Washtenaw County Environmental Council

Tuesday, November 28, 2023
5:00PM - 6:30PM
Remote Meeting via Zoom
Join by Zoom: https//zoom.us/join
Join by phone:1-312-626-6799
Meeting ID: 873 0013 5225
Passcode: 709275

AGENDA

I. Call to Order
II. Attendance
III. Approval of the Agenda
IV. Approval of Meeting Minutes
    A. October 24, 2023
V. Citizen Participation: (up to 4 minutes per speaker)
    A. Council Responses to Citizen Participation
    B. Acknowledgement of written Citizen Participation
VI. Presentation: Stormwater Resources & Additional Topics
    Presenter: County Water Resources Commissioner Evan Pratt
VII. Regular Business
    A. Washtenaw County Climate Action Plan & Sustainability/Resilience Office
        1. Budget and Staffing Status & Next Steps.
            a) Staff
            b) Council Discussion
    B. Council Membership:
        1. Updates on upcoming five appointments to the WCEC. *Staff*
VIII. New Business
    A. Proposed 2024 Meeting Calendar
    B. Appointments to Advisory and Recommendations Committee
    C. Updates: Regional climate action planning by SEMCOG. *Staff.*
IX. Communications and Reports
    A. Councilmembers
    B. Staff
    C. Committees and Committee Reports
X. Adjourn

Next Meetings

No December Meeting

January Meeting: Tuesday, January 23, 2024. 5pm - 6:30pm

(pending approval of the 2024 Calendar at the Nov. 28, 2023 meeting).

Washtenaw County Environmental Council

DRAFT

Proposed 2024 Meeting Schedule

The Council generally meets on fourth Tuesdays of the month.
All meetings are from 5:00pm to 6:30pm ET and are currently virtual via Zoom.

Tuesday, January 23

Tuesday, February 27

Tuesday, March 26

Tuesday, April 23

Tuesday, May 28*

Tuesday, June 25

Tuesday, July 23

Tuesday, August 27

Tuesday, September 24

Tuesday, October 22

Tuesday, November 19**

Tuesday, December 17***

* This is the day after Memorial Day.

**This is the third Tuesday. The fourth Tuesday is two days before Thanksgiving. For this reason, the Chair recommends moving the meeting date up one week.

***This is the third Tuesday. The fourth Tuesday is Christmas Eve. For this reason, the Chair recommends moving the meeting date up one week.

Washtenaw County Environmental Council

DRAFT

First & Second Quarter 2024 Meeting Topics

These are *proposed* meeting topics and content, with *suggested* months for the topics.
The exact schedule will depend on availability of speakers and other business that may come before the Council.

Proposed topics:

January:

- Sustainability/Resilience Office: Staffing and hiring
- Presentation by community group: Washtenaw County Dark Sky Initiative
- Staff Update: USDA Climate Smart Commodities Program grant
- Council Planning Committee: Presents Bylaws update recommendations*

February:

- Sustainability/Resilience Office: Staffing and hiring
- Presentation by community group/County jurisdiction sustainability/resilience council or staff)**
- Regional Resilience Authority Updates

March:

- Sustainability/Resilience Office: Staffing and hiring
- Council elections: Chair and Vice Chair
- Presentation by community group/County jurisdiction sustainability/resilience council or staff)

April

- Sustainability/Resilience Office: Staffing and hiring

May

- Presentation by community group/County jurisdiction sustainability/resilience council or staff)

June

- Presentation by community group/County jurisdiction sustainability/resilience council or staff)

NOTES

* Best practice is to review and,as advisable, update Bylaws on a scheduled basis, generally every year or two years. The Chair would like to proposing updating the Agenda order and including in it a Land Acknowledgement. Other changes could be considered as well. If approved by the full WCEC, the updated Bylaws would then go to the Board of Commissioners for approval, at which point they would go into effect. Alternatively, Bylaws update recommendations could be made and voted on at the April meeting for approval by the BOC in May.

** Please contact the Chair with any recommendations or suggestions. Suggestions already received: Ypsilanti Sustainability Commission, regenerative agriculture, EGLE to understand their regional outlook and priorities, a western Washtenaw sustainability initiative.

WASHTENAW COUNTY WATER RESOURCES

RESILIENCE STRATEGY

Presented to: Washtenaw Environmental Council

Evan Pratt, P.E.| Nov 28, 2023

A. THE ISSUES

B. OUR STRATEGY

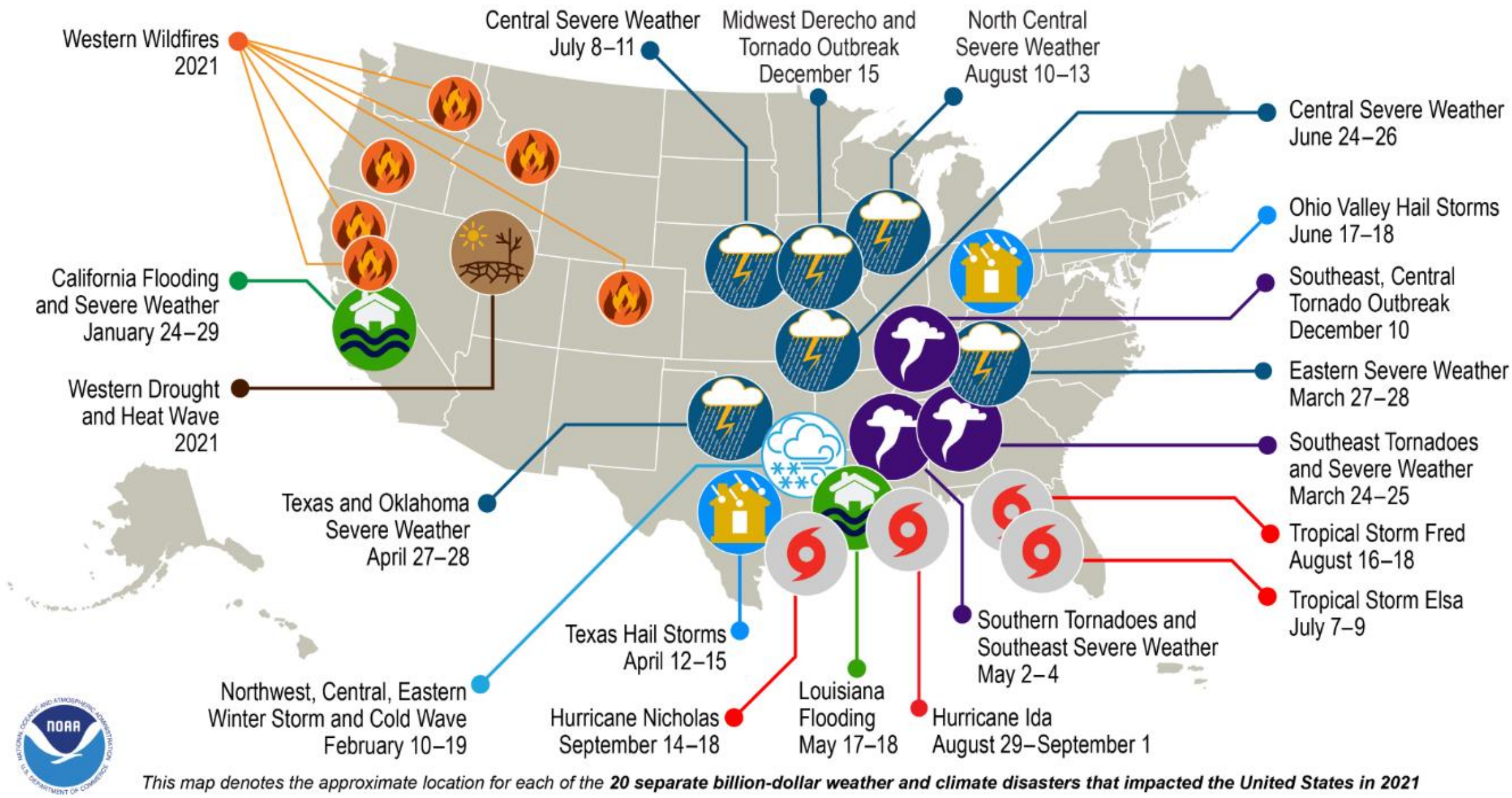
C. WCEC

Presented to: Washtenaw Environmental Council

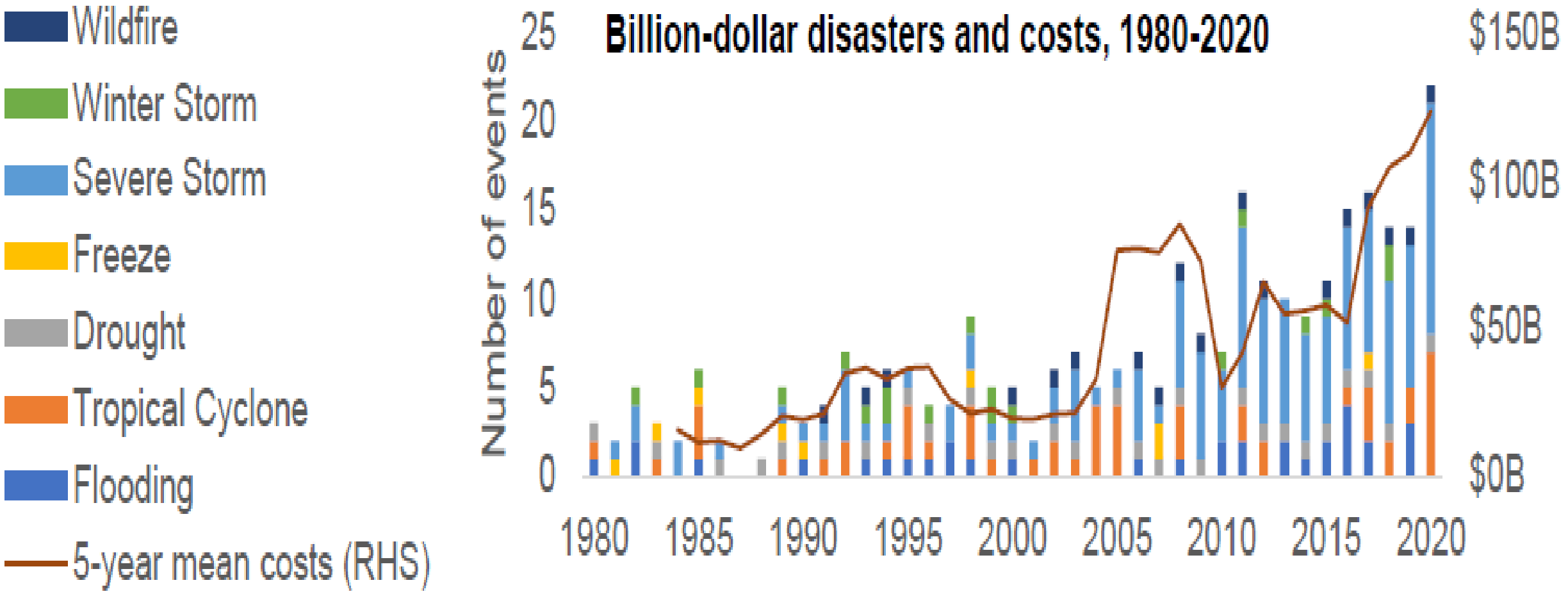
Evan Pratt, P.E.| Nov 28, 2023

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER

U.S. 2021 Billion-Dollar Weather and Climate Disasters



*This map denotes the approximate location for each of the **20 separate billion-dollar weather and climate disasters that impacted the United States in 2021***

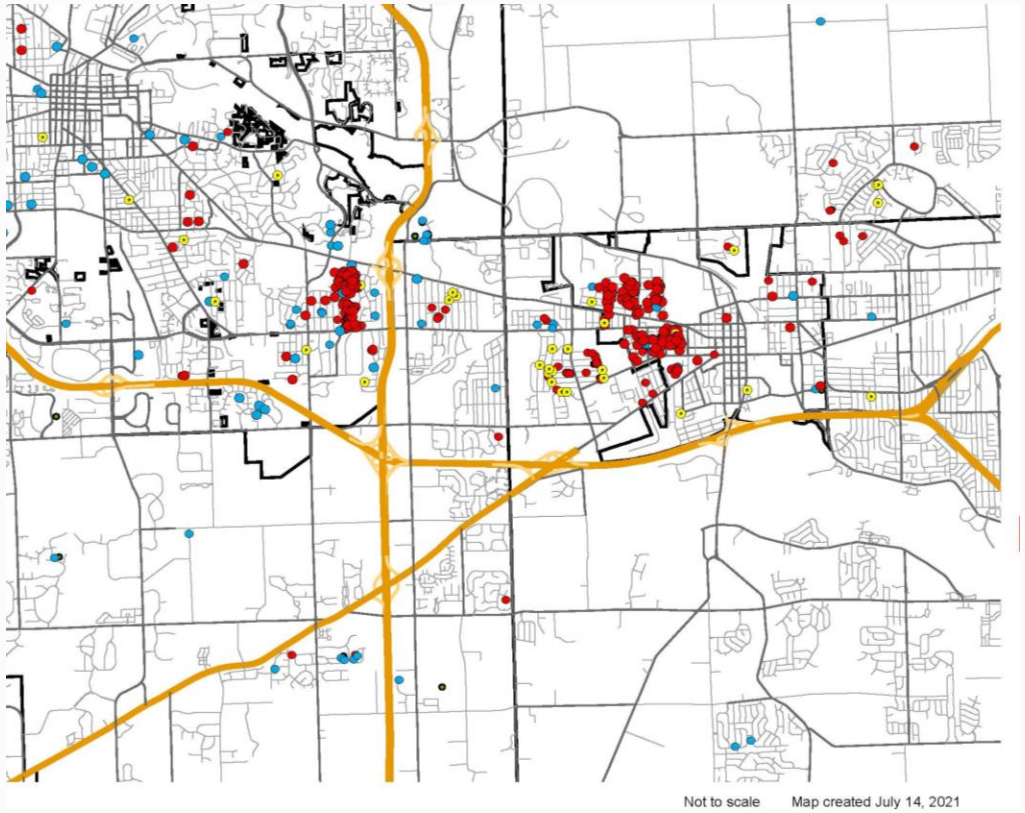


"The history of billion-dollar disasters in the United States each year from 1980 to 2020, showing event type (colors), frequency (left-hand vertical axis), and cost (right-hand vertical axis). NOAA Climate.gov image, based on NCEI data." 2020 U.S. billion-dollar weather and climate disasters in historical context | NOAA Climate.gov

1 Precautionary approach to future risks

1 The ability to recover quickly from [climate disasters]

JUNE 2021

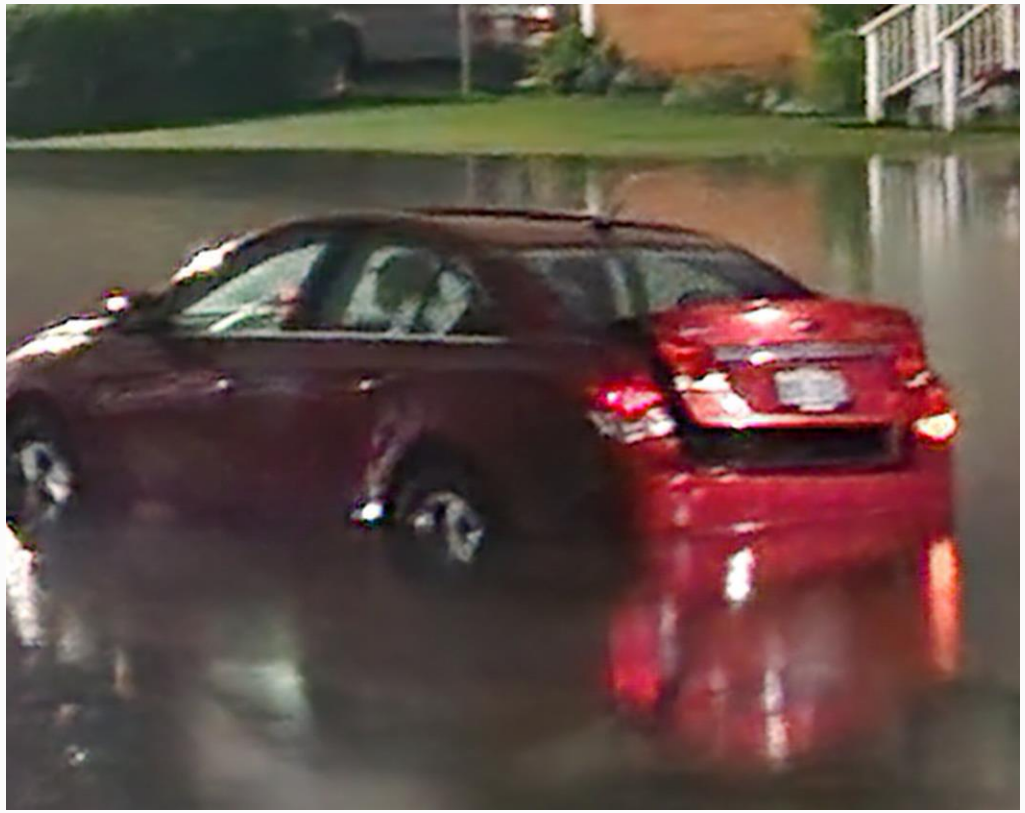


Washtenaw County Water Resources

JUNE 2021

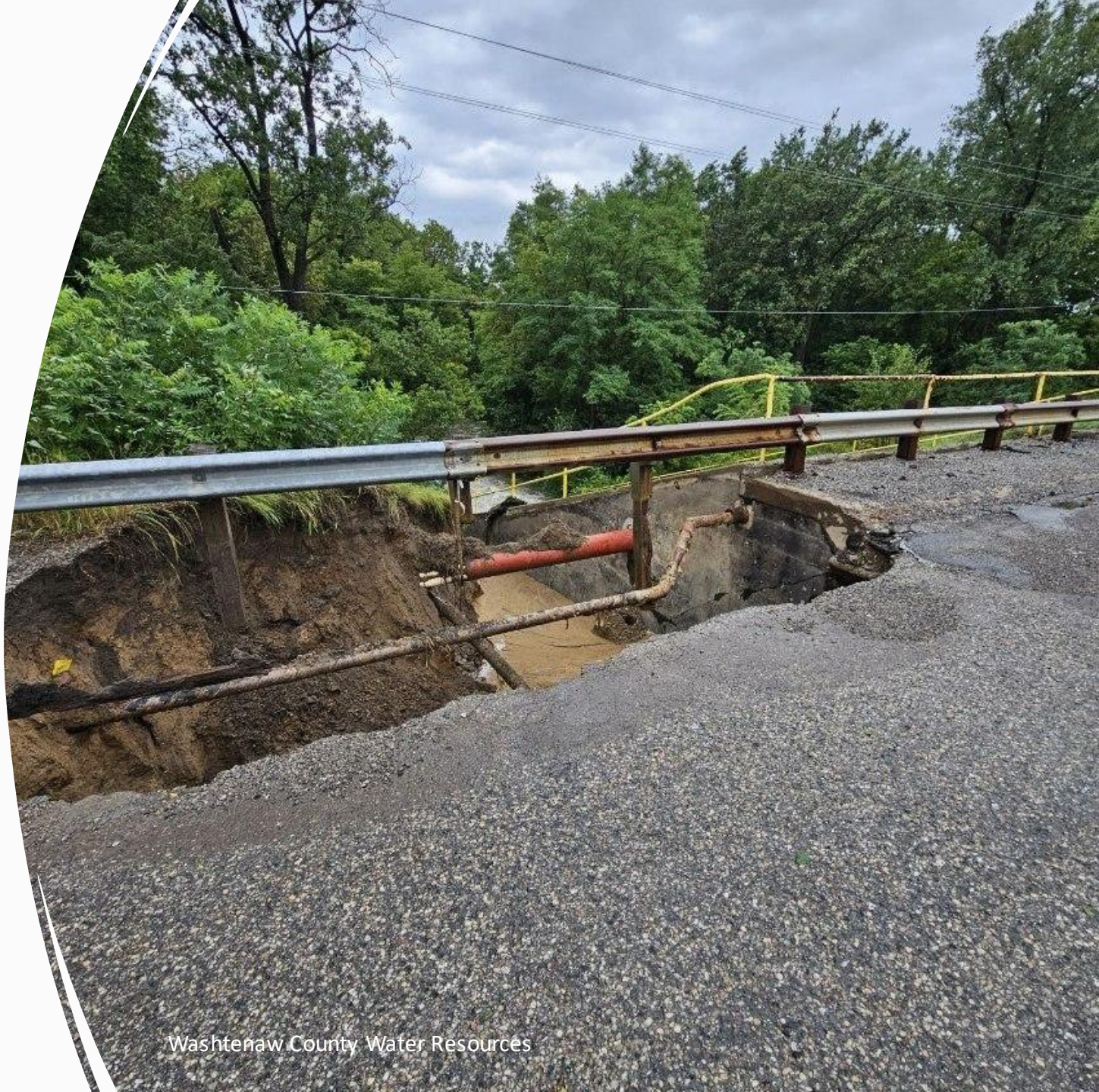
Washtenaw County Water Resources

AUG 2023



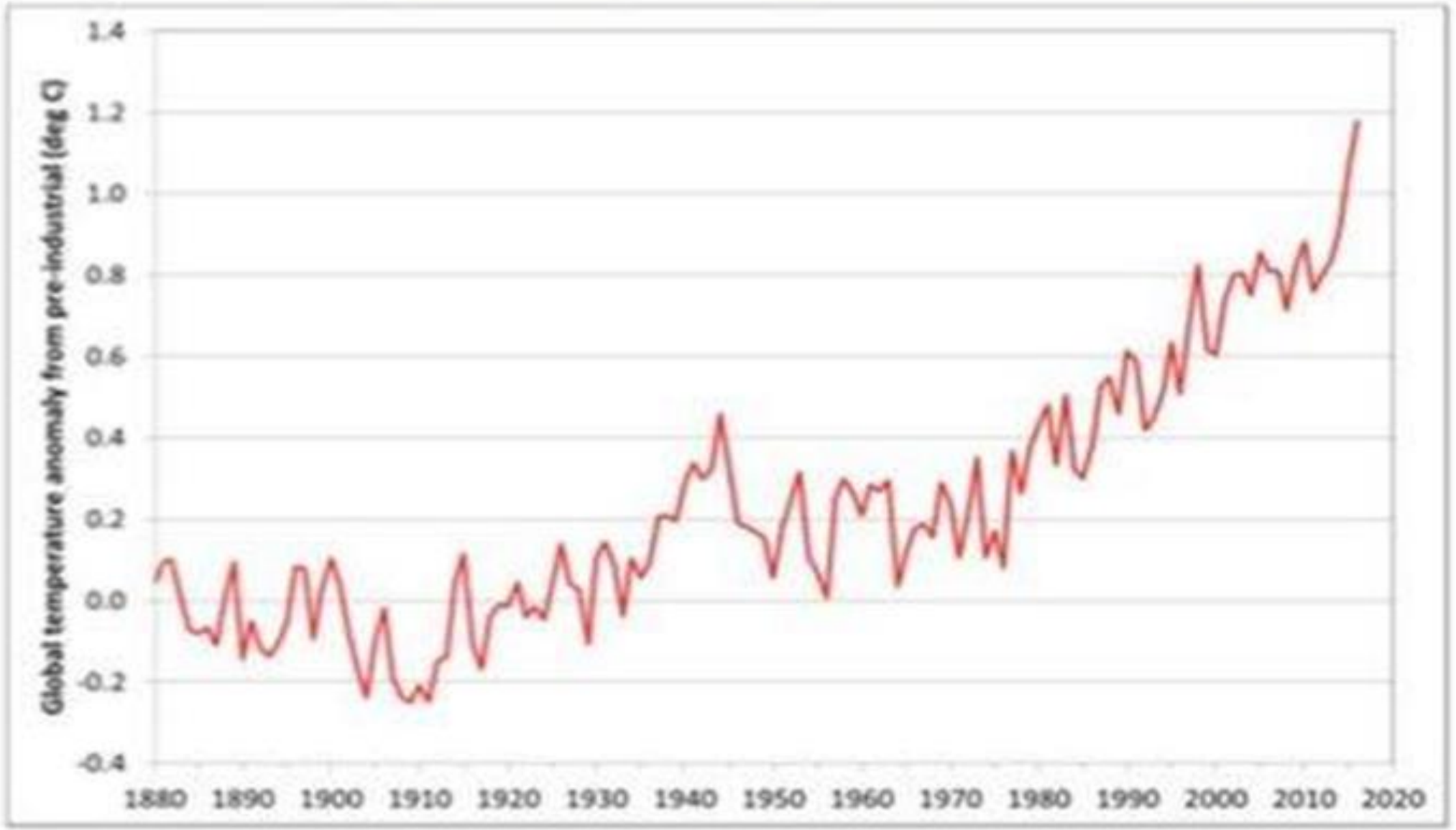
Washtenaw County Water Resources

AUG 2023

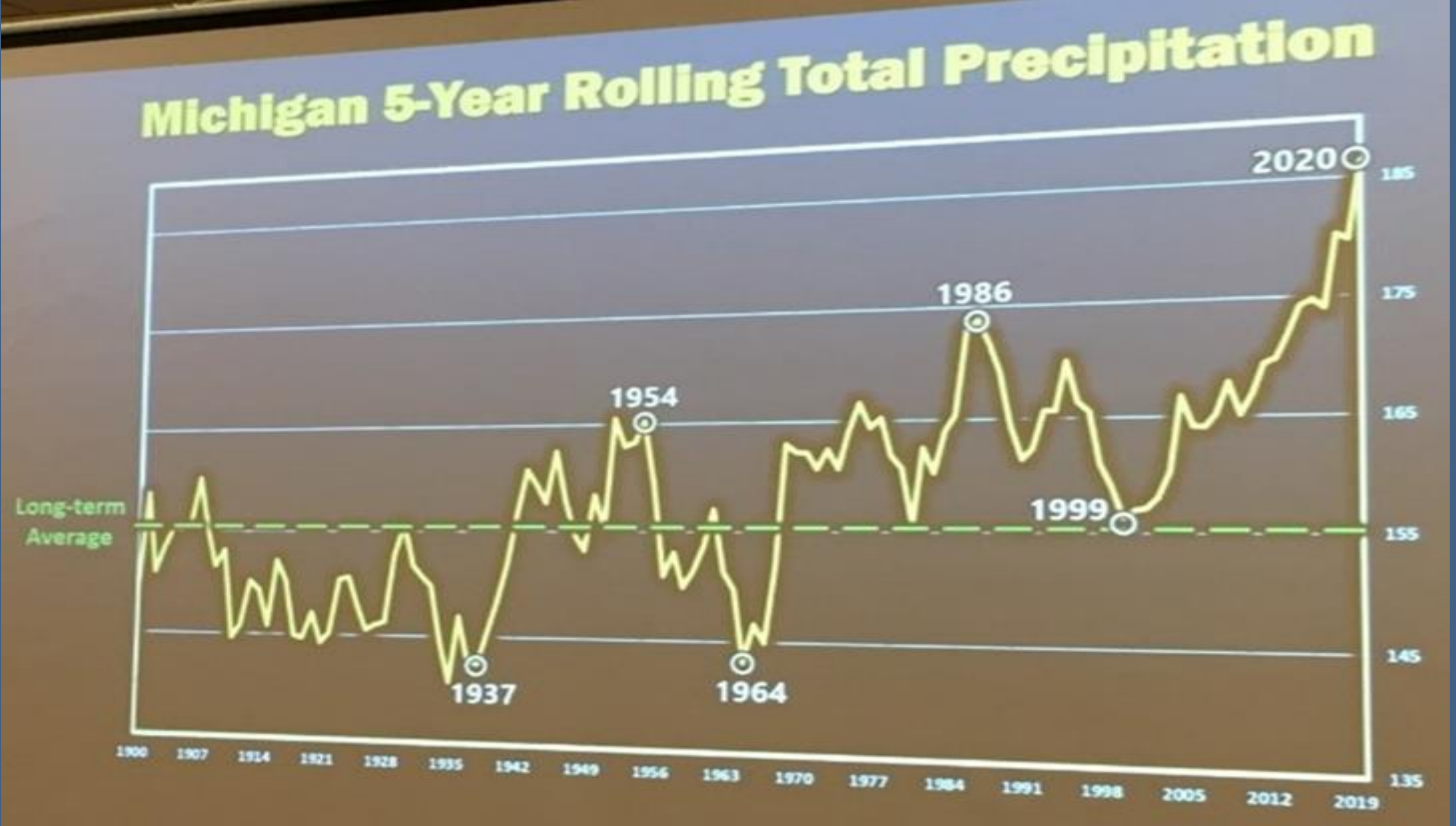


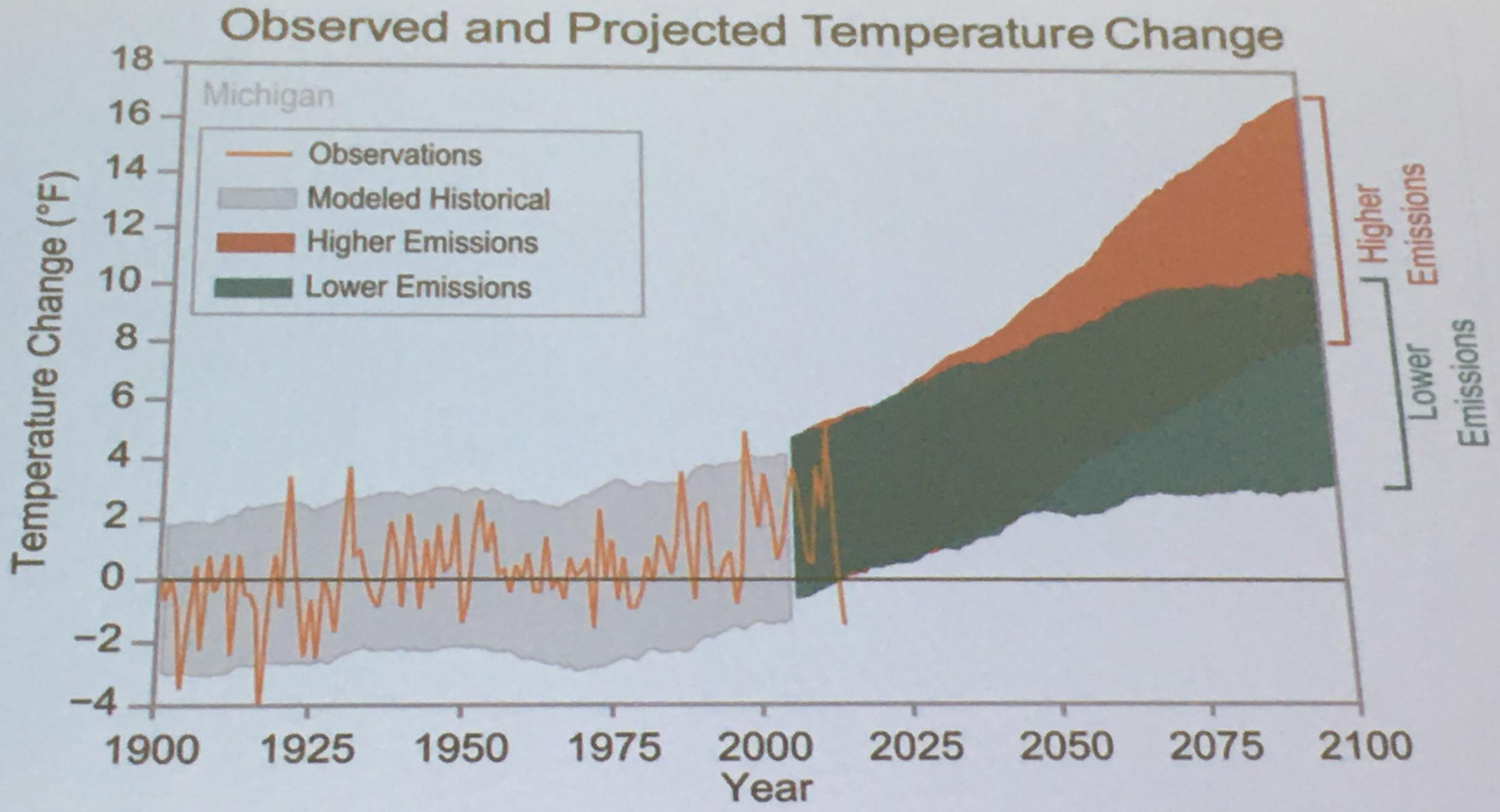
Washtenaw County Water Resources

Global temperatures – change from pre-industrial



Data: NOAA, NASA, UK Met Office/CRU


Michigan 5-Year Rolling Total Precipitation
2020
1986
1954
1999
1937
1964
Long-term Average
185
175
165
155
145
135
1900
1907
1914
1921
1928
1935
1942
1949
1956
1963
1970
1977
1984
1991
1998
2005
2012
2019

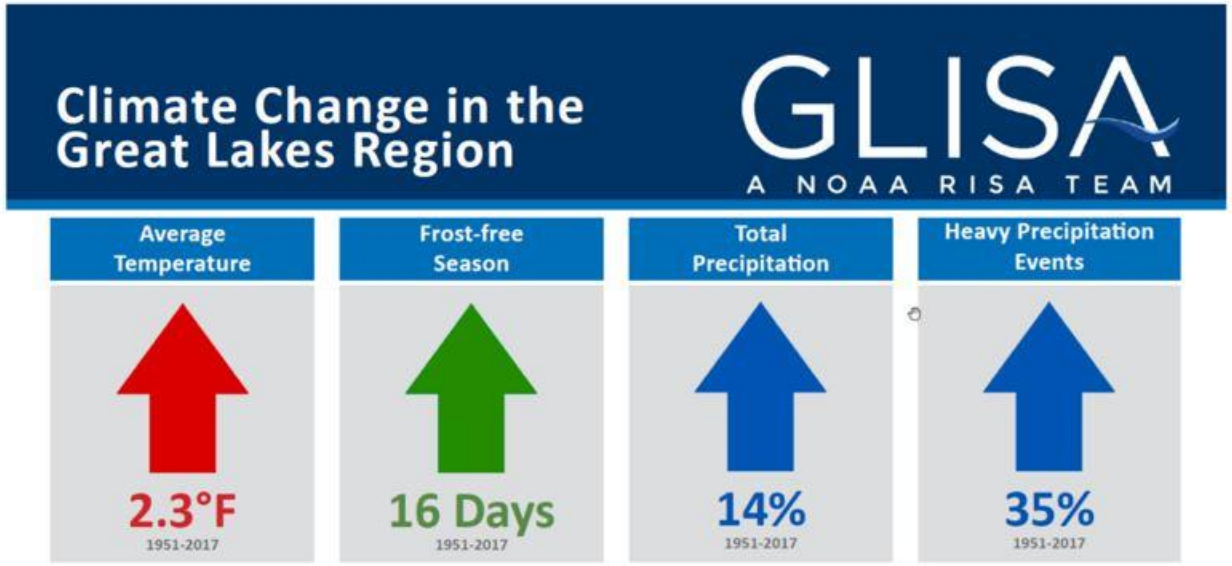

Observed and Projected Temperature Change
Michigan
Observations
Modeled Historical
Higher Emissions
Lower Emissions
Temperature Change (°F)
18
16
14
12
10
8
6
4
2
0
−2
−4
1900
1925
1950
1975
2000
2025
2050
2075
2100
Year
Higher Emissions
Lower Emissions

(NCICS, 2017)

CLIMATE ACTION PLANS

- GHG Focused
- Water Conservation
- Mitigation??

Increased Precipitation and Intensity



Great Lakes Integrated Sciences and Assessments

EGLE Climate Change – Draft Plan presentation – C. Alwin

Note: Date ranges are 1951 thru 2017

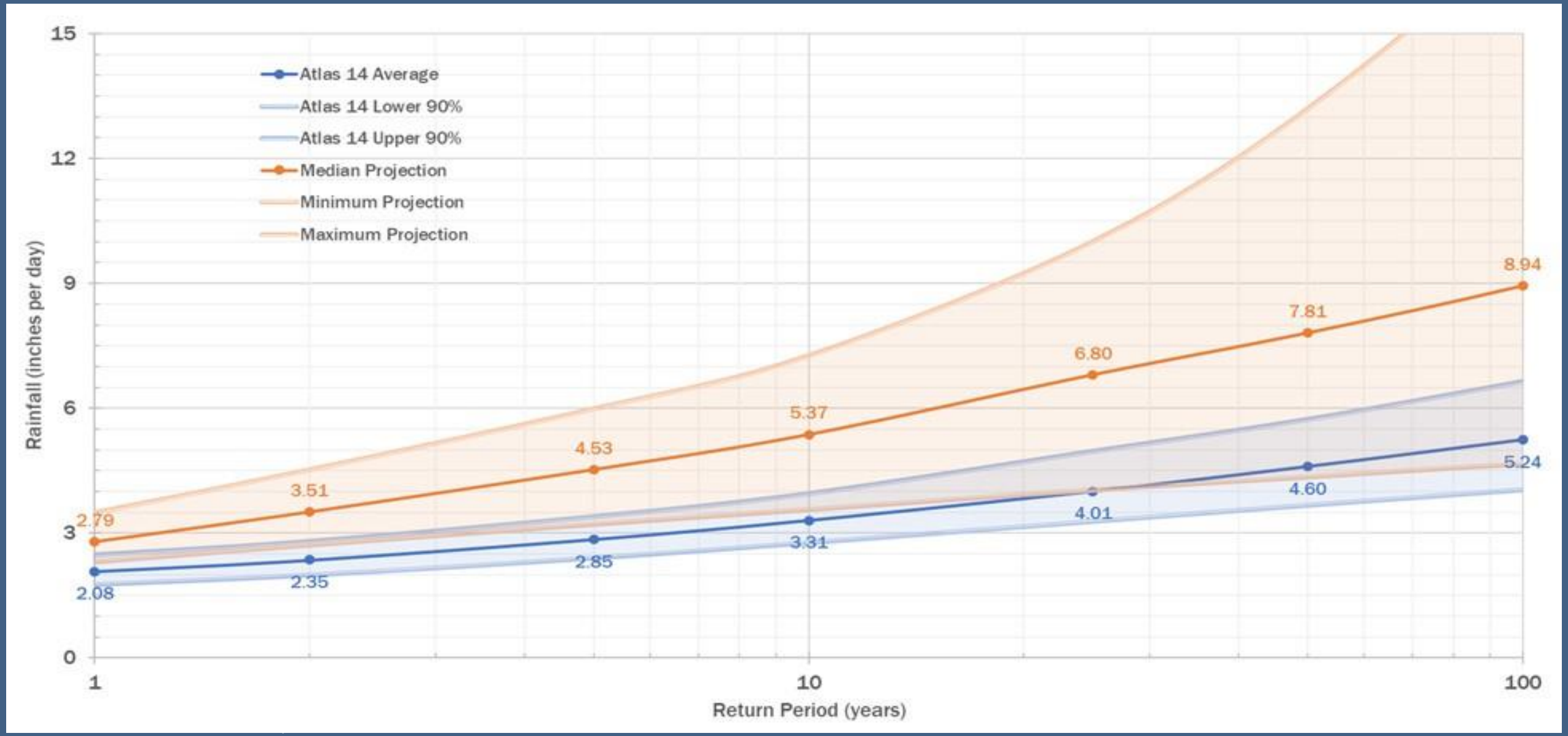
24-Hour Precipitation Totals (inches)
2-100 Year Recurrence Intervals
Lansing, MI

	2 Year	10 Year	50 Year	100 Year
TP 40 (1938-1957)	2.35	3.70	4.45	4.80
Huff and Angel (1948-1991)	2.35	3.25	4.45	5.25
NOAA Atlas 14 Vol. 8 (POR, 2013)	2.43	3.42	4.80	5.5
Future Projected 2071-2100 (Kunkel et al., 2021)	2.98	4.26	6.08	6.99

Source: Jeff Andersen, State Climatologist for Michigan @ Great Lakes Water Infrastructure Conference 2023

Source: Jeff Andersen, State Climatologist for Michigan @ Great Lakes Water Infrastructure Conference 2023

"Southeast Michigan Current and Future Precipitation Climate Resiliency and Flooding Mitigation Study"



END-OF-CENTURY AVERAGE REGIONAL RAINFALL (IN)

Duration	1-year	2-year	5-year	10-year	25-year	50-year	100-year
5-min	0.47	0.58	0.73	0.86	1.07	1.22	1.40
	(0.35 - 0.57)	(0.44 - 0.69)	(0.55 - 0.87)	(0.63 - 1.03)	(0.72 - 1.38)	(0.76 - 1.78)	(0.80 - 2.35)
10-min	0.68	0.83	1.06	1.24	1.54	1.75	2.01
	(0.50 - 0.81)	(0.63 - 0.99)	(0.79 - 1.25)	(0.90 - 1.48)	(1.04 - 1.99)	(1.09 - 2.55)	(1.15 - 3.39)
15-min	0.83	1.02	1.29	1.52	1.87	2.14	2.45
	(0.61 - 0.99)	(0.77 - 1.21)	(0.97 - 1.52)	(1.10 - 1.8)	(1.27 - 2.43)	(1.34 - 3.11)	(1.40 - 4.13)
30-min	1.14	1.40	1.77	2.09	2.59	2.96	3.39
	(0.84 - 1.37)	(1.06 - 1.66)	(1.33 - 2.10)	(1.52 - 2.48)	(1.75 - 3.36)	(1.85 - 4.3)	(1.94 - 5.71)
60-min	1.45	1.78	2.27	2.69	3.36	3.86	4.45
	(1.07 - 1.74)	(1.35 - 2.13)	(1.71 - 2.69)	(1.96 - 3.19)	(2.27 - 4.34)	(2.42 - 5.61)	(2.56 - 7.50)
2-hr	1.84	2.29	3.03	3.64	4.48	5.17	5.88
	(1.46 - 2.34)	(1.81 - 2.90)	(2.15 - 3.68)	(2.44 - 4.55)	(2.80 - 6.33)	(2.99 - 8.29)	(3.16 - 11.1)
3-hr	2.03	2.54	3.35	4.00	4.93	5.71	6.53
	(1.70 - 2.60)	(1.98 - 3.23)	(2.31 - 4.30)	(2.60 - 5.31)	(2.97 - 7.45)	(3.25 - 9.82)	(3.46 - 13.1)
6-hr	2.31	2.91	3.77	4.51	5.54	6.44	7.41
	(1.86 - 2.99)	(2.18 - 3.82)	(2.52 - 5.17)	(2.83 - 6.30)	(3.21 - 8.58)	(3.50 - 11.2)	(3.75 – 15.0)
12-hr	2.55	3.21	4.13	4.94	6.14	7.15	8.20
	(2.07 - 3.25)	(2.42 - 4.14)	(2.84 - 5.56)	(3.14 - 6.77)	(3.56 - 9.26)	(3.89 - 12.2)	(4.16 - 16.3)
24-hr	2.79	3.51	4.53	5.37	6.80	7.81	8.94
	(2.30 - 3.49)	(2.70 - 4.53)	(3.20 - 5.99)	(3.55 - 7.27)	(4.02 - 10.0)	(4.34 - 13.2)	(4.65 - 17.7)

3.64 (2.44 - 4.55)	4.48 (2.80 - 6.33)	5.17 (2.99 - 8.29)	5.88 (3.16 - 11.1)
4.00 (2.60 - 5.31)	4.93 (2.97 - 7.45)	5.71 (3.25 - 9.82)	6.53 (3.46 - 13.1)
4.51 (2.83 - 6.30)	5.54 (3.21 - 8.58)	6.44 (3.50 - 11.2)	7.41 (3.75 – 15.0)
4.94 (3.14 - 6.77)	6.14 (3.56 - 9.26)	7.15 (3.89 - 12.2)	8.20 (4.16 - 16.3)
5.37 (3.55 - 7.27)	6.80 (4.02 - 10.0)	7.81 (4.34 - 13.2)	**8.94** **(4.65 - 17.7)**

PROBABILITY = UNCERTAINTY

END-OF-CENTURY AVERAGE REGIONAL RAINFALL (INCHES)
(THE FINE PRINT)

- Statistical Analysis vs Precision
- "100-year storm". 1% probability in a given year or "Return Frequency"
- 90% Confidence Interval -- "Upper and Lower Bounds"
- **5.11" (4.23" – 6.13") Today.** Means 90% confident that there is only a 1% chance in a given year of seeing a rainfall between 4.23 – 6.13. *So 5.11 is just a statistical midpoint*
- NOAA: "The probability that return frequency rainfall amounts will be GREATER than the upper bound is 5%". **So actually we're 95% confident that today's 1% won't exceed 6.13"**
- **So we're 5% confident that today's 1% WILL exceed 6.13", and in 2100 could be 17".**
- **8.94" (4.65" – 17.7")** = Estimated 24-hour rainfall amount with 1% probability of occurring in a given year, 90% confidence interval.
- Translation: **It's hard to be certain what protection is provided by a given investment.**

BUT WAIT, THERE'S MORE

SOIL MOISTURE IMPACT: 2” RAIN

- Typical pre-development landcover may absorb 75%-85% so 0.4” runoff (20%)
- Typical suburban landcover may absorb 60%-65% so 0.8” runoff (detention calcs)
- Fully saturated soils absorb 0% so 2” runoff in that situation
- It’s not “how much rain”, it’s “how wet and permeable is the dirt?”
- 2" example: Runoff from saturated produces flows like a 5” storm **(2.5x** vs avg soil)
- Or 5x compared to avg, undeveloped – so runoff from 2" rain = runoff from 10” rain

BOTTOM LINE: STORAGE IS CRITICAL RESILIENCE IS CRITICAL

- Three types of storage (detention) during storms

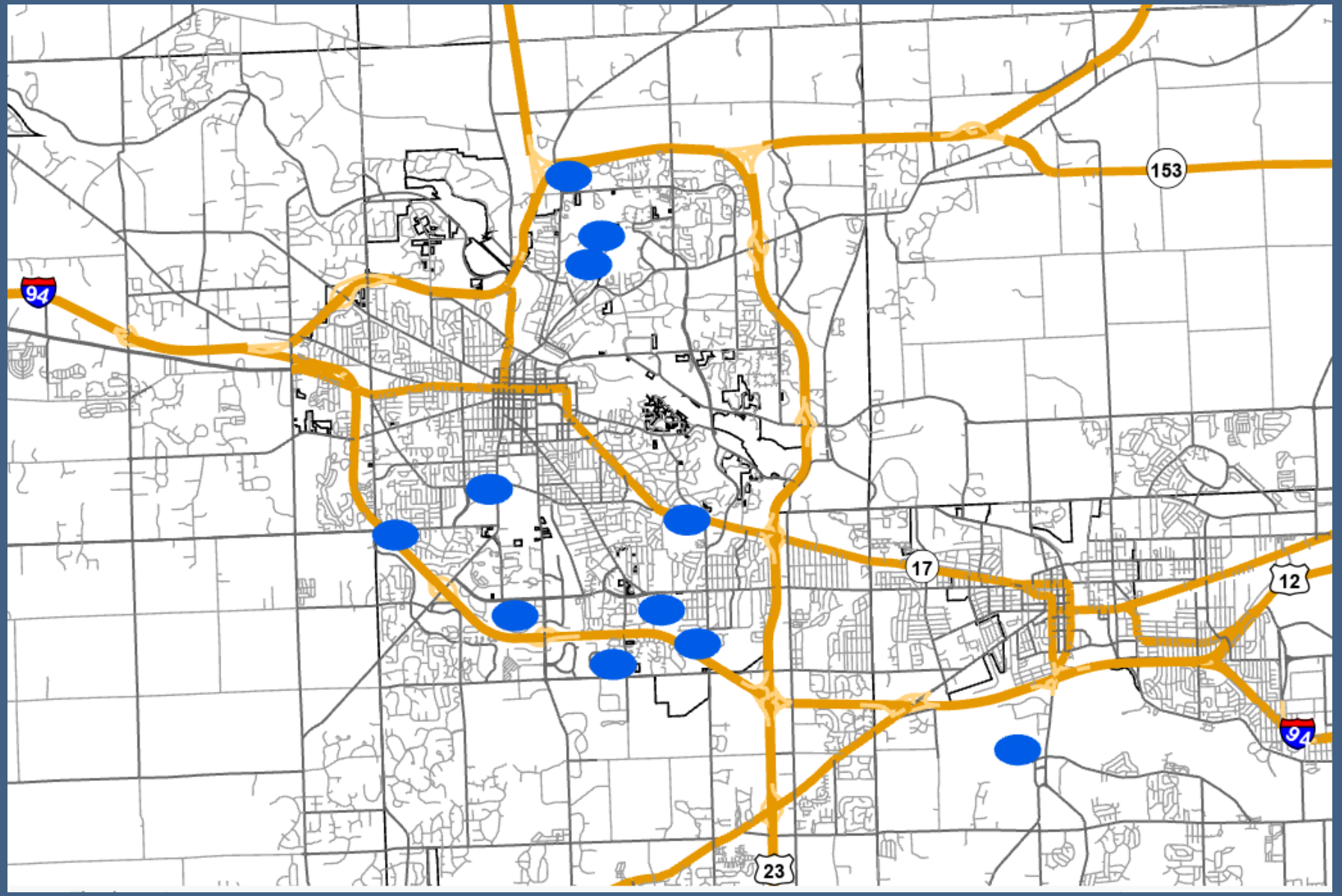
- Big Holes – regional detention
- Medium Holes – development sites
- Small Holes – raingardens

OVERVIEW

Regional Detention and Retrofits (BHs)

Site Specific (SHs)

Green Infrastructure (VSHs)

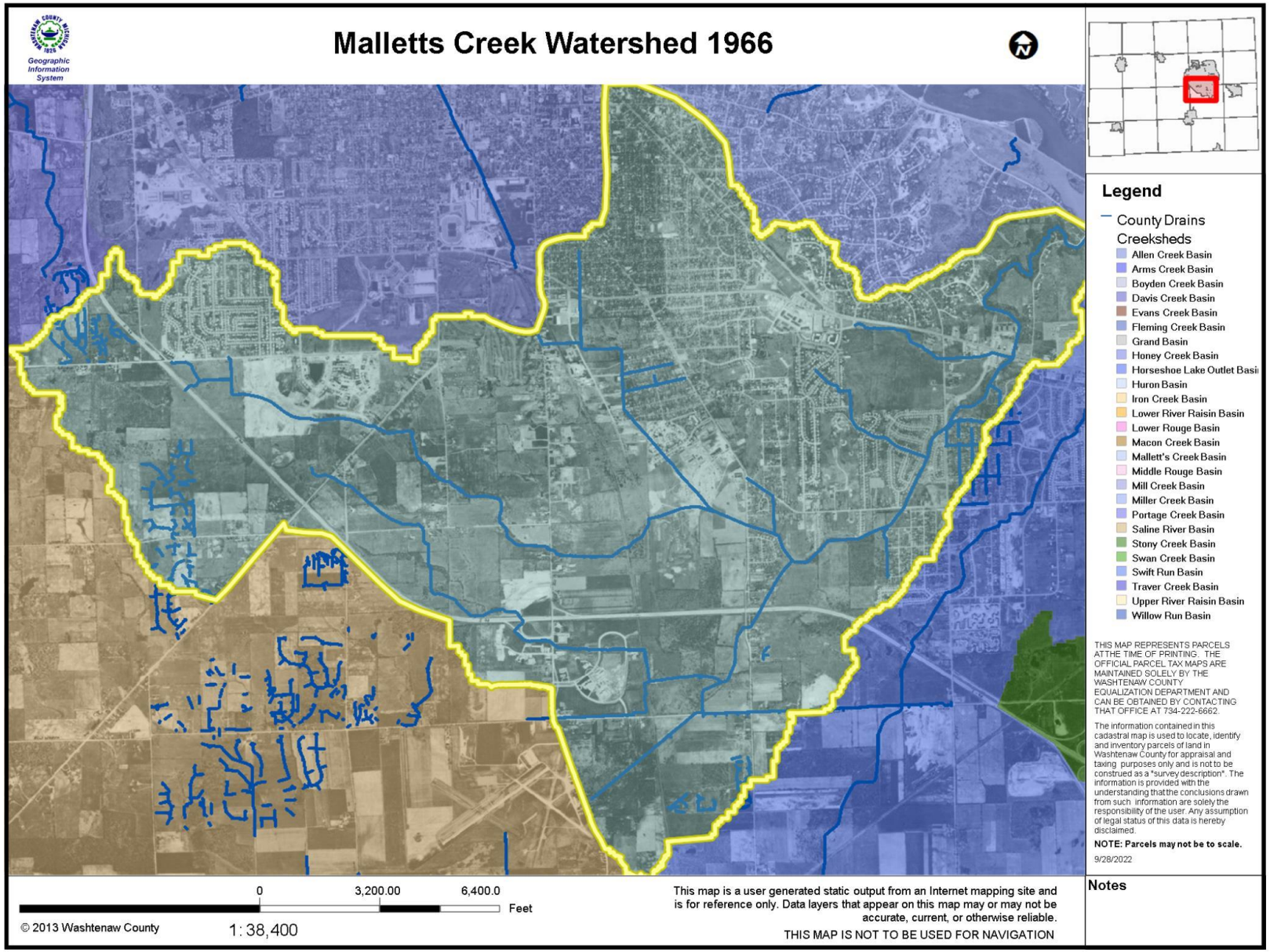


REGIONAL FACILITIES

GOAL: Store water during storms

STRATEGIES:

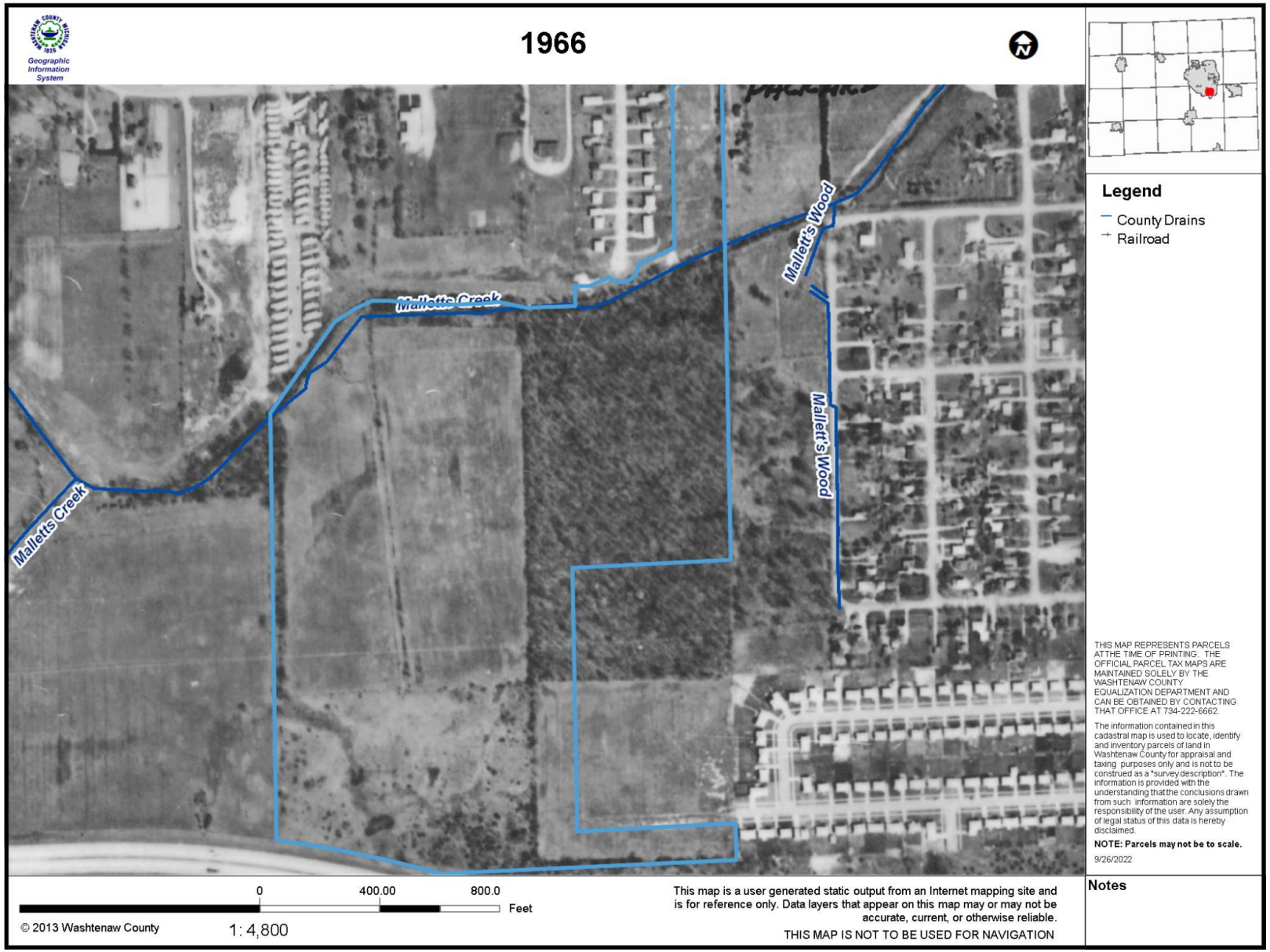
- Retrofits
- Add New



RETROFIT:

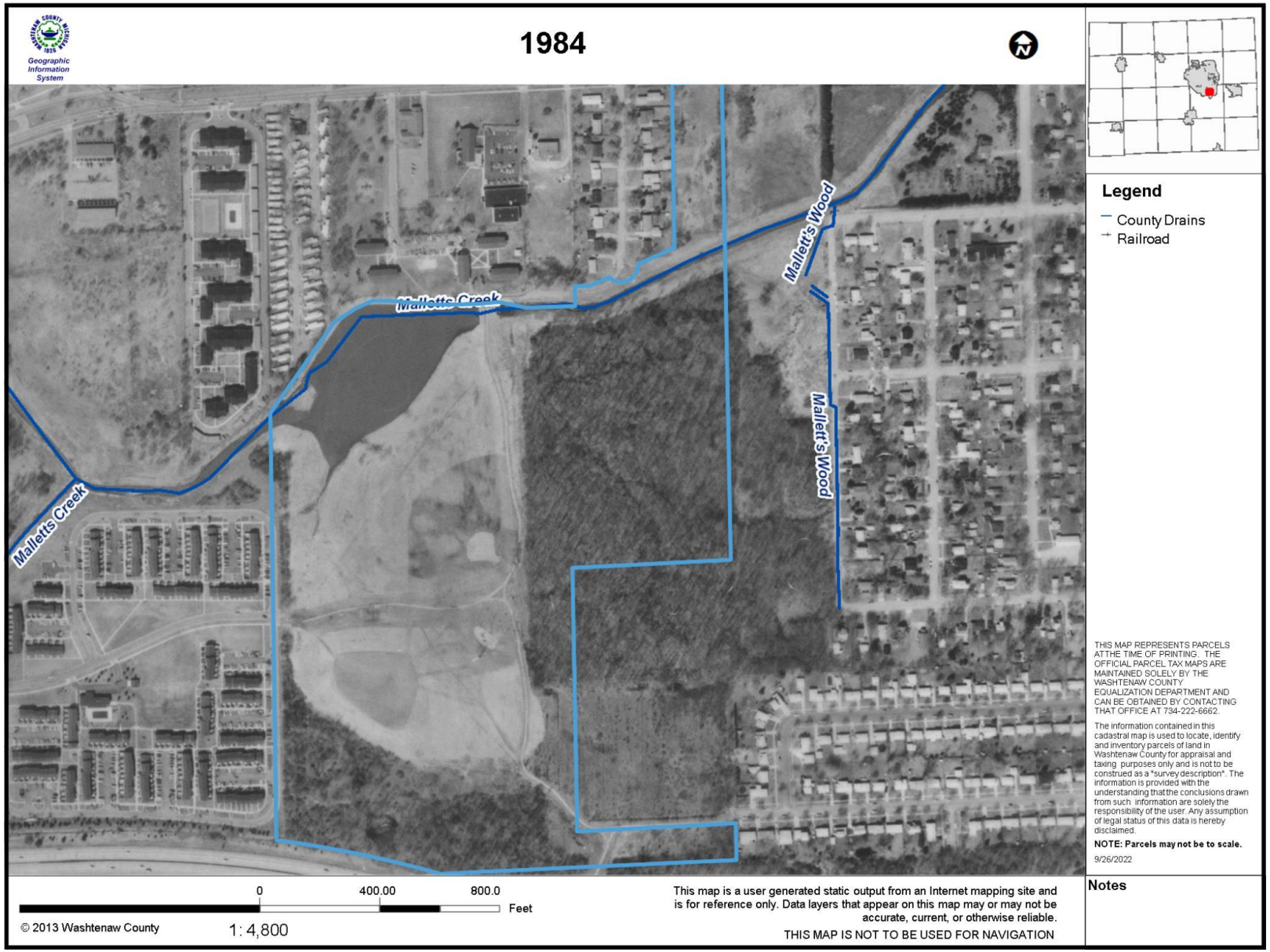
DOYLE PARK

11 MI^2 MALLETTS CREEK WATERSHED



DOYLE PARK

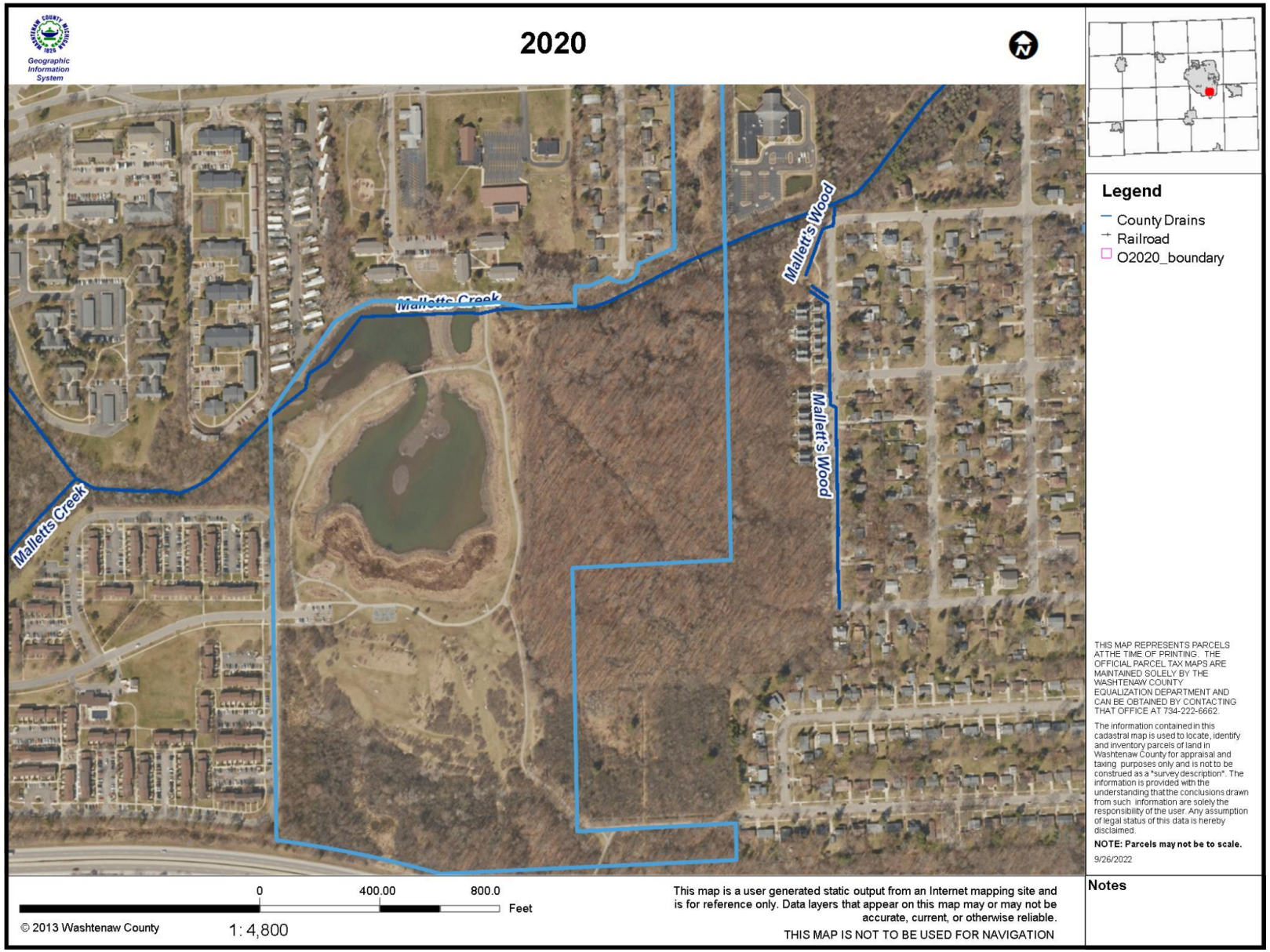
PRIOR TO '68 FLOOD



~1980 DOYLE PARK

FLOOD CONTROL

~25-YR DESIGN EVENT (4%)



DOYLE PARK 2009 RETROFIT

RETROFIT: 2009 MARY BETH DOYLE PARK

FIRST FLUSH (PARTIAL, 0.2"/1")

14,260,000 GAL

$3,200,000

$0.22/GALLON

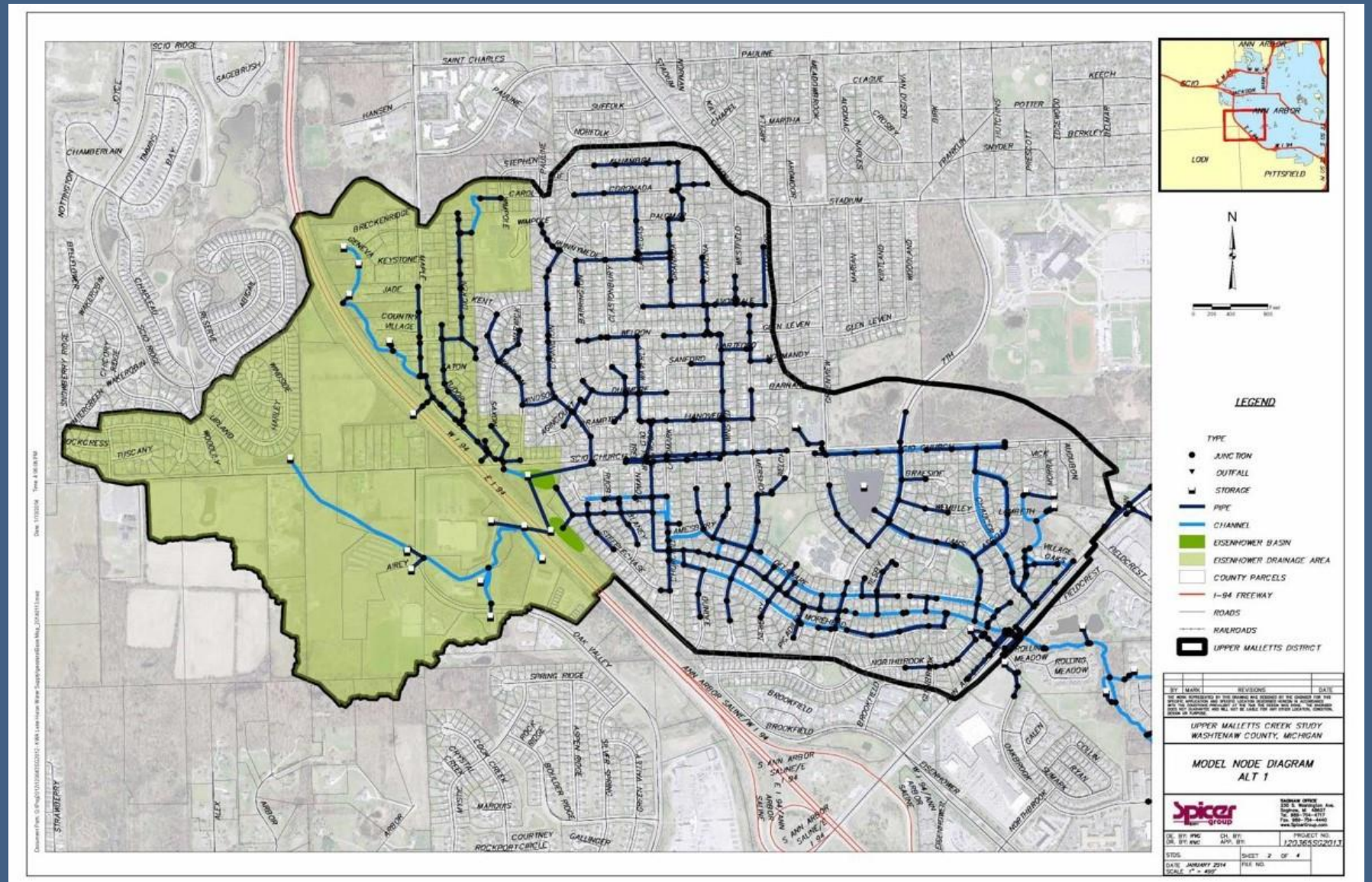
Washtenaw County Water Resources

DOYLE PARK

Washtenaw County Water Resources

DOYLE PARK

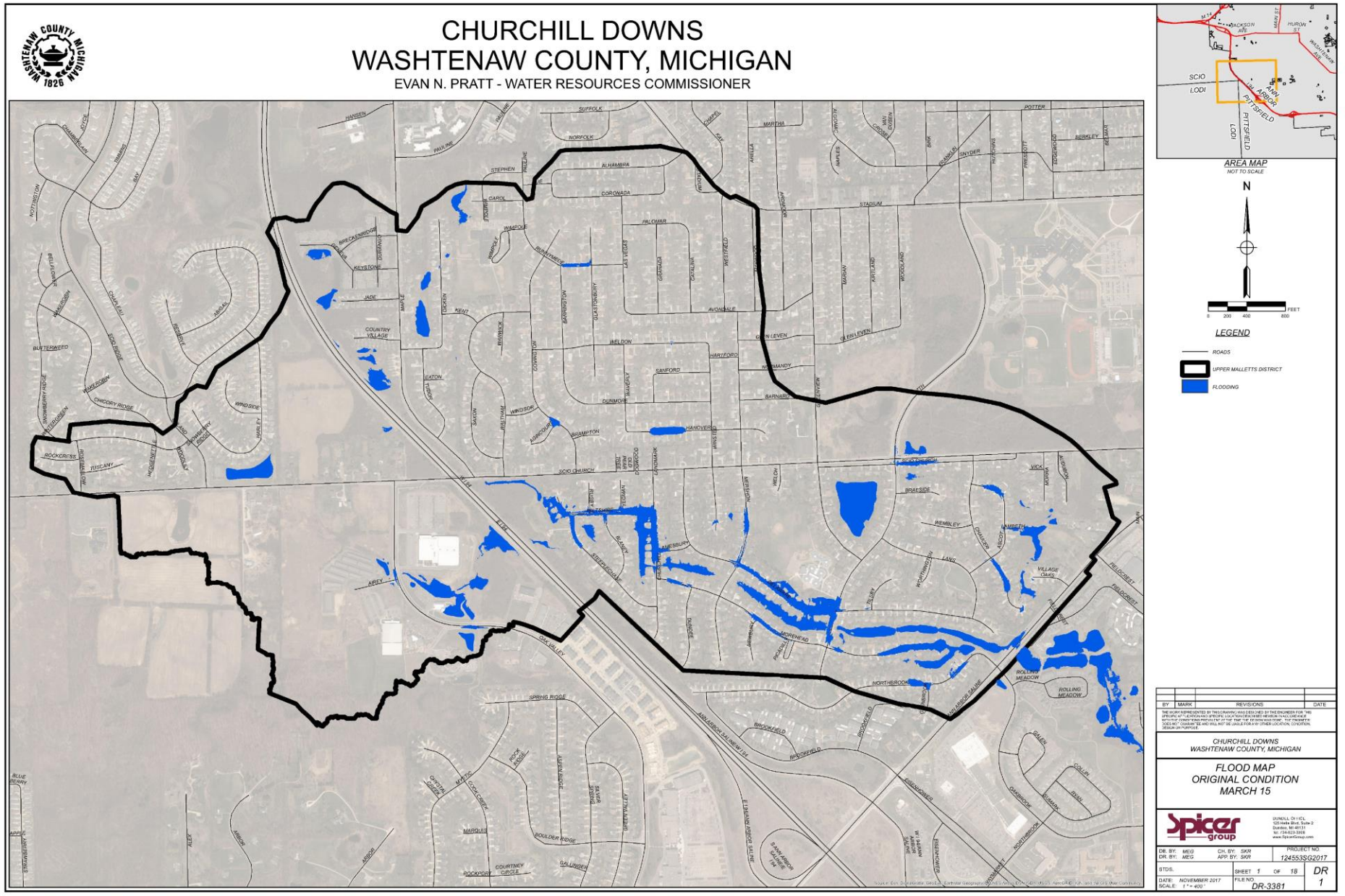
Washtenaw County Water Resources



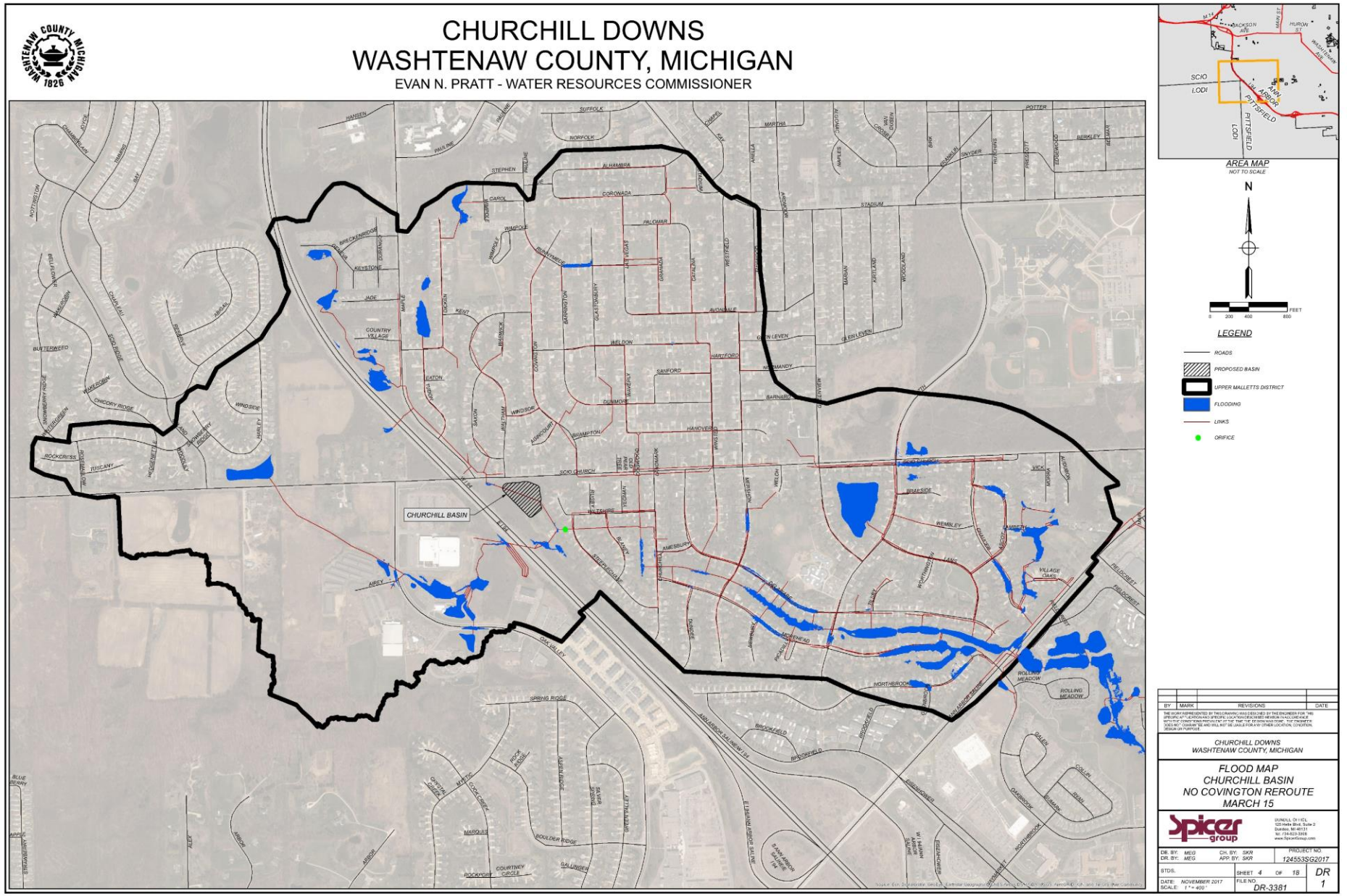
CHURCHILL PARK

(LAWTON & DICKEN NEIGHBOR-HOODS)

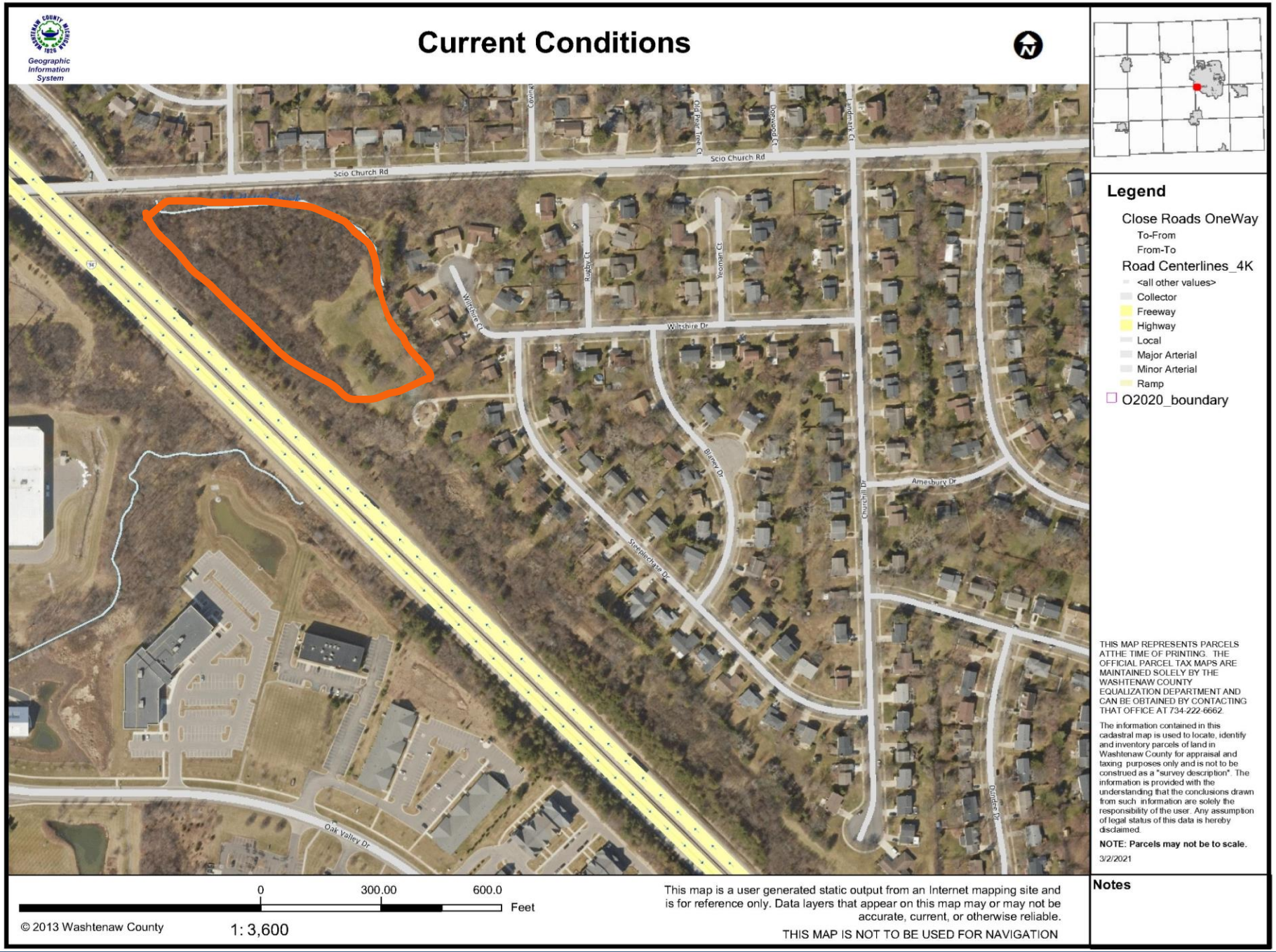
CHURCHILL PARK



CHURCHILL PARK



CHURCHILL PARK



CHURCHILL PARK

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER

CHURCHILL PARK

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER

PiHi Infiltration Basin

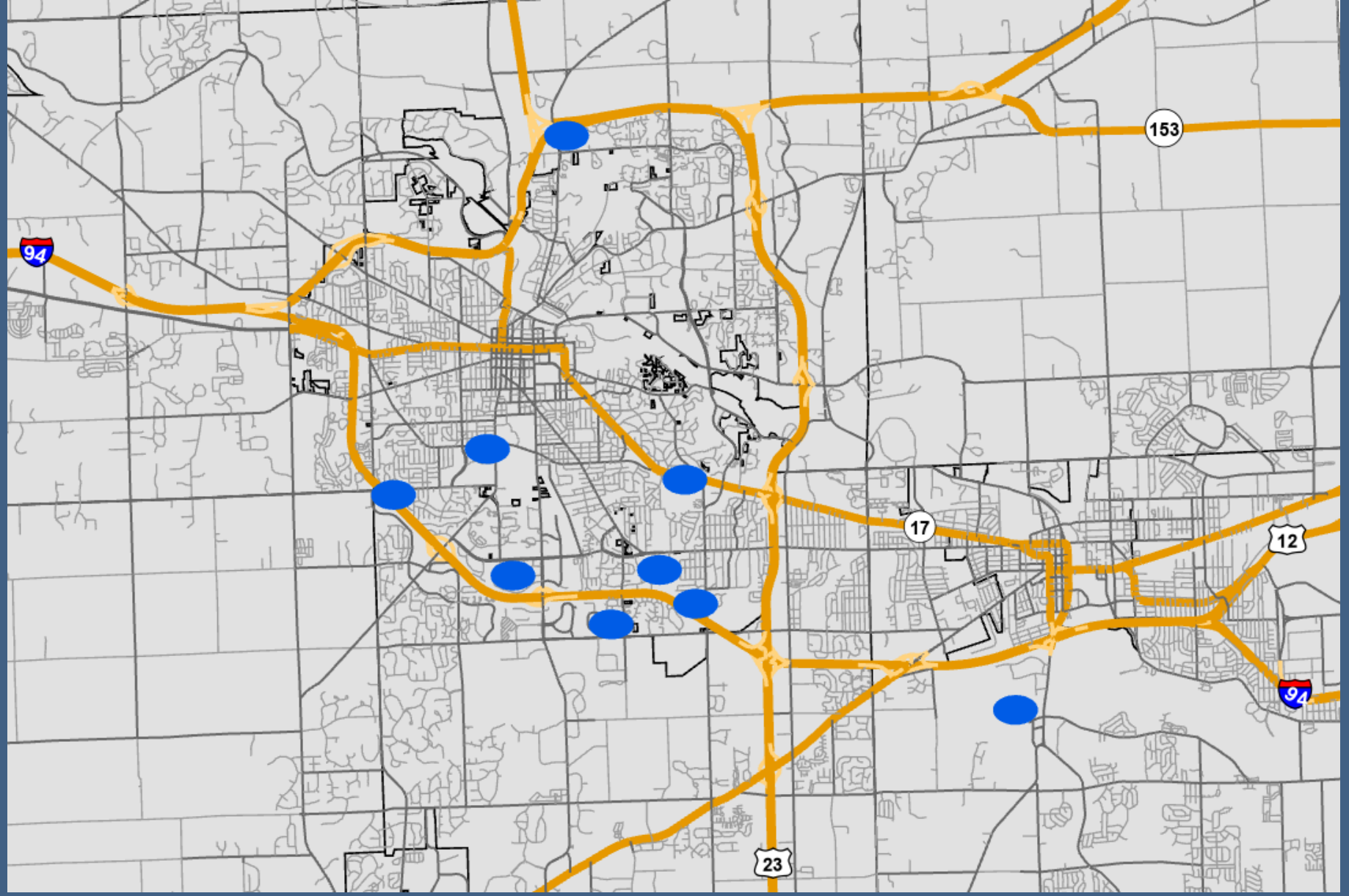
~340 Ac

~2 MG

44% Infiltration (2010)

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER


18 11:55AM



AA = 29 sq mi
= 18,560 Ac

5-10% Rule of Thumb

NEED: 1,000 – 1,500 Ac

WHAT WE HAVE

Regionals = 35-40 Ac,
Benefits 15,685 Ac

Stores 184 "Ac-ft"

=2 Michigan Stadiums

Washtenaw County Water Resources

REGIONAL BASINS (NTS)

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER

OVERVIEW

Regional Detention and Retrofits (BHs)

Site Specific (SHs) - Greatest benefit (15%)

Green Infrastructure (VSHs)

SHS ARE DEVELOPMENT SPECIFIC

Washtenaw County Water Resources

SITE SPECIFIC (SH)

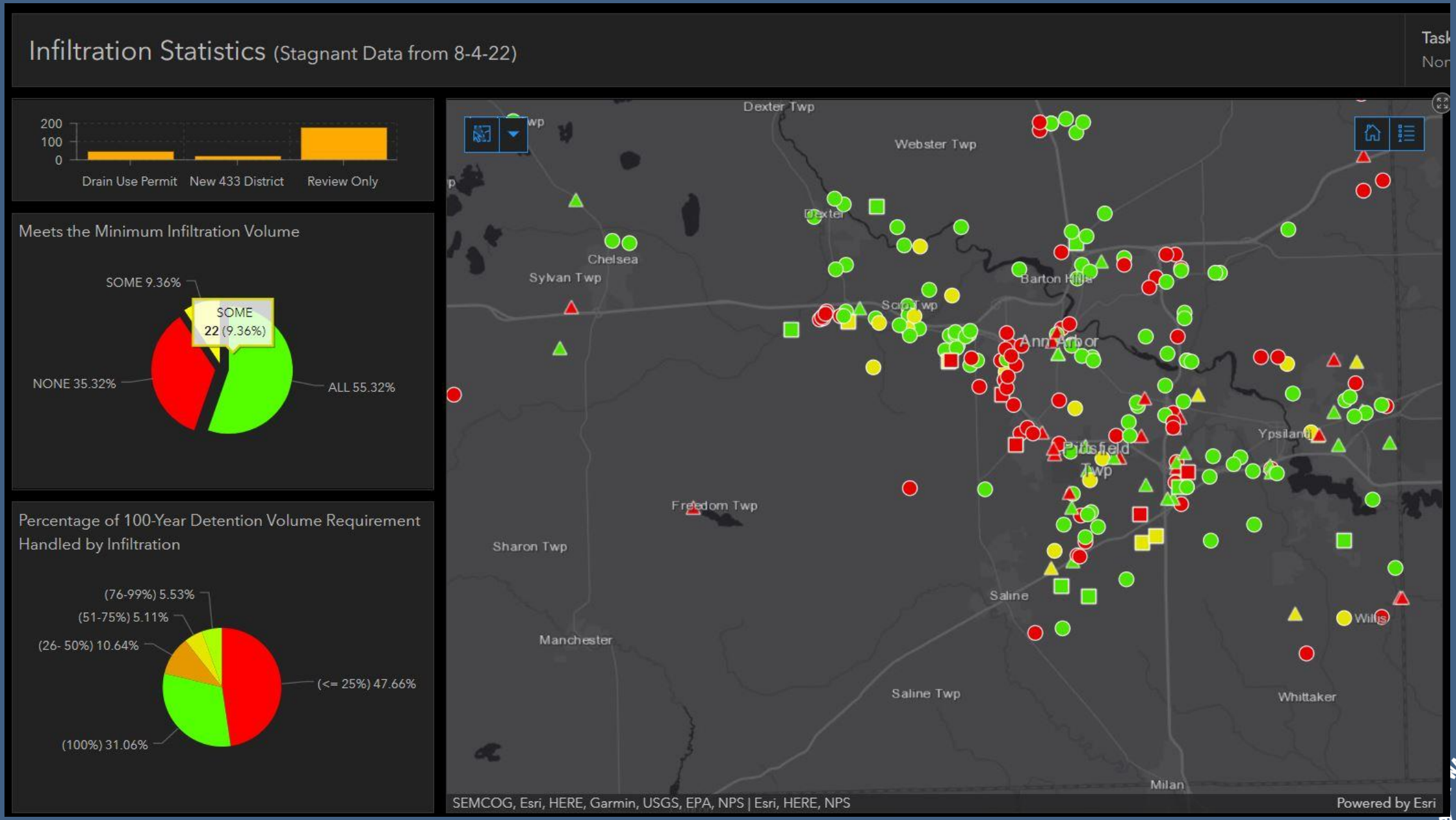
- Currently:
  - No basin
  - Old basin
  - New rules (2014) basin

- Altogether probably 5-6x the benefit of regionals

- Basin audit goals:
  - **Identify where additional water can be infiltrated or stored**
  - **Identify where existing do not function as designed**

2014 WCWRC RULES UPDATE

- 90% of annual rainfall must soak in (Infiltration)
- If soils don't allow, make detention 20% > 100-year (1%)
- Must use current NOAA rainfall data (1888-2011)



Washtenaw County Water Resources

ALL 239 SITES

Washtenaw County Water Resources

Washtenaw County Water Resources

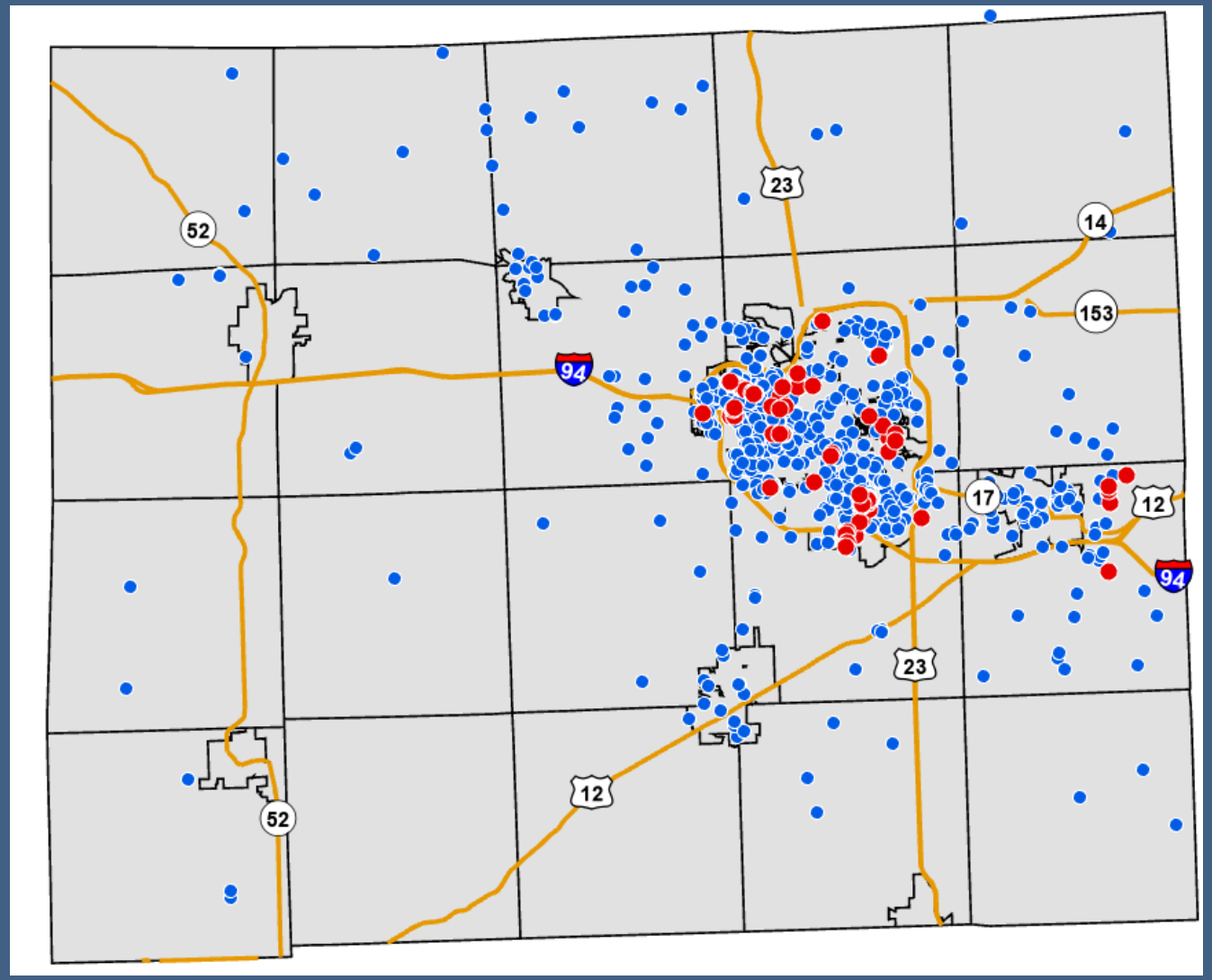
OVERVIEW

Regional Detention and Retrofits (BHs)

Site Specific (SHs)

Green Infrastructure (VSHs or underground)

WASHTENAW COUNTY GI (VSH)



- Goal: Soak in 90% Annual

- 1800 RGs Regionally!!!
- 60 Ac-Ft annually
- =>20 Million Gal

GI Maintenance

- County Maintained (93)
- Maintained by Others (976)

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER

VETERAN'S PARK

Washtenaw County Water Resources

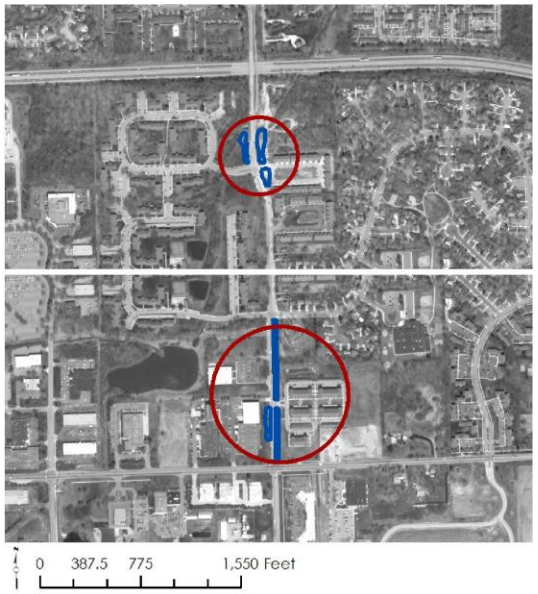
STONE SCHOOL ROAD

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER

Stone School Road Rain Gardens

Approximate Address: Stone School Rd north of Ellsworth Rd

SW



Year Built: 2015

Designer: InSite Design Studio

Aesthetic Level Required: High

DESCRIPTION:

Six vegetated swales line Stone School Road to the west and to the east. Each swale receives stormwater from Stone School Road through a curb cut inlet. Inlets have deep sumps for sediment. Terraced step pools help slow stormwater. This garden was burned in '18

MAINTENANCE NOTES:

Northern most basins were so wet that few of the original plantings survived. Invasives were allowed to grow to stabilize soil. Cut back standing dead between late fall and early spring. Invasives include Cat-tails, Chicory, Phragmites, Japanese Knotweed, Yellow Sweet Clover and Teasel.

August 2016

Season	Activity
Spring	Pull: Canada Thistle, Sow Thistle, Dandelion & Plantain
Summer	Trim edges and trim height as needed if too tall
Fall	Pull: Queen Anne's Lace & Chicory Herbicide*: Cat-tail, Phragmities & Teasel
Winter	Cut Standing Dead

**to be completed by NAP or contractor*

YEARLY ESTIMATE	HOURS	COST
Supervisor & Staff Labor	11	$750
Volunteer Labor	0	$0
Materials		$55
Equipment		$15
Controlled Burns*		$280
Contracted Work		$7,150
Remove Sediment**		$1,000
SUM		$9,250

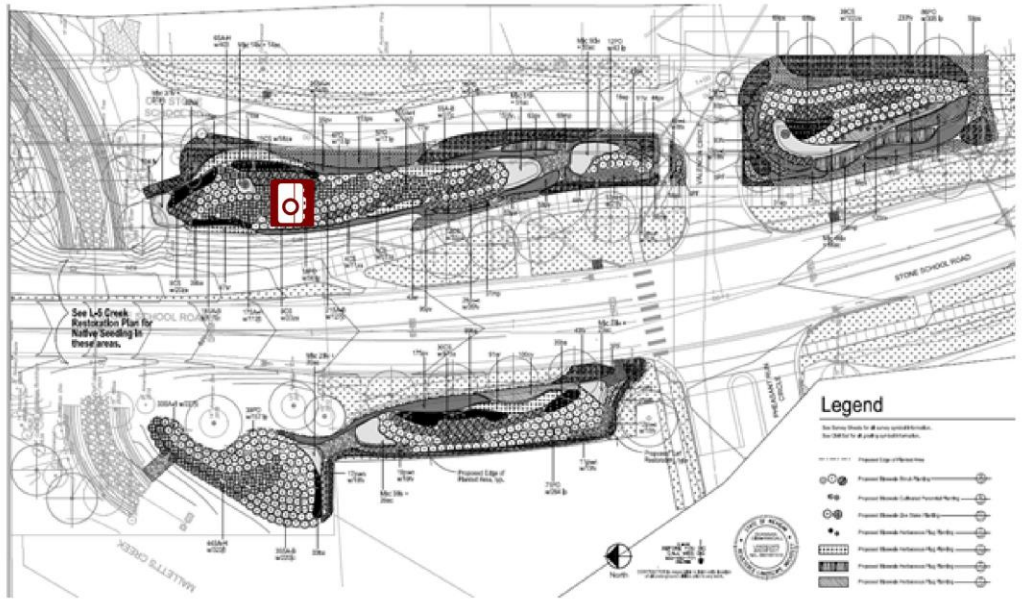
*** catch basins include deep sediment traps that will be maintained by a City vactor truck.*

**per estimate from PlantWise. Burn every three years so cost spread across years*

Stone School Road Rain Gardens

Site Plan

Acres: 1.35
SF: 58,811



NATIVE PLANTS TO LOOK FOR:

Perennials:

Blue-eyed Grass (Sisyrinchium angustifolium)
Blue Flag Iris (Iris virginica)
Canada Rush (Juncus canadensis)
Common Cinquefoil (Potentilla simplex)
Cream Wild Indigo (Baptisia lacteal)
False Aster (Boltonia asteroids)
Fox Sedge (Carex vulpenoidea)
Golden Alexanders (Zizia aurea)
Golden Ragwort (Packera aurea)
Horsemint (Monarda punctata)
Little Bluestem (Schizachyrium scoparium)
Nodding Wild Onion (Allium cernuum)
Northern Blazing Star (Liatris scariosa)
Northwind Switchgrass (Panicum virgatum)
Obedient Plant (Physostegia virginiana)
Pale Purple Coneflower (Echinacea pallida)
Prairie Blazing Star (Liatris pycnostachya)
Prairie-Dock (Silphium terebinthinaceum)
Prairie Dropseed (Sporobolus heterolepis)
Riddel's Goldenrod (Solidago ridellii)
Sand Coreopsis (Coreopsis lanceolata)
Shenandoah Switchgrass (Panicum virgatum)
Swamp Milkweed (Asclepias incarnate)
Torrey's Rush (Juncus torreyi)
Wild Strawberry (Fragaria virginiana)

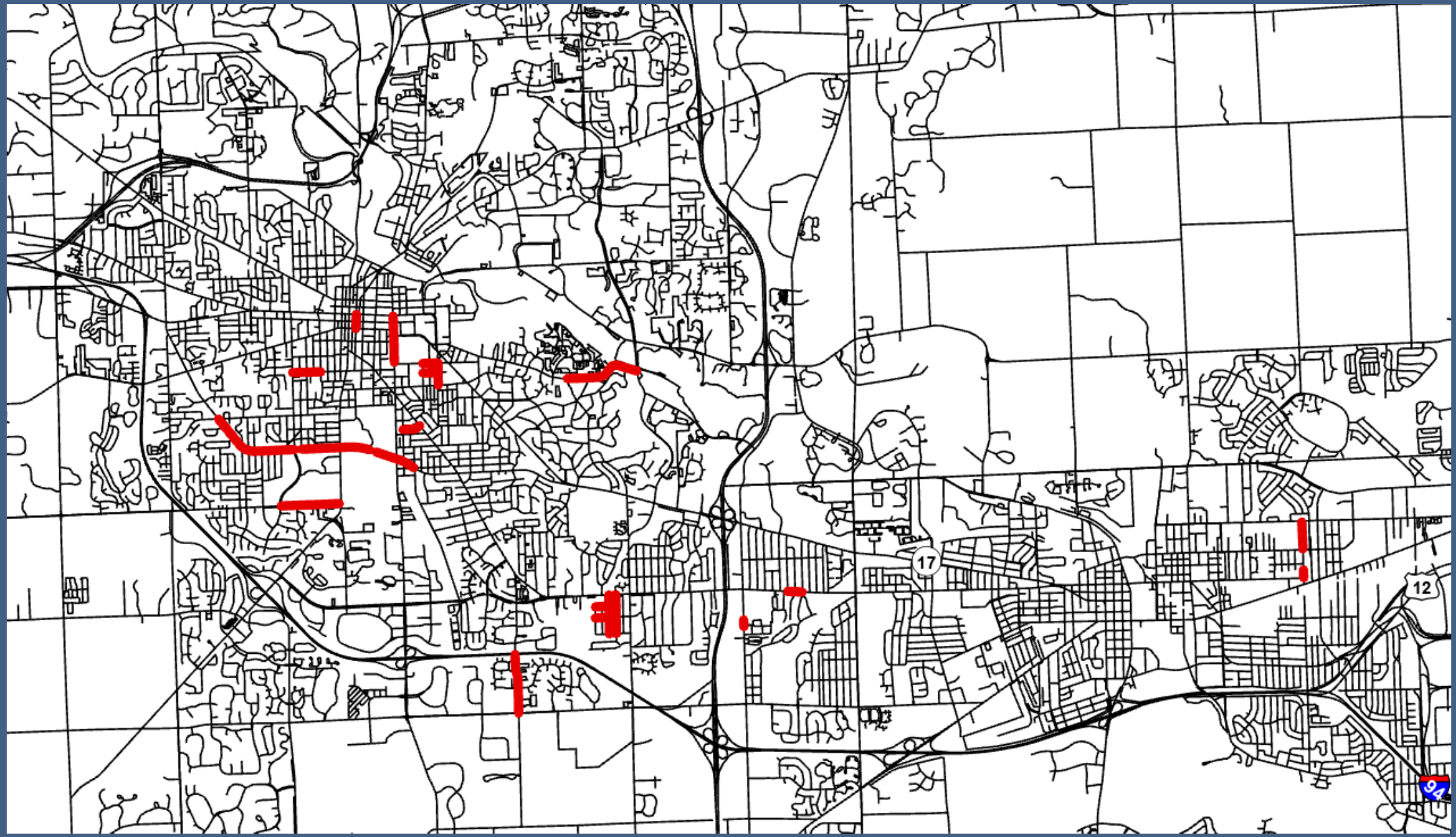
Shrubs and Trees:

Blackskin Willow (Salix glabra)
Common Ninebark (Physocarpus opulifolius)
Goldfinger Potentilla (Potentilla fruticosa)
Hutchinson's Yellow Red Willow (Salix x rubens)
Red-osier Dogwood (Cornus sericea)

Washtenaw County Water Resources

MILLER ROAD (23)

Washtenaw County Water Resources



Washtenaw County Water Resources

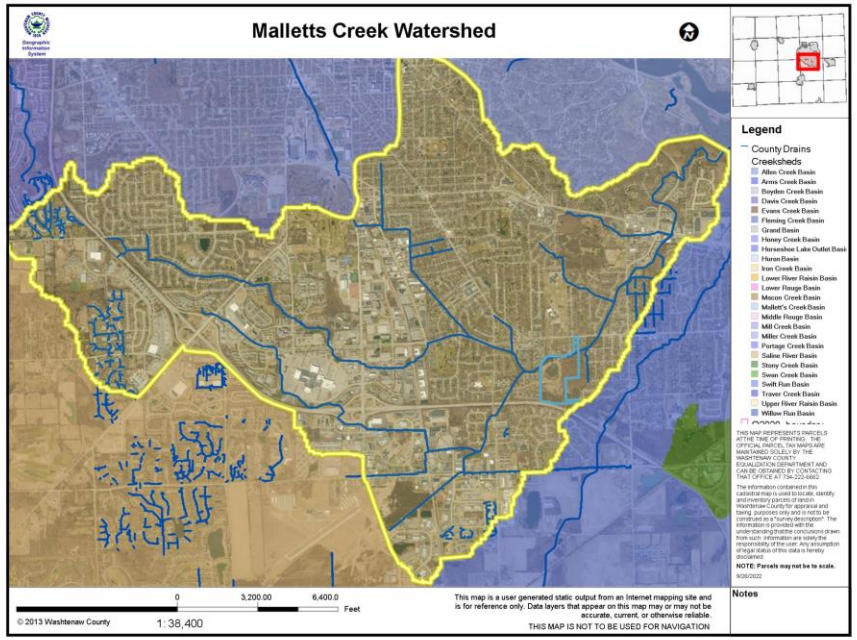
GREEN STREETS

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER

Washtenaw County Water Resources

WATERSHED SCALE RESTORATION

Malletts Creek Restoration Plan 2000-2023



MALLETTS CREEK RESTORATION PLAN 2000

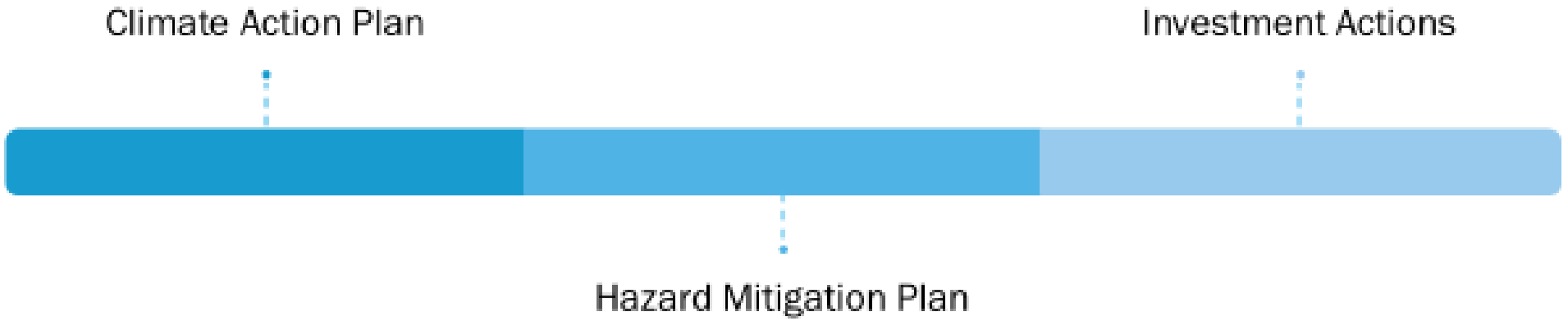
$12,250,000

(25% GRANT/FORGIVENESS)

Table 9: Restoration Activity Schedule and Estimated Costs

Project #	Restoration Activities	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total Estimated Costs	
		SCHEDULE							
1	Illicit Discharge Elimination Program							$212,700	✓
2	Sampling for Bacteria & Phosphorus							$27,720	✓
2a	Sampling for Benthics							$9,900	✓
3	USGS Stream Gage - Continue Operation							$54,000	✓
4	Enforce Existing Ordinances							$450,000	
5	Ordinance & Code Revisions for Stormwater Quality & Management							$360,000	✓
6	Stream Maintenance (routine)							$195,000	✓
7	Public Education Program							$720,000	✓
8	Design In-System Storage Structures for Large Storm Drain Outlets							$75,000	
9	Remedy 10-yr. Storm Flooding Problem - Design Solution for Oakbrook Drive Crossing							$10,000	
10	Investigate 100-yr. Storm Flooding Problems - Determine Responsibilities							$20,000	✓
8a	Construction of In-System Storage Structures							$1,198,214	
9a	Remedy 10-yr. Storm Flooding Problems - Start Construction							$42,600	✓
11	Start Detention Pond Study Throughout The Watershed (Survey & Design 40 ponds/year)							$696,360	
12	Design Structural Repairs to Stream -To be done by petition.							$150,000	✓
11a	Start Detention Ponds Retrofit - Outlet Structures, Wetlands and Sediment Forebay							$2,218,250	
12a	Structural Repairs to Stream -Start Construction							$4,837,815	✓
13	Residential Street Sweeping - Phase 1 - Area F							$10,100	✓
14	Brown Park Pond Improvements - Design							$250,000	✓
15	County Farm Park Wetlands - Design							$50,000	✓
13a	Residential Street Sweeping - Phase 2 - Area F & C							$27,000	
14a	Brown Park Pond Improvements - Start Construction							$2,244,163	✓
15a	County Farm Park - Start Construction							$263,600	✓
13b	Residential Street Sweeping - Phase 3 - All Areas							$134,800	✓
14b	Brown Park Pond - Monitoring							$35,000	✓
15b	County Farm Park Wetland Pond - Monitoring							$35,000	✓
16	Sweep Commercial Streets on a Monthly Basis							$68,800	
17	Stream Bank Stabilization - Design							$208,000	✓
18	Habitat Improvements - Design							$22,000	✓
19	Pilot Project - Catch Basin Restriction							$1,169,329	
20	Catch Basin Cleaning - Clean 2x/year							$944,300	
17a	Stream Bank Stabilization - Implement							$2,211,311	✓
18a	Habitat Improvements - Implement							$174,000	✓
								$19,124,962	

PLANNING AND ACTIONS



CHALLENGES/WCEC SUPPORT IDEAS

- CAP Elements to assist with Decision Making/Prioritization

A. Extend ARPA County incentive program using GF $$
   - ?$500k to $1M annual matching funds to incent LUG investments
   - Prioritize strategic retrofits of existing storage

B. Vulnerability Analysis

C. (All) Hazard Mitigation Plan
   - FEMA requires for any funding
   - Opportunities to reduce flood insurance rates
   - No County lead/resources

THANK YOU

LinkedIn
https://www.linkedin.com/company/washtenawwrc/

Twitter
@WashtenawWRC

Email
Drains@washtenaw.org

Phone
734-222-6860

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER