

City of Appleton Water Supply Service Area Plan



DECEMBER 23

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DEPARTMENT OF
UTILITIES

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- B – Existing Water Distribution System
- C – Municipal Service Area and Wholesale Customer Maps
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1. INTRODUCTION:

1.1. Background

The City of Appleton is a community of approximately 75,000 residents (2023 Census) located in the Fox River Valley of northeastern Wisconsin, at the crossroads of U.S. Interstate 41 and U.S. Highway 47. The City spans portions of Calumet, Outagamie, and Winnebago counties and is situated approximately 90 miles north of Milwaukee and 30 miles southwest of Green Bay. The Appleton Water Utility provides potable water service to residential and commercial customers within the City and supplies wholesale water to three adjacent water systems: the Town of Grand Chute, the Village of Sherwood, and Harrison Utilities.

The Appleton water system includes a surface water treatment plant, six water storage tanks (four elevated), two booster pumping stations, and approximately 379 miles of transmission and distribution water mains. The system is divided into three pressure zones to reliably meet customer demand and maintain adequate service pressures throughout the service area.

Appleton's proximity to major urban centers and key transportation corridors supports continued growth and development. Accordingly, proactive and comprehensive planning is essential to ensure that the expansion and improvement of municipal water system facilities are aligned with both short-term operational needs and the long-term demands of the community.

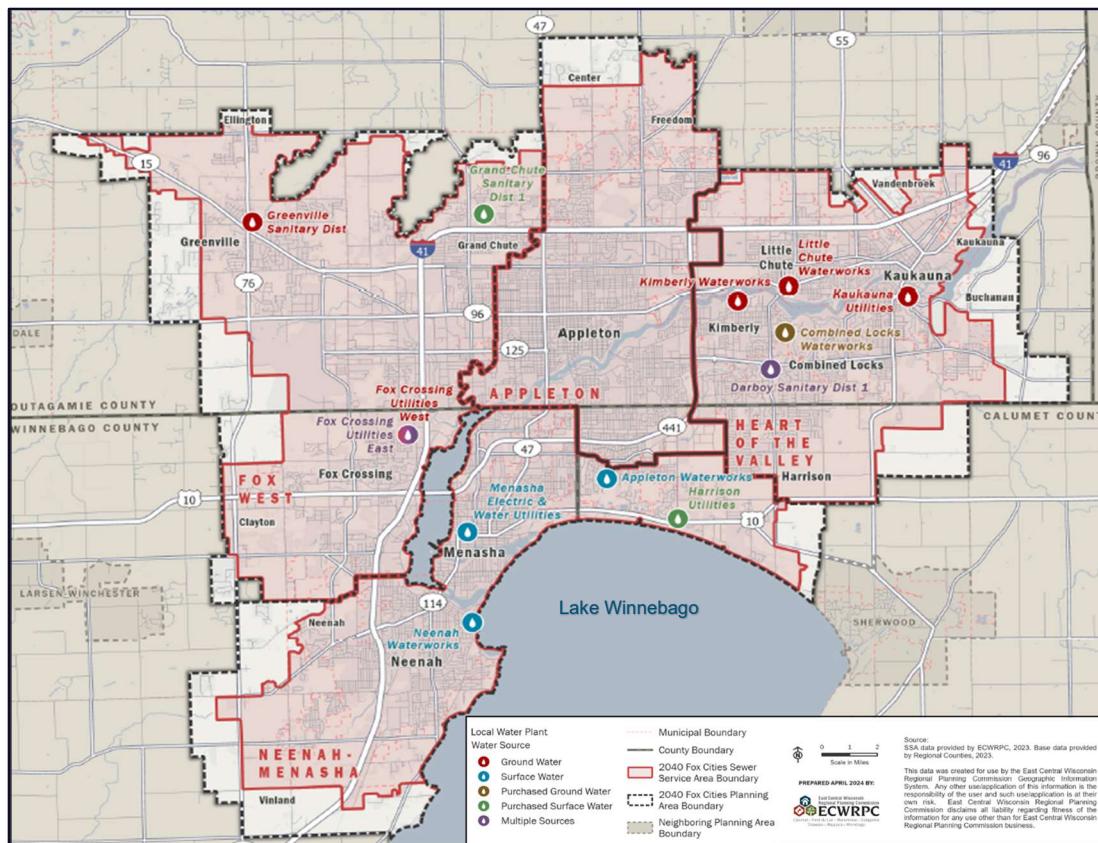


Figure 1: Municipal Boundaries in Vicinity of City of Appleton (Source: Fox Cities 2040 Service Area Plan)

1.2. Purpose

The Wisconsin Department of Natural Resources (WDNR) requires a Water Supply Service Area plan as part of the Straddling Community Water Diversion Application. The purpose of the plan is to illustrate compliance with Section 281.348 of the Wisconsin Statutes as follows:

1. Provide information about existing water sources, population projections and future water demands.
2. Inventory the sources and quantities of the current water supplies in the area.
3. Identify water supply alternatives.
4. Delineate the area to which the public water supply system may provide water.
5. Assess the environmental impacts of carrying out any significant recommendations of the plan.
6. Illustrate how the water supply service area plan supports and is consistent with comprehensive plans for the service area.
7. An opportunity for the public to provide comments on the proposed water supply service area plan

The contents of this Water Supply Service Area plan are derived from the City of Appleton Water System Master Plan completed in October 2019 and subsequent Public Service Commission (PSC) annual report data. The Appleton Water System document was broken into three planning period categories to identify needs and prioritize improvements.

- Short-term improvements (5 years)
- Mid-term improvements (6 to 10 years)
- Long-term improvements (11 to 20 years)

The next planned update of the Appleton Water System Master Plan is scheduled to be completed in 2028.

2. CURRENT CONDITIONS:

This section presents a summary of the existing water system components. A treatment schematic found on the following page depicts overall process from the source supply (Lake Winnebago) through treatment, and then distribution. The general location and layout of the water system facilities including the raw water pump station and supply connection to the Village of Sherwood is illustrated in Attachment A. The transmission system which provides the hydraulic network to transport the water from the Appleton Water Treatment Facility (AWTF) entire distribution system through the City of Appleton is illustrated in the map found within Attachment B. The water system facilities operated and maintained by the City of Appleton are summarized in Table 2-1.

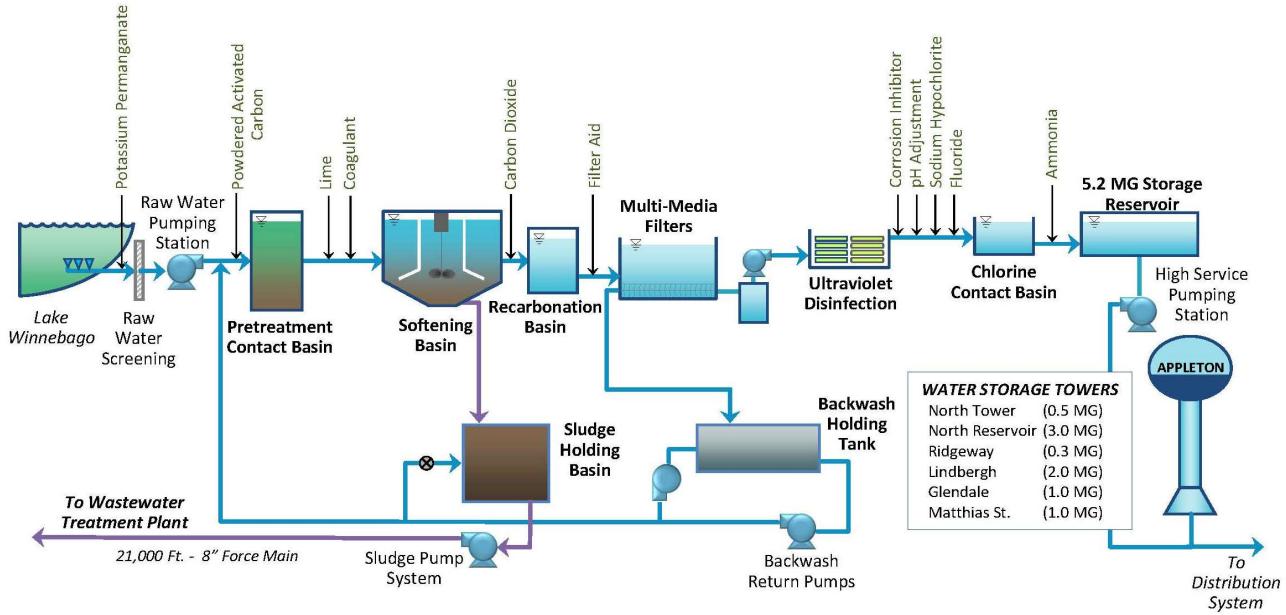


Figure 2: Appleton Water Treatment Facility Process Schematic

Table 2-1: Summary of Water System Components

Water System Components		Description
Water Supply from Lake (raw water)	Lake Intake	<ul style="list-style-type: none"> 1 intake at Lake Winnebago, shore well, 2 station meters
	Pump Station	<ul style="list-style-type: none"> Raw Water Pump Station (5 Pumps)
	Transmission Main	<ul style="list-style-type: none"> Single transmission main from Raw Water Pump Station to AWTF
Treatment, Highlift Pumps and Storage	Plant and Reservoirs	<ul style="list-style-type: none"> Rated for 24 MGD High Lift Pump Station (6 pumps) 2 Reservoir –1.65 MG and 3.65 MG 2 station meters
	Pressure Zones	<ul style="list-style-type: none"> 3 pressure zones – Main Pressure Zone, Ridgeway Pressure Zone, and North Pressure Zone
	Booster Pump Stations	<ul style="list-style-type: none"> 2 booster pump stations
	Storage Tanks	<ul style="list-style-type: none"> 4 elevated water storage tanks – Matthias (recirculation pump), Glendale, North, and Ridgeway 1 standpipe (Lindbergh) 1 reservoir (north)
	Valve Stations	<ul style="list-style-type: none"> 2 stations (Reeve and 47)
	SCADA	<ul style="list-style-type: none"> SCADA system
Water System serving City of Appleton	Water Mains	<ul style="list-style-type: none"> Approximately 379 miles of transmission and distribution water mains
	Wholesale Customers	<ul style="list-style-type: none"> Service to 3 wholesale customers (Town of Grand Chute, Village of Sherwood, and Harrison Utilities)
Emergency Connection		<ul style="list-style-type: none"> One emergency connection with Little Chute

2.1. Water Supply Service Area and Source

The Appleton water distribution system consists of three pressure zones as illustrated in Figure 3 and Attachment B. The Main Pressure Zone serves the majority of the water system including the lower elevations along the Fox River. The ground elevations served by the Main Pressure Zone are approximately 710 feet to 830 feet. The two high level pressure zones, the Ridgeway Pressure Zone and the North Pressure Zone, serve areas of higher elevation to the north. The Ridgeway Pressure Zone serves elevations from approximately 780 feet to 849 feet, and the North Pressure Zone serves elevations from approximately 784 feet to 902 feet.

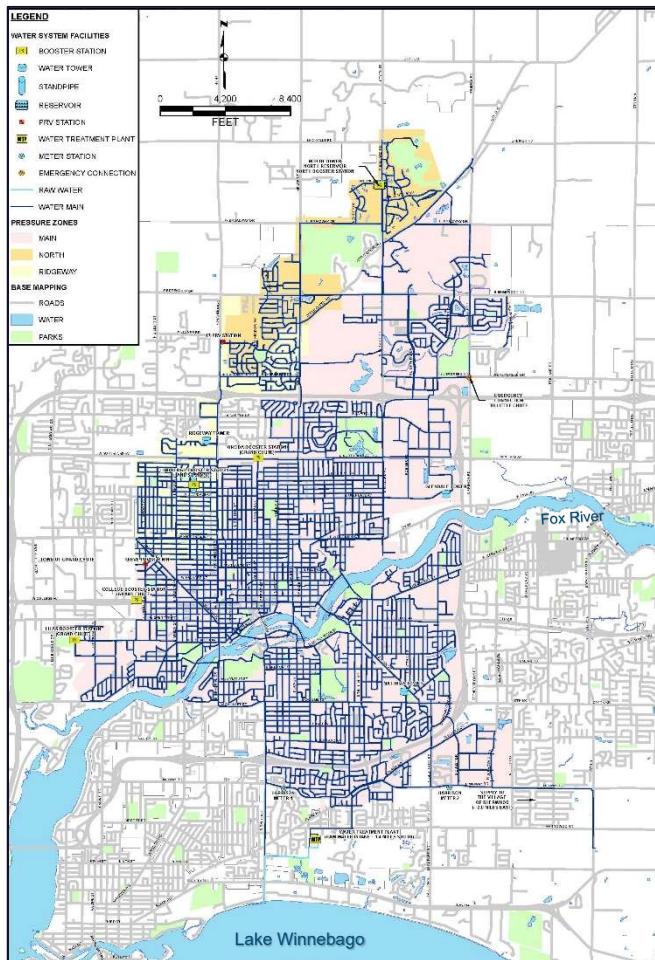


Figure 3: Appleton Distribution System

Critical transmission mains in the Appleton water system include the two discharge transmission mains from the AWTF and the river crossings. There is currently a 42-inch main on Oneida Street and a 36-inch main on Kernan Avenue which transport water from the high lift pumps at the AWTF into the distribution system. The first connections into the distribution system occur at Oneida Street and Calumet Street and Kernan Avenue and Meadow Grove Boulevard.

The City's water distribution system provides a means of transporting and distributing water from the supply sources to the customers and other points of usage. The distribution system must be capable of supplying adequate quantities of water at reasonable water system pressures throughout the service area under a range of operating conditions. Furthermore, the distribution system must be able to provide not only uniform distribution of water during normal and peak water demand conditions but must also be capable of delivering adequate water supplies for fire protection purposes.

The water system consists of approximately 379 miles of water main ranging in size from 1-inch to 42-inches in diameter. Of the approximately 379 miles of water main nearly 12 percent are 16 inches and larger which represent the primary mains that transmit the water throughout the system.

Currently, the City of Appleton supplies water to the following three wholesale customers:

- Town of Grand Chute Sanitary District
- Village of Sherwood
- Harrison Utilities

A Fox Cities municipal service area map and individual wholesale customer maps are provided in Attachment C for reference.

2.1.1. Town of Grand Chute

The City of Appleton has supplied water to the Town of Grand Chute Sanitary District since 1975. Currently, the Town of Grand Chute serves nearly 8,500 customers and has the following three booster stations which supply water from the City of Appleton water system to Grand Chute:

- Oneida Street Booster Station (two 1,600 gallon per minute (gpm) pumps)
- College Avenue Booster Station (two 700 gpm pumps)
- Lilas Drive Booster Station (two 700 gpm pumps)

The general locations of the booster stations are illustrated within Attachment A and B. Pump 1 at each of the booster stations has a variable frequency drive (VFD). The Town of Grand Chute Sanitary District currently has two active elevated storage tanks with capacities of 1.0 million gallons (MG) and 0.75 MG.

2.1.2. Village of Sherwood

The Village of Sherwood serves approximately 1,300 customers and is supplied water from the City of Appleton via a 16-inch water main on County Trunk Highway (CTH N) via a transfer pump station with a 500-gpm pump. The Village has a 0.2 MG elevated tank.

2.1.3. Village of Harrison

Harrison Utilities serves approximately 2,500 customers near the north shore of Lake Winnebago in the Town of Harrison and the City of Menasha. Currently, the City of Appleton has two connections to the Harrison Utilities located on Midway Road. The Harrison Utilities also has an emergency connection to the Town of Menasha.

2.2. Population and Community Growth

This section summarizes the planning assumptions made regarding future service area characteristics within the Appleton Water Utility service area. The population and community growth discussed in this section are the basis for water requirement projections for Appleton presented in Section 4.

2.2.1. Population

There is generally a close relationship between a community's population and total water consumption. Future water sales are generally expected to reflect future changes in service area population. For the Appleton, consideration also needs to be given to the existing/future wholesale customer population changes.

2.2.2. City of Appleton Population Trends

Table 3-1 summarizes past and projected population trends for the City of Appleton. In the 2023, U.S. Census Appleton's population totaled 74,873 people. According to the

Wisconsin Department of Administration (DOA), the City has an estimated population of 76,303 people in 2025. Since 1970, the City of Appleton has steadily grown an average of approximately 0.7 percent each year. According to the DOA and the City Comprehensive Plan, the City of Appleton will continue to peak to a projected 80,650 people by 2040, an approximately 6 percent increase from 2025.

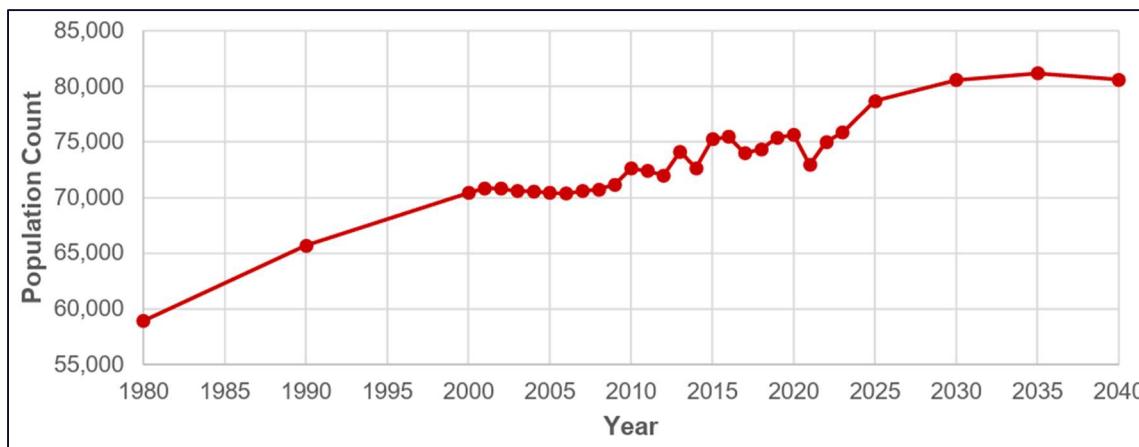


Figure 4: Appleton Population Over Time

Sources: U.S. Census American Community Survey 5-Year Estimates Table B01001. Total Population, 2023, WI Demographics Services Center, Municipal Population Projections from 2010-2040, Vintage 2013 (latest available).

2.2.3. Existing Wholesale Customer Population Projections

Appleton currently provides water to the **Town of Grand Chute, Harrison Utilities, and Village of Sherwood**. Table 2-2 summarizes historical population from 2010 to present and future population projections to 2040 for the City of Appleton including surrounding wholesale customer communities based on Wisconsin DOA data.

The Town of Grand Chute, Village of Harrison, and Village of Sherwood although smaller in total population have increased in population the last 10 years an average of approximately 20 percent and are projected to increase by another 15% percent or more over the next 15 years. Growth in the greater Fox Valley area is expected to plateau or curtail by 2040.

Table 2-2: Population Trends of Existing Wholesale Customers

Community	Population						Percent Change	
	Census 2010	Census 2020	DOA 2025	Projection 2030	Projection 2035	Projection 2040	2010- 2025	2020- 2040
City of Appleton	72,623	75,644	76,303	80,570	80,605	80,100	5.1%	5.0%
Town of Grand Chute	20,919	23,831	24,458	24,565	25,274	25,270	16.9%	3.3%
Village of Harrison ¹	--	12,418	15,623	16,591	19,851	21,675	--	38.7%
Village of Sherwood	2,713	3,114	3,414	3,224	3,191	3,052	25.8%	-10.6%

Source: Wisconsin Department of Administration.
Footnotes: Village of Harrison was created in 2013.

2.3. Land Use

The City of Appleton Comprehensive Plan was first adopted in 2010 and revised in 2017. The City recently repealed and recreated its entire Comprehensive Plan which was approved by the Appleton Common Council on November 19, 2025. The new plan, "Plan Appleton" replaces the previous "City of Appleton Comprehensive Plan 2010-2030". It creates a community vision and addresses issues and opportunities, housing, transportation, utilities, community facilities, agricultural, natural resources, cultural resources, economic development, intergovernmental cooperation, and land use elements of the City. The plan serves as a Citywide framework for guiding investments, informing public and private decision-making, and coordinating various initiatives.

A future land use map from Plan Appleton is provided in Figure 6 on the following page. An existing land use map of the greater Fox Cities is found in Attachment D. The depicted land uses within the Appleton service area include a mix of residential (single/multi-family), commercial (retail, hospitality), industrial (manufacturing, logistics), institutional/public (schools, government), recreational/open space (parks, greenways), and some remaining agricultural land, with a push towards future mixed-use developments, infill, and redevelopment to balance growth, preserve resources, and enhance urban areas.

2.3.1. Source Water Quality

Lake Winnebago and its upstream tributaries are significantly affected by nonpoint-source pollution, particularly from agricultural activities and urban stormwater runoff. Elevated sediment loads and excessive nutrients, specifically phosphorus, drive harmful algal blooms that can create taste and odor issues, increase organic loading, and contribute to low-oxygen conditions in the source water.

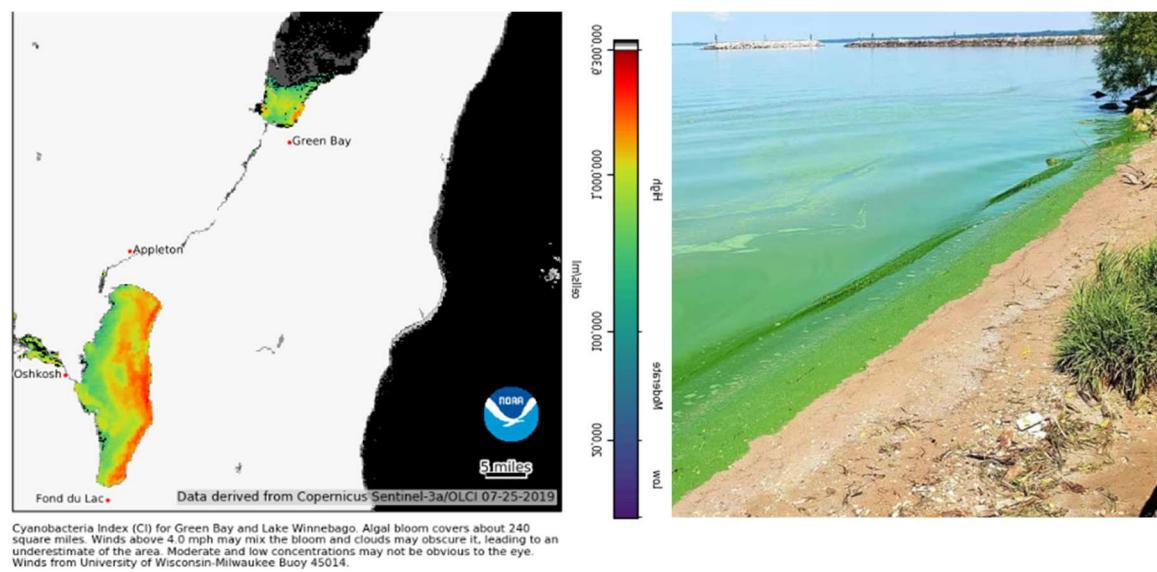


Figure 5: NOAA Satellite Monitoring: Blue-green Algal Blooms from Space and Photo of Northeast Shore of Lake Winnebago

While the AWTF is designed to reliably remove these solids, nutrients, and associated contaminants to produce safe, high-quality drinking water, treating increasingly variable and degraded source water requires more intensive processes, greater chemical use, and higher operational costs.

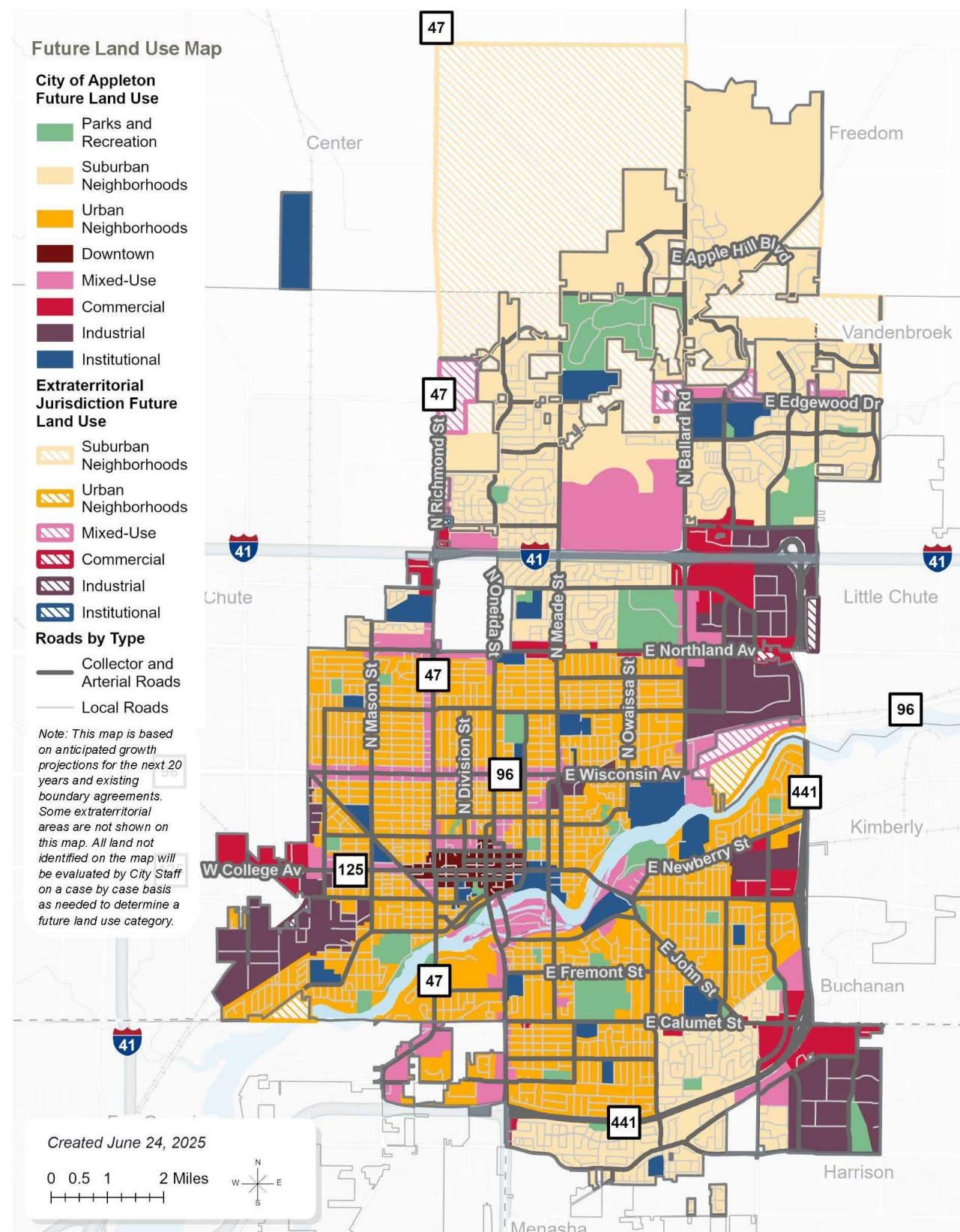


Figure 6: Future Land Use Map (Source: Plan Appleton)

3. WATER USE BY CUSTOMER SECTOR

This section summarizes historic water demands and pumpage since 1990 for each customer sector serviced by the Appleton Water Utility.

3.1. Water Consumption and Metered Sales

Generally, a close relationship exists between the total gallons of water pumped, and the gallons of water metered and sold to water utility customers. Total metered water sales are less than the amount of pumpage due to several factors and the difference is termed non-revenue water (NRW).

Although total water sales have not varied drastically over the past 30 years, the characteristics of water sales have changed. As residential, public, and industrial water sales have declined, the City of Appleton began to supply additional wholesale customers. Figure 7 depicts the water use by sector today and a summary of the changes in customer sector consumption since 1990 is summarized in Table 3-1.

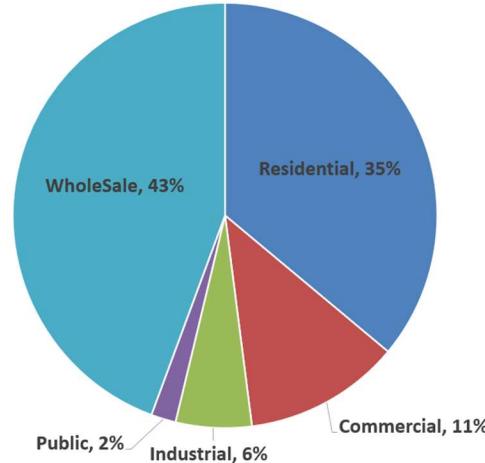


Figure 7: Appleton Water Use by Sector (2024).

Table 3-1: Summary of Historical Metered Water Sales

Customer Sector	1990 Sales (MGY)	2018 Sales (MGY)	2024 Sales (MGY)	1990-2024 Percent Change	2018-2024 Percent Change
Residential	1,189	1,008	983	-17%	-2%
Commercial ¹	448	348	325	-27%	-7%
Multifamily Residential ¹	-	116	113	--	-3%
Industrial	470	223	158	-66%	-29%
Public	92	66	51	-45%	-23%
Wholesale ²	423	1,188	1,209	186%	2%
Total	2,621	2,948	2,839	8%	-4%

Footnotes:

¹ Prior to 2013, multifamily residential was reported as commercial.

² Wholesale customers in 2018 include Village of Sherwood, Town of Grand Chute, and Harrison Utilities

Note: MGY is million gallons per year

Source: Appleton Water Utility Annual PSC report.

Historical water sales since 1990 have varied from a low of 2,621 million gallons per year (MGY) in 1990 to a high of 3,409 MGY in 1998. Sales in residential, public, and industrial sectors are generally decreasing throughout the period. However, overall water sales have increased approximately 8 percent from 1990 to 2024 because of wholesale customer sales offsetting the decrease in sales to other customers.

Historical water usage by customer sector for the Appleton Water Utility (including wholesale customers) is illustrated in Figure 8 and Figure 9. Although historical usage by sector appears to decrease for the Utility, when analyzed for the City of Appleton, it has been relatively constant over the planning period with the decline in percentage of sales a result of the addition of wholesale customers. The historical number of customers served has been relatively constant. Approximately 92 percent of the nearly 28,500 customers are residential and multi-family customers

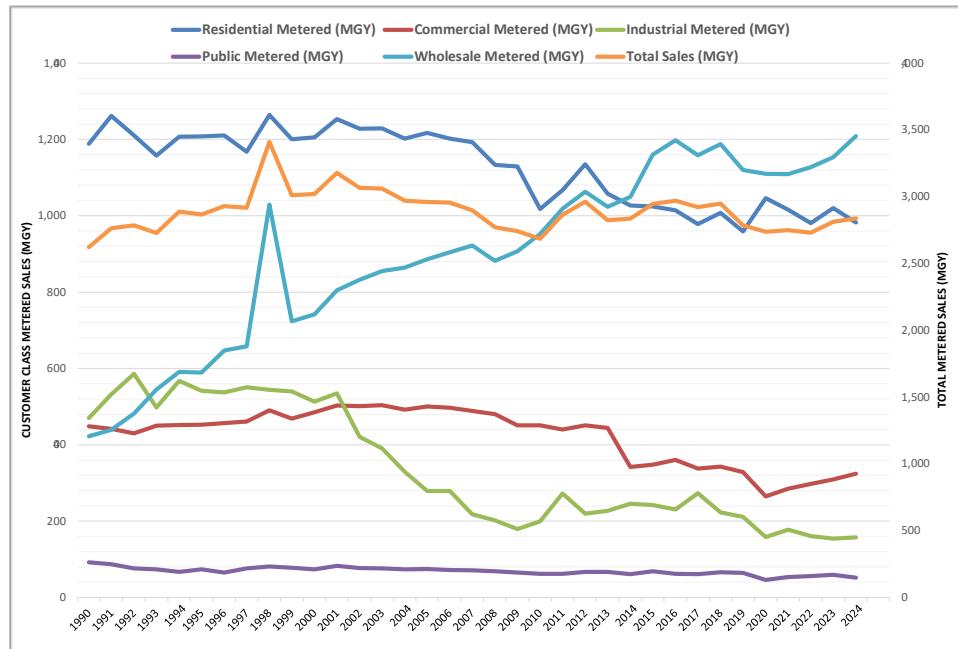


Figure 8: Appleton Water Sales and Pump History (1999-2024)

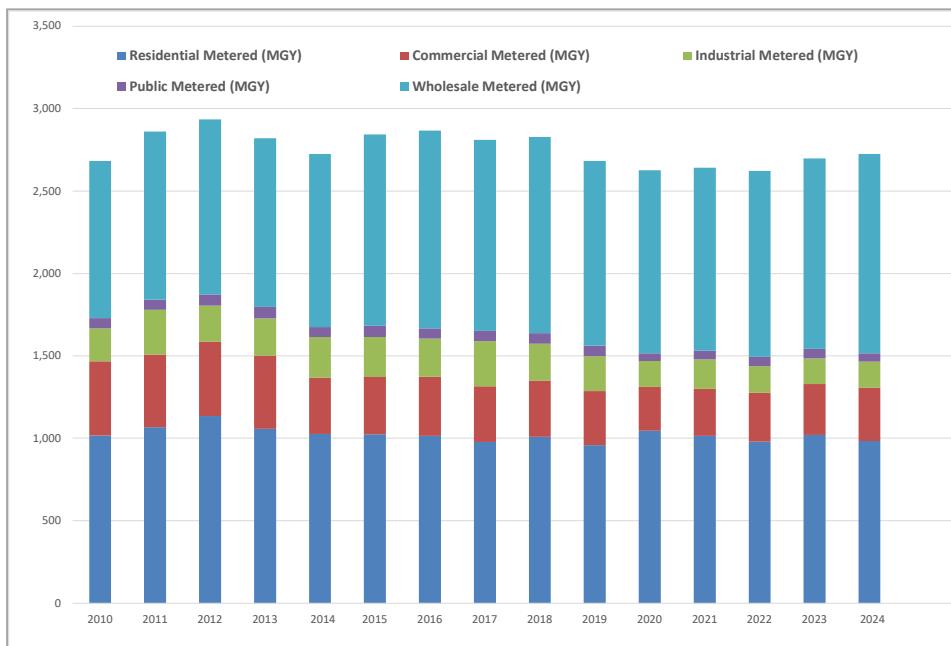


Figure 9: Water Use Summary by Sector (2010-2024)

Table 3-2: Historical Number of Customers Served

Year	Residential	Commercial	Industrial	Public Authority	Multifamily Residential	Wholesale	Total
1990	20,468	1,554	128	67	-	2	22,219
1991	20,821	1,585	130	69	-	2	22,607
1992	21,398	1,569	107	86	-	2	23,162
1993	21,457	1,607	122	110	-	1	23,297
1994	21,413	1,578	106	90	-	1	23,188
1995	21,900	1,668	123	94	-	1	23,786
1996	22,010	1,639	120	70	-	1	23,840
1997	22,170	1,628	96	68	-	2	23,964
1998	22,378	1,609	98	71	-	2	24,158
1999	22,596	1,591	87	56	-	2	24,332
2000	22,924	1,628	95	58	-	2	24,707
2001	23,158	1,638	95	71	-	2	24,964
2002	23,485	1,643	93	57	-	2	25,280
2003	23,854	1,696	92	83	-	2	25,727
2004	24,144	1,721	88	87	-	2	26,042
2005	24,266	1,749	87	88	-	2	26,192
2006	24,405	1,782	84	88	-	2	26,361
2007	24,469	1,788	88	88	-	2	26,435
2008	24,580	1,810	84	90	-	2	26,566
2009	24,665	1,823	83	91	-	2	26,664
2010	24,778	1,827	79	90	-	3	26,777
2011	24,867	1,847	77	90	-	3	26,884
2012	24,948	1,835	76	91	-	3	26,953
2013	25,153	1,868	72	92	-	3	27,188
2014	25,202	1,700	73	94	298	3	27,370
2015	25,280	1,721	75	95	311	3	27,485
2016	25,442	1,704	75	94	322	3	27,640
2017	25,532	1,743	76	95	322	3	27,771
2018	25,582	1,709	76	96	340	3	27,806
2019	25,637	1,754	74	99	335	3	27,902
2020	25,699	1,748	72	100	346	3	27,968
2021	25,831	1,731	70	101	352	3	28,088
2022	25,930	1,723	70	105	353	3	28,184
2023	26,049	1,727	69	110	354	3	28,312
2024	26,203	1,747	68	114	324	3	28,459

3.1.1. Water Pumpage

Water sales and pumpage data since 1990 is summarized within Appendix F. Over the last 30 years, finished water pumpage has varied from a high of 4,015 MGY in 1998 to a low of 3,086 MGY in 2010 (reference Figure 8). Since 1998 finished water pumpage has decreased with it generally leveling off for the past 10 years with finished water pumpage averaging approximately 9 MGD.

3.1.2. Per Capita Water Usage

Residential, multifamily, commercial, and public water use are closely related to the City of Appleton's population. Per capita water consumption for each customer class is evaluated using historical sales records. Based on that analysis, residential and commercial per capita water use has declined since 1998. Residential per capita consumption has gradually decreased from approximately 49.8 gallons per capita per day (gpcd) in the late 1990s to about 36 gpcd in recent years due to sustained conservation initiatives, adoption of water-efficient fixtures and appliances, system-wide metering, and evolving residential water-use patterns. This level of residential water use is consistent with comparable water utilities across Wisconsin. For purposes of projecting future water demand, a conservative five-year maximum residential per capita consumption rate of 38 gpcd was used (five-year average of 37.3 gpcd).

3.1.3. Wholesale Customers

The Appleton Water Utility currently has the following three wholesale customers which include the Town of Grand Chute, Harrison Utilities, and Village of Sherwood.

Table 3-3 summarizes the wholesale customer sales from 2008 to 2024 for Appleton as reported in the Appleton PSC report (metered by Appleton). In 2024, wholesale sales accounted for approximately 43 percent by volume of the total sales (37% by revenue) with the Town of Grand Chute being the largest user.

TABLE 3-3: Wholesale Customer Sales

Year	Wholesale Sales (MGY)				Total Metered (MGY)	Percent of Total Sales
	Grand Chute	Harrison Utilities	Village of Sherwood	Total Wholesale		
2010	801.4	117.7	33.4	952.4	2,685.7	35.5%
2011	845.9	117.2	55.8	1,018.9	2,864.3	35.6%
2012	876.9	128.0	57.5	1,062.4	2,962.2	35.9%
2013	843.7	125.0	54.8	1,023.5	2,822.7	36.3%
2014	861.7	131.6	56.7	1,049.9	2,835.2	37.0%
2015	956.0	141.6	62.3	1,159.9	2,946.2	39.4%
2016	997.6	137.7	62.9	1,198.2	2,971.3	40.3%
2017	969.3	126.6	62.7	1,158.6	2,921.1	39.7%
2018	980.9	138.6	68.5	1,188.0	2,948.1	40.3%
2019	902.1	140.2	67.7	1,110.0	2,774.3	40.0%
2020	936.3	115.7	67.6	1,119.5	2,744.9	40.8%
2021	897.2	141.6	70.2	1,109.0	2,747.9	40.4%
2022	904.3	151.1	71.7	1,127.1	2,729.6	41.3%
2023	898.4	174.2	80.7	1,153.3	2,810.4	41.0%
2024	956.8	167.3	84.9	1,208.9	2,837.8	42.6%

Historical usage for each of the existing and potential wholesale customers over the past 10 years has not changed significantly as a function of volume. The Town of Grand Chute usage (pumpage) has increased by approximately 11 percent (95 MGY), Harrison Utilities 27% (36 MGY), and the Village of Sherwood 50% (28 MGY) since 2014.

4. WATER SUPPLY ANALYSIS

4.1. Reliable Supply Capacity

The rated capacity of the AWTF is 24 MGD following the 2015 project upgrades which eliminated the ultrafiltration system. The actual combined pumping capacity of the high lift booster pumps is less than the rated capacities due to the hydraulic limitations imposed on the pumps by the transmission main system leaving the AWTF. Therefore, the reliable supply capacity of the water system is limited by the reliable high lift booster pumping capacity of approximately 22 MGD. However, based on the last Master Distribution Plan update the AWTF has adequate pumping/treatment reliable supply to meet existing and projected maximum day demands of approximately 14.9 MGD and 17.7 MGD, respectively.

5. SUPPLY RELIABILITY

For a water utility to effectively serve its customers and protect public health and welfare, its facilities, equipment, and distribution system must be reliable under all operating conditions. Service reliability represents a significant portion of the Utility's investment in infrastructure and equipment. Wisconsin Administrative Code NR 811.30 requires all pumping stations to be supplied by power from at least two independent electrical substations or from a dedicated standby or auxiliary power source serving water supply operations. As a general planning objective, the City of Appleton should be able to meet average day water demands and maintain adequate fire protection using auxiliary power sources alone.

The City of Appleton has standby power available at the AWTF and the North Booster Station. Both facilities are capable of continued operation using on-site emergency generators during power outages or other electrical interruptions. In addition, the Lindbergh Booster Station is equipped with a transfer switch that allows connection of a portable generator in the event of a power interruption. Collectively, these provisions allow the City to maintain water supply during most power-related emergencies.

Additional supply reliability considerations arise from the fact that the AWTF, which draws raw water from Lake Winnebago, is the sole source of supply for the Appleton water system. The raw water intake integrated portable bypass pumping capability, a second shore well, and an intermediate raw water pipe intake door as part of a previous Pump Station upgrade project. Those improvements can deliver 8 million gallons per day to the if a failure were to occur at the lake intake structure. A second raw water pipe and intake structure remains on the Utilities long-term capital plan.

6. Plan Public Input and Implementation

The Department of Utilities leadership routinely monitors changes in water demand, municipal growth patterns, and applicable regulatory requirements (including those of the

EPA, DNR, and PSC). These factors inform the timing and scope of updates to the City of Appleton Water System Master Plan.

The most recent Master Plan update was completed in 2019, with the next update anticipated in 2028. The Master Plan is presented to the Appleton Common Council through a public hearing process to allow for community input and transparency.

Findings and recommendations from the Water System Master Plan directly inform the Department of Utilities' five-year Capital Improvements Program (CIP). The CIP is reviewed and presented annually to the Appleton Common Council for consideration and adoption.

7. Plan Consistency

The population projections and land use assumptions used in this report are consistent with those contained in the City of Appleton Comprehensive Plan. This Water Supply Plan is intended to align with broader municipal planning efforts and long-term development goals.

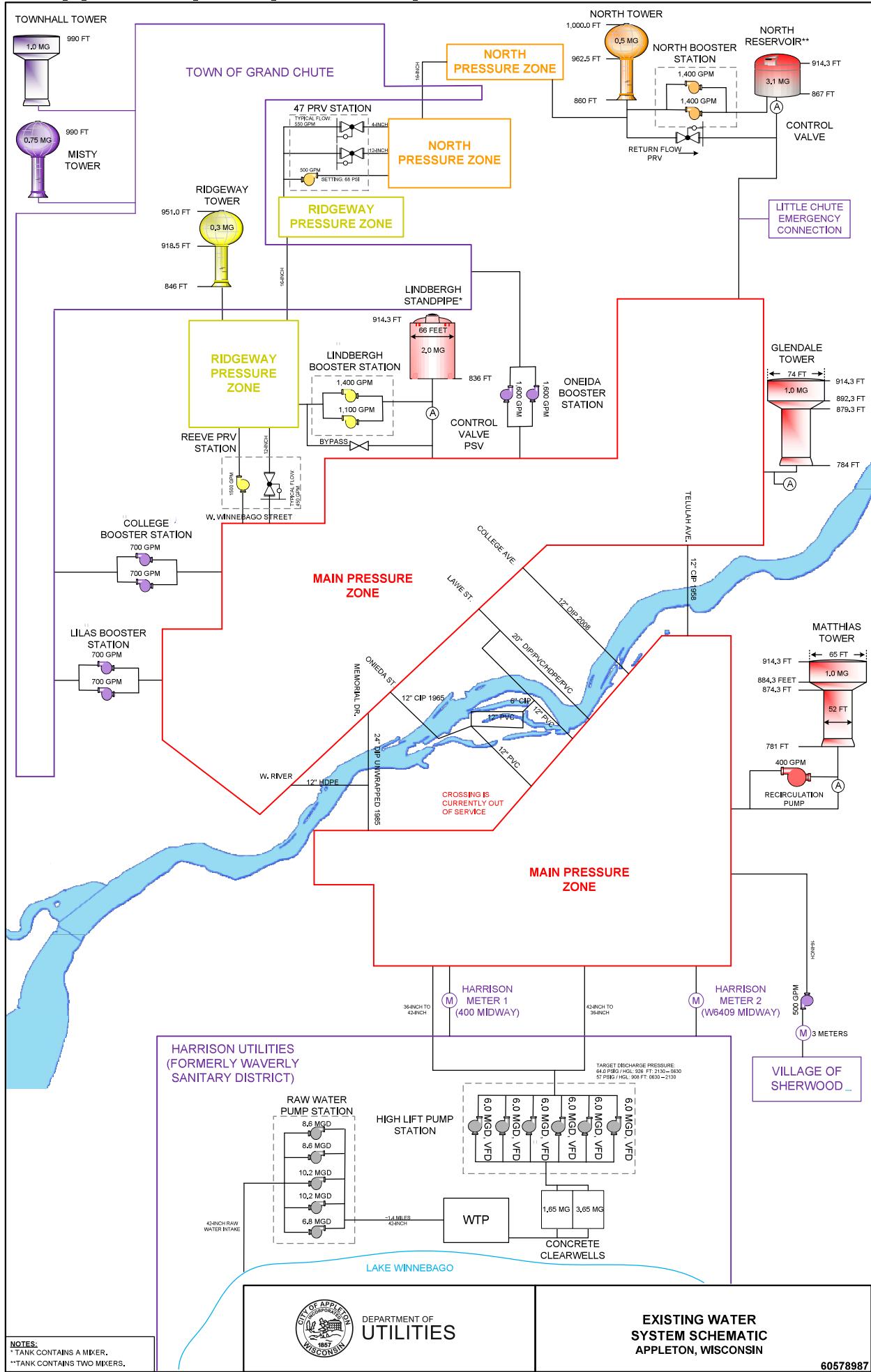
Additional plans and documents referenced in the development of this Water Supply Plan include:

- City of Appleton Comprehensive Plan
- City of Appleton Water System Master Plan
- Fox Cities 2040 Sewer Service Plan
- Public Service Commission (PSC) reports
- City of Appleton Capital Improvements Program
- Applicable state and federal regulatory guidance

ATTACHMENTS

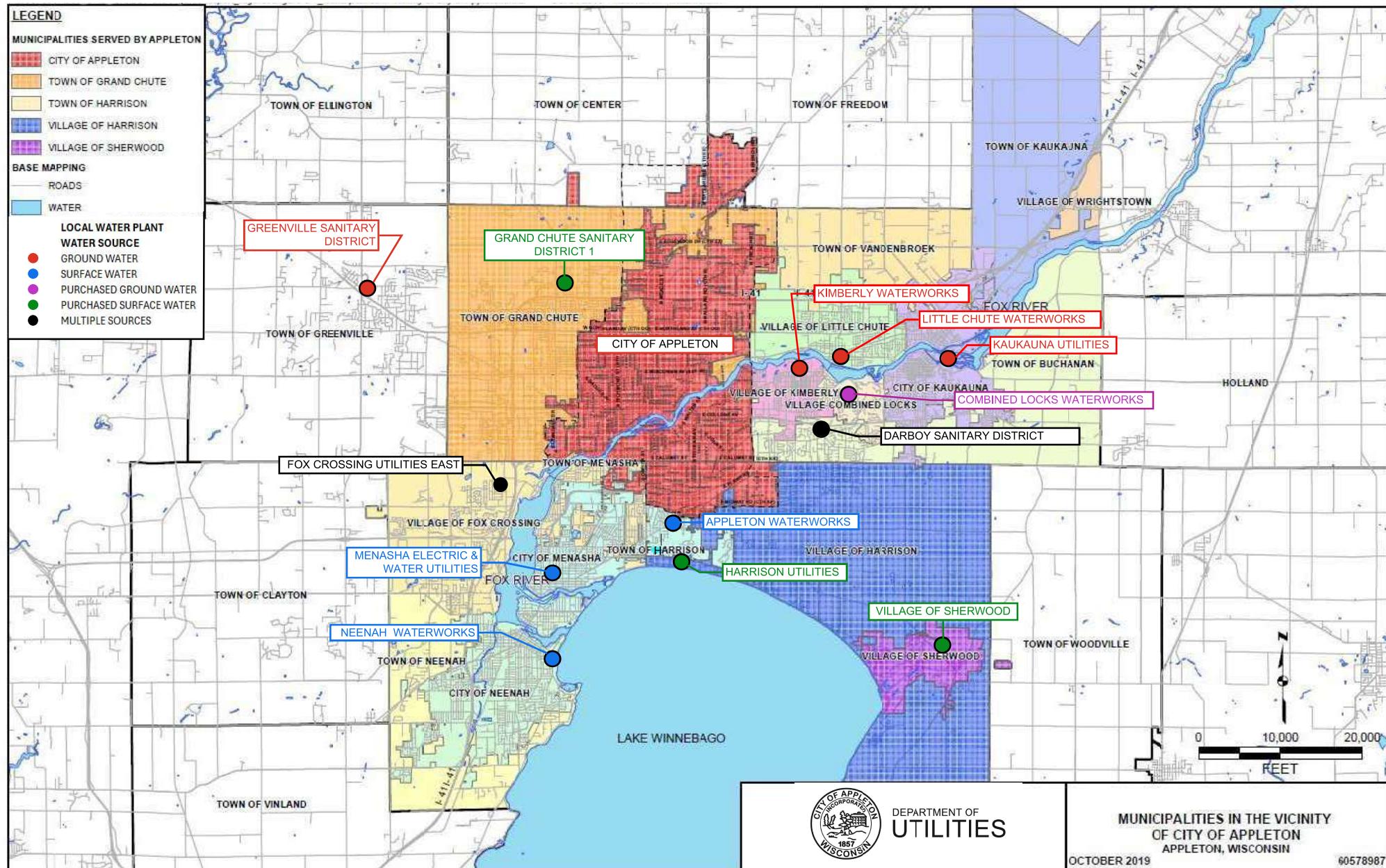
- A – Existing Water System Schematic
- B – Existing Water Distribution System
- C – Municipal Service Area and Wholesale Customer Maps
- D – Existing Land Use Map of Fox Cities Area
- F – Water Sales and Pump History Table

A – Existing Water System Schematic

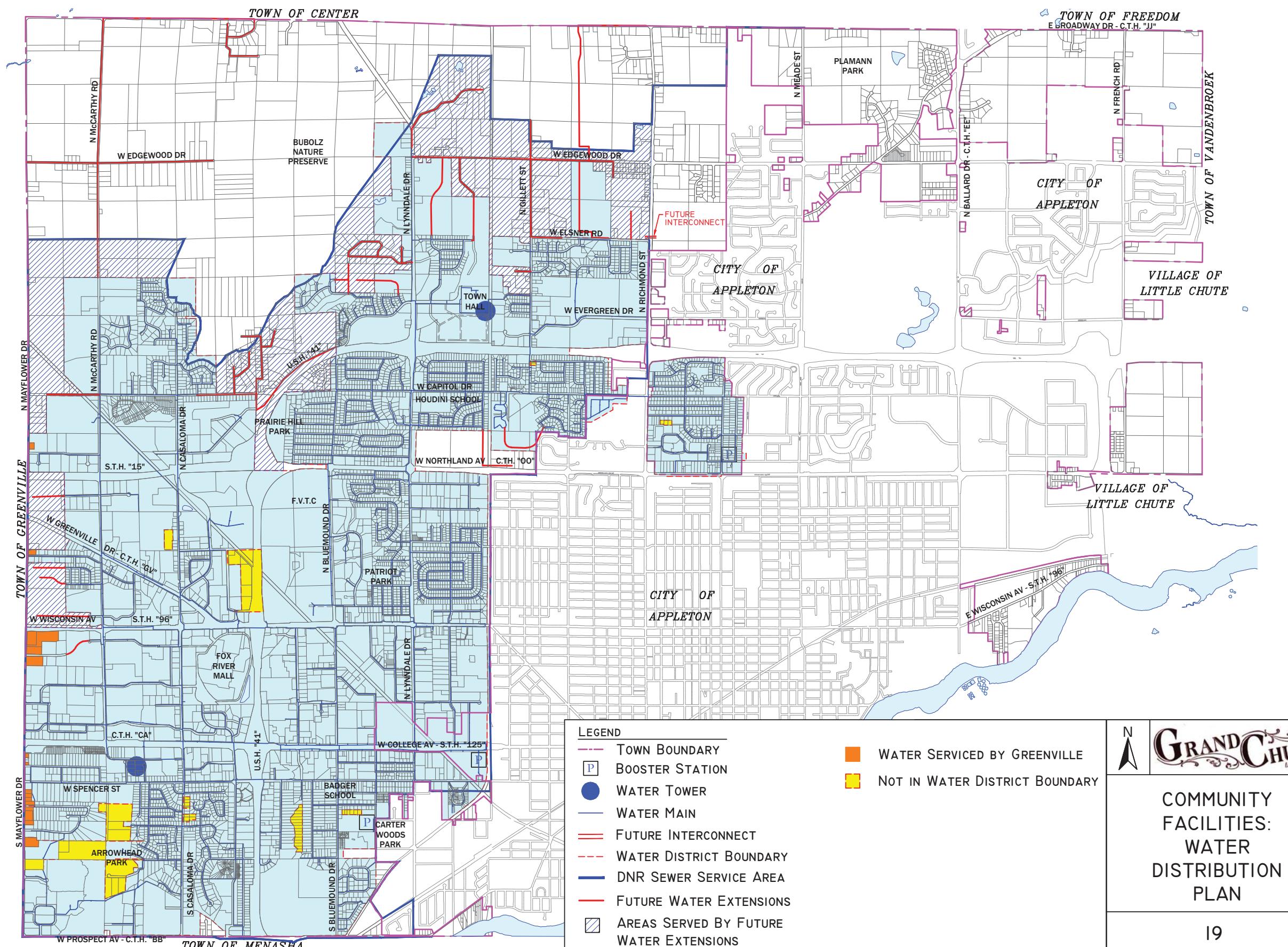


B – Existing Water Distribution System

C – Municipal Service Area and Wholesale Customer Maps



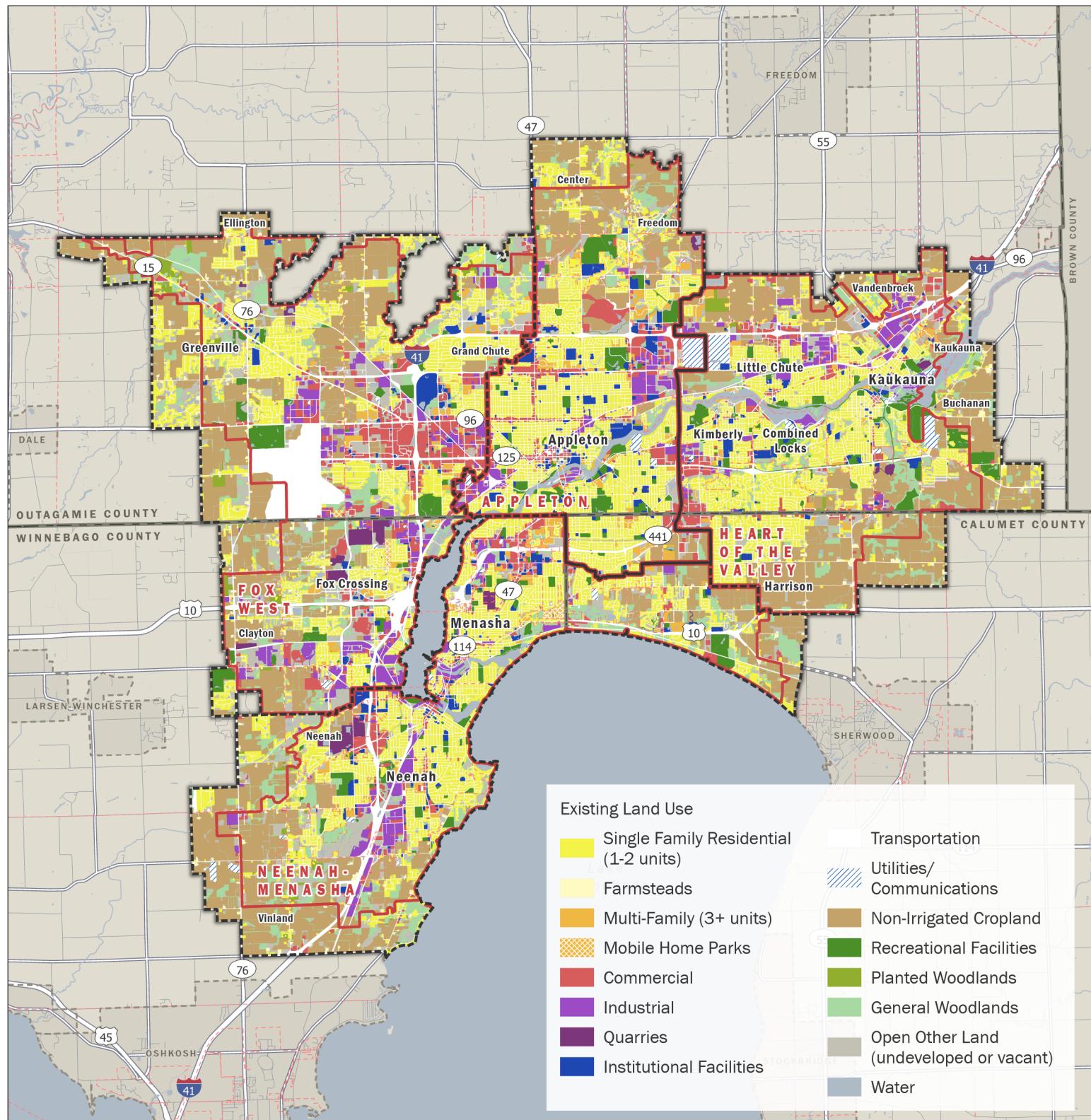
SOURCE: 2019 APPLETON MASTER DISTRIBUTION PLAN (AECOM)



D – Existing Land Use Map of Fox Cities Area

Fox Cities Sewer Service Areas - Existing Land Use

Map 7



 Municipal Boundary

 County Boundary

 2040 Fox Cities Sewer Service Area Boundary

 2040 Fox Cities Planning Area Boundary

 Neighboring Planning Area Boundary

0 1 2
Scale in Miles

PREPARED APRIL 2024 BY:

F – Water Sales and Pump History Table

TABLE 3-4: WATER SALES AND PUMPAGE HISTORY

Year	Annual Water Sales (MGY)										Sales for Resale (MGY)			Wholesale Metered (MGY)	Total Sales (MGY)	Raw Water (MGY)	Finished Water Pumpage (MGY)	Percentage Use Sector							
	Residential		Commercial		Industrial		Public Authority		Multifamily Residential		Grand Chute		Harrison		Sherwood			Residential	Commercial	Industrial	Public	WholeSale			
	Residential Metered (MGY)	Unmetered	Commercial Metered (MGY)	Unmetered	Industrial Metered (MGY)	Unmetered	Public Metered (MGY)	Unmetered	Metered	Unmetered	422.58	439.58	482.04	545.22	591.45	589.11	646.91	646.91	2,927.92	3,248.44	45%	17%	18%	3%	16%
1990	1,188.69	-	448.40	0.24	469.85	-	91.56	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	3%	16%
1991	1,261.25	-	441.98	1.11	532.12	-	87.48	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	3%	16%
1992	1,210.43	-	430.32	0.40	585.44	-	76.19	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	3%	16%
1993	1,157.60	-	450.25	5.21	497.79	-	73.33	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	3%	20%
1994	1,206.95	-	452.30	2.65	567.25	-	66.94	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	2%	20%
1995	1,208.25	-	452.65	1.80	541.42	-	73.95	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	3%	21%
1996	1,211.01	-	456.77	10.15	537.66	-	65.42	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	2%	22%
1997	1,167.95	-	461.46	1.41	550.71	-	76.19	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	3%	23%
1998	1,264.15	-	490.37	0.04	544.40	-	80.81	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	2%	30%
1999	1,200.49	-	468.37	0.02	539.83	-	77.63	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	3%	24%
2000	1,205.60	-	485.56	0.04	513.12	-	73.64	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	2%	25%
2001	1,253.11	-	502.79	0.00	534.88	-	82.75	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	3%	25%
2002	1,228.27	-	501.30	5.28	420.93	-	76.94	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	3%	27%
2003	1,229.05	-	503.69	5.77	390.03	-	76.57	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	18%	3%	28%
2004	1,202.09	-	492.14	8.18	328.89	-	73.87	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	11%	2%	29%
2005	1,217.10	-	500.14	1.91	279.55	-	74.47	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	9%	3%	30%
2006	1,202.17	-	496.85	0.29	279.10	-	72.18	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	9%	2%	31%
2007	1,192.59	-	488.54	4.53	218.08	-	71.16	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	8%	2%	32%
2008	1,133.30	-	480.68	5.62	201.92	-	68.42	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	7%	2%	32%
2009	1,129.36	0.63	450.90	10.47	179.50	-	65.08	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	7%	2%	33%
2010	1,017.37	-	451.01	3.86	199.18	-	61.81	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	7%	2%	35%
2011	1,066.90	-	440.53	3.29	272.31	-	62.30	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	10%	2%	36%
2012	1,134.91	-	451.15	26.96	219.43	-	67.35	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	7%	2%	36%
2013	1,057.72	-	443.64	3.62	226.87	-	67.35	-	-	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	8%	2%	36%
2014	1,026.71	-	341.90	3.93	245.51	-	61.40	-	105.82	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	9%	2%	37%
2015	1,024.38	-	347.39	3.45	242.25	-	68.79	-	100.03	-	422.58	439.58	-	482.04	545.22	591.45	589.11	646.91	2,927.92	3,248.44	45%	17%	8%	2%	39%
2016	1,014.39	-	360.36	3.14	230.03	-	62.23	-	102.																