

Birmingham

💧 Data Driven Direction 💧



“Nonpoint Source Water Quality”

Alabama Clear Water 2024 Presentation

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September 25, 2024

City of Birmingham
Stormwater Management





Program Not Working For Birmingham

- ▶ In 2011...
 - ▶ Checking a box
 - ▶ Stacking Paper



Not understanding
water quality
impacts; TMDL's



Program Not Working For Birmingham



In 2011...

- ▶ Checking a box
- ▶ Not Solving Problems
- ▶ **Data Collection & Monitoring Limitations**

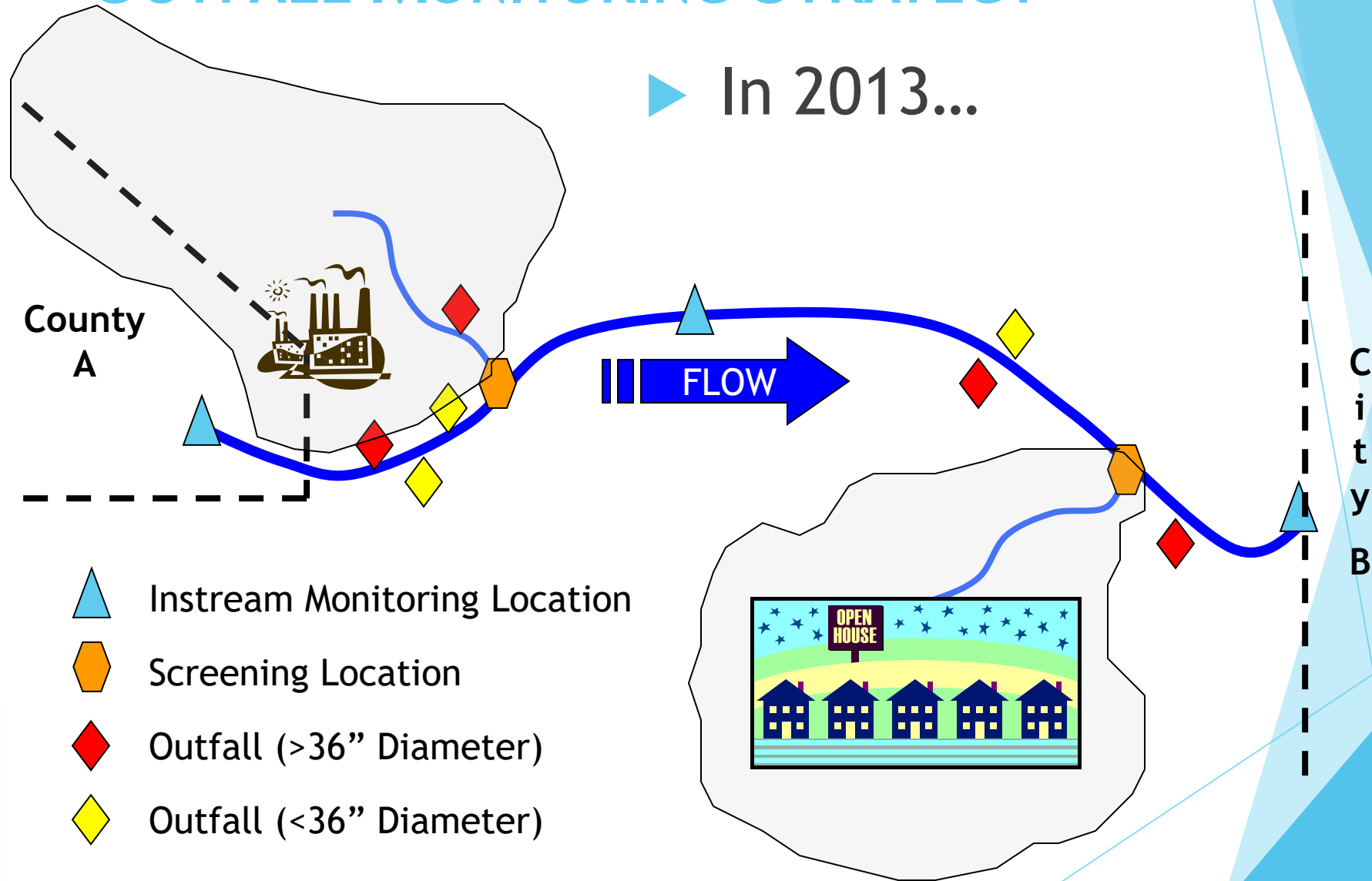
WatER they?

- ▶ Wet weather sampling
- ▶ Screening sites once annually
- ▶ (ORI's) >700 sites in 5 streams to locate discharging outfalls
- ▶ In 2012 less than 10% had dry weather flows
- ▶ Parameters below detection limits
- ▶ Unsafe questionable sampling locations
- ▶ Unable to accurately measure flow



OUTFALL MONITORING STRATEGY

► In 2013...



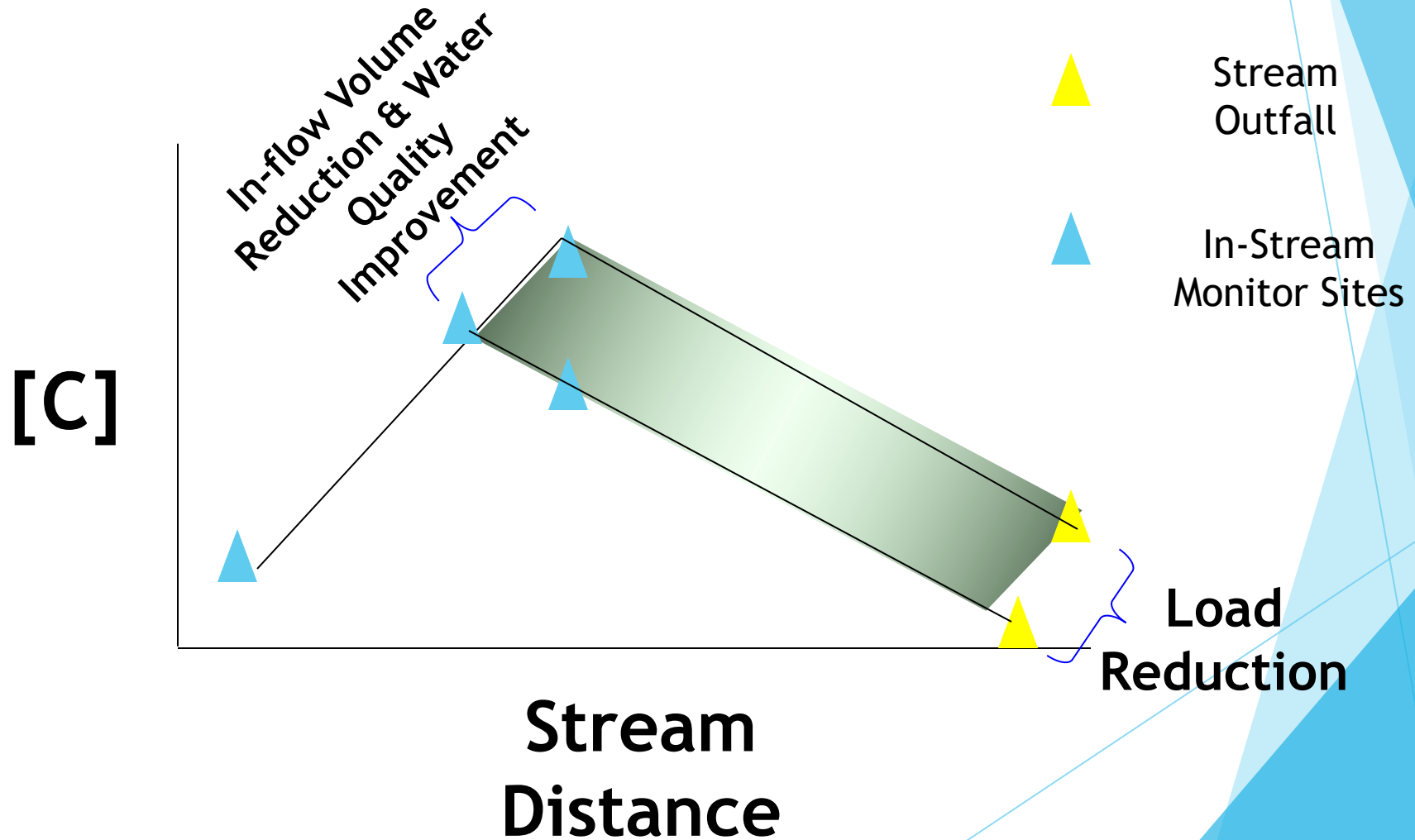
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PERFORMANCE MEASURE OF SUCCESS

► In 2013...

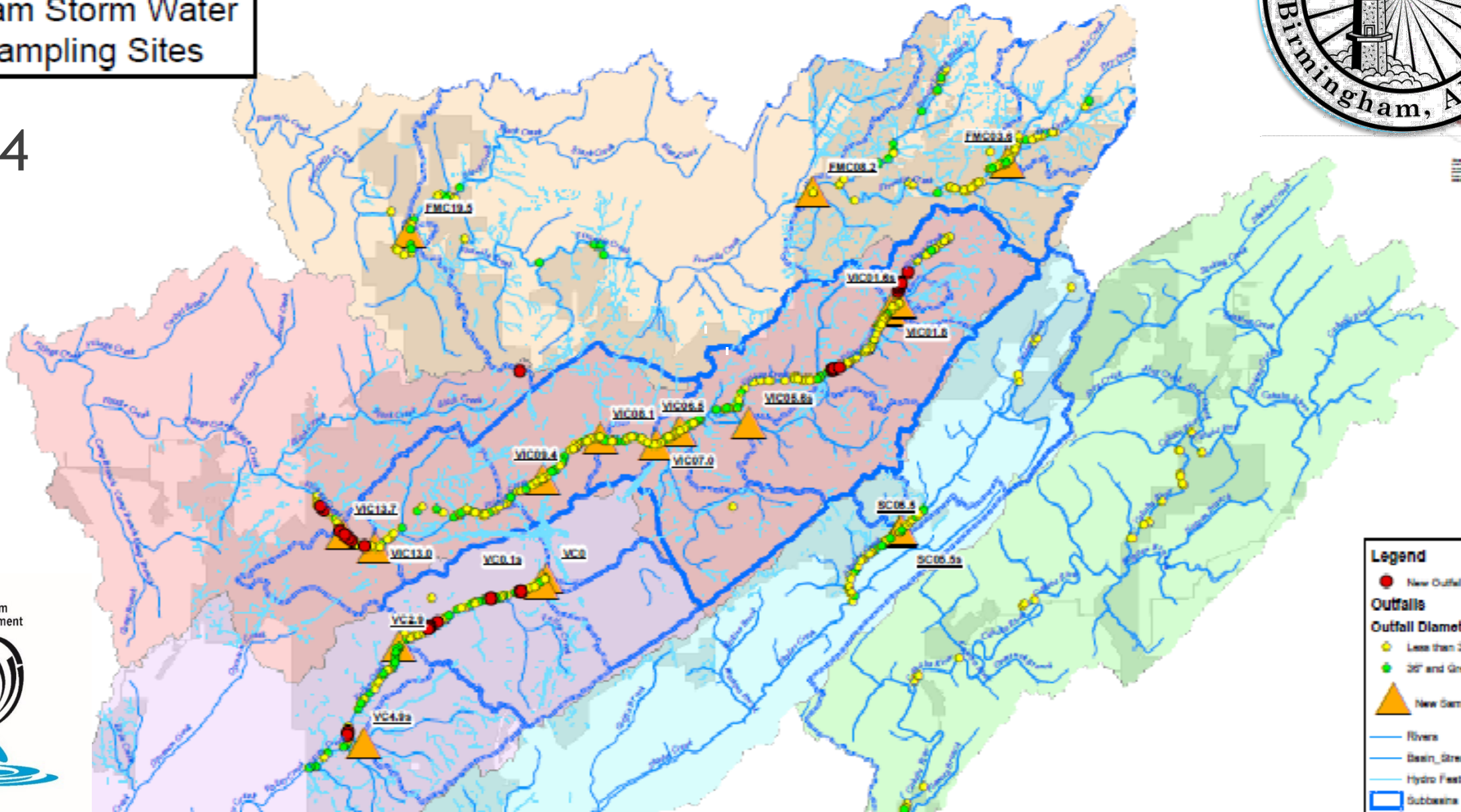


Customize a Program For Birmingham



Birmingham Storm Water
New Sampling Sites

▶ 2024



Legend

- New Outfalls
- Outfalls**
- Outfall Diameter**
- Less than 36"
- 36" and Greater
- ▲ New Sampling Points
- Rivers
- Basin_Streams
- Hydro Features
- Subbasins



Customize a Program For Birmingham

- ▶ In 2024...
- ▶ Put People First!!



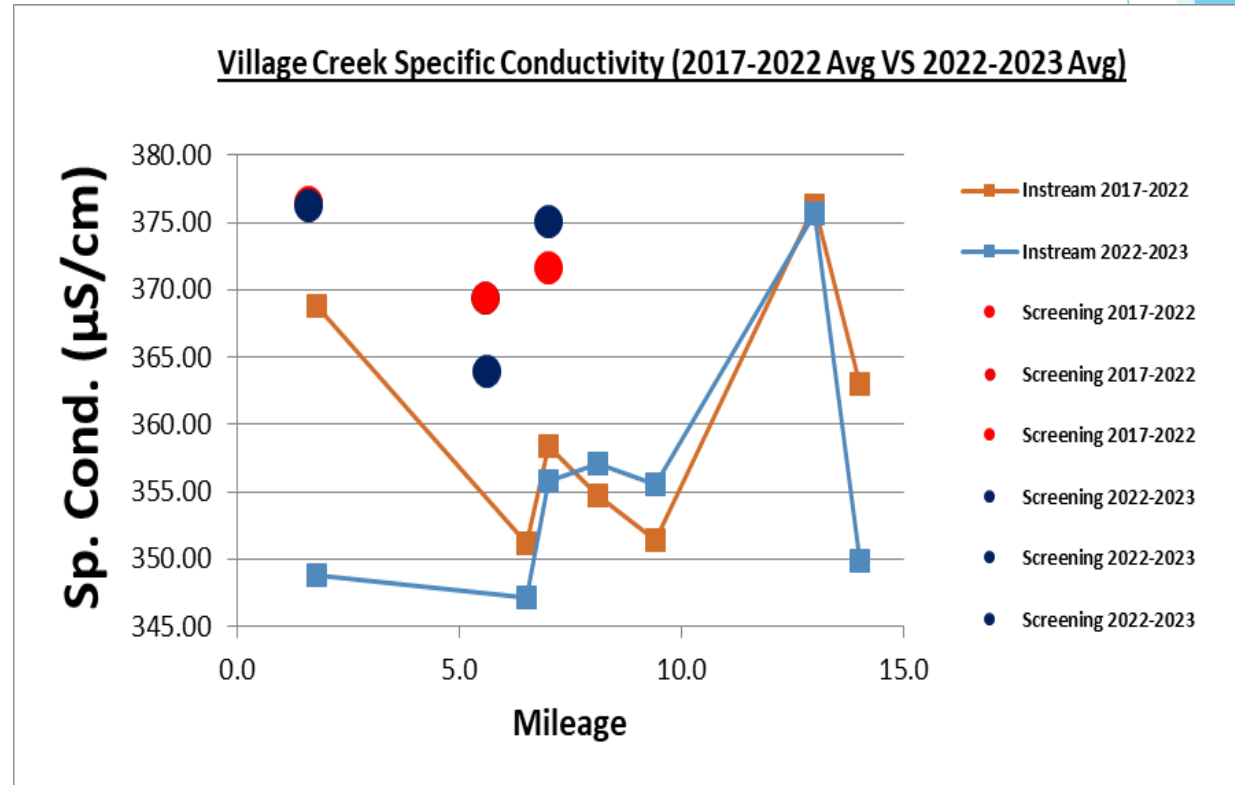
SAFETY FIRST!



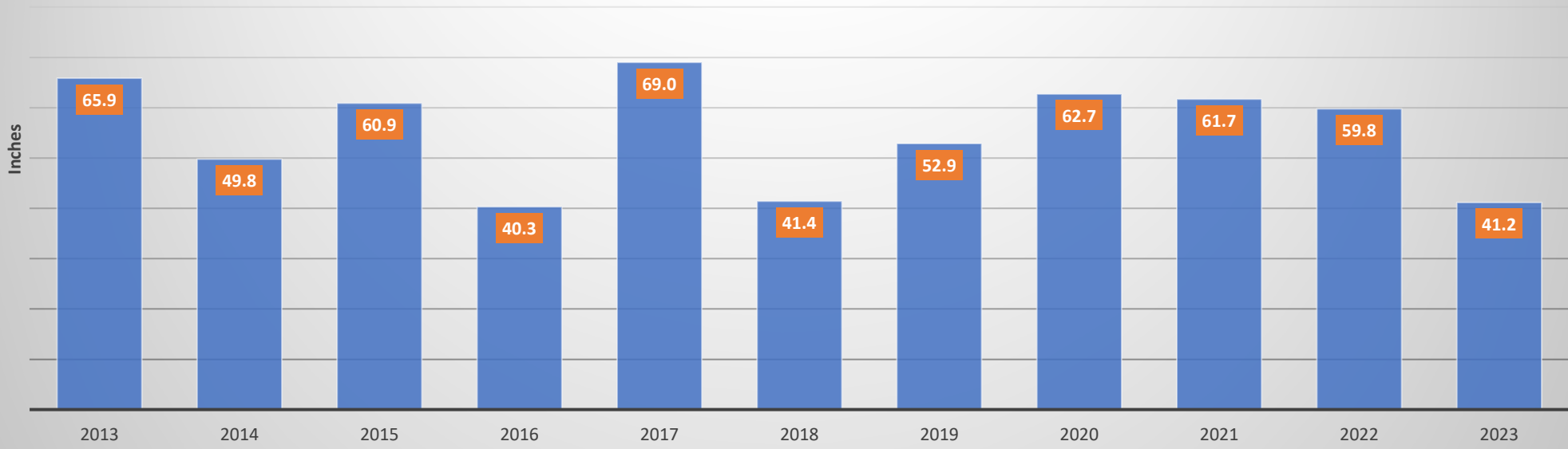


Customize a Program For Birmingham

- ▶ In 2024...
 - ▶ Put People First!!!
 - ▶ Use statistics to Guide the Program!!!



Total Rainfall Per Year

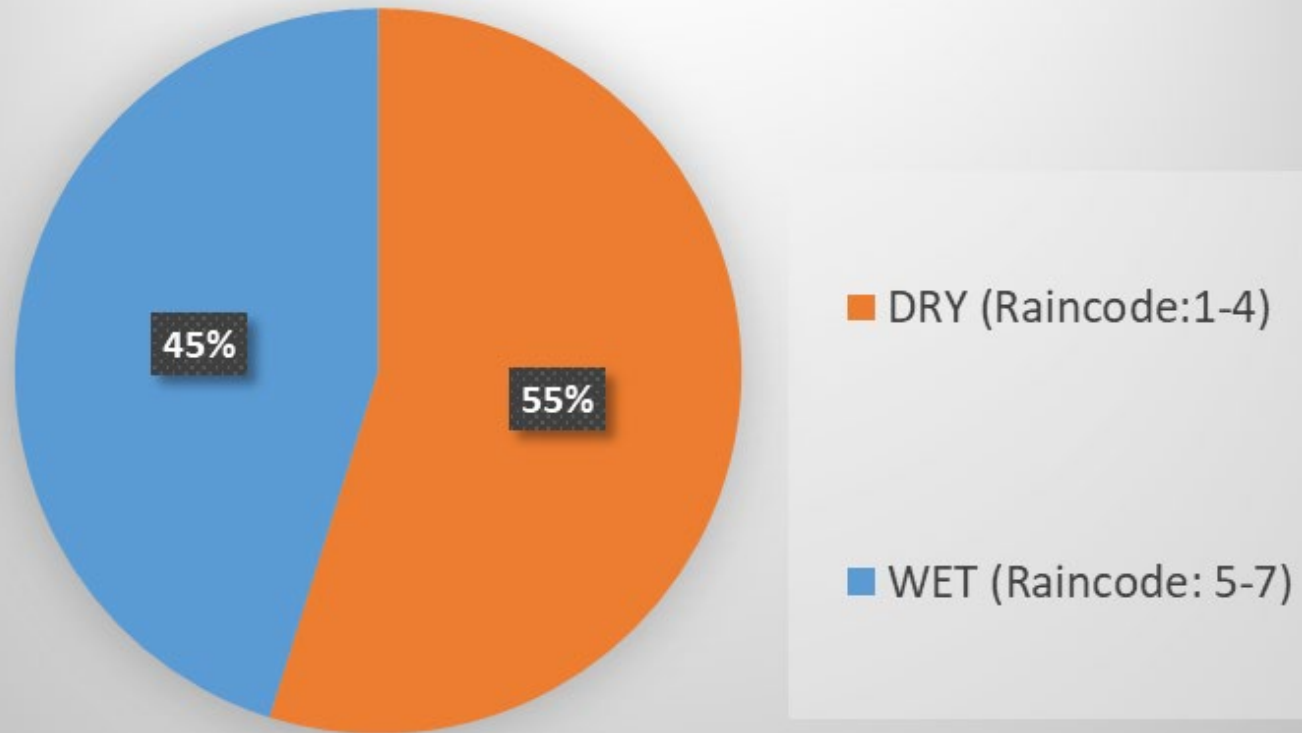


***2023 Represents a 9 month period**

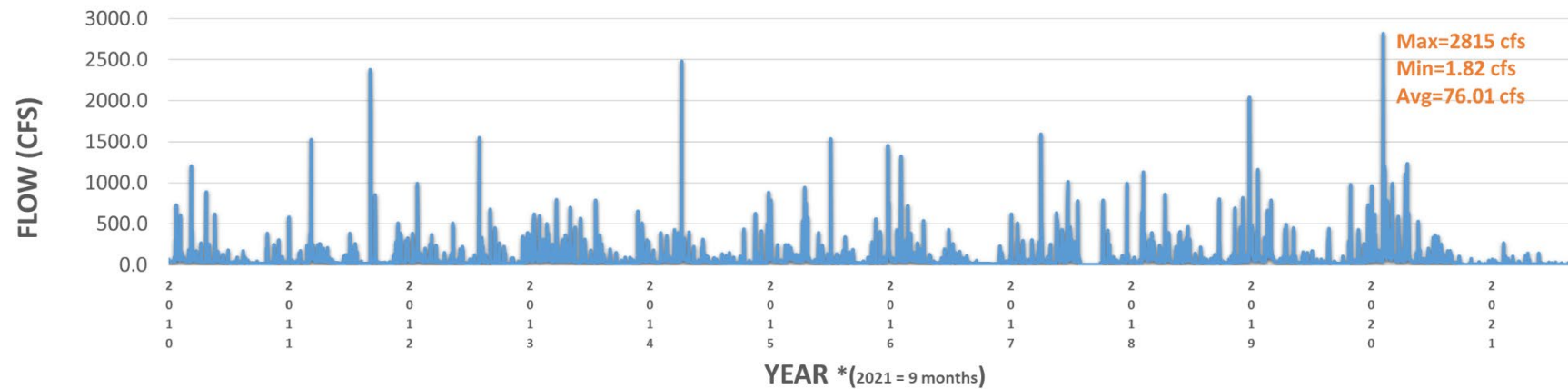
Total Rainfall Codes for Sampling.

- ▶ 1 - No Rain
- ▶ 2 - 0.01 - 0.05 inches (Trace)
- ▶ 3 - 0.06 - 0.09 inches (Light)
- ▶ 4 - 0.10 - 0.15 inches (Moderate)
- ▶ 5 - 0.16 - 0.49 inches (Moderate Heavy)
- ▶ 6 - 0.5 - 1.0 inches (Heavy)
- ▶ 7 - ≥ 1.01 inches (Heavy)

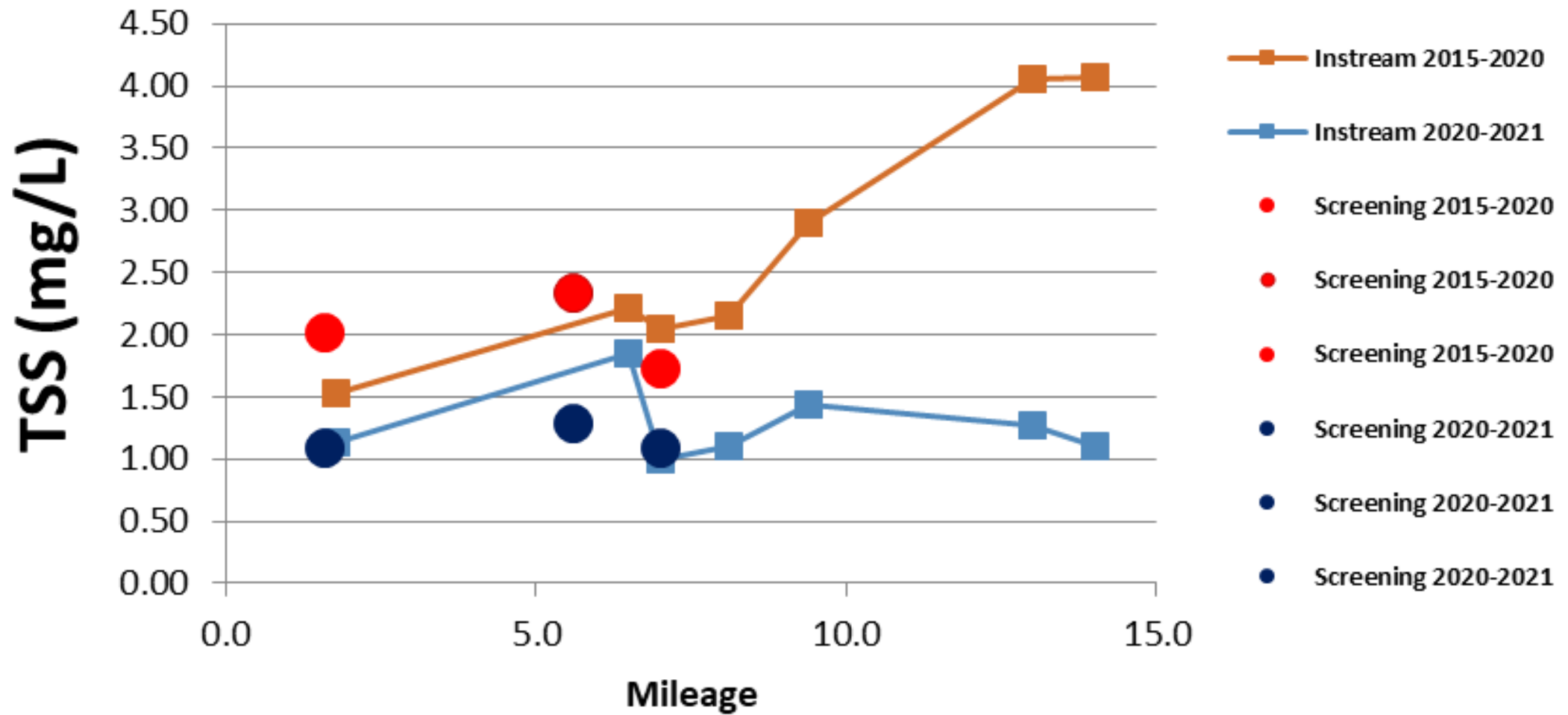
2013-2022 Wet VS Dry Sampling



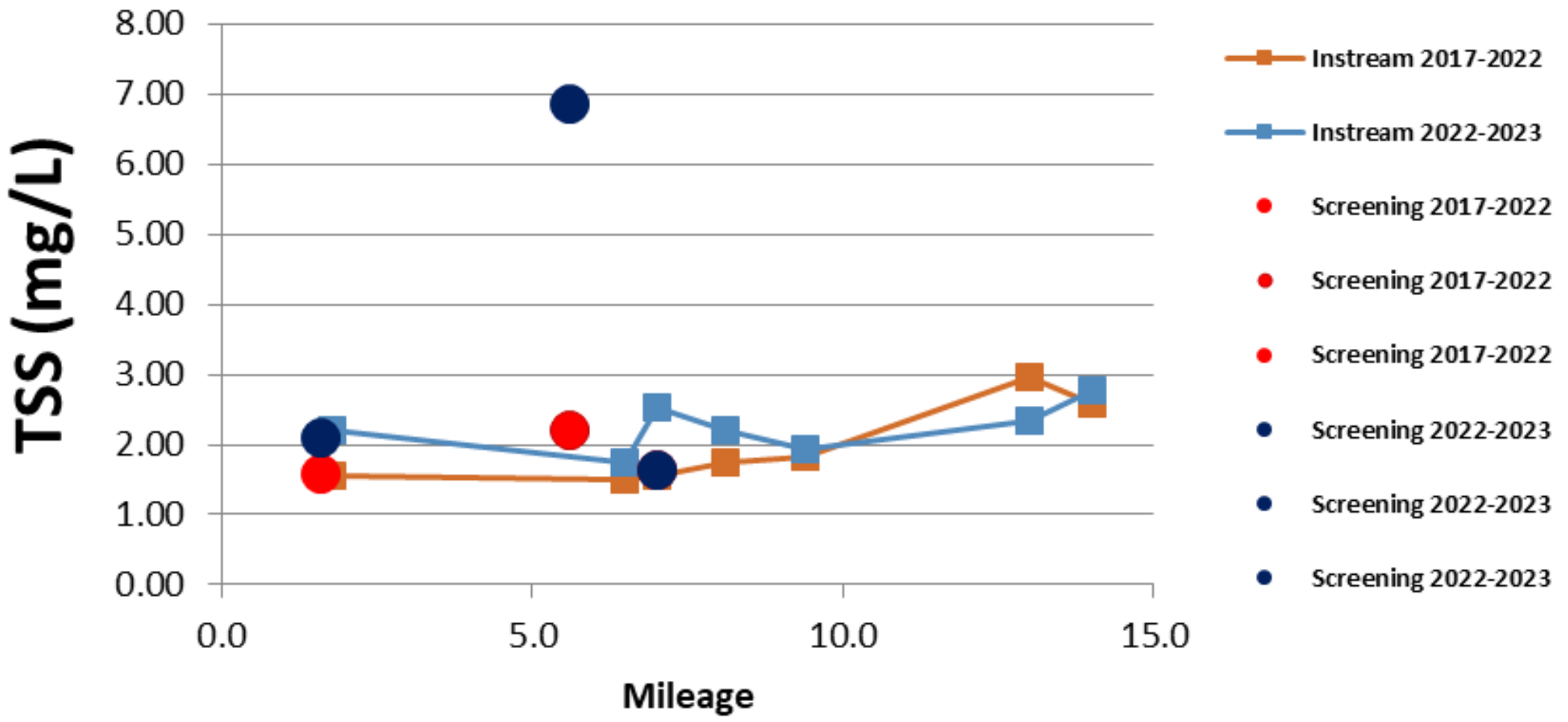
Daily Average Flow @ 02458450 (Ave W, Village Creek)



Village Creek Total Suspended Solids (2015-2020 Avg VS 2020-2021 Avg)



Village Creek Total Suspended Solids (2017-2022 Avg VS 2022-2023 Avg)



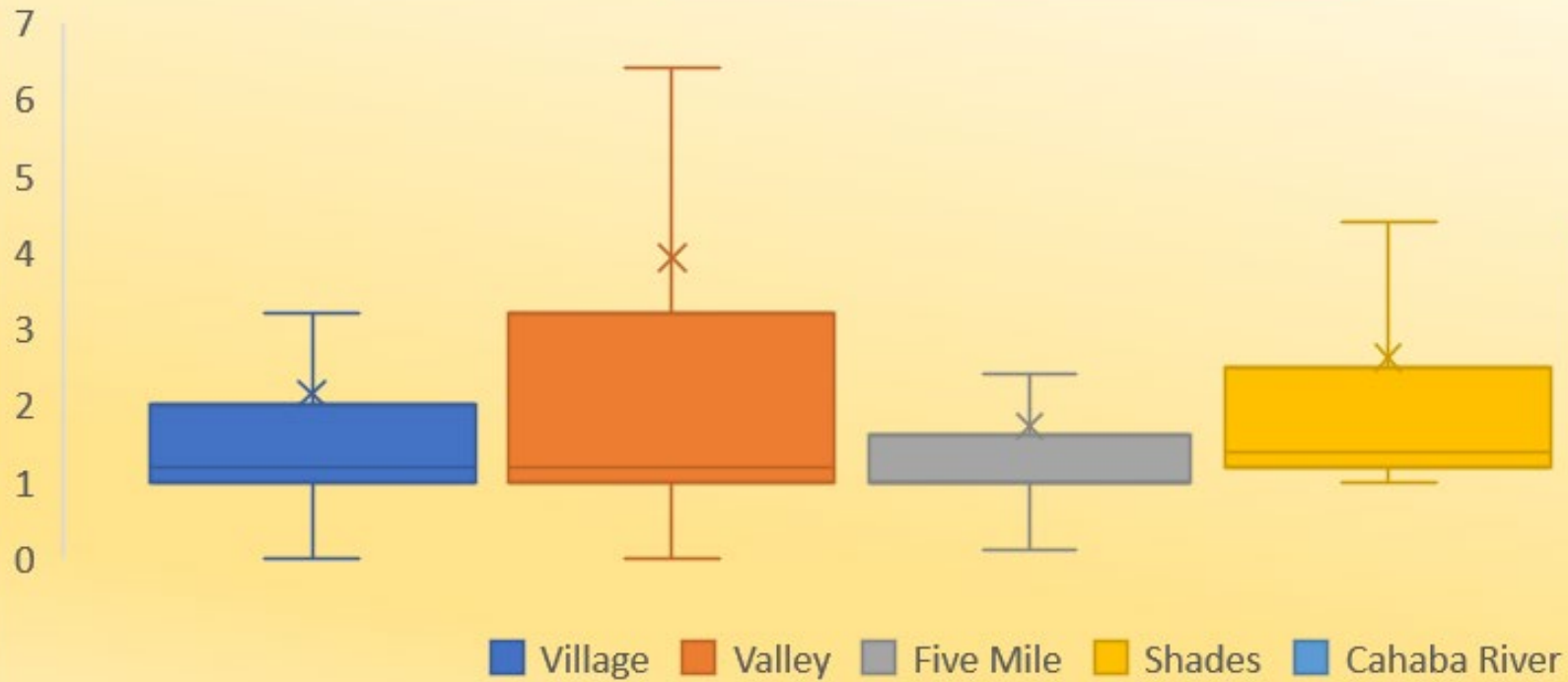
Customize a Program For Birmingham



- ▶ In 2024...
- ▶ Put People First!!!
- ▶ Use statistics to Guide the Program!!!
- ▶ Improve Water Quality



2016-2023 TSS Data



Customize a Program For Birmingham Anti-Degradation Table



Stream	D.O. (mg/L) Min/Max	pH Units Min/Max	Temp. F° Geomean/Max	<i>E. coli</i> CFU/100 mL/s Geomean/Max	Turbidity NTU Geomean/Max	Zinc µg/L Geomean/Max
Cahaba	5.7/9.7	7.4/8.1	64.9/77.9	218/>2,420	8.7/23.5	
Five Mile	7.4/11.1	7.2/8.5	63.0/74.8	214/1,050	3.9/33.0	
Village	7.2/11.0	6.9/8.4	65.8/76.8	236/1,990	2.8/9.1	<5.0/<5.0
Valley	7.7/12.1	7.7/8.4	67.4/74.5	421/1,986	7.2/208	
Shades	4.1/13.0	7.2/8.3	63.1/75.7	527/1,120	7.0/12.6	

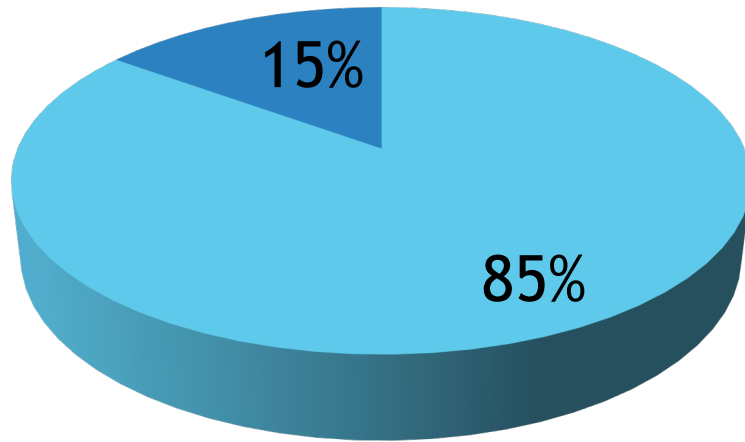


Customize a Program For Birmingham

- ▶ In 2024...
 - ▶ Put People First!!!
 - ▶ Use statistics to Guide the Program!!!
 - ▶ Improve Water Quality
 - ▶ Work with NPDES Designated Facility



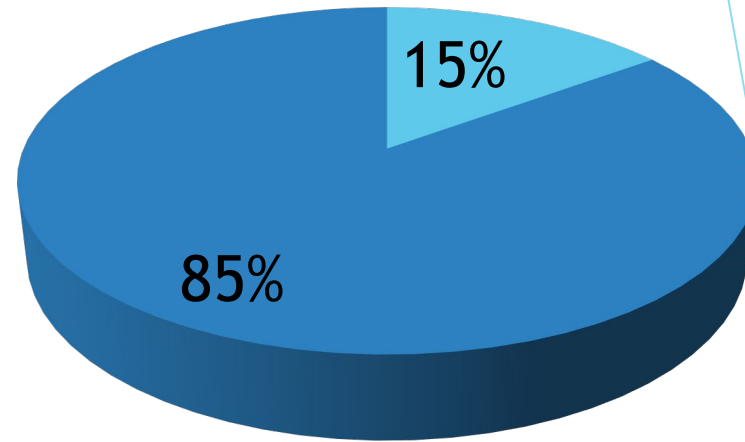
Source of Impairment



1970

Point Sources

(Industrial and Wastewater Professionals)



2010

Non-Point Sources

(Stormwater Professionals)

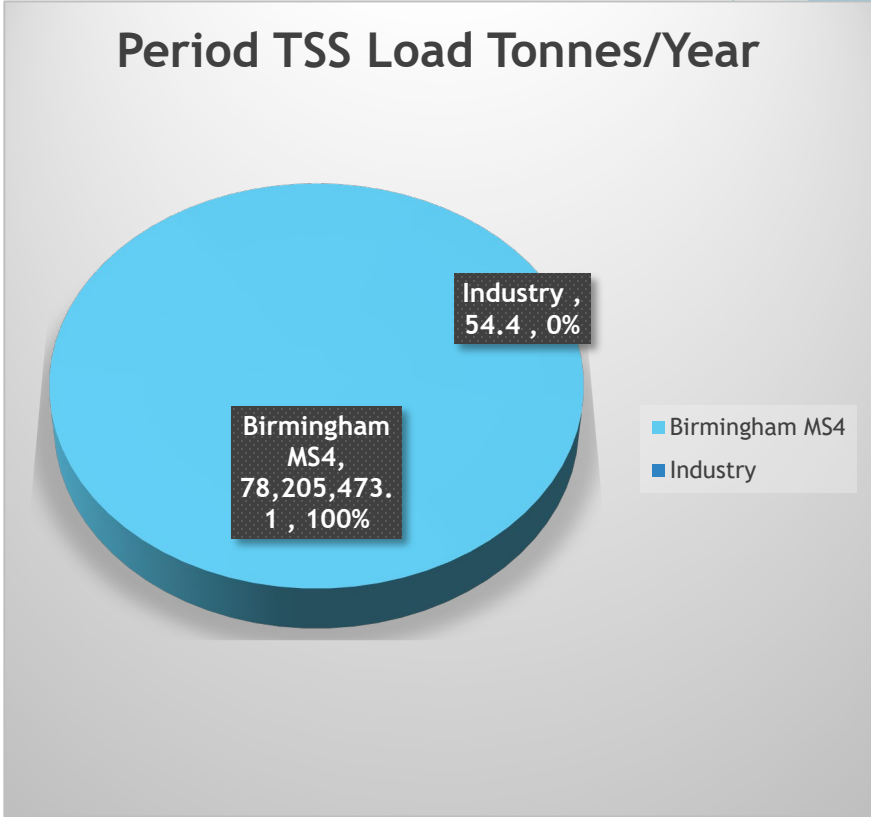
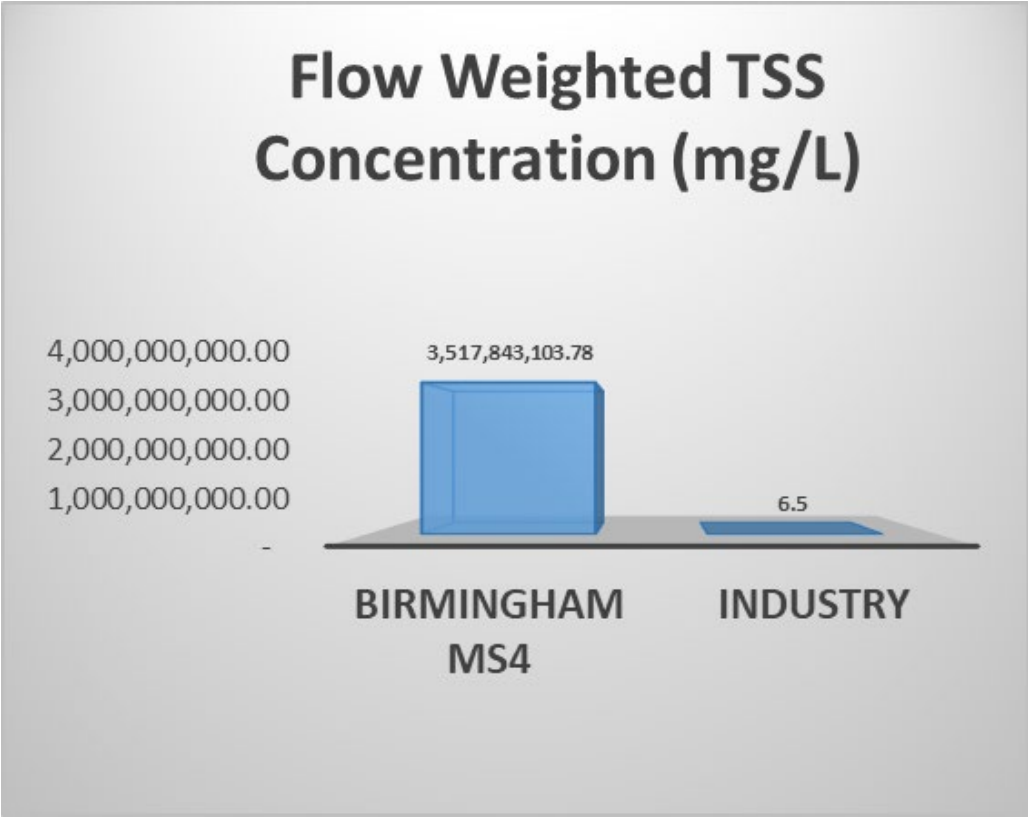


Adapted from Seth Brown's Sitting at The Grown Up Table (2017 AL SW Forum)

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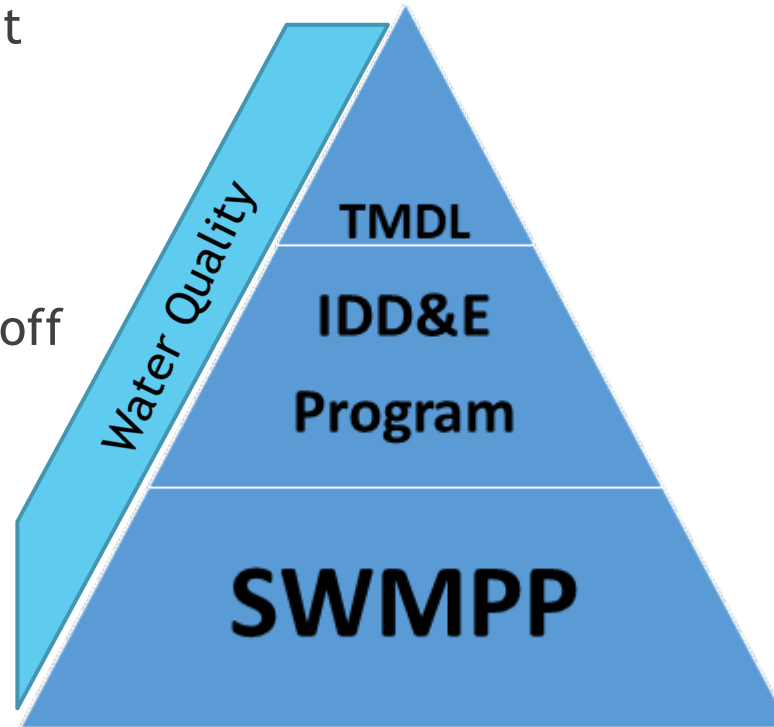
Nonpoint Source Impacts from Birmingham's MS4 to Village Creek



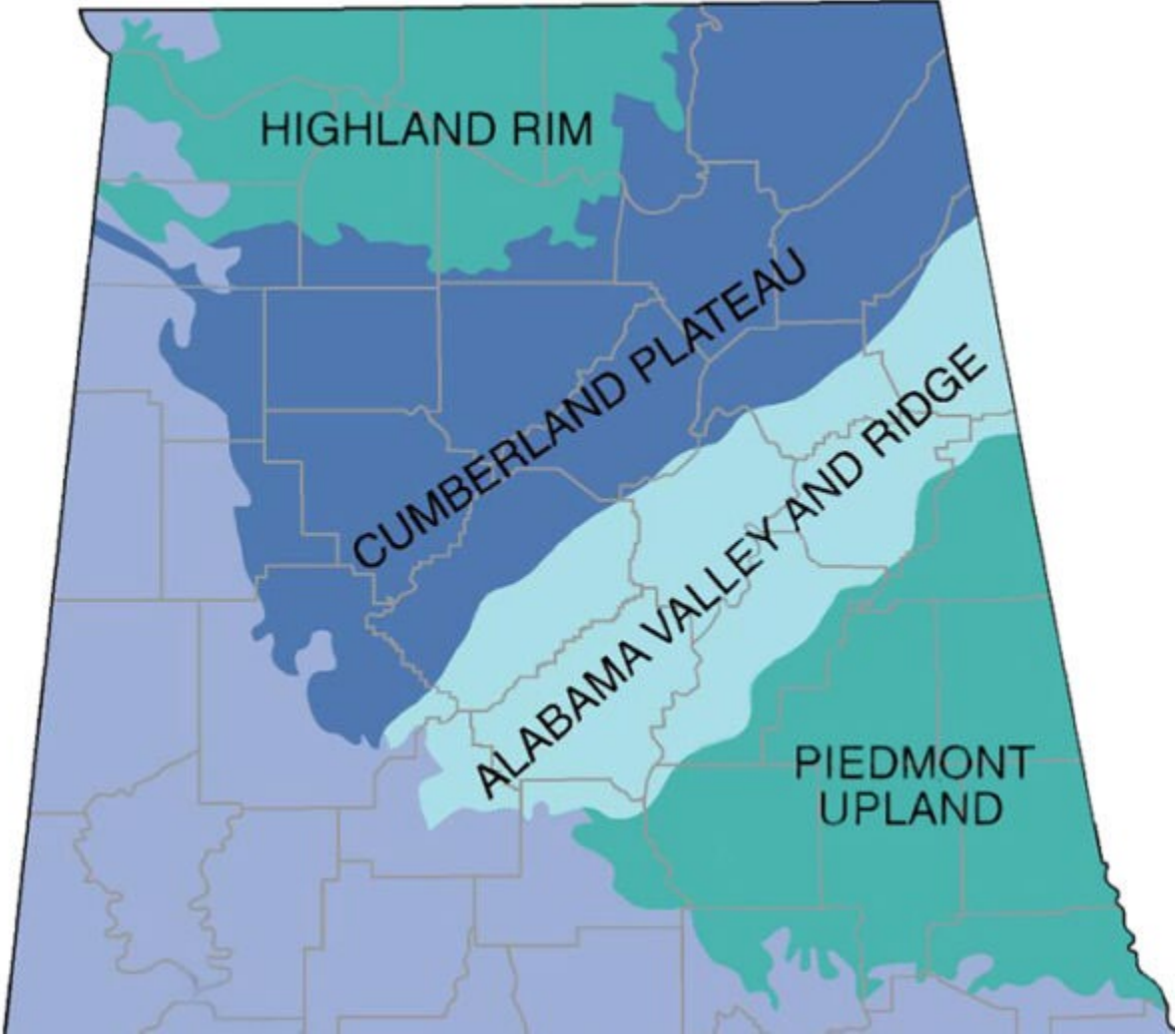
Water Quality promotes

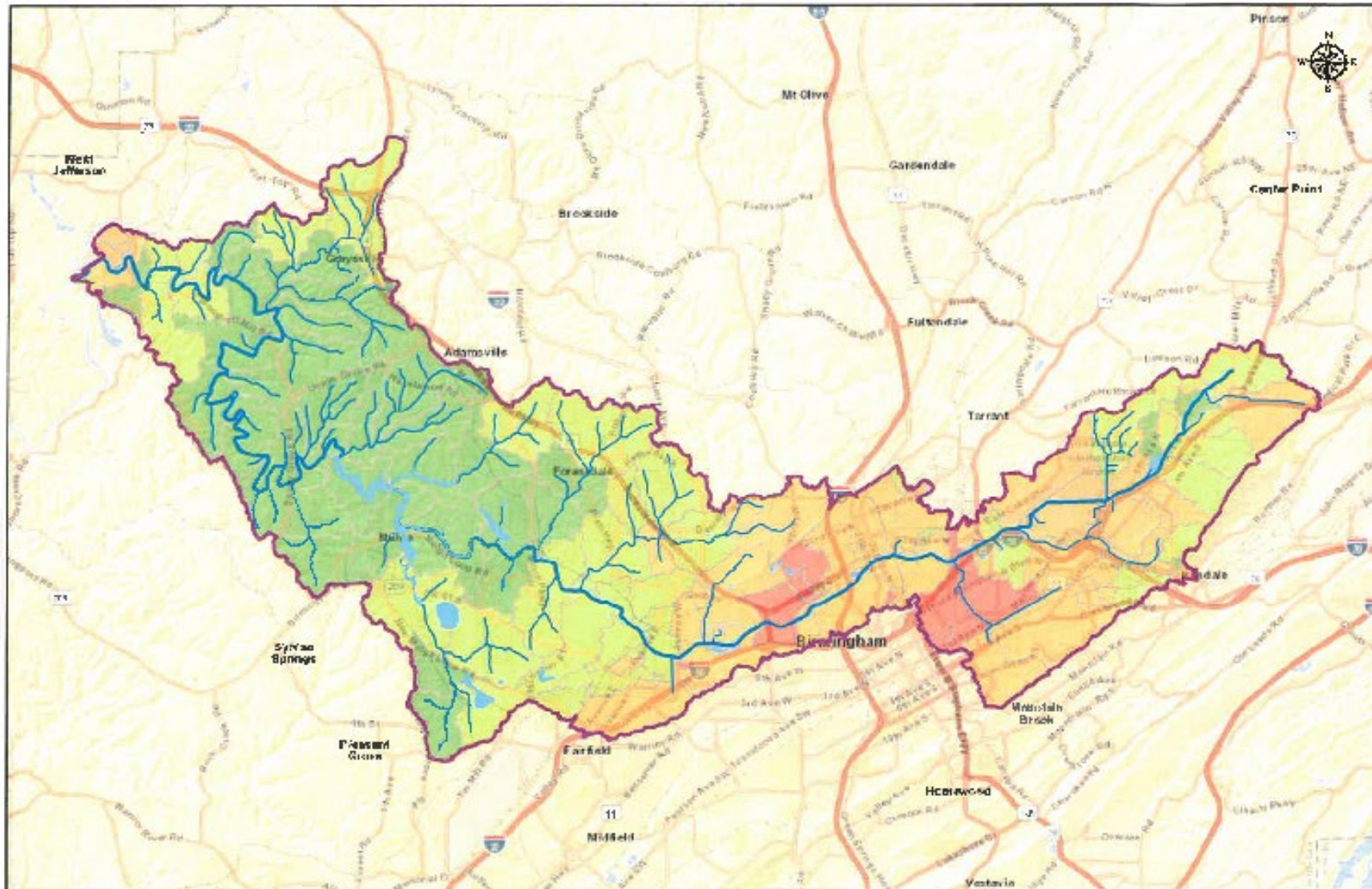
NPDES Permit BMP Controls

- ▶ Education & Public Involvement
- ▶ LID/GI Development
- ▶ IDDE
- ▶ Post Construction
- ▶ New Construction and Site Runoff
- ▶ Good Housekeeping
- ▶ Industrial Runoff
- ▶ Household Hazardous Waste
- ▶ Pesticides, Herbicides, and Fertilizers
- ▶ Spill Response



Physiographic Section





	<p>Legend</p> <ul style="list-style-type: none"> — Major Road — Minor Road — Water Village Creek Watershed Implementation Plan 0 - 100 100 - 200 200 - 300 300 - 400 400 - 500 500 - 600 600 - 700 	<p style="text-align: center;">City of Birmingham Village Creek Watershed Implementation Plan</p>	<p style="text-align: center;">TSS Loading (lb/ac/year)</p> <p style="font-size: small;">ARCADIS 2000 Riverchase Birmingham, AL 35244 www.arcadis-usa.com</p> <p>Date: 9/19/2016 Project No. 034210-6 Figure - 5-15</p>
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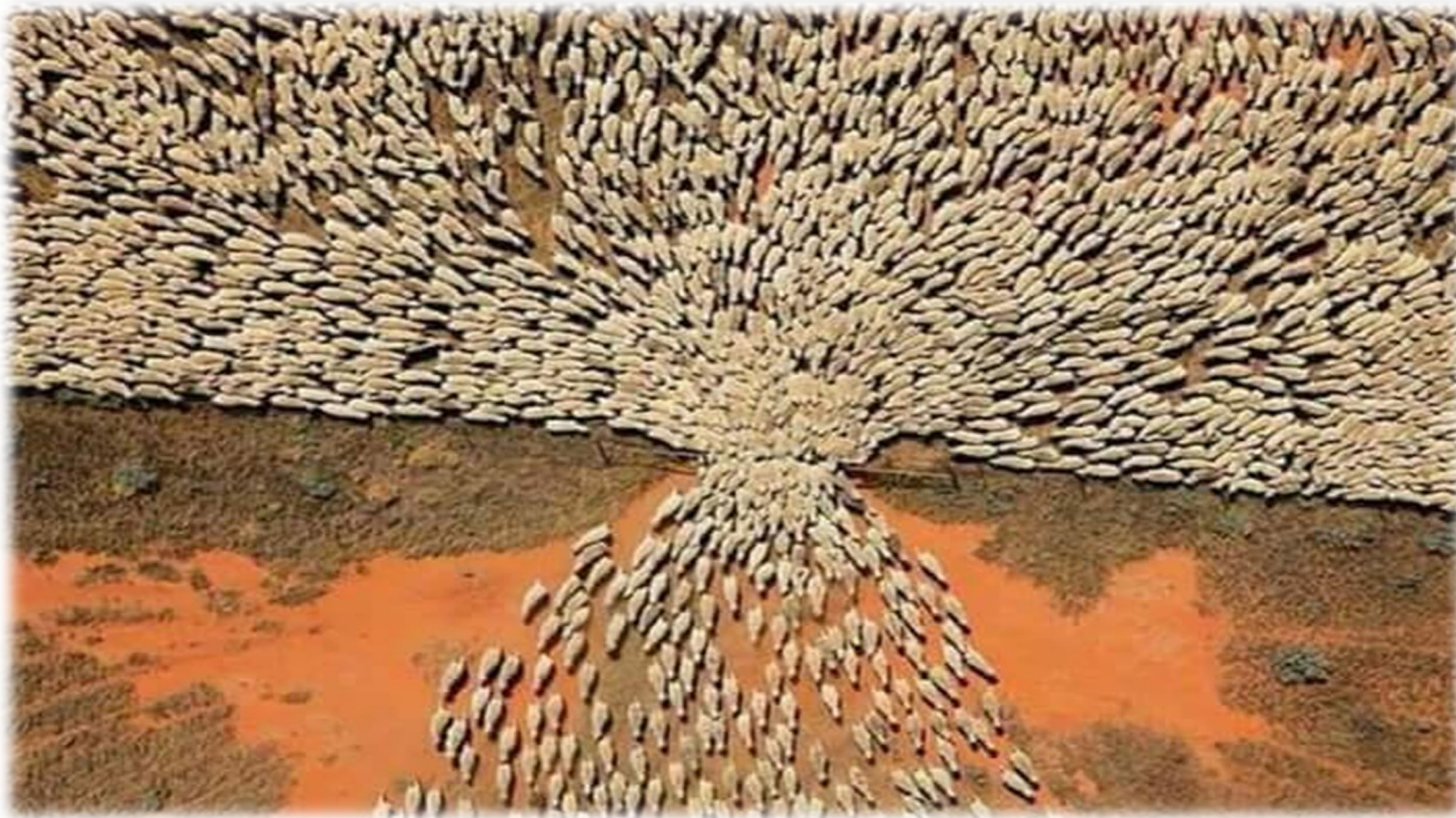












Not Following the Crowd!





THANK YOU
Questions?

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