

Public Safety & Infrastructure Committee Stormwater Advisory Group

Meeting 1: Stormwater 101
March 9, 2016



Agenda

- Introductions
- Goals for Stormwater Advisory Group (SAG)
- Stormwater 101
- Magnitude of Stormwater as an Asset
- Rochester Hills Infrastructure and Budget

Introductions

- PS&I Committee Members
- Additional SAG members
- Consultant Staff
 - Greg Kacvinsky, OHM
 - Dan Mitchell, HRC

Goals for Meeting

Basics of Stormwater (Stormwater 101)

Budget Realities

Costs of maintaining our infrastructure



Clinton River, Wikipedia

Stormwater Infrastructure Addresses Quality of Life:

Public safety

Public health

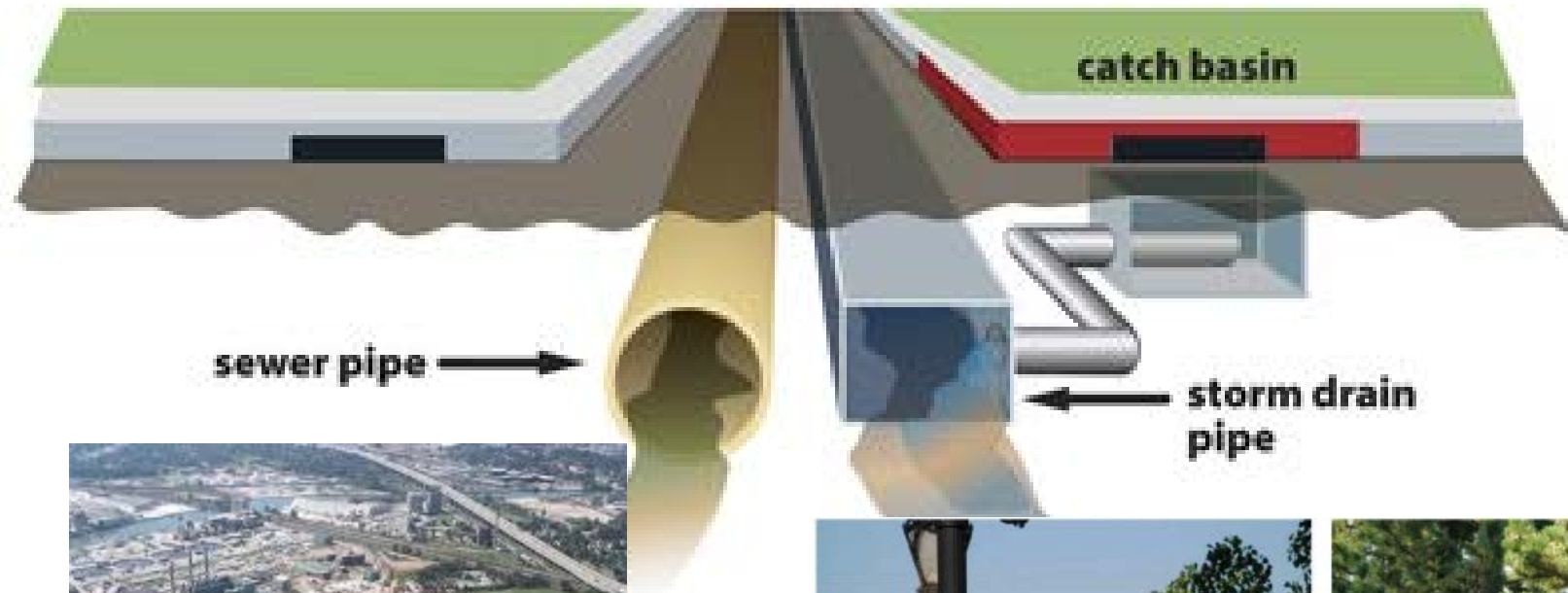
Flood control

Economic health

Environmental concerns



Stormwater Collection and Discharge



Detroit
Treatment
Facility



Stormwater Discharge

Hundreds of direct discharges to the environment

Fishing 101 at
Spencer Park



Clinton River Paddlepalooza

Photo Credits: Rochester Media

Stormwater Infrastructure

- Collects and safely conveys stormwater
- Limited lifetime (50-80 years)
- No dedicated funding source
- Regulated by Clean Water Act



Infrastructure Components



Pipes

Manholes



Catch
Basins



Infrastructure Components



Flood Control



Infrastructure Components

Culverts

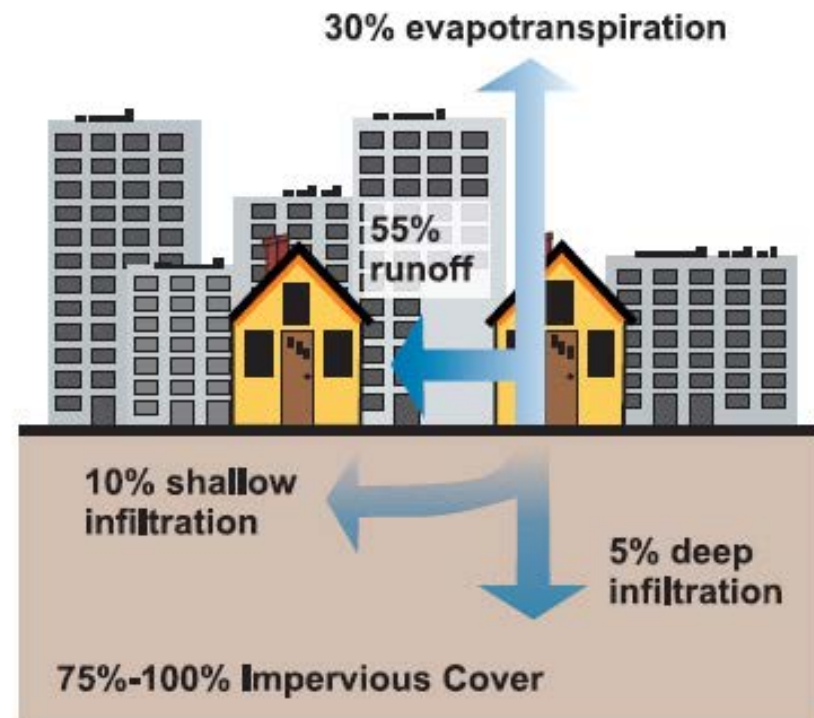
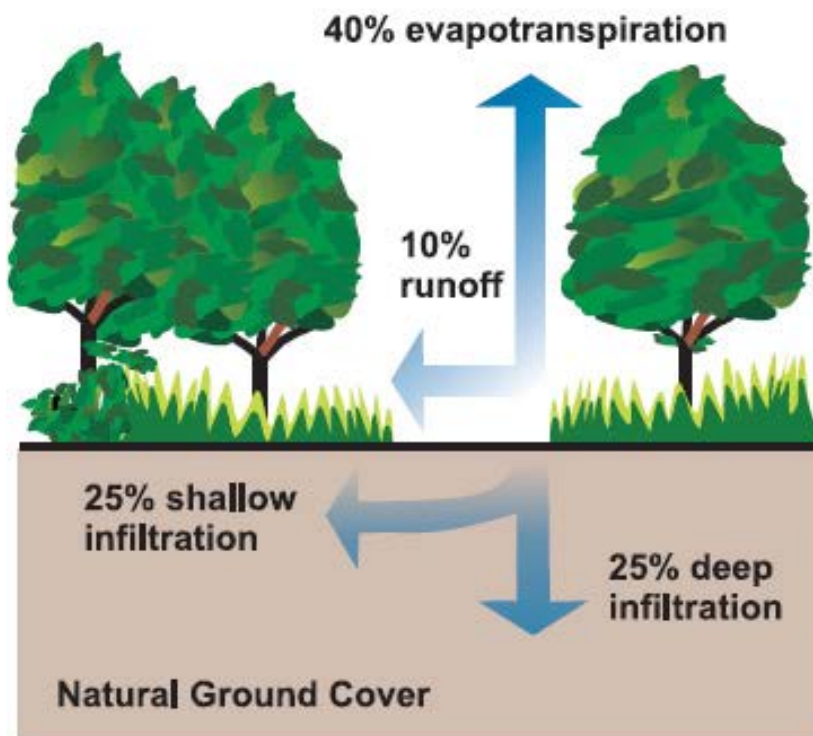
Streams, Rivers, Drains



<http://www.conteches.com/>



Stormwater Runoff



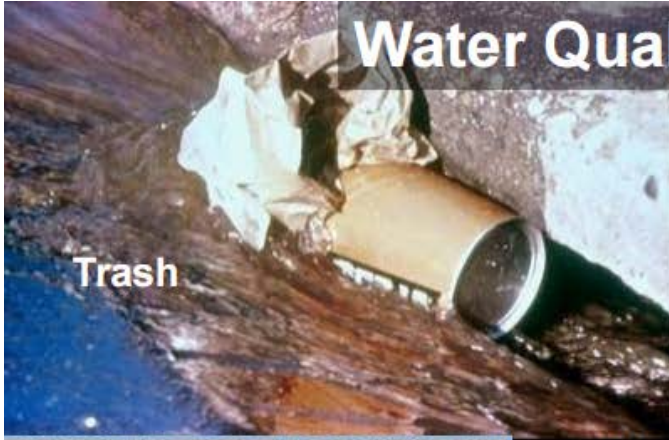


United States Environmental Protection Agency



Water Quality Impacts: Pollutants

Trash



Nutrients



Heavy Metals



Pathogens



Sediment



Oil and Grease



Cleaning Stormwater

Ponds

Wetlands

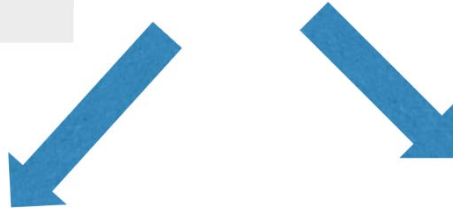
Infiltration

Filtration



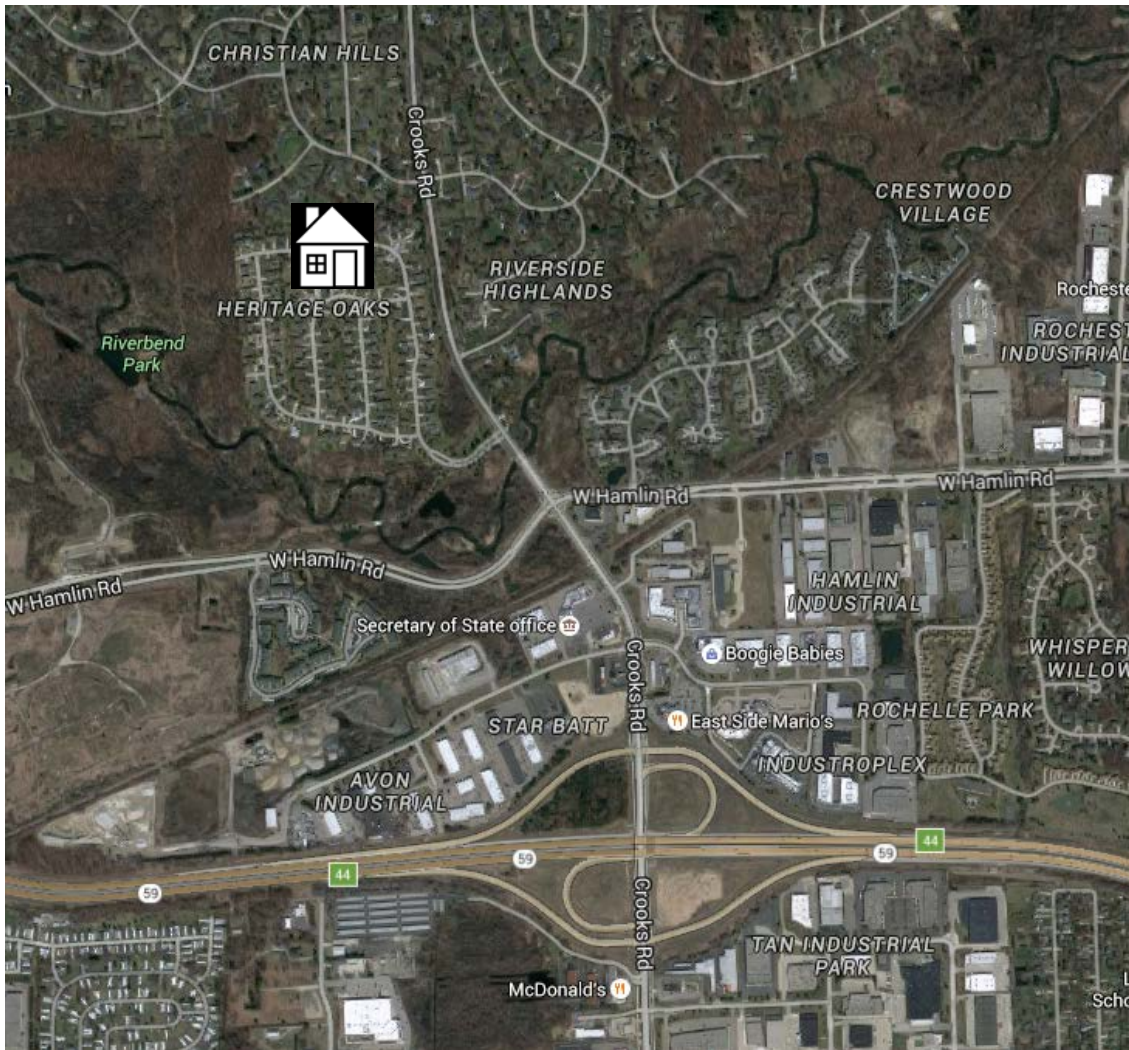


Hidden
problems
become
visible
quickly!





How we depend on stormwater infrastructure



Follow the path of water out of the City...

How does the City manage to safely transport this water?



How we depend on stormwater infrastructure



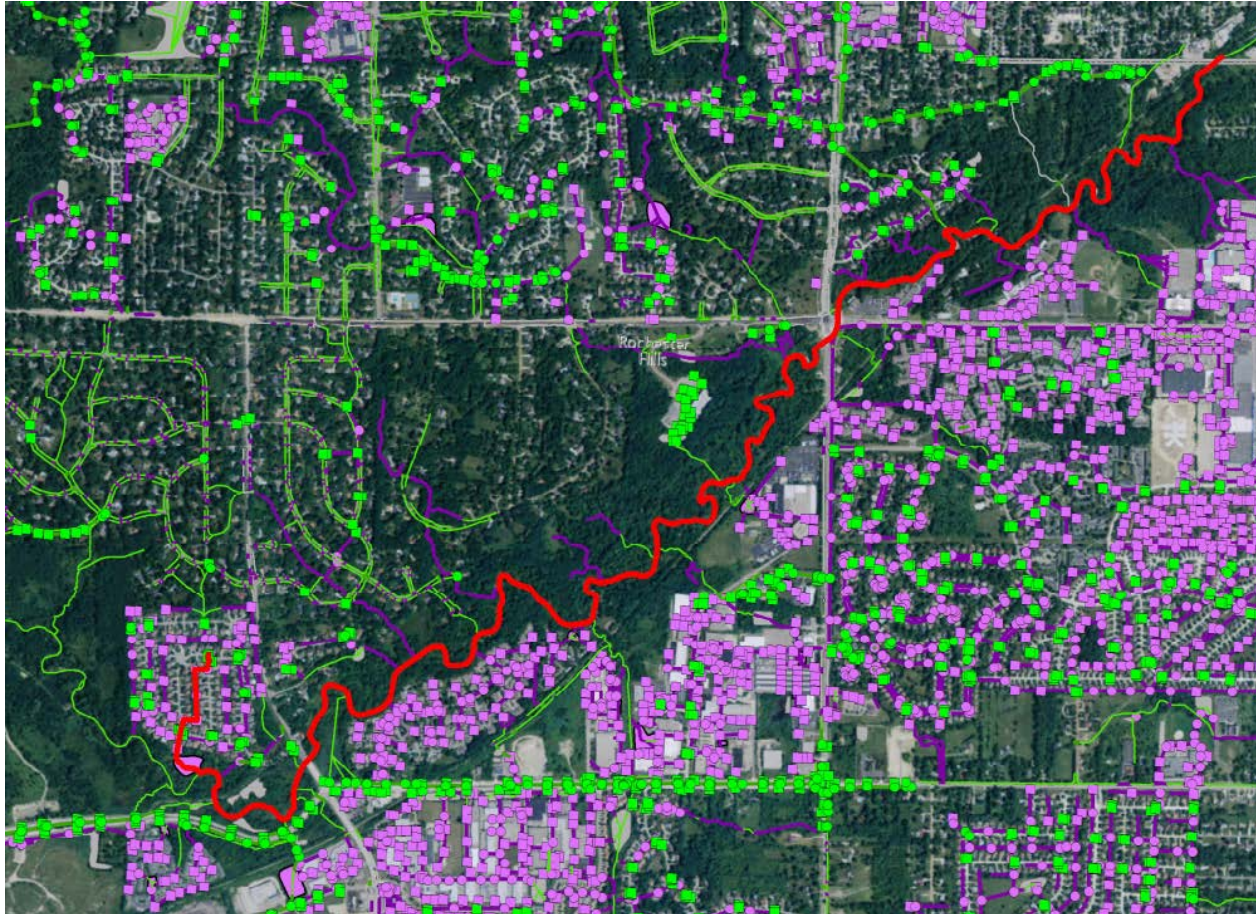
Water from a residence
flows through:

a catch basin inlet

6 manholes

$\frac{1}{4}$ mile of storm sewer

Then into detention pond...




Then into the Clinton River

- Travels under culvert at Crooks Rd
- Travels through culvert at Avon & Livernois Rds
- Travels through culvert at Rochester Rd
- 4 miles through Clinton River

Finally, leaves city

Infrastructure Value

Asset	Value
¼ Mile of Storm Sewer	\$108,800
6 Manholes	\$15,000
Catch Basins - Inlets	\$1,200
6 Culverts	\$3,000,000
4 Miles Open Channel*	\$3,165,000
Total	\$6,290,000



Storm water from 1 home, travels through \$6.3 million worth of infrastructure before leaving the City!

*Assume ~\$150/ft for Clinton River

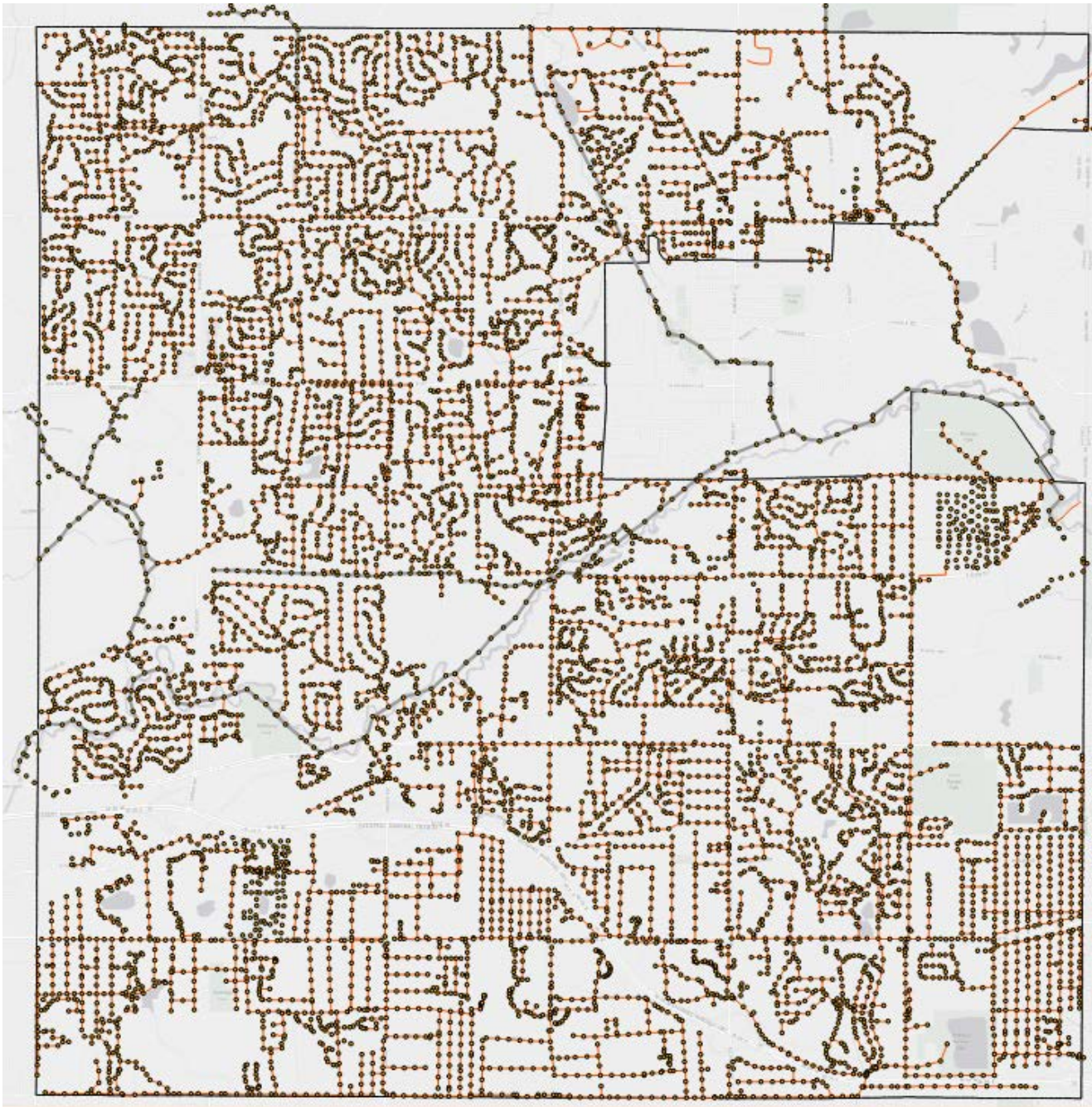
Infrastructure Funding

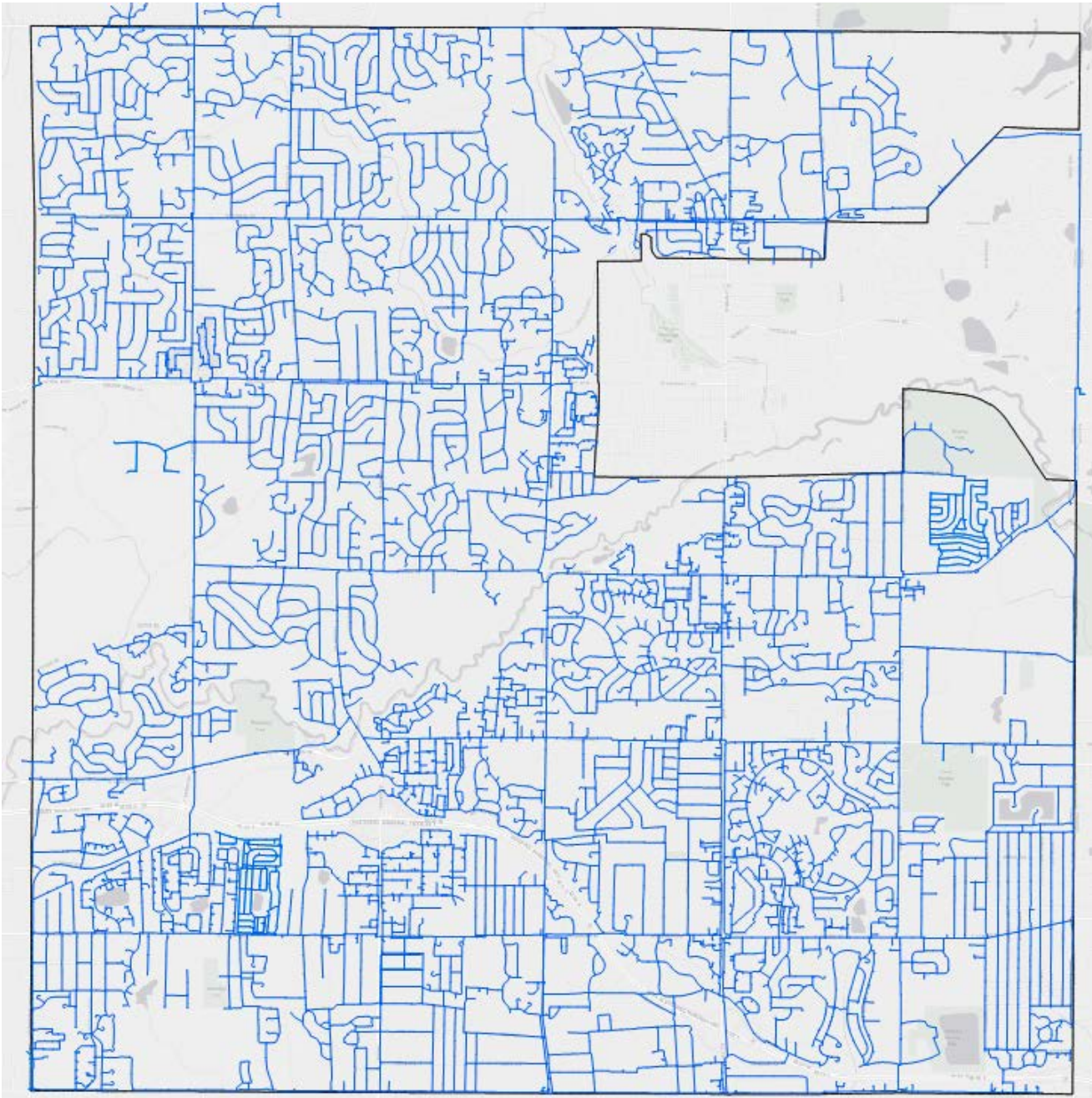


Liquid Assets The Story of Our
Water Infrastructure

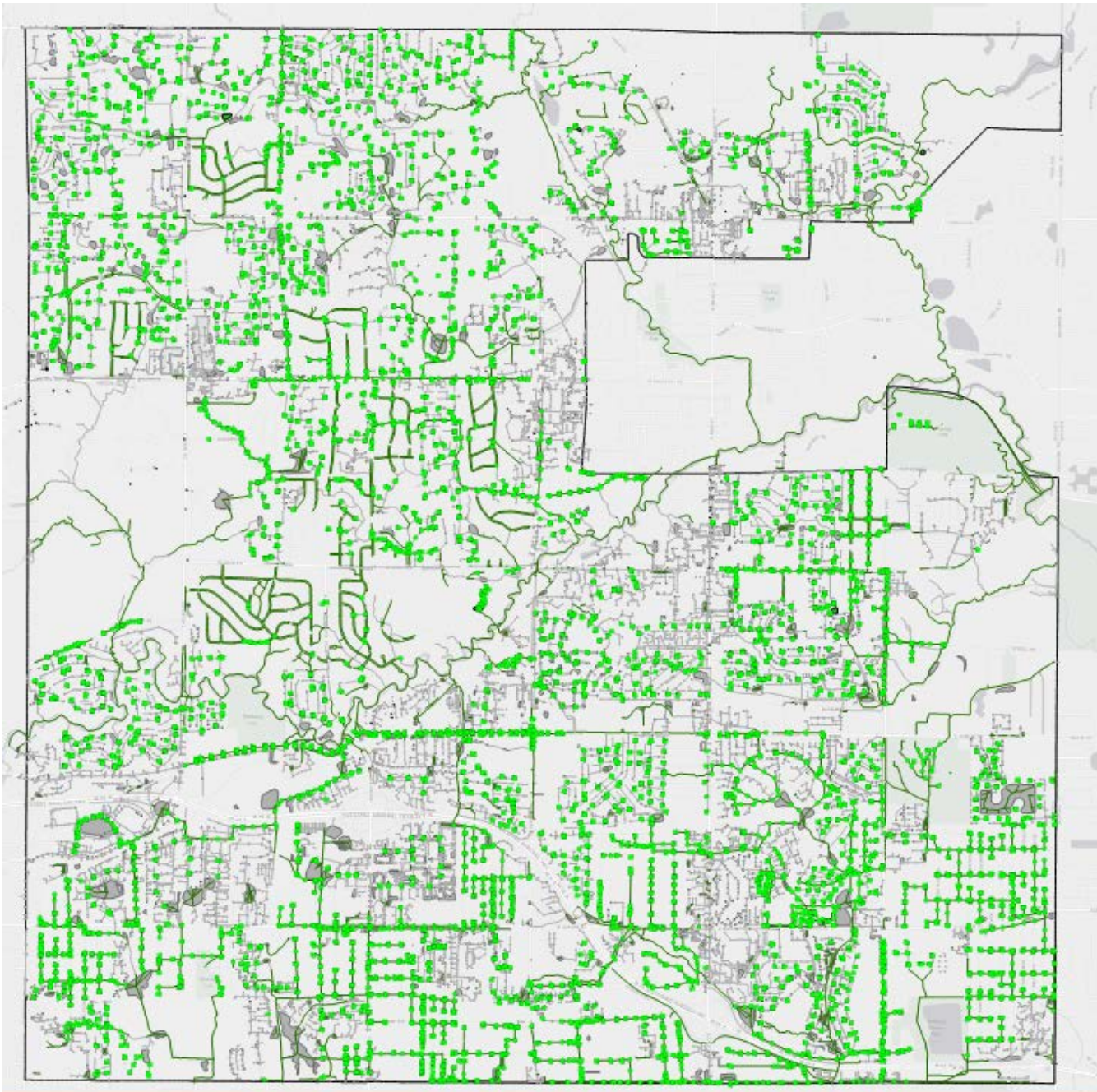
<http://liquidassets.psu.edu/#overview>

- Wastewater Collection System
 - 330 miles sewer
 - 8,800 manholes
 - 6 pump stations
- Annual Budget \$15 million

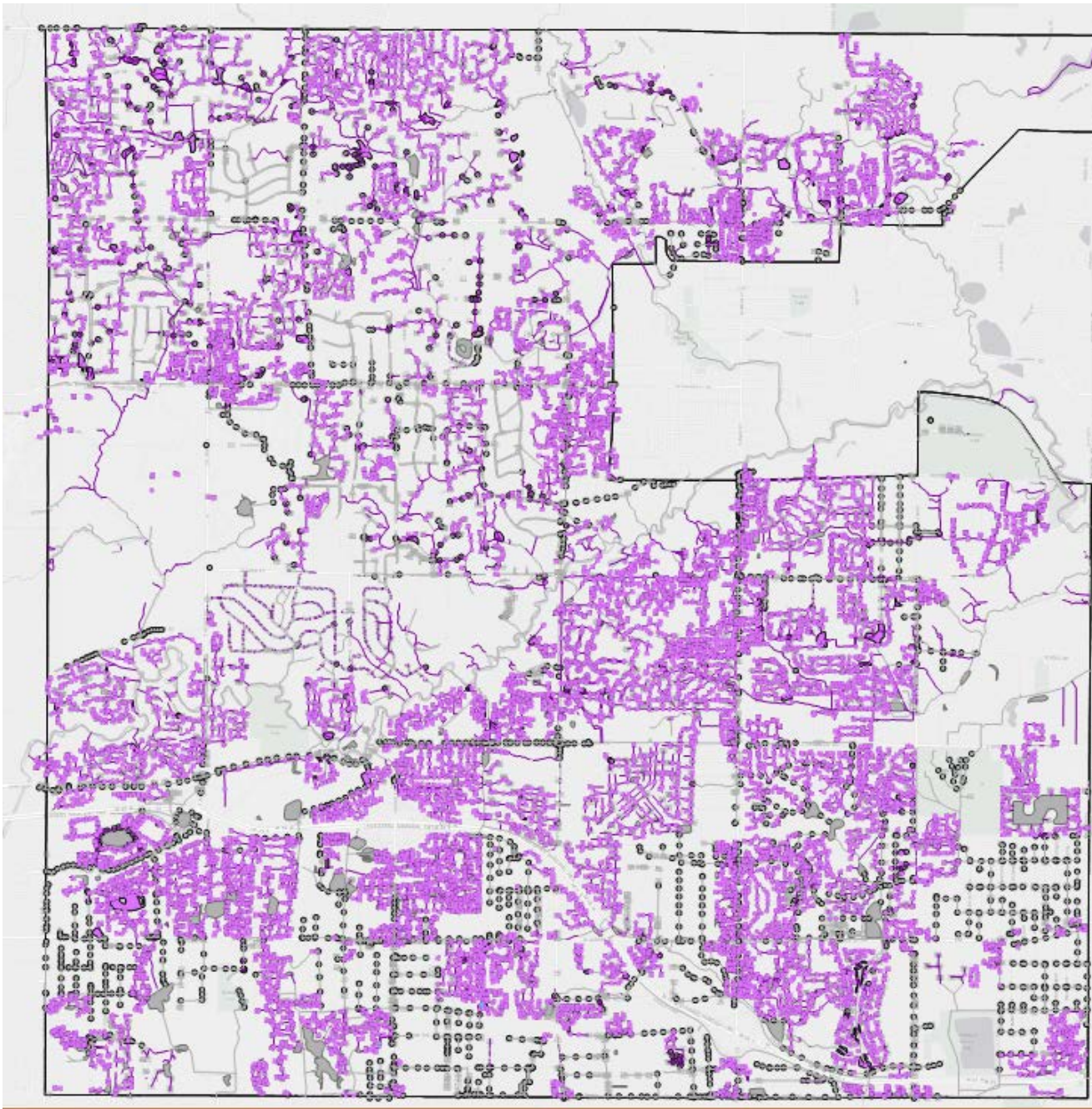




- Drinking Water System
 - 441 miles pipe
 - Thousands of Fire Hydrants and Valves
- Annual Budget \$18.5 million



- Public Stormwater System
 - 110 miles sewer
 - 120 miles open drains
 - 1,900 manholes
 - 6,500 catch basins
 - major culverts
- Annual Budget \$575,000



- Private Stormwater System
 - 323 miles sewer
 - 37 miles open drains
 - 5,600 manholes
 - 7,800 catch basins
- Annual Budget
Not known

Public vs Private Ownership



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

Stormwater Impacts Road Budget

Street sweeping and ditch cleaning

Repairing catch basins

Replacing storm sewer during road projects



What's NOT included...

Rehabilitation and repair of aging pipes

Sewer jetting/cleaning and inspections

Replacement of undersized sewers



Stormwater Assets: Rochester Hills

Asset	Value
Storm Sewer (110 miles)	\$60,000,000
Manholes	\$4,800,000
Catch Basins - Inlets	\$7,700,000
Culverts	\$14,000,000
Open Drains (100 miles)	\$24,500,000
Total	\$111,000,000



Stormwater Assets: Privately Owned

Asset	Value
Storm Sewer (323 miles)	\$156,500,000
Manholes	\$14,000,000
Catch Basins - Inlets	\$9,500,000
Open Drains (36 miles)	\$8,600,000
Total	\$188,000,000



Does not include detention ponds

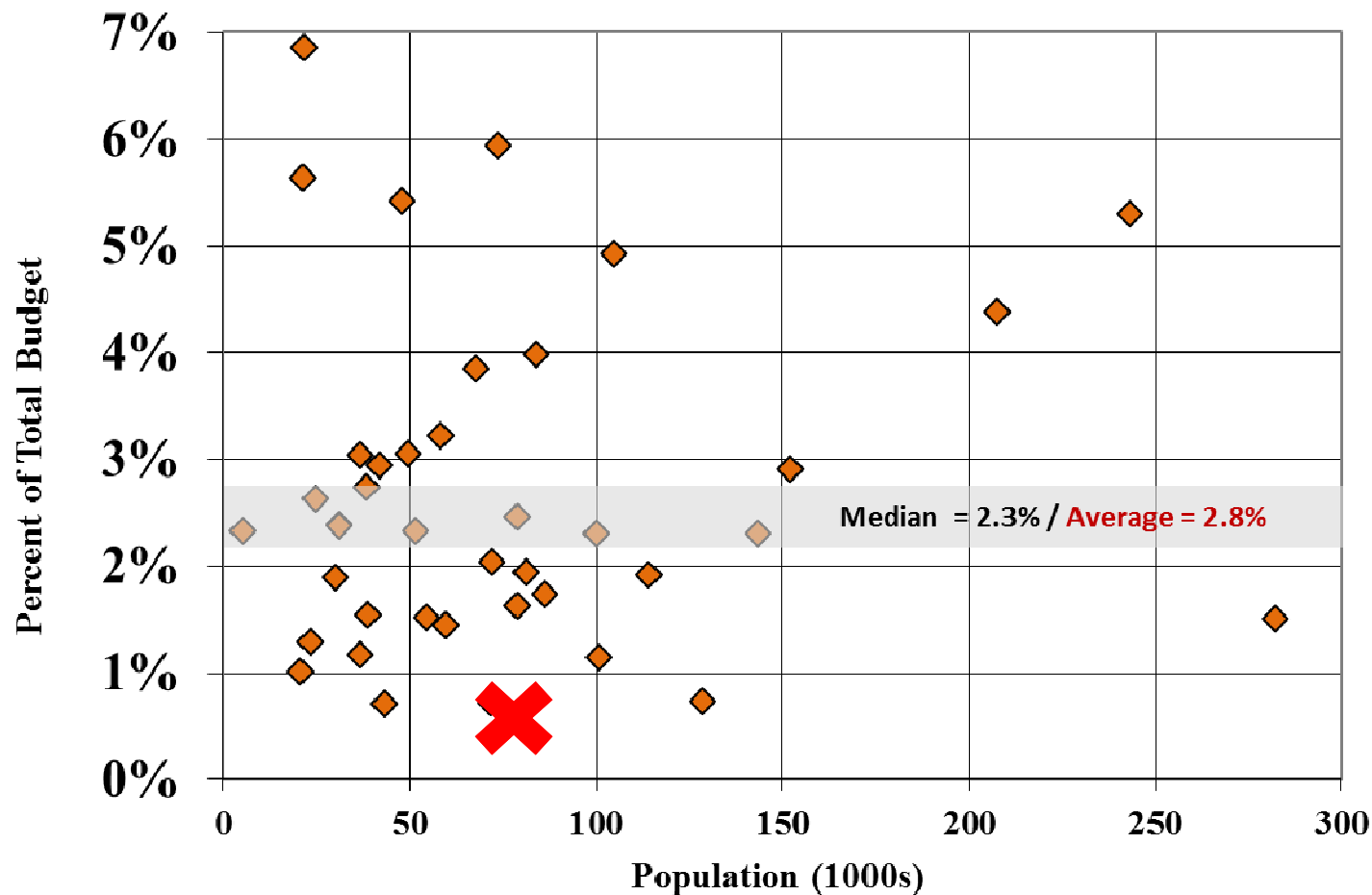
Deterioration / Rehab

Average infrastructure life is 75 years:

Annual asset recovery is **~\$1.5 million for City Owned Assets**

Annual rehab budget should be targeted at around \$1.5 million





Stormwater:
2-3% of annual
budget is typical
in cities with
dedicated
funding source

Rochester Hills
spending =
~0.5%

Cost Effective Investment

Flood control: Protect private property

Environment: Protect your rivers and streams

Regular Maintenance
decreases costs over time



Issues Affecting Rochester Hills

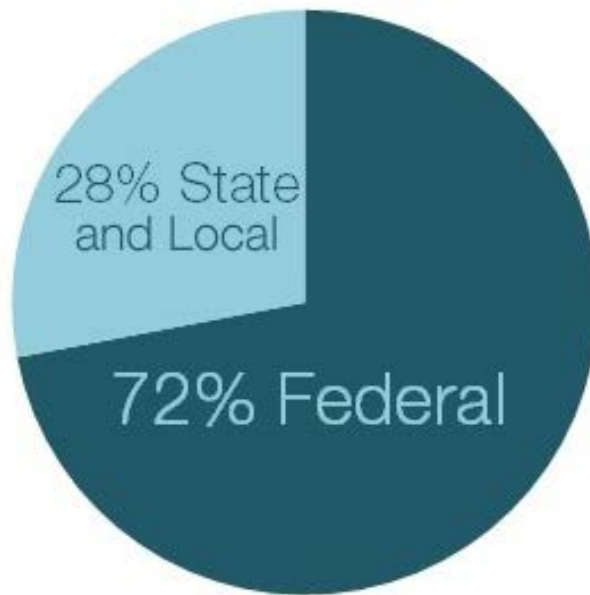


Excessive runoff
increases erosion
and sediment =
contaminated
water



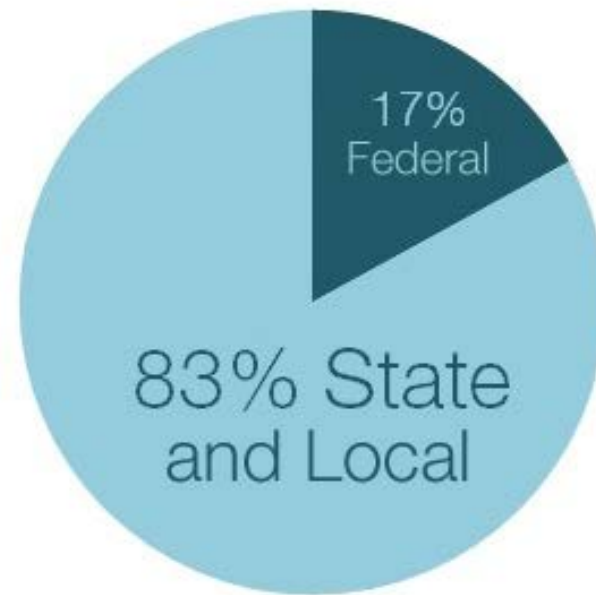
Flooding &
Property Damage

Capital Investment in Water & Sewer Infrastructure



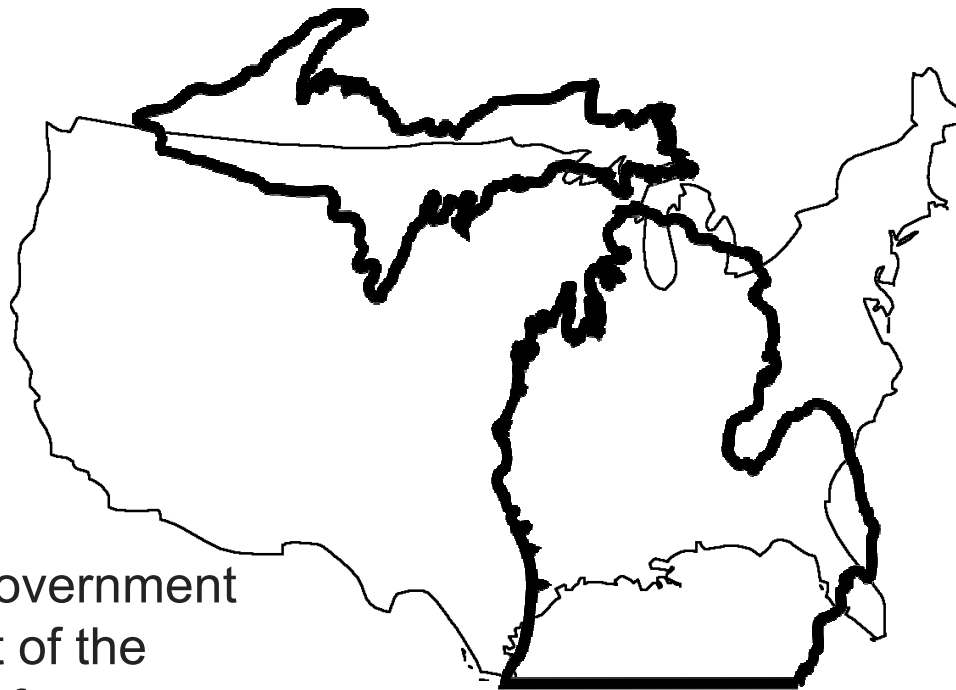
1977

VS



2010

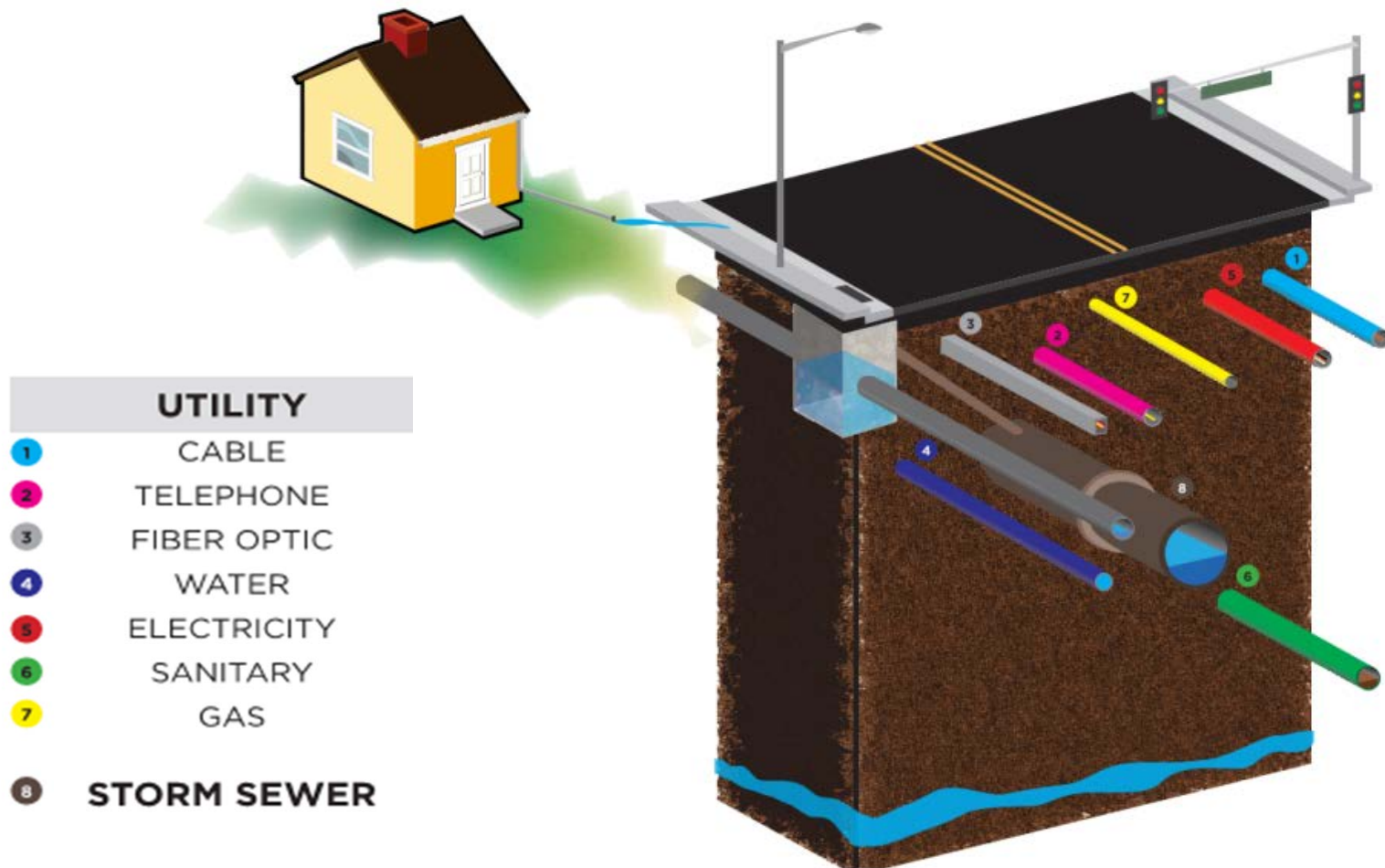
Bottom Line



Federal Government
getting out of the
business of
infrastructure

States and local
governments **WILL**
take on the additional
burden

Underground Infrastructure



SAG Roadmap

April:

- Discuss local priorities
- Early findings from Asset Management Plan



May:

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



June:

- Seek consensus on recommending funding option
- Prepare policy statement

Next SAG Meeting

April 20, 2016

APRIL 2016						
24calendars.com						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					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

Download Free Printable April 2016 Calendar from www.24calendars.com