



LAND & WATER  
RESOURCES  
DEPARTMENT

# Fee-in-lieu & Stormwater Volume Credit Trading Feasibility Report

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June 5, 2024

# Background – Ch. 14 Infiltration Requirements

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## Infiltration Standards

- Infiltrate 90% of pre-development infiltration volume, based on average annual rainfall

## *Exemptions*

- Projects that are exempted from meeting the 90% stay-on standard of Chapter 14

## *Prohibitions*

- Areas where infiltration practices are prohibited from being installed due to potential for groundwater contamination from runoff source areas

# Recent Permitting Changes

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- Updated to require peak rate control of the 200-year storm
- Added specific language to include volume requirements for internally drained areas
- Redevelopment projects meeting certain thresholds must now treat the first 0.5” of stormwater runoff using green infrastructure (GI)
- Policy changes to limit project exemptions

# Offsite Stormwater Management Programs

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- Alternative compliance strategies for meeting stormwater management requirements off-site
- Fee-in-Lieu Programs
  - Developers pay stormwater agency a fee which is used to later implement stormwater offsite
- Stormwater Volume Credit Trading and Banking
  - Developers purchase credits from offsite sellers with existing practices

# Evaluation of Existing Programs

Program Location	2020 Population (U.S. Census Bureau)	Program Name	Program Type	Year Established	Basis	Area
Washington DC	689,545	Stormwater Retention Credit (SRC) Program	Stormwater FIL, Credit Banking and Trading	2013	Retention	68.35 sq mi
Chattanooga, TN* (has not been utilized)	181,099	In Lieu Fee and Credit Coupon Program	Stormwater FIL, Credit Banking and Trading	2013	Retention	150.08 sq mi
Park Ridge, IL	39,656	Stormwater Management Ordinance and Stormwater Detention Fee	Stormwater FIL	2011	Detention	7.13 sq mi
Aspen, CO	7,004	Fee-In-Lieu Program	Stormwater FIL	2008	Detention	3.858 sq mi
San Antonio, TX	1,434,625	Fee In-Lieu-of (FILO) Program	Stormwater FIL	1997	Detention	504.64 sq mi
Middleton, WI	21,827	Fee-In-Lieu	Stormwater FIL		Retention	9.07 sq mi
Grand Rapids, MI	198,893	Stormwater Credit Trading Program	Stormwater FIL, Credit Banking and Trading	2023	Retention	45.63 sq mi
Dane County	552,536	-	-	-	<i>Retention</i>	1,238 sq mi

# Retention Program Structures

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- Allow developers to purchase offsite credits or pay FIL to achieve stormwater compliance
  - Uniform Credit for FIL and credit trading
- Conditions for going offsite
  - Washington D.C.: Must retain first 50% of volume onsite, can go offsite for rest
  - Grand Rapids: Onsite compliance required first
- Trading Boundaries
- Credit purchase obligation
  - One-time, up-front payments
  - Recurring annual basis

# Retention Program Structures – Cont.

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- Stormwater agency establishes a FIL program which acts as a price ceiling for credit traders
  - Washington D.C. - \$4.57/gal
  - Grand Rapids – Case by case basis
- Credit generation
  - Installation of voluntary GI
  - Exceeding stormwater requirements on regulated sites
  - Removal of impervious surfaces
- Credit recertification
  - Requires inspection of credit generating sites to ensure ongoing performance
- Credit Generation Restrictions
  - Washington DC: cannot sell credits past 1.7” of retention
  - Grand Rapids: in order to reduce Administrative costs and manage more stormwater, credit generates must retain at least 250 cubic feet to be eligible

# Washington D.C. Program Incentives

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- High-Impact SRC's (Stormwater Retention Credits) purchased first
- SRC-Aggregating Business Grant
  - Many property owners partner with an SRC-aggregating business that can install and maintain GI on their property
  - Grant available for SRC-aggregating businesses, up to \$75,000
- SRC Price Lock Program
  - Launched with \$11.5 million
  - Effectively sets a price floor, guarantees credits will be sold



# Washington D.C. – Fee-In-Lieu Projects

- DOEE funds FIL projects in advance of receiving payments
- As of 2019, four projects had been implemented
  - Spent \$575,584
  - Received \$151,739.60 in FIL payments

Plan Number	DOEE Funding Provided	Retention Year	ILF Gallons Approved	ILF Gallons Used	ILF Revenue
3688	\$450,858	FY2015	16,090	16,090	\$56,315
		FY2016	16,090	16,090	\$56,315
		FY2017	16,090	10,812	\$38,916.84
5690	\$50,000	FY2019	1,571	0	\$0
6338	\$25,976	FY2019	1,513	0	\$0
		FY2020	1,513	0	\$0
		FY2021	1,513	0	\$0
6359	\$48,750	FY2019	1,603	0	\$0
		FY2020	1,603	0	\$0

# Middleton, WI – Program Overview

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- The City collects fees-in-lieu for infiltration and recharge based on impervious area
- FIL requests must be approved by the Water Resources Management Commission (WRMC)
- For the period between 1/1/2018 and 4/1/2021:
  - 11 fee-in-lieu requests for 35 total stormwater permits
  - Fees-in-lieu totaled approximately \$125,000
  - Averages to ~\$38,500 per year
- The fee rates are lower than installation and maintenance costs

# Common Program Goals

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- Maximize flexibility for property owners and developers
- Provide an option when onsite controls may be very expensive for property owners or may not be feasible due to site constraints
- Result in overall water quality and stormwater control benefits through installation of additional GI
- Allows municipalities to encourage/incentivize credit generation in areas where it will result in the greatest overall benefit

# Lessons Learned – Program Considerations

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- Regulatory Conditions
  - If regulations related to the threshold for going offsite are restrictive, will not be enough demand for a successful program
- Stormwater agencies must incentive trading for a successful program
- Programs are more costly to establish and administer than on-site retention requirements

# Lessons Learned – Program Administration

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- Permitting of projects
- Establishing clear design guidelines, maintenance obligations
- Credit generation eligibility
- Determination of conditions for off-site credit purchase
- Credit certification
  - Inspection and Enforcement
- Credit purchase tracking
  - Multiple municipalities increases difficulty
- On-line marketplace
- Public and stakeholder education and outreach
- Ensuring program equity with cost to developers and installation locations

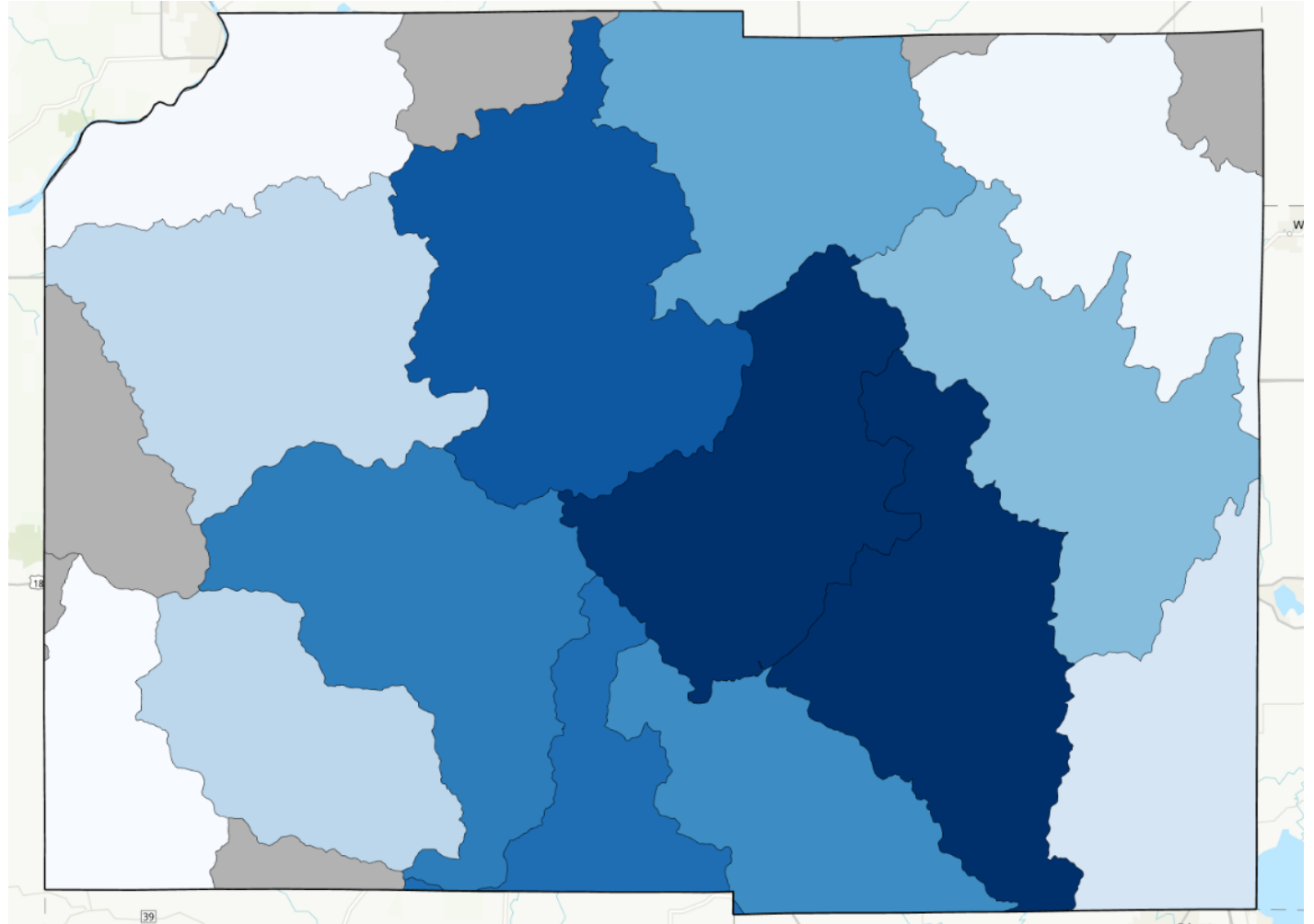
# Dane County Program Evaluation

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- Establishment of fee-in-lieu price
- Review of expected program demand through previously fulfilled stormwater management permits
- Identification of permits issued with exemptions and prohibitions
- Evaluation of unmet infiltration demand
- Considerations for implementing a local FIL and Stormwater Volume Credit Trading Program

# Establishing a Fee-in-Lieu Price – Land Costs

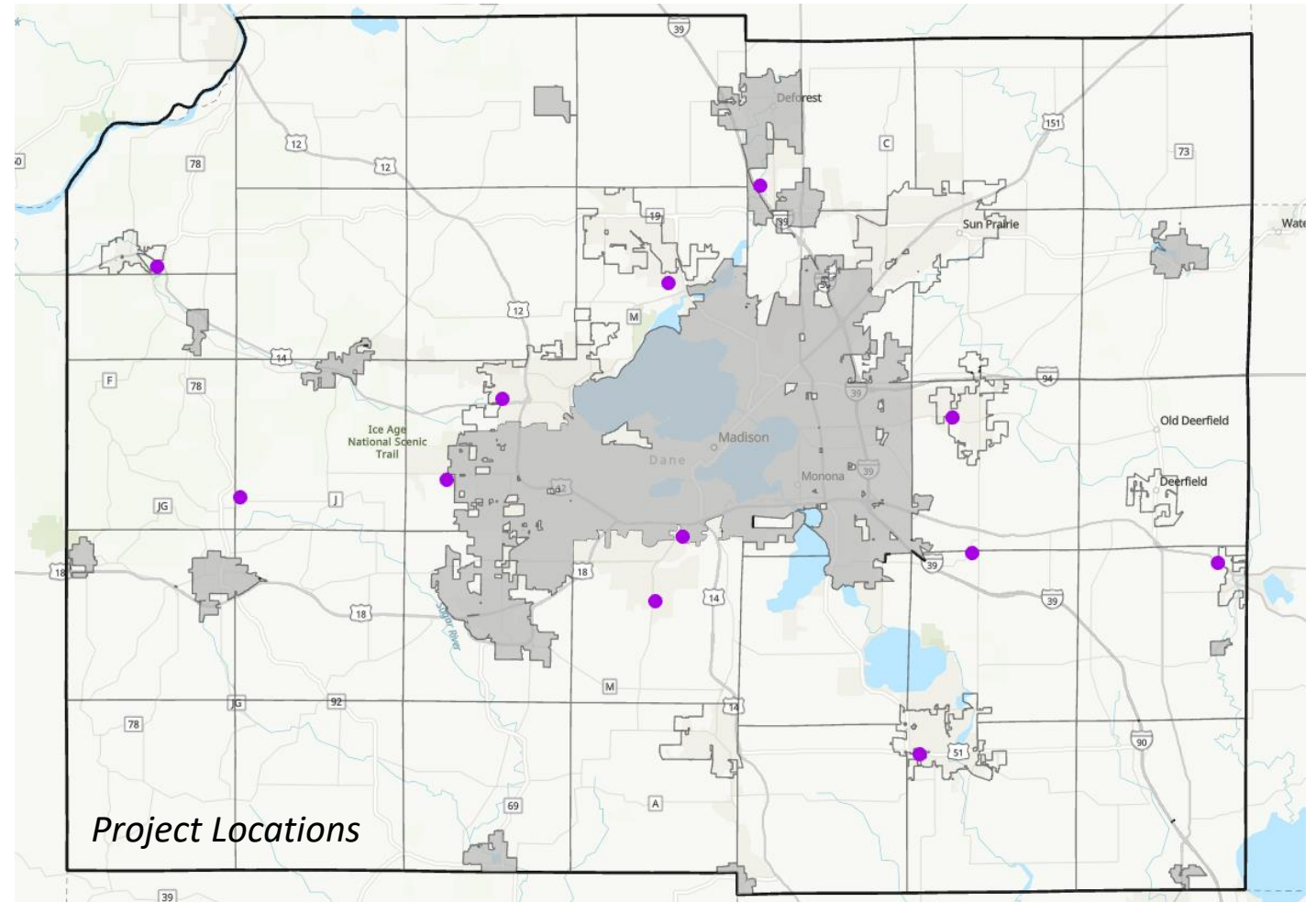
- Land acquisition, or siting on existing County owned property
- Highly variable cost throughout County
- 19 County land acquisitions from 2020-2023
  - Average cost of \$77,394 per acre



*Mean Cost per Acre of Lots/Land in Dane County by Watershed [For Sale & Recently Sold]*

# Establishing a Fee-in-Lieu Price

- Evaluation of 12 recent projects with infiltration practices and varying features
  - Land use types
    - Residential
    - Commercial
    - Industrial
  - Site Area
  - Site Impervious %
  - Infiltration Practices
  - Native Soil Infiltration Rates





# Establishing a Fee-in-Lieu Price

- Analyzed approved models to determine an average practice performance
- Calculated average cost per square foot

Median Infiltration Footprint	2,606 sqft
Infiltration Volume per Square Foot of Infiltration Footprint	24.0 cuft/sqft
Average Cost per Square Foot of Infiltration Footprint	\$17.50
Average Land Area Required per Square Foot of Infiltration Footprint	2.63 sqft

# Establishing a Fee-in-Lieu Price

- Estimated project and ongoing maintenance costs
- Determined anticipated credit generation
- 1 credit = 1 cubic foot of infiltration
- Established FIL price as an initial credit price with a recurring annual maintenance payment, or a one-time payment

Item	Unit Cost	Unit	QTY	Total Cost
Engineering Plan Design, Review, Approval	\$5,000	LS	1	\$5,000
Soil Testing	\$800	LS	1	\$800
Mobilization	\$3,000	LS	1	\$3,000
Erosion Control	\$7,000.00	LS	1	\$7,000
Construction Costs	\$17.50	SQFT	2,600	\$45,500
Construction Labor (Assume 30% project total)	\$18,500.00	LS	1	\$18,500
Lifetime Program Administration	400	HRS	20	\$8,000
<b>Project Capital Cost</b>				<b>\$79,800</b>

FIL Price	
Initial Credit Price	\$1.40
Ongoing annual credit price (to cover maintenance and rehabilitation)	\$0.11
OR	
Total one-time (upfront) credit price	\$4.12

# Dane County Program Evaluation

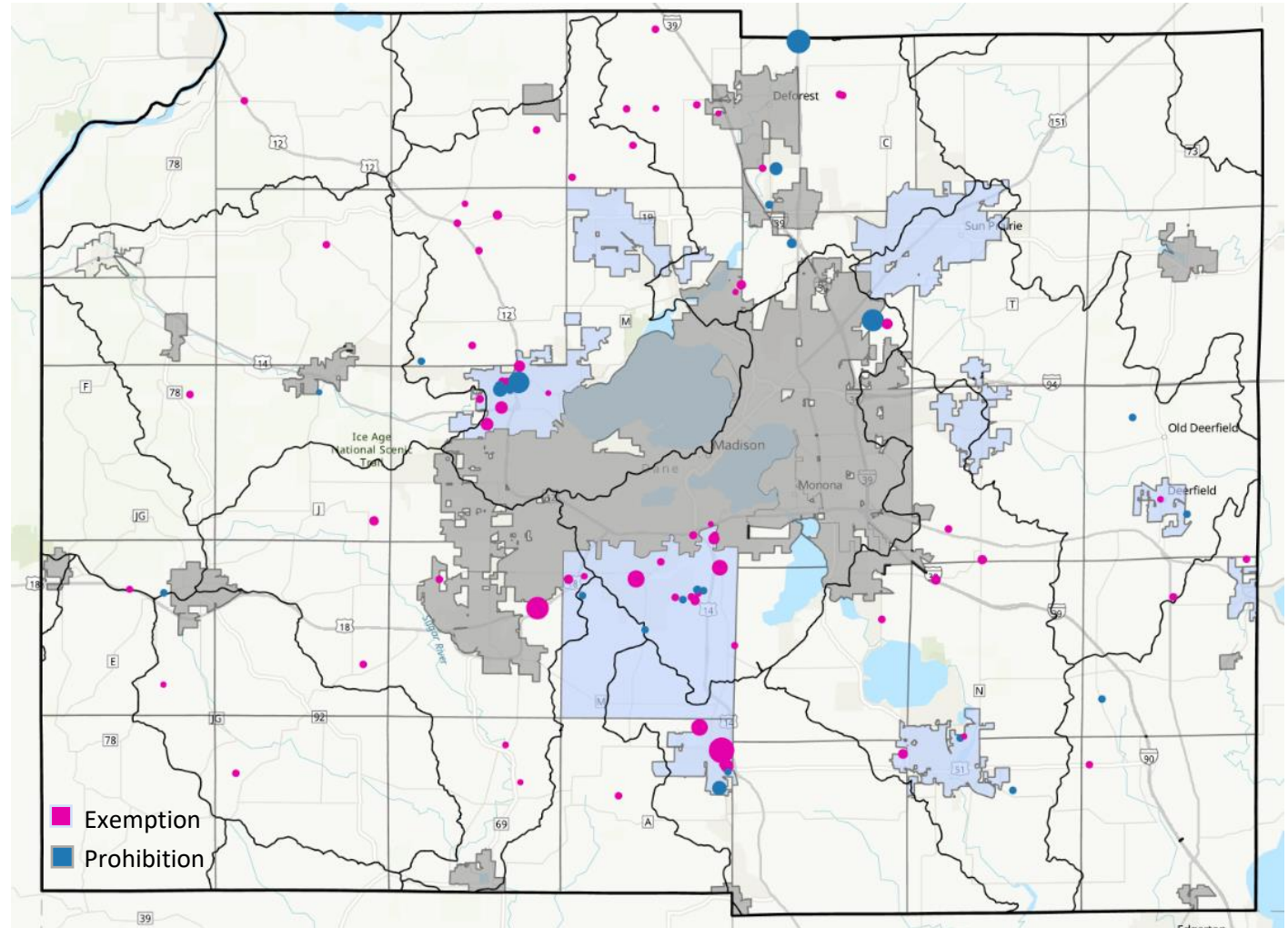
- Evaluation of all stormwater permits fulfilled from 6/1/2017-6/7/2023
- Identification of permits with exemptions or prohibitions

Stormwater Management Permit Breakdown						
	All Permits		Dane County		ICA Munis	
	Total	%	Total	%	Total	%
<b>Permit Requests Fulfilled</b>	485	-	278	-	207	-
<b>Exemptions &amp; Prohibitions</b>	176	36.3%	90	32.4%	86	41.5%
Redevelopment Only	92	19.0%	42	15.1%	50	24.2%

# Stormwater Management Permits

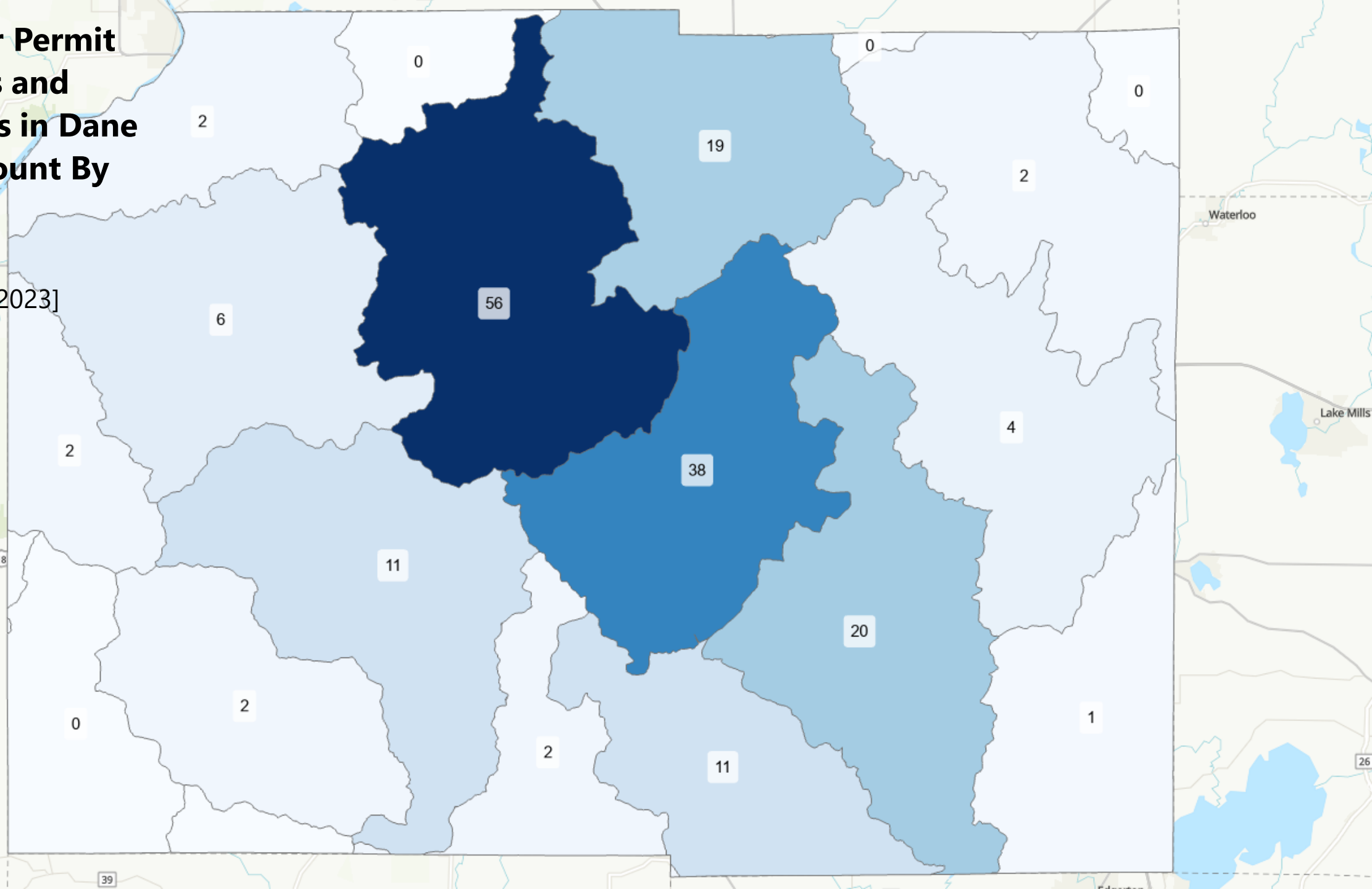
Exemptions	
Redevelopment	92
10% Disconnected Impervious*	10
Agricultural Facilities and Practices	15
Clay Soils	33
Expansion of Municipal or County roads	7
Roadway Within Commercial Development*	4
<b>Total</b>	<b>161</b>

Prohibitions	
Tier 1 Industrial Facilities	1
Tier 2 Industrial Facilities	0
Fueling and Vehicle Maintenance Areas	0
Gradient conduit to groundwater	0
Separation Distances	18
Wellhead Protection Area	2
Contaminated Soils	4
<b>Total</b>	<b>25</b>



# Stormwater Permit Exemptions and Prohibitions in Dane County – Count By Watershed

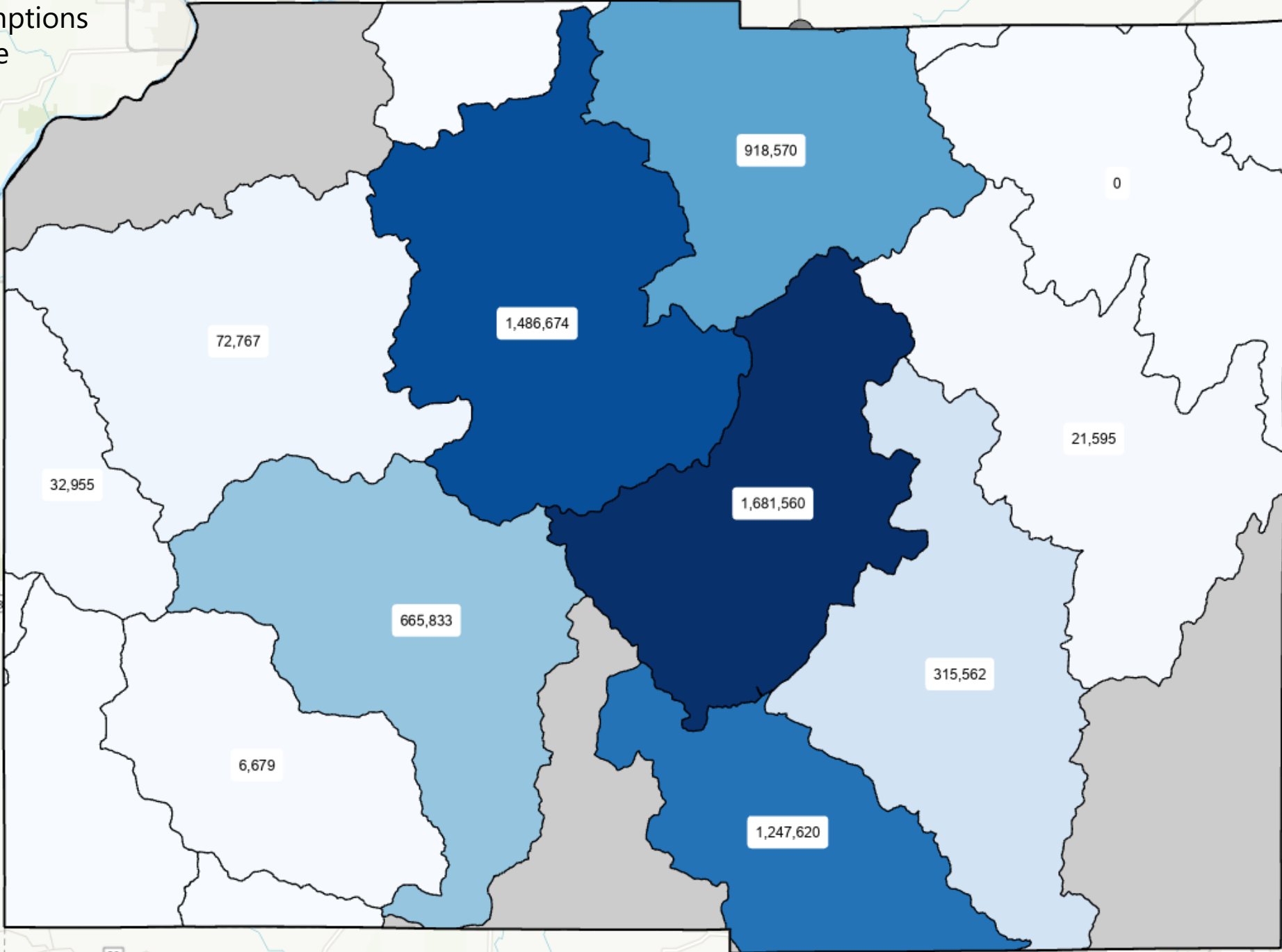
[6/1/2017-6/7/2023]



# Stormwater Permit Exemptions and Prohibitions in Dane County - by Watershed

**Sum of Unmet Infiltration Demand (cuft/year)**

**[6/1/2017-6/7/2023]**



# Unmet Infiltration Requirements – Reference

- Approximately 1,000 acres of impervious surface is developed in Dane County each year
- Sum of unmet infiltration from exemptions and prohibitions for six years
  - 6,449,815 cubic feet
  - Average increase of 1,074,969 cubic feet/year

Stormwater Compliance	
100% Stay-on (28.81")	104,580,300 ft <sup>3</sup>
90% Stay-on Requirement	94,122,270 ft <sup>3</sup>
90% Infiltration Achieved if Exemptions and Prohibitions fully meet standards	95,197,239 ft <sup>3</sup>
	1.14% Increase in Infiltration Achieved

# Program Considerations

- County size increases difficulty of implementing a successful program
- Trading boundaries are integral to preventing exacerbation of flood issues and water quality degradation
- Two potential watershed trading areas based on demand
- Majority of the area of those watersheds have local stormwater permitting entities

<b>Program Location</b>	<b>2020 Population</b> (U.S. Census Bureau)	<b>HUC10 Watersheds</b>	<b>Area</b>
Washington DC	689,545	3	68.35 sq mi
Grand Rapids, MI	198,893	1	45.63 sq mi
Dane County	552,536	21	1,238 sq mi



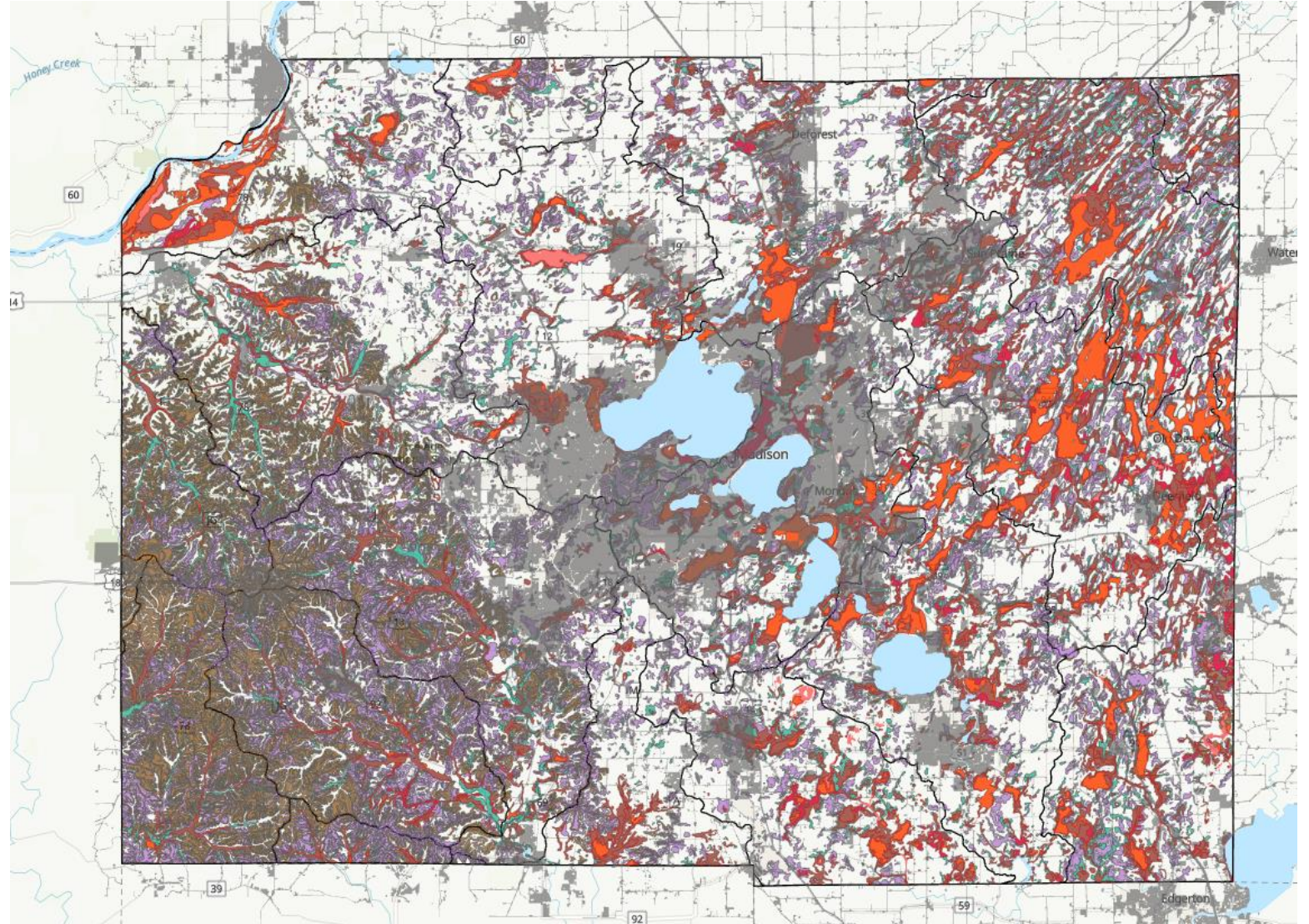
# Program Considerations

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- Programs with restrictive off site alternatives are not likely to succeed
- Narrow exceptions that allow off-site compliance are contrary to what would be optimal for building a trading program
- Successful program depends on relatively easy access to off-site alternatives
  - Washington D.C. – up to 50% offsite retention
  - Grand Rapids – flexible infeasibility criteria
  - Chattanooga, TN – program ineffective due to offsite restrictions
- County would need to consider increasing flexibility for offsite compliance

# Fee-in-lieu Program – Potential Infiltration Sites

- Map layers show unsuitable infiltration sites
  - Developed Land Use (2020)
  - Hydric Soils
  - Hydrologic Soil Group
    - C, D, A/D, B/D, C/D



# Other Considerations – General Administration

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- One-time, up-front payment
  - Creates more certainty for the buyer and stormwater agency
  - All offsite obligations met before the final development, only a single transaction for the agency to track
  - Credit Provider bears all risk and costs going forward
- Recurring annual payment
  - Payment of FIL or purchasing requirement transfers to buyer
  - Requires more administration to implement
- Allowing preexisting projects may disincentivize program participation

# Other Considerations – Credit Certification

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- Stormwater Credit Trading
  - Requires recertification of credit generating projects
  - Must pass inspections
  - Recommended once every 1-3 years
- No existing inspection and maintenance program in place
  - Working on improving stormwater maintenance education and outreach
  - Potential issues with having formal inspection requirements for program participants but not other permit holders
- Credit generators need a permit for their project, complicates program tracking in areas where County doesn't handle permitting

# Other Considerations – Demand

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## TAC Recommendations:

- Require trading for sites where on-site controls are prohibited
  - Low program demand for prohibited sites
- Would allow volume trading for re-development and exempted sites
  - Some program demand, particularly for redevelopment
  - Since 2017 recommendation, Chapter 14 has been updated to require 0.5” capture with GI for redevelopment
  - Roughly 15 redevelopment permits per year
  - Would require reducing onsite requirements in order to generate enough offsite demand

# General Considerations – Program Risks

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- The stormwater fee in lieu program relies on consistent revenue streams to fund stormwater management projects and administrative costs
- Fluctuations in fee collections, economic downturns, or budgetary constraints may undermine the financial viability of the program
- Fee in lieu program may inadvertently exacerbate socio-economic disparities or inequities within communities
  - Low-income households or small businesses may be disproportionately burdened by the fees

# Overview – Program Needs

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- No existing maintenance/inspection program
  - Recertification would be required
- Additional staff for implementation and maintenance
- Databases for tracking, selling
- As development continues, becomes harder/more expensive to implement a FIL program
- Identification of incentives for participation
  - Time consuming for developers to identify a mitigation site and broker a 1:1 transaction with another site
- Establishment of purchase obligation recurrence
  - Continuous purchase obligation = more administration required

# Conclusions

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- Program has changed since 2017 report
- Requirements for redevelopment have been implemented
- Exemptions from infiltration have been limited
- Potential benefit of program has been reduced
- High-cost of administration





# Questions?

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