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Stormwater Quality Management Plan Update

City of Whitewater, WI

October 21, 2025

Introduction

- City's Stormwater Permit for its Municipally Separate Storm Sewer System (MS4)
  - WPDES Permit No. WI-S050075-3 (May 1, 2019 to April 30, 2024)
- Stormwater Quality Management Plan (SQMP) History
  - 2008 (Original), 2011 (Update), 2017 (TMDL), 2021 (Appendix-MS4 Program Updates)
- Pollutant Reduction Requirements
  - **MS4:** 20% Total Suspended Solids (TSS) Reduction
  - **Rock River Basin Total Maximum Daily Load (TMDL)**
    - 49.0% TSS Reduction
    - 66.4% Total Phosphorus (TP) Reduction
    - Rock River is a 303 (d) listed impaired water
- Main objective of SQMP Update: Assess Compliance with TMDL Requirements

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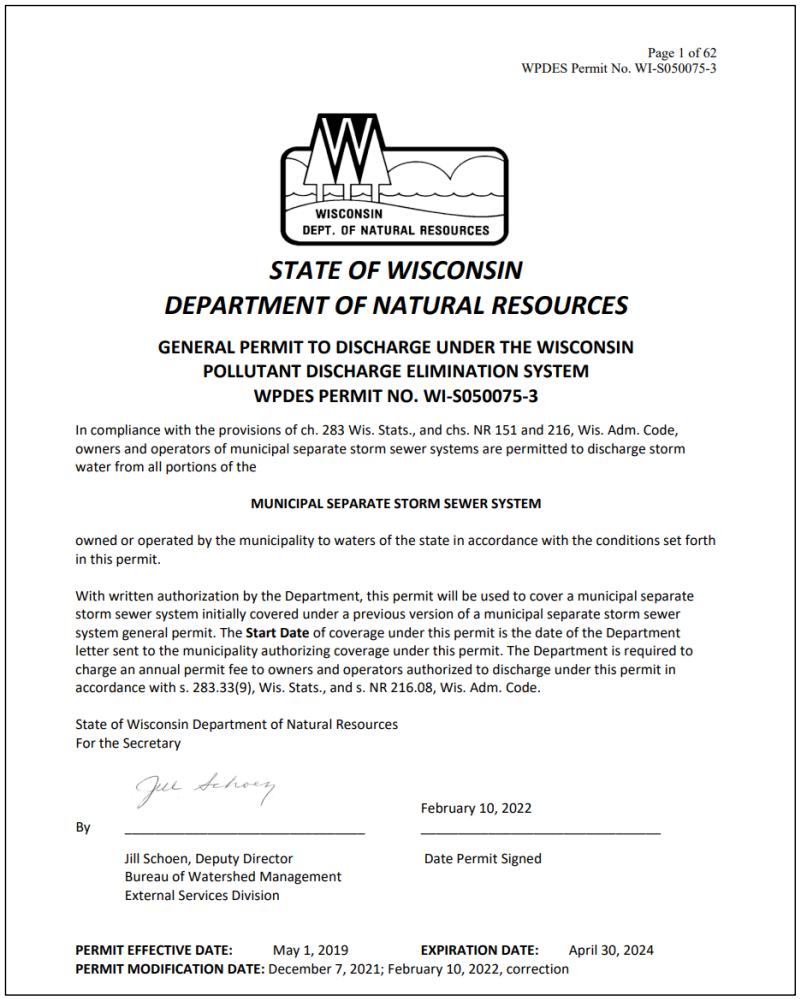
WPDES Permit-Required Stormwater Program



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WPDES Permit No. WI-S050075-3

WISCONSIN
DEPT. OF NATURAL RESOURCES

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

GENERAL PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM
WPDES PERMIT NO. WI-S050075-3

In compliance with the provisions of ch. 283 Wis. Stats., and chs. NR 151 and 216, Wis. Adm. Code, owners and operators of municipal separate storm sewer systems are permitted to discharge storm water from all portions of the

MUNICIPAL SEPARATE STORM SEWER SYSTEM

owned or operated by the municipality to waters of the state in accordance with the conditions set forth in this permit.

With written authorization by the Department, this permit will be used to cover a municipal separate storm sewer system initially covered under a previous version of a municipal separate storm sewer system general permit. The **Start Date** of coverage under this permit is the date of the Department letter sent to the municipality authorizing coverage under this permit. The Department is required to charge an annual permit fee to owners and operators authorized to discharge under this permit in accordance with s. 283.33(9), Wis. Stats., and s. NR 216.08, Wis. Adm. Code.

State of Wisconsin Department of Natural Resources
For the Secretary

By _____ February 10, 2022

Jill Schoen, Deputy Director
Bureau of Watershed Management
External Services Division

Date Permit Signed

PERMIT EFFECTIVE DATE: May 1, 2019 **EXPIRATION DATE:** April 30, 2024
PERMIT MODIFICATION DATE: December 7, 2021; February 10, 2022, correction

Permit Condition
Public Education/Outreach
Public Involvement/Participation
Illicit Discharge Detection & Elimination
Construction Site Pollutant Control (Erosion Control)
Post-Construction Stormwater Management
Pollution Prevention-Municipal Operations
Stormwater Quality Management
Storm Sewer System Map
Annual Report
Rock River Stormwater Group Meetings

Updating Via
Task Order 24-02

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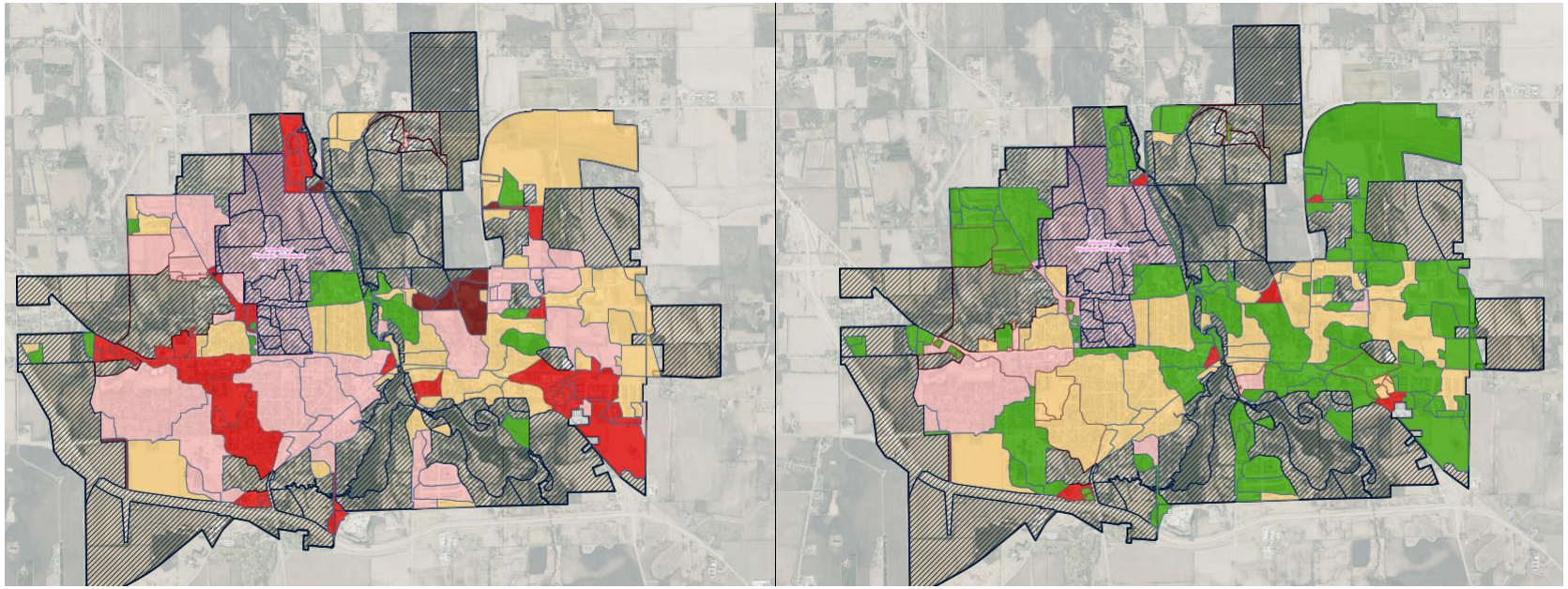
Stormwater Quality Modeling



Baseline / No Controls Condition

Existing Conditions / With Controls

Pollutant	MS4 Permit Required Reductions	Rock River TMDL Required Reductions (Reach 59)	MS4 Modeled Existing Conditions Reduction (%)	TMDL Pollutant Reduction Gap (%)	TMDL Pollutant Reduction Gap (lbs)
City of Whitewater (WinSLAMM Version 10.5.0)					
TSS	20%	49.0%	53.6%	0.0%	0.0 lbs
TP	NA	66.4%	45.5%	20.9%	374.5

TP Improvement Since 2017: **8.3% (was 37.7%)** **68 lbs (was 442.5 lbs)**

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Stormwater Best Management Practices (BMPs) Implemented Since 2017

- Enhanced Street Sweeping Program
  - Vacuum Street Sweeper Purchase w/WDNR UNPS&S Grant (2021)
  - $49,800 Grant
  - Street sweeping (once every 2 weeks) with vacuum street sweeper
- TP Leaf Collection Credit Analysis
  - (2020): 19.1 lbs TP
  - (2023): 47.1 lbs TP
    - Additional 28.0 lbs TP due to WDNR's updated 2022 Guidance
- New Development Pollutant Reduction
- Redevelopment Pollutant Reduction

WISCONSIN DEPT. OF NATURAL RESOURCES

BUREAU OF WATERSHED MANAGEMENT
PROGRAM GUIDANCE

WATERSHED MANAGEMENT TEAM
Storm Water Runoff Management Program

Wisconsin Department of Natural Resources
101 S. Webster Street, P.O. Box 7921
Madison, WI 53707-7921

Municipal Phosphorus Reduction Credit for Leaf Management Programs

02-17-2022
EGAD Number: 3800-2022-01

This document is intended solely as guidance and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

APPROVED:

Jill Schoen 2/22/2022

Jill Schoen, Acting Director — Date
Bureau of Watershed Management

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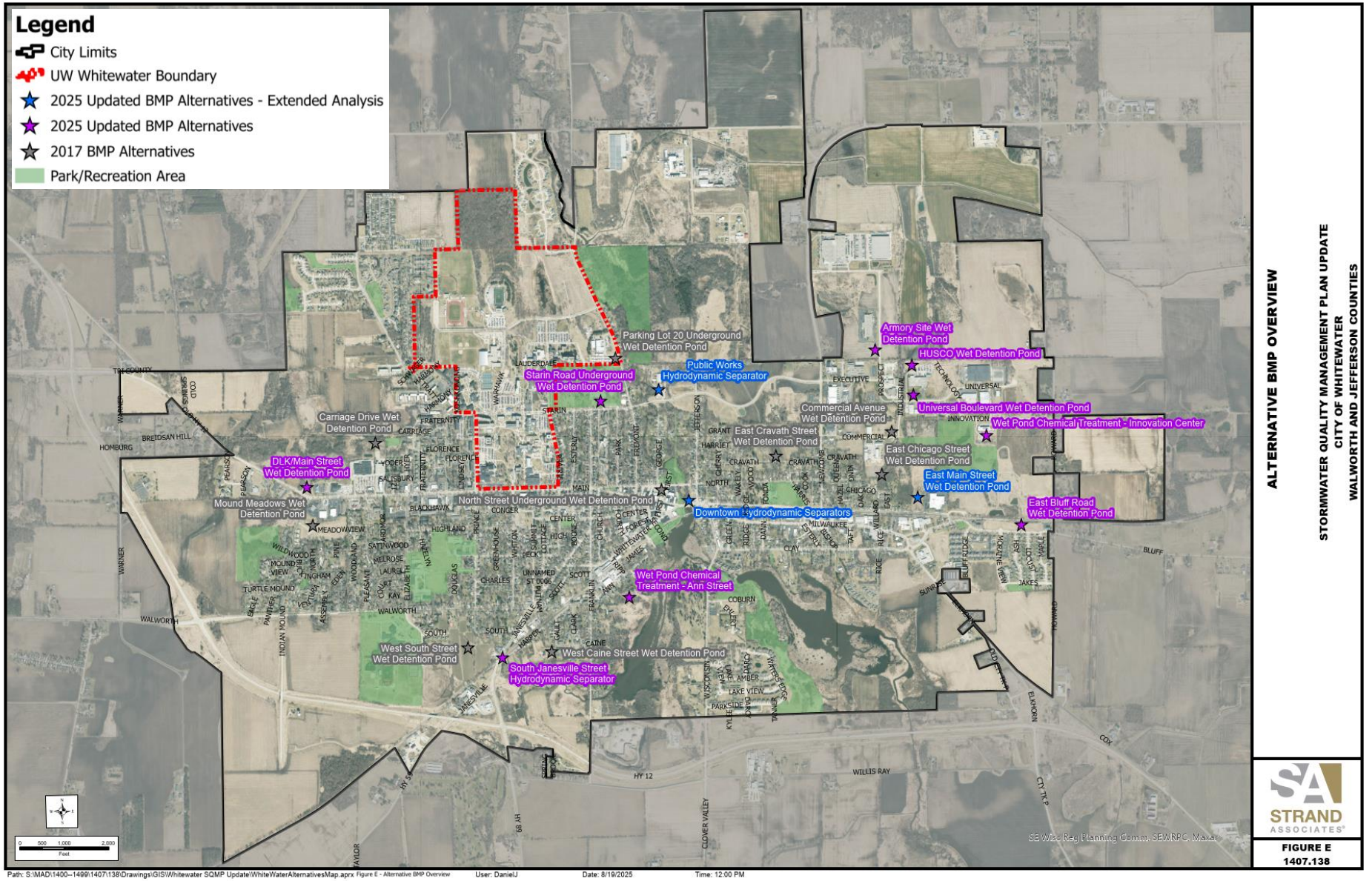
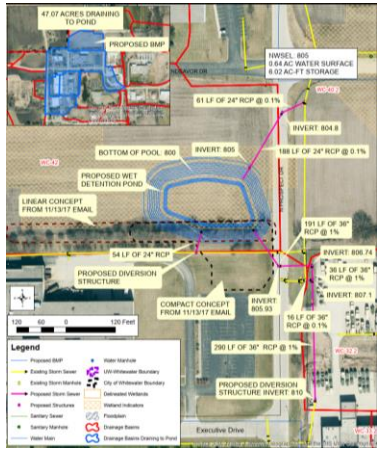
New Stormwater Best Management Practices (BMPs) Evaluated in the City



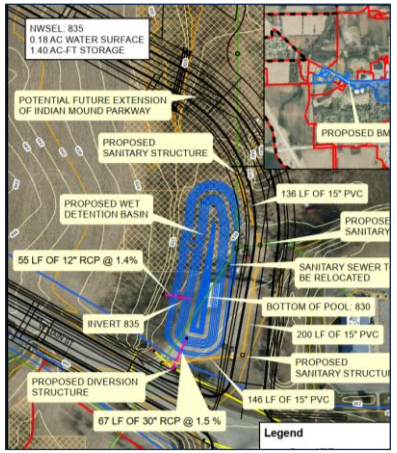
Stormwater BMPs in the City (Alternative #2 Example)

Starin Road Underground Wet Pond (WP)
- Existing Grant
- 20.9 City/31.0 UWW lb TP
- $3.63 million
  - City $1.46 million
  - UWW $2.17 million



Armory Wet Pond
- 12.3 lb TP
- $669,500

West North Street HDS
- 3.9 lb TP
- $261,500



DLK/Main Street WP
- 18.6 lb TP
- $454,400

Public Works-HDS
- 0.4 lb TP
- $59,700

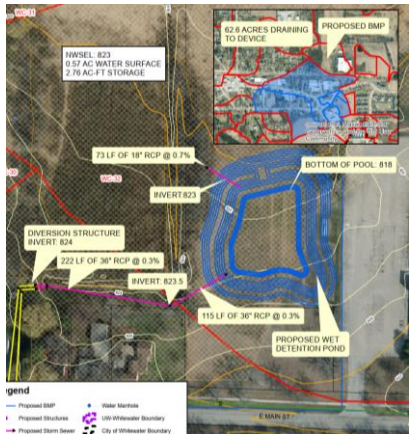
N. Universal Blvd WP
- 5.9 lb TP
- $647,000

Redevelopment at 80% TSS Reduction
- 16.20 lbs over 20 years
- $0

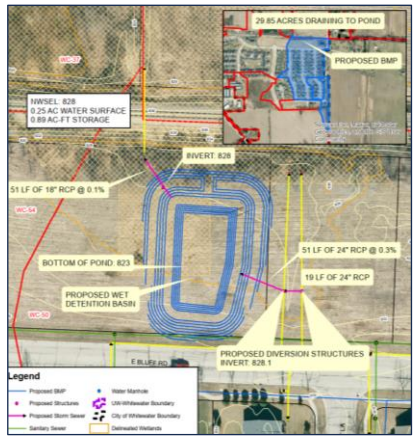
Agricultural Water Quality Trading (159 lbs TP)
- $25,400 in 2025$
- Begin implementation in 2035

Ann Street Wet Pond Chemical Treatment
- 107.8 lb TP
- $456,900

Innovation Center Wet Pond Chemical Treatment
- 13.6 lb TP
- $450,000

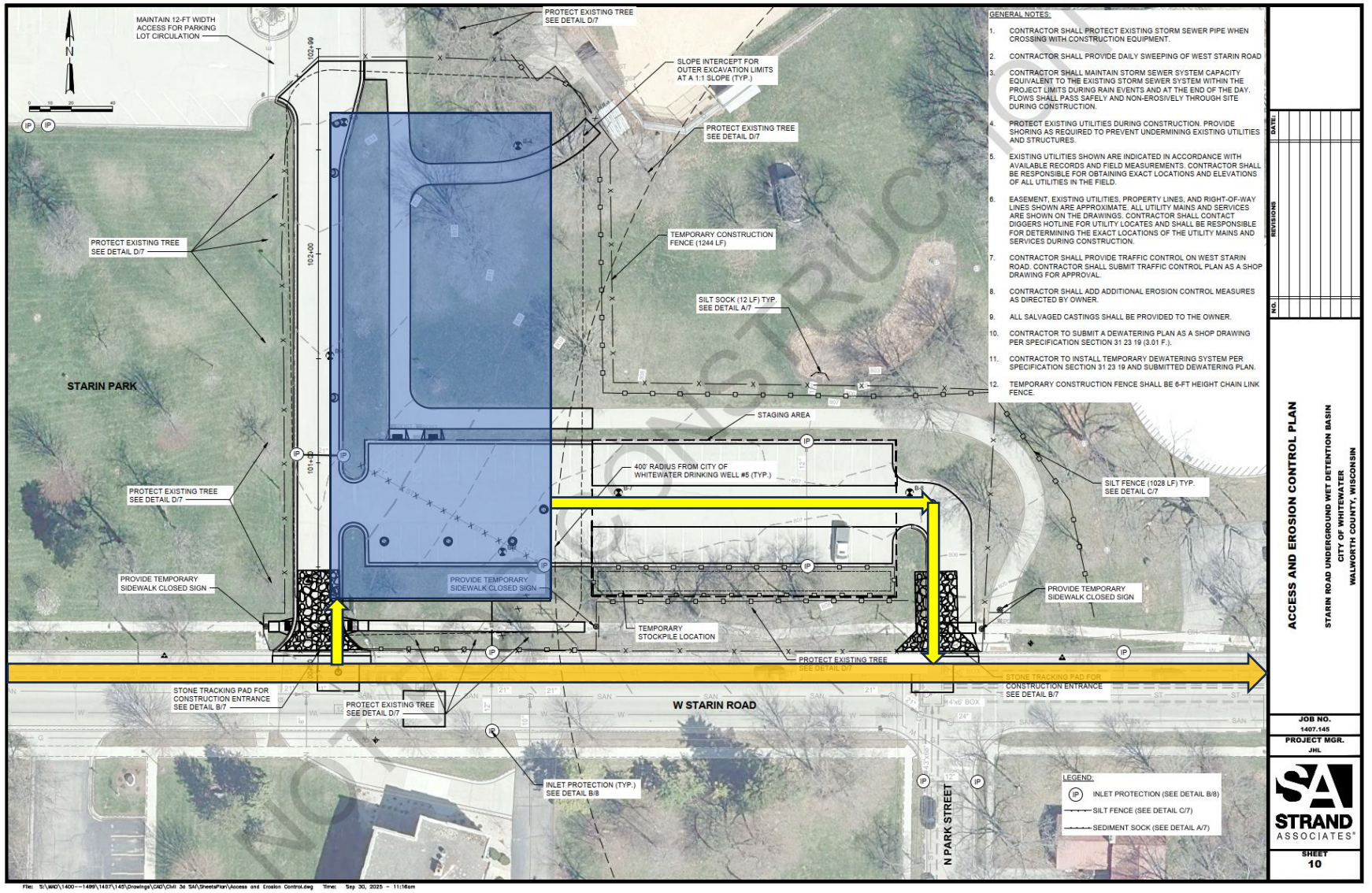


E. Main Street Wet Pond
- 9.6 lb TP
- $792,300



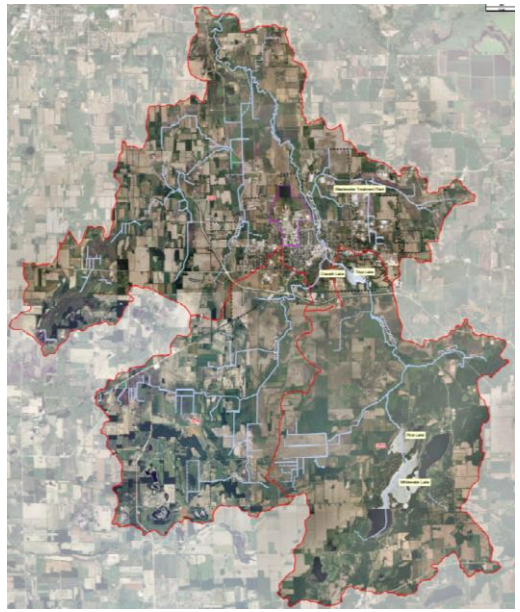
East Bluff Rd Wet Pond
- 6.6 lb TP
- $401,400

Starin Road Underground Wet Detention Basin

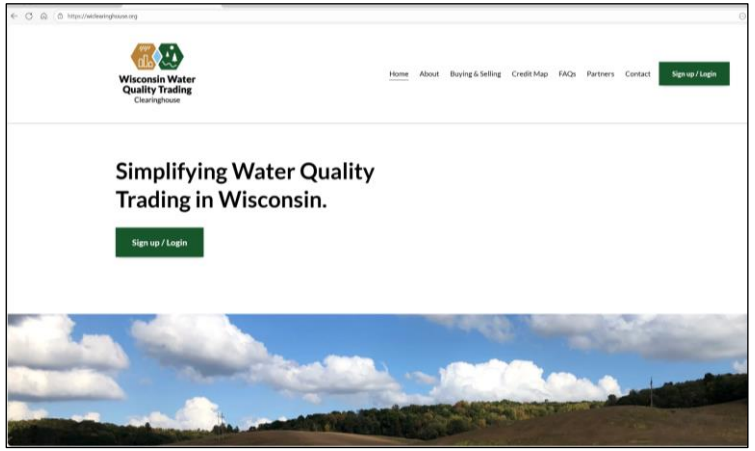


Water Quality Trading

- Agricultural Lands
  - Approximately $160/lb TP
  - Water Quality Trading Clearinghouse
- Other MS4s
  - City of Fort Atkinson
- WWTFs
  - City of Whitewater
- Private Point Dischargers
  - LS Power



Map Showing Agricultural Lands Surrounding Whitewater



Water Quality Trading Clearinghouse Website

Alternatives Analysis (Table 5.04-1)

Component	BMP	Figure Number	Proposed BMP Type	Basin	Serves UWW and City Lands	Property Acquisition	Wetland Delineation	Soil Contamination On-Site	2025 BMP Cost	BMP Cost (20-Year NPW)	20-Year NPW Cost-Effectiveness ($/lb TP)	Alternative No. 1 (lb TP)	Alternative No. 2 (lb TP)	Alternative No. 3 (lb TP)
1	Redevelopment–80 percent (20 years of redevelopment)	N/A	TBD									16.2	16.2	16.2
2	DLK/Main Street	E-1	Wet Detention Basin	GC-1		Yes	Yes		$454,375	$502,894	$1,350	18.6	18.6	18.6
3	Starin Road-Starin Park	E-2	Underground Wet Detention Basin	Multiple	Yes				$1,400,795	$1,558,619	$3,724	20.9	20.9	20.9
4	Public Works Yard	E-3	Hydrodynamic Separator	WC-7					$59,695	$152,884	$21,841	0.35	0.35	0.35
5	Armory Site-Business Park	E-4	Wet Detention Basin	WC-42			Yes		$669,500	$882,752	$3,597	12.3	12.3	12.3
6	Husco International	E-5	Dry to Wet Pond Conversion	WC-39		Yes	Yes		$610,360	$795,899	$11,762	3.4		
7	North Universal Boulevard (Husco)	E-6	Wet Detention Basin	WC-38		Yes			$647,044	$706,179	$6,010	5.9	5.9	
8	East Main Street	E-7	Wet Detention Basin	WC-55, TL-17, and WC-66		Yes	Yes		$792,261	$973,749	$5,069	9.6	9.6	
9	East Milwaukee Street	E-8	Hydrodynamic Separator	CL-2, CL-8			Yes		$106,445	$162,914	$114,845	0.07		
10	East Main Street	E-8	Hydrodynamic Separator	WC-4, CL-8					$189,625	$242,512	$17,472	0.69		
11	East North Street	E-8	Hydrodynamic Separator	WC-3					$110,695	$166,981	$15,641	0.53		
12	West North Street	E-8	Hydrodynamic Separator	WC-2 CITY, WC-2 UW, WC-61	Yes				$261,500	$311,292	$3,971	3.92	3.92	3.92
13	West Main Street	E-8	Hydrodynamic Separator	WC-9					$110,195	$166,503	$16,725	0.50		
14	Cravath Park	E-8	Hydrodynamic Separator	CL-7					$64,320	$122,603	$29,612	0.21		
15	South Wisconsin Street	E-8	Hydrodynamic Separator	CL-1					$67,445	$125,593	$15,845	0.40		
16	South Janesville Street Hydrodynamic Separator	E-9	Hydrodynamic Separator	SB-2					$110,320	$166,622	$12,777	0.65		
17	East Bluff Road	E-10	Wet Detention Pond	WC-50, WC-51.2, and WC-51.3			Yes		$401,375	$478,654	$3,649	6.56	6.56	
18	Ann Street Wet Pond Chemical Treatment	E-11	Wet Detention Pond Chemical Treatment	CL-4.1, CL-4.2, CL-4.3, CL-4.4, CL-4.5					$456,900	$711,565	$330	107.8	107.8	107.8
19	Innovation Center Wet Pond Chemical Treatment	E-11	Wet Detention Pond Chemical Treatment	WC-48, WC-48OS, Z-2					$450,000	$618,083	$2,276	13.6	13.6	13.6
20	1 Acre of Permeable Pavement Serving 5 Acres of Existing Pavement (5:1 Run-On Ratio)								$1,161,993	$1,187,825	$12,911	4.60		
21	Agricultural Water Quality Trading (Interim Credits)–147.8 lb								$23,650	$473,002	$160	147.81		
22	Agricultural Water Quality Trading (Interim Credits)–158.8 lb								$25,416	$508,315	$160		158.85	
23	Agricultural Water Quality Trading (Interim Credits)–180.9 lb								$28,942	$578,833	$160			180.89
											Total TP Removed	374.50	374.50	374.50
											Total 2025 Cost	$8,148,495	$5,618,861	$3,781,707
											Total 20-Year NPW Cost	$10,507,127	$8,200,886	$5,316,923
											20-Year NPW Cost Per Pound TP Captured	$1,403	$1,095	$710
											TP Reduction Gap	374.50	374.50	374.50

Notes:

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Alternatives Analysis Summary

Alternative #	Total 20-Yr NPW	$/lb TP Removed (20-Yr NPW)
1 – 17 BMPs + WQT	$10.5 million	$1,403
2 – 8 BMPs + WQT	$8.2 million	$1,095
3 - 5 BMPs + WQT	$5.3 million	$710

Implementation Plan

Table 6.03-1 Implementation Plan (lb TP) for Alternative No. 2

	Reach	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Agricultural WQT	59											9.9	19.9	29.8	39.7	49.6	59.6	69.5	79.4	89.3	99.3	109.2	119.1	129.0	139.0	148.9	158.8
Starin Park Underground Wet Detention Basin	59		20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9
Armory Site-Business Park Wet Detention Basin	59						12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3
West North Street HDS	59										3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
DLK/Main Street Wet Detention Basin	59												18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6
Public Works Yard HDS	59														0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Ann Street Wet Detention Basin Chemical Treatment	59																107.8	107.8	107.8	107.8	107.8	107.8	107.8	107.8	107.8	107.8	107.8
Innovation Center Wet Detention Basin Chemical Treatment	59																				13.6	13.6	13.6	13.6	13.6	13.6	13.6
North Universal Boulevard Wet Detention Basin	59																						5.9	5.9	5.9	5.9	5.9
East Main Street Wet Detention Basin	59																								9.6	9.6	9.6
East Bluff Road	59																										6.6
Redevelopment at 80 Percent TSS Reduction	59	0.65	0.65	1.30	1.94	2.59	3.24	3.89	4.54	5.18	5.83	6.48	7.13	7.78	8.42	9.07	9.72	10.37	11.02	11.66	12.31	12.96	13.61	14.26	14.90	15.55	16.20
Total		**0.6**	**21.6**	**22.2**	**22.9**	**23.5**	**36.4**	**37.1**	**37.7**	**38.4**	**43.0**	**53.5**	**82.7**	**93.3**	**104.2**	**114.8**	**233.1**	**243.7**	**254.3**	**264.8**	**289.0**	**299.6**	**316.0**	**326.6**	**346.8**	**357.4**	**374.5**
Cumulative Citywide Percent TP Reduction (%)		**45.6**	**46.8**	**46.8**	**46.8**	**46.9**	**47.6**	**47.6**	**47.7**	**47.7**	**47.9**	**48.5**	**50.2**	**50.8**	**51.4**	**52.0**	**58.6**	**59.1**	**59.7**	**60.3**	**61.7**	**62.3**	**63.2**	**63.8**	**64.9**	**65.5**	**66.4**
Percent Closure of TP Reduction Gap (%)		**0.2**	**5.8**	**5.9**	**6.1**	**6.3**	**9.7**	**9.9**	**10.1**	**10.2**	**11.5**	**14.3**	**22.1**	**24.9**	**27.8**	**30.7**	**62.2**	**65.1**	**67.9**	**70.7**	**77.2**	**80.0**	**84.4**	**87.2**	**92.6**	**95.4**	**100.0**
Permit Required (10% of TP Reduction Gap by 2030)							37.45																				

Note: HDS=hydrodynamic separator

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Conclusions and Recommendations

- Continue to implement all of the City's stormwater programs to maintain compliance with its WPDES permit.
- Proceed with implementation of Alternative No. 2 for TMDL compliance as shown in Table 6.03-1.
  - Consider the Water Quality Trading Clearinghouse in pursuit of water quality trading (circa 2035).
- Budget for grant application preparation to help fund design and construction of stormwater BMPs.
  - Per Table 6.03-1, consider a grant application in 2028 to fund design in 2029 and construction in 2030.
- Budget for design and construction of stormwater BMPs and consider stormwater utility rate modifications.
- Update the City's stormwater system maps on an annual basis.
- WinSLAMM Modeling: Update existing conditions modeling approximately every 5 to 7 years to account for BMPs since 2025.
- Discretionarily pursue streambank restoration projects with grant funding through WDNR's Targeted Runoff Management (TRM) grant program.

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Questions and Answers

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