

CHAPTER 3

OVERVIEW OF STUDY AREA

INTRODUCTION

The Town of Salem has had a long history of concern for environmental protection of the local natural resources. As part of the concern for natural resource protection, the Town has funded a storm water management study. The study area, shown on Figure 1-1, is approximately 20,648 acres (32.3 square miles) in size. The following chapter provides an overview of the physical features of the study area, including land use, population projections, historical sites, climate, soils, environmental resources, and drainage facilities. Roadway classifications for all roads within the Town are shown on Figure 3-1.

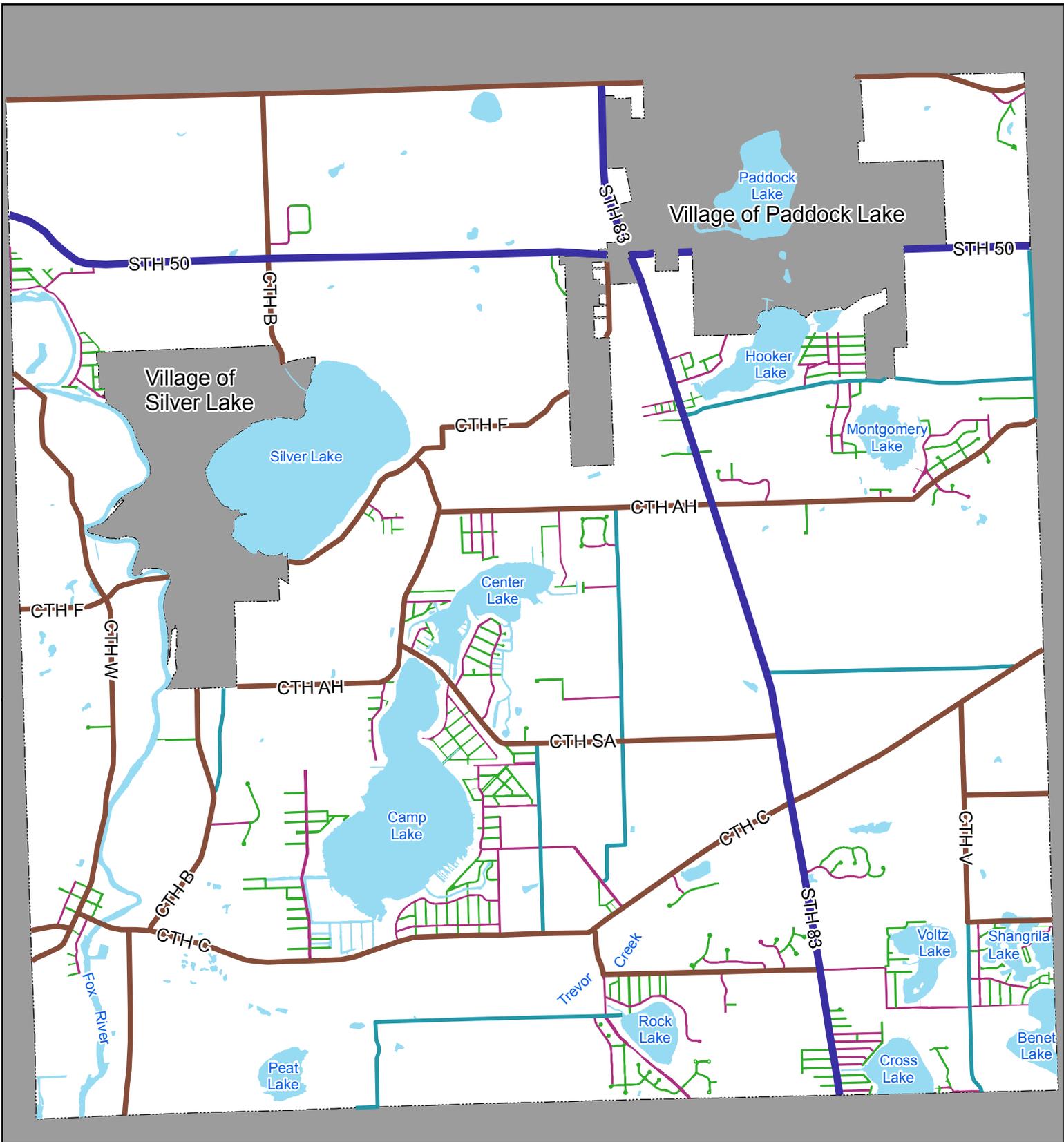
LAND USE

The existing land use condition is characterized as the development in place defined by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) for the Year 2000. The only noteworthy land use change since the Year 2000 is that approximately 250 acres of agricultural lands out of the total 20,648 acres within the Town of Salem have developed into low density residential lands, which is only 1% of the Town. Therefore, only minor changes were needed for the existing land use.

The existing condition data shows that the Town of Salem study area is about 18 % urban development. The existing land use urban area is comprised of approximately 11 % residential land use with lot sizes ranging from 1/8 acre to several acre estates, and 7 % commercial, industrial, institutional, and transportation and utility land uses. The largest land use in the Town of Salem is agricultural, with about 43 %. The remainder of the study area consists of about 16 % open space, 14 % wetlands, and 9 % surface water. Figure 3-2 illustrates the existing land use in the study area. The existing condition land use breakdown is provided in Table 3-1.

Year 2020 future land use was determined from the Comprehensive Neighborhood Plan approved in 2007. The land use is divided into different categories than the existing condition data.

The 2020 future land use plan shows a loss of about 1,917 acres to annexation. Therefore, proposed land uses were not available for these areas as part of this report. For the purposes of this storm water management plan, it was decided that these future annex areas should still be included in our analysis as it may take years for this to occur, so the existing land uses were used in these areas to fill in this gap. The future development plan estimates that 51% of the remaining town area will be developed by the year 2020. More specifically, 43% of the town will be residential, and agriculture will be reduced to 11%. The future land use is shown in Figure 3-3, and the breakdown is provided in Table 3-2.



**FIGURE 3-1
TOWN OF SALEM
ROADWAY CLASSIFICATION EXHIBIT**

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Legend	
	Municipal Boundary
Roadway Type	
	State Highway
	County Highway
	Local Arterial
	Collector
	Minor



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**TABLE 3-1
2000 Land Use in the Town of Salem**

Land Use	Acres	Percent
Residential:		
High Density ¹	50.6	.3
Medium Density	882.6	4.3
Low Density	1,212.5	5.8
Open space ²	3,358.3	16.3
Wetland	2,945.0	14.3
Commercial	69.5	0.3
Industrial	154.7	0.8
Institutional and Government	141.5	0.7
Transportation and Utilities ³	1,059.7	5.1
Surface Water	1,876.0	9.1
Agricultural	8,897.9	43.0
Total	20,648.4	100

Source: R.A. Smith National, Inc. – Data generated from SEWRPC 2000 Land Use file.

¹ High Density Residential includes residential parking and multi-family, two-family, and mobile home residential land uses.

² Open Space includes recreational areas, cemeteries, unused land, woodlands, and landfill land uses.

³ Transportation and Utilities includes communication & utilities, rail, and streets land uses.

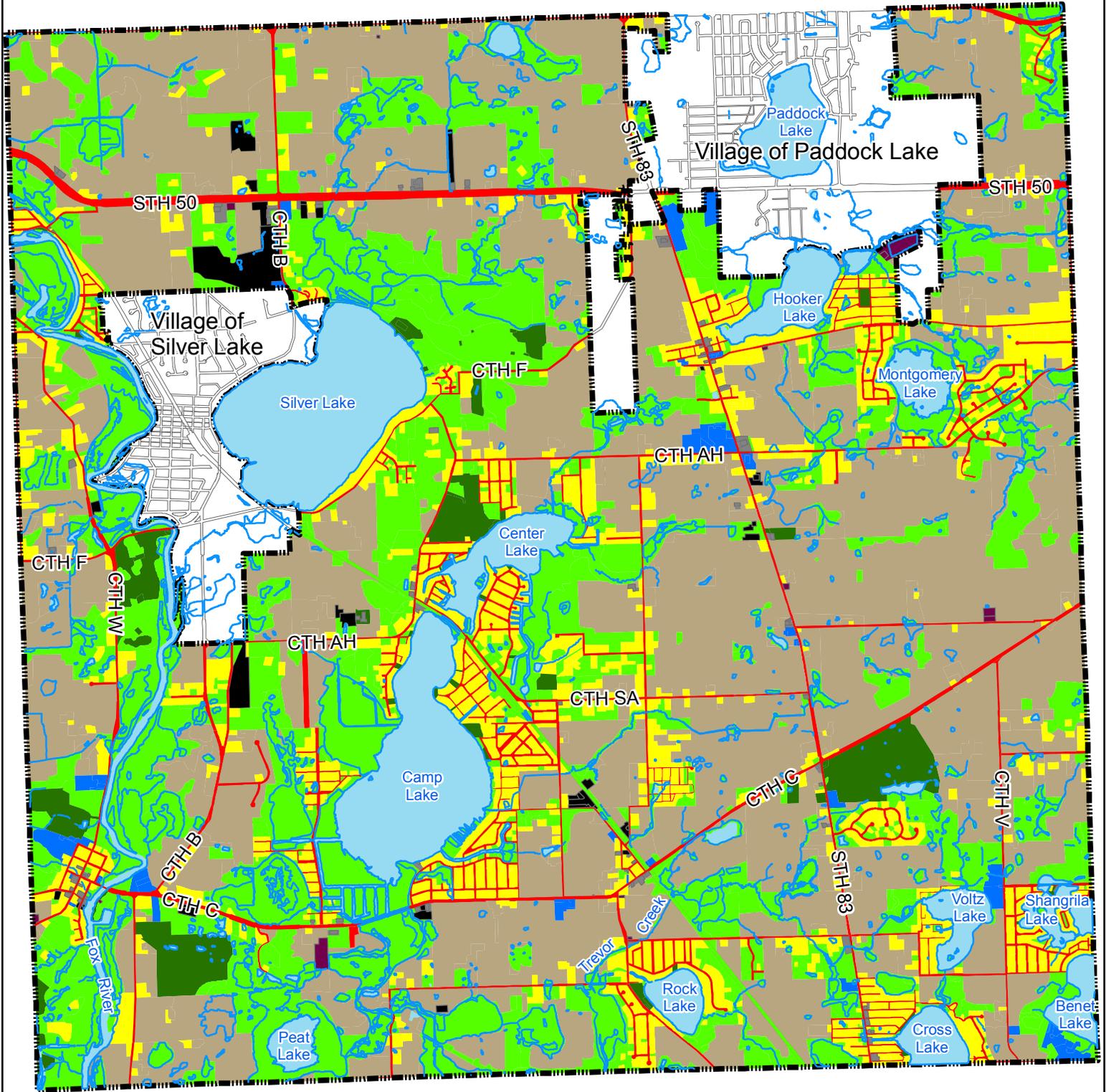
**TABLE 3-2
2020 Land Use in the Town of Salem Study Area**

Land Use	Acres	Percent
Residential	8,780.6	42.5
Parks and Recreation ¹	1,714.6	8.3
Transportation	93.0	.5
Business District	924.0	4.5
Industrial	238.0	1.2
Institutional	480.5	2.3
Water	830.2	4.0
Lowland Resource Conservancy ²	4,031.0	19.5
Upland Resource Conservancy	1,207.5	5.8
Agricultural	2,349.0	11.4
Total	20,648.4	100

Source: R.A. Smith National, Inc. – Data generated from Town of Salem Neighborhood Plan 2007.

¹ Parks and Recreation also includes unused lands, landfill land uses, cemeteries, and woodlands.

² Lowland Resource Conservancy also includes wetlands and surface water.



Source: Southeastern Wisconsin Regional Planning Commission

**FIGURE 3-2
TOWN OF SALEM
EXISTING YEAR 2000 LAND USE**

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Legend	
Municipal Boundary	Industrial
Land Use Type	Open Lands
Agricultural	Recreational
Commercial	Residential
Communication & Utility	Transportation
Government & Institution	



POPULATION

According to the Year 2000 U.S. Census, the population of the Town of Salem has steadily increased since 1980. Projections by the State of Wisconsin Department of Administration show that the increases should continue through 2030. The past census and projected population of the Town of Salem are summarized in Table 3-3.

TABLE 3-3
Town of Salem Population Projections

Year	Population	Percent Change in Population
1980 (Census)	6,292	---
1990 (Census)	7,146	13.6
2000 (Census)	9,871	38.1
2005 (Estimate)	11,121	12.7
2010 (Projected)	12,288	10.5
2015 (Projected)	13,546	10.2
2020 (Projected)	14,838	9.5
2025 (Projected)	16,091	8.4
2030 (Projected)	17,270	7.3

Source: State of Wisconsin Department of Administration, 2008

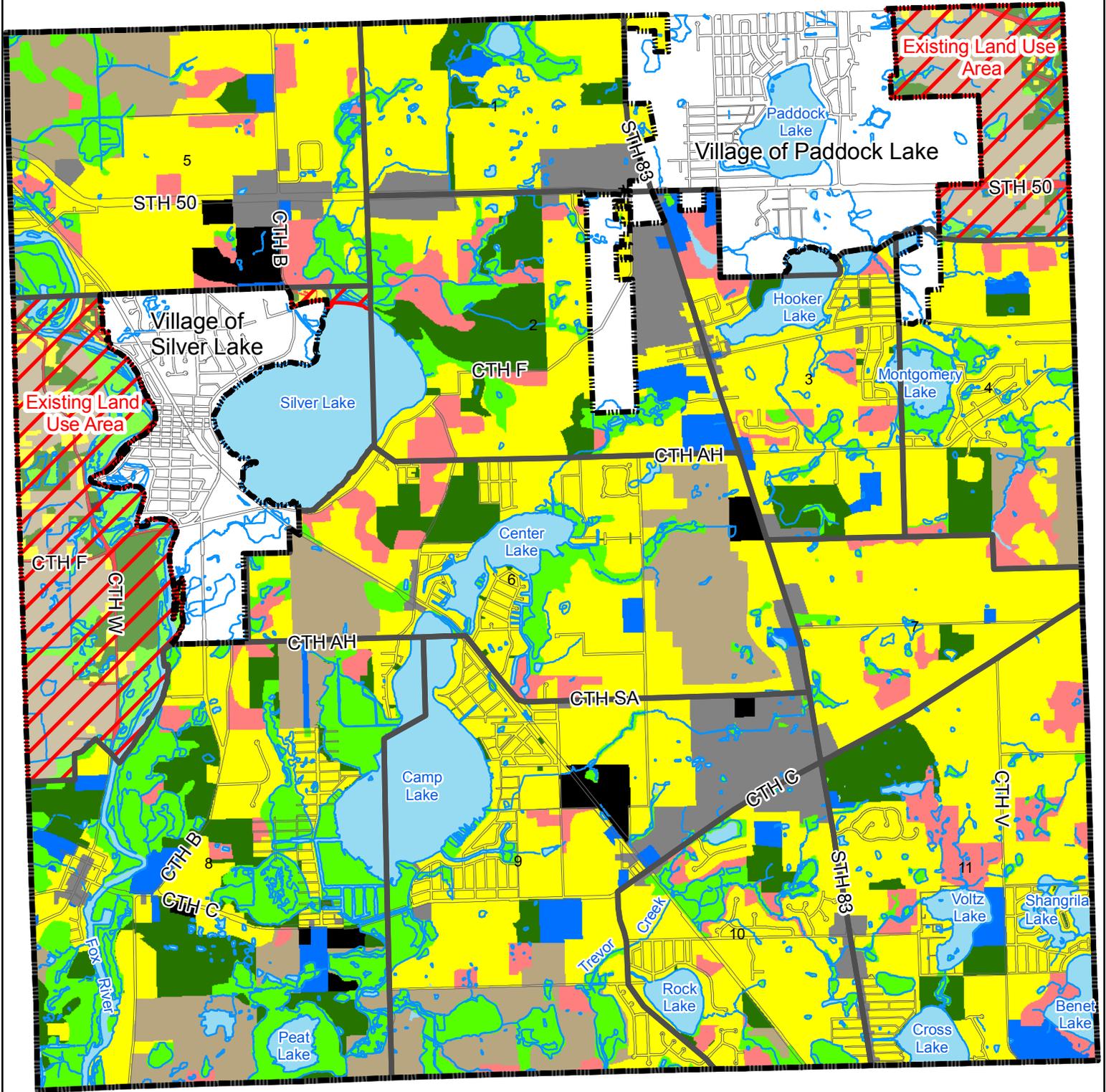
HISTORICAL SITES

The National Register of Historic Places website does not list any historic sites in the Town of Salem.

CLIMATE

The frequency, duration and amount of precipitation influences surface and groundwater quality and quantity, soil moisture content, runoff characteristics, and the physical condition of surface waters. Precipitation events throughout the watershed are most frequently moderate in duration and quantity.

Table 3-4 summarizes the normal monthly temperature and precipitation from the Wisconsin State Climatology Office for the Kenosha weather station of the U.S. Cooperative Network. The normals are based on the 30-year period from 1971-2000.



Source: R.A. Smith National

**FIGURE 3-3
TOWN OF SALEM
PROPOSED LAND USE**

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Legend

- Municipal Boundary
- Neighborhood Boundary
- Areas Planned for Annexation

Land Use Type

Agricultural (A-1 & A-2)	Residential (R-1, R-2, R-3, R-4, R-5, R-6, R-8, R-9, & RC)
Business (B-1, B-2, B-3, B-4, BP, CB, HC, NB, PO, & VHB)	Lowland Resource Conservancy & Wetland (C-1 & WETLAND)
Institutional (I-1)	Upland Resource Conservancy (C-2)
Industrial (M-1, M-2, & M-3)	Water Surface (WATER)
Park & Recreational (PR-1)	



TABLE 3-4
Normal Temperature and Precipitation at Kenosha Cooperative Network Station #474174

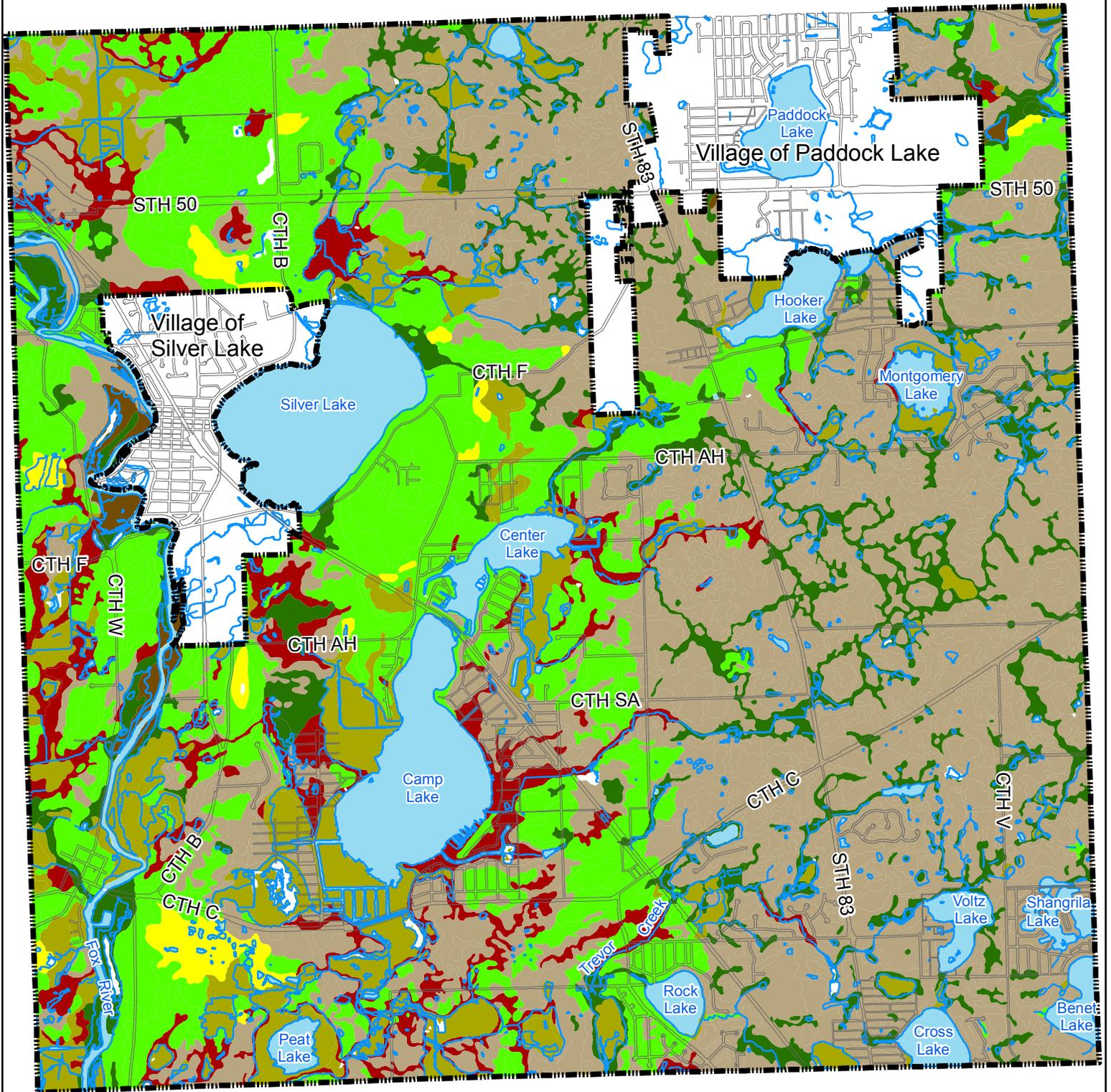
Month	Temperature			Precipitation	
	Mean Daily Maximum (°F)	Mean Daily Minimum (°F)	Mean Temperature (°F)	Normal Total Precipitation (in)	Average Snow and Sleet (in)
January	28.4	13.2	20.8	1.67	12.6
February	32.3	17.8	25.1	1.29	9.3
March	41.5	27.2	34.4	2.34	5.6
April	50.9	37.3	44.1	3.85	1.1
May	62.1	47.7	54.9	3.38	0.0
June	72.7	57.2	65.0	3.59	0.0
July	78.7	63.9	71.3	3.68	0.0
August	77.7	63.9	70.8	4.19	0.0
September	70.5	55.2	62.9	3.49	0.0
October	59.3	44.0	51.7	2.49	0.1
November	46.0	31.5	38.8	2.68	1.4
December	33.8	20.0	26.9	2.09	8.4
Average/Total	54.5	39.9	47.2	34.74	38.5

Source: Wisconsin State Climatology Office, 2009 (Normals for 1971 – 2000).

SOILS

Soils are classified into four major hydrologic soil groups (HSG) of A, B, C, and D, according to their minimum infiltration rate. The soils range from Group A, which has high permeability in well-drained soil with less runoff produced, to Group D, which has low permeability and more anticipated runoff. Three HSGs (A/D, B/D, and C/D) indicate that a soil is capable of having a drained/undrained condition.

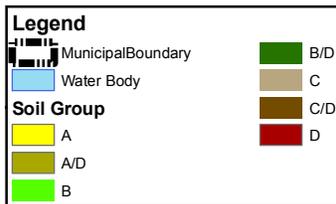
The dominant HSG occurring in 42% of the Town of Salem is Group C. The next largest type is Group B with 22%. The area and percent of total area of each HSG found within the Town of Salem are summarized in Table 3-5. Figure 3-4 illustrates the HSGs in the study area.



Source: Soil Survey of Kenosha and Racine Counties, Wisconsin, Natural Resource Conservation Service

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**FIGURE 3-4
TOWN OF SALEM
SOILS**



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**TABLE 3-5
Hydrologic Soil Groups in the Town of Salem**

Hydrologic Soil Group	Area (acres)	Percent of Total Area
A	263.3	1.3
A/D	1,943.4	9.4
B	4,453.9	21.6
B/D	2,042.2	9.9
C	8,609.2	41.7
C/D	139.5	0.7
D	1,299.5	6.3
Open Water	1,886.6	9.1
Landfill & Borrow Pits	1,299.5	>0.1
Total	20,648.5	100

Source: R.A. Smith National, Inc.

INDUSTRIAL PERMITS

Currently there are four industries in the Town of Salem that are required to obtain a Wisconsin Pollutant Discharge Elimination System (WPDES) Permit. Municipal Sanitary Sewer Bypass Permits are also required for the Town and Salem Utility District. Table 3-6 lists the industrial permits within the Town of Salem.

**TABLE 3-6
Industrial Permits in the Town of Salem**

Type of Permit	Industry Name	Address
Municipal Sanitary Sewer Bypass	Salem Utility District	28733 Wilmot Road, Trevor
Municipal Sanitary Sewer Bypass	Salem, Town	Town-wide
Non-contact Cooling Water and Storm Water Industrial Tier 2 Permit	Amorim Cork Composites	26112 110 th Street
Nonmetallic Mining Operations	Adams Sand and Gravel	52 nd Street and 294 th Avenue
Storm Water Auto Parts Recycling	HWY 50 Auto & Truck Salvage LLC	27520 75 th Street
Storm Water Industrial Tier 2 Permit	Thelan Sand and Gravel – Wilmot Ready Mix	29901 Highway C

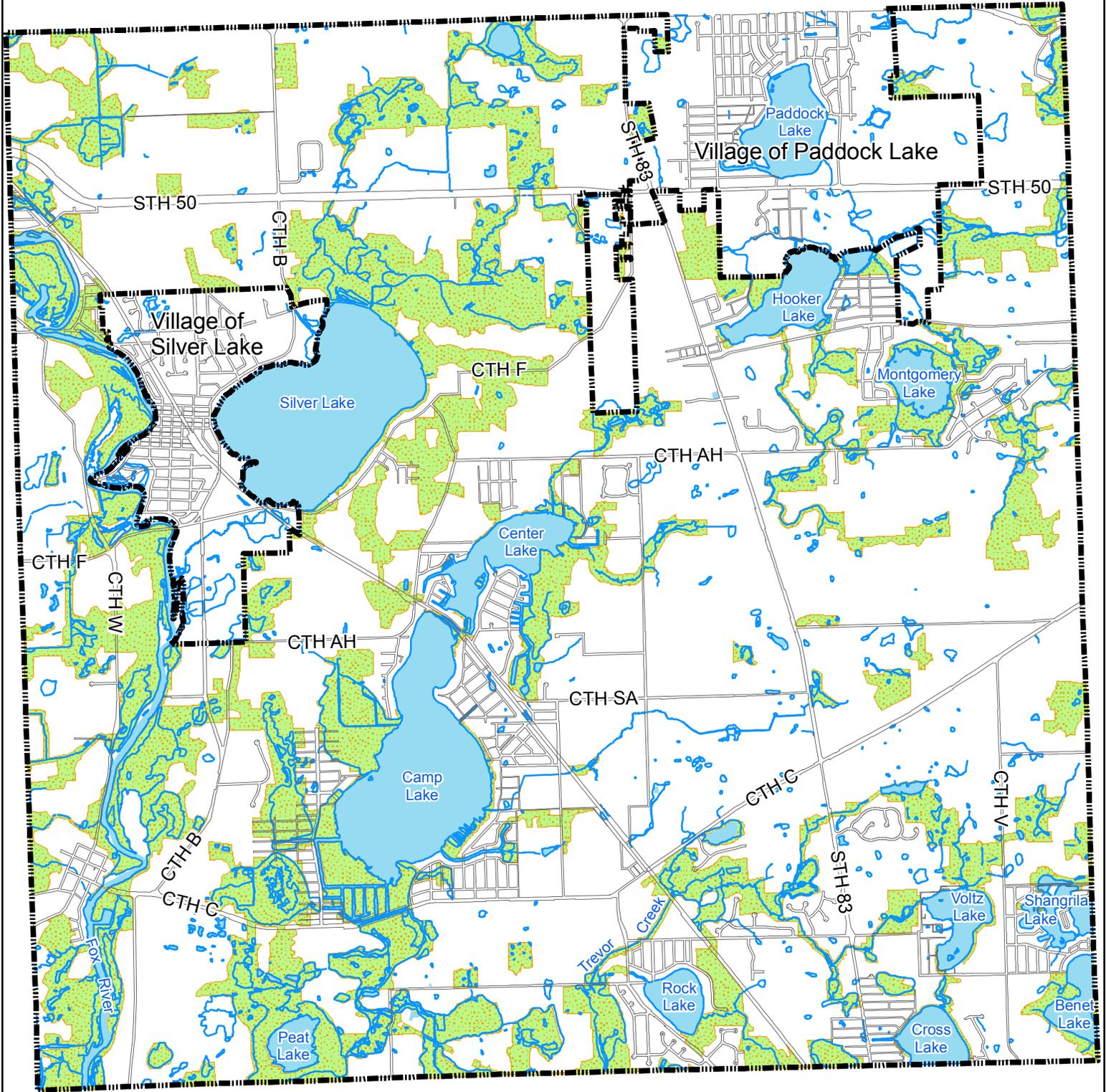
Source: Wisconsin Department of Natural Resources, 2009

ENVIRONMENTAL RESOURCES

Environment resources identified in the Town of Salem include environmental corridors, areas of endangered aquatic and terrestrial resources, and lakes.

Environmental Corridors

SEWRPC has identified environmental corridors within southeastern Wisconsin. These areas have concentrations of important natural resources including: lakes, rivers, and streams and their associated



Source: Southeastern Wisconsin Regional Planning Commission

**FIGURE 3-5
TOWN OF SALEM
ENVIRONMENTAL CORRIDOR**

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Legend

-  Municipal Boundary
-  Water Body
-  Environmental Corridor



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shorelands and floodplains; wetlands; woodlands; prairies; and wildlife habitat areas. SEWRPC recommends that these areas be preserved and protected by State, County, and local governments. Environmental corridors in the Town of Salem are shown on Figure 3-5.

Endangered Resources

WDNR has identified areas of endangered aquatic and terrestrial resources. Each category includes occurrences of animals, plants and natural communities that have been identified in those locations. The areas of endangered resources in the Town of Salem are shown on Figure 3-6.

Lakes

Lakes provide recreation opportunities such as fishing, boating and swimming; desirable locations for homes and businesses; and excellent wildlife and aquatic habitat. The Town of Salem has large lakes such as Silver Lake and Camp Lake, and numerous smaller lakes. Many of the lakes are controlled by outlet structures identified as dams by the Wisconsin Department of Natural Resources (WDNR). Some of the lakes have formed organizations to manage and protect the lakes. One-percent annual chance probability flood elevations (100-year recurrence interval) have been estimated for some of the lakes by SEWRPC. Table 3-7 provides information on the lakes in the Town of Salem.

TABLE 3-7
Lakes in the Town of Salem

Name	1% Annual Chance Flood Elevation (ft, NGVD-29)	Dam Name	Lake Organization
Benet Lake	N/A	N/A	N/A
Camp Lake	742.7	Camp Lake	Camp/Center Lake Rehabilitation District
Center Lake	744.4	Center Lake	Camp/Center Lake Rehabilitation District
Cross Lake	N/A	Cross Lake	Cross Lake Improvement Association
Hooker Lake	756.2	Hooker Lake	Hooker Lake Management District
Lake Shangrila	N/A	Lake Shangri La	N/A
Montgomery Lake	800.9	N/A	N/A
Peat Lake	N/A	N/A	N/A
Rock Lake	N/A	Rock Lake	Rock Lake Highlands Association
Silver Lake	749.4	Silver Lake	N/A
Voltz Lake	N/A	Voltz Lake	Voltz Lake Management District

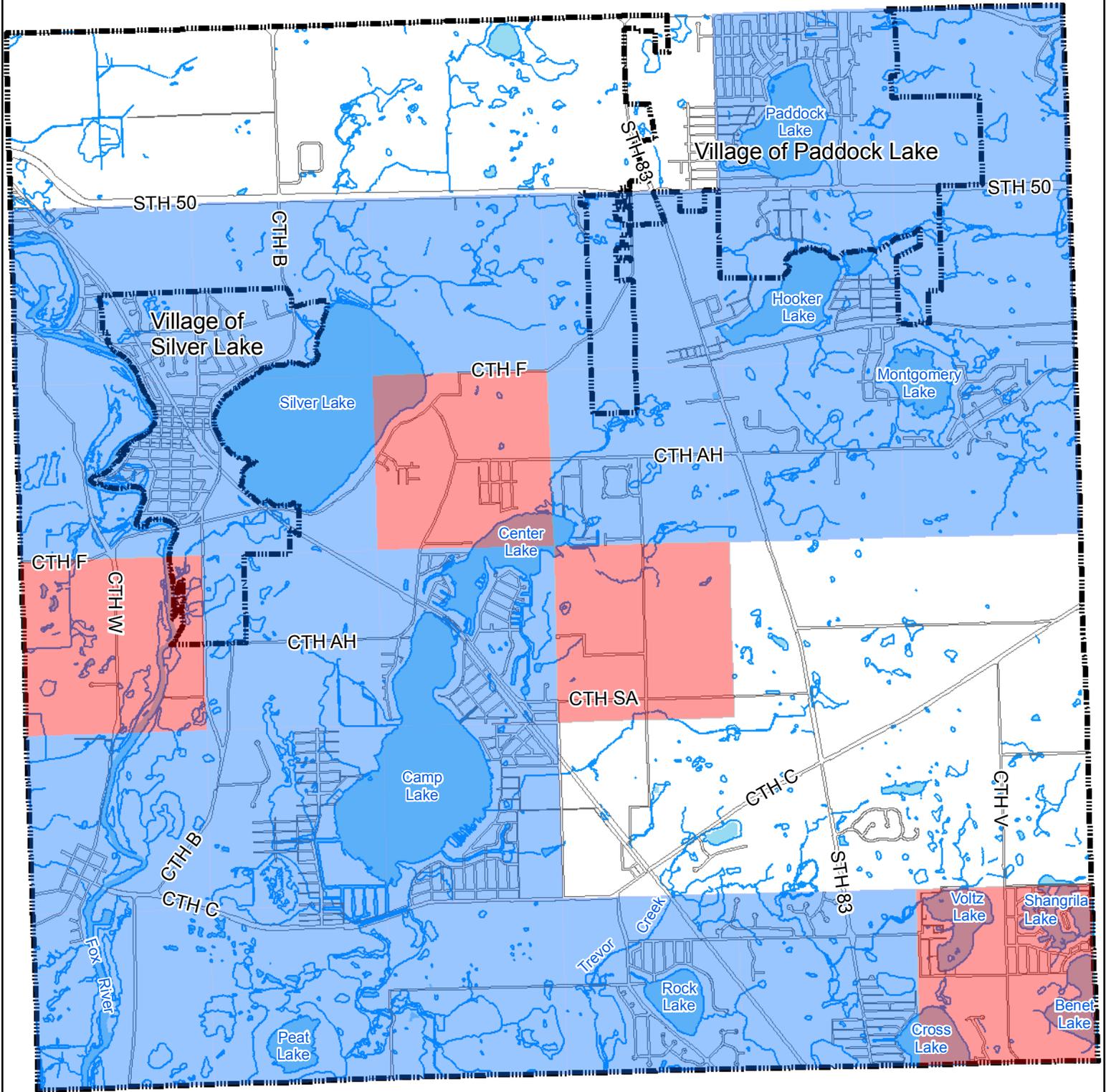
N/A – Not available

Source: R.A. Smith National, Inc., SEWRPC, WDNR, and UW Extension Lakes

WETLANDS

Wetlands in the study area provide a variety of beneficial uses, including flood storage, water quality treatment, and fish and wildlife habitat. Uncontrolled storm water runoff can adversely impact on wetlands causing degradation in their beneficial use. The potential impacts to a wetland from uncontrolled runoff will vary depending on the type of wetland plant community. For example, wetlands such as sedge meadows are sensitive to storm water pollutants and water level changes, while reed canary grass or cattail wetlands are tolerant of storm water pollutants and water level changes.

The existing land use shows there are approximately 2,944 acres of existing wetlands in the Town of Salem drainage area. Figure 3-7 illustrates the wetlands located in the Town of Salem.



Source: Wisconsin Department of Natural Resources

**FIGURE 3-6
TOWN OF SALEM
ENDANGERED RESOURCES**

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Legend

-  Municipal Boundary
-  Aquatic Endangered Resource Area
-  Aquatic & Terrestrial Endangered Resource Area

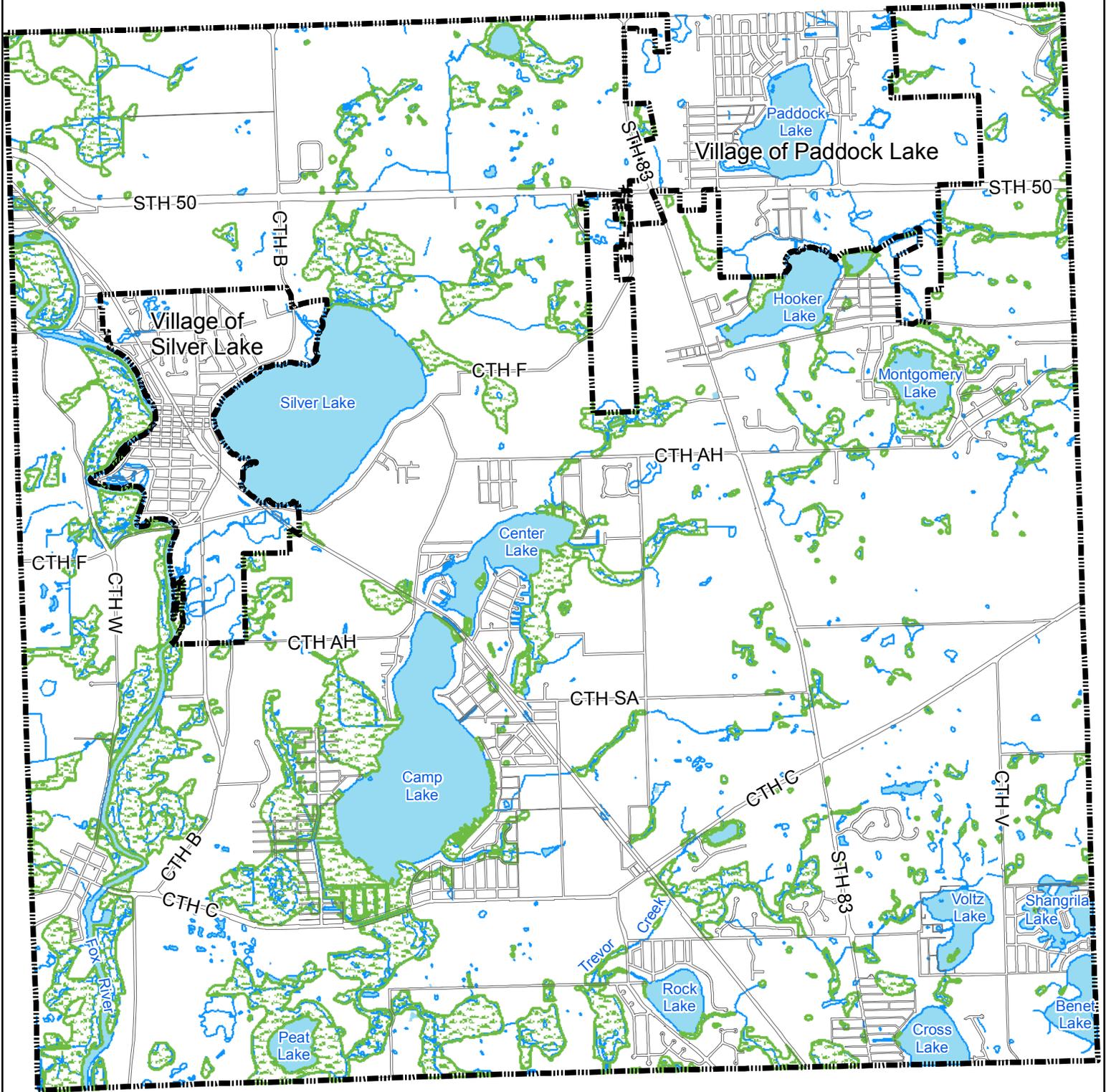


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DRAINAGE FACILITIES

Storm water runoff drainage facilities in the developed portions of the Town of Salem are a mixture of open grass swales, culverts, curb and gutter, and storm sewers. Wet ponds are scattered throughout the town, with some designed for aesthetic purposes and some storm water control. The ponds are generally privately owned, but the Town of Salem owns two wet detention ponds that were built to control storm water runoff to Camp Lake and protect water quality in the lake. The town-owned wet ponds are included as part of the water quality analysis in Chapter 5 and are shown on Figure 5-3.

Streams flowing through the Town of Salem include the Fox River, Trevor Creek, Brighton Creek, Salem Branch of Brighton Creek, Unnamed Tributary No. 3 to Salem Branch of Brighton Creek, Unnamed Tributary No. 1 to Hooker Lake, Unnamed Tributary to Camp Lake, Unnamed Tributary to Center Lake, and other small unnamed tributaries. The Fox River is along the western border of the Town and flows south into Illinois. Trevor Creek also flows south into Illinois and is in the Fox River Watershed. Brighton Creek and its tributaries flow east-southeast and are in the Des Plaines River Watershed. The locations of these tributaries are shown on Figure 4-1.



Source: Southeastern Wisconsin Regional Planning Commission

**FIGURE 3-7
TOWN OF SALEM
WETLANDS**

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Legend

-  Municipal Boundary
-  Water Body
-  Wetlands



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