH), and one (1) Residential Care Apartment Complexes (RCAC).

CEMETERIES

The City of Two Rivers operates two (2) cemeteries. The Pioneer Rest/Calvary cemetery, located at 25th Street and Forest Avenue; and the Holy Cross/Forest View cemetery located at 3801 Mishicot Road.


Map 10 Utilities & Community Facilities
City of Two Rivers 2022 Comprehensive Plan Update
VV
147
310
42
O
Tannery Rd
Riverview Dr
Forest Ave
Adams St
27th St
22nd St
Monroe St
Jefferson St
Jackson St
17th St
14th St
12th St
Columbus St
Lowell St
Roosevelt Ave
Madison St
Sandy Bay Rd
Zlatnik Dr
Mirro Dr
West Twin River
East Twin River
Lake Michigan
TOWN OF TWO RIVERS
CITY OF TWO RIVERS
TOWN OF MANITOWOC
CITY OF MANITOWOC
Base Map Features
Road
Railroad
Building Footprint
Parcel Boundary
City of Two Rivers
City of Manitowoc
Town of Manitowoc & Town of Two Rivers
Utilities & Community Facilities
1. Aurora Medical Center
2. City Hall/Police Department
3. Fire Department
4. Holy Cross and Forest View Cemetery
5. J.E. Hamilton Community House
6. J.F. Magee Elementary School
7. Koenig Elementary School
8. L.B. Clark Middle School
9. Lester Public Library
10. Municipal Garage
11. Municipal Garage
12. Pioneer Rest and Calvary Cemetery
13. Post Office
14. Two Rivers High School
15. US Coast Guard Station
16. Wastewater Treatment Plant
Sources: WisDOT, 2016, 2020; WDNR, 2019; Manitowoc County, 2020; City of Two Rivers, 2020; Bay-Lake RPC, 2021.
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Parks and Recreation

Parks and open space serve several important functions in a community. Parks are a tangible reflection of the quality of life in a community. They provide identity for citizens and are a major factor in the perception of quality of life in a given community. Parks and recreation services are often cited as one of the most important factors in surveys of the livability of communities.

The City of Two Rivers provides space and facilities for active and passive outdoor recreation, including various parks that serve neighborhoods, the entire community, or the entire region. The city's recreational facilities take the form of parks, trails, beaches, and nature preserves, and offer opportunities to experience the city's vast environmental and cultural features.

This portion of the comprehensive plan provides an inventory of the city's park sites and recreation opportunities as well as recommendations on maintenance and opportunities for the city to continue its investment into its parks and recreational assets.

Neshotah Beach

Woodland Dunes Nature Center

Source: City of Two Rivers

Playground at Neshotah Beach

Source: City of Two Rivers Park and Recreation Department

PARKS AND RECREATION GOAL:

Planning and establishing outdoor recreation facilities that accommodate the public's evolving demand, while recognizing the need for continued safety, improvements, and environmental preservation.

Central Park West 365 Project

Source: City of Two Rivers

PARK AND RECREATION FACILITIES INVENTORY AND ASSESSMENT

Parks in the city range from small, neighborhood parks to larger recreational areas that draw regional interest with their natural beauty and variety of recreational opportunities. Tables 13 and 14 highlight each community park and their amenities. Map 11 illustrates the locations of the local park and recreation sites in and around the City of Two Rivers.

TABLE 13: PARK AND RECREATION FACILITIES, CITY OF TWO RIVERS

City Park	Park Type	Facilities	Potential Needs/ Improvements
Neshotah Park & Beach	Community/ Regional	Softball field, volleyball and basketball courts, playgrounds, the Rawley Point bike trail, horseshoe pits, four shelters, and picnic areas with tables and grills. Sand beach on Lake Michigan nearly three-quarters of a mile long with areas for swimming, volleyball, and launching jet skis and kayaks.	Refer to 2002 Master Plan for future design of the park. Evaluate parking payment system options for **non-resident** visitors to the beach to assist with costs associated with trash removal, beach maintenance, bathroom facilities, and other additional costs related to tourist season. More restrooms necessary to replace temporary restroom facilities put up each year. Consider addition of small shelters for rent added into design of park. Update and expansion of playground to be a destination unto itself Lighting updates Softball field ripe for new creative attraction Update tennis courts
Washington Park	Community	A shelter, playground equipment, 3 tennis courts, basketball court, sledding hills, pier, and a walking trail along the West Twin River.	Seasonal ice rink for recreational use each winter. Pickleball courts added onto existing tennis courts. Major playground update to create the feature playground for neighborhood parks Expanded rental venue Fitness equipment trail

TABLE 13 (CONT.): PARK AND RECREATION FACILITIES, CITY OF TWO RIVERS

City Park	Park Type	Facilities	Potential Needs/ Improvements
Zander Park	Community	Location of the city's dog park. A shelter, volleyball and basketball courts, and picnic areas with tables and grills.	Continued evaluation of park use due to wetland areas. Updated fencing Updated lighting Additional dog park amenities such as obstacles, benches, small and large dog areas
Central Park	Community	Location for many of the city's special events. The park covers both sides of Washington Street and is home to the city's band shell.	Redesign of Central Park with splash pad, ice rink, band stand
Vet's Park	Community	The city's major public boat launch and fish cleaning station. Playground equipment, and basketball and volleyball courts, a water fountain, and a shelter.	Add a kayak launch.
Paddlers Park	Community	Launching facilities for kayaks and canoes into the East Twin River. Also a launch for larger pleasure boats.	Add an ADA kayak launch. Addition of permanent restroom facilities Fishing Dock Paving of parking lot and boat ramp
Riverside Park	Community	Site of the city's skateboard park. Fully enclosed shelter/restroom facility, playground equipment, and basketball courts.	Garage added for recreation department's storage needs. Re-opening of restrooms Lighting Updates/repairs to skate park, potentially move to more visible location or new site with capacity for a mountain bike trail Signage and surface for trail along river and containment pond Kayak launch Fishing Dock/Board walk Re-paving of parking lot and road

TABLE 13 (CONT.): PARK AND RECREATION FACILITIES, CITY OF TWO RIVERS

City Park	Park Type	Facilities	Potential Needs/ Improvements
Picnic Hill	Community	Heavily wooded area with areas for walking and hiking. Also contains a disc golf course.	Continue to develop more passive recreation. Re-vitalize disc golf course Winter-time inner tube sled hill–fee-based Forested walking trail New parking and entry point from 21st street Signage
Taylor Park	Neighborhood	Playground equipment and a small shelter.	
Vietnam Veterans Memorial Park	Community	Softball fields, shelter, playground equipment, basketball hoops, and bleachers.	New lighting at park. Batting cages added to park. Possible park expansion into adjacent land.
Walsh Field	Community	A regulation baseball field with stadium style bleachers, and a shelter with restroom facilities. The field is home to the Two Rivers Polar Bears semi-pro baseball team and Manitowoc County Mariners semi-pro football team.	Evaluation of possible toboggan hill add-on for winter use.
Lakeshore Park	Neighborhood	Picnic areas and playground equipment overlooking Lake Michigan.	Update playground equipment
Harbor Park	Neighborhood	A 425-foot sea wall built in 2016, included docking facilities along the East Twin River that include water, electric and sewer hookups.	Landscaping of adjacent parking lot Picnic shelter or rental venue in place of parking lot

Source: Two Rivers, Bay-Lake Regional Planning Commission, 2022

POTENTIAL CITY PARK AND RECREATION NEEDS OR IMPROVEMENTS

- Continue with the addition of kiosks (information & map) for wayfinding. Two kiosks installed in 2021, one along Memorial Drive and one in the Neshotah Beach area.
- Consideration of a wayfinding plan.
- Development of a community park in the northwest area of the city, which could serve neighborhood playground and neighborhood park.
- Continuation of riverfront walkway system maintenance and improvements along Memorial Drive, along the East and West Twin Rivers, and the areas that provide for connection points to promote connectivity of the system.
- Develop land behind Public Works facilities into a green space/trail.
- Expand park along railroad right of way near Memorial Drive to connect to Manitowoc.
- Develop space in front of Hamilton Wood Type and Printing Museum into a pocket park.
- Additional planning for kayaking/paddlers in the city.
- Additional neighborhood parks in the northwest and south side locations of the city.
- Improved and new park signage where needed.

Core Park Components that Need Attention (Clean, Safe, Natural)

- Trees
- Increased maintenance capacity
- Preservation of larger portions of natural areas to create nature trails, cross-country ski trails, and mountain bike trails
- Lighting and increased policing/monitoring

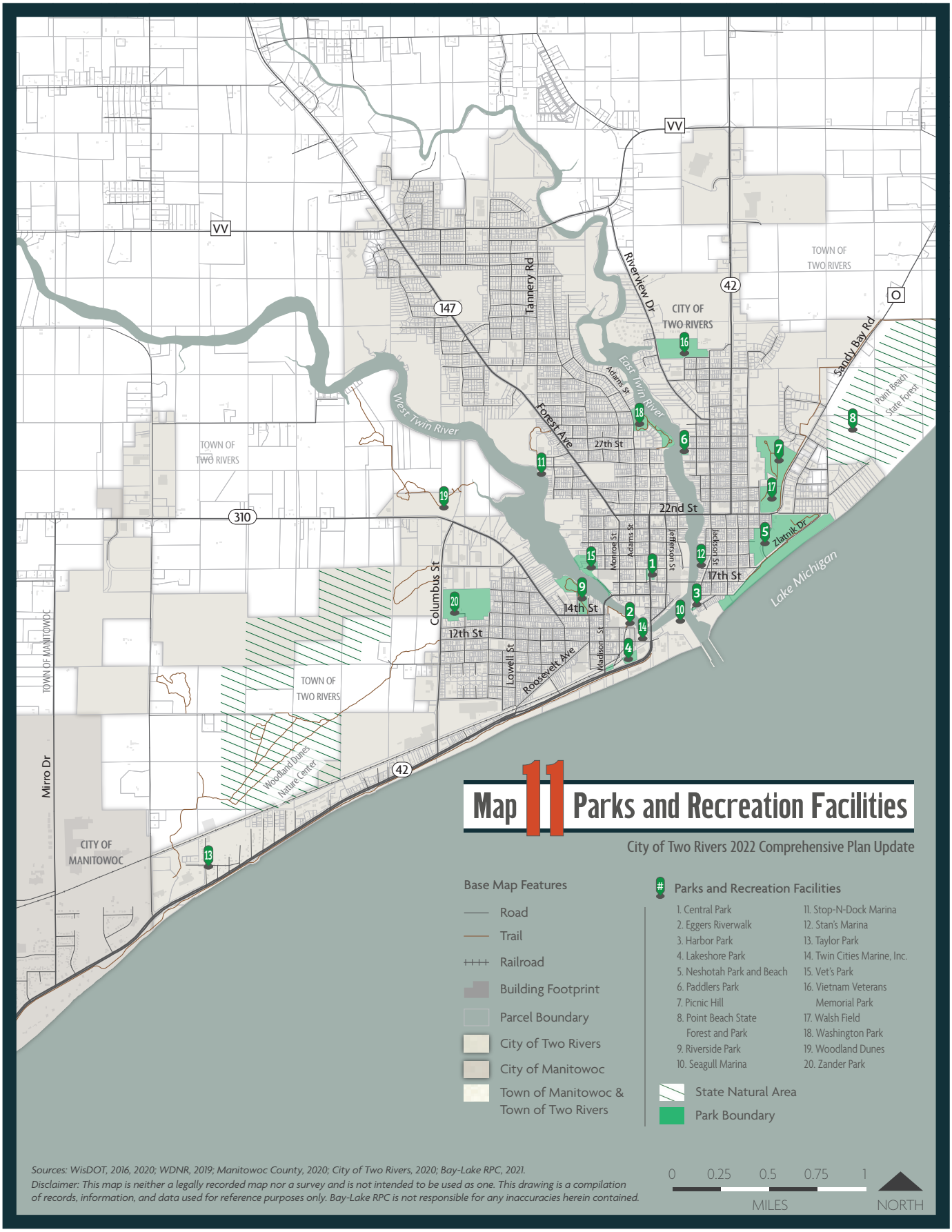
Outdoor Culture Amenities

- Increased staff capacity and expertise to lead outdoor skills activities and drive outdoor culture
- Addition of dirt trails and paved trails within parks
- Trail connections to existing trail systems to create several 3-mile loops
- Mobile climbing wall
- City fleet of kayaks, canoes, and stand-up paddle boards with adaptive equipment
- Archery equipment with adaptive equipment
- Bicycle parking
- Mountain bike trail and skills course
- Bike lanes and trails extending to Nature Center and Arboretum
- Indoor climbing facility
- Preservation of river front corridor properties
- Bouldering Park
- Outdoor pop-up restaurant venue/food truck park/beer garden

TABLE 14: PARK AND RECREATION FACILITIES, CITY OF TWO RIVERS & SURROUNDING AREA

Additional park and recreational facilities in the City of Two Rivers and surrounding area that warrant mentioning are summarized below.

Recreation Facility	Type	Facilities
Community Garden	Community	Garden added to the Forest View/Holy Cross Cemetery land in the 2014.
Eggers Riverwalk	Community	Walkway along the West Twin River, just off the Madison Street bridge. Picnic area.
Mariners Trail	Regional	4.4 miles of paved trail connects the City of Manitowoc to the City of Two Rivers and north to Point Beach State Park.
Ice Age National Scenic Trail	Regional	Passes through the city and incorporates portions of the Mariners Trail. The purpose of the trail is to tell the story of the Ice Age and continental glaciation along a scenic footpath. *Actions:* Add possible trail head amenities on Columbus Street access point. Additional signage and coordination with Ice Age Trail group for promotion about on Columbus Street trail access in Two Rivers and the access at Woodland Dunes.
Marinas	Regional	• Seagull Marina and Campgrounds • Beacon Marine • Stop-N-Dock Marina • Twin Cities Marine, Inc • Rogers Street Fishing Village • Stan's Marina
Woodland Dunes Nature Center and Preserve	Regional	A nature study area whose purpose is to preserve the large wooded area in its natural state. Woodland Dunes offers hiking trails, cross country ski trails, nature center, and a viewing tower.
Point Beach State Forest	Regional	State park located just outside the city limits of Two Rivers. Trails are available for hiking, biking, skiing and enjoying nature. Contains campgrounds and beach access on Lake Michigan.
Twin Rivers Water Trail	Regional	Promotes the development and safe use of a water trail for human powered watercraft along the East and West Twin Rivers.
Wisconsin Shipwreck Coast National Marine Sanctuary	Regional	A 962-square-mile area of Lake Michigan designated by NOAA that protects important habitats, safeguards historic shipwrecks, and offers various outdoor recreation experiences. *Actions:* Work with federal and state agencies to promote the sanctuary designation. If possible, add the sanctuary as a part of a local visitor center destination and component of funding.



Map 11 Parks and Recreation Facilities

City of Two Rivers 2022 Comprehensive Plan Update

Base Map Features

- Road
- Trail
- Railroad
- Building Footprint
- Parcel Boundary
- City of Two Rivers
- City of Manitowoc
- Town of Manitowoc & Town of Two Rivers

Parks and Recreation Facilities

1. Central Park
2. Eggers Riverwalk
3. Harbor Park
4. Lakeshore Park
5. Neshotah Park and Beach
6. Paddlers Park
7. Picnic Hill
8. Point Beach State Forest and Park
9. Riverside Park
10. Seagull Marina
11. Stop-N-Dock Marina
12. Stan's Marina
13. Taylor Park
14. Twin Cities Marine, Inc.
15. Vet's Park
16. Vietnam Veterans Memorial Park
17. Walsh Field
18. Washington Park
19. Woodland Dunes
20. Zander Park

- State Natural Area
- Park Boundary

Sources: WisDOT, 2016, 2020; WDNR, 2019; Manitowoc County, 2020; City of Two Rivers, 2020; Bay-Lake RPC, 2021.
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Chapter 7

Implementation

- Intergovernmental Cooperation
- Implementation Action Plan

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Intergovernmental Cooperation

The City of Two Rivers relationship with overlapping and adjacent jurisdictions can impact city residents in terms of taxation, planning, the provision of services, and the siting of public facilities. An examination of these relationships and the identification of shared decision-making efforts can help the city address these circumstances productively. Further, to ensure that the city is cooperating well with overlapping and adjacent jurisdictions, Two Rivers will need to continuously evaluate how it fosters cooperation and how its decisions impact the broader region. Accordingly, this element is the starting place for future collaborative planning efforts in and around the City of Two Rivers.

INVENTORY OF OVERLAPPING & ADJACENT JURISDICTIONS

Adjacent Communities

The City of Manitowoc is located south of Two Rivers. The communities have a mutual aid agreement in place to provide emergency services on an as needed basis. Two Rivers share a constructive relationship with the City of Manitowoc working with the city on some tourism related activities.

The City of Two Rivers shares its borders with the towns of Two Rivers and Manitowoc. The City of Two Rivers maintains a good working relationship with them. The City of Two Rivers has the authority to annex lands within these towns, while the surrounding towns do not. Therefore, the borders between the City and the towns are fixed until such a time that the City accepts lands to be annexed. The City of Two Rivers extra-territorial planning area also extends three miles beyond its city limits (i.e., into the towns of Two Rivers and Manitowoc). The City is willing to participate in future planning activities of its neighbors to ensure future compatibility of goals and visions.

School District
The City of Two Rivers is located within the Two Rivers Public School District along with the Lakeshore Technical College (LTC) District. The city's relationship with the districts is considered good. The city and its residents can provide input on school activities and future development projects.

Manitowoc County
The City of Two Rivers and Manitowoc County maintain a good working relationship with each. The City is willing to participate in all county-wide planning efforts or other initiatives aimed at promoting or improving the region.

Region
The city is in Manitowoc County, which is a member of the Bay-Lake Regional Planning Commission (BLRPC). The BLRPC is the regional, governmental entity of northeast Wisconsin. Two Rivers has a role to play in the region, and will consider participating in regional planning efforts as they arise.

State
Two Rivers relationship with the State of Wisconsin is one which deals mainly with issues related to transportation (in coordination with the Wisconsin Department of Transportation) and natural resources (in coordination with the Wisconsin Department of Natural Resources).

In addition, the Two Rivers maintains a good working relationship with the state by adhering to state laws, policies, and requirements. The City will also consider its participation in state-led initiatives as they arise.

Federal
The city's relationship with the US government is one which deals primarily with funding opportunities. The City maintains a good working relationship with the US government by adhering to federal laws and requirements.

INVENTORY OF EXISTING PLANS AND AGREEMENTS

Annexation Plans
Wisconsin Statute 66.021 provides the regulatory framework for Two Rivers to annex lands. Annexation is the transfer of one or more tax parcels from a town to a city or village. Consent of property owners is but one of the procedures in annexation.

Extra-Territorial Subdivision Regulation
State Statutes allows cities to extend extra-territorial plat review over surrounding unincorporated areas. This helps cities protect land uses near its boundaries from conflicting uses outside its limits. For cities over 10,000 people, the extra-territorial area extends three miles; accordingly, the City of Two Rivers has an Extra-Territorial Plat Review jurisdiction of three miles. This area extends into the Town of Two Rivers and Town of Manitowoc.

Extra-Territorial Zoning
State Statutes allows cities to extend extra-territorial zoning over surrounding unincorporated areas. Two Rivers extra-territorial area extends three miles into the Town of Two Rivers and Town of Manitowoc. However, the city does not have extra-territorial zoning agreements with the surrounding towns.

Intergovernmental Agreements
Intergovernmental agreements enable cooperation between governmental jurisdictions, quasi-governmental jurisdictions, and districts. Intergovernmental agreements are the most common form of agreement made between communities (usually regarding police, fire, and rescue services). Intergovernmental agreements are also available for revenue sharing, determining land use within a designated area, and in setting temporary municipal boundaries. Two Rivers has several intergovernmental agreements in place.

EFFORTS FOR COLLECTIVE DECISION-MAKING

The following is a list of efforts or services requiring or potentially requiring collaboration/collective decision-making between the City of Two Rivers and other jurisdictions.

- Shared emergency services (such as fire, police, ambulance)
- Preservation, promotion, and enhancement of natural resources and outdoor, recreational facilities
- Development adjacent to the waterfront and in extra-territorial areas
- Preservation of historic character
- Protection of ground and surface water quality
- Economic development
- Official mapping, including planned street network and other applicable future infrastructure or utilities.
- Annexation services

Implementation Action Plan

The Implementation Element provides a framework for the City of Two Rivers to implement this Comprehensive Plan. Implementation can take many forms, including:

- Carrying out the action plan, recommended on subsequent pages.
- Using the plan's content to guide public and private decision-making on matters that relate to the development of the city and the prioritization of public revenues.
- Reviewing, evaluating, and amending the plan as demographics, the economy, political climates, or fiscal realities change.

ROLE OF CITY STAFF

Predominately, city staff, the city's plan commissioners, and the city's elected officials will carry out implementation of this plan. Their specific roles include:

- **Role of City Staff**: city staff, in various departments, will typically carry out the day-to-day operations of implementation. For example, staff may administer new program(s), facilitate presentations to discuss regulatory changes, or coordinate amongst partners to finance capital projects as recommended by the plan. Staff often provide technical advice to Plan Commissioners and elected officials to inform decision-making on topics related to the comprehensive plan.
- **Role of City Plan Commissioners**: The Plan Commission's primary responsibility is to implement the comprehensive plan and to ensure supporting city ordinances are consistent with the plan. When reviewing any petition or when amending any land control within the city, the comprehensive plan shall be reviewed and a recommendation will derive from its goals, objectives, and 20-Year Land Use Plan. If a decision needs to be made in which it is inconsistent with the comprehensive plan, the comprehensive plan must be amended before the decision can take effect. The Plan Commission will need to ensure that the comprehensive plan is updated every 10 years. An annual review of the plan is recommended so the Plan Commission may stay familiarized with the plan's maps, content, goals, objectives, and actions.
- **Role of Elected Officials**: The city's elected officials make decisions from the standpoint of overall community impact—tempered by specific, situational factors. Elected officials balance recommendations made by plans and policies, the objectives of applicants and the public, technical advice from staff, recommendations of advisory boards, and their own judgment. The comprehensive plan provides much of the information elected officials need to make a decision. While the prime responsibility of implementing and updating the comprehensive plan falls on the city's Plan Commission, elected officials should become familiar with this plan and assert that resources are maintained to keep the comprehensive plan current and viable.

ACTION PLAN

The following pages present the comprehensive plan's action plan to ensure progress is made after the comprehensive plan is adopted. The action plan identifies activities to implement the goals of this plan and ultimately achieve the city's vision.

Note that this action plan is intended to be implemented over the planning period in a flexible manner. Many actions require additional exploration prior to implementation. Upon further exploration, some actions may not be implemented. Other actions, not documented in the action plan, can also be pursued.

ENVIRONMENTAL AND CULTURAL RESOURCES

Action
Identify priority sites and infrastructure in shoreland areas that needs for resiliency projects that could reduce coastal hazard risks. • The shoreline area surrounding the wastewater treatment plant • Shoreline area around the Harbor Park (formerly named Lot F Park) • Beach area sand dune planting to secure the beach from blowing
Continue to work with funding agencies and organizations to support projects that protect environmental resources and the community that are vulnerable to the changing climate. • These agencies include FEMA, WDNR, Fund for Lake Michigan and others that can potentially assist with shoreline erosion, flooding, rising water levels and issues related to being a Lakeshore community
Continue to pursue projects that address the significant impacts of the Lake Michigan wave action. • Projects to address surge and shoaling action. The water surges up the channel which damages the steel sheet piling that surrounds the harbor
Employ surface water best management practices to protect the water quality of rivers, lake, and the groundwater. • Best management practices to be incorporated for surface water drainage when projects are being designed. • Tree planning, native plantings, and removal of invasive species assist with these practices while also benefiting pollinators, birds, and beautify the areas where they are implemented. o Continue partnering and working with Woodland Dunes in projects that involve native plantings and environmental resource enhancements.
Many properties within the city were former industrial sites that are now brownfields. Continue to redevelop and pursue funding opportunities to prepare these sites for re-use through the Wisconsin DNR and the U.S. EPA.
Continue working with these organizations on projects, However, expand the emphasis on cultural and artistic opportunities and public art displays in the City. • Two Rivers Historical Society: Expand dialog with the Historical Society. • Rogers Street Fishing Village: Pursue connection with this group to work with them regarding their vision of the fishing village. • Hamilton Wood Type Museum: Continue working with the museum as a partner to expand and integrate its reach into the community in forms of public art, its positive impact on tourism and culture within the City of Two Rivers. An example of this collaboration is the Hamilton Wood Type - Conference Center project that is envisioned to be a joint conference center, visitor center, and the Hamilton Wood Type & Printing Museum.

HOUSING AND NEIGHBORHOODS

Action
Consider a range of housing needs as indicated by survey results and day-to-day interactions. • Work with the area real estate community, developers, and investors to promote housing development in Two Rivers. • These housing types include new single family, improved existing single family, new multi-family residential, new condominium residential, and affordable housing.
Strengthen neighborhoods, or areas of the city, by developing tools and programs to assist property owners with improvements to housing structures. • Promote the City's Housing Loan Program and the Northeast Wisconsin Regional Housing Loan Program that is available to income qualified individuals for home improvements. • Promote the "Transform Two River's Program" that uses affordable housing funds from tax incremental districts that have been extended an additional year for affordable housing purposes.
Consider the application of streetscaping, terrace plantings, or other beautification techniques within neighborhood street corridors when street design projects are being planned. There are "gateway" areas in the City along entryway corridors where some of these techniques may be very impactful: • Hawthorn Street to 14th Street • 14th Street • 12th Street • Forest Avenue and 45th Street (CTH VV) • 22nd Street
Explore ways to place overhead utility lines underground when construction projects are occurring.
Review the maintenance code for the exterior of buildings, outdoor storage, and yard appearance as it relates to residential buildings. • Review potential for additional time and budget allocated to outreach and enforcement of the City's building maintains code. • Evaluate the code enforcement options such as community service officer(s) or housing inspector(s) position.
Promote available public and private sites identified for development and redevelopment. Survey results indicated support for single family residential, condominium style units, additional apartments, and workforce/affordable housing units. • Consider use of financial incentive tools to facilitate housing development such as Tax Incentive Financing for infrastructure costs. • Use of the Tax Incentive Financing affordable housing funds set aside from TIDs that have been extended for a year through City Council approval. • Working with the private development community to facility construction in both greenfield sites and redevelopment areas. • Pursue funding assistance at the state and federal level where possible to facilitate additional housing development within the City.

HOUSING AND NEIGHBORHOODS (cont.)

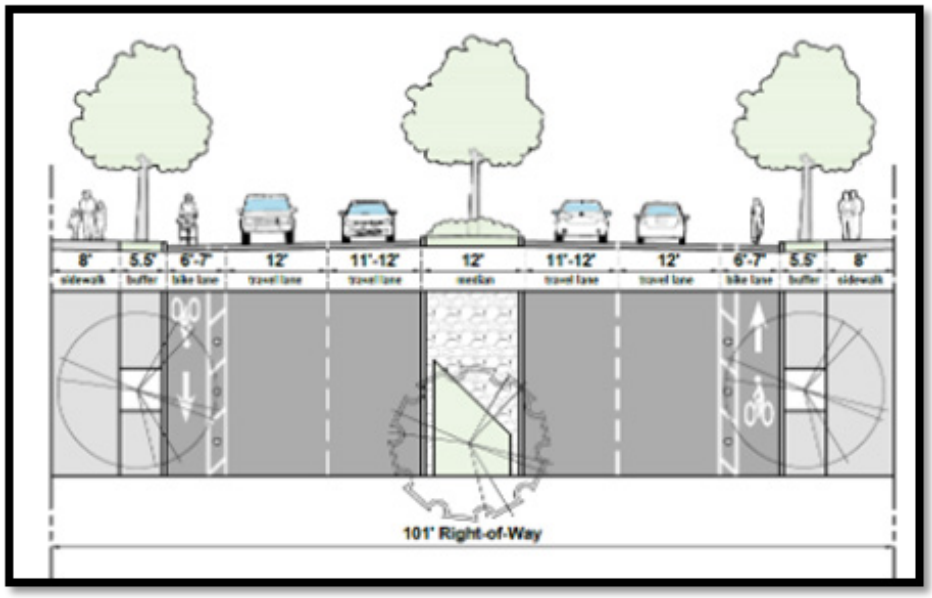
Action
Recommended residential development focus areas: • The City owned Sandy Bay Highland Subdivision has approximately 17 acres to the north remaining within the subdivision that has not been platted. Phase three should be designed and subdivided for future development as Phase 1 and 2 are almost completely developed. • Land adjacent to Sandy Bay Highland subdivision is also recommended areas for future residential development • The area south of the Two Rivers High School adjacent to Lincoln Avenue includes areas land areas recommended for future housing and mixed uses. • Redevelopment sites along waterfront locations that may in some cases be brownfields are recommended for reuse for residential and mixed use in the future. • The existing housing stock where there are small lot sizes, or homes that are extremely small. These existing homes may fill a niche for the demand for "small" homes as there are homes that are 1,200 square feet in some cases. Upgrading these homes with modern amenities is encouraged. • There are homes that have been left in disrepair, abandoned, and then put up for sale in some cases for a price under $20,000. It is recommended the City's Community Development Authority (CDA) consider potential purchase(s) of these types of properties. Otherwise there remains a negative, spiraling effect of homes purchased at these prices with little investment made beyond minimal cosmetic changes. Unfortunately, this is not a solution to the City's limited supply of quality first time homes available for purchase.

ECONOMIC DEVELOPMENT

Action
Promote the redevelopment of properties. There are some properties within the City of Two Rivers that are targeted for redevelopment and may also be identified as brownfields and in need of redevelopment. • Priority growth areas/redevelopment sites are identified on Map 6. • Continue to use and pursue resources such as site assessment grants and other resources for investing in brownfield clean-up for future development opportunities.
Facilitate development to support and grow the city's tax base while providing new opportunities for business and residential expansion. • Strategically use tax incremental financing, grant programs, the city's economic development loan program, and other grant/loan resources to support the ongoing process of development in the City. • Promote other tools including the City's Economic Development Loan program and the Façade Improvement Program both of which are intended to assist businesses when additional funds for investment are needed.
Continue work on marketing the City's area for development. • Build marketing information for the city owned Woodland and Columbus industrial park property. • Identify and market areas in accordance with planning documents for future development opportunities.

ECONOMIC DEVELOPMENT (cont.)
Action
The City owned industrial buildings located at Wentker Court need maintenance and improvements. These buildings provide an opportunity for incubator-type uses for new businesses in the community. • Explore Economic Development Administration (EDA) and other funding opportunities that are potential sources to improve these buildings to fully provide the incubator services and space for startups in the city
Build relationships with businesses to understand retention and attraction needs for their operations. • Continue outreach to companies independently and through the Manitowoc Chamber of Commerce, the Two Rivers Business Association, Two Rivers Main Street, Lakeshore Technical College and other organizations to facilitate assistance to community businesses
Provide resources on the City's website to assist businesses and entrepreneurs.
ECONOMIC DEVELOPMENT - Downtown Two Rivers
Work with the City's Main Street organization to enhance the downtown area and support businesses.
When applicable, support streetscaping and beautification efforts to enhance the downtown experience and appearance. These include but are not limited to hanging planters, painting of wastebaskets, and public artwork.
Facilitate the full use of buildings as the economy evolves. Examples include light manufacturing, for example food production, paired with a retail component.
ECONOMIC DEVELOPMENT - Tourism
Promote the City's tourism efforts as the model for service delivery changes for the community.
Continue support for the hospitality industry including but not limited to lodging, restaurants, and retails providers with marketing materials, and updated website information.
Engage in the use of social media to promote events and assets for residents and visitors.
Continue the implementation of outdoor trail plans, public access to water, recreational amenities and activities that both residents and visitors enjoy.
Continue beach maintenance, and expansion plans for public access to and enjoyment of Lake Michigan and the East and West Twin Rivers.
Two Rivers is part of the Wisconsin Shipwreck Coast National Marine Sanctuary and this designation provides a partnership with NOAA and significant tourism opportunities with the community and visitors.

TRANSPORTATION

Action
Develop a transportation system that provides for all transportation modes.
Identify areas where traffic and/or safety issues have been raised. • The intersection of Washington Street and 12th Street • The intersection of Forest Avenue and Tannery Road
When the design of a street is in process, consider the attributes of a "complete street" such as curb, gutter, sidewalk, terrace, bicycle lane, and vehicle lane widths all of which contribute to the varying ways in the public travels. 
Continue the use of the Pavement Surface Evaluation and Rating (PASER) system to assess the overall condition of roadways and to determine the road maintenance, restoration, and construction needs.
Continue availability of Maritime Metro Transit, evaluate the need for and use of paratransit providers and access for residents to alternative transportation services. Aging populations and those with mobility constraints will continue to have transportation needs.
Conduct periodic bicycle traffic counts on key bicycle routes and trails to evaluate usage, particularly Mariners Trail . This information is helpful for funding opportunities for the trail and other planning activities related to the trail and the users of it.
Improve signage and information indicating bicycle routes and trail connectivity including the connection from Mariners Trail to the Rawley Point trails.
Update the information available to the public about bicycle routes and trail access.

TRANSPORTATION (cont.)

Action
Expand existing bicycle and pedestrian trail system with new trail connections. • Additional trails include a trail between the Washington Street Bridge to the 17th Street Bridge along the waterfront. • An extension of the trail from Two Rivers High School to the south. Adding light to the trail would also be helpful to the trail users
Evaluate and update the Bicycle and Pedestrian Plan.
Evaluate the Harbor Master Plan and update as needed.
Promote information about the "water trail", and public access to water transportation, availability of public docking and launching locations.
The evaluation of and preparation for the increased presence of electric vehicles (EV) and bicycles presence and the impacts of them within the transportation system.

UTILITIES & COMMUNITY FACILITIES/SERVICES

Action
Provide quality services, maintain system infrastructure, and seek out ways to modernize service delivery.
Continue to replace lead pipes within the water distribution system for safe drinking water quality in the community.
The City's Water and Light Utility will continue to modernize the provision of service and customer service features for the city's residents.
Preparing for the presence of electric vehicles (EV) is necessary. An assessment for the possibility of providing a charging station(s) in coordination with WPPI.
Monitor the electric transmission poles and transmission system with respect to climate variability and rising intensity. In addition, evaluate the potential to remove poles and replace with underground services when construction is occurring to enhance service provision and aesthetics.
Work with broadband providers to support and improve broadband services, the "Cool City" Wi-Fi network and the telecommunication network overall for services to residents and businesses.
Previous plans have identified conducting a study of relocating the public works facility from its current location, on Lake Michigan, a prime location for development to another location. Conducting a vulnerability assessment for this location and a needs assessment study for the public works facility is recommended.

LAND USE

Action
Review the adopted, future land use map annually.
Consider area development plans or plans specific to some locations within the City to address needs specific to the area. Some suggested areas are below: • Area bounded by Madison Street on the east, 14th Street on the south and Wentker Court on the west, and West Twin River to the North  • Neshotah Beach: Bounded by 22nd Street to the north, Pierce Street to the west and Zlatnik to the south. 
Modify the zoning ordinance when needed for consistency with the comprehensive plan and in cases where it needs to be updated to keep for modernization purposes.

INTERGOVERNMENTAL COOPERATION

Action
Develop a list of resources and services that are formally or informally shared between entities.
Invite neighboring communities (e.g., Manitowoc County, towns of Two Rivers and Manitowoc, City of Manitowoc) to attend meetings and workshops regarding topics with a regional focus or impact.
Share completed plans and project success summaries with neighboring communities (e.g., Manitowoc County, towns of Two Rivers and Manitowoc, City of Manitowoc) as part of an ongoing initiative to improve communication.
Develop boundary agreements with the towns of Two Rivers and Manitowoc to catalyze the future planning of Two Rivers' extra-territorial areas.

IMPLEMENTATION

Action
Update Two Rivers comprehensive plan every 10 years.
Hold community meetings and education efforts with the public, local schools, the media, and stakeholders to publicize and communicate planning projects identified in this plan, and to gather feedback.
Maintain a comprehensive plan web page (on the City's website) that includes the adopted plan, documentation of all comprehensive plan amendments, and updates and summaries of ongoing projects/actions related to the comprehensive plan.
Update the city's zoning ordinance, as needed, so it is consistent with the 20-year land use plan map and any amendments.
In addition to addressing matters of the comprehensive plan as they arise, the Plan Commission may select a meeting, at least once per year, to broadly discuss the comprehensive plan goals, objectives, and actions to collect public comment on a reoccurring basis and otherwise discuss any potential issues or conflicts with current practices.
Require amendments to the future land use plan map to include an analysis of externalities of the changing parcels.
Evaluate future possibilities and issues when comprehensive plan amendments are requested, especially to the future land use plan map.

TWO RIVERS WISCONSIN

BAY LAKE Regional Planning Commission | Since 1972

Bay-Lake Regional Planning Commission
1861 Nimitz Drive
De Pere, WI 54115
(920) 448-2820

APPENDIX B
2024 WATER QUALITY REPORT

City of Two Rivers

2024 Water Quality Report

two-rivers.org · (920) 793-5523

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

Dlaim ntawv tshaabzu nuav muaj lug tseemceeb heev nyob rua huv kws has txug cov dlej mej haus. Kuas ib tug paab txhais rua koj, los nrug ib tug kws paub lug thaam.

Introduction

The employees of Two Rivers Utilities (TRU) Water Department are pleased to provide you with this year's Water Quality Report. The Water Department routinely monitors Two Rivers' drinking water for contaminates to ensure that it meets all health and safety standards. The purpose of this report is to inform our customers of the findings from our ongoing water quality monitoring. We want you to understand the efforts we continuously make to improve water quality and protect our water resources. We are committed to ensuring the quality of your drinking water remains at the highest possible level.

If you would like to know more information contained in this report, please contact Andrew Sukowaty, Water Director at 920-793-5558 or email customerservice@two-rivers.org. There is opportunity for input on decisions affecting your water quality at Two Rivers City Council Meetings located at City Hall, 1717 E. Park Street, Two Rivers, WI 54241 on the first and third Mondays each month at 6:00pm.

Water System Overview

2 Water Towers

1 Reservoir

72 Miles of Water Main

5,600 Water Services

667 Hydrants

3 Million Gallons of Storage

About TRU

Two Rivers Water Works was first commissioned in 1902 with two shallow wells along Lake Michigan where today Memorial Drive is located. It was formed along with the first electric utility in the city to be known as Two Rivers Water and Light. With water demands growing the decision was made to filter water from Lake Michigan to meet the demands of the city. In 1932, construction began on a 3-million gallon per day surface water treatment facility. Sand filtration beds were used to filter the water until 2000 when the filtration plant upgraded to ultra membrane filtration. Two Rivers Water and Light continued to serve the community until it recently transformed into what we see today as Two Rivers Utilities.

TRU water comes from Lake Michigan through an intake pipe that extends 6,180-feet into Lake Michigan and is 24-inches in diameter. The water is then filtered in a 3-million gallon per day (mgd) Ultrafiltration Membrane Treatment Facility. Water is then treated with Chlorine and Fluoride as it leaves the treatment facility into the distribution system. The distribution system is comprised of 72 miles of water main that connect all the customers, fire hydrants, and water storage facilities in the city. The storage facilities are comprised of two water towers which hold a combined total of 1-million gallons of water and one reservoir that holds 2-million gallons of water. In 2022, TRU pumped a total of 341,396,000 gallons of water, which equals a daily average of 0.94 mgd or just less than one million gallons a day.

Hydrant Flushing Frequently Asked Questions

1. **Why does the city perform hydrant flushing?** Hydrant flushing is a controlled procedure that is vital for the general maintenance of the water distribution system. It ensures adequate water flow and water quality.
2. **What are the effects of hydrant flushing?** Sediment can collect in the water mains. Flushing removes collected sediment from fire hydrants. This can result in discolored water during the flushing process and possibly shortly afterwards.
3. **Can I use my water during hydrant flushing?** It is recommended if TRU is in your area flushing to wait until flushing has subsided.
4. **What should I do if my water is discolored?** If you experience discolored water, run your cold water tap for 3-5 minutes or until it runs clear. Faucet aerators may need to be removed and cleaned.
5. **Is the water safe?** Water is safe to consume during hydrant flushing, but if discoloration does occur refrain from consuming until you have flushed your cold tap.
6. **I live several blocks away from where flushing is occurring. Why is my water discolored?** Sometimes residents who live further away from where flushing is occurring can experience discolored water. This occurs when flushing a hydrant because the water can flow in opposite directions than normal. Certain techniques are used by TRU to minimize these impacts.
7. **How often does hydrant flushing occur?** TRU flushes many parts of the distribution system annually. Various hydrants may be flushed more frequently dependent on water quality.

Information from the EPA

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's safe drinking water hotline (800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune systems disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Environmental Protection Agency's safe drinking water hotline (800-426-4791).

Educational Information

The sources of drinking water, both tap water and bottled water, include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. The City of Two Rivers' source of water is Surface Water, Lake Michigan.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally- occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which shall provide the same protection for public health.

Water Quality Testing and Results

Two Rivers Utilities routinely monitors constituents in your drinking water in accordance with state and federal laws and regulations. All sources of drinking water, including bottled water, are subject to potential contamination by constituents that are naturally occurring or man-made. Those constituents can be microbes, organic or inorganic chemicals, or radioactive materials.

The following table shows the results of our monitoring from the period of January 1, 2024 through December 31, 2024 (unless otherwise noted).

Contaminant (units)	MCL	MCLG	Detected Level	Range	Major Sources	Violation
Disinfection Byproducts						
HAA5, D21 (ppb)	60	60	20	16 - 23	By-product of drinking water chlorination	No
TTHM, D21 (ppb)	80	0	49.8	32.8 – 72	By-product of drinking water chlorination	No
HAA5, D3A (ppb)	60	60	25	17 –19	By-product of drinking water chlorination	No
TTHM, D3A (ppb)	80	0	56.6	37.1 – 69.1	By-product of drinking water chlorination	No
HAA5, D41 (ppb)	60	60	20	15 – 25	By-product of drinking water chlorination	No
TTHM, D41 (ppb)	80	0	52.8	43 – 73	By-product of drinking water chlorination	No
HAA5, D1/D5 (ppb)	60	60	18	13 – 22	By-product of drinking water chlorination	No
TTHM, D1/D5 (ppb)	80	0	45.3	35.3 – 55.2	By-product of drinking water chlorination	No
Inorganics Contaminants						
Antimony Total (ppb)	6	6	0.3	0.3	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	No
Barium (ppm)	2	2	0.023	0.023	Discharge of drilling wastes, metal refineries; Erosion of natural deposits	No
Fluoride (ppm)	4	4	0.7	0.7	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer & aluminum factories	No
Nitrate (N03-N) (ppm)	10	10	0.41	0.41	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	No
Sodium (ppm)	n/a	n/a	14	14	n/a	No
Copper (ppm) (0 of 60 results were above action level)	AL=1.3	1.3	0.19 (90^{th} perc)	0.0018-0.3100	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives	No
Lead (ppb) (3 of 60 results were above action level)	AL=15	0	13 (90^{th} perc)	0.00-37.00	Corrosion of household plumbing systems; Erosion of natural deposits	No
Radioactive Contaminants						
Gross Alpha, Excl. R&U (pCi/l) Sample date 04/21/2020	15	0	0.8	0.8	Erosion of natural deposits	No
Combine Uranium (ug/l) Sample date 04/21/2020	30	0	0.3	0.3	Erosion of natural deposits	No
Unregulated						
Metoachlor (dual) (ppb) Sample date 05/02/2023			0.01	0.00-0.01		No

Contaminant (units)	RPHGS or HAL (PPT)	Detected Level	Range	Sample Date
Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)				
PFBS (ppt)	450000	0.38	0.35 – 0.38	04/26/2023
PFHXS (ppt)	40	0.70	0.65 – 0.70	07/19/2023
PFHXA (ppt)	150000	1.40	1.20 – 1.40	7/19/2023
PFOS (ppt)	20	2.70	1.90 – 2.70	07/19/2023
PFOA (ppt)	20	2.20	2.00 – 2.20	07/19/2023
PFOA & PFOS TOTAL (ppt)	20	4.90	3.90 – 4.90	07/19/2023

Contaminants with a Public Health Groundwater Standard, Health Advisory Level, or a Secondary Maximum Contaminant Level

The following table lists contaminants which were detected in your water and that have either a Public Health Groundwater Standard (PHGS), Health Advisory Level (HAL), or a Secondary Maximum Contaminant Level (SMCL), or both. There are no violations or detections of contaminants that exceed Health Advisory Levels, Public Health Groundwater Standards or Secondary Maximum Contaminant Levels. Secondary Maximum Contaminant levels are levels that do not present health concerns by may pose aesthetic problems such as objectionable taste, odor, or color. Public Health Groundwater Standards and Health Advisory Levels are at which concentrations of the contaminant present a health risk.

Contaminant (units)	SMCL	Detected Level	Range	Major Sources	Violation
Contaminant					
Sulfate (ppm)	250	22	22	Runoff/leaching from natural deposits and industrial wastes	No

Additional Health Information

Lead can cause serious health effects in people of all ages, especially pregnant people, infants (both formula-fed and breastfed), and young children. Lead in drinking water is primarily from materials and parts used in service lines and in home plumbing. Two Rivers Waterworks is responsible for providing high quality drinking water and removing lead pipes but cannot control the variety of materials used in the plumbing in your home. Because lead levels may vary over time, lead exposure is possible even when your tap sampling results do not detect lead at one point in time. You can help protect yourself and your family by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Using a filter, certified by an American National Standards Institute accredited certifier to reduce lead, is effective in reducing lead exposures. Follow the instructions provided with the filter to ensure the filter is used properly. Use only cold water for drinking, cooking, and making baby formula. Boiling water does not remove lead from water. Before using tap water for drinking, cooking, or making baby formula, flush your pipes for several minutes. You can do this by running your tap, taking a shower, doing laundry or a load of dishes. If you have a lead service line or galvanized requiring replacement service line, you may need to flush your pipes for a longer period. If you are concerned about lead in your water and wish to have your water tested, contact Two Rivers Waterworks (Andrew Sukowaty at 920-793-5558). Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at https://www.epa.gov/safewater/lead.

Additional Information on Service Line Materials

We were required to develop an initial inventory of service lines connected to our distribution system by October 16, 2024 and to make the inventory publicly accessible. To view or obtain a copy of the service line material inventory please stop by the Utility Office located at 1415 Lake Street, Two Rivers, WI 54241 during the hours of 6:30am-3:30pm Monday – Thursday and 6:30am-10:30am on Fridays.

Presence of Other Contaminants

UCMR4 testing was completed in 2020 and UCMR5 testing was completed in 2023. No contamination was detected during either testing cycle. Information available upon request.

Other Compliance

Other Drinking Water Regulations Violations

Description of Violation	Date of Violation	Date Violation Resolved
Failed to develop an initial inventory for service line materials that meets federal requirements.	10/17/2024	01/21/2025

Actions Taken

Two Rivers Waterworks worked with Jacobs Engineering as recommended by the WDNR to correct records and plans that were submitted as part of the inventory that did not fully align with reporting requirements. Two Rivers Waterworks was in violation for three months before the violation was resolved.

Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of women who are exposed to lead before or during pregnancy can have increased risk of these adverse health effects. Adults can have increased risks of heart disease, high blood pressure, kidney or nervous system problems.

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the active level over many years could suffer liver or kidney damage. People with Wilsons Disease should consult their personal doctor.

Uncorrected Significant Deficiencies

Deficiency Description & Progress to Date	Date System Notified	Scheduled Correction Date
SD2 – The overflow of the Northside ground reservoir does not terminate in a downward opening with free air break 12 to 14 inches above a splash pad or rip rap as required in s. NR 811.64, Wis. Adm. Code. In addition, there is concern that the area surrounding the discharge pipe above the outlet elevation of 608.25 and water could back up into the pipe if the storm sewer drain is clogged with debris.	10/09/2020	12/31/2026

Actions Taken

Per WDNR representatives an extension for corrective action was granted until 2026 when the reservoir will be scheduled for a drained inspection. The site will be monitored for safety until corrective action is taken.

Turbidity Monitoring

In accordance with s. NR 810.29, Wisconsin Administrative Code, the treated surface water is monitored for turbidity to confirm that the filtered water is less than 0.1 NTU. Turbidity is a measure of the cloudiness of water. We monitor for it because it is a good indicator of the effectiveness of our filtration system. During the year, the highest single point turbidity measurement was 0.080 NTU.

Definitions

AL – Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

HAL – Health Advisory Level is a concentration of a contaminant which, if exceeded, poses a health risk and may require a system to post a public notice. Health Advisories are determined by US EPA.

MCL – Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG – Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

mrem/year – millirems per year (a measure of radiation absorbed by the body).

NTU – Nephelometric Turbidity Units

pCi/l – picocuries per liter (a measure of radioactivity)

ppm – parts per million or milligrams per liter (mg/l)

ppb – parts per billion or micrograms per liter (ug/l)

ppt – parts per trillion or nanograms per liter

RPHGS – Recommended Public Health Groundwater Standards: Ground water standards proposed by the Wisconsin Department of Health Services. The concentration of a contaminate which, if exceeded, poses a health risk and may require a system to post a public notice.

SMCL – Secondary Maximum Contaminant Levels: Contaminants that affect taste, odor, or appearance of the drinking water. The SMCLs do not represent health standards.

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