



# City of Waupun

201 E. Main Street  
WAUPUN, WISCONSIN 53963  
Phone: 920-324-7900  
Fax: 920-324-7939

"Wild Goose Center of Wisconsin"

October 10, 2014

A meeting of the Board of Public Works is scheduled for **Tuesday, October 14, 2014 at 4:30 p.m.** in the Waupun City Hall, Common Council Chambers

## AGENDA

- 1) Call to Order
- 2) Roll Call
- 3) Approve minutes of the September 9, 2014, regular meeting.
- 4) Update / Comments on updates to municipal code.
- 5) Discuss / Approve electronic filing. (see attached list)
- 6) Discuss / Approve Snow blower rates
- 7) Discuss No Parking by the Aquatic Center.
- 8) Update on Hawthorne Dr. storm sewer
- 9) Discuss / Approve MSA's storm water quote.
- 10) Public Comments
- 11) Adjournment

Richard Flynn  
Public Works Director

cc: Mayor & Common Council  
City Attorney  
Department Heads  
Media

*It is possible that members of and possibly a quorum of other governmental bodies of the municipality may be in attendance at the above stated meeting to gather information. No action will be taken by any other governmental body at the above stated meeting other than the governmental body specifically referred to above in this Notice.*

*Please note that, upon reasonable notice, efforts will be made to accommodate the needs of disabled individuals through appropriate aids and service. For additional information or to request this service, contact Angela Hull, City Clerk, at 324-7900.*



*"Wild Goose Center of Wisconsin"*



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## Waupun Board of Public Works DRAFT Minutes of Regular Meeting September 9, 2014

The Waupun Board of Public Works met in regular session on Tuesday, September 9, 2014 in the City Hall Council Chambers with Acting-Chairman Johnson presiding.

Acting-Chairman Johnson called the meeting to order at 4:30pm.

Members present are Acting-Chairman Mike Johnson, Alderman Pete Kaczmariski, Public Works Director Dick Flynn, Deputy Chief Loudon, and City Clerk Angie Hull. Chairman Steve Bastian is absent and excused.

Audience present: Myranda Bykowski and Allison Neumann of Wee Care.

Motion Loudon, second Kaczmariski to approve the minutes of the July 15, 2014 meeting of the Board of Public Works. Motion carried 5-0.

At the July Board of Public Works meeting, Wee Care asks for stop sign placement at the railroad tracks on Brown Street, in front of their business, due to car traffic and safety. Motion was made and the stop sign placement was approved. Flynn spoke with the railroad regarding the stop sign placement and it was inquired if the City considered speed humps. Flynn spoke to MSA engineer regarding a speed hump on the east side. In viewing the area and traffic, it was discussed to have the speed hump on the west side and possibly a second one down further on that same side if necessary. The railroad right of way is 46 feet. In speaking with the engineer, the speed hump would be 12 feet wide to 3-4 inches high. Signage would also be placed and possibly painting the hump area upon DOT approval. Allison Neumann of Wee Care questions how long the construction would take – Flynn believes approximately one day. Neumann prefers the humps be placed on the east side as this is a one way street and would like the vehicles to be approaching the business at a slower rate. Kaczmariski and Johnson believe one hump, with reflective paint, should be located on both sides of the tracks, east and west, as well as signage.

Motion Loudon, second Kaczmariski to approve hump placement, to be located on the east and west side of the railroad tracks on West Brown Street with reflective paint if DOT approved. Motion carried 5-0.

Proposed ordinance to amend Chapter 6.05(2) (ad) entitled Traffic Code-Senior Center Van Parking Stall is reviewed. This ordinance will designate one stall in the parking lot located south of the 300 block of E. Main Street and E. Jefferson Street as a Senior Center Van parking stall.

Motion Kaczmariski, second Loudon to recommend to the Committee of the Whole to adopt the ordinance to amend Chapter 6.05(2) (ad) entitled Traffic Code-Senior Center Van Parking Stall. Motion carried 5-0.

A citizen complaint was received by the Police Chief about safety at the walking bridge and dam located near Harris Mill Park. Children were seen playing in the dam area and this was viewed as unsafe. Flynn received a quote from Century Fence Company for fencing this area in the amount of \$4,070.00. Discussion of safety and parental responsibility was heard. No action is taken.

Flynn has made updates to Chapter 6 of the Municipal Code for review. No action is taken and will be discussed at a future meeting.

A quote from Monroe Truck Equipment to upgrade the spreader speed control for the salter truck in the amount of \$7,179.00 was reviewed and discussed. Currently two trucks have speed control on them, however due to DNR mandates, Flynn requests for the primary salter truck to be upgraded as well. Everything is currently done manually with this vehicle and does not provide accuracy of salt usage. Flynn states the funds for this purchase would be from the Waupun Public Works Auction Account

Motion Johnson, second Hull to approve the quote from Monroe Truck Equipment to upgrade the spreader controller for the salter truck in the amount of \$7,179.00 and funds to be disbursed from the Waupun Public Works Auction Account. Motion carried 5-0.

Snow blower rates are not available at this time. No action is taken.

No public comments are heard.

Motion Louden, second Flynn to duly call the meeting adjourned at 5:25pm. Motion carried 5-0.

Angie Hull, City Clerk

## Electronic Filing (Maps)

- Aldermanic Districts
- Commercial / Residential Building Plans
- Corporate Limits
- Curb & Gutter
- Elevations
- Floodplain
- Parcel Maps
- Plats / Subdivisions
- Sidewalk
- Street Profiles
- Storm Sewer
- TIF
- Zoning

**City of Waupun  
Equipment Rates**

<b>ID</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Model</b>	<b>Category</b>	<b>Location</b>	<b>Serial VIN Number</b>
1	Intrepid Ratesub	Dodge	Intrepid	1996	Vehicle	City Hall	2B3HD46T7TH103711
	Default		0.80 \$/mi				
<b>ID</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Model</b>	<b>Category</b>	<b>Location</b>	<b>Serial VIN Number</b>
3-08	Tandem Dump Truck Ratesub	Sterling	LT-7501	2008	Dump Truck	Garage	2FZHATBS78AY79046
	Power Reversible Truck		12.26 \$/hr				
	Tailgate - mounted - Widening Wing		67.30 \$/hr				
			11.50 \$/hr				
			11.38 \$/hr				
<b>ID</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Model</b>	<b>Category</b>	<b>Location</b>	<b>Serial VIN Number</b>
4	Dump Truck Ratesub	Ford	L8000	1995	Dump Truck	Garage	1FDYK82E9SVA82994
	Power Reversible Widening Wing		12.26 \$/hr				
			11.38 \$/hr				
			46.60 \$/hr				
<b>ID</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Model</b>	<b>Category</b>	<b>Location</b>	<b>Serial VIN Number</b>
5-09	Dump Truck Ratesub	Freightliner	M2106V	2009	Dump Truck	Garage	1FVHC3BS19HAJ1444
	Power Reversible Widening Wing		12.26 \$/hr				
			11.38 \$/hr				
			67.30 \$/hr				
			11.00 \$/hr				
<b>ID</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Model</b>	<b>Category</b>	<b>Location</b>	<b>Serial VIN Number</b>
6-13	Single Axle Dump Truck Ratesub	Freightliner	108SD	2013	Dump Truck	Garage	1FVAG4BS0DHF9538
	Power Reversible Tailgate - mounted - Widening Wing		12.26 \$/hr				
			16.52 \$/hr				
			11.38 \$/hr				
			46.60 \$/hr				
<b>ID</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Model</b>	<b>Category</b>	<b>Location</b>	<b>Serial VIN Number</b>
7	Tandem Dump Truck Ratesub	Sterling	LT-7501	2003	Dump Truck	Garage	2FZHATAKX3AM13718
	Widening Wing		11.38 \$/hr				
	Power Reversible Truck		12.26 \$/hr				
			67.30 \$/hr				
<b>ID</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Model</b>	<b>Category</b>	<b>Location</b>	<b>Serial VIN Number</b>
8	Dump Truck Ratesub	Ford	L-8000	1990	Dump Truck	Garage	1FDYK82A7LVA32741
	Power Reversible Widening Wing		12.26 \$/hr				
			11.38 \$/hr				
			11.50 \$/hr				
			46.60 \$/hr				

9-12	ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
		Tandem Dump Truck	Freightliner	M280	2012	Dump Truck	Garage	1FVHC3BS3CHBR5339
		Ratesub						
		Widening Wing	11.38 \$/hr					
		Truck	67.30 \$/hr					
		Tailgate - mounted -	11.50 \$/hr					
		Power Reversible	12.26 \$/hr					
11	ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
		Tandem Dump Truck	Sterling	LT-7501	2001	Dump Truck	Garage	2FZHATAK01AJ93549
		Ratesub						
		Truck	67.30 \$/hr					
		Widening Wing	11.38 \$/hr					
		Power Reversible	12.26 \$/hr					
12-07	ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
		Sweeper	Ford - Elgin	CF700	2007	Heavy Equipment	Garage	49HAAADB57DX57964
		Ratesub						
		Default	78.50 \$/hr					
13	ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
		Air Compressor	Atlas	XAS90JD	1998	Heavy Equipment	Garage	4500AH0717WH606309
		Ratesub						
		Default	17.06 \$/hr					
14	ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
		Tractor	Massey Ferguson	MF-20	1976	Heavy Equipment	Garage	9A236875
		Ratesub						
		Default	29.30 \$/hr					
15	ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
		3/4-Ton Pickup Truck	Chevrolet	2500	1996	Pick-up Truck	Garage	1GCGK24R2TZ180143
		Ratesub						
		Default	13.94 \$/hr					
17-09	ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
		Riding Lawn Mower/Blower	Kubota	F3680	2009	Lawn Mowers		215909
		Ratesub						
		Default	21.80 \$/hr					
19	ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
		1/2-Ton Pickup Truck	Chevrolet	1500	2003	Pick-up Truck	Garage	1GCEK14T63Z263023
		Ratesub						
		Default	13.94 \$/hr					
22-13	ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
		1/2-Ton Pickup Truck	Chevrolet	Silverado	2013	Pick-up Truck	Garage	1GCNKPE01DZ169235
		Ratesub						
		Default	13.94 \$/hr					
23	ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
		Track Loader	Caterpillar	953	1988	Heavy Equipment	Garage	20Z01628
		Ratesub						
		Default	64.38 \$/hr					

ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
24	Grader	Caterpillar	140G	1984	Heavy Equipment	Garage	72V06860
	Ratesub						
	Default	70.48 \$/hr					
	Widening Wing	21.74 \$/hr					
	Ripper Attachment	70.88 \$/hr					
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
25-10-C	Payloader Wing	Wausau	PW10 RHTE	2010	Heavy Equipment	Garage	17494
	Ratesub						
	Widening Wing	21.74 \$/hr					
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
25-10	Caterpillar Payloader	Caterpillar	930H	2010	Heavy Equipment	Garage	CAT0930HPDHC02116
	Ratesub						
	Default	61.20 \$/hr					
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
25-10-B	Payloader Plow	Wausau	HSP4212H	2010	Heavy Equipment	Garage	17494
	Ratesub						
	Plow	21.96 \$/hr					
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
25A	Snowblower	Fair Snocrete	7421C	1996	1996	Snowblower	Garage
	Ratesub						
	Default	275.24 \$/hr					
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
26	Tractor Backhoe	Ford	655-D	1993	Heavy Equipment	Garage	A421577
	Ratesub						
	Default	47.08 \$/hr					
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
27	1-Ton Flatbed Dump Truck	Chevrolet	3500	1998	Pick-up Truck	Garage	1GBJK34F6WF066660
	Ratesub						
	Default	13.94 \$/hr					
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
28	1-Ton Flatbed Truck w/hoist	Chevrolet	3500	2003	Pick-up Truck	Garage	1GBJK34173E266968
	Ratesub						
	Default	13.94 \$/hr					
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
29-11	1/2 Ton Pick-up	Chevrolet	Silverado	2011	Pick-up Truck		1GCNKPE03BZ361139
	Ratesub						
	Default	13.94 \$/hr					
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
30	1 Ton Flatbed truck w/hoist	Chevrolet	3500	2006	Pick-up Truck	Garage	1GBJK34266E126374
	Ratesub						
	Default	13.94 \$/hr					
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
33	Trailer		8-12	1973	Trailer	Garage	TH8-12G-55753
	Ratesub						
	Default	25.18 \$/hr					

ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
34-09	1-Ton Pickup Truck	Chevrolet	3500	2009	Pick-up Truck	Garage	1GBJK74649F158829
	Ratesub						
	Default		13.94 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
35-08 C	Payloader Wausau Plow	Wausau	SS4212H	2008	Heavy Equipment		08172
	Ratesub						
	Plow		21.74 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
35-08	Front End Loader w/ attachments	Caterpillar	930H	2008	Heavy Equipment		CAT0930HLDHC00679
	Ratesub						
	Default		61.20 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
35-08 D	Payloader Wausau Wing	Wausau	PW9RHTE	2008	Heavy Equipment		08172
	Ratesub						
	Default		21.74 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
38	3/4-Ton Pickup Truck	Chevrolet	2500	1996	Pick-up Truck	Garage	1GBGK24RXTZ206086
	Ratesub						
	Default		13.94 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
39	1 Ton Flatbed Truck w/hoist	Chevrolet	3500	2006	Pick-up Truck	Garage	1GBJK34296E125381
	Ratesub						
	Default		13.94 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
40	1 Ton Flatbed	Chevrolet	Silverado	2007	Pick-up Truck	Garage	1GBJK34667E525564
	Ratesub						
	Default		13.94 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
43-08	Compactor	Honda	WP 1550AW	2008	Light Equipment	Garage	7576 121 6644032
	Ratesub						
	Default		32.90 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
45	Leaf Vac	Giant Vac	6600 JD	1996	Light Equipment	Garage	96267144
	Ratesub						
	Default		32.00 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
46	Backhoe / Tractor	Caterpillar	311	1996	Heavy Equipment	Garage	9LJ00491
	Ratesub						
	Default		60.38 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
48	Toro Mower Trailer	Toro			Trailer		
	Ratesub						
	Default		15.12 \$/hr				
ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
49-10	Giant Leaf Vac	6600JDT-TR1	2010		Light Equipment	Garage	
	Ratesub						
	Default		32.00 \$/hr				

ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
50-08	Lawn Mower	Groundmaster	30464	2008 Lawn Mowers		280000142
	Ratesub					
	Default	1/1/2014	21.80 \$/hr			
ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
51-12	3" Diaphragm Pump	Wacker - Neuson	PDT3A	2012 Light Equipment		20059729
	Ratesub					
	Default	1/1/2014	32.42 \$/hr			
ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
52	1-Ton Flatbed Pickup Truck	Chevrolet	3500	1999 Pick-up Truck	Garage	1GBJK34F2XF017036
	Ratesub					
	Default	1/1/2014	13.94 \$/hr			
ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
53	Portable Generator	Homelite	176A35-1C	2001 Tool	Garage	22297323
	Ratesub					
	Default	1/1/2014	18.62 \$/hr			
ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
54	Tractor & Mower / Blade	John Deere	430	1984 Lawn Mowers	Garage	M00430X360056
	Ratesub					
	Default	1/1/2014	17.50 \$/hr			
ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
55	Mower	Toro	445-D	2001 Lawn Mowers	Garage	CP366-26-04268
	Ratesub					
	Default	1/1/2014	21.80 \$/hr			
ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
56	Tractor / Blade / Broom	John Deere	455	1996 Lawn Mowers	Garage	00455C040252
	Ratesub					
	Sprayer	1/1/2014	18.38 \$/hr			
	Broom	1/1/2014	32.62 \$/hr			
	Default	1/1/2014	17.50 \$/hr			
ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
57	Walk Behind Saw	Norton	C-115	Saw		87BM725001701
	Ratesub					
	Default	1/1/2014	48.26 \$/hr			
ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
58	Tractor	John Deere	430	1985 Lawn Mowers	Garage	
	Ratesub					
	Default	1/1/2014	17.50 \$/hr			
ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
59	Compactor	Wacker	B5-604	Light Equipment	Garage	0501310334
	Ratesub					
	Default	1/1/2014	32.90 \$/hr			
ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
60	Bobcat Loader, skid w/ auger & chisel	Melroe	773	996 Heavy Equipment	Garage	509638612
	Ratesub					
	Default	1/1/2014	27.10 \$/hr			

61	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		Case Internatio 885 Tractor	Case	T25	1988 Heavy Equipment	Garage	021303
		Ratesub					
		Default	1/1/2014	28.46 \$/hr			
		2 pan section	1/1/2014	22.40 \$/hr			
64	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		Portable Generator	OHV	OVB50	Tool	Garage	H964107
		Ratesub					
		Default	1/1/2014	18.62 \$/hr			
65	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		Generator Trailer Mounted		16944	1961 Trailer	Garage	PU4821M
		Ratesub					
		Default	1/1/2014	101.70 \$/hr			
66	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		Bobcat Flatbed Trailer			Trailer	Garage	
		Ratesub					
		Default	1/1/2014	25.18 \$/hr			
68	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		Roller / Vibrating	Wacker	RD880	1994 Heavy Equipment	Garage	629601130
		Ratesub					
		Default	1/1/2014	41.06 \$/hr			
69-07	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		Brush Chipper	Brush Bandit	1290H Drum	2007 Trailer	Garage	007231
		Ratesub					
		Default	1/1/2014	30.70 \$/hr			
70	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		CAT Flatbed Trailer	Trail King	TK40LP	1994 Trailer	Garage	1TKC02422RM115296
		Ratesub					
		Default	1/1/2014	44.34 \$/hr			
73	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		Wire Welder	L-Tec	V1-2066V	Tool	Garage	B87K-75561
		Ratesub					
		Default	1/1/2014	3.64 \$/hr			
75	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		Power Washer	Alkota	5181	Tool	Garage	D02-05181
		Ratesub					
		Default	1/1/2014	54.70 \$/hr			
77	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		Makita Concrete Saw	Makita	DPC7311	Saw	Garage	0507096193
		Ratesub					
		Default	1/1/2014	48.26 \$/hr			
97	ID	Description	Manufacturer	Model	Category	Location	Serial VIN Number
		Cement Trailer	Radeas		Trailer	Garage	
		Ratesub					
		Default	1/1/2014	15.12 \$/hr			

ID	Description	Manufacturer	Model	Model	Category	Location	Serial VIN Number
99	Cement Trailer				Trailer	Garage	
	Ratesub						
	Default	1/1/2014	44.34 \$/hr				
110	Cement Saw	ICS	613GC		Tool	Small Tool Room	4470492
	Ratesub						
	Default	1/1/2014	48.26 \$/hr				
111	Cement Saw	Dolmar	PC7374		Tool	Small Tool Room	010440735
	Ratesub						
	Default	1/1/2014	48.26 \$/hr				
112	Cement Saw	Dolmar	309		Tool	Small Tool Room	309000150
	Ratesub						
	Default	1/1/2014	48.26 \$/hr				
175	Ltec Welding & Cutting				Hand Tools	Welding Area	B87K-75561
	Ratesub						
	Default	1/1/2014	3.64 \$/hr				

**SCOPE OF SERVICES**  
**Stormwater Pollution Prevention Planning – Municipal Sites**

**INTRODUCTION**

The City of Waupun is obligated to prepare Stormwater Pollution Prevention Plans (SWPPPs) for municipal garages, storage areas and other sources of stormwater pollution as described in WPDES Permit No. WI-S050075-2, Section 2.6.7.

**SCOPE OF WORK**

MSA will prepare SWPPPs for a pre-determined number of sites identifies by the City of Waupun. The SWPPPs will be prepared and documented for inclusion with the City's annual report due March 31, 2016.

The scope of work (for each site) includes:

1. Site visit and meeting with the City's representative responsible for facility operations and maintenance.
2. Preparation of site map per Section 2.6.7.2 of the General Permit.
3. Description of current housekeeping practices and any BMPs.
4. Recommendations for improvements to current practices.
5. Development of inspection procedures, employee training procedures, and spill prevention and response procedures.
6. Determination of whether each Site would qualify for a conditional no exposure exclusion.

**DELIVERABLES**

Two (2) hardcopies and one (1) pdf copy of a short technical report to be included with the City's 2016 annual report.

**PROJECT COST**

The cost to complete SWPPPs is \$4,700 for the first site, and \$3,000 for each subsequent site.

# SCOPE OF WORK

## INTRODUCTION

In July 2011, the Wisconsin Department of Natural Resources completed a Total Maximum Daily Load (TMDL) study for Total Phosphorus (TP) and Total Suspended Solids (TSS) for the Rock River Watershed. The City of Waupun is located within three subwatersheds of the Rock River Watershed and each watershed has specific TP and TSS reduction requirements necessary to achieve the Rock River TMDL.

1. The South Branch of the Rock River, miles 1 to 3,
  - TSS Reduction Requirement: 55.6%
  - TP Reduction Requirement: 86.9%
2. The South Branch of the Rock River, miles 3 to 20
  - TSS Reduction Requirement: 40.6%
  - TP Reduction Requirement: 48.2%
3. The West Branch of the Rock River/Horicon Marsh, mile 0 to South Branch Rock River.
  - TSS Reduction Requirement: 40.0%
  - TP Reduction Requirement: 27.0%

This scope of work documents activities to be undertaken by MSA for purposes of developing a plan to improve the quality of stormwater runoff from the City of Waupun. The goal of this study will be to achieve TSS reduction targets identified in the TMDL report. TP reductions for existing and alternative future BMPs will be quantified and reductions maximized to the extent practicable; however, as TP reduction requirements are exceptionally high (especially that for the South Branch of the Rock River) they may not be attainable within the limits of the scope of this project and may need to be revisited in a subsequent revision to the City's stormwater quality management plan.

## TASK 1 - PREPARE/REVISE WATER QUALITY DATABASE

MSA will obtain from the City existing GIS data describing land use, watersheds, and drainage infrastructure.

**Subwatershed Divides:** MSA will subdivide city-provided watershed maps to determine drainage areas to up to 60 existing and alternative future structural BMP locations.

**Model Land Use.** The City has a comprehensive database of impervious area within City limits. MSA will develop model input data based on this actual impervious data by overlaying city land use maps over the impervious area maps and applying 'directly connected impervious area' ratios from USGS standard land use files to the resulting data to prepare model input which will be specific to the City of Waupun.

## **TASK 2 – CONDUCT INFILTRATION ASSESSMENTS**

MSA will conduct up to eight (8) double ring infiltrometer testing within the vegetated drainage systems (swales) serving City streets. MSA will conduct abbreviated two-hour infiltration tests as described/endorsed by the WDNR at the ‘consultant roundtable’ held in January 2011.

The double ring infiltrometer tests are intended to identify the saturated soil infiltration rate. As such, MSA will attempt to schedule infiltrometer tests shortly following rainfall events.

*Note: WDNR modeling guidance requires a preliminary evaluation of swale candidates to make sure that each segment of swale meets minimum criteria. MSA will use available topographic mapping and field reconnaissance to conduct the following steps:*

*Determine where swale slopes exceed 4%. MSA will use available topographic mapping to determine and plot the longitudinal slopes of all elements of the swale system. Swale segments with slopes in excess of 4% will be excluded from the existing conditions assessment. However, MSA may include these segments in the proposed conditions assessment if they can feasibly be outfitted with slope interruption devices such as ditch checks (in accordance with conservation practice standard 1062). These swales would be included as alternative future BMPs.*

*Conduct an assessment of channel scour. MSA will visually inspect the swale system to check for evidence of scour such as channel cuts. We will locate the end points of locations of scour using visual observations and by hand marking on aerial photos. These areas must be excluded from the existing conditions assessment.*

*Where construction plans are not available, or where as-built conditions are suspected to deviate significantly from construction plans, MSA will measure the width of swale bottoms using measuring tape at approximately 500 foot increments. We will identify the location where swales are measured and will obtain a representative photograph with a scalable item such as a survey range pole at the location of each photo. MSA also will determine the horizontal side slopes of both sides of the swale at the locations where bottom widths are measured using a six-foot carpenter’s level and a measuring tape.*

*Measurement of swale characteristics will be conducted on swales where infiltration testing is completed.*

## **TASK 3 –CREATE CITYWIDE WATER QUALITY MODEL**

MSA will create a WinSLAMM v10 water quality model developed according to the most recent WDNR guidance document regarding application of water quality models for TMDL compliance (as of the date of this document, the most recent guidance is in draft form and dated February 21, 2014).

Modeling will be completed to determine the amount of Total Suspended Solids (TSS) and Total Phosphorus (TP) generated within the City and removed by the City’s stormwater management system.

**Baseline/“No Controls.”** MSA will develop a WinSLAMM water quality computer model representing the City’s existing land use conditions to determine the baseline pollutant loading from land uses within the City limits. This activity will determine the actual load generated within the study area (which includes areas outside the City that drain through the City’s separate storm sewer system), within the City limits, and within the ‘regulated’ area of the City.

**Existing Controls.** MSA will identify the location and characteristics of existing publicly and privately owned infrastructure, and the nature, location, frequency and timing of current municipal “housekeeping” practices (e.g., street sweeping) that may contribute towards the TSS reduction target. Using this information, MSA will modify the baseline model to determine how much TSS and TP reduction existing infrastructure and housekeeping practices can be credited. This task will determine the current level TSS and TP reduction within the City.

MSA will evaluate up to 40 existing structural BMPs under this work task. MSA’s evaluation will be based on plan data provided by the City and does not include field survey or other field verification of BMP geometry.

The existing BMP evaluations will also include the City’s current catchbasin cleaning and street sweeping programs.

Additionally, the existing BMP evaluations will include assessment of City streets served by vegetated swale drainage systems.

#### **TASK 4 - CONDUCT WATER QUALITY BMP ALTERNATIVE ANALYSIS**

MSA will develop alternative solutions to improve total suspended solids pollutant reduction goals in accordance with the Rock River TMDL. Where possible, alternative future BMPs evaluated as part of this project will incorporate infiltration practices as this is the most effective way to achieve high levels of TP reduction.

MSA will identify sites for installation of new water quality treatment facilities and will evaluate each site (according to available space and tributary area) for its ability to reduce TSS and TP loads to waters of the State. Sites with comparatively higher reduction rates will be further evaluated to determine approximate construction costs. Sites will be prioritized according to cost-benefit ratios and ranked for construction sequencing.

MSA will also evaluate the effectiveness of increased frequency of the City’s street sweeping practices. We will also evaluate the effectiveness of implementing parking controls as these practices can almost double the effectiveness of sweeping efficiency.

MSA will evaluate up to 20 alternative future BMP locations under this work task.

#### **TASK 5 – PREPARE BMP CONCEPT DESIGNS**

**Concept Plans.** MSA will develop preliminary concept designs for purposes of identifying BMP footprint and basic geometry for determining land acquisition requirements and construction quantities.

**Groundwater Indicators.** MSA will create maps of wellhead protection areas, potential groundwater contamination, and areas of high groundwater which may prohibit or negatively affect the performance of proposed BMPs which rely on infiltration. Mapping will be completed using readily available mapping resources.

**Wetland Indicators.** MSA will overlay conceptual BMP design footprints with maps of wetlands and wetland indicators using the Wisconsin Wetland Inventory Maps USDA Natural Resources Conservation Service soil maps (which will be used to indicate areas of 'somewhat poorly, poorly and very poorly drained soils' which are soil types typically found within areas designated as wetlands).

**Evaluate Permitting Issues.** The mapping products described above will be used to evaluate each proposed BMP for permitting issues. It is anticipated that this will focus primarily on the presence of wetlands or wetland indicators on any given site. WDNR and ACOE are not likely to permit BMP construction projects within wetland areas.

## **TASK 6 – PRIORITIZE RECOMMENDED IMPROVEMENTS**

**Prepare BMP Cost Estimates.** MSA will prepare preliminary construction cost estimates for each BMP. Cost estimates will include major elements include property acquisition, earthwork, storm sewer modifications, and site restoration. Allocations for additional site investigation (geotechnical, wetland delineation), engineering design, and contingency will be included.

**Develop Priority Ratings.** MSA will determine the cost-benefit ratio of each alternative water quality management facility (pounds of TSS removed per dollar of construction cost) and will prioritize each BMP according to its rank. MSA will complete this effort for two evaluation conditions; once for BMPs evaluated for WPDES-compliance, and once for BMPs evaluated for actual conditions.

## **TASK 7 – PREPARE FINAL REPORT**

MSA will prepare a report summarizing the activities conducted during this study. The report will include maps, figures, and text documenting the significant finds of field investigations, modeling studies, and ordinance and program development activities.

## **DELIVERABLES**

Three (3) hardcopies of double ring infiltrometer test results.

One (1) electronic copy in GIS format of mapping data used to develop the WinSLAMM water quality model(s).

One (1) electronic copy in WinSLAMM v10 format of the final water quality models used in this study.

Three (3) hardcopies and one (1) electronic copy in PDF format of the final stormwater management plan report.

## **PROJECT COST**

The cost to complete this project is \$45,500.

## **SCOPE OF SERVICES**

### **Stormwater Utility Audit**

#### **INTRODUCTION**

MSA has been working intermittently with the City of Waupun Public Works Staff responding to periodic requests for information regarding the City's stormwater utility and parcel bills. In our review of the stormwater utility database which was prepared by another firm, we have identified some potential discrepancies between the database and actual impervious area on several parcels which suggest that an audit of the database should be conducted to improve overall accuracy. In addition, the database is becoming out of date, having not been updated in several years.

#### **SCOPE OF WORK**

MSA will work with City staff to review the Stormwater Utility budget and current stormwater utility (SWU) database to identify data gaps in the existing database and to determine the revenue generation capability. The SWU database review will include the following activities:

1. Review and/or re-digitize all non-residential parcel impervious areas in GIS.
2. Compare non-residential impervious to the existing SWU database.
3. Recommend changes to existing database that incorporates new development and changing land use for non-residential properties.
4. After review by the City, update the SWU database to incorporate rate changes and determine revenue generation capability.

This task requires MSA receiving recent high resolution aerial photography from the City and/or County, updated GIS parcel boundaries for the City, and a copy of the current SWU database that includes the customer number, parcel number, owner name and site address (if available), land use (if available) and current ERU rate.

#### **DELIVERABLES**

One (1) electronic copy of a revised SWU database and a mapbook showing the digitized impervious areas.

#### **PROJECT COST**

The cost to complete this project is \$12,500.

## **SCOPE OF SERVICES**

### **Neighborhood Drainage Improvement Studies**

#### **INTRODUCTION**

The City of Waupun has identified seven (7) locations in the City with flooding and/or drainage problems. These problems are spread throughout the City and will benefit from small, neighborhood-style, stormwater plans (as opposed to a citywide master plan).

#### **PROPOSAL SUMMARY**

##### **1. Watertown St. – Bronson St.**

- This intersection has experienced recurring flooding believed to be due to inadequate storm sewer capacity along Watertown Street. MSA will survey the existing trunk storm sewer from Beverly Court to the outfall at the South Branch of the Rock River (approximately 5,000 feet of storm sewer and 15 intersections) and construct a hydraulic model of the storm sewer system to evaluate system capacity, to identify potential bottlenecks and to evaluate potential alternatives to improve system capacity.
- **Study Cost Estimate - \$15,050**

##### **2. Hazell St. – Patee Dr.**

- This area has been reviewed in the past by the City's prior stormwater consultant and small fixes have been implemented by the department of public works based on input from MSA Professional Services; however, drainage problems persist in this neighborhood and a systemic review is warranted. The City's previous consultant has prepared an XP-SWMM model of the storm sewer in this area, the current review will build off this existing model.
- **Study Cost Estimate – \$7,850**

##### **3. Rens Way – Lincoln St.**

- This area is immediately adjacent to Area 2, above, and is served by the same storm sewer system. Issues are similar to the aforementioned problem area in that there is a conflict over drainage between developed lands within the City limits and agricultural lands outside the City. This study will revise the existing Hazell-Patee XP-SWMM model to be sure appropriate elements are included in the model to evaluate this problem area also.
- **Study Cost Estimate – N/A, included with Study Area #2**

##### **4. Harris Creek at Brown St. and West Main St.**

- There have been historic problems with flooding of Harris Creek at these two locations. MSA will obtain from WDNR the effective floodplain model of Harris Creek and will evaluate potential alternatives for passing additional flow through these potentially undersized crossings.
- **Study Cost Estimate – \$3,850**

##### **5. Rock River Country Club (and Birdie Blvd.)**

- It has been suggested that there is a potential for increasing floodplain storage within the Rock River Country Club and within a parcel of land acquired by the City off Birdie Blvd. across the river from Pine Street.

MSA will review historic flow data on the South Branch of Rock River to determine if the available storage provides enough additional detention volume to reduce peak flow rates by an amount sufficient to reduce downstream flood elevations.

- **Study Cost Estimate – \$1,900 (Conceptual Evaluation Only)**

6. **434 West Hawthorne Dr.**

- Issues in this study area are similar to those being experienced in areas 2 and 3, above, in that there is a conflict over drainage between developed lands within the City limits and agricultural lands outside the City.
- **Study Cost Estimate – \$6,900**

7. **Gateway Dr.**

- Gateway Drive suffers from flooding due to backwater of the South Branch of the Rock River. MSA has preliminarily determined that the road cannot be completely removed from the floodplain without construction of extensive flood protection systems which will increase flood elevations for areas upstream from Gateway Drive. For this project, MSA will evaluate a smaller project which will consist of a partial flood protection berm and a system of stormwater backflow prevention devices that will floodproof Gateway Drive and reduce the number of roadway closures on the street's south leg.
- **Study Cost Estimate – \$7,900**

**Proposal Cost Summary \$43,450**

## **SCOPE OF WORK**

### **Study Area 1: Watertown St. – Bronson St.**

#### **Task 101 – Field Survey**

MSA will complete a field survey of existing storm sewer manholes, inlets, and outfalls along the trunk storm sewer within the study area (approximately 5,000 feet of storm sewer, 15 intersections). Specifically, MSA will use GPS equipment to determine the horizontal location and surface elevation of the castings for manholes, inlets, and outfalls. Additionally, MSA will document the connectivity, invert elevations (by measuring depth from rim), cross-sections dimensions, and construction material for connecting pipes between manholes.

All work will be completed within the public street right-of-way.

#### **Task 102 – Compile Survey Data in GIS Database**

MSA will reduce the field survey data collected in Task 1 into a database format compatible with the City's existing geographic information system (GIS) database and which is compatible with import into the XP-SWMM stormwater model.

Specifically, GIS data will include point and line data describing structures and pipes and will include the following information:

<i>Point Data (Manholes/inlets)</i>	<i>Line Data (Pipes)</i>
Name	Name
Type (Inlet, Manhole, Outfall)	Length
X coordinate	Material
Y coordinate	Shape
Rim elevation	Dimensions (diameter or H/W)
Invert elevation	Upstream invert
Diameter	Downstream invert
	US (From) node name
	DS (To) node name

#### **Task 103 – Prepare Watershed Mapping (Hydrologic Model Input)**

MSA will obtain available information from the City of Waupun related to topography, aerial photographs, soil data, land use, and impervious area coverage. We will use this information to prepare watershed boundary, land use (runoff curve number and/or directly connected impervious area), times-of-concentration (or watershed widths) and soil infiltration rates (hydrologic soil groups).

Watershed boundaries and hydrologic model input data will be developed on a per-intersection basis. The capacities of inlets will be estimated on a per-inlet basis and entered into the hydraulic model according to the total number of inlets at each intersection.

#### **Task 104 – Prepare Storm Sewer Computer Model (Hydraulic Model)**

MSA will construct an XP-SWMM hydrologic and hydraulic model of the storm sewer, inlets, and manholes within the study area. The model will include elements for determining watershed runoff rates and volumes, inlet capacities (manual calculations for individual inlets prorated according to total inlets per intersection), pipe hydraulics, and manhole losses (manual calculations expressed as minor loss coefficients). The model will be solved for 2-, 5-, 10-, 25-, and 100-yr rainfall events.

#### **Task 105 – Prepare Technical Report**

MSA will prepare a technical report summarizing the findings of the modeling study. The report will include mapping describing modeling methods and critical input data and a discussion of potential causes and solutions to observed drainage problems at the intersections of Watertown Street and Bronson Street.

The estimated cost to complete this study is **\$15,050**.

## **Study Areas 2 and 3 - Hazell St./Patee Dr. and Rens Way/Lincoln St.**

The labor estimate for evaluation of these study areas is predicated on the assumption that the GIS data provided to MSA by the City, originally developed by the City's previous stormwater consultant is reasonably accurate. This data includes watershed boundaries, storm sewer information, and land use data. If in the course of the project work MSA determines that data is missing and/or grossly inaccurate, additional fieldwork or analysis tasks may be required.

### **Task 201 – Field Survey**

MSA is in possession of an XP-SWMM model of the storm sewer system serving both study areas. MSA has allocated one day's survey effort to spot-check elevations represented in the model.

### **Task 202 - Revise Watershed Boundaries**

MSA will check the watershed boundaries within the provided GIS data to insure that boundaries reflect the most recent storm sewer data and aerial terrain data available, and will make minor edits where necessary. The watershed limits will then be refined to create further subdivisions on an intersection-by-intersection basis for the trunk storm sewer systems serving the two study areas.

### **Task 203 - Revise Land Use Estimates**

Current land use data in the City's model was developed from zoning maps and includes composite runoff curve number data reflecting average land use types. MSA will revise the current land use estimates for the watersheds within the study limits to reflect the actual impervious areas shown on planimetric maps and recent aerial photograph provided by the City.

### **Task 204 – Construct Hydraulic/Hydrologic Model**

MSA will construct an XP-SWMM model for each study area to reflect hydrologic data developed in Tasks 201 and 202, and will incorporate hydraulic storm sewer data from the provided GIS database.

### **Task 205 - Assess Current Drainage System Capacity**

MSA will solve the model for storm events including the 2-, 5-, 10-, 25-, and 100-yr rainfall event. If incremental rainfall data specific to the events that caused the flooding experienced in the study areas is available MSA will solve the model for those events and calibrate the model as appropriate to better reflect the actual extent of flooding experienced.

### **Task 206 - Develop Concept Designs**

MSA will meet with City staff to discuss the findings of the capacity assessment task and will discuss potential alternatives for each study area and trunk storm sewer system. Concept designs will be developed for as many as three

alternatives for each problem site (note: it is anticipated that most problem areas will have only one, or perhaps two truly feasible alternatives to evaluate).

**Task 207 - Prepare Technical Memoranda**

MSA will prepare a technical memo for each study area and trunk storm sewer system, anticipated to be no more than three (3) pages in (text) length documenting the proposed concept designs. MSA will prepare preliminary alignment and profile data for the concept designs and will also provide preliminary construction cost-estimates.

The estimated cost to complete both studies described in this section is **\$7,850**.

**Study Area 4 – Harris Creek at Brown St. and West Main St.**

**Task 401 - Assess Current Drainage System Capacity**

MSA will obtain the HEC-RAS model of Harris Creek from the WDNR (developed by WDNR in 2012) and will determine the extents of property affected by 10-yr, 25-yr, 50-yr, and 100-yr flood events. If incremental rainfall data and high water marks specific to the events that have caused damage in the past is available, MSA will solve the model for those events and calibrate the model as appropriate to better reflect the actual extent of flooding experienced.

**Task 402 - Develop Concept Designs**

MSA will meet with City staff to discuss the findings of the capacity assessment task and will discuss potential alternatives for each Harris Creek Study Area. Concept designs will be developed for two alternatives for each problem site, anticipated to be a conveyance improvement alternative as the primary solution and a property acquisition alternative as a secondary solution.

**Task 403 - Prepare Technical Memoranda**

MSA will prepare a technical memo for each Harris Creek Study Area, anticipated to be no more than three pages in (text) length documenting the proposed concept designs. MSA will prepare preliminary alignment and profile data for the concept designs and will also provide preliminary construction cost-estimates.

The estimated cost to complete this study is **\$3,850**.

**Study Area 5 – Rock River Country Club**

**Task 501 - Assess River Hydrology**

MSA will obtain available flow records for the South Branch of the Rock River and will extrapolate hydrograph data to estimate the shape (peak/volume) of the 100-yr flood hydrograph in the vicinity of the Rock River Country Club.

**Task 502 – Assess River Hydraulics**

MSA will obtain the HEC-2/HEC-RAS models of the South Branch of the Rock River from the WDNR (developed by WDNR, dating back to approximately 1991). MSA will use the model to evaluate the effect that additional storage estimated to be available within the Rock River Country Club may have on reduction of 100-yr peak flows within the South Branch of the Rock River.

MSA will also determine the effect that peak flow reductions have on flood elevations along the South Branch of the Rock River (i.e. x% reduction in flow equates to y-inches in average flood elevation reduction).

**Task 503 – Prepare Technical Memorandum**

MSA will prepare a technical memorandum for the study (estimated to be no more than three (3) pages long) documenting methods and findings and recommending an approach for advancing the project to the next stage if warranted.

The estimated cost to complete this study is **\$1,900**.

**Study Area 6 - 434 West Hawthorne Dr.****Task 601 – Field Survey**

MSA will complete a field survey of existing storm sewer manholes, inlets, and outfalls along the trunk storm sewer within the study area (approximately 1,800 feet of storm sewer, 5 intersections). Specifically, MSA will use GPS equipment to determine the horizontal location and surface elevation of the castings for manholes, inlets, and outfalls. Additionally, MSA will document the connectivity, invert elevations (by measuring depth from rim), cross-sections dimensions, and construction material for connecting pipes between manholes.

All work will be completed within the public street right-of-way.

**Task 602 – Compile Survey Data in GIS Database**

MSA will reduce the field survey data collected in Task 1 into a database format compatible with the City's existing geographic information system (GIS) database and which is compatible with import into the XP-SWMM stormwater model.

Specifically, GIS data will include point and line data describing structures and pipes and will include the following information:

<i>Point Data (Manholes/inlets)</i>	<i>Line Data (Pipes)</i>
Name	Name
Type (Inlet, Manhole, Outfall)	Length
X coordinate	Material
Y coordinate	Shape
Rim elevation	Dimensions (diameter or H/W)
Invert elevation	Upstream invert
Diameter	Downstream invert
	US (From) node name
	DS (To) node name

#### **Task 603 – Prepare Watershed Mapping (Hydrologic Model Input)**

MSA will obtain available information from the City of Waupun related to topography, aerial photographs, soil data, land use, and impervious area coverage. We will use this information to prepare watershed boundary, land use (runoff curve number and/or directly connected impervious area), times-of-concentration (or watershed widths) and soil infiltration rates (hydrologic soil groups).

Watershed boundaries and hydrologic model input data will be developed on a per-intersection basis. The capacities of inlets will be estimated on a per-inlet basis and entered into the hydraulic model according to the total number of inlets at each intersection.

#### **Task 604 – Prepare Storm Sewer Computer Model (Hydraulic Model)**

MSA will construct an XP-SWMM hydrologic and hydraulic model of the storm sewer, inlets, and manholes within the study area. The model will include elements for determining watershed runoff rates and volumes, inlet capacities (manual calculations for individual inlets prorated according to total inlets per intersection), pipe hydraulics, and manhole losses (manual calculations expressed as minor loss coefficients). The model will be solved for the 2-, 5-, 10-, 25- and 100-yr rainfall events.

#### **Task 605 – Prepare Technical Report**

MSA will prepare a technical report summarizing the findings of the modeling study. The report will include mapping describing modeling methods and critical input data and a discussion of potential causes and solutions to address drainage problems reported along the back of lots north of West Hawthorne Drive.

The estimated cost to complete this study is **\$6,900**.

## Study Area 7 - Gateway Dr.

### **Task 701 – Field Survey**

MSA will complete a field survey of existing storm sewer manholes, inlets, and outfalls along the trunk storm sewer within the study area (approximately 2,000 feet of storm sewer – note this is not the entire length of trunk storm sewer in this area). Specifically, MSA will use GPS equipment to determine the horizontal location and surface elevation of the castings for manholes, inlets, and outfalls. Additionally, MSA will document the connectivity, invert elevations (by measuring depth from rim), cross-sections dimensions, and construction material for connecting pipes between manholes.

### **Task 702 – Compile Survey Data in GIS Database**

MSA will reduce the field survey data collected in Task 1 into a database format compatible with the City's existing geographic information system (GIS) database and which is compatible with import into the XP-SWMM stormwater model.

Specifically, GIS data will include point and line data describing structures and pipes and will include the following information:

<i>Point Data (Manholes/inlets)</i>	<i>Line Data (Pipes)</i>
Name	Name
Type (Inlet, Manhole, Outfall)	Length
X coordinate	Material
Y coordinate	Shape
Rim elevation	Dimensions (diameter or H/W)
Invert elevation	Upstream invert
Diameter	Downstream invert
	US (From) node name
	DS (To) node name

### **Task 703 – Prepare Watershed Mapping (Hydrologic Model Input)**

MSA will obtain available information from the City of Waupun related to topography, aerial photographs, soil data, land use, and impervious area coverage. We will use this information to prepare watershed boundary, land use (runoff curve number and/or directly connected impervious area), times-of-concentration (or watershed widths) and soil infiltration rates (hydrologic soil groups).

Watershed boundaries and hydrologic model input data will be developed on a per-inlet group basis. The capacities of inlets will be estimated on a per-inlet

basis and entered into the hydraulic model according to the total number of inlets within each group.

**Task 704 – Prepare Storm Sewer Computer Model (Hydraulic Model)**

MSA will construct an XP-SWMM hydrologic and hydraulic model of the storm sewer, inlets, and manholes within the study area. The model will include elements for determining watershed runoff rates and volumes, inlet capacities (manual calculations for individual inlets prorated according to total inlets per intersection), pipe hydraulics, and manhole losses (manual calculations expressed as minor loss coefficients). The model will be solved for 10-, 25-, 50-, and 100-yr rainfall events.

**Task 705 - Assess Current Floodplain Limits**

MSA will obtain the existing HEC-2/HEC-RAS models of the South Branch of the Rock River from the WDNR (developed by WDNR, dating back to approximately 1991) and will determine the extents of Gateway Drive affected by 10-yr, 25-yr, 50-yr, and 100-yr flood events. MSA will also delineate floodplain boundaries resulting from flows within the local watershed (when peak flow rates exceed the capacity of existing storm sewers).

**Task 706 - Develop Concept Designs**

MSA will meet with City staff to discuss the findings of the storm sewer capacity assessment and floodplain mapping portion of this project and to discuss potential alternatives solutions for flooding of Gateway Drive. MSA has preliminarily determined that the road cannot be completely removed from the floodplain without construction of extensive flood protection systems which will increase flood elevations for areas upstream from Gateway Drive. For this project, MSA will evaluate a smaller project which will consist of a partial flood protection berm and a system of stormwater backflow prevention devices that will floodproof Gateway Drive and reduce the number of roadway closures on the street's south leg. It may be that a portable or permanent pump station may need to be installed to provide positive drainage from the local watershed draining through storm sewers on Gateway Drive. It may also be possible to use storage within the excavated area west of the development on Gateway Drive for temporary storage of runoff which occurs when the river is high.

**Task 707 – Prepare Technical Report**

MSA will prepare a technical report summarizing the findings of the modeling study. The report will include mapping describing modeling methods and critical input data and a discussion of potential causes and solutions to address flooding of Gateway Drive.

The estimated cost to complete this study is **\$7,900**