

# Welcome!

## We will begin shortly...

<b>Virtual Meeting Schedule</b>	
<b>6:00 – 6:10</b>	Welcome
<b>6:10 – 6:45</b>	Presentation
<b>6:45 – 7:00</b>	Presentation Q & A (General)
<b>7:00 – 7:45</b>	Focus Group Discussions/Zoom Breakout Rooms
<b>7:45 – 8:00</b>	Come Back Together/Wrap-Up



# Willow Creek Watershed Study Public Information Meeting No. 2

by City of Madison Engineering Division  
& MSA Professional Services, Inc.  
March 10, 2021

*Please Note: This meeting is being recorded. It is a public record subject to disclosure. By continuing to be in the meeting, you are consenting to being recorded and consenting to this record being released to public record requestors.*

- ✓ This meeting will be recorded and posted to the City's project page.
- ✓ All attendees should stay be muted to keep background noise to a minimum.
- ✓ You may use the “raise hand” option at the bottom if you have something that required immediate clarification.
- ✓ Use “chat” option if you are having technical issues and a staff person can try to assist.
- ✓ Please use the “Q&A” option at the bottom of the screen to type your question. Questions will be answered at the end of the presentation. Inappropriate questions may be dismissed.
- ✓ If you cannot ask via typing your question, use the “raise hand” option and you will be unmuted when it is your turn.



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# How to Participate

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Make sure to join audio

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Raise your hand to be unmuted  
For comments or ask additional questions.

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Use chat if you have technical issues or a question for the panelists

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Use Q/A if you have questions.  
We will answer after the presentation

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To leave the meeting click here



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# Evening Overview

- ▶ Welcome (Hannah Mohelnitzky, City of Madison)
- ▶ Presentation (Eric Thompson, MSA Professional Services)
- ▶ Q&A (facilitated by Hannah Mohelnitzky, City of Madison)
  - Submit questions through Zoom Q&A
    - *To find the Zoom Q&A Box, hover over the edge of your screen. A toolbar will appear and you can click on “Q&A”*
  - Questions answered at the end of the Presentation
- ▶ Wrap Up (Hannah Mohelnitzky, City of Madison)
- ▶ Breakout to Focus Groups (City of Madison & MSA staff)
  - A link for the Focus Groups will be posted in the Zoom Group Chat box.

# Presentation Overview

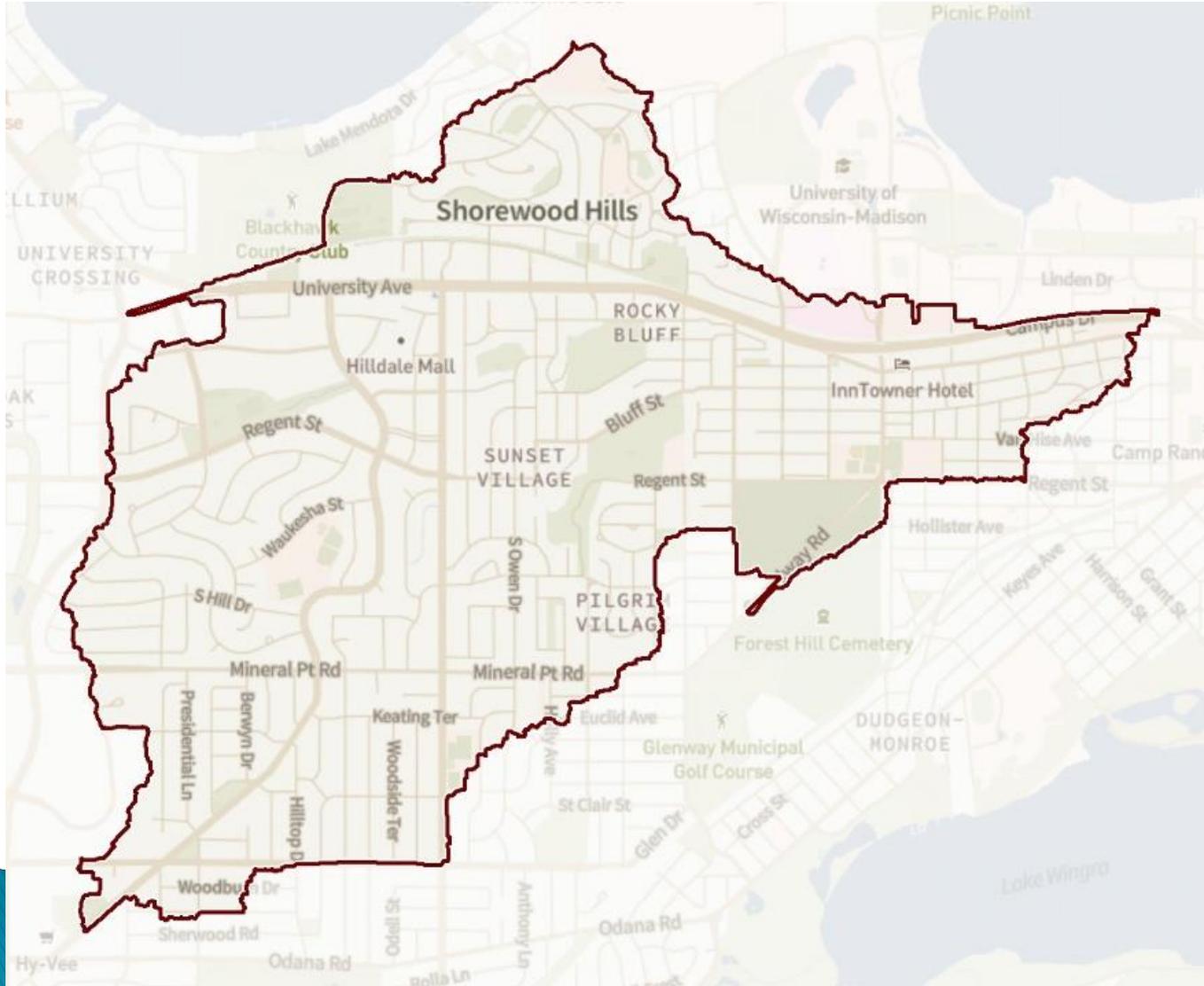
- ▶ Definitions of commonly used terms
- ▶ Project location
- ▶ Watershed characteristics
- ▶ Progress to date
- ▶ Tonight's meeting
  - Present Progress to date
  - Receive feedback from participants
  - Will not present proposed solutions
- ▶ Next steps
- ▶ Watershed study limitations



# Definitions of commonly used terms

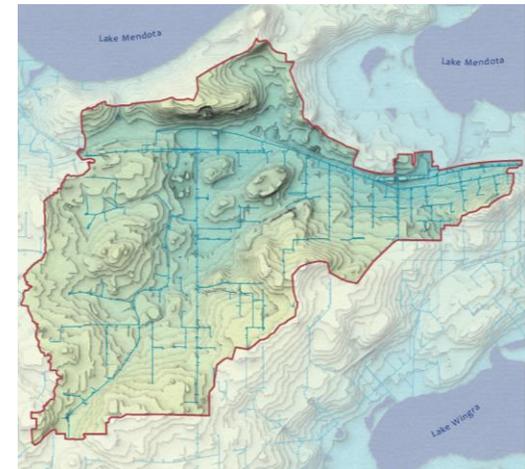
- ▶ **Stormwater:** rainwater produced from a rain event
- ▶ **Stormwater runoff:** the portion of the rainwater that does not soak into the ground
- ▶ **Stormwater inlets:** grates in the ground that take in stormwater runoff; connected to the stormwater conveyance system
- ▶ **Detention ponds:** ponds designed to hold stormwater runoff to improve water quality and/or help prevent flooding
- ▶ **Subcatchments:** smaller sub-areas of a watershed
- ▶ **Level loggers:** monitoring equipment used to measure the level in a pond, channel, storm sewer, etc
- ▶ **Rain gauges:** monitoring equipment used to measure the depth of rain that fall in a rain event
- ▶ **Model:** computer software that is used to evaluate the stormwater conveyance system

# Project Location



A watershed is an area of land that drains to a single location.

This is the Willow Creek watershed in the City of Madison.

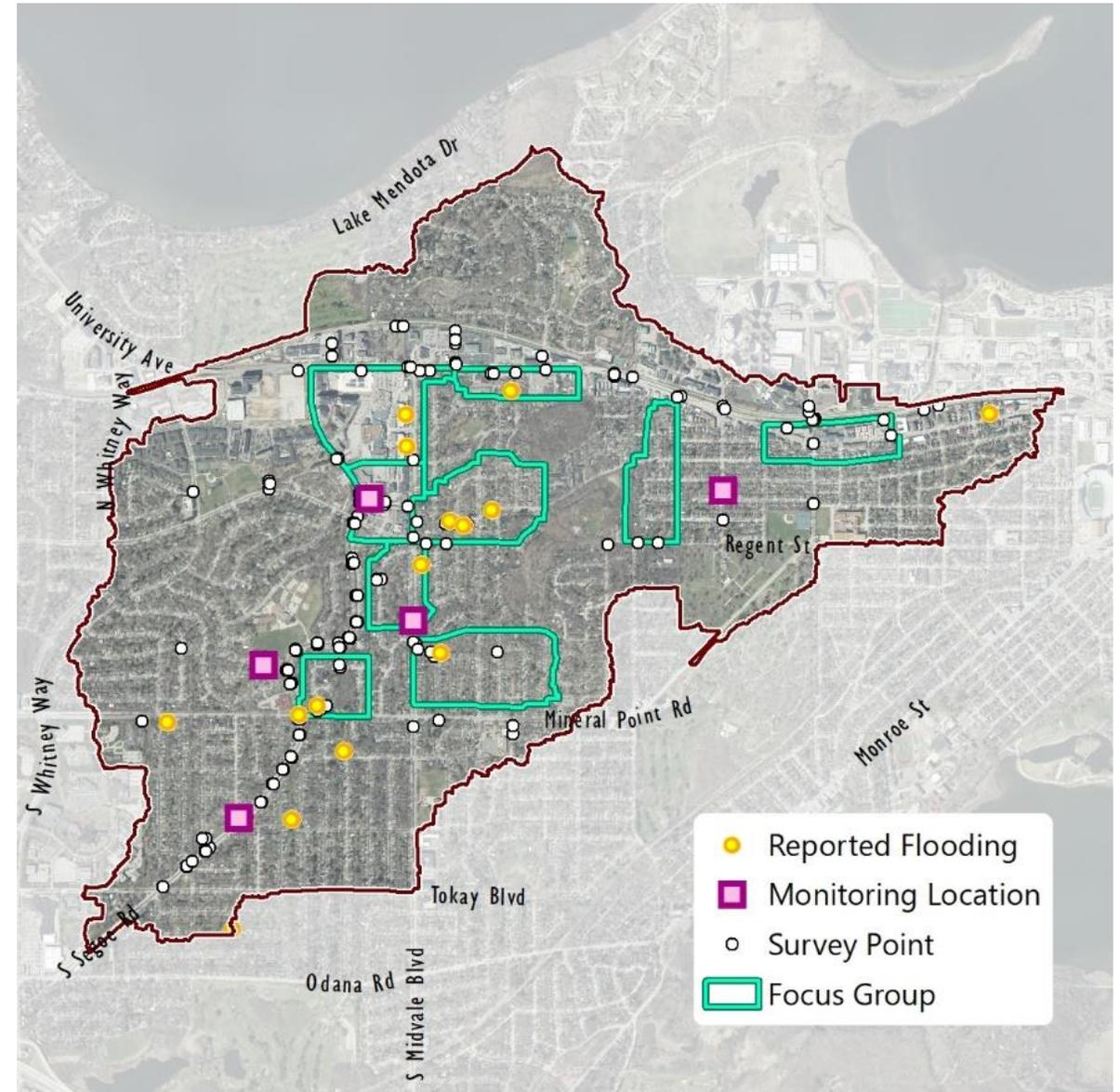


# Watershed Characteristics

Item	Quantity
Watershed Area (acres)	1,913
Number of Subcatchments (#)	1
Public Stormwater Inlets and Access Structures in Watershed (#)	2,407
Total storm sewer pipes in Watershed	39.7 miles
Storm sewer pipes in Model	24.1 miles (911 elements)
Open channels in Model	5,435 feet
Detention Ponds in Model	2

# Progress To Date

- Data collection
  - Ground/storm sewer survey
  - Monitoring – rain depth & intensity, flow depth in channels, and flow rate in selected storm sewer
  - Flood reports
  - Focus groups – flooding experiences



# Progress To Date

- Public Information
- Public Input Meeting #1 – September 17, 2020
- Project website creation and updates – [www.cityofmadison.com/WillowCreekWatershed](http://www.cityofmadison.com/WillowCreekWatershed)



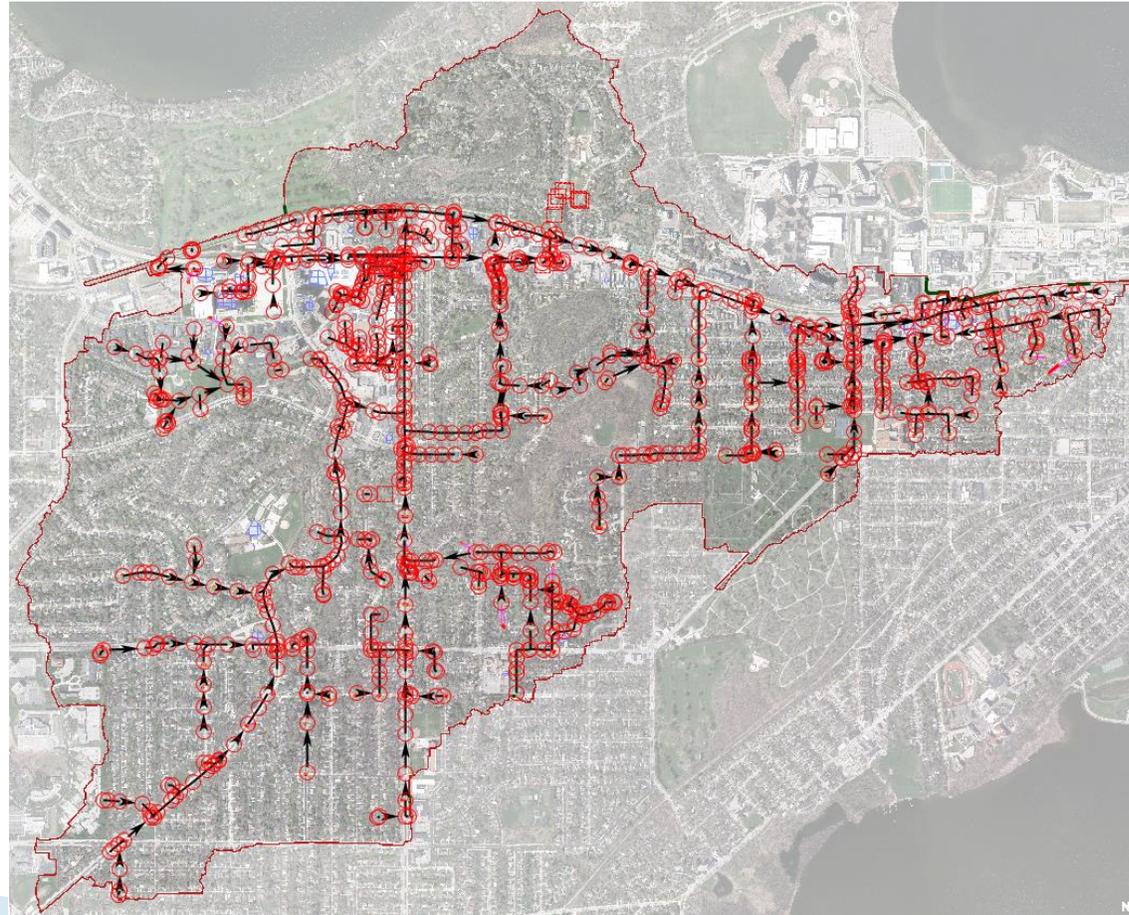
# Progress To Date

- Media – television, radio, Facebook, Twitter, Podcast
  - Coverage about watershed studies as a whole on Channels 3, 27, 15, State Journal, Cap Times
  - Flooding awareness, education posts, photos and videos from focus groups on social media
  - Two podcast episodes on Everyday Engineering: Historic Flooding, Watershed studies



# Progress To Date

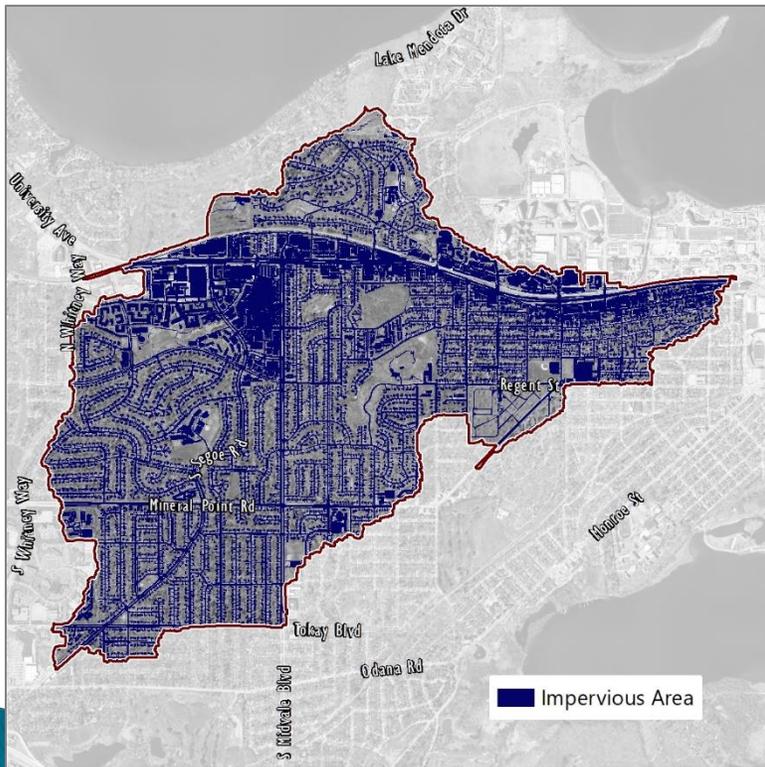
- ▶ Existing Conditions Model Construction



*An image of the Willow Creek model pipe network*

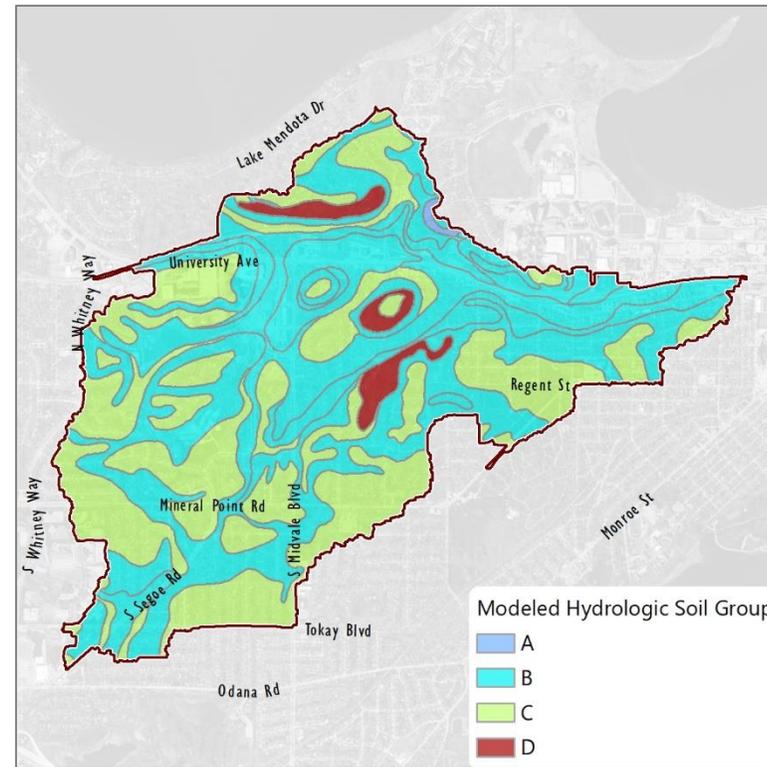
# Progress To Date

- ▶ Existing Conditions Model Calibration
  - Detailed Assessment of Land Use and Soils in the Watershed



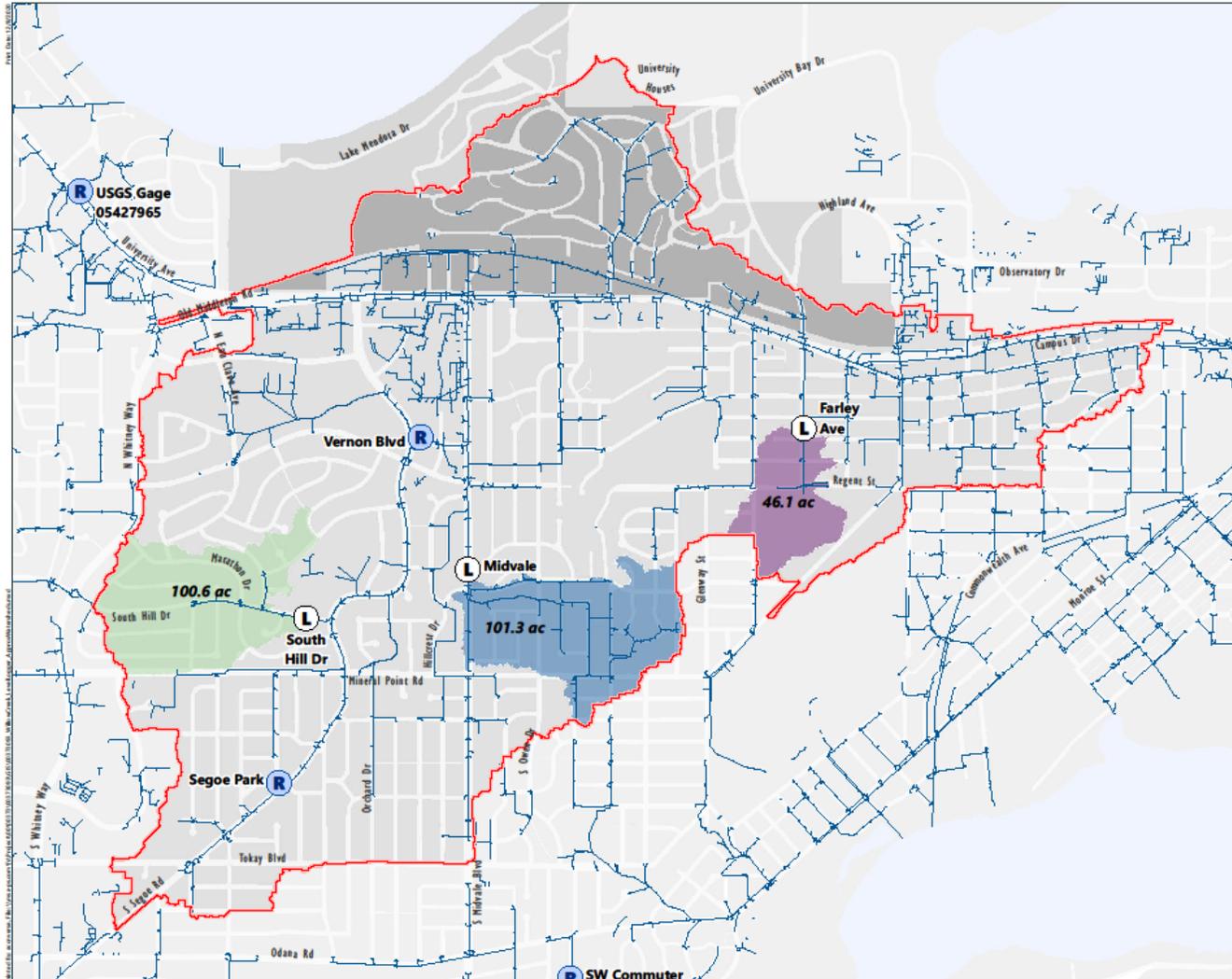
Total Watershed Area  
1,913 acres

Total Impervious  
817 acres (43%)



Hydrologic Soil Group  
↓  
Texture  
A ~ Sandy (4.0-1.0 in/hr)  
B ~ Silty (2.0-0.5 in/hr)  
C ~ Clayey (1.0-0.2 in/hr)  
D ~ Clayey (0.5-0.1 in/hr)  
↑  
Infiltration Rate

# Progress To Date



## Level Loggers

Willow Creek Watershed Study

City of Madison  
Dane County, WI

- Willow Creek Watershed
- Watersheds to Level Loggers
- Farley Ave Level
- South Hill Dr Level
- Midvale Level
- Stormwater Pipe
- Rain Gauge
- Level

Data Sources:  
Aerial: City of Madison (2018)  
Stormwater System: City of Madison



## Model Calibration

Calibration is a process of comparing the model results to monitored results and making changes so the model matches more closely

## Model Calibration Equipment

- Two (2) Rain Gauges
- Three (3) Level Loggers

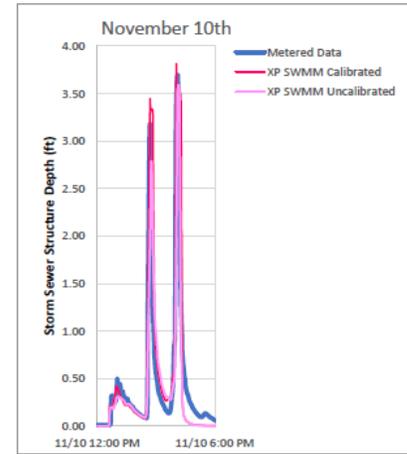
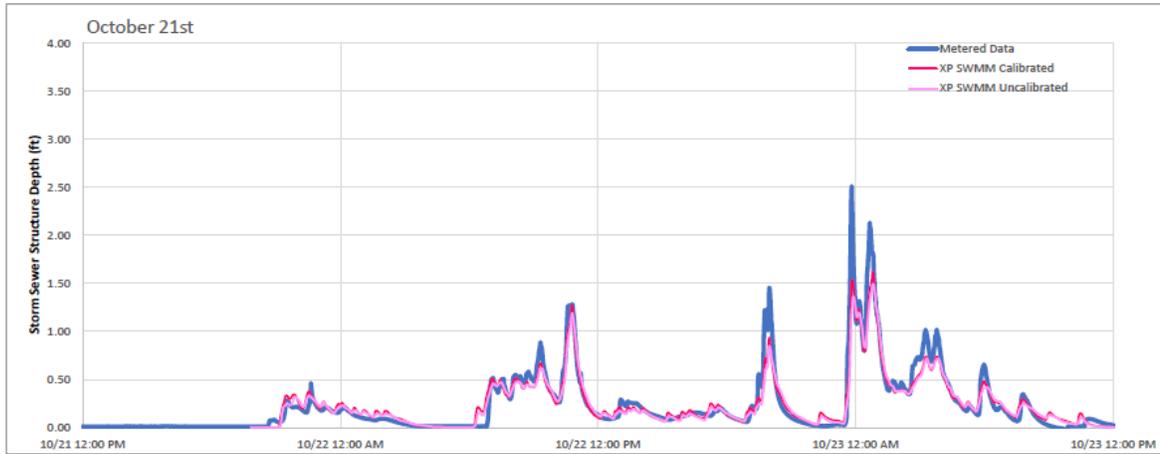
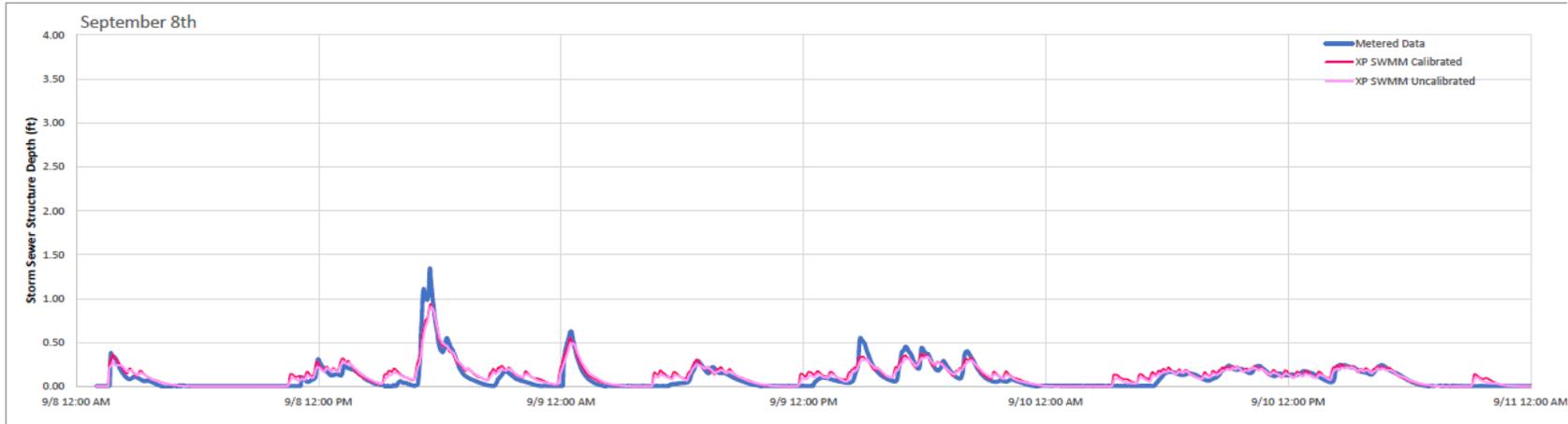
CITY OF MADISON



# Model Calibration

## Model Calibration Results South Hill Dr Level Logger

Metershed Area = 100.6 acres  
Downstream Pipe = 30" Circular @ 1.0%



# Model Calibration

August 20th 2018  
Inundation  
With Surveyed High  
Water Marks

Willow Creek Watershed Study

City of Madison  
Dane County, WI

-  Watershed Study Area
-  Public Storm System
-  Private Storm System
-  Shorewood Hills Storm System
-  Open Channel Flow

August 20th, 2018 Storm Event

Maximum Water Depth (ft)

-  0 - 0.25
-  0.25 - 0.5
-  0.5 - 1
-  1 - 3
-  3 - 6
-  > 6

-  Surveyed Highwater Marks

**Surveyed High Water Marks**

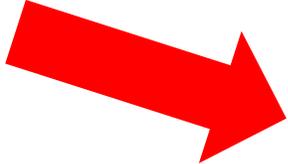
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Data Sources:  
Aerial: City of Madison (2018)  
Watershed Boundaries: MSA  
Stormwater System: City of Madison

# Next Steps



Fall 2020 -  
Winter 2021:  
Create and  
Calibrate Model

Spring –  
Summer  
2021:  
2<sup>nd</sup> Public  
Meeting

Late  
Summer  
2021:  
3<sup>rd</sup> Public  
Meeting



Early Spring 2021:  
Identify Flood  
Impacts

Summer  
2021:  
Evaluate  
Solutions

Late Fall 2021:  
Complete  
Watershed Study



# Tonight's Meeting

- ▶ Show our progress to date
- ▶ Review maps in Focus Groups (Zoom Breakout Rooms) following presentation Q&A

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# Draft Flood Inundation Mapping

- ▶ The following slide shows the map from a model simulation of a rain event that has a 20% chance of happening each year
- ▶ Statistical rainfall storms – expressed as a depth of rainfall over a specified duration of time.
- ▶ The 20% chance storm can be:
  - 1.3 inches in 30 minutes
  - 1.7 inches in 1 hour
  - 3.1 inches in 12 hours
  - 3.5 inches in 24 hours
- ▶ This study applied 24-hr duration events for statistical events





# Willow Creek Watershed

## Existing Conditions

### August 2018 Storm Event

### Maximum Water Depth

August 20th, 2018  
Inundation

FIGURE XX  
Willow Creek Watershed Study  
Existing Conditions Report

City of Madison  
Dane County, WI

-  Watershed Study Area
-  Greenway
-  Public Storm System
-  Private Storm System
-  Shorewood Hills Storm System
-  Open Channel Flow

**August 20th, 2018 Storm Event**

Maximum Water Depth (ft)

-  0 - 0.25
-  0.25 - 0.5
-  0.5 - 1
-  1 - 3
-  3 - 6
-  > 6

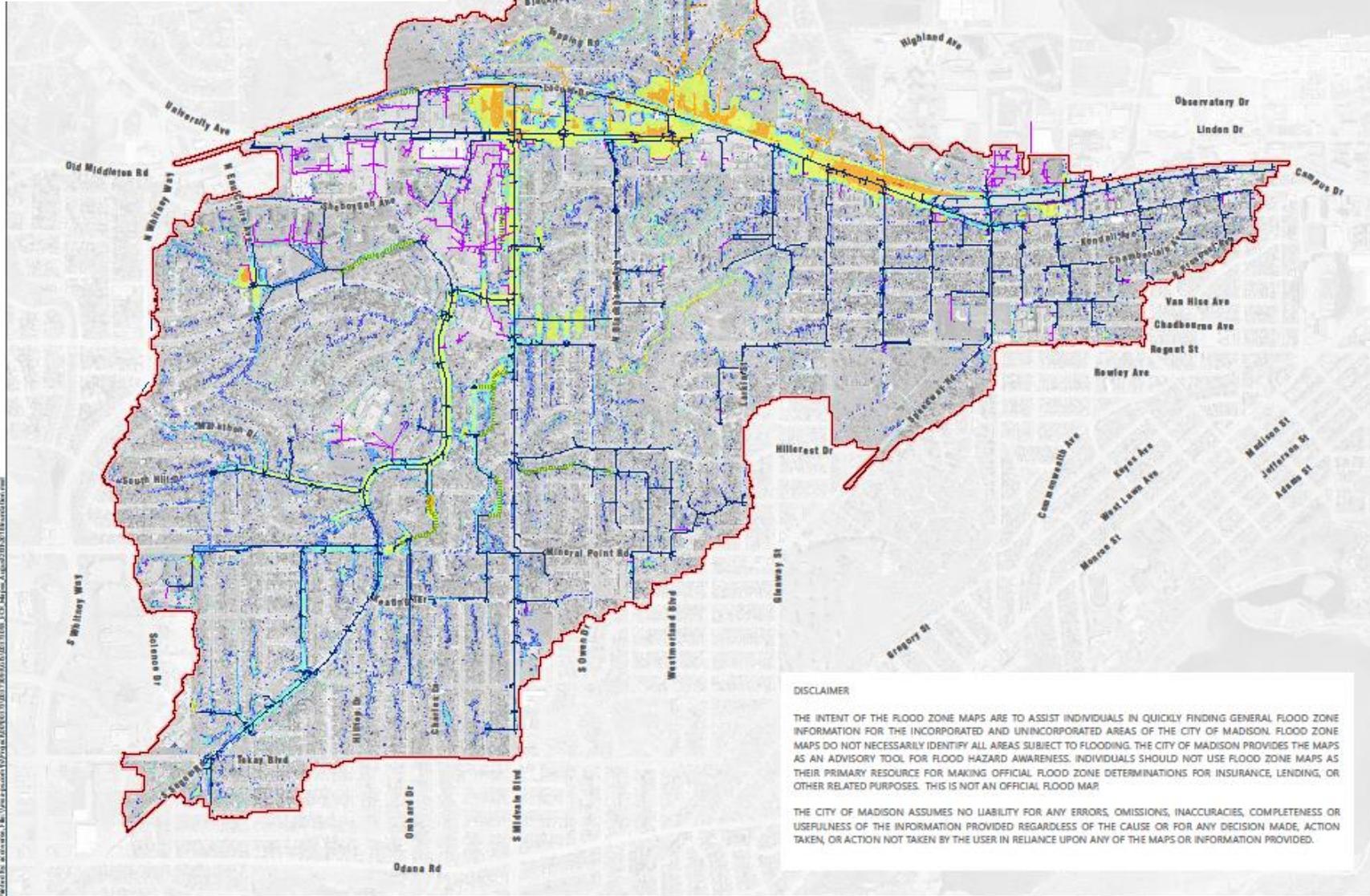
DRAFT  
2/19/2021

Data Sources:  
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Watershed Boundaries: MSA  
Stormwater System: City of Madison

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# Willow Creek Watershed Existing Conditions August 2018 Storm Event

## Thiessen Polygons

Willow Creek Watershed Study

City of Madison  
Dane County, WI

3.12 in

10.46 in

5.94 in

8.82 in

5.71 in

-  Thiessen Polygon
-  Watershed Study Area
-  Greenway
-  Public Storm System
-  Private Storm System
-  Shorewood Hills Storm System
-  Open Channel Flow
-  Rain Gauge

Data Sources:  
Aerial: City of Madison (2018)  
Watershed Boundaries: MSA  
Stormwater System: City of Madison



# Next Steps

## ➤ Identify Problem Areas

### **City of Madison Flood Mitigation Goals**

1. No home or business will be flooded during the 100-year design storm.
2. Eliminate flooding from the storm sewer system for up to the 10-year design storm; all water shall be contained within the pipes and structures (exception: low points).
3. Allow no more than 0.5 feet of water above storm sewer inlet rim at inlet-restricted low points for up to the 10-year design storm.
4. Centerline of street to remain passable during 25-year design storm with no more than 0.2 feet of water at the centerline.
5. Enclosed depressions to be served to the 100-year design storm (which can include safe overland flow within street, easements, greenways or other public lands).
6. Greenway crossings at streets to be served to the 100-year design storm.
7. Provide flooding solutions that do not negatively impact downstream properties.

# Next Steps

- Identify Problem Areas
- Evaluate Alternative Solutions
  - Green Infrastructure
  - Grey Infrastructure
  - Combination
- PIM #3
- Final Report
- Begin Implementing Solutions



# Watershed Study Limitations

- ▶ Utilizing computer models for analysis (computer models have inherent limitations, require assumptions, and are for one specific set of circumstances)
- ▶ Retrofitting infrastructure takes a lot of time and money
- ▶ Not all problems can be solved
- ▶ Repairs are not always easy, popular, or inexpensive
- ▶ Best engineering solution may not be the one chosen
- ▶ Property owners will need to create solutions too
- ▶ Solutions will need broad community cooperation
- ▶ Groundwater problems not easily addressed by infrastructure

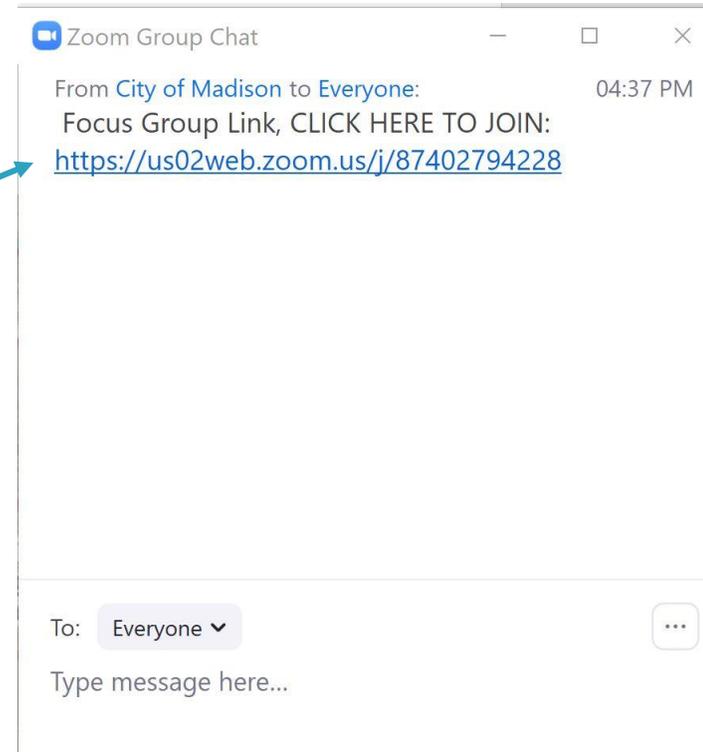
# Contact Information & Resources

- Project Manager: Lauren Striegl, [lstriegl@cityofmadison.com](mailto:lstriegl@cityofmadison.com)
- Public Information Officer: Hannah Mohelnitzky, [hmoelnitzky@cityofmadison.com](mailto:hmoelnitzky@cityofmadison.com)
- Project Webpage: [www.cityofmadison.com/WillowCreekWatershed](http://www.cityofmadison.com/WillowCreekWatershed)
  - Sign-up for project email updates on the website
  - Report flooding, past or current on the Report Flooding form
- New Flooding Website: [www.cityofmadison.com/flooding](http://www.cityofmadison.com/flooding)
- Everyday Engineering Podcast
- Facebook – City of Madison Engineering
- Twitter – @MadisonEngr



# Focus Groups – Zoom Breakout Rooms

- ▶ Join the Zoom Breakout Room Session
  - Open the Zoom Chat box (if not already open)
  - Click on Link provided in the Zoom Group Chat box
  - A message will pop-up that says “Do you want to leave this meeting?”
  - Click “Yes”
  - Join Meeting
  - City/Consultant staff will meet you in the new virtual meeting room



# Focus Groups/ Zoom Breakout Sessions

1. Blackhawk Ave
2. Merlham Channel/Robin Greenway
3. Near Campus
4. University–Shorewood
5. Shepard/Franklin
6. Sunset Ct
7. University–Midvale/South Midvale

