Professional

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Services

Stormwater Quality Management Plan

Part 4 of 5

Report

City of

La Crosse, WI

August 2024

STRAND ASSOCIATES®

SECTION 4
ALTERNATIVES ANALYSIS

4.01 INTRODUCTION

The City must meet the WPDES MS4 Stormwater Permit requirements, as stated previously in Section 1. Table 4.01-1 shows that the City is not in compliance with the MS4 Stormwater Permit's required 20 percent TSS reduction requirement.

To achieve the required TSS reductions, the City will need to implement new BMPs that might include conversion of dry detention basins to wet detention basins, construction of new wet detention basins, bioretention basins, porous pavement, hydrodynamic stormwater treatment devices, ditch checks, chemical treatment of wet ponds, modified street sweeping, and modified ordinance requirements for redevelopment as further described in this section. In the future, the City may be required to meet TMDL requirements for Phosphorous and the alternatives discussed in this section may assist the City in meeting these requirements.

	MS4 Required TSS Reduction	Existing Conditions TSS Reduction	TSS Reduction Gap	TSS Reduction Gap (lb)
Citywide	20%	17.23%	2.77%	76,789

lb=pounds

Table 4.01-1 Citywide MS4 Compliance Summary

The remainder of this section is devoted to an alternatives analysis to determine the most cost-effective way for the City to achieve MS4 compliance.

Section 4.02 discusses alternatives considered for the City. Section 4.03 discusses components that make up the alternatives for the City. Section 4.04 provides an evaluation of alternatives for the City. Section 4.05 includes recommendations.

Each alternative includes a description, the effects on stormwater quality and the planning-level OPCC. Costs presented were estimated using historical bid costs (where available) and supplemented by other reference sources. The referenced project costs include allowances for engineering, contingencies, and soils investigations, where necessary. The purpose of this SQMP is to provide the City with the information required to initiate the budgeting and planning phase for facilities improvements. The costs are presented in 2024 dollars. The costs presented in this section include a 35 percent contingency and technical services allowance. Costs include utility conflict resolution where sufficient GIS data was available; however, the conflicts addressed may not be all encompassing. Maintenance costs are included in the 20-year net present worth (NPW) in Table 4.04-1. Appendix D includes figures (Figures D-1 to D-6) showing the layout of each alternative component. Appendix E includes detailed OPCC breakouts for each alternative. Future construction costs should be adjusted for inflation when the final project schedules are determined. OPCCs should be updated during the design phase.

4.02 ALTERNATIVES CONSIDERED

Table 4.02-1 shows three alternatives seeking to close the TSS pollutant reduction gap identified in Table 4.01-1. Alternative components considered (though in some cases not analyzed) include water quality trading (WQT), increased frequency of street sweeping, wet detention basins, underground wet detention basins, dry to wet detention basin conversion, vegetated swales, permeable pavement retrofits, hydrodynamic separators, ditch checks, and traffic-calming bioretention basin bumpouts, Table 4.04-1 provides a listing of these alternative components including their individual cost, performance, cost-effectiveness, soil contamination on-site (according to WDNR Remediation and Redevelopment [RR] Sites Map), property acquisition need, and wetland delineation need. Table 4.04-1 also packages the BMPs into Alternative Nos. 1, 2, and 3 to achieve closing the TSS reduction gap to achieve MS4 compliance.

Alternative No.	Structural BMP Components
1	Six across the City
2	Four across the City
3	Two across the City

Note: See Table 4.04-1 for detailed alternatives analysis information.

Table 4.02-1 Alternatives Analysis Summary of Components

4.03 ALTERNATIVE COMPONENTS

Alternatives considered for the City involve many different components. Assumptions for these components are described in this section.

A. Increased Frequency of Vacuum Street Sweeping

As described in Section 3.05, the City currently performs street sweeping with a mechanical sweeper every 2 weeks citywide and weekly in downtown areas. These frequencies are considered above-average frequency. The potential increase in pollutant reduction of switching to a weekly frequency of vacuum sweeping on curb and gutter streets within the City area was not analyzed because the increased frequency would be costly and would not provide significant increases in pollutant reduction, especially considering the abundance of catch basins with sumps in the City.

B. Increased Frequency of Catch Basin Sump Cleaning

Figure 2.01-1 showed the locations of existing catch basins with sumps in the City that are included in the modeling results in Section 3. Implementing an accelerated catch basin cleaning frequency was considered, but not analyzed, as it was deemed a cost-prohibitive alternative to meet MS4 requirements. However, when the City is required to meet TMDL requirements for phosphorous, an increased cleaning frequency from once every 5 years to once per year may provide some additional pollutant reductions.

C. Redevelopment

When the City falls under the jurisdiction of a TMDL for phosphorous, the WDNR allows TMDL pollutant reduction credit to be taken for new development. If modeled properties redevelop in the future, the City can receive pollutant reduction credit toward TMDL compliance. This SQMP does not include projecting future redevelopment plans. Chapter NR 151 requires MS4s to have stormwater ordinances that require redevelopment to achieve 40 percent TSS reduction.

D. Construction of Stormwater BMPs

Appendix D includes figures for each proposed structural stormwater BMP. These figures show existing wetlands, floodplains, and storm sewer. Inclusion of this information allows preliminary siting of proposed stormwater BMPs outside wetlands and floodplains to the extents possible in a community next to the Mississippi River and to minimize conflicts with existing public utilities. It is recommended that stormwater BMPs within an applicable proximity to the La Crosse Regional Airport follow the Federal Aviation Administration (FAA) Advisory Circular No. 150/5200-33C regarding Hazardous Wildlife Attractants on or near Airports. Figure 4.03-1 shows the locations of the BMPs considered and BMPs analyzed to meet the 20 percent TSS reduction requirements.

1. Bioretention Basin at Airport Road

Construction of a new bioretention basin on open land north of the building at 3145 Airport Road is proposed as shown on Figure D-1 in Appendix D. The proposed bioretention basin is located on a 10-acre parcel in which 3.4 acres is needed for the construction and maintenance of this BMP. Property acquisition would be needed for this project. A low-flow diversion structure would be installed at the junction manhole just upstream of the bioretention basin. This allows for the entire drainage area to be treated for smaller storm events while allowing large-scale storm events to pass through the existing storm sewer along Airport Road. Although there is sand present at the site and a 3.6-in/hr infiltration rate was used for modeling, it is recommended that a geotechnical investigation be completed during the design of bioretention basin to estimate the infiltration rate of stormwater into the subsurface below the bottom of the basin. The addition of multiple cells within the bioretention basin reduces the likelihood of short circuiting the basin by providing time to stage up and infiltrate instead of flowing out of the basin through an outlet control structure consisting of an orifice and a sharp crested weir. The water leaving the pond would then be routed back to the storm sewer along Airport Road. The geotechnical investigation should also include a contaminated soil investigation (per- and polyfluoroalkyl substances [PFAS]) as the land is near is a closed site on the WDNR RR Sites Map tool as well as near the airport, which historically has been known to use PFAS in its fire suppressants. There are no mapped wetlands or indicator soils in the area.

The Airport Road bioretention basin provides the additional treatment of 33,200 pounds of TSS per year. The bioretention basin is modeled to achieve an overall 38.9 percent TSS reduction for the 99.9 acres of land draining to it. The 2024 BMP OPCC is $3,429,300, as seen in Appendix E .

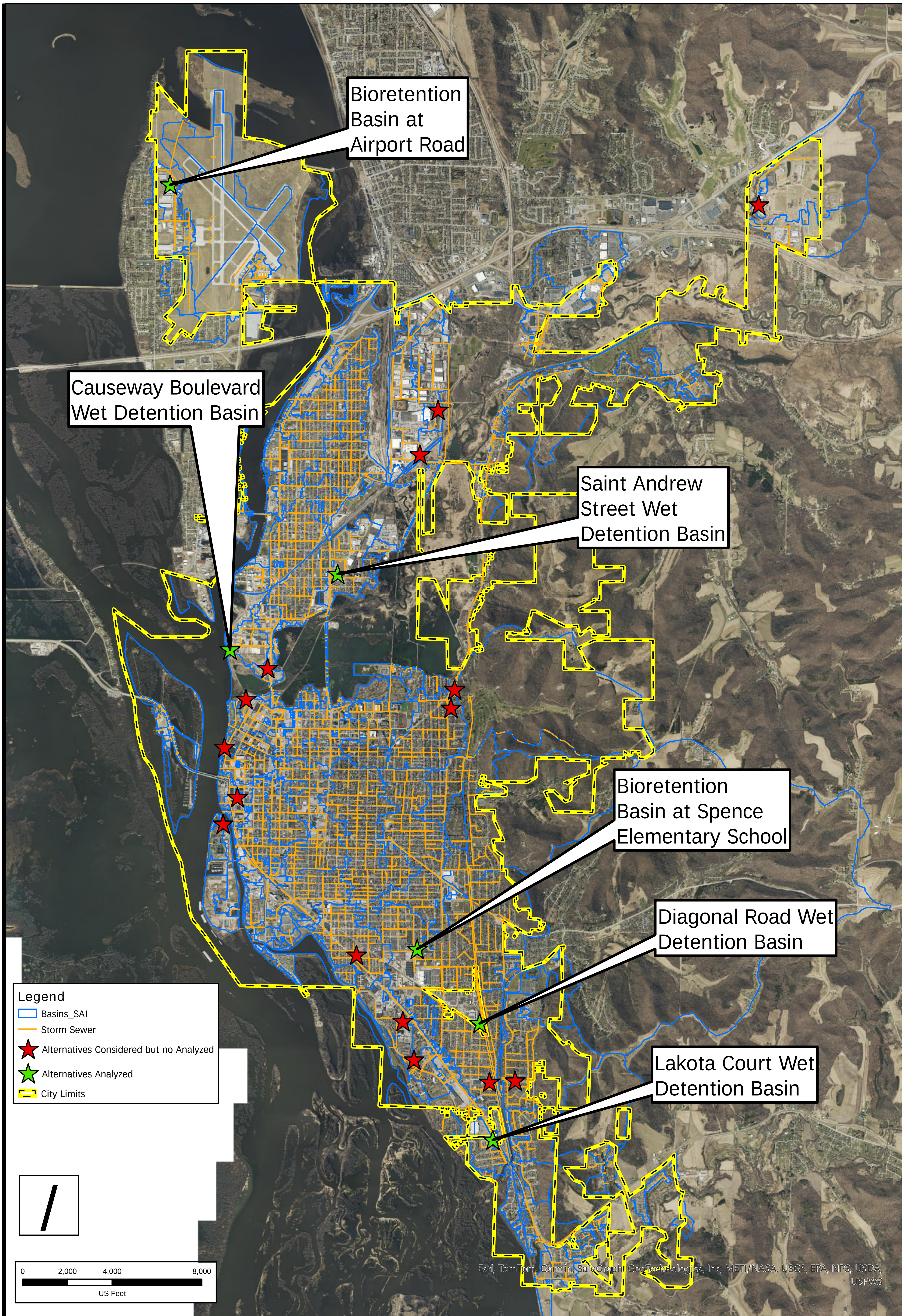

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FIGURE 4.03-1
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PROPOSED BMPS MAP

STORMWATER MANAGEMENT PLAN UPDATE
CITY OF LA CROSSE
LA CROSSE COUNTY, WISCONSIN

The WDNR Bioretention for Infiltration Technical Standard 1004 recommends a maximum drainage area of 2 acres. However, Strand has had success in implementing enhanced bioretention basins for larger drainage areas when the following are incorporated into the design: diversion of large storm events around the bioretention basin; pretreatment of low flows upstream of bioretention basin with a SAFL Baffle and down-turned elbow; level spreading and energy dissipation of low flows entering the bioretention basin; sufficient drawdown time; and confirmation of adequate vertical grade to incorporate an underdrain, if needed. This bioretention basin would not provide a permanent wet pool near the airport therefore complying with FAA Advisory Circular No. 150/5200-33C regarding Hazardous Wildlife Attractants on or near Airports. Figure 4.03-2 shows two examples of enhanced bioretention basins incorporating these features on Strand-designed projects in the City of Cleveland, Ohio.

Figure 4.03-2 Enhanced Bioretention Basins in Cleveland, Ohio Serving 19- and 59-Acre Drainage Areas, Respectively

2. Bioretention Basin at Spence Elementary School

Construction of a new bioretention basin on open land west of the main building of Spence Elementary School is proposed as shown on Figure D-4 in Appendix D. The proposed bioretention basin is located on a 2.2-acre parcel in which 1 acre is needed for the construction and maintenance of this BMP. A low-flow diversion structure would be installed at the junction manhole just upstream of the bioretention basin. This allows for the entire drainage area to be treated for smaller storm events while allowing large-scale storm events to pass through the existing storm sewer along 21st Place South. The addition of multiple cells within the bioretention basin reduces the likelihood of short circuiting the basin by providing time to stage up and infiltrate instead of flowing out of the basin through an outlet control structure consisting of an orifice and a sharp crested weir. Although there is sand present at the site and a 3.6-in/hr infiltration rate was used for modeling, it is recommended that a geotechnical investigation be completed during design of bioretention basins to estimate the infiltration rate of stormwater into the subsurface below the bottom of the basin. There are no mapped wetlands or indicator soils in the area.

The Spence Elementary School bioretention basin provides additional treatment of 22,200 pounds of TSS per year. The bioretention basin is modeled to achieve an overall 87 percent TSS reduction for the 84.2 acres of land draining to it. The 2024 BMP OPCC is $1,614,700, as seen in Appendix E.

The WDNR Bioretention for Infiltration Technical Standard 1004 recommends a maximum drainage area of 2 acres. However, Strand has had success in implementing enhanced bioretention basins for larger drainage areas when the following are incorporated into the design: diversion of large storm events around the bioretention basin; pretreatment of low flows upstream of bioretention basin with a SAFL Baffle and down-turned elbow; level spreading and energy dissipation of low flows entering the bioretention basin; sufficient drawdown time; and confirmation of adequate vertical grade to incorporate an underdrain if needed. This bioretention basin would not provide a permanent wet pool near the elementary school and will only fill with water during rain events and shortly after. The bioretention basin would also provide opportunities for learning and public involvement regarding the bioretention basin and overall stormwater management practices.

3. Causeway Boulevard Wet Detention Basin

Construction of a new wet detention basin on open land south of Causeway Boulevard adjacent to the river is proposed as shown on Figure D-2 in Appendix D. The proposed wet detention basin is located on a 20-acre parcel in which 1.5 acres is needed for the construction and maintenance of this BMP. A low-flow diversion structure would be installed at the junction manhole just upstream of the pond. Pretreatment of low flows upstream with a SAFL Baffle and down-turned elbow would help prevent floatables from entering the wet detention basin. This allows for the entire drainage area to be treated for smaller storm events while allowing large-scale storm events to pass through the existing storm sewer along Causeway Boulevard and toward the existing outfall. A backflow preventer will need to be installed at the manhole where the pond ties back into the existing storm sewer system because the 10-year Water Surface Elevation (WSEL) of the Mississippi River is 6.7 feet higher than the WSEL of the pond. The pond lies within the 100-year floodplain and close to the Mississippi River floodway; however, it is anticipated that this will have no impact on the design or permitting of this pond. It is recommended that a geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner. The geotechnical investigation should also include a contaminated soil investigation as the land used to be a steel supply company and is a closed site on the WDNR RR Sites Map tool. There are no mapped wetlands or indicator soils in the area. The land is currently owned by the Redevelopment Authority of the City. If this pond were to be constructed, the land must be set aside and not developed. It is currently assessed at $0.00 but some sort of property action will need to be taken. The land purchase number included in the OPCC is an estimate of the land purchase costs based on a similar nearby property.

The Causeway Boulevard wet detention basin provides additional treatment of 24,200 pounds of TSS per year. The wet detention basin is modeled to achieve an overall 66 percent TSS reduction for the 67.2 acres of land draining to it. The 2024 BMP OPCC is $3,750,250, as seen in Appendix E.

4. Saint Andrew Street Wet Detention Basin

Construction of a new wet detention basin on open land northeast of the intersection of Saint Andrew Street and Lang Drive is shown on Figure D-3 in Appendix D. The proposed wet detention basin is located on a 5.3-acre parcel in which 4 acres are needed for the construction and maintenance of this BMP. Pretreatment of low flows upstream with a SAFL Baffle and down-turned elbow would help prevent floatables from entering the wet detention basin. Two low-flow diversion structures would be installed along Lang Drive, intersecting the parallel storm sewer system flowing south just upstream of the pond as well as a low-flow diversion structure along the storm sewer on Saint Andrew Street. This allows for the entire drainage area to be treated for smaller storm events while allowing large-scale storm events to pass through the existing storm sewer along Lang Drive and toward the existing outfall. It is recommended that a geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner. The geotechnical investigation should also include a contaminated soil investigation because the land used to be owned by a steel supply company and is a closed site on the WDNR RR Sites Map tool. There are no mapped wetlands or indicator soils in the area. If this pond were to be constructed, the land must be purchased and not developed. There are also two instances of potential water main conflicts and the need for a relaying of the sanitary sewer along Saint Andrew Street because of a sanitary sewer conflict with some of the proposed storm sewer.

The Saint Andrew Street wet detention basin provides additional treatment of 46,600 pounds of TSS per year. The wet detention basin is modeled to achieve an overall 87 percent TSS reduction for the 115.4 acres of land draining to it. The 2024 BMP OPCC is $11,116,900, as seen in Appendix E.

5. Diagonal Road Wet Detention Basin

Construction of a new wet detention basin on open land south of 2911 27th Street South and between the two railroad tracks is shown on Figure D-5 in Appendix D. The proposed wet detention basin is located on a 3.03-acre parcel in which 2.6 acres are needed for the construction and maintenance of this BMP. Pretreatment of low flows upstream with a SAFL Baffle and down-turned elbow would help prevent floatables from entering the wet detention basin. A low-flow diversion structure would be installed along the 72-inch reinforced concrete pipe (RCP) east of the proposed pond and a low-flow diversion structure will be installed along the 30-inch RCP south of the proposed pond. This allows for the entire drainage area to be treated for smaller storm events while allowing large-scale storm events to pass through the existing storm sewer lines toward the existing outfall. It is recommended that a geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner. There are no mapped wetlands or indicator soils in the area. The land is currently privately owned and is within the Town of Shelby. If this pond were to be constructed, the land must be purchased and not developed. Please note that if this alternative is considered, the City should discuss access for construction and maintenance with the current owner.

The Diagonal Road wet detention basin provides additional treatment of 54,200 pounds of TSS per year. The wet detention basin is modeled to achieve an overall 39.1 percent TSS reduction for the 471.7 acres of land draining to it. The 2024 BMP OPCC is $1,680,600, as seen in Appendix E.

6. Lakota Court Wet Detention Basin

Construction of a new wet detention basin on open land northwest of the intersection of Lakota Court and Mormon Coulee Road is shown on Figure D-6 in Appendix D. The proposed wet detention basin is located on a 1-acre parcel in which the entire parcel is needed for the construction and maintenance of this BMP. Pretreatment of low flows upstream with a SAFL Baffle and down-turned elbow would help prevent floatables from entering the wet detention basin. A low-flow diversion structure would be installed along the 36-inch RCP pipe east of the proposed pond. This allows for the entire drainage area to be treated for smaller storm events while allowing large-scale storm events to pass through the existing storm sewer line toward the existing outfall. It is recommended that a geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner. There are no mapped wetlands or indicator soils in the area. The land is currently privately owned and is within the Town of Shelby. If this pond were to be constructed, the land must be purchased and not developed.

The Lakota Court wet detention basin provides additional treatment of 17,900 pounds of TSS per year. The wet detention basin is modeled to achieve an overall 41.1 percent TSS reduction for the 133.0 acres of land draining to it. The 2024 BMP OPCC is $980,700, as seen in Appendix E.

7. Underground Wet Detention Basin

Underground wet detention basins were considered but not analyzed as part of this SQMP. Underground wet detention basins are considerably more expensive than traditional wet detention basins (in general) but are considered when there is little open land available to site a wet detention basin or the surface over the pond is to be used for a parking lot. Figure 4.03-3 shows several typical underground wet detention basin options.

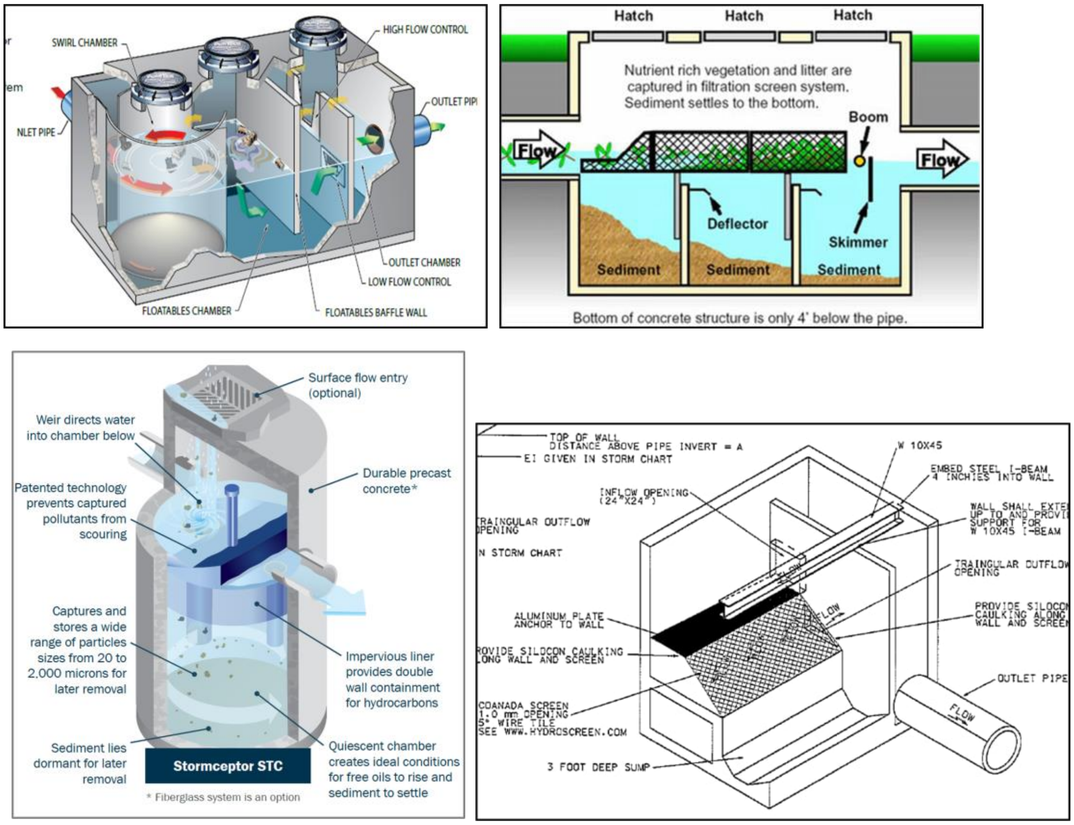
Source: Stormbloc® (by Hydro International Ltd.), StormTech® (by Advanced Drainage System [ADS]), ADS N-12 (by ADS), Contech CMP Storage (by Contech Engineered Solutions LLC [Contech]), and DoubleTrap® (byStormTrap) (clockwise from top left)

Figure 4.03-3 Underground Detention Options

8. Hydrodynamic Separator

Hydrodynamic separators are generally less effective than wet detention and bioretention basins, but are considered when there is little open land available to site a more traditional stormwater BMP such as a wet detention or bioretention basin. Hydrodynamic separators typically will treat only low flows (1- to 2-year storm events) while bypassing high flows around or through the unit. Appropriately sized hydrodynamic separators generally can expect to achieve a 15 to 25 percent TSS reduction and a 12 to 20 percent TP reduction, though this performance goes down in areas already treated by street sweeping and catch basins with sumps. Hydrodynamic separators are proven to be effective in reducing urban stormwater pollutants (nutrients, TSS, TP, oil/grease, trash, and other debris) when adequately maintained. Typical maintenance would be provided via a vacuum truck two to three times per year. Hydrodynamic separators are typically less effective in TSS and TP control where there is a high density of catch basins with sumps in a watershed because the catch basins with sumps have a similar treatment mechanism as hydrodynamic separators. However, catch basins do little to capture oil/grease, trash, and floatables. Hydrodynamic separators should be considered during street reconstruction projects at locations with no treatment at existing outfalls.

Typical options for hydrodynamic separators, as shown in Figure 4.03-4, include Vortechs® (by Contech) units, Nutrient Separating Baffle Box® (NSBB) (by Oldcastle Infrastructure, Inc.), Stormceptor (by Contech), SiteSaver® (by StormTrap), and nonproprietary coanda screen pretreatment units. Strand recommends an alternatives analysis be completed during design to determine the most cost-effective hydrodynamic separator at a given location while considering performance, need for bypass, ease of maintenance, and cost.



Source: Vortechs (by Contech), NSBB (by Oldcastle Infrastructure, Inc.), Stormceptor (by Contech), and coanda screen (clockwise from top left)

Figure 4.03-4 Hydrodynamic Separator Options

9. Permeable Pavement

Permeable pavement was considered, but not analyzed, as part of this SQMP. Permeable pavement would likely be best implemented through City projects during redevelopment. Permeable pavement (ranging from $11,000 to $25,000 per pound of TP on a 20-year present worth basis) is generally less cost effective than other traditional stormwater BMPs.

When analyzing permeable pavement, a 5:1 traditional pavement to permeable pavement run-on ratio is allowed by WDNR Permeable Pavement Technical Standard 1008. Technical Standard 1008 allows for 100 percent TSS and TP reduction for the portion of incoming flows infiltrating into the ground beneath the pavement, and 65 percent TSS and 35 percent TP removal for incoming flows flowing out of an underdrain in a permeable pavement system. Typical options for permeable pavement (as shown in Figure 4.03-5) include permeable asphalt, permeable concrete, and paver blocks.

Notes: Permeable asphalt, permeable concrete, and permeable paver blocks (from left to right)

Figure 4.03-5 Permeable Pavement Options

10. Traffic Calming Bioretention Basin Bumpout System

Where there is a need to provide traffic calming and pedestrian refuge at certain intersections, a traffic-calming bioretention basin bumpout system could be considered. This system would look much like Figures 4.03-6 and 4.03-7. Traffic-calming bioretention basin bumpout systems (ranging from $7,000 to $13,000 per pound of TP on a 20-year present worth basis) are generally less cost effective than other traditional stormwater BMPs but their value increases due to the dual-purpose traffic calming function.

On a recent Strand project in the City of Aurora, Illinois, 17 intersections were provided with this system. Watersheds draining to each intersection ranged from 0.3 to 5.4 acres with an average of 3.2 acres per intersection. Underdrains would be connected to existing storm sewer infrastructure in or nearby the intersection.

Bioretention basins would be designed using the WDNR Technical Standard 1004: Bioretention for Infiltration. Bioretention basins would typically be analyzed to have 1.25 feet of aboveground storage, a 2-foot engineered soil layer, and a 15-inch aggregate storage layer with a 6-inch underdrain pipe.

An engineered soil mix that minimizes leaching of phosphorus would be considered. As stated in the WDNR guidance document *Modeling Post-Construction Storm Water Management Treatment,* May 2015, the “DNR allows […] 80% TSS and 0% TP removal credit for the volume of runoff that is filtered through an engineered soil filtering layer that meets the requirements of Technical Standard 1004 (Bioretention for Infiltration), and that is discharged via an underdrain.”

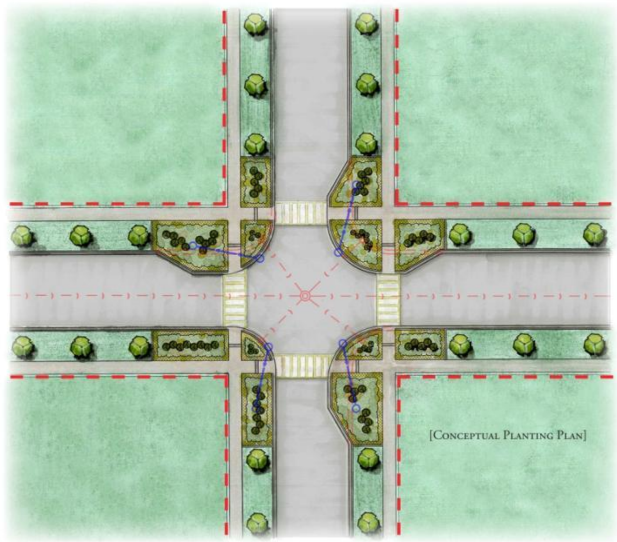


Figure 4.03-6 Traffic-Calming Bioretention Basin Bumpout System Design Rendering

Figure 4.03-7 Traffic-Calming Bioretention Basin Bumpout System

4.04 EVALUATION OF ALTERNATIVES

Table 4.04-1 summarizes the alternatives, the incremental TSS reduction, and the OPCCs.

Alternative No. 1 uses all six component BMPs to meet and exceed the 20 percent TSS reduction requirement. The six proposed alternatives would bring the City to 24.5 percent TSS reduction by providing an additional 203,000 pounds of TSS reduction. The total BMP 2024 installation cost of this alternative is $22,572,500.

Alternative No. 2 uses four of the six component BMPs to meet and exceed the 20 percent TSS reduction requirement. Airport Road and Saint Andrew Street, as the two most expensive and least cost effective were removed for this alternative. The four remaining component BMPs would bring the City to 21.5 percent TSS reduction by providing an additional 124,000 pounds of TSS reduction. The total BMP 2024 installation cost of this alternative is $8,026,300.

Alternative No. 3 uses the two most cost-effective component BMPs: Diagonal Road and Lakota Court wet detention basins. These two component BMPs would bring the City to 20.0 percent TSS reduction by providing an additional 77,400 pounds of TSS reduction. The total BMP 2024 installation cost of this alternative is $2,661,300.

It appears the most cost-effective alternative to meet the MS4 requirements is Alternative No. 3. For purposes of developing an MS4 implementation plan, it makes sense to pursue Alternative No. 3. Alternative Nos. 1 and 2 include additional constructed BMPs that would be helpful in meeting potential future TMDL requirements.

Should the WDNR institute a TMDL for the La Crosse, Black, or Mississippi Rivers in the future that would include TP and higher TSS reduction requirements, the City's MS4 may also want to entertain watershed-based solutions such as WQT and watershed adaptive management (WAM) as described in Appendix C in addition to constructed BMPs in the City. Likewise, at that time, the City may also want to consider completing a Municipal Phosphorus Reduction Credit for Leaf Management Programs analysis and emerging BMP technologies such as a Stormwater Sand Filter (WDNR Technical Standard 1012, currently under development), Enhanced Settling and Phosphorus Removal (WDNR Technical Standard 1013, currently under development), or Episodic Additive Dosing (WDNR Technical Standard 1014, currently under development).

Table 4.04-1 Summary of Alternatives

Proposed BMP Name and Type	Figure Number	Basin Treated	Treated Area (acres)	Property Acquisition or Easement Needed?	Navigable Stream	Wetlands or Wetland Indicator Soils	Wetland Delineation Needed?	Soil Contamination On-Site According to WDNR RR Sites Map?	Additional TSS Removed (lb)	Additional TP Removed (lb)	2024 BMP Cost	BMP Cost (20-Year NPW)	20-Year NPW Cost-Effectiveness ($/lb TSS Removed)	20-Year NPW Cost-Effectiveness ($/lb TP Removed)		Alternative No. 1 TSS (lb/year)	Alternative No. 2 TSS (lb/year)	Alternative No. 3 TSS (lb/year)		Alternative No. 1 TP (lb/year)	Alternative No. 2 TP (lb/year)	Alternative No. 3 TP (lb/year)
Airport Road Bioretention Basin	G-1	1341	1,341	Yes	No	No	No	Potentially	33,167	60.32	$3,429,300	$3,516,108	$5.30	$2,914.55		33,167				60.32		
Causeway Boulevard Wet Detention Basin	G-2	1265	67.2	Yes	No	No	No	Yes	24,203	31.29	$3,750,254	$3,807,268	$7.87	$6,083.84		24,203	24,203			31.29	31.29	
Saint Andrew Street Wet Detention Basin	G-3	1276	115.4	Yes	No	No	No	Yes	45,675	66.07	$11,116,900	$11,552,536	$12.65	$8,742.65		45,675				66.07		
Spence Elementary School Bioretention Basin	G-4	1109	84.2	No	No	No	No	No	22,220	52.55	$1,614,700	$1,716,298	$3.86	$1,633.14		22,220	22,220			52.55	52.55	
Diagonal Road Wet Detention Basin	G-5	1109	471.7	Yes	No	No	No	No	59,497	110.08	$1,680,600	$1,809,264	$1.52	$821.80		59,497	59,497	59,497		110.08	110.08	110.08
Lakota Court Wet Detention Basin	G-6	1189	133	Yes	No	No	No	No	17,904	33.08	$980,700	$1,047,219	$2.92	$1,582.86		17,904	17,904	17,904		33.08	33.08	33.08
															Total MS4 TSS Reduction Gap	76,789.80	76,789.80	76,789.80	**Total TMDL TP Reduction Gap (All Reaches)**	NA	NA	NA
															Total TSS Reduction via BMP Implementation	202,666.90	123,824.30	77,401.10	**Total TP Reduction via BMP Implementation**	353.39	227.00	143.16
															Total BMP Implementation 2024 Cost	**$22,572,454**	**$8,026,254**	**$2,661,300**	**Total BMP Implementation 2024 Cost**	**$22,572,454**	**$8,026,254**	**$2,661,300**
															Total BMP Implementation 20-Year NPW Cost	**$23,448,693**	**$8,380,049**	**$2,856,483**	**Total BMP Implementation 20-Year NPW Cost**	**$23,448,693**	**$8,380,049**	**$2,856,483**
															20-Year NPW Cost Per Pound TSS Captured	**$5.79**	**$3.38**	**$1.85**	**20-Year NPW Cost Per Pound TP Captured**	**$3,318**	**$1,846**	**$998**

$/lb=cost per pound
lb/year=pounds per year
NA=not applicable

SECTION 5
CONCLUSIONS AND RECOMMENDATIONS

5.01 GENERAL

This section presents specific recommendations for achieving the SQMP update goals. These recommendations are based on the evaluations and information presented in Sections 3 and 4, and on analyses performed as part of this SQMP.

5.02 RECOMMENDATIONS FOR ACHIEVING STORMWATER MANAGEMENT GOALS

Implementation of the following recommendations will aid the City in achieving the goals and objectives contained in this SQMP.

1. Proceed with recommendations in Section 4.04 to achieve MS4 compliance related to TSS reduction. These recommendations include installing a variety of stormwater BMPs (including bonding and financing for the projects and submitting grant applications to offset project costs), among others described in Section 4. Maintain the existing conditions TSS reduction performance of BMPs in the City. Consider officially mapping proposed stormwater BMP locations to preserve them for future development.

2. Update the City's storm sewer system map on an annual basis if changes to the storm systems are made.

3. Submit an annual report to the WDNR documenting and tracking permit-related activities.

4. Leverage funds from the stormwater utility, grants, and low interest loan/principal forgiveness for design and construction of the improvements necessary.

5.03 IMPLEMENTATION PLAN

It is recommended that the City pursue implementation of Alternative No. 3 for MS4 compliance, further described in Sections 4.04 and Table 4.04-1. The City should work with the WDNR to set a timeline for MS4 compliance and use funding opportunities described herein to decrease the local share of the projects outlined in Alternative No. 3. Over time, the City should consider other opportunities for TSS reductions as they arise once a TMDL for phosphorous is in place in the region, including consideration of components of Alternative Nos. 1 and 2 if they make sense for the City.

The next opportunity for a WDNR UNPS construction grant application is April 15, 2026, with a successful grant funding design in 2027 and construction in 2028. As a community currently not in compliance with the 20-percent TSS requirement, the City gains 30 points for Extent of Pollutant Control compared to in-compliance communities that would achieve 15 points for that question in the WDNR Urban Nonpoint Source (UNPS) stormwater construction grant application. This would partially offset points gained by communities that are in TMDL watersheds that gain 30 points compared to 10 points for the City (Surface Water Quality) for the grant application's Water Quality Need. The timing of the grant application should be coordinated with the timing for seeking of Clean Water Fund (CWF) Program funding (low interest loan and 55 percent principal forgiveness) to maximize potential funding for the project and increase the cost-effectiveness of Alternative No. 3.

5.04 PROGRAM FUNDING OPTIONS

Possible funding sources for implementation of activities required for compliance with the stormwater permit are described herein.

A. Grants

Some more popular WDNR grant programs include the UNPS and Stormwater, Healthy Lakes and Rivers, Surface Water Restoration, Management Plan Implementation, Surface Water Planning, Comprehensive Management Planning for Lakes and Watersheds, and Municipal Flood Control grant programs. The WDNR UNPS and Stormwater Grant is the most appropriate for implementing stormwater quality BMPs recommended in this plan. Up to approximately 50 percent up to $150,000 of the design and construction of a stormwater quality BMP could be covered by the grant program should the City be successful in obtaining a grant. Land acquisition is also funded through this grant program. The remaining percentage would be covered by City funds. Scoring criteria dictates that if the City were to pay a higher percentage, then the score of the grant application would increase, potentially increasing the odds of grant award.

The CWF administered through the WDNR is also a funding option with current funding showing the City eligible for a 55 percent principal forgiveness loan and a 45 percent low-interest loan as of 2025. The principal forgiveness loan is received through a competitive process. An Intent to Apply (ITA) and Priority Evaluation Review Form (PERF) form would need to be submitted to the WDNR. This option should be pursued for all stormwater projects because up to $2,000,000 in principal forgiveness can be received for all City projects per year. This would mean that the Alternative No. 3 total cost would be cut from $2,856,500 to $1,285,400.

B. Fees

Use the OPCC from this SQMP to show the need for a fee increase to the stormwater utility.

C. Bonds

Large capital improvement projects such as major storm sewers or detention facilities may be funded through bonds or grants. Bonds are a mechanism to borrow capital for a project and distribute repayment during the life span of the project. A popular local bonding program is the CWF Program. This is a subsidized loan program included in WDNR’s Environmental Improvement Fund (EIF). The CWF provides loans to municipalities for wastewater treatment and urban stormwater projects. This program has historically been used extensively for WWTP construction. Recent program modifications allow funds to be used for stormwater management improvements.

Most CWF projects receive a subsidized interest rate of 55, 65, or 70 percent of the EIF market interest rate. CWF wastewater projects that meet certain criteria may be eligible to receive Hardship Financial Assistance, which may be in the form of a lower interest rate loan or include a grant.

5.05 CONCLUSION

The purpose of this SQMP has been to provide the City with a WPDES permit-compliant SQMP. The City should use this SQMP to guide its stormwater permit compliance efforts.

Funding of the stormwater program is at the discretion of the City. At this time, it appears that the most economical way to implement a stormwater program is to leverage stormwater utility funds, apply for WDNR UNPS and stormwater construction grants, and low interest loan/principal forgiveness through the CWF for the recommended alternative stormwater BMP components required to close the TSS reduction gaps and maintain permit compliance.