

EXECUTIVE SUMMARY - REVISED

INTRODUCTION

The purpose of the Town of Salem Storm Water Management Plan is to develop recommendations and implementation strategies for addressing drainage problems and minimizing the impact of storm water runoff from existing and future developments. The plan addresses both water quantity and water quality issues in the Town.

The study area includes the areas tributary to the Fox River and Des Plaines River. The study area is approximately 20,684 acres (32.3 square miles) in size, and includes all of the area within the Town's boundary. The Study Area is illustrated on Figure 1.

STORM WATER MANAGEMENT PLAN GOALS

The goals of the Town of Salem Storm Water Management Plan fall into the following four categories:

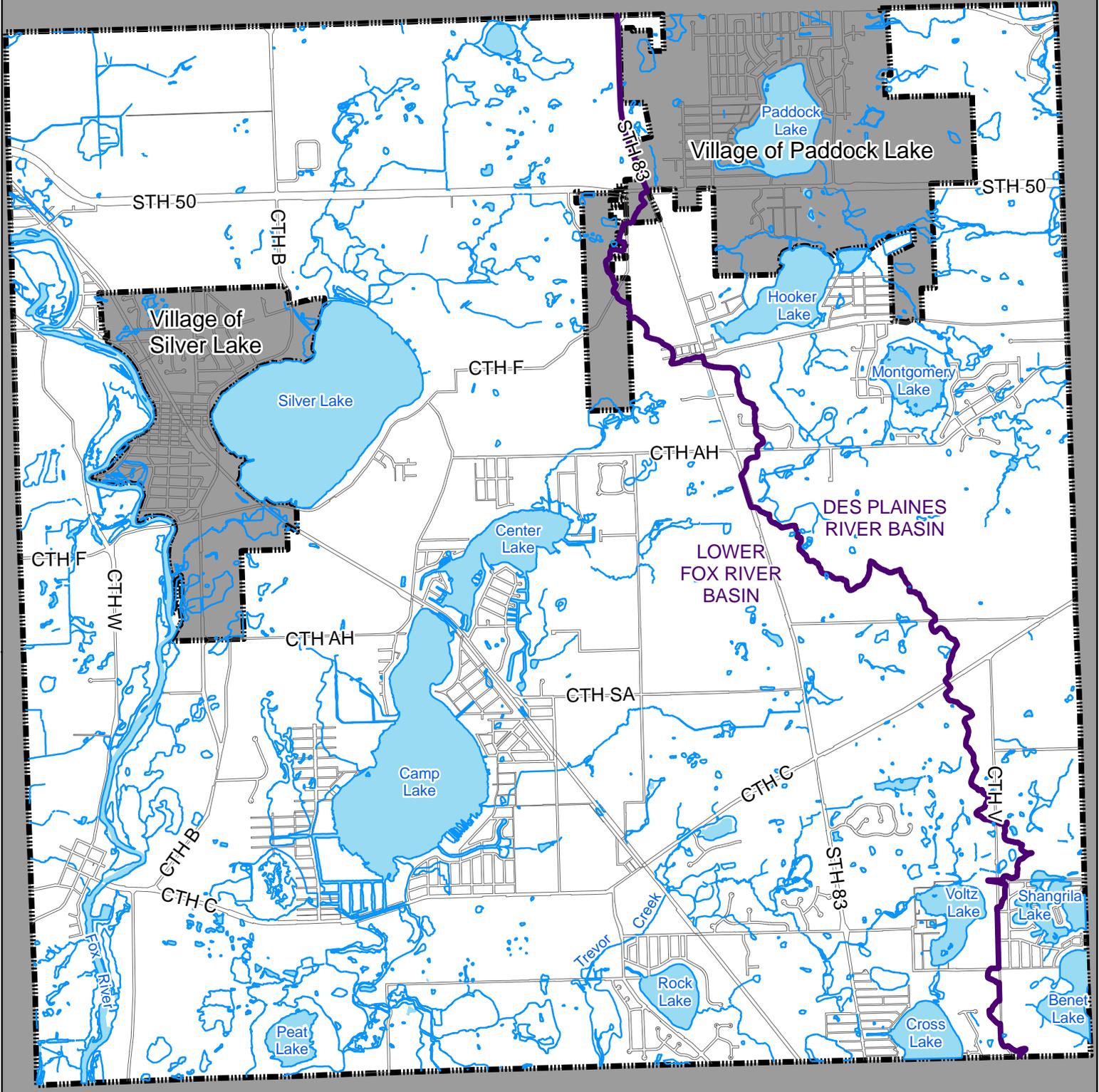
- I. Protect the water quality of the lakes and streams within the Town of Salem, the local wetlands, and groundwater.**
- II. Protect environmentally sensitive areas such as wetlands, fish and wildlife habitat, and environmental corridors.**
- III. Protect public and private property from the potential damages caused by storm water runoff.**
- IV. Provide the framework for compliance with the Wisconsin Pollutant Discharge Elimination System General Permit to discharge storm water from all portions of the Municipal Separate Storm Sewer System (MS4).**

INVENTORY AND ANALYSIS

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 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 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.

Year 2020 future land use was determined from the Comprehensive Neighborhood Plan approved in 2007. The 2020 future land use plan shows a loss of about 1,917 acres to annexation. 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%.

Storm water runoff drainage facilities in the developed portions of the study area are a mixture of open grass swales, culverts, and storm sewers. Peak discharge flow rates and runoff volumes for the 2-, 10-, 25-, and 100-year recurrence interval storm events for the 24-hour storm duration have been developed for all the subbasins in the Town under existing and proposed land uses. The Source Loading and



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Legend

- Municipal Boundary
- Major Watershed Division

Management Model (WINSLAMP) V9.3.1 was used to identify the sources of storm water pollutants being exported from the study area.

Some of the other areas of the study related to water quantity and quality inventory and analysis include:

- Construction Site Erosion Control
- Post Construction Storm Water Management
- Illicit Discharge Detection and Elimination
- Pollution Prevention Planning
- Storm Sewer System Mapping
- Public Education and Outreach

FLOODING AND DRAINAGE RECOMMENDATIONS

The following recommendations to address the flooding and drainage issues focus on projects, policy, and administrative procedures.

Pursue solutions to the known seven priority flooding and drainage problem areas.

Table 1 summarizes a prioritized ranking for the recommended solution, and the estimated costs. Prioritization of these projects was based on the following factors:

- Frequency of flooding
- Severity of flooding
- Number of homes affected by flooding
- Ability to tie in water quality to help the Town achieve the required 40% TSS reduction goal
- Estimated cost to address this problem
- Feasibility of construction and regulatory approval needed to construct project

Table 1
 Drainage Priorities and Estimated Costs

Priority Ranking	Drainage Issue	Proposed Alternative	Estimated Cost
1	256 th Ave & CTH AH	High water relief storm sewer on 256 th Avenue, south of CTH AH.	\$111,875
2	122 nd Street & 22 nd Ave	Storm sewer conveyance system on 122 nd Street.	\$205,175
3	Salem Oaks Subdivision	Storm sewer conveyance system and wet detention pond.	\$552,000
4	Timber Lane Subdivision	Storm sewer conveyance system and wet detention pond on drainage along 27 th Avenue; Storm sewer conveyance system for drainage along 28 th Avenue; Restore low-lying detention areas west of 26 th Avenue.	\$659,500
5	Sunset Oaks Subdivision	Storm sewer conveyance system; retrofit the Town's wet detention pond to provide additional storage and water quality treatment.	\$661,500
6	Shoreview Subdivision	Upstream detention to reduce peak flood flows in navigable stream flowing through this subdivision.	\$800,000
7	99 th Street & 27 th Ave	High water relief storm sewer on 27 th Avenue between 99 th and 100 th Streets	\$76,300

Other Flooding and Drainage Recommendations:

- Address nuisance drainage complaints
- Develop more stringent release rates for the effluent
- Revise the storm water management ordinance applicability criteria
- Develop a database for drainage complaints
- Develop a driveway culvert permit process
- Review ordinances for floodplain regulations
- Flood storage compensation requirements

WATER QUALITY RECOMMENDATIONS

The Town's MS4 General Permit requires a total suspended solids loading reduction of 20 percent by 2008 and 40 percent by 2013 within the urbanized area of the Town. The Town's No Controls TSS loading was calculated to show a 23% reduction. Therefore, the Town meets the 20% TSS loading reduction requirement of 2008. However, the Town will need to remove an additional 17% to meet the 40% reduction goal and thus additional work will be necessary. The recommendations to achieve this goal are as follow:

- WinSLAMM modeling to analyze how to reach the 40% TSS reduction goal
- Revise the erosion control ordinance applicability criteria
- Develop a storm water management facilities inventory
- Construction site erosion control ordinance enforcement and inspections
- Post-construction storm water management ordinance enforcement
- Illicit discharge detection & elimination ordinance enforcement and annual field screenings
- Pollution prevention program
- Storm sewer system mapping
- Encourage manure & nutrient management
- Promote agricultural buffers & alternative crop practices
- Implement the information and education program

IMPLEMENTATION STRATEGY

For any project to move from concept to construction implementation strategy is necessary. The following implementation strategy outlines a recommended schedule, financing options, aside from the existing storm water utility that are available for implementation and the administrative and regulatory process that will need to be followed to implement the plan.

Table 2
 Recommended Implementation Schedule

RECOMMENDATION	RECOMMENDED COMPLETION DATE
Flooding and Drainage Recommendations	
Priority Flooding Project 1 – CTH AH & 256 th Ave	2010
Priority Flooding Project 2 – 122 nd St & 224 th Ave	2011
Priority Flooding Project 3 – Salem Oaks Subdivision	2012
Priority Flooding Project 4 – Timber Lane Subdivision	2015
Priority Flooding Project 5 – Sunset Oaks Subdivision	2018
Priority Flooding Project 6 – Shoreview Subdivision	2020
Priority Flooding Project 7 – 99 th St & 270 th Ave	Project on hold: residents fixing tile
Analysis & Preliminary Engineering of Nuisance Drainage Complaints	2010
Nuisance Drainage Improvement Projects	2010-2020
Develop More Stringent Release Rates for the Town	2010
Revise the Storm Water Management Ordinance Application Criteria	2010
Develop a Database for Drainage Complaints	2010
Develop a Driveway Culvert Permit Process	2010
Review Ordinances for Floodplain Requirements	2010
Review Flood Storage Compensation Requirements	2010
Water Quality Recommendations	
WinSLAMM Modeling for 40% TSS Reduction Goal	2010-2011
Construction of Storm Water Management Facilities Required to Meet the 40% TSS Reduction Goal by March 13, 2013	2011 - 2013
Revise the Erosion Control Ordinance Applicability Criteria	2010
Develop a Database to Track Storm Water Management Facilities	2010
Construction Site Erosion Control Ordinance Enforcement & Construction Site Inspections	Ongoing for ordinance enforcement & once/month for inspections as development occurs
Post-Construction Storm Water Management Enforcement & Storm Water Facility Annual Inspection	Ongoing for ordinance enforcement & annual inspections for facilities
Illicit Discharge Detection & Elimination & Annual Outfall Inspections	Ongoing for ordinance enforcement & Annual outfall inspections
Pollution Prevention Program	Ongoing Good Housekeeping Practices
Municipal Separate Storm Sewer System Mapping	Ongoing
Manure & Nutrient Management Education Efforts	Ongoing
Agricultural Buffer & Alternative Crop Practice Education Efforts	Ongoing
Information & Education Program Implementation	Ongoing

STORM WATER UTILITY BUDGETING

The Town adopted the Year 2009 storm water utility budget as part of the storm water utility creation in 2008. Table 3 outlines the recommended 10-year budget for years 2010 through 2020, and includes the recommendations in this plan.

As shown in this table, it is expected to cost approximately \$62 million dollars over the next 10 years to address all of the recommendations listed above. At the current Storm Water Utility ERU fee of \$60 per ERU over the next 10 years, the Town will collect approximately \$4.7 million dollars to allocate toward storm water management. It is recommended that the Town review this proposed budget to decide if an increase in the Storm Water Utility ERU fee should be implemented at some point in the future to balance the budget.

PUBLIC COMMENT REVIEW PERIOD AND PLAN ADOPTION

An important first step in the plan implementation is the formal adoption of the plan by the Town of Salem. The steps in the approval process are listed below.

Plan Adoption

1. Three hard copies of the draft storm water management plan will be provided for staff review along with a CD containing the draft plan to be posted on the Town's website for public review.
2. Public review and comment period through November 2009.
3. Town Board discussion of review comments and creation of the draft storm water management plan in November 2009.
4. Addendum to the draft storm water management plan addressing all review comments to date to be submitted in December 2009.
5. Public information meeting held in January 2010.
6. Adoption of final storm water management plan by the Board in February or March of 2010.

TABLE 3
Town of Salem Recommended Storm Water Utility Budget t through 2020
December 2009

ANNUAL OPERATION & MAINTENANCE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
WPDES Permit Annual Fee	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 5,500
Root Pike WIN Annual Fee	\$ 2,205	\$ 2,205	\$ 2,205	\$ 2,205	\$ 2,205	\$ 2,205	\$ 2,205	\$ 2,205	\$ 2,205	\$ 2,205	\$ 2,205	\$ 24,255
Public Involvement and Participation Program	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 16,500
Construction Site Erosion Control Ordinance & Enforcement Procedures	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 5,500
Post-Construction Site Pollutant Control Ordinance & Long-term Maintenance	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 5,500
Illicit Discharge Program On-going Field Screening Inspection & Enforcement	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 55,000
Implementation of the Pollution Prevention Program for Municipal Facilities	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 11,000
On-going Storm Sewer System Mapping	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 11,000
WPDES Permit Annual Report	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 22,000
Re-apply for Permit Coverage	\$ 1,500	\$ -	\$ -	\$ -	\$ -	\$ 1,500	\$ -	\$ -	\$ -	\$ -	\$ 1,500	\$ 4,500
Administrative Services Related to NR216 Permit & Storm Water Utility	\$ 1,440	\$ 1,483	\$ 1,528	\$ 1,574	\$ 1,621	\$ 1,669	\$ 1,719	\$ 1,771	\$ 1,824	\$ 1,879	\$ 1,935	\$ 18,443
Highway Department Services Relating to Roadway and Drainage System Maintenance	\$ 100,000	\$ 103,000	\$ 106,090	\$ 109,273	\$ 112,551	\$ 115,927	\$ 119,405	\$ 122,987	\$ 126,677	\$ 130,477	\$ 134,392	\$ 1,280,780
One Full Time Employee												\$ -
Culvert Maintenance												\$ -
Backfill Operations												\$ -
Restoration												\$ -
Ditching												\$ -
Legal / Engineering / Contracted Services Related to WPDES Permit & Storm Water Utility	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 165,000
SUBTOTAL	\$ 132,145	\$ 133,688	\$ 136,823	\$ 140,051	\$ 143,377	\$ 148,302	\$ 150,330	\$ 153,963	\$ 157,706	\$ 161,561	\$ 167,032	\$ 1,624,978
CAPITAL IMPROVEMENTS												
WinSLAMM 40% Modeling Assessment	\$ 7,500	\$ 5,000										\$ 12,500
Ordinance Development and Revisions	\$ 10,000											\$ 10,000
Development of Complaint Inventory Database, Culvert and Land Disturbance Permits	\$ 15,000											\$ 15,000
Priority Flooding Project 1 - CTH AH & 256th Ave	\$ 111,875											\$ 111,875
Priority Flooding Project 2 - 122nd Street & 224th Ave		\$ 205,175										\$ 205,175
Analysis and Preliminary Engineering of all Recorded Drainage Complaints	\$ 10,000											\$ 10,000
Construction of Nuisance Drainage Improvement Projects	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 605,000
Culvert Inventory & Mapping		\$ 25,000	\$ 25,000									\$ 50,000
Priority Flooding Project 3 - Salem Oaks Subdivision			\$ 552,000									\$ 552,000
Priority Flooding Project 4 - Timber Lane Subdivision						\$ 659,500						\$ 659,500
Priority Flooding Project 5 - Sunset Oaks Subdivision								\$ 661,500				\$ 661,500
Priority Flooding Project 6 - Shoreview Subdivision										\$ 800,000		\$ 800,000
Priority Flooding Project 7 - 99th St & 270th Ave												\$ -
Equipment Maintenance and Purchase Costs	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 550,000
Storm Water Quality Practices to meet the WDPES 40% TSS Reduction Goal*			\$ 100,000	\$ 100,000	\$ 100,000							\$ 300,000
SUBTOTAL	\$ 259,375	\$ 340,175	\$ 782,000	\$ 205,000	\$ 205,000	\$ 764,500	\$ 105,000	\$ 105,000	\$ 766,500	\$ 105,000	\$ 905,000	\$ 4,542,550
TOTAL	\$ 391,520	\$ 473,863	\$ 918,823	\$ 345,051	\$ 348,377	\$ 912,802	\$ 255,330	\$ 258,963	\$ 924,206	\$ 266,561	\$ 1,072,032	\$ 6,167,528

* Exact costs for storm water quality practices needed to meet the 40% TSS reduction goal is not quantifiable at this time and is only meant to be an estimate