



OHM
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Stormwater Advisory Group

Meeting 2
April 20, 2016





Agenda

- Stormwater Infrastructure and Pollution
- Preventative vs. Reactive Maintenance
- Prioritization Exercise



Recap Group Goals

Basics of Stormwater

Budget Realities

Costs of maintaining our infrastructure



Clinton River

Key Takeaways

- Originally for flood protection
- Now: protecting water quality
- Huge volumes of water
- Water carries pollutants
- Less expensive to be proactive





Functions of Stormwater Infrastructure

Protecting property
from flooding



Keeping water
safe



Stormwater Treatment Wetland



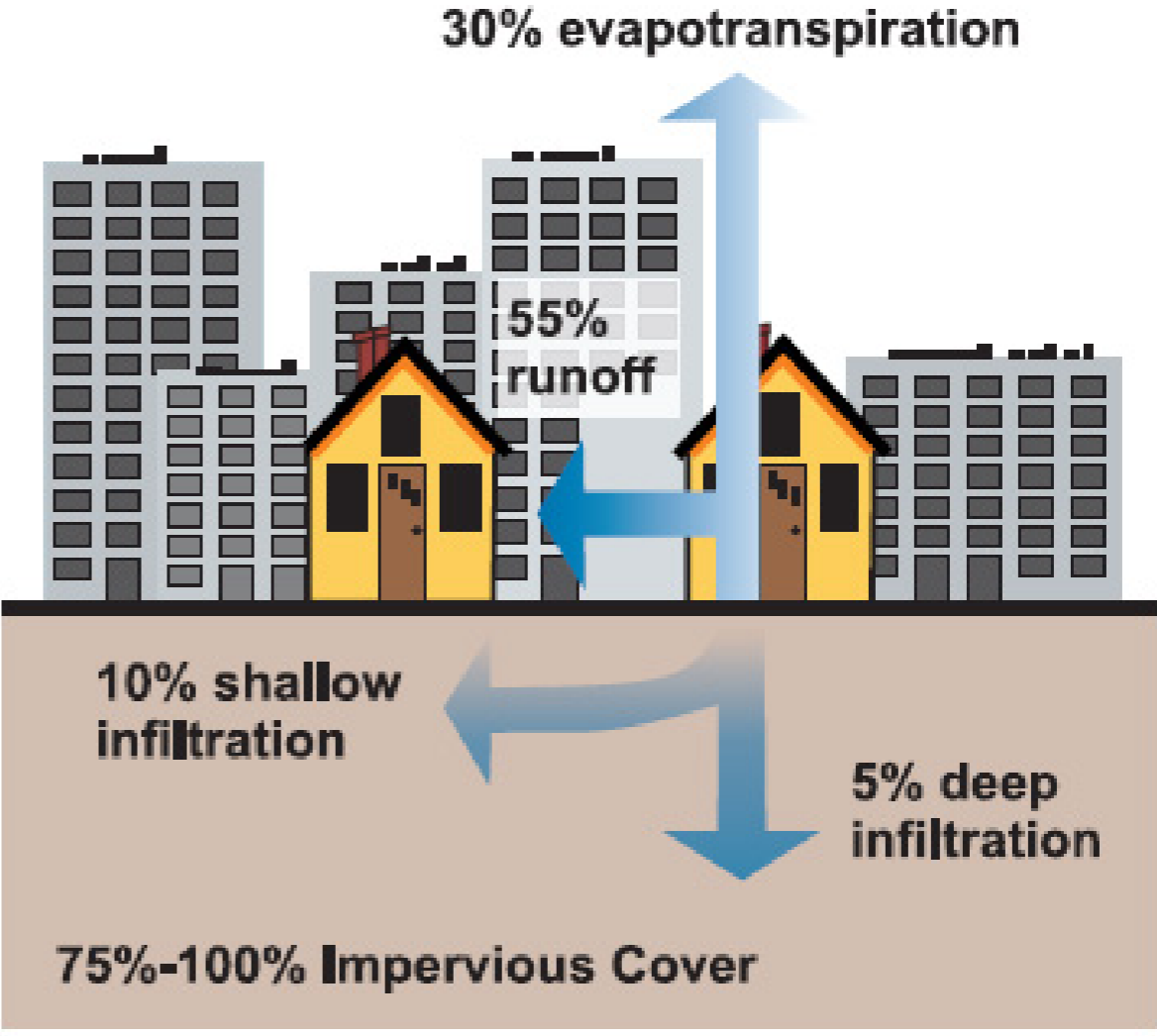
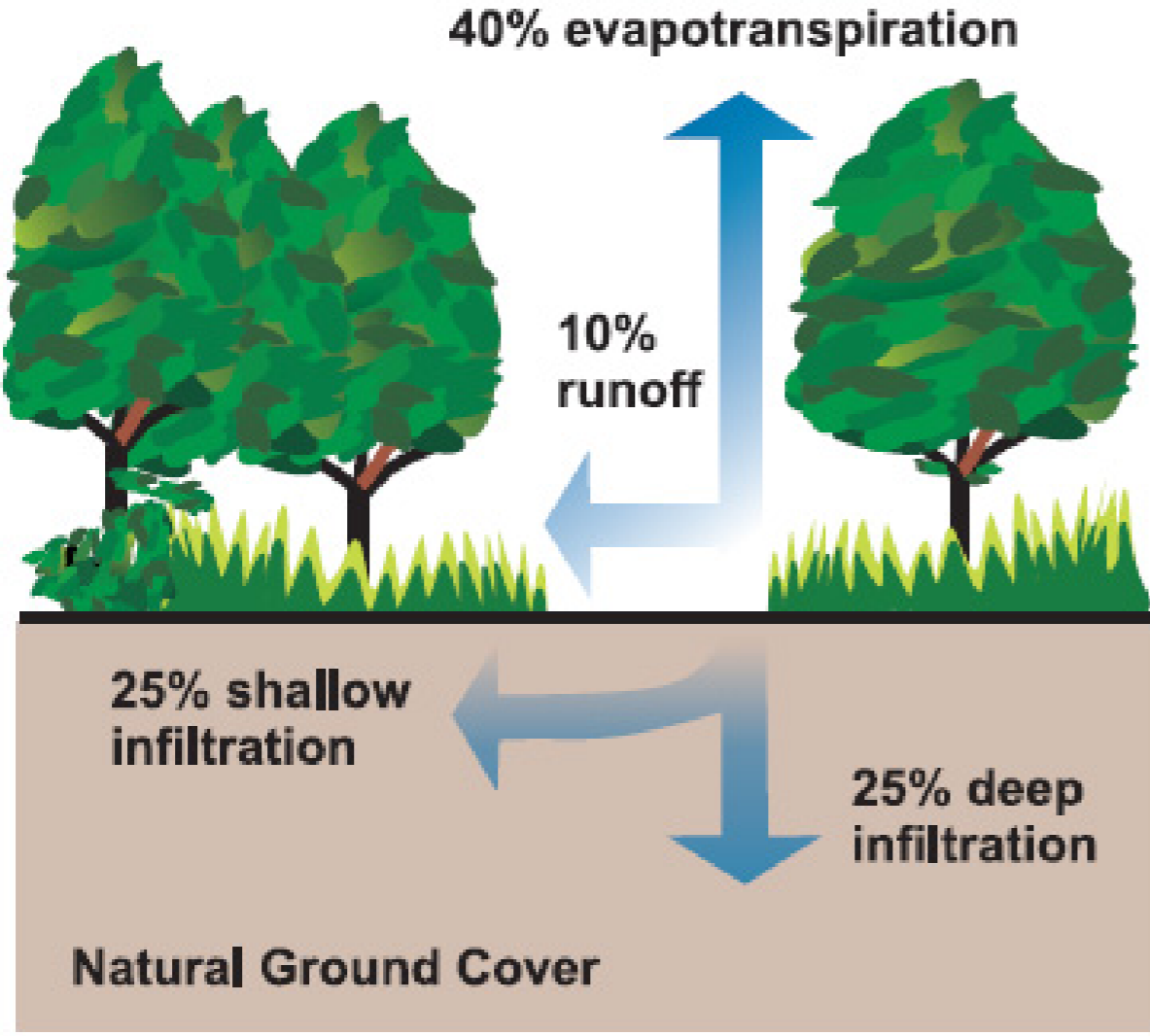
Rainwater is clean, until...



Runoff Threatens Water Safety



Stormwater Runoff: *Before and After*

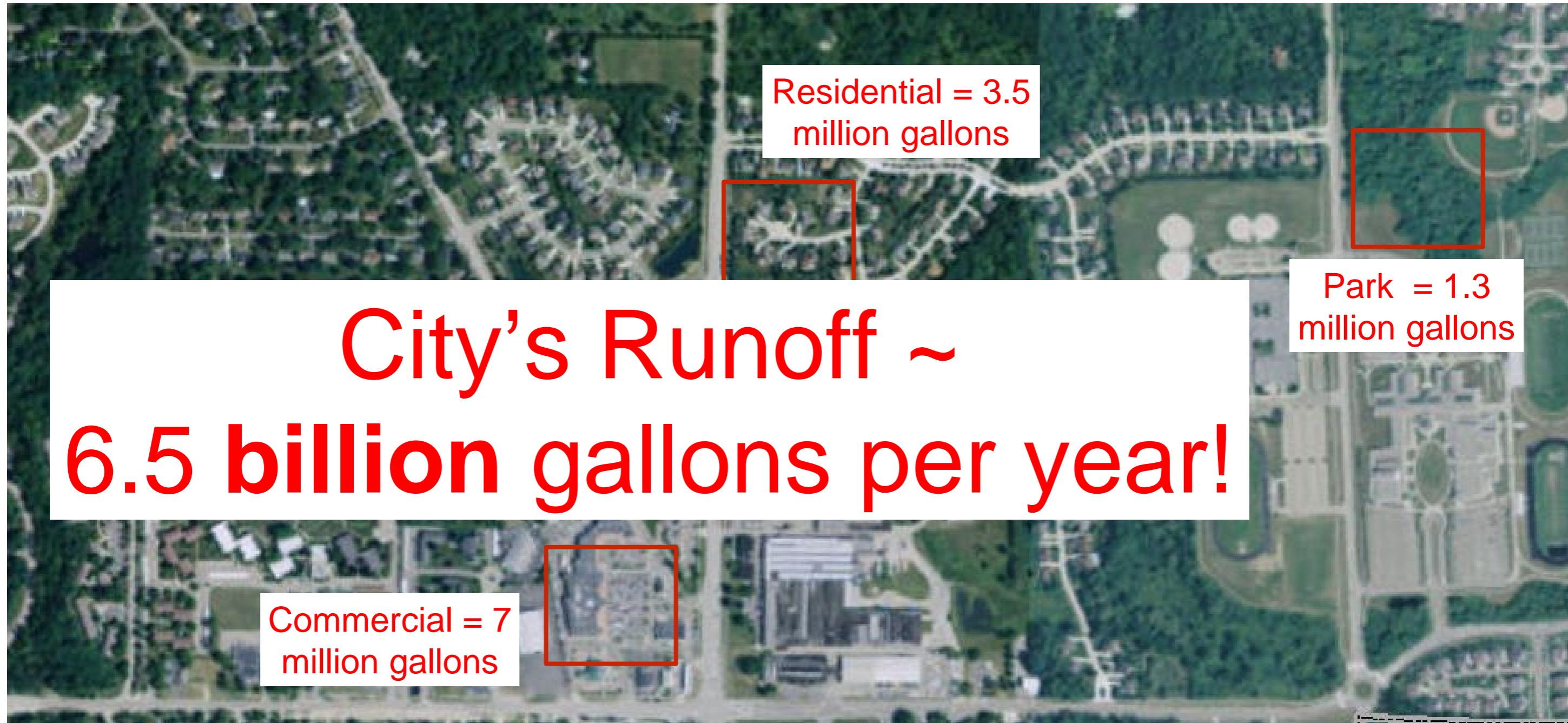


How Much Rain Runs Off?

It depends on where it falls



No matter where, it's a lot of water



Two Key Questions

- Where does it go?
- What's in it?





Water Quality Impacts: Pollutants



Trash



Heavy Metals



Nutrients



Sediment



Pathogens



Oil and Grease

Pollution from just 10 acres!

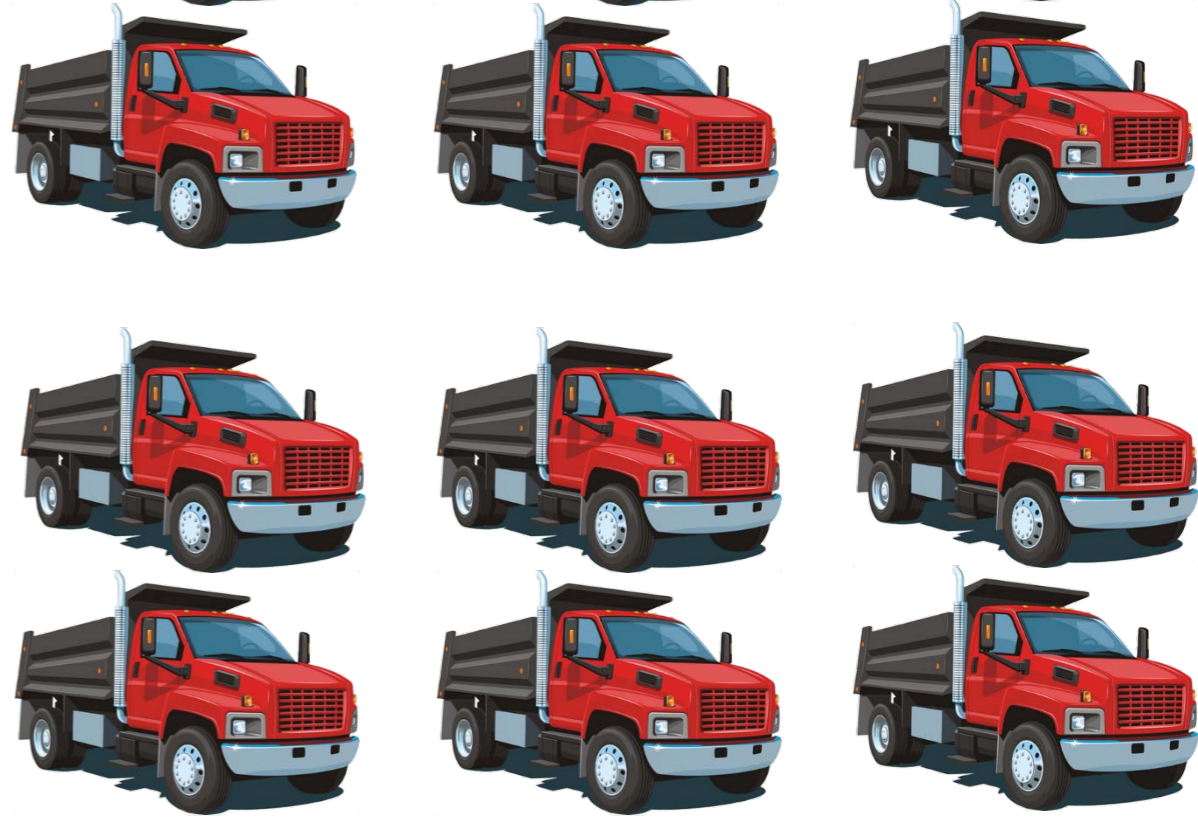
Contaminant	Park	Residential	Commercial
Dirt (suspended solids)	1440 lbs	3839 lbs	7678 lbs
Phosphorus	7 lbs	18 lbs	37 lbs
Nitrogen	53 lbs	141 lbs	282 lbs
Lead	1 lbs	4 lbs	7 lbs
Zinc	3 lbs	9 lbs	18 lbs



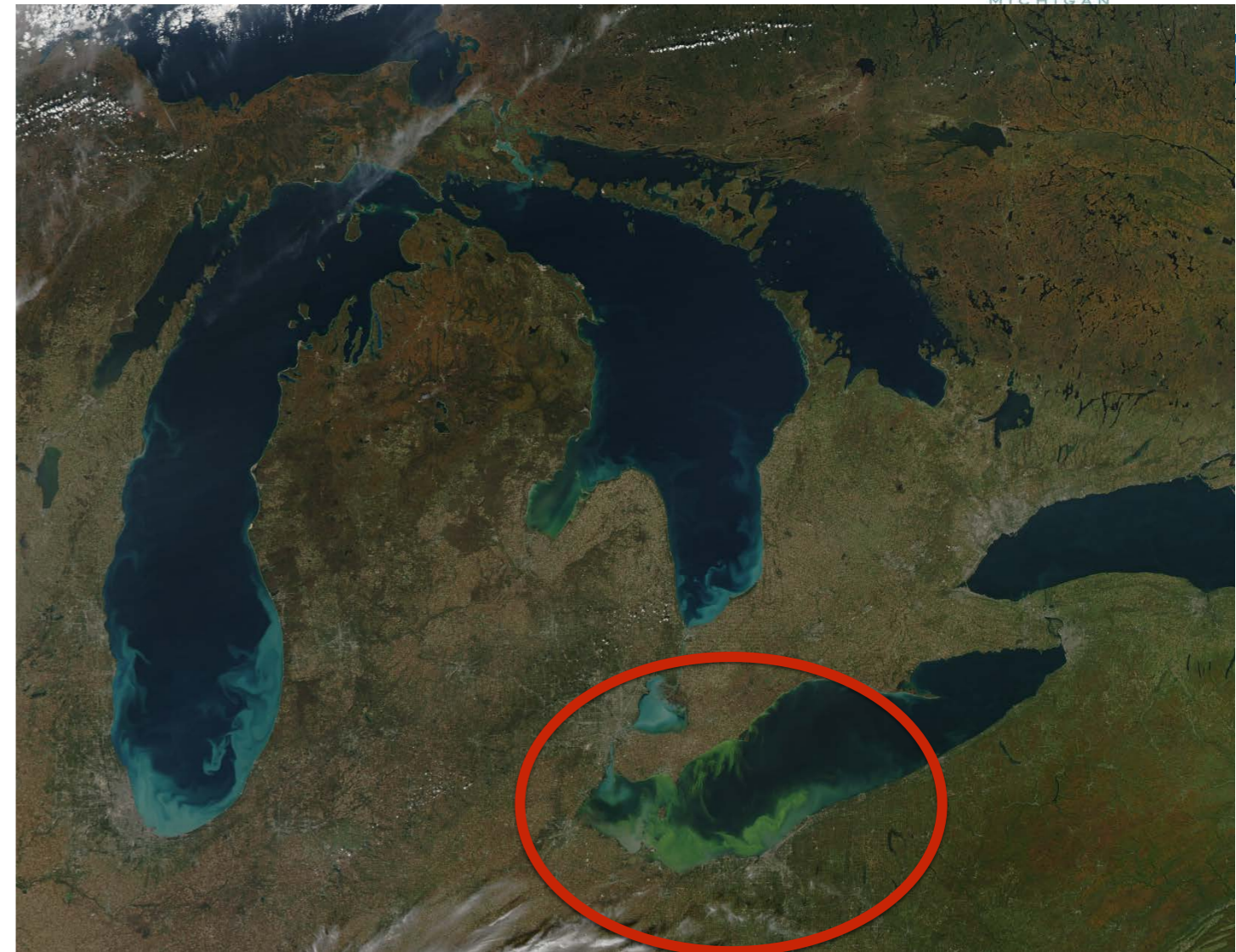
Much more for Entire City



Contaminant	Entire City
Dirt (suspended solids)	1465 tons
Phosphorus	14,000 lbs
Nitrogen	108,000 lbs
Lead	2,700 lbs
Zinc	7,000 lbs



Eutrophication



Algal Blooms in Lake Erie due to increased Phosphorus & Nitrogen

Maintenance: Reactive vs Preventative



Reactive Actions



Sewer Clean to
Remove Obstructions



Catch Basin Cleaning

Preventative Actions



Rain Gardens



Detention Ponds

What is “Green” Infrastructure and why is it necessary?



- Enhances quality of life and property values
- Mimics pre-development hydrology
- Removes pollutants before they get downstream

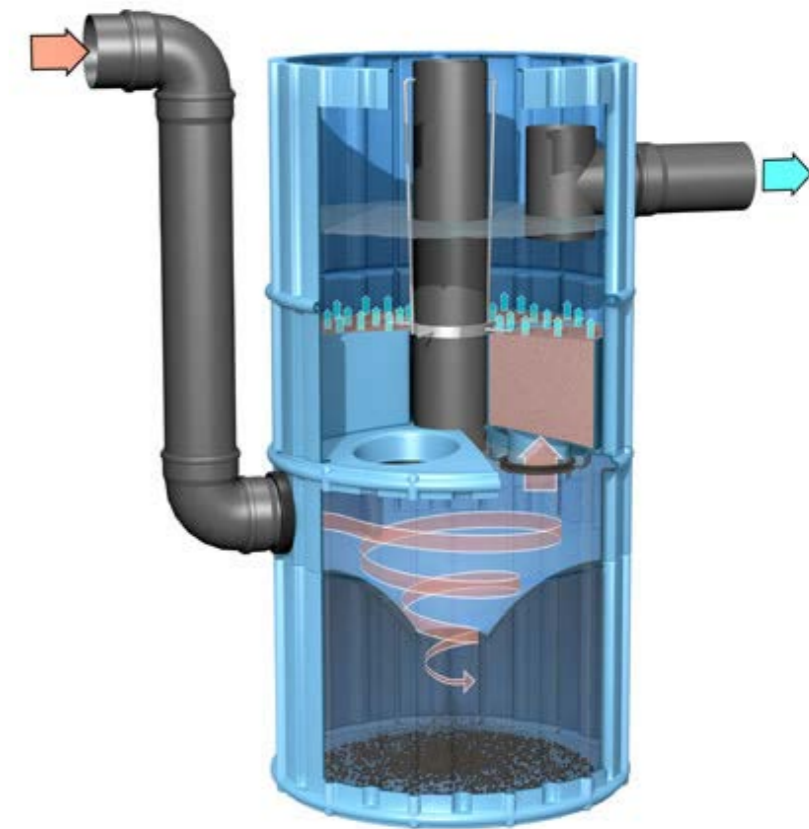
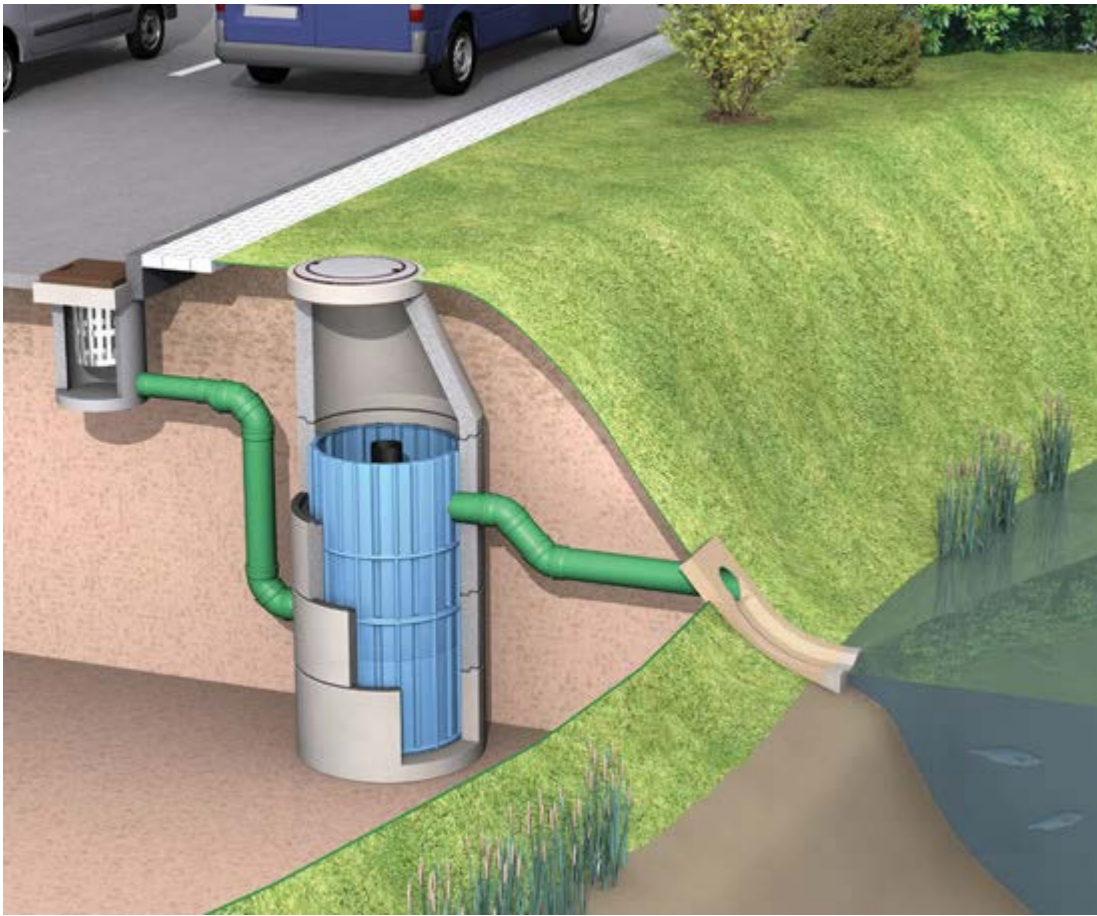
Tailor the Tools to the Site



Small and Large Scale Options



Best Management Practices



Mechanical
Separators

What “Officially” Counts as Infrastructure?

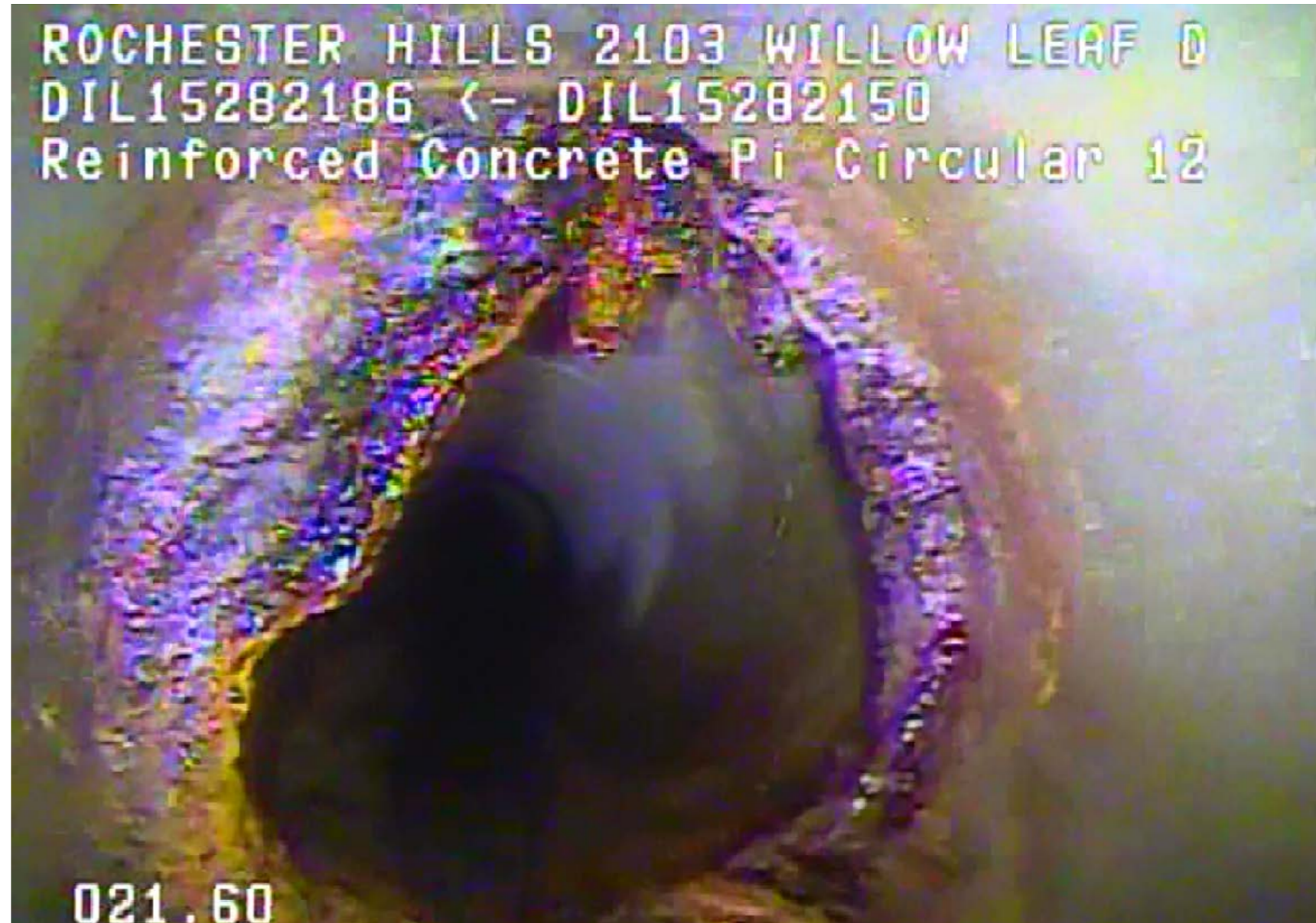
- BOTH Green and Grey Infrastructure are integral components of the system – they both must be maintained



Rochester Hills Footprint



Rochester Hills Footprint



Old Reality: Flood control rules *get it to the river quickly and efficiently*

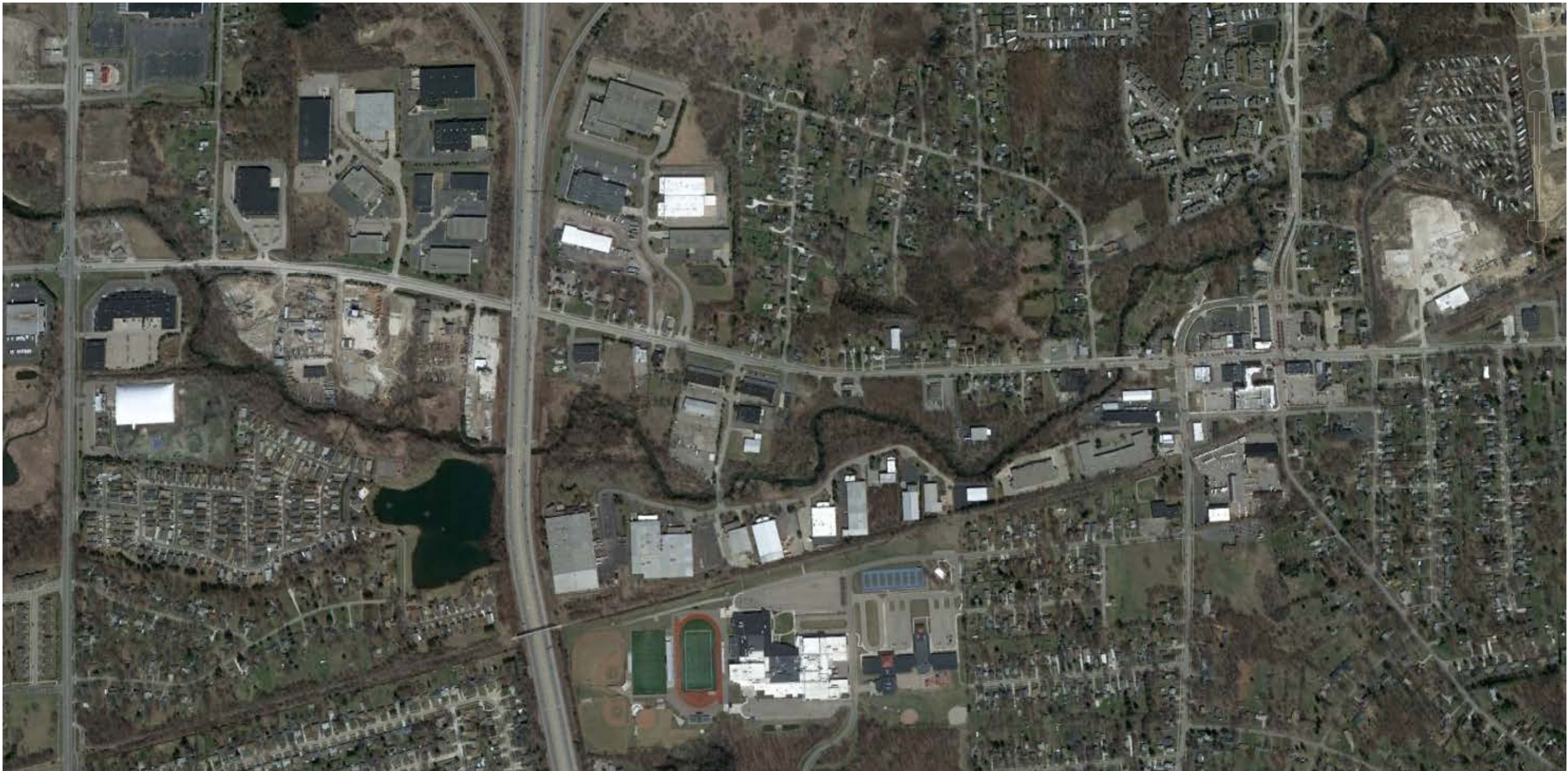


Old Reality: Stormwater detention (1970s on) – *peak flow control*



New Reality: Stormwater quality (post-2000) — *source control and stream corridor management*

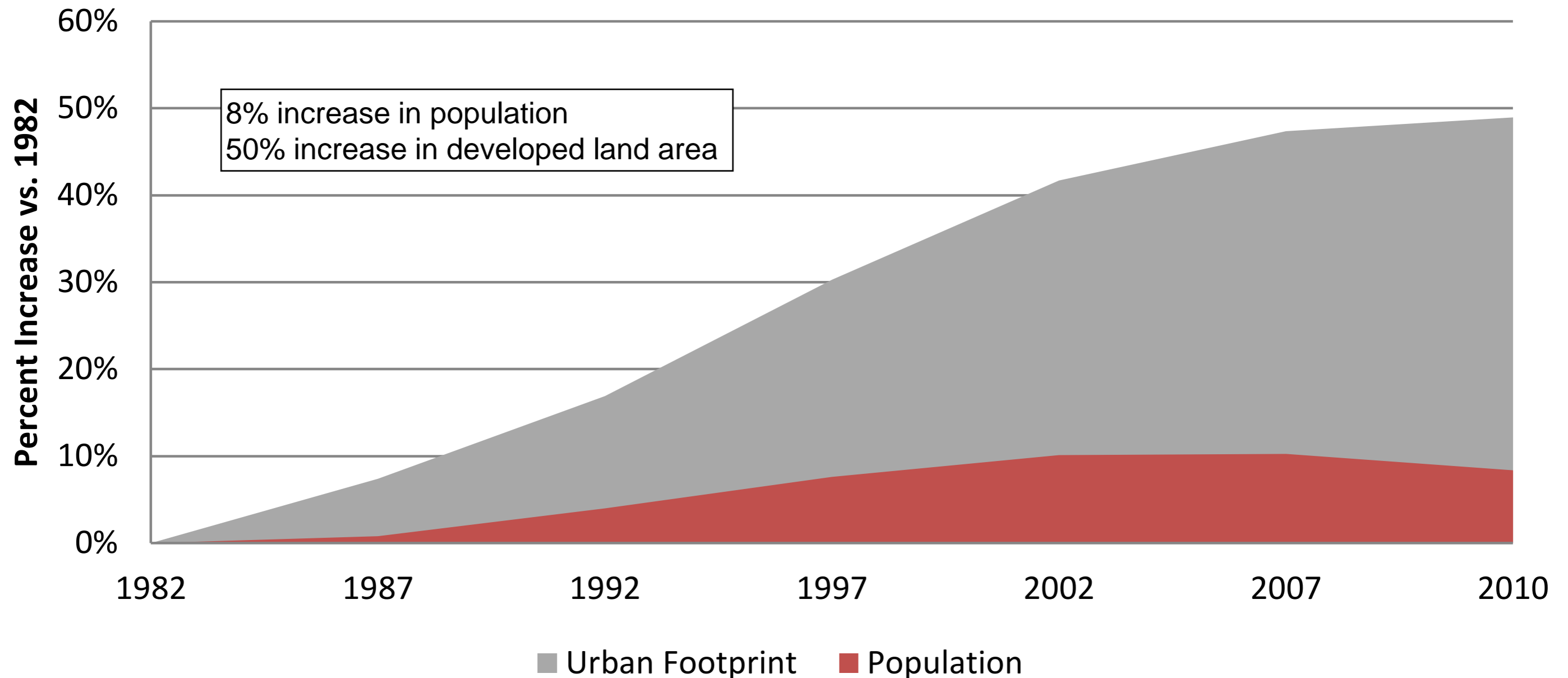




**How Much Infrastructure
is Out There?**

A lot more than you might think:

Michigan's urban footprint growing more quickly than population



The Key Takeaways

- **It used to be all about flood prevention**
- **Now it's also about protecting water quality**
- **The Volume of managed water is Huge**
- **It carries many pollutants**
- **Acting Proactively has many advantages**
- **There is a lot more out there than you might think**

Prioritization Exercise

What do *you* feel are the key problems,
needs, issues or priorities that must address
in an improved stormwater program?



Funding: the end is in sight

Dedicated Budget:

- **\$575,000 per year from Water Resources Fund**
- **0.5% of the City's \$110 million budget**

At this rate, existing Fund will run out in 3 years!

Water Resources Fund

Professional Services:
\$180,000 per year

Misc. Expenses and Personnel:
\$230,000 per year

System Maintenance:
\$165,000 per year

Capital Improvements

Stormwater vs. Water/Sewer

Local taxes pay for capital projects (drain projects):

\$130,000 per year in debt payments

Water and Sanitary Sewer Capital Funding:

\$7.8 million per year

Future Opportunities

- SW Quality Investments
- Enhanced Information Services/GIS
- Storm System Capital Improvements
- Rehabilitation and repair of aging and undersized pipes
- Sewer jetting/cleaning and inspections
- Stormwater Component of Road and Bridge Projects



SAG Roadmap

June:

- Map out future budget based on priorities
- Discuss funding options



July/August:

- Seek consensus on recommending funding option
- Prepare policy statement



Next SAG Meeting

- Topics
- Date/Time

Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
June 2016						
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	Notes:	



Q & A

Thanks for your attention!