Water Quality
INITIATIVE

Creating A Blueprint for the future of our Rivers and Lake Michigan

What is MMSD?

- State-chartered regional agency
- Provides wastewater treatment and flood management
- Serves 1.1 million customers in 28 communities
- Covers 411 square miles

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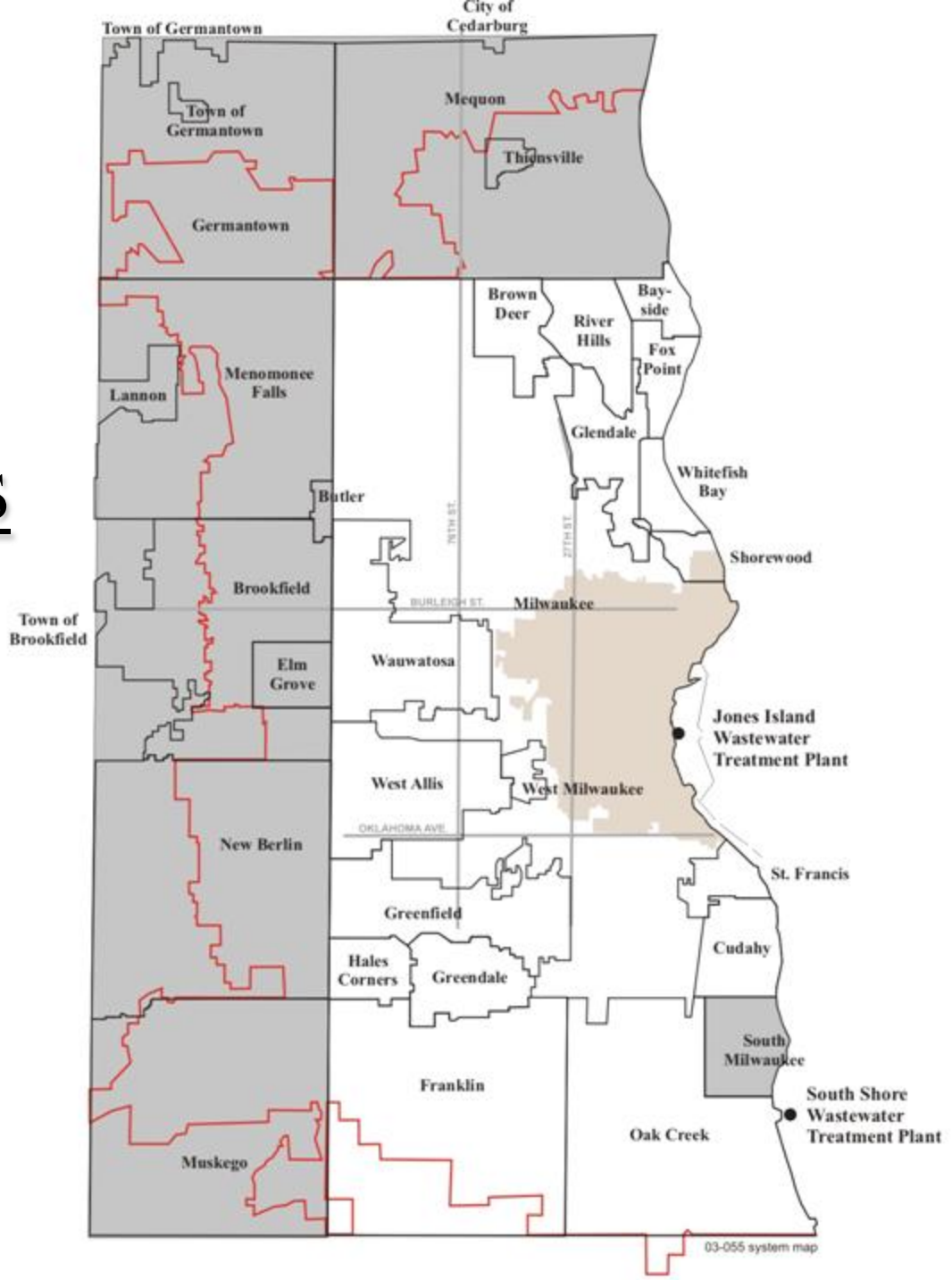
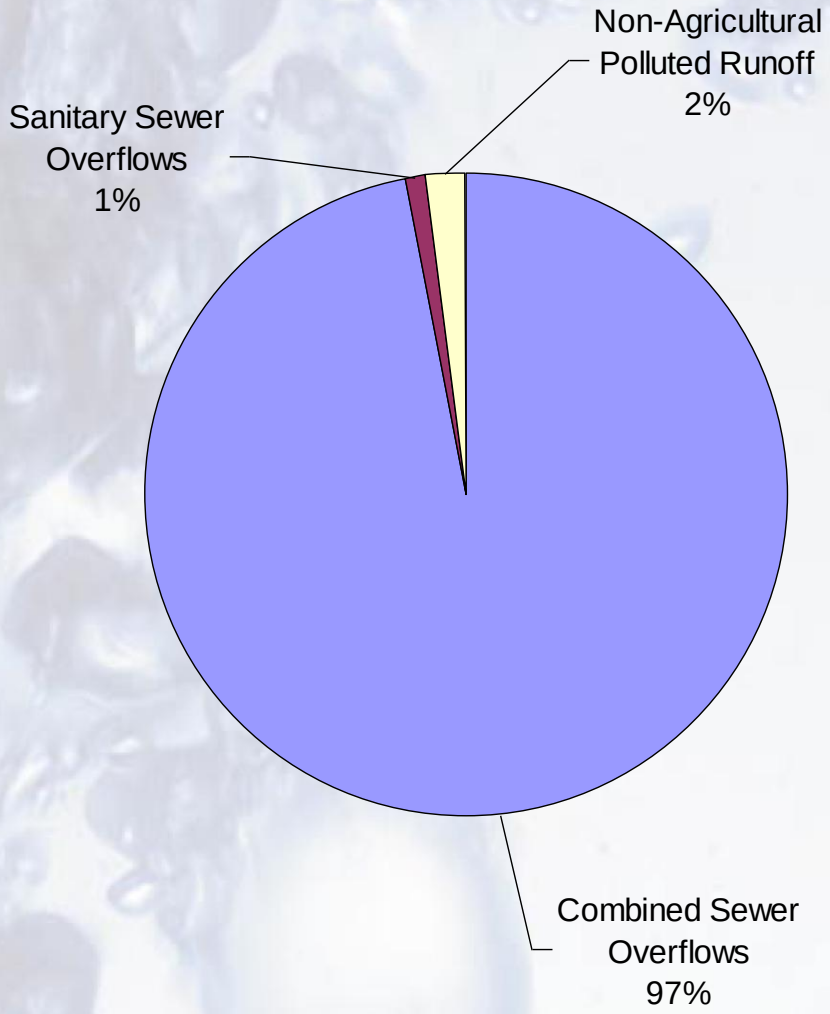
MMSD Serves 28 Communities

- 10 Communities outside Milwaukee County
- 18 Communities inside Milwaukee County



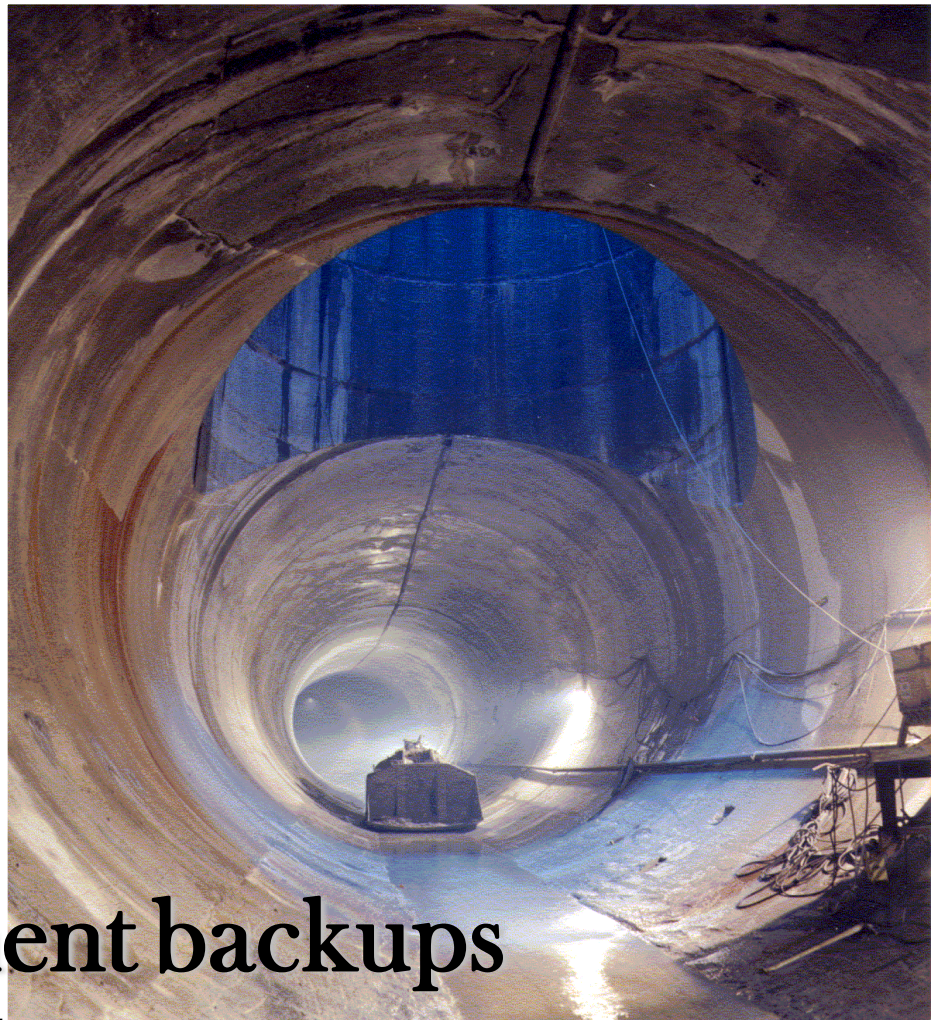
What was our Water Quality like in 1975?



Kinnickinnic River
Fecal Coliforms

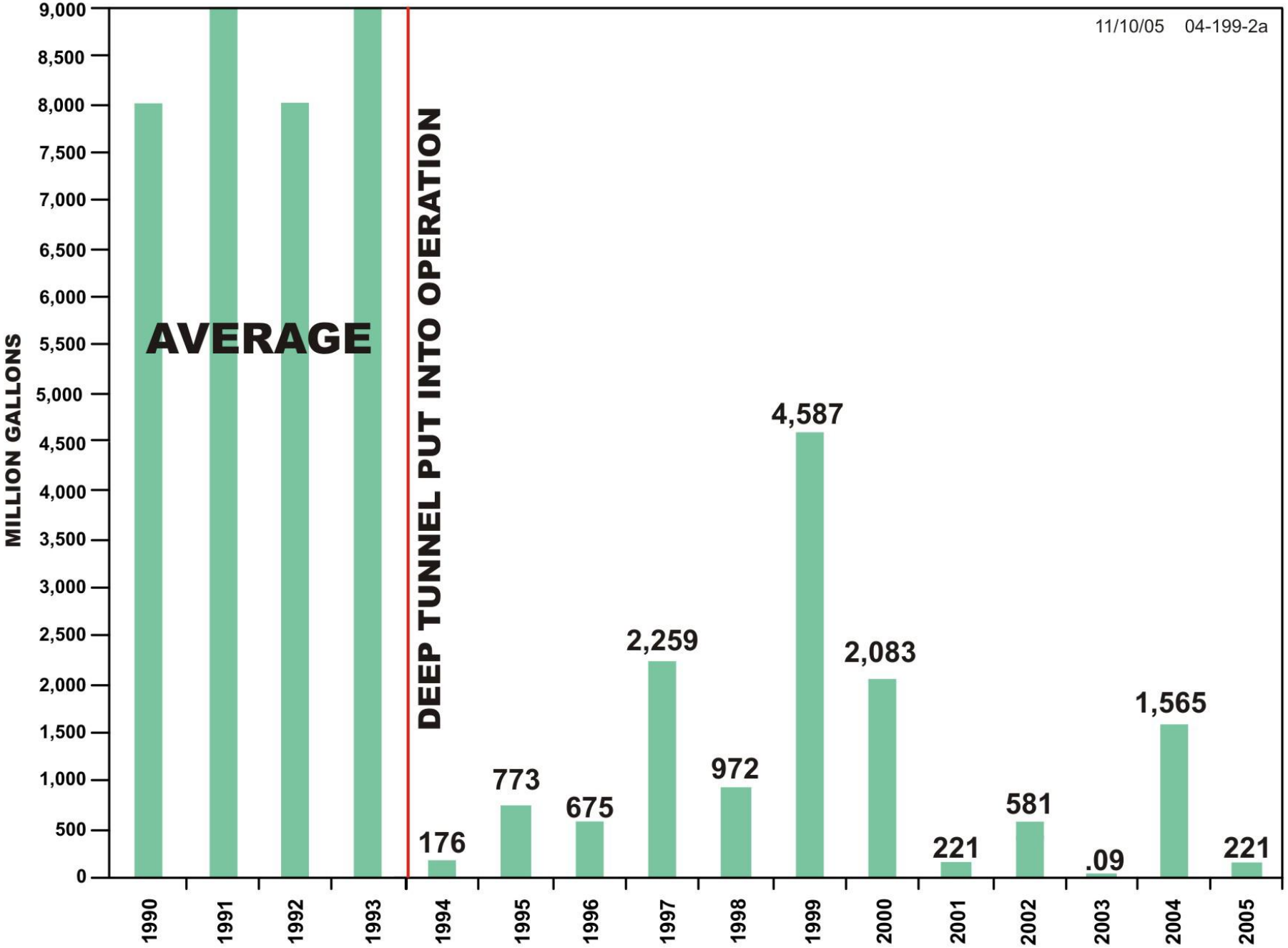
14,300 trillion
cells/year

Deep Tunnel System



- 300 ft. below ground
- 405 million gallons
- 19.4 miles long
- Designed for 1-2 overflows a year
- Helps prevent basement backups

CSO & SSO VOLUMES



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Estimated CSOs

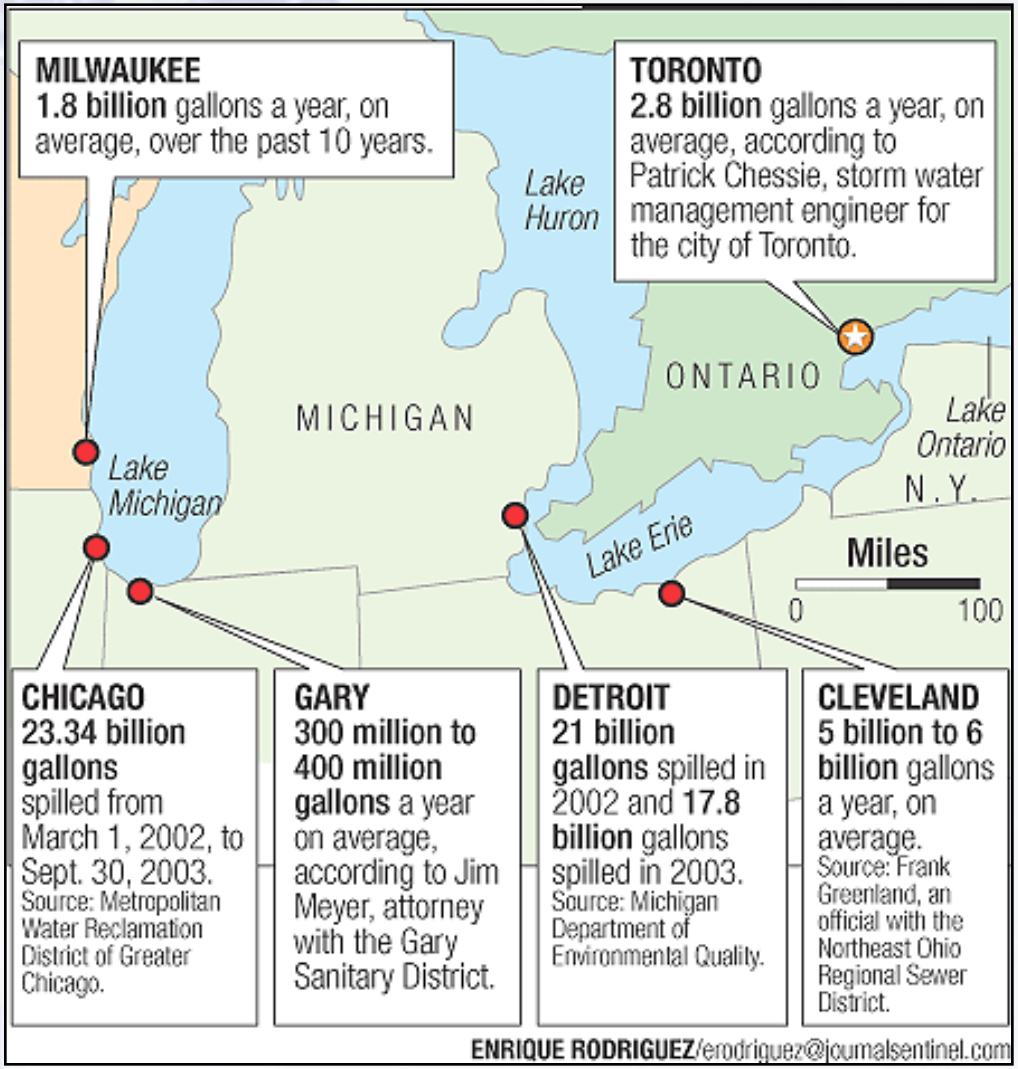
DUMPING

ESTIMATED COMBINED SEWER OVERFLOWS

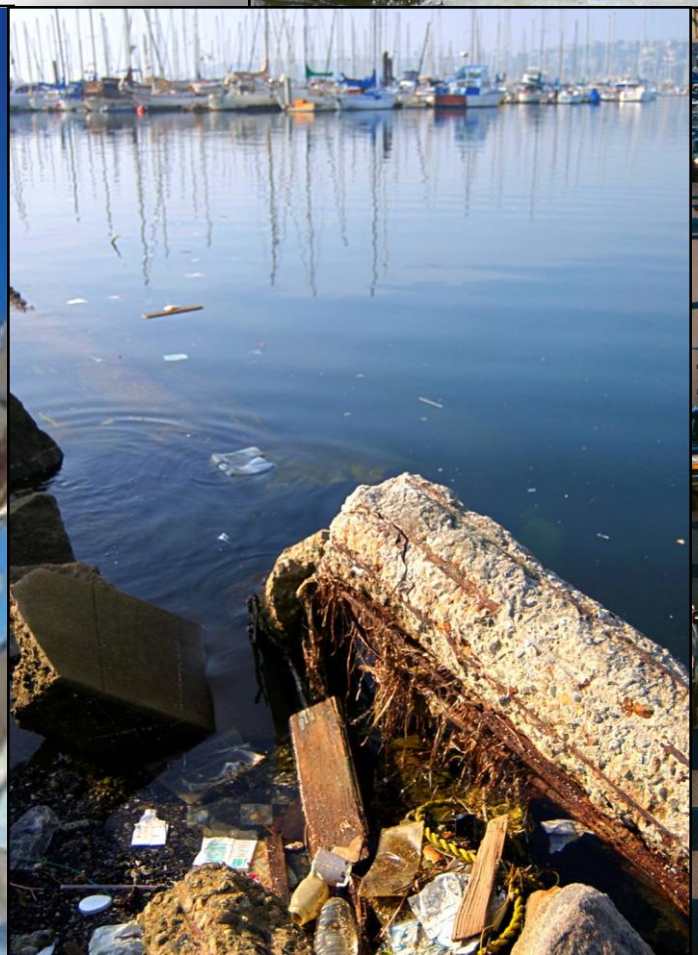
While Milwaukee's recent sewage dumping has drawn much debate, other Great Lakes cities have similar problems.

The volume number does not cover a consistent period. Some of it is a snapshot of a particular year or period, some of it is an estimated yearly average.

Source: Journal Sentinel, 6/26/04

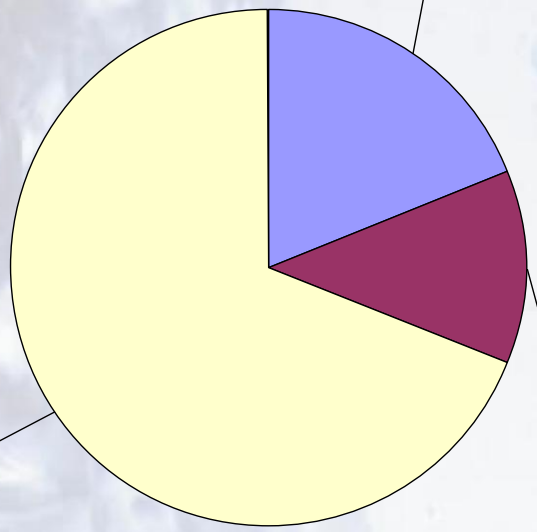


Pollution: Where is it Coming From?



What is our Water Quality like in 2000?

Kinnickinnic River Fecal Coliforms



In 1975: 14,300 trillion cells/year

67% Reduction in Load

In 2000: 4,700 trillion cells/year

Water Quality
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Point Sources:

- Sanitary sewer overflows
- Combined sewer overflows
- Wastewater treatment plants
- Industrial discharges

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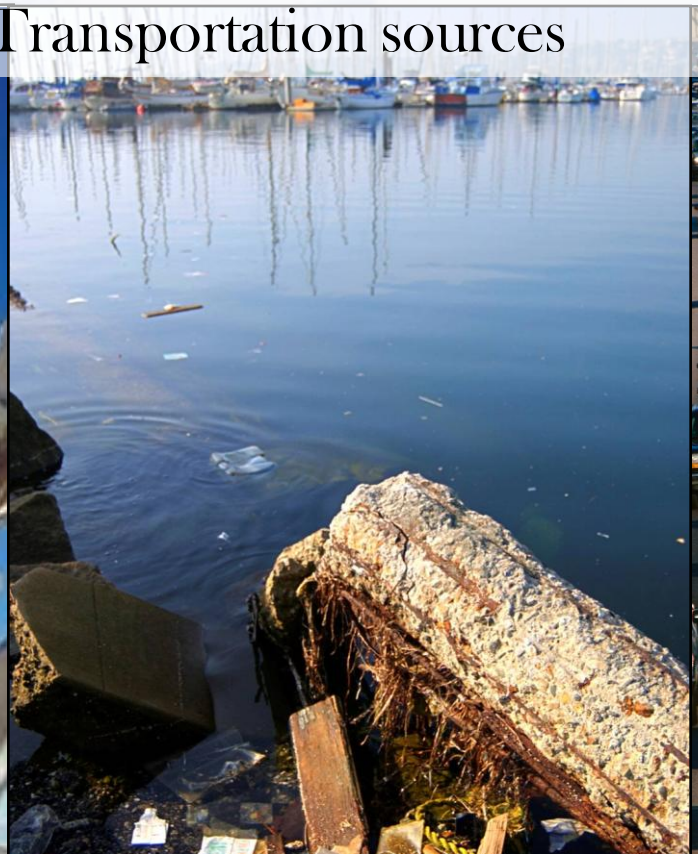
Non-Point Sources

- Bird & animal droppings
- Polluted urban & agricultural stormwater
- Construction & Industrial Site Runoff
- Transportation sources



Would you put this water in your fish bowl?

Water Quality Initiative

Blueprint for the Future of Clean Water

The *Water Quality Initiative* involves the public in identifying solutions to improve water quality.

Uses the EPA recommended Watershed Approach.

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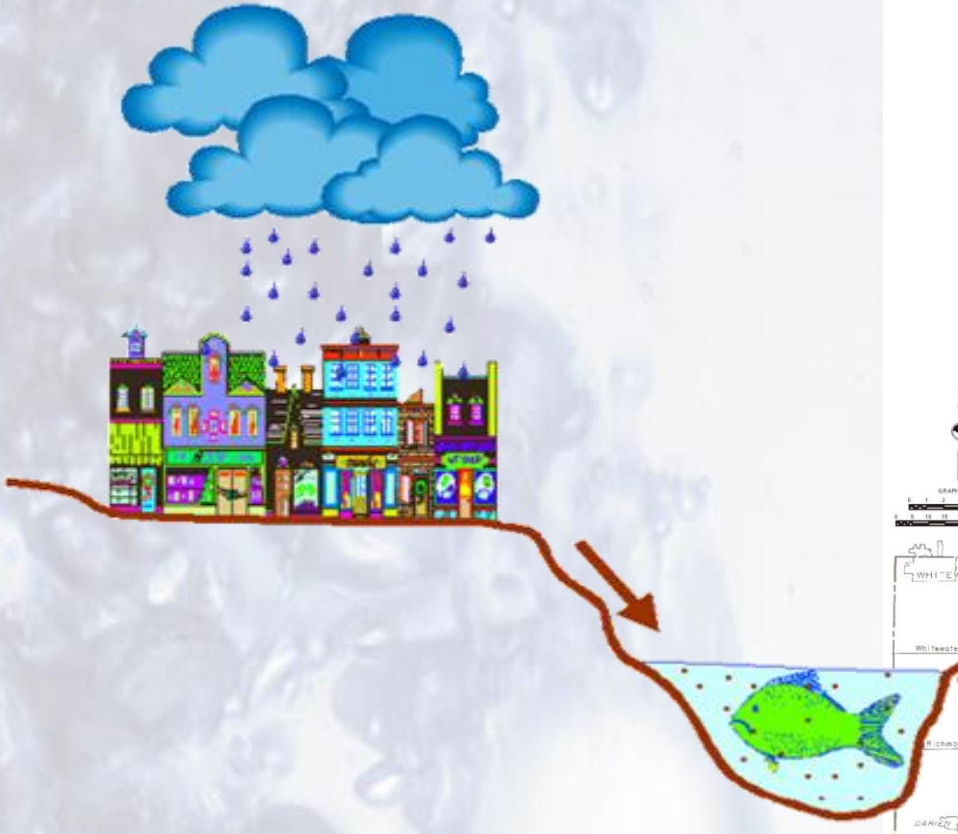
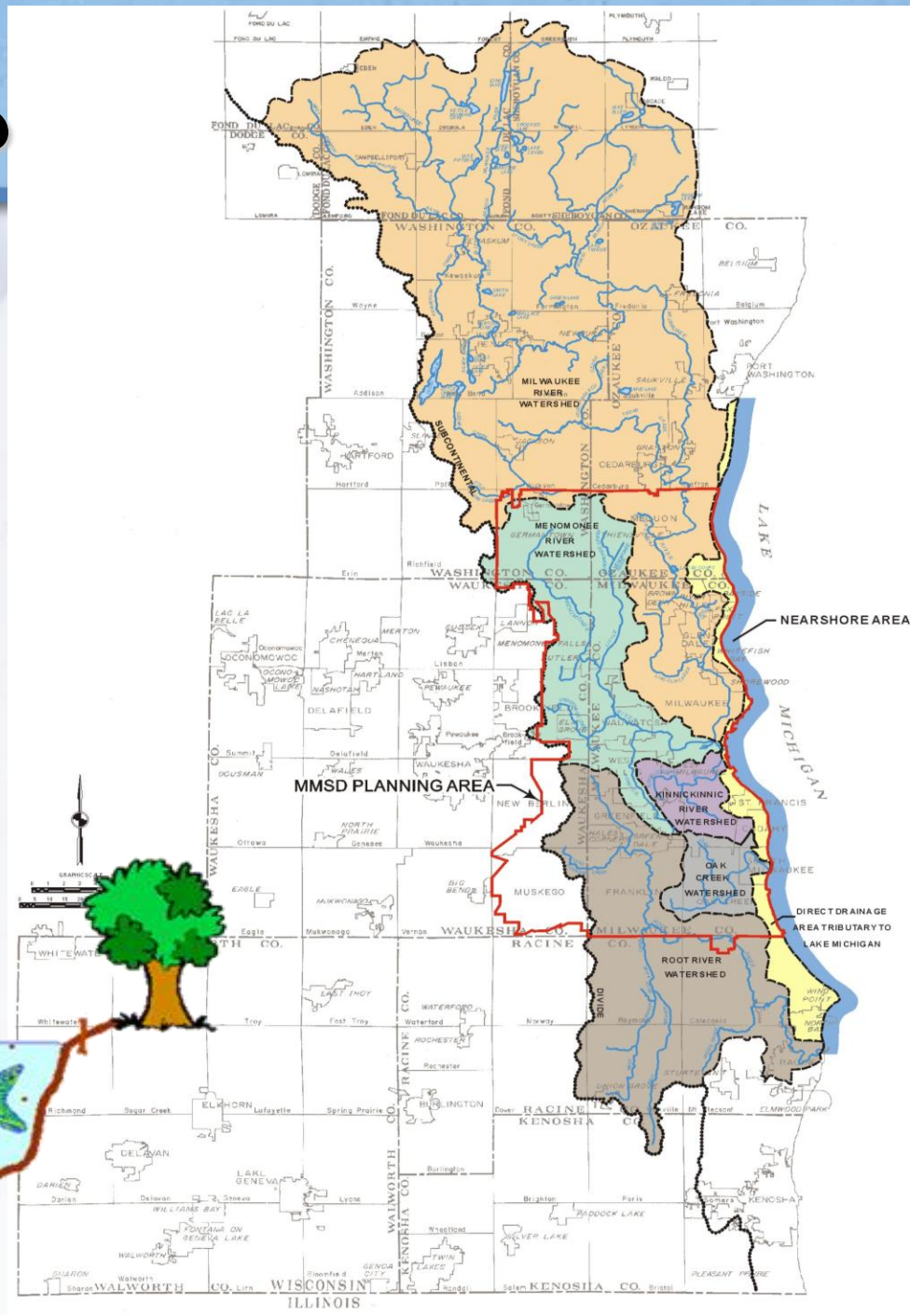
What is a Watershed?





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Collaborating Agencies

MMSD

Preserving The Environment •
Improving Water Quality

KENOSHA · MILWAUKEE · OZAUKEE · WAUKESHA · WASHINGTON · WALWORTH · RACINE

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

WISCONSIN DEPT. OF NATURAL RESOURCES

Planning Studies

Milwaukee Metropolitan Sewerage District	→ 2020 Facilities Planning Process
Southeastern Wisconsin Regional Planning Commission	→ Regional Water Quality Management Plan

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2020 Planning Process Timeline

2002-03	Plan organization and methods development
2003-04	Identification of goals and objectives
2004-05	Data collection and forecasting conditions
2005-06	Development and evaluation of alternatives
2006-07	Plan selection & development of implementation plan
2007	Final plan approval
2008+	Plan implementation

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Decisions Driven by Public Participation

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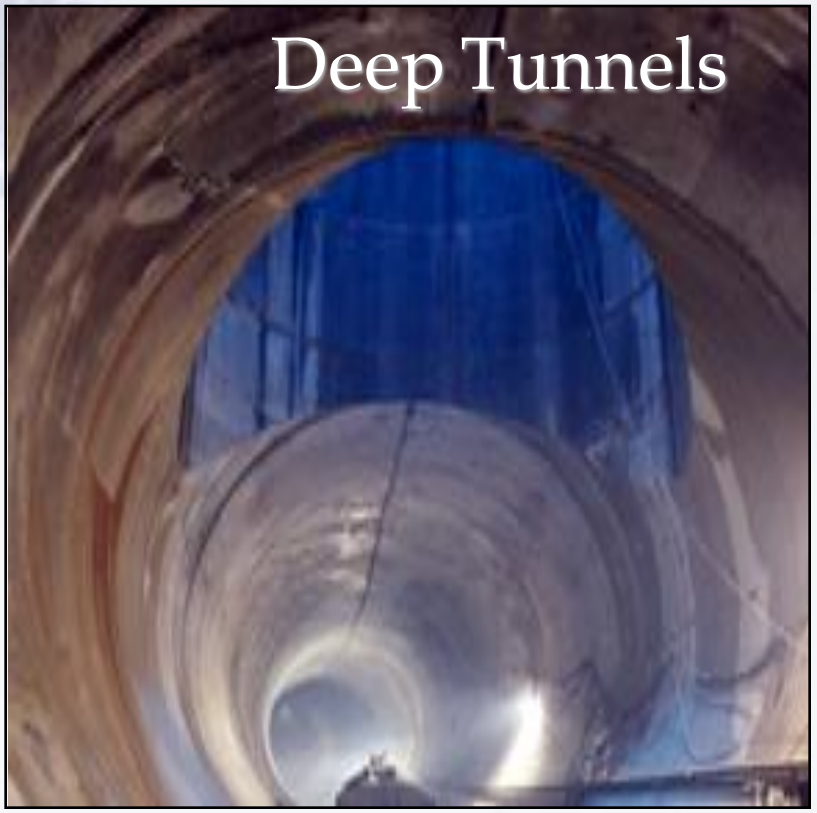
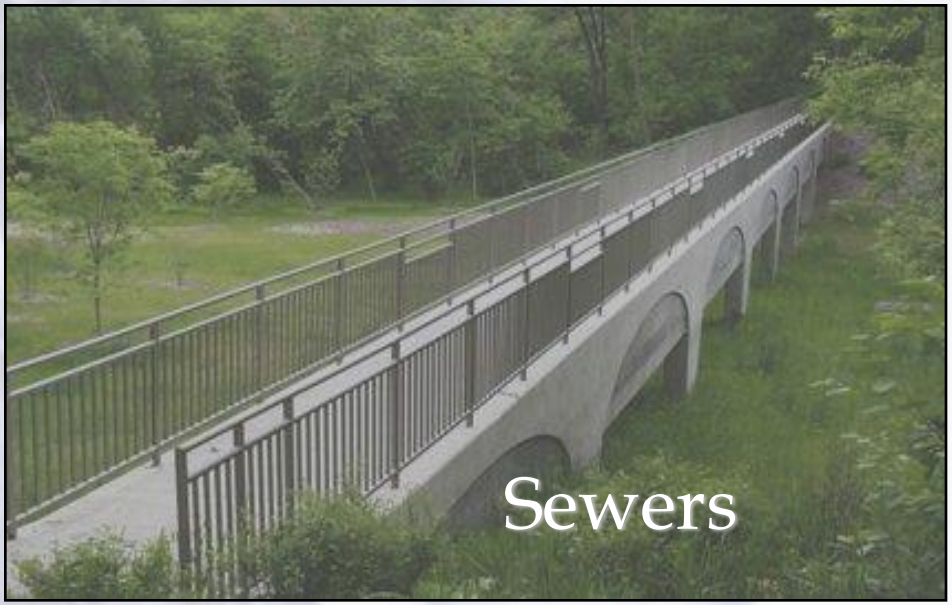
What can be done?

-Technologies-

Traditional Technologies Studied by MMSD

Treatment Plants





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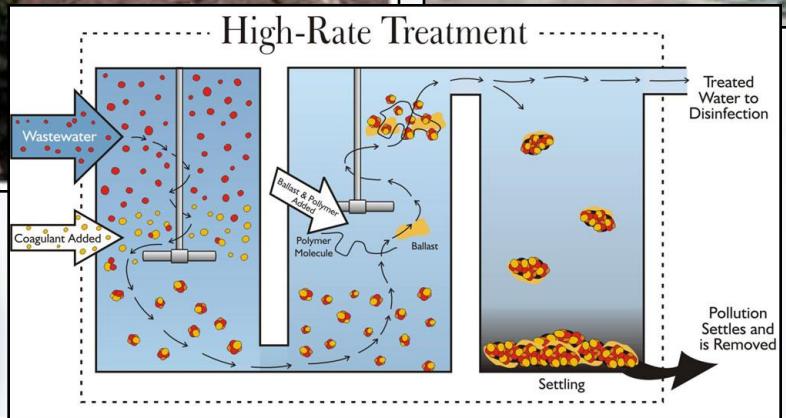
Emerging Technologies Studied by MMSD



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What Can Be Done?

-11 Plan Alternatives-

Every Alternative Includes

- Completion of MMSD flood management projects
- Maintenance of current I/I levels from existing development
- On going investment in MMSD assets
- Other initiatives – education, advocacy, etc.
- Costs for these items that are common to each alternative will be developed in the implementation plan

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Alternative 1

Baseline

What is It?

The Baseline Alternative includes water quality investments the region is already committed to making. This includes projects by MMSD, cities and villages, and the Department of Natural Resources (DNR). This and all alternatives are based on projected population and land use for the year 2020.

What is Involved?

By MMSD: estimated $820 million in 6-year financial plan.
By Others: local sewer infrastructure work & stormwater regulation implementation.
Total regional cost of this alternative is $1.5-2.0 billion.

What are the Results?

Serves as a Basis of Comparison for Every Alternative
As you review the other alternatives, you can see whether water quality improves or not.

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Alternative 2

Overflow Elimination with Sewer Separation

What is It?

This alternative uses sewer separation and a combination of other infrastructure investments to prevent overflows, based on rainfall and snowmelt data since 1940.

What is Involved?

- Separate sewers in 89% of the combined sewer service area.
- Increase wastewater treatment plant capacity by 300 million gallons per day. Each of MMSD's treatment plants currently can handle about 300 million gallons per day.
- Increase Deep Tunnel pumping capability by 100 million gallons per day.
- Increase Deep Tunnel storage by 230 million gallons.

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Alternative 3

Overflow Elimination without Sewer Separation

What is It?

This alternative prevents overflows based on rainfall and snowmelt data since 1940 with major MMSD infrastructure investments.

What is Involved?

- Increase wastewater treatment plant capacity by 300 million gallons per day. Each of MMSD's treatment plants currently can handle about 300 million gallons per day.
- Increase Deep Tunnel pumping capability by 100 million gallons per day.
- Increase Deep Tunnel storage by 1.6 billion gallons, three times more than what will be built by 2010.

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Alternative 4

Eliminate Separate Sewer Overflows Only

What is it?

This alternative prevents separate sewer overflows based on rainfall and snowmelt data since 1940 with major MMSD infrastructure investments.

What is Involved?

- Increase wastewater treatment plant capacity by 300 million gallons per day. Each of MMSD's treatment plants currently can handle about 300 million gallons per day.
- Increase Deep Tunnel pumping capability by 100 million gallons per day.
- Increase Deep Tunnel storage by 160 million gallons.

Alternative 5

Fix Leaky Sewers

What is it?

Eliminate separate sewer overflows by reducing the volume of water that leaks into the separate sewer system.

What is Involved?

- Removal of inflow and infiltration using all possible methods – both public and private sewers and sewer laterals.
- Rehabilitation required in 90% of separate sewer area.

Alternative 6

Stormwater Best Management Practices

What is It?

Implement widespread best management practices (BMPs) to help reduce the amount of polluted stormwater that gets into our rivers and lakes. This alternative includes a variety of BMPs for urban, suburban, and rural communities.

What is Involved?

- Best management practices to control polluted stormwater in rural areas.
- Rain barrels, downspout disconnections, roof storage, green roofs, and more.
- Pet litter, waterfowl control, litter, and road salt reduction programs.

Alternative 7

Regulatory Approach (Everyone)

What is It?

This alternative requires MMSD and others to meet all state and federal overflow and stormwater regulations. It includes full implementation of state mandated polluted storm water regulations.

What is Involved?

- Reduce polluted storm water runoff by cities and villages.
- Establish low-impact farming practices.
- Implementation of downspout disconnections, rain gardens, rooftop storage, and other stormwater best management practices in the combined sewer area.
- Implement necessary sewer facilities to meet SSO and CSO regulations.

Alternative 8

Regulatory Approach

What is it?

Requires MMSD and communities to meet all state and federal sewer and stormwater regulations– excluding agricultural areas.

What is Involved?

- Requires full implementation of state mandated polluted stormwater regulations for all non-agricultural areas.
- Implement necessary sewer facilities to meet SSO and CSO regulations.
- Implement limited best management practices in non-agricultural areas.

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Alternative 9

Change Operating & Regulatory Approach

What is it?

This alternative proposes reducing overflows by operating MMSD facilities differently.

What is Involved?

- Change operating strategy to account for no difference in combined sewer and separate sewer overflows (this might require a change in State and Federal regulations).
- Implement all State regulations for agricultural and non-agricultural runoff.
- Implement limited best management practices in non-agricultural areas.

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Alternative 10

Watershed Approach –
Facility Improvements with Best Management Practices

What is It?

This alternative proposes a variety of facility improvements and best management practices (BMPs) for agricultural and non-agricultural areas.

What is Involved?

- Best management practices to reduce polluted stormwater in agricultural areas.
- Implement necessary sewer facilities to meet SSO and CSO regulations.
- Best management practice solutions for combined and separate sewer area.
- Disinfect polluted stormwater runoff at critical locations.

Alternative 11

Watershed Approach –
Habitat Improvement

What is It?

This alternative maximizes restoration and protection of natural areas, such as wetlands and prairies. It also includes a variety of facility improvements and best management practices for agricultural and non-agricultural areas.

What is Involved?

- Improve habitat though wetland restoration, establish prairies.
- Best management practices to reduce polluted stormwater in agricultural areas.
- Best management practice solutions for combined and separate sewer area.
- Disinfects polluted stormwater runoff at critical locations.

Evaluation of Alternatives

We compared the 11 Alternatives using:

- **Water Quality**
- **Publicly Inspired Goals**
- **Overflows**
- **Cost**

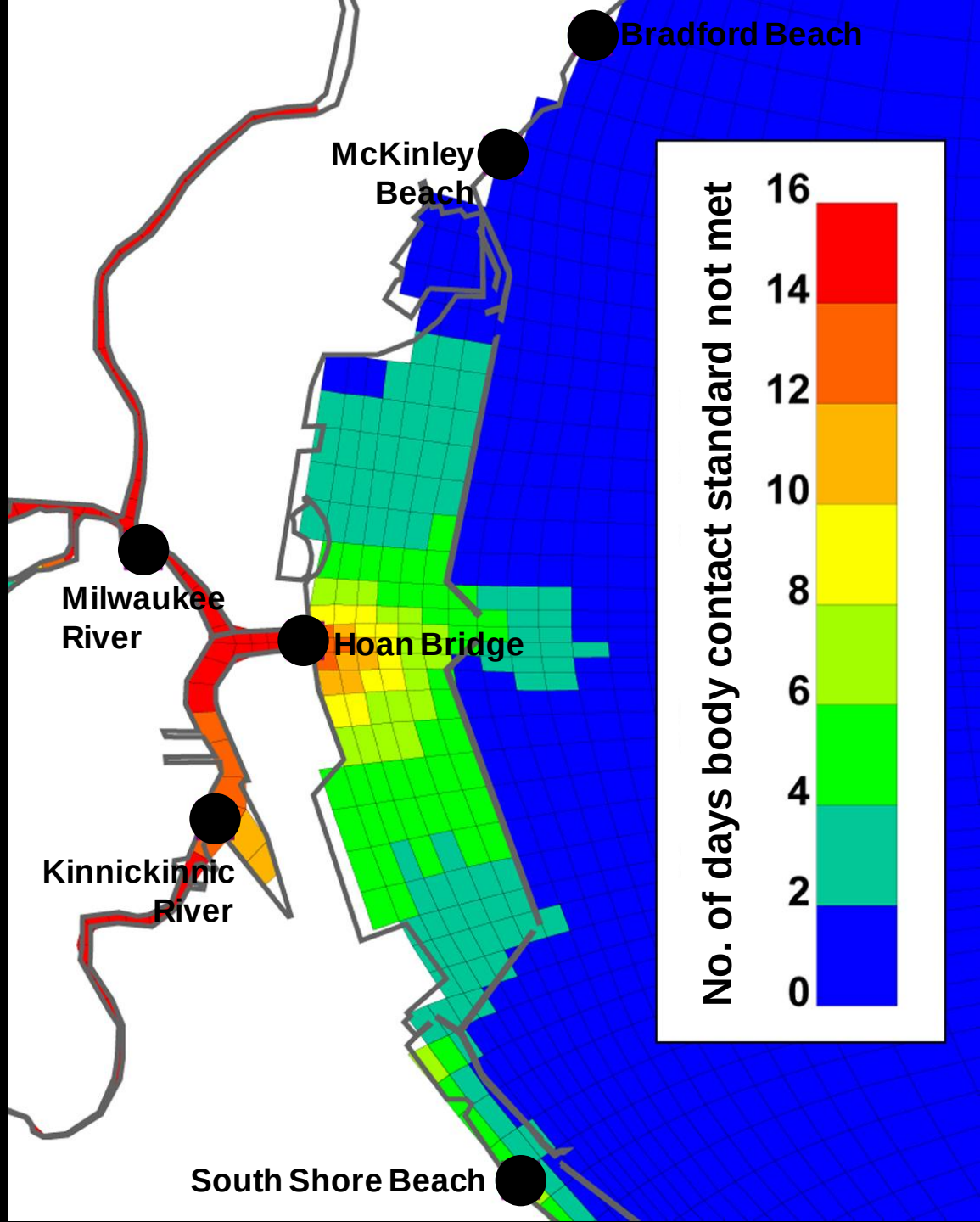
Alternative Summary

1	Future Baseline Condition				
	Screening Alternatives		Regulatory Alternatives		Watershed Alternatives:
2	Overflow Elimination with Sewer Separation	7	Regulatory Approach (Everyone)	10	Watershed Approach - Facility Improvements with Best Management Practices
3	Overflow Elimination without Sewer Separation	8	Regulatory Approach	11	Watershed Approach – Habitat Improvement
4	Eliminate Sanitary Sewer Overflows Only	9	Change Operating and Regulatory Approach		
5	Fix Leaky Sewers				
6	Stormwater Best Management Practices				

Water Quality INITIATIVE

Alternatives		Criteria: Annual Sewer Overflows – Sanitary Sewer	Criteria: Annual Sewer Overflows – Combined Sewer	Criteria: Achieve WQ & Public Goals	Cost – Billions
Screening Alternatives	#1: Baseline	1.2	3.6	5.7	——
	#2: Overflow Elimination with Sewer Separation	0	0	4.3	$4.5-5.8
	#3: Overflow Elimination without Sewer Separation	0	0	5.1	$4.9-6.4
	#4: Eliminate Separate Sewer Overflows Only	0	3.5	5.3	$1.2-1.6
	#5: Fix Leaky Sewers	0	3.5	5.1	$6.7-8.8
	#6: Stormwater Best Management Practices	0.9	2.9	7.7	$1.1-1.5
Regulatory Alternatives	#7: Regulatory Approach (Everyone)	0.2	2.1	6.1	$1.0-1.5
	#8: Regulatory Approach (MMSD and Communities)	0.2	2.1	6.2	$0.6-0.8
	#9: Change Operating & Regulatory Approach	1	1.1	6.1	$1.1-1.5
Watershed Alternatives	#10: Watershed Approach: Facility Improvements with Best Management Practices	0.9	2.9	8.4	$1.5-2.1
	#11: Watershed Approach: Habitat Improvement	0.9	2.9	9.1	$1.7-2.3

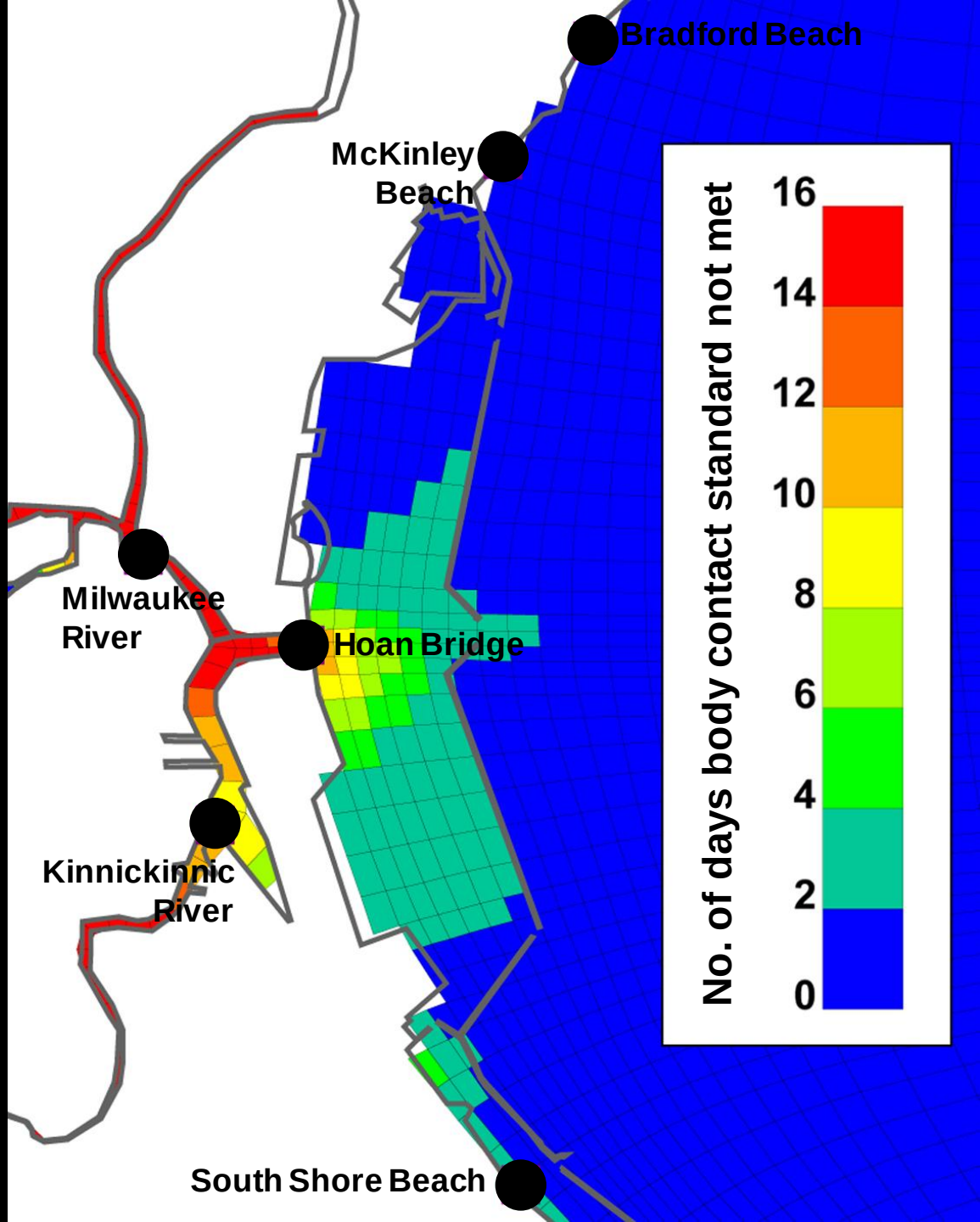
Existing Condition- Fecal coliform (May through September 153 days)



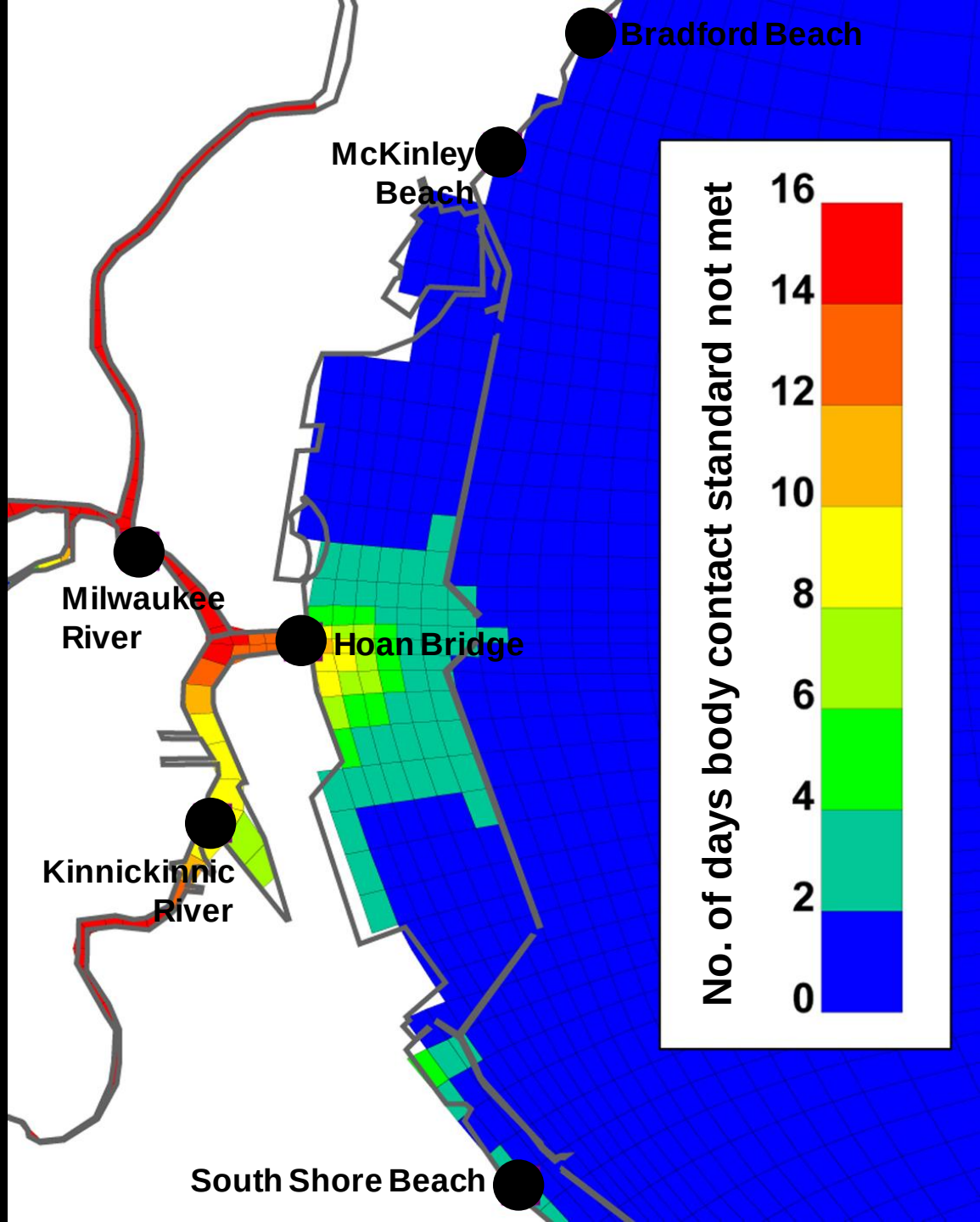
Alternative 1

Future Condition

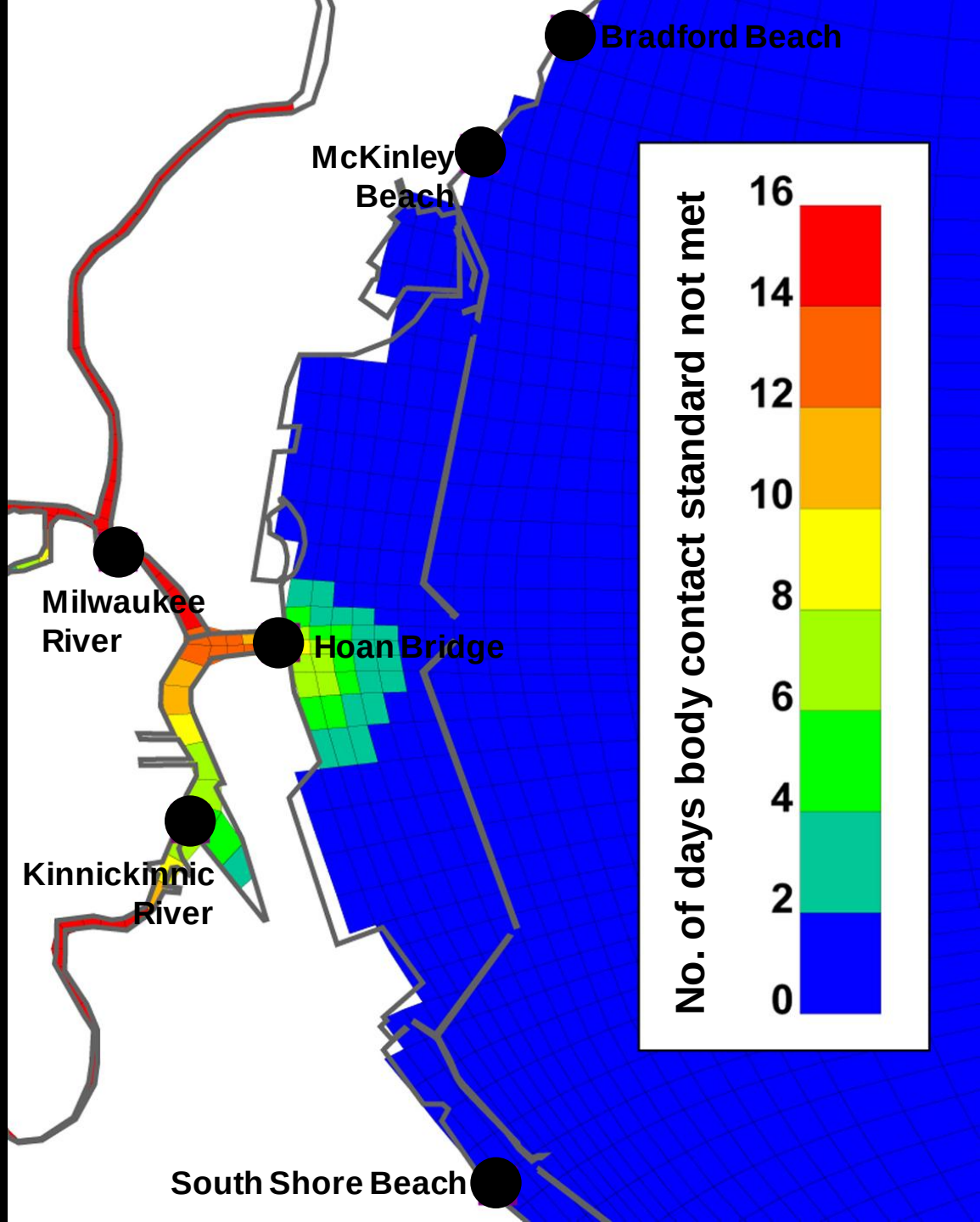
Fecal Coliform



Alternative 4 & 5 No SSO Fecal Coliform



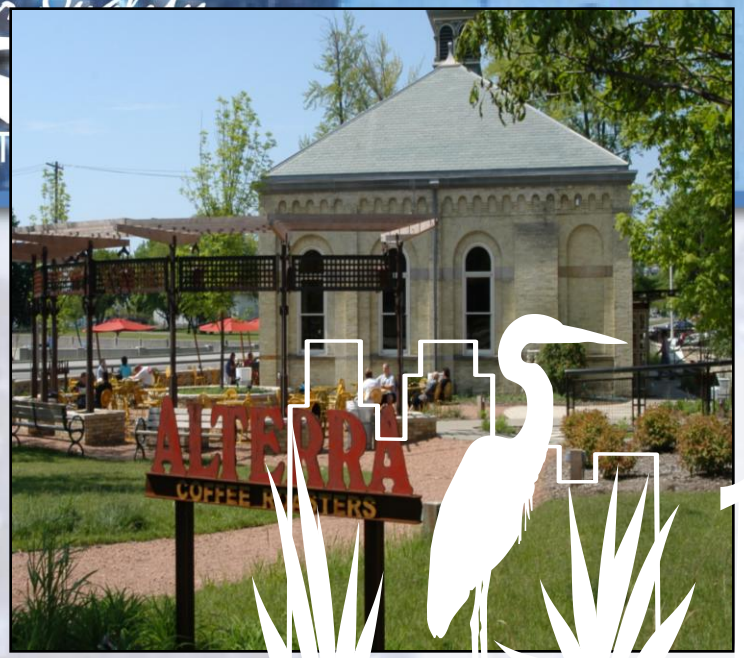
Alternative 2 & 3 No CSO And No SSO Fecal Coliform



What Do You Think?

Send questions and comments to:

Ms. Krista Chapdelaine: 225-2128 or kchapdelaine@mmsd.com



WMSD

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