

MS4 Annual Report

Board of Public Works

Phil Gaebler - City of Madison Engineering Department

4/6/2021

Report Overview

- ▶ 3rd Year of Online Reporting
 - ▶ Minimal Control Measures
 - ▶ Fiscal Analysis
 - ▶ Progress

Minimal Control Measures - Each Required a Written Program

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Pollutant Control
5. Post-Construction Storm Water Management
6. Pollution Prevention - SWPPPS Required
7. Storm Sewer System Map
8. TMDL Progress and Plan

1. Public Education and Outreach

- ▶ Waterways Newsletter
 - ▶ Flood Prioritization
 - ▶ Green Infrastructure Funding
 - ▶ Saltwise
 - ▶ Text alerts for leaves
- ▶ Ripple-Effects
 - ▶ <https://www.ripple-effects.com/>
 - ▶ Storm Drain Murals - 3 completed
 - ▶ Vilas, Paterson, Childrens Museum
 - ▶ Plant Dane
 - ▶ Rain Garden Workshops- Recorded
 - ▶ Volunteer Plant Growers
- ▶ Everyday Engineering Podcast
 - ▶ 13 Episodes in 2021



Vilas Park Storm Drain Art



Dudgeon Park Rain Garden



cityofmadison.com/engineering/stormwater

FALL 2021

Help the City Prioritize Flooding Projects

The questions, "How do you decide which flooding improvement projects get done first?" Or "when will my project be completed?" come up often from residents in public information meetings, focus groups, site visits and around the table planning the city's stormwater infrastructure. These are not easy questions to answer since the projects tend to be very expensive and complex. There are also many more projects than what the City can currently fund. Now, City Engineering wants to know what the community thinks should be prioritized with a new survey available on the Engineering Division's website.

"The survey asks residents to rank flooding issues from low priority to high priority. The purpose is to help us understand the concerns and how they impact the community while building budget equity in the decisions we make," Janet Schmidt, City Engineering Stormwater Manager and Principal Engineer said. "We want to know what they [the community] think we should be working on, because sometimes improvements can't be seen on a map or in the numbers. It comes from experience or sometimes decades living in a certain neighborhood."

The survey asks about the following topics, among others, when it comes to prioritization: flood reduction in communities that need assistance to evacuate; areas that flood most frequently, regardless of how deep; flood reduction in the greatest total area of the city, regardless of structures, roads, services; flood reduction along roads; flood reduction around commercial properties and businesses; flood reduction on emergency routes; and more. All the topics are aimed at creating an equitable way to choose and prioritize improvements.

City Engineering is tasked with designing, building and maintaining the City's stormwater system, which is a system of pipes and local waterways that move stormwater in and out of our community. The stormwater system is important because it is what protects us from flooding, and it can also be the reason for flooding as well.

City Engineering is constantly looking for ways to improve the stormwater system. This is important because the system design standards have changed drastically with advancements in technology over the last hundred years, starting from limited information, resources and funding toward stormwater infrastructure, to a lot of attention on a system that drastically impacts our community, especially during wet seasons.

Take the flood survey today: cityofmadison.com/engineering



Engineer Phil Gaebler answers a resident question while in the Wingra West watershed as part of the Division's watershed study focus groups. The Engineering Division developed the flood prioritization survey after fielding questions from the community.

A Word from the City Engineer, Rob Phillips

We continue to build our engagement program to reach you as we work to improve our City's infrastructure. From virtual public information meetings, to translating our City's Flooding website into multiple languages, to hearing from residents on what flooding projects we should prioritize, this year has provided a wide range of opportunity to connect with our community in different ways on different mediums. Our flood project prioritization survey is out now for any resident to complete.

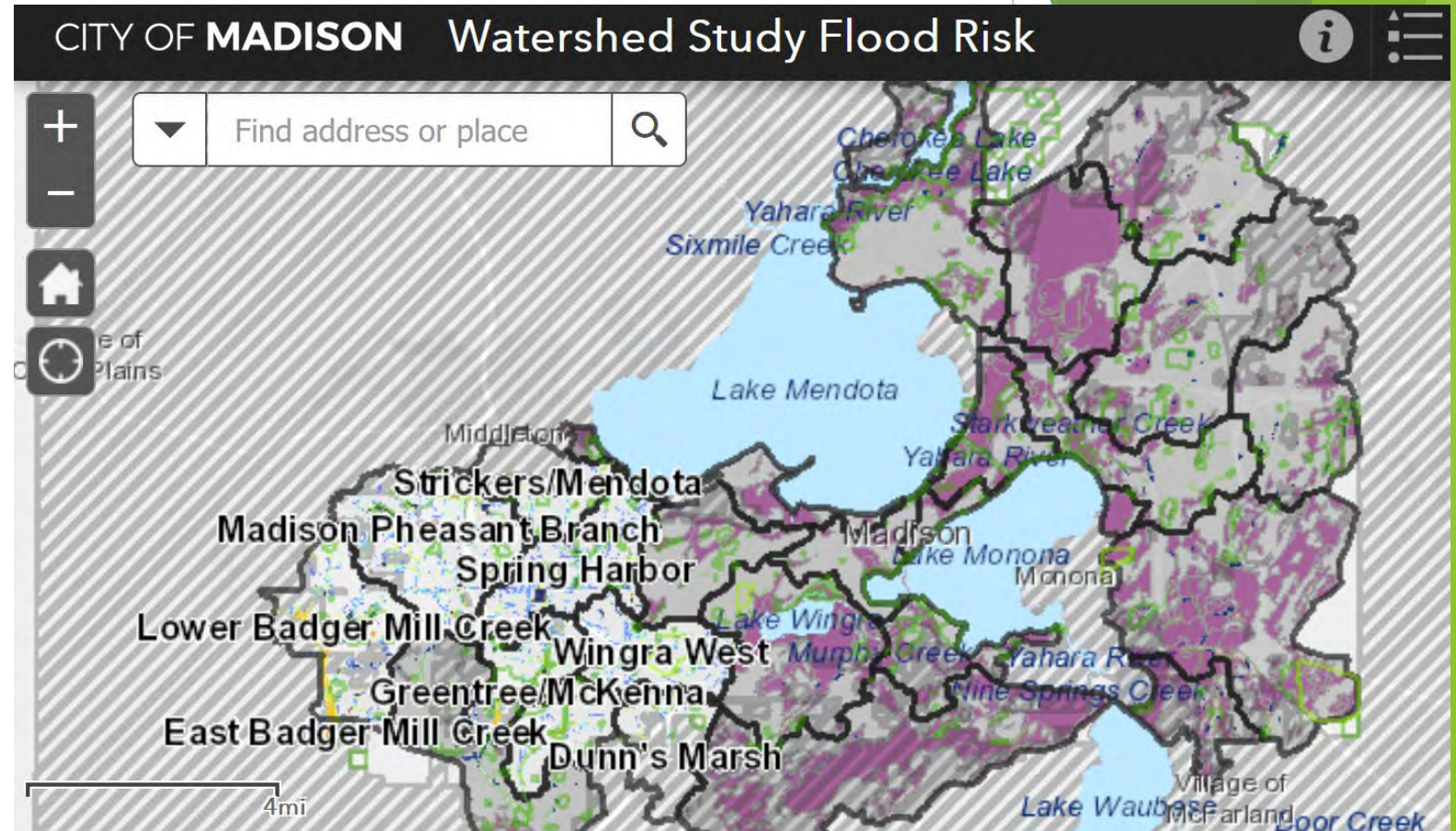
I encourage you to learn more (Front Page) and let us know what projects should be complete sooner than later. Our progress with green infrastructure is highlighted on page 2 with an update on the City's first permeable street. We're seeing more residents join us in meeting our 1,000 rain garden goal, learn more on how to pick your rain garden plants (page 2), and then send in your photos to be added to the map. Lastly, consider subscribing to our Engineering Division podcast (page 4), to learn about all the different programming we offer, including ways we work with other City agencies to support stormwater goals in the City of Madison. It's more imperative than ever to connect with one another, and we invite you to take part in these programs, visit our new Engineering Division website and share with us your experience as you join our journey toward more resilient infrastructure in the City of Madison.

It's an honor to continue serving you.

Rob Phillips

2. Public Involvement

- ▶ Chapter 37 updates
 - ▶ 1 - 200 yr peak detention
 - ▶ Low building openings set by 500 yr event (8.94")
- ▶ SWU fee Adjustment policy
 - ▶ \$5 for terrace rain garden residents
 - ▶ Increased adjustments for residents with Rain gardens and Commercial properties with non-required stormwater treatment.
- ▶ Public Information meetings
 - ▶ Watershed studies and Reconstruction Projects
- ▶ Illicit Discharge reporting now county wide

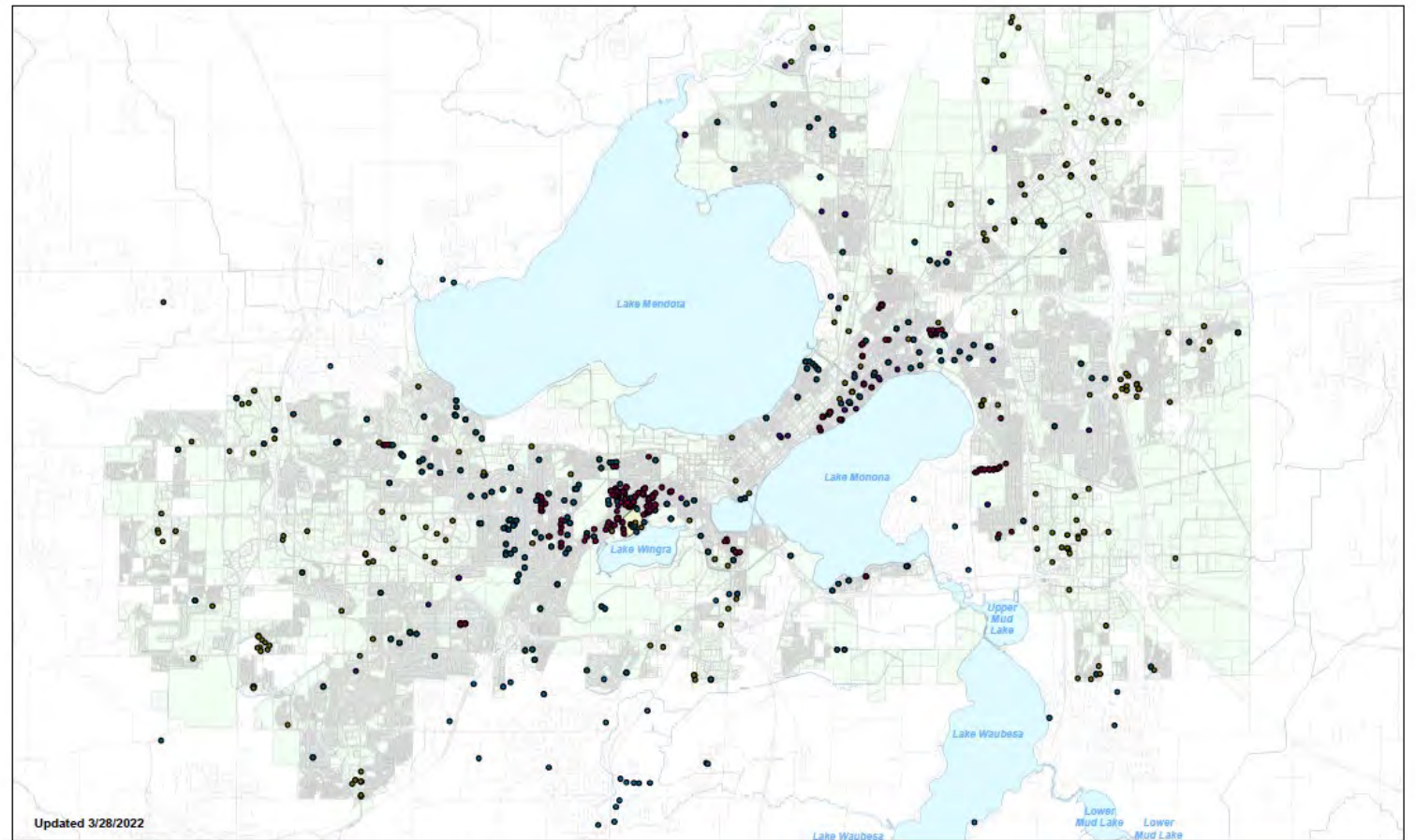


<https://www.cityofmadison.com/flooding/understanding-flooding/watershed-study-flood-risk-map>

2. Public Engagement Rain Gardens

Continue to promote public
and private installation

- Dean Avenue
- Pilot area

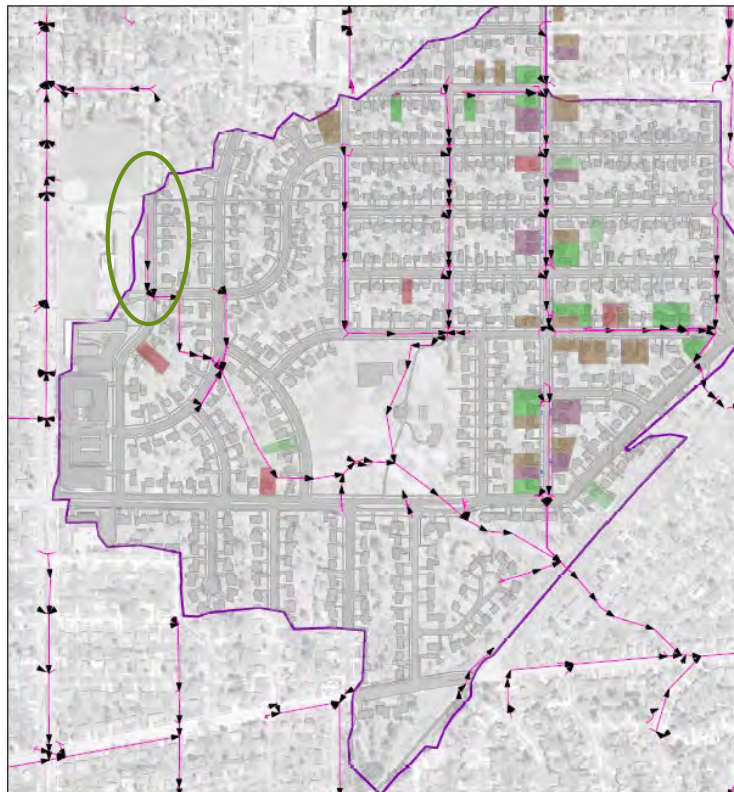


City of Madison - Rain Gardens
686 Rain Gardens and Counting

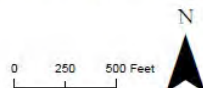
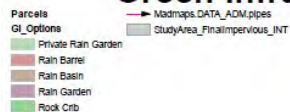
0 1 2 4 Miles



2. Public Engagement GI Pilot Study Installation Map



Green Infrastructure Study Area



Public Installation Quantities

- Stormwater Terraces
 - Rain Gardens : 12 + 5 Caromar
 - Rain Basins: 22
- Permeable Streets
 - Parking lane of Euclid and St. Clair
 - 6,344 sf + 2000 sf on Caromar
- Rock Cribs : 14
- Sidewalk Drains : 129

Private Installation Quantities

- 8 Rain Gardens: 2 in the works
- 5 Rain Barrels

- Total Impervious Draining to GI: ~4%

3. IDDE

- ▶ Illicit Discharge Detection and Elimination
 - ▶ Tests all 590 outfalls on a four year rotation
 - ▶ 109 tested in 2021:
 - ▶ No issues found
 - ▶ Water that should go to Madison Metro Sewerage District that goes to Storm Sewer
 - ▶ Cross Connections
 - ▶ Dumping
 - ▶ Concrete
 - ▶ Carpet Cleaners
 - ▶ Painters
 - ▶ 32 illicit discharges confirmed in 2021
 - ▶ 26 cleaned up
 - ▶ 6 were non-retrievable



Waste oil dumps at closed oil change business

4. Construction Site Pollution Control Erosion Control

- ▶ Issued **130** Permits for 2021
 - ▶ **1833** inspections
 - ▶ 31 Citation
- ▶ Green Tier Erosion Control Tour



Cedar Street Silt Fence

5. Post Construction Stormwater Management

Review and maintenance of Private Stormwater Treatment

- ▶ 64 new facilities added
- ▶ 290 inspection reports filed
- ▶ 12 citations given for non-compliant maintenance



6. Pollution Prevention Ponds and Greenways

- ▶ 190 Ponds owned and managed by the City
 - ▶ Inspected for sediment depth, bank erosion and clogging
 - ▶ Maintained as needed
- ▶ 56 Ponds Managed by others in our system
- ▶ 1550 catchbasins
 - ▶ 835 tons removed
- ▶ 81 repairs to Ponds
 - ▶ Bank erosion, vegetation, fence repairs
- ▶ Surveyed 31 ponds



Wheeler Road Pond

6. Pollution Prevention Winter Maintenance

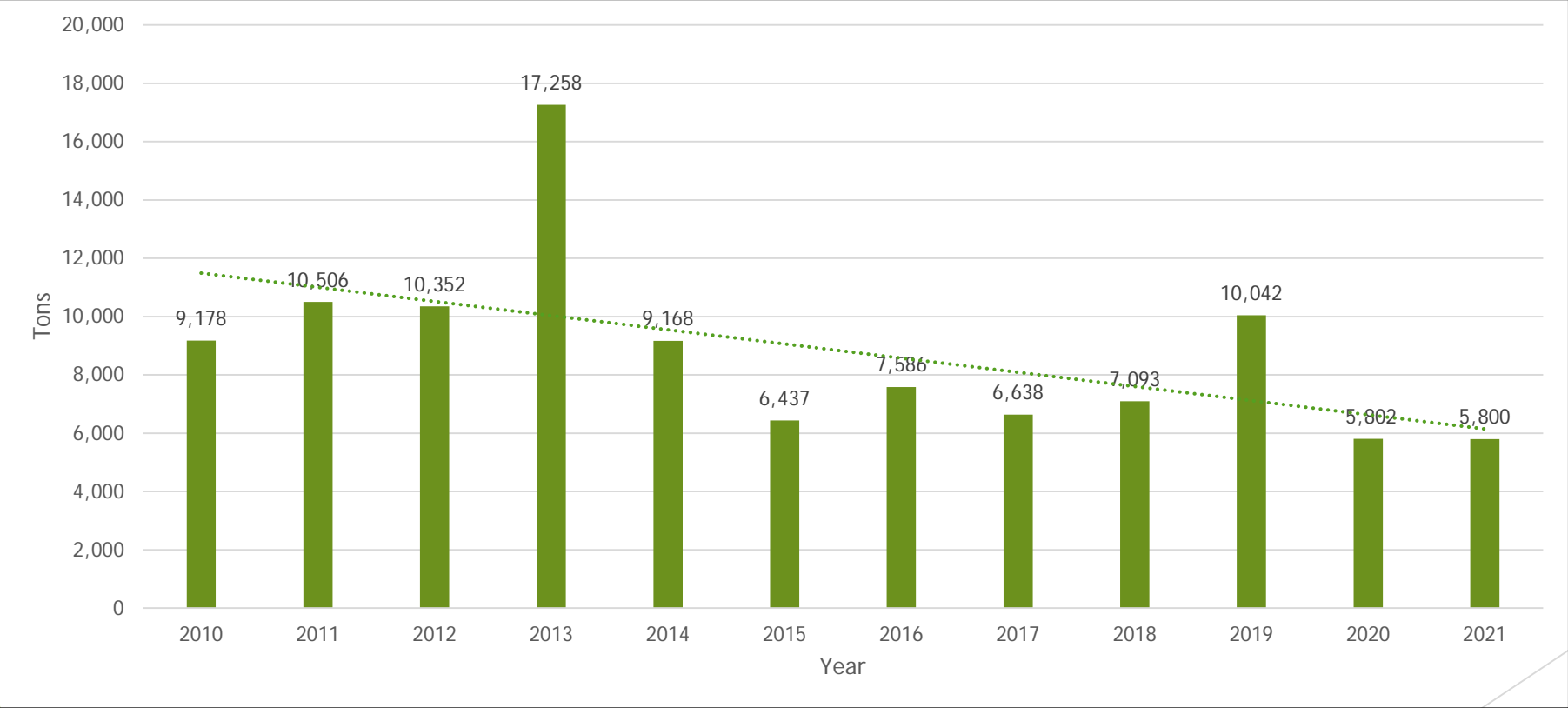
- ▶ Certification program to get public and private applicators educated on ways to effectively reduce de-icing salt.
 - ▶ 4 in house Road Trainings ~150 plow drivers
- ▶ Wi Saltwise has an LTE
 - ▶ Allison Madison
 - ▶ Coordinating Trainings
 - ▶ Over 800 certified applicators in 2021
- ▶ CARPC led Starkweather Creek Chloride Management Plan

MARCH 2021
Starkweather Creek
Chloride Management Plan
2020 - 2024



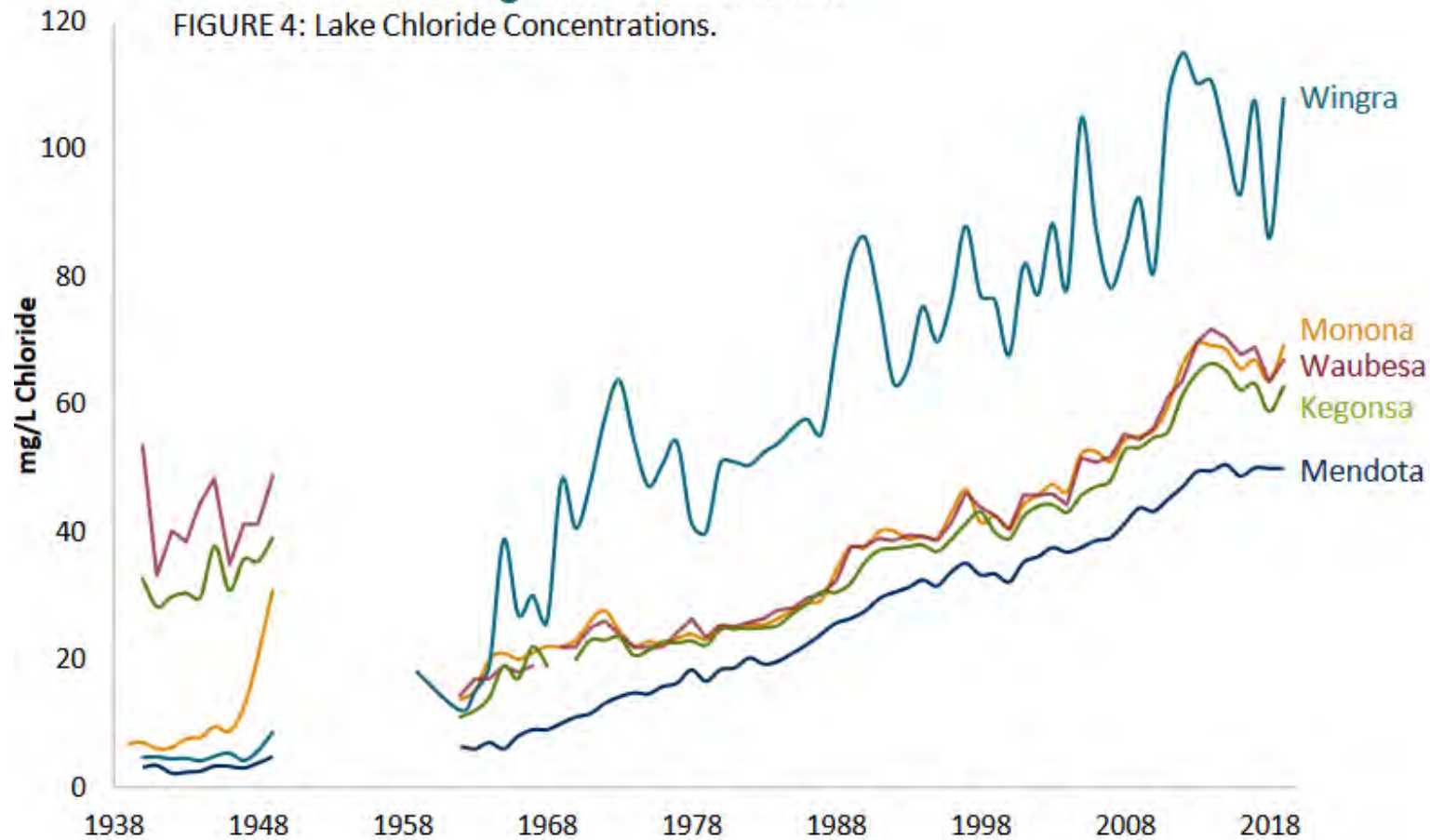
<https://www.capitalarearpc.org/being-salt-wise-for-starkweather-creek/>

6. Pollution Prevention Winter Maintenance City Salt Use 2010-2021



Chloride is increasing in the Yahara Lakes

FIGURE 4: Lake Chloride Concentrations.



6. SWPPPS- Stormwater Pollution Prevention Plans

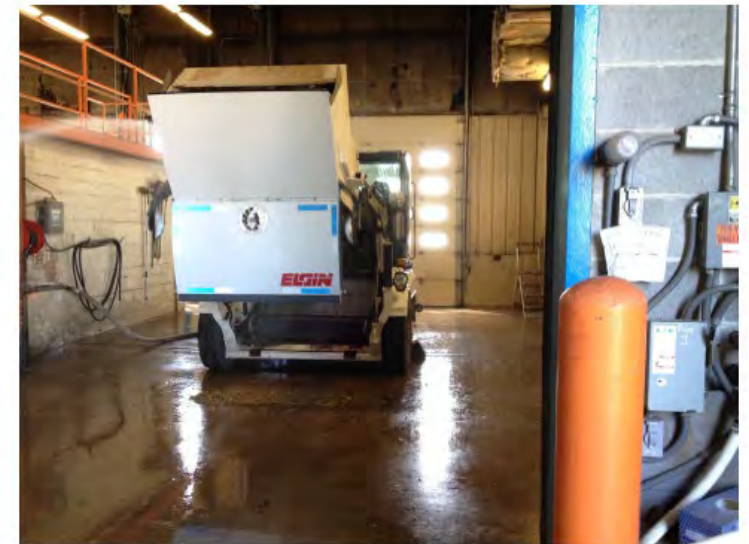


Sycamore Street Facility
Madison, WI



- 8 Sites with SWPPPs
- 2022 moving to Cityworks for Inspections

1	A	B		D	E	F	G	H	I	J		L					
		Indoors	Outdoors							Likelihood of Contact	Risk of release						
2	ACTIVITY/MATERIAL	LOCATION MAP ID		Sediment	Nutrients	Metals	Hydrocarbons	Toxins	other	Likelihood of Contact	Risk of release	CURRENT PRACTICE					
3	4	5	6										7	8	9	10	11
	Vehicle repair and maintenance	B-2		○	-	●	●	●			○	○	<ul style="list-style-type: none"> ● Vehicles repaired and maintained indoors ● Floor drains in these facilities are connected to the sanitary sewer system 				
	Vehicle storage and parking	B-1C B-4C	M-1	●	-	●	●	○		●	○	<ul style="list-style-type: none"> ● Outside vehicle storage drains to stormsewer 					
	Vehicle washing	B-1D		●	●	○	○	●		○	○	<ul style="list-style-type: none"> ● Vehicle washing is performed indoors ● Washbays are connected to the sanitary sewer system 					
	Metals recycling		M-11	-	-	-	-	-				<ul style="list-style-type: none"> ● Material stored in uncovered dumpster 					
	Refuse		M-13	●	●	-	-	-									
	Waste oil and used anitfreeze		M-13 M-12	-	-	-	-	-									
	Gasoline and diesel fuel dispensing		M-15 M-14	-	-	-	-	-									
	Cold Patch	B-1B		-	-	-	-	-									
	Tack for Asphalt	B-1A		-	-	-	-	-									
	Pea gravel	B-1A		○	-	-	-	-									
	Spray patch equipment	B-1A		-	-	-	-	-									
	Snow plow storage		M-7 M-4	-	-	-	-	-									
	Sweeper dumps/transfer location		M-5	●	●	-	-	-									
	Salt / Sand storage	B-3		●	-	-	-	-									
	90% and 10% Salt			-	-	-	-	-									
	Brine Solution tanks		M-10	-	-	-	-	-									



B-1D Vehicle Washing

6. Street Sweeping

- ▶ Clean Streets Clean Lakes Initiative
 - ▶ Weekly Sweeping with Parking Restrictions
 - ▶ 6,473 Tons Collected
 - ▶ Expanded Parking Restrictions Year Round
 - ▶ Vacuum Sweeper for 2022(2023 supply chain issues)
 - ▶ 2021 Costs: \$2.3 million

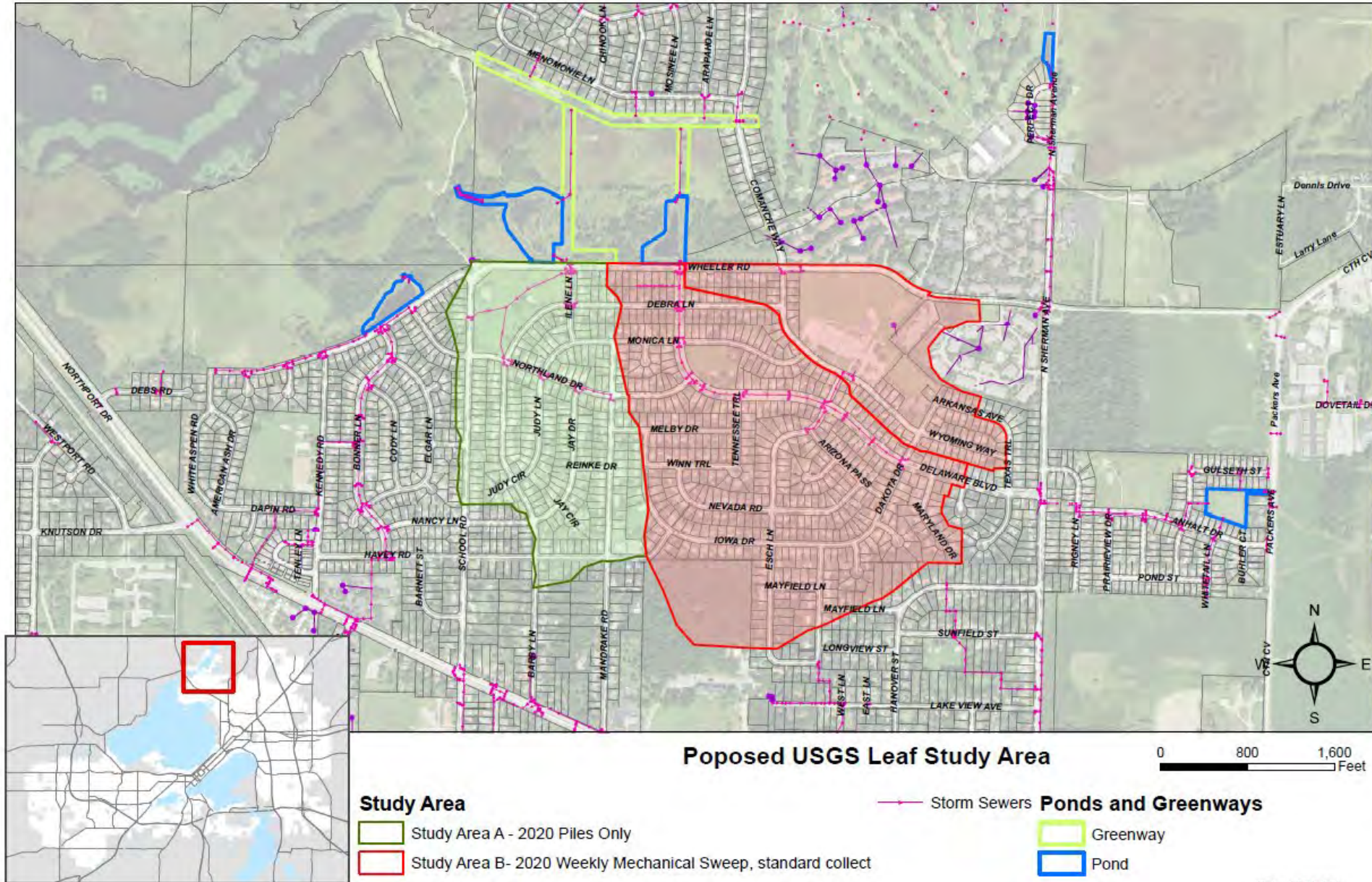


6. Leaf and Yard Waste Collection 2021

- ▶ Madison Collected:
 - ▶ 15,943 tons of leaves,
 - ▶ 1,760 tons of yard waste in 2021
- ▶ Cost :
 - ▶ \$2.38 million for Leaves
 - ▶ \$819,000 for Yard Waste
- ▶ Ordinance prohibiting leaves in Street
 - ▶ 10.18 - COLLECTION OF REFUSE AND RECYCLING OF WASTE.
- ▶ Promotion of leaf removal from street
 - ▶ Text alerts
- ▶ USGS Study to assess impact of mechanical bi-weekly sweeping



City of Madison - Leaf Study Continues



- 3 yrs
- Funded by Wisconsin League of Municipalities
- Study Goals
 - Mechanical sweeper between collections
 - Impact of detention basins

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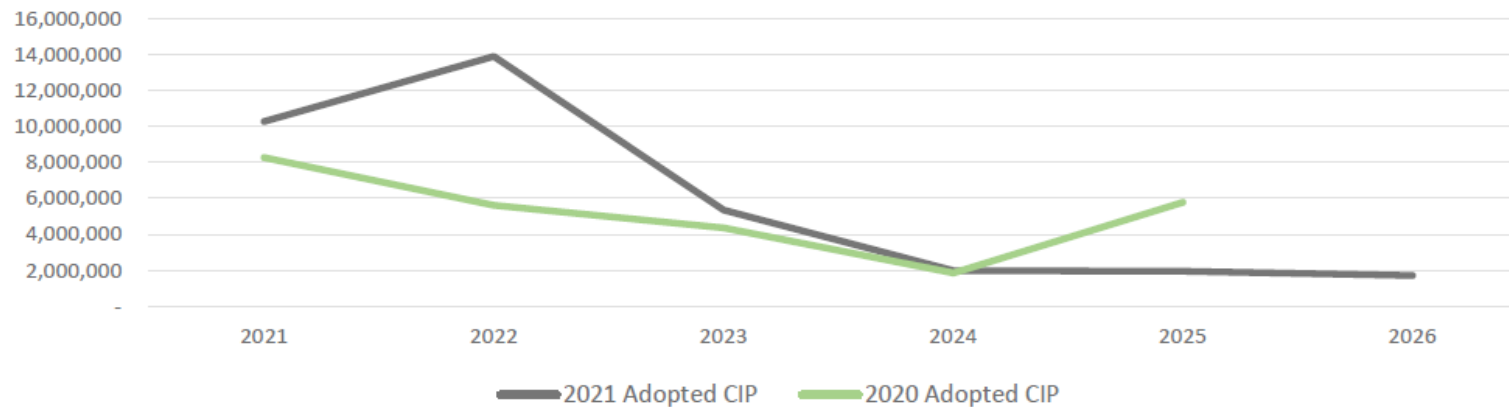
Stormwater Utility

Project Summary: Adopted Budget

	2021	2022	2023	2024	2025	2026
Citywide Flood Mitigation	6,525,000	9,537,000	3,248,000	1,120,000	1,130,000	190,000
Storm Sewer System Improvements	461,000	247,000	240,000	167,000	203,000	183,000
Stormwater Quality System Improvements	2,825,000	3,650,000	1,550,000	235,000	150,000	840,000
Street Cleaning Equipment - Streets	455,000	465,000	300,000	470,000	470,000	493,000
Total	\$ 10,266,000	\$ 13,899,000	\$ 5,338,000	\$ 1,992,000	\$ 1,953,000	\$ 1,706,000

Changes from 2020 CIP

2021 Capital Improvement Plan
2020 Adopted vs. 2021 Adopted

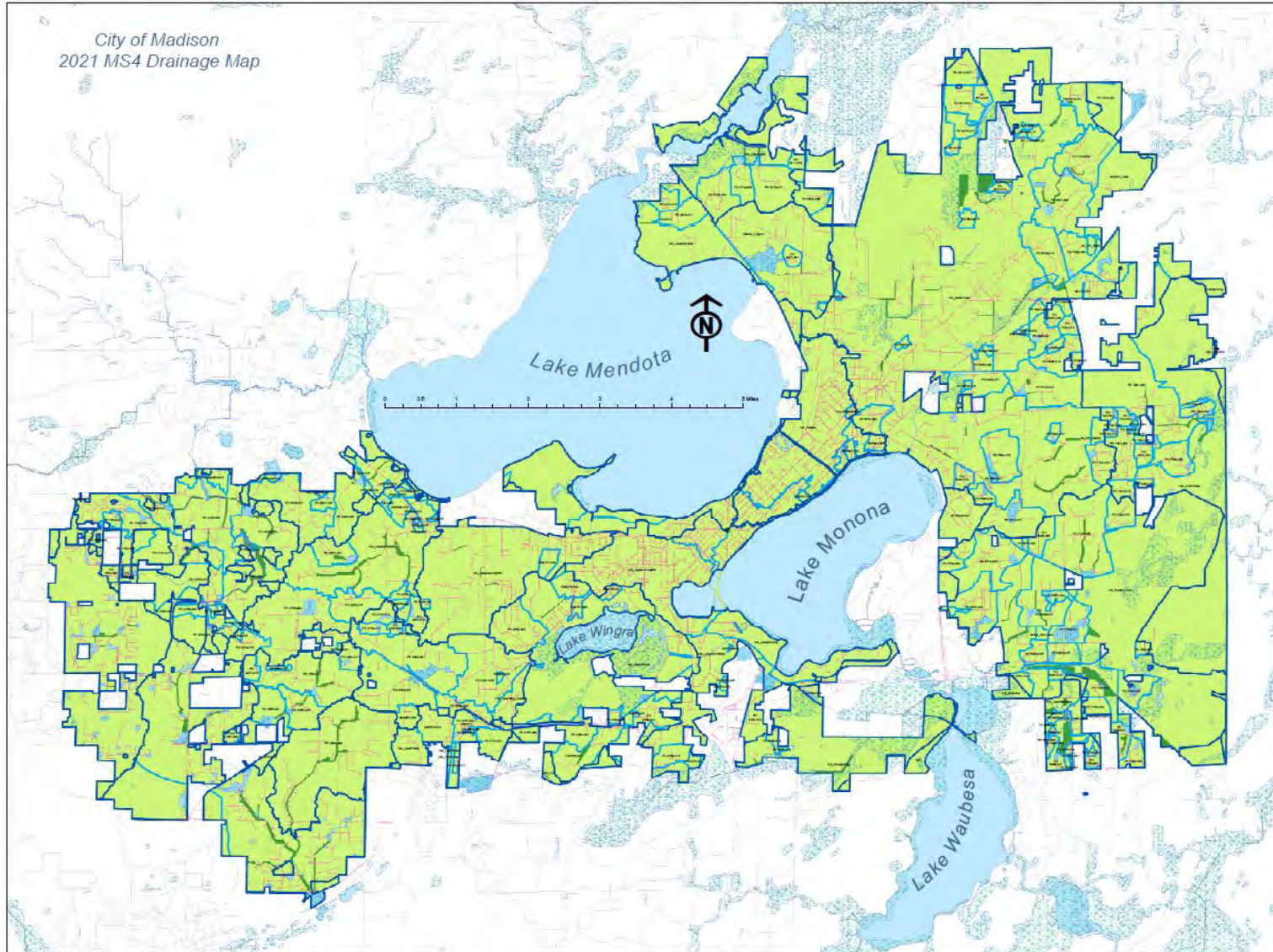


Major Changes

- Citywide Flood Mitigation
Program budget increased by \$8.8m over full CIP to include additional projects resulting for Watershed studies

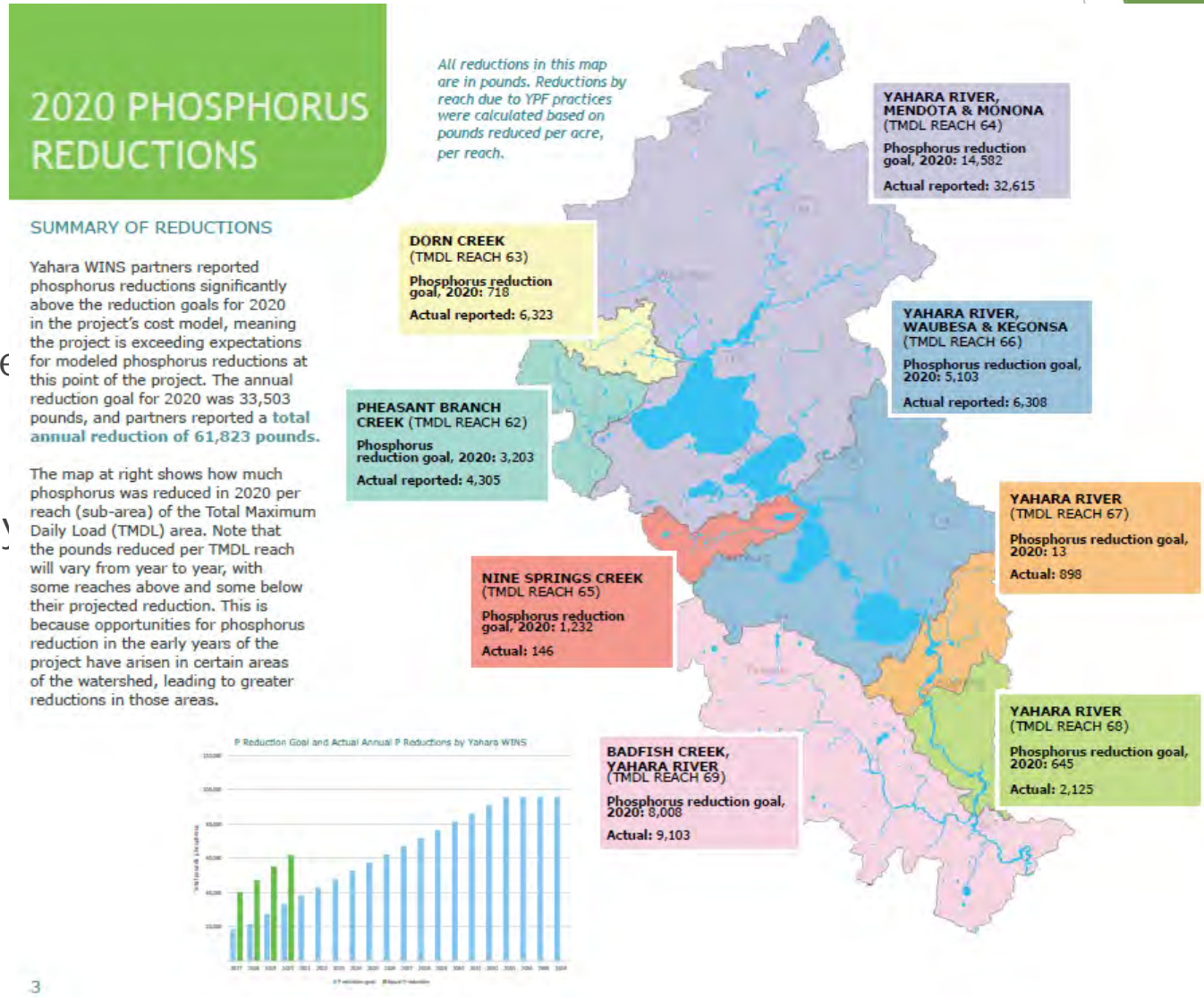
TID 37 funding added for Winnebago/Eastwood/Amoth/Atwood in 2022 (\$3.0m)
- Stormwater Quality System Improvements
Program budget decreased in 2021 based on planned projects (\$558k)

7. Drainage Map



8. Adaptive Management TMDL Compliance

- ▶ Madison Contributed
 - ▶ \$504,394 in 2021
 - ▶ Addresses 10,254 lb of TP
- ▶ Program is ahead of schedule
- ▶ 61,823 lb TP Captured vs 35,503 lb TP Goal for 2020
- ▶ TP \$/lb is lower than initially thought
- ▶ Ultimate Goal 104,000 lb
- ▶ Madison produces 29,839 lb TP a year in the TMDL
- ▶ Currently Captures 7,877 lb annually



Going Forward

- ▶ Continue Outreach and Education Efforts
- ▶ Green Infrastructure Pilot
 - ▶ Caromar resurface project
- ▶ Work to Reduce Phosphorus and TSS
 - ▶ Leaf Collection Study- Year 3 in 2023
 - ▶ Pond Conversions
 - ▶ Dry Pond SOC
 - ▶ MOU with Middleton on confluence pond
 - ▶ Watershed Study Proposed Solutions
 - ▶ Account for increased TSS and TP capture
- ▶ Improve and Expand Salt Certification - Increase Brine Usage
- ▶ Continue with Erosion Control Inspections and IDDE Education
- ▶ SWPPP Inspections into Cityworks