| 6:30 - 6:45 | Welcome |
|-------------|--|
| 6:45 - 7:15 | Presentation |
| 7:15 - 7:30 | Presentation Q & A |
| 7:30 - 8:30 | Small Group/Focus Group Discussions |





Spring Harbor Watershed Study Public Information Meeting No. 2

by City of Madison Engineering Division February 24, 2020

DISCLAIMER

THE INTENT OF THE INUNDATION MAPS ARE TO ASSIST INDIVIDUALS IN QUICKLY FINDING GENERAL FLOOD RISK INFORMATION FOR THE INCORPORATED AND UNINCORPORATED AREAS OF THE CITY OF MADISON. INUNDATION MAPS DO NOT NECESSARILY IDENTIFY ALL AREAS SUBJECT TO FLOODING. THE CITY OF MADISON PROVIDES THE MAPS AS AN ADVISORY TOOL FOR FLOOD HAZARD AWARENESS. INDIVIDUALS SHOULD NOT USE INUNDATION MAPS AS THEIR PRIMARY RESOURCE FOR MAKING OFFICIAL FLOOD RISK DETERMINATIONS FOR INSURANCE, LENDING, OR OTHER RELATED PURPOSES. THIS IS NOT AN OFFICIAL FLOOD MAP.

THE CITY OF MADISON ASSUMES NO LIABILITY FOR ANY ERRORS, OMISSIONS, INACCURACIES, COMPLETENESS OR USEFULNESS OF THE INFORMATION PROVIDED REGARDLESS OF THE CAUSE OR FOR ANY DECISION MADE, ACTION TAKEN, OR ACTION NOT TAKEN BY THE USER IN RELIANCE UPON ANY OF THE MAPS OR INFORMATION PROVIDED.



Evening Overview

- Welcome (Hannah Mohelnitzky, City of Madison)
- Presentation (Amber Lefers, AE2S)
- Q&A (facilitated by Hannah Mohelnitzky, City of Madison)
- Wrap Up (Hannah Mohelnitzky, City of Madison)
- Breakout to Small Groups (City of Madison and AE2S Team staff)





- Definitions of commonly used terms
- Outreach to Date



- Definitions of commonly used terms
- Outreach to Date
- Existing Conditions Model Construction



- Definitions of commonly used terms
- Outreach to Date
- Existing Conditions Model Construction
 - Data Collection



- Definitions of commonly used terms
- Outreach to Date
- Existing Conditions Model Construction
 - Data Collection
 - Watershed and Model Statistics



- Definitions of commonly used terms
- Outreach to Date
- Existing Conditions Model Construction
 - Data Collection
 - Watershed and Model Statistics
 - Model Inputs



- Definitions of commonly used terms
- Outreach to Date
- Existing Conditions Model Construction
- Flood Inundation Mapping



- Definitions of commonly used terms
- Outreach to Date
- Existing Conditions Model Construction
- ▶ Flood Inundation Mapping
- Next steps in Watershed Study



- Definitions of commonly used terms
- Outreach to Date
- Existing Conditions Model Construction
- Flood Inundation Mapping
- Next steps in Watershed Study
- Challenges to Future Implementation



- Definitions of commonly used terms
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- Existing Conditions Model Construction
- Flood Inundation Mapping
- Next steps in Watershed Study
- Challenges to Future Implementation
- Break Out to Small / Focus Groups



Small Groups / Focus Groups

Present Draft Maps



Small Groups / Focus Groups

- Present Draft Maps
- Receive feedback from participants



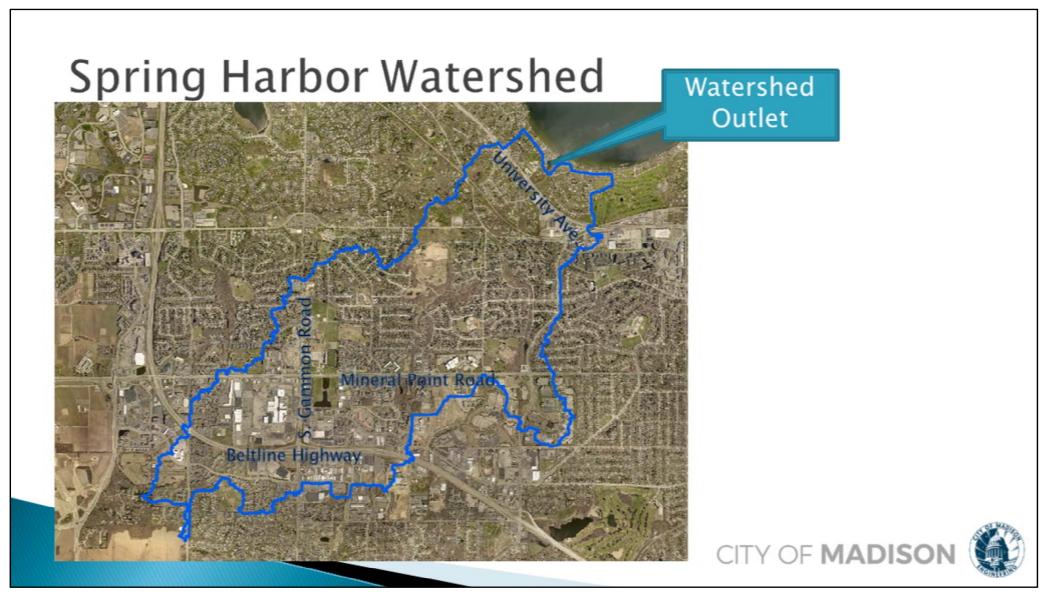
Small Groups / Focus Groups

- Present Draft Maps
- Receive feedback from participants
- Will not present proposed solutions



• Watershed: An area of land that drains to a single location.





- Watershed
- Stormwater: water resulting from precipitation (rain, snow, sleet, etc.)



- Watershed
- Stormwater
- Stormwater runoff: the portion of the rainwater or snowmelt that does not soak into the ground





Stormwater runoff causing flooding at Commerce Dr near Plaza Dr, Aug 20, 2018



- Watershed
- Stormwater
- Stormwater runoff
- Stormwater inlets: grates in the ground that take in stormwater runoff; connected to the stormwater conveyance system





Standard City of Madison Htype inlets near the Madison Municipal Building



- Watershed
- Stormwater
- Stormwater runoff
- Stormwater inlets
- Detention ponds: ponds designed to hold stormwater runoff to improve water quality and/or help prevent flooding



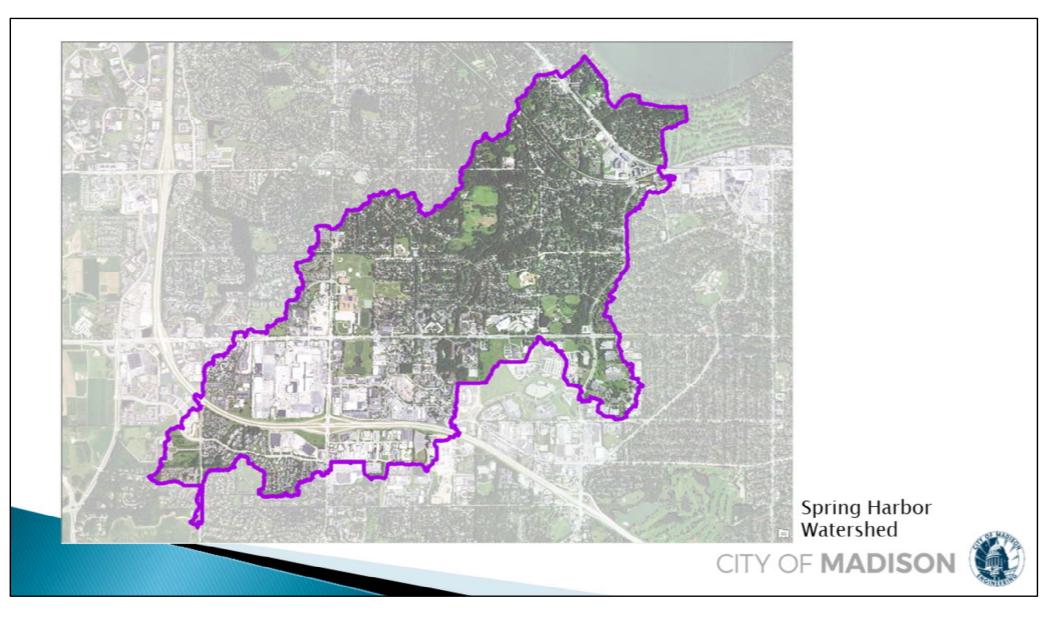


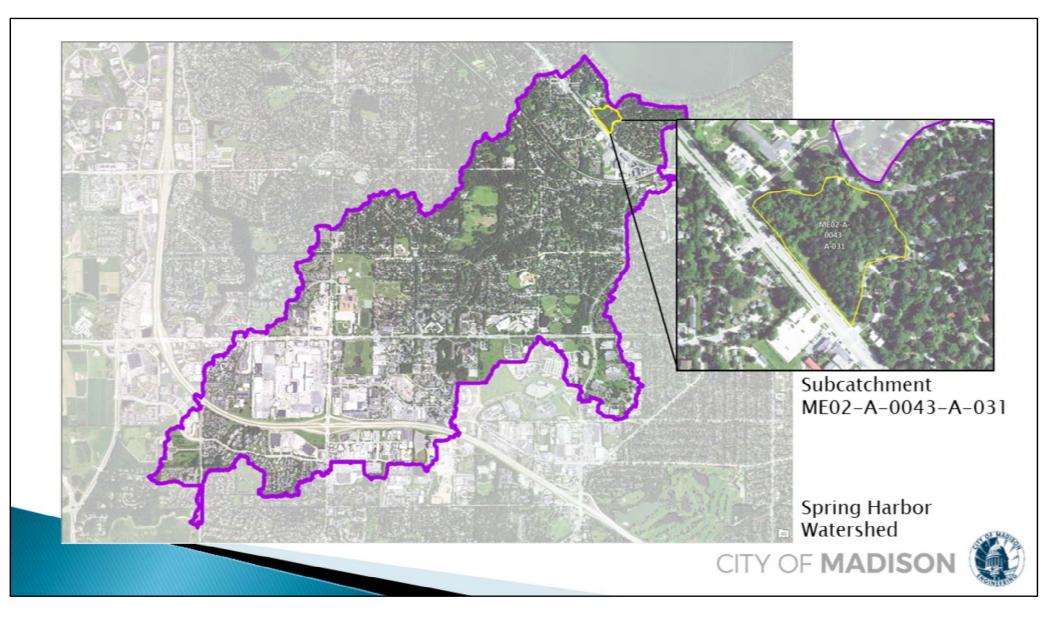
West Towne Pond(s), Gammon Rd at Mineral Point Rd



- Watershed
- Stormwater
- Stormwater runoff
- Stormwater inlets
- Detention ponds
- Subcatchments: smaller sub-areas of a watershed







- Watershed
- Stormwater
- Stormwater runoff
- Stormwater inlets
- Detention ponds
- Subcatchments
- Level loggers: monitoring equipment used to measure the level in a pond, channel, storm sewer, etc.





Courtesy www.trimblewater.com

Telog Pressure Recorder level logger (above) and mounted FloWav areavelocity flow/level sensor (right)



Courtesy www.flowav.com



- Watershed
- Stormwater
- Stormwater runoff
- Stormwater inlets
- Detention ponds
- Subcatchments
- Level loggers
- Rain gauges: monitoring equipment used to measure the depth of rain that fall in a rain event



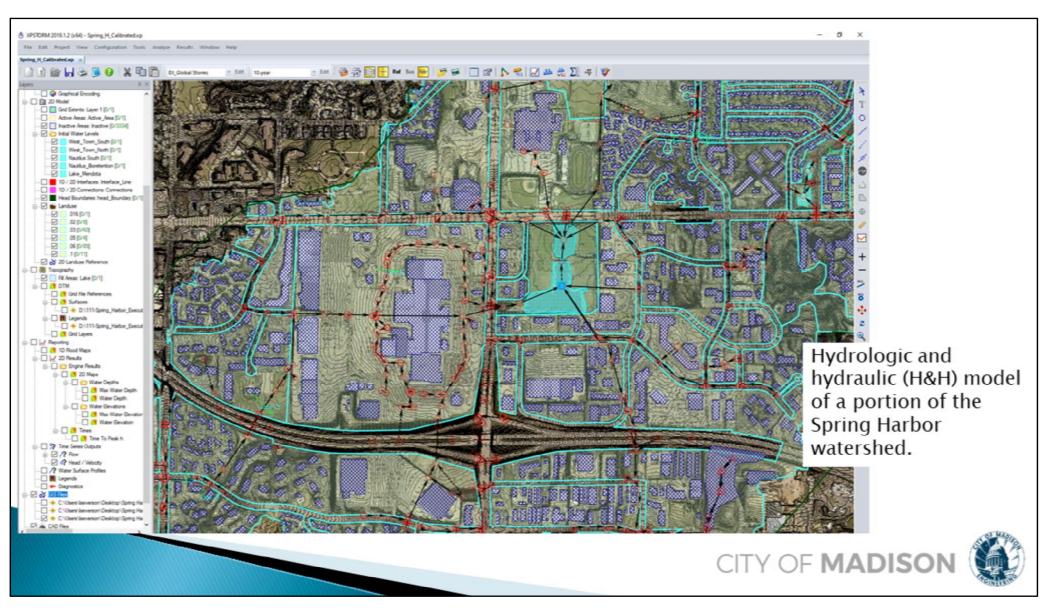


USGS station with rain gauge. Photo courtesy of Bill Selbig (USGS).



- Watershed
- Stormwater
- Stormwater runoff
- Stormwater inlets
- Detention ponds
- Subcatchments
- Level loggers
- Rain gauges
- Model: computer software that is used to evaluate the stormwater conveyance system





Outreach To Date

- > Public Information
 - ➤ Public Input Meeting #1 April 25, 2019





Outreach To Date

- > Public Information
 - ➤ Public Input Meeting #1 April 25, 2019
 - Focus Groups 8 Focus Groups in August-October 2019





Outreach To Date

> Public Information

- ➤ Public Input Meeting #1 April 25, 2019
- Focus Groups 9 Focus Groups in August– October 2019
- Project website creation and updates –

www.cityofmadison.com/ SpringHarborWatershed

Spring Harbor Watershed Study



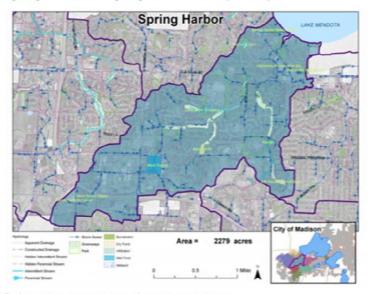
UPDATE: Upcoming Public Input Meeting at Muir Elementary

The second Public Input Meeting for the Spring Harbor Watershed Study will occur on Monday, February 24 from 6:30 p.m. to 8:30 p.m. in the Muir Elementary School Gymnasium/Cafeteria, 6602 Inner Drive.

We will present the completed, new, drainage model of existing flooding conditions. We invite watershed residents to ground-furth the model results. Additionally, it will be another opportunity to ask questions and hear about our next steps. There are **not** any proposed solutions at this time. The PowerPoint will be posted on this website in advance of the meeting.

Project Description

The City of Madison will complete a watershed study in the Spring Harbor watershed (as shown below). A local engineering consultant, Advanced Engineering and Environmental, will complete the study.



Project Details

O Project Type: Sewer/Stom

Q Location(s):

- 321 Nautilius Dr Madison, WI 53705
- Area: Central, West
- ## Aldermanic District(s): District 1, District 9, District 11, District 19
- # Estimated Schedule: 03/11/2019 to 12/31/2020
- O Project Status: Planning

Project Contact:

Jojo O'Brien

608-266-9721

jobrien@cityofmadison.com

I≡ Active Project List

Subscribe to Email List:

Subscribe to the Spring Harbor Watershed Study email

Email: " required

Subscribe

Outreach To Date

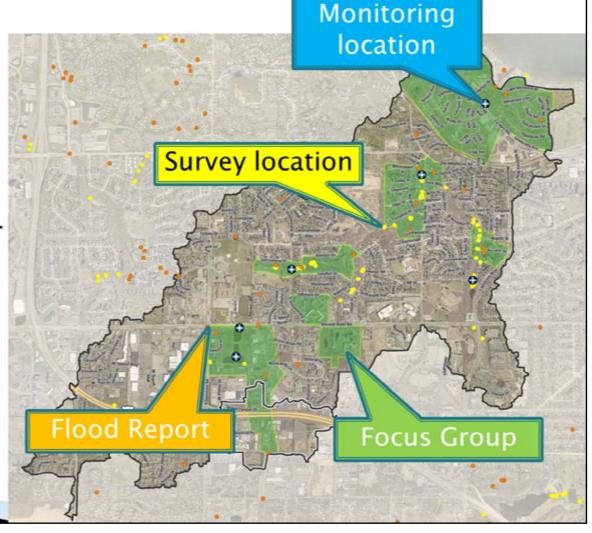
- Media television, radio, Facebook, Twitter, Podcast
 - Coverage about Watershed studies as a whole on Channels 3, 27, 15, State Journal, Cap Times
 - Flooding awareness, education posts, photos and videos from focus groups on social media
 - Two podcast episodes on Everyday Engineering: Historic Flooding,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





Data Collection

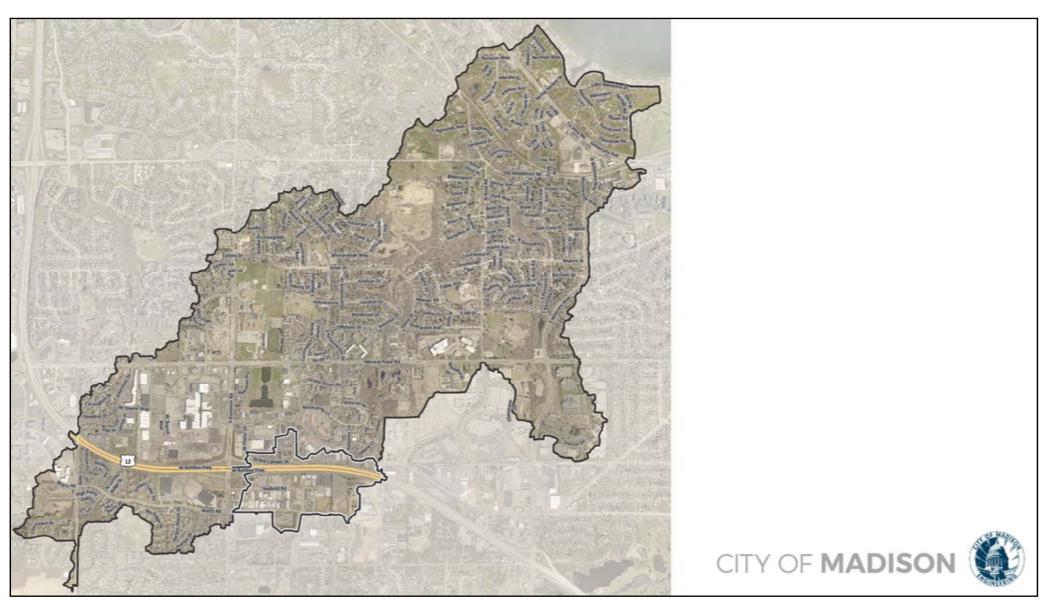
- Ground/storm sewer survey
- Monitoring rain depth, pond and storm sewer water levels, storm sewer flow
- Flood reports
- Focus groups flooding experiences



Data collection can take many forms. Part of our data collection involved collecting survey data, but a key part of our data collection for this project also involved talking to you and getting information from the people who have seen firsthand the impacts of flooding.

| Item | Quantity |
|------------------------|----------|
| Watershed Area (acres) | 2,400 |

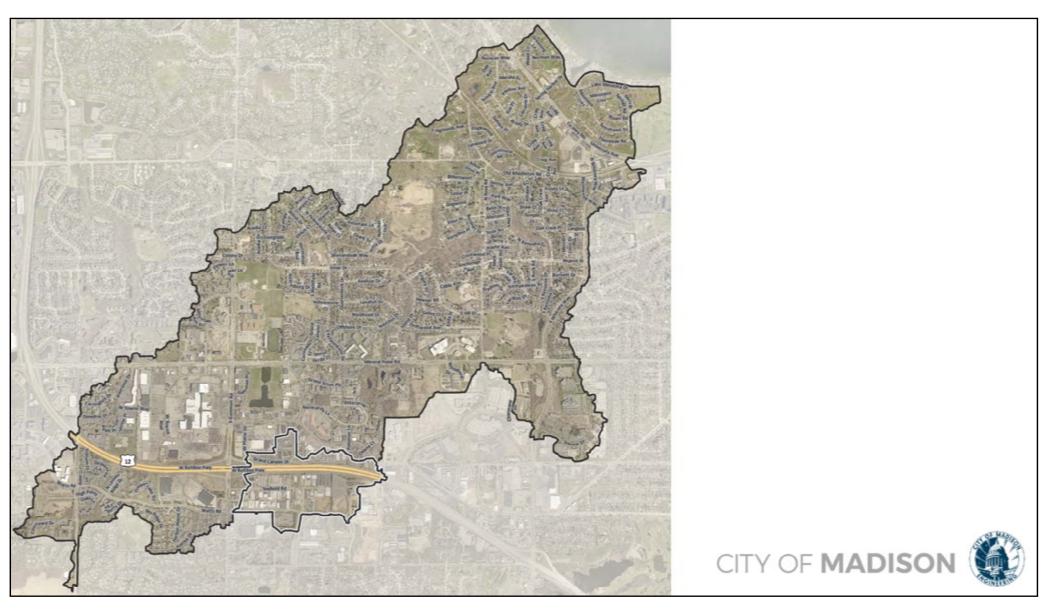




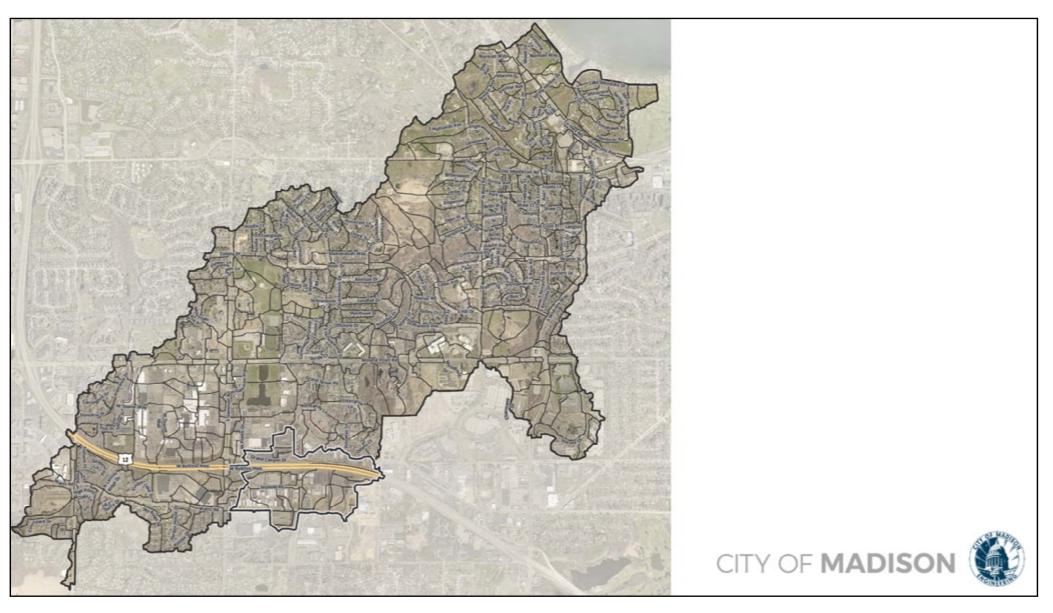
This is the overall Spring Harbor watershed outline shown in black. The white/black outline is the portion of the McKenna/Greentree watershed that flows south away from Spring Harbor, but the West Towne Pond blows both ways, so we needed to include a part of that.

| Item | Quantity |
|-----------------------------|----------|
| Watershed Area (acres) | 2,400 |
| Number of Subcatchments (#) | 471 |





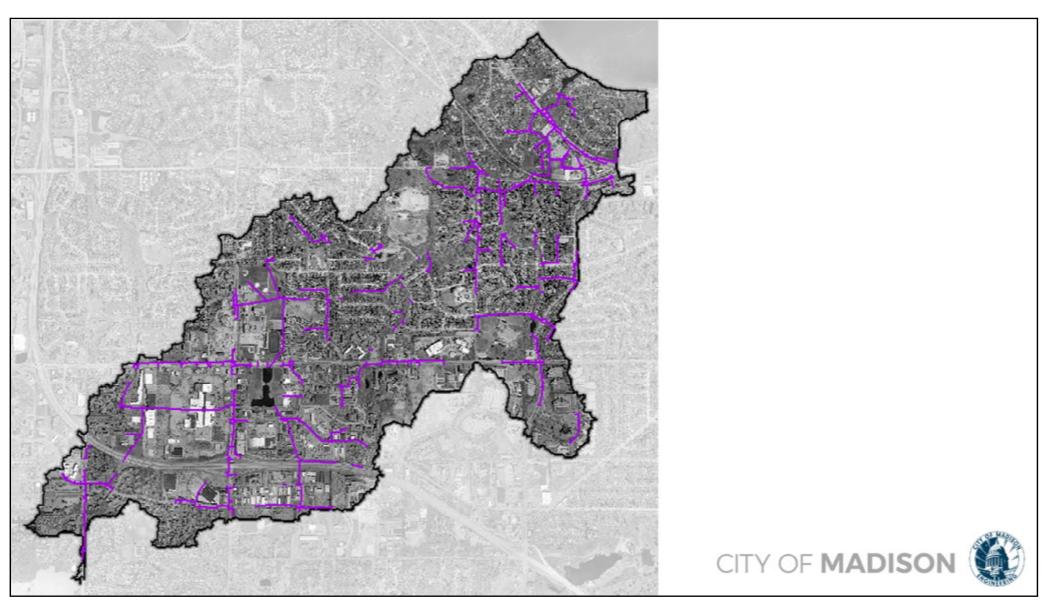
This is the same slide as previous to illustrate how the subcatchments split up the overall watershed.



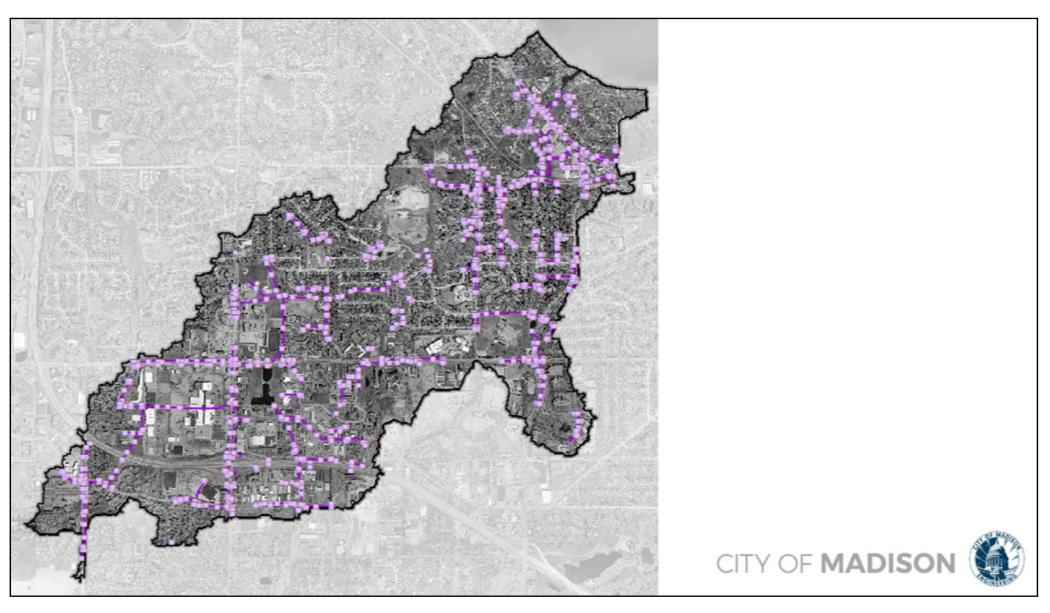
The thinner black outlines represent the outlines of each subcatchment in the model.

| Item | Quantity |
|---|-------------------|
| Watershed Area (acres) | 2,400 |
| Number of Subcatchments (#) | 471 |
| Public Stormwater Inlets and Access Structures in Watershed (#) | 1653 |
| Total storm sewer pipes in Watershed (#; length) | 1,648; 23.4 miles |

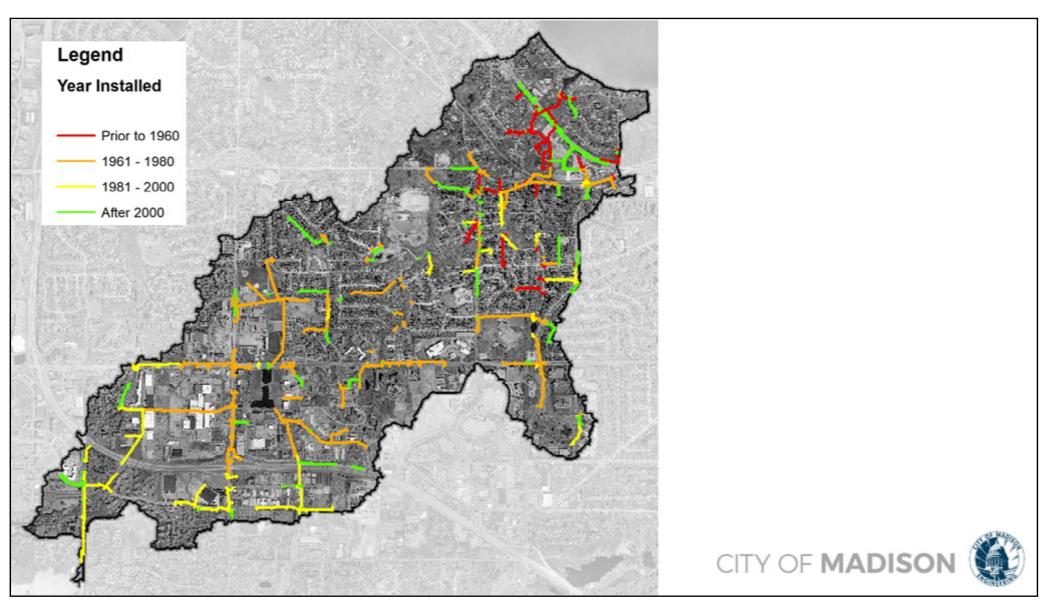




City Storm Sewer Pipes within Spring Harbor Watershed shown in purple



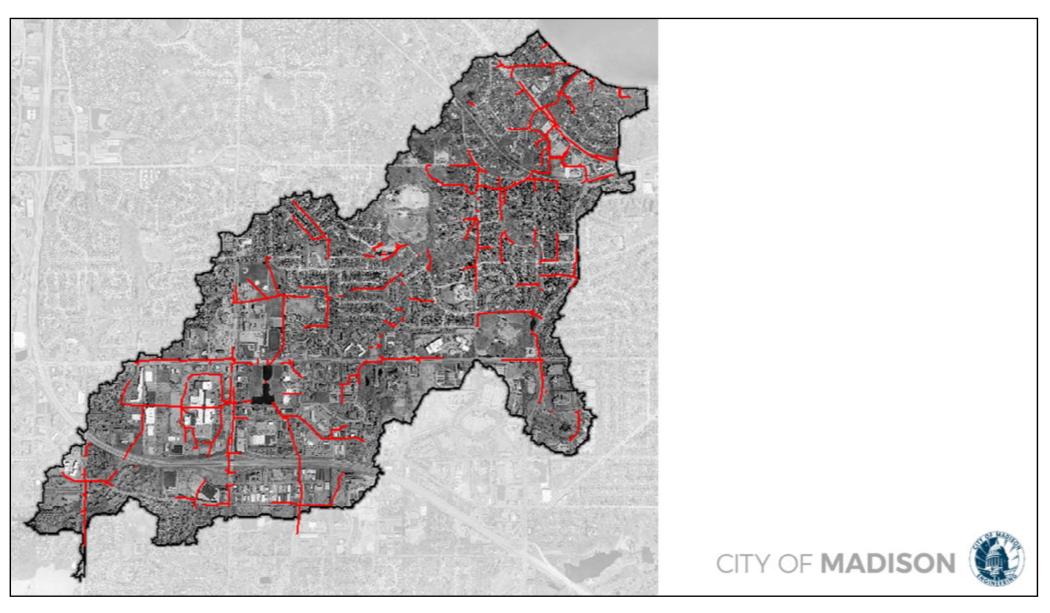
City Storm Sewer Structures within Spring Harbor Watershed shown in light purple



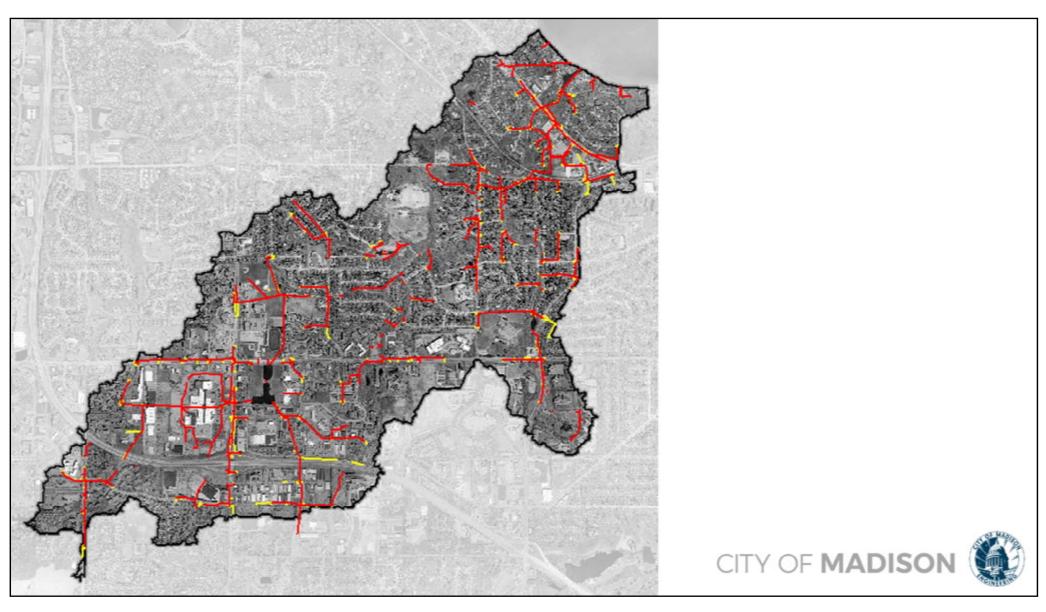
The age of the system is varied with a lot of the system over 40 years old now.

| Item | Quantity |
|---|-------------------|
| Watershed Area (acres) | 2,400 |
| Number of Subcatchments (#) | 471 |
| Public Stormwater Inlets and Access Structures in Watershed (#) | 1653 |
| Total storm sewer pipes in Watershed (#; length) | 1,648; 23.4 miles |
| Storm sewer pipes in Model (#; length) | 853; 21.9 miles |
| Greenways in Model (length) | 2.4 miles |

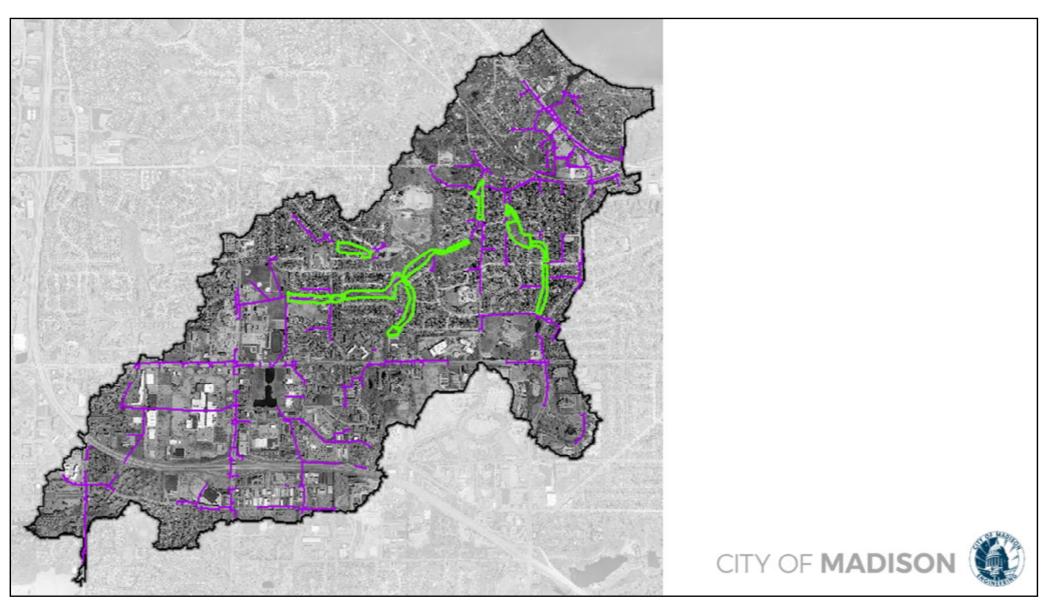




Red lines are the pipes that are in the stormwater model



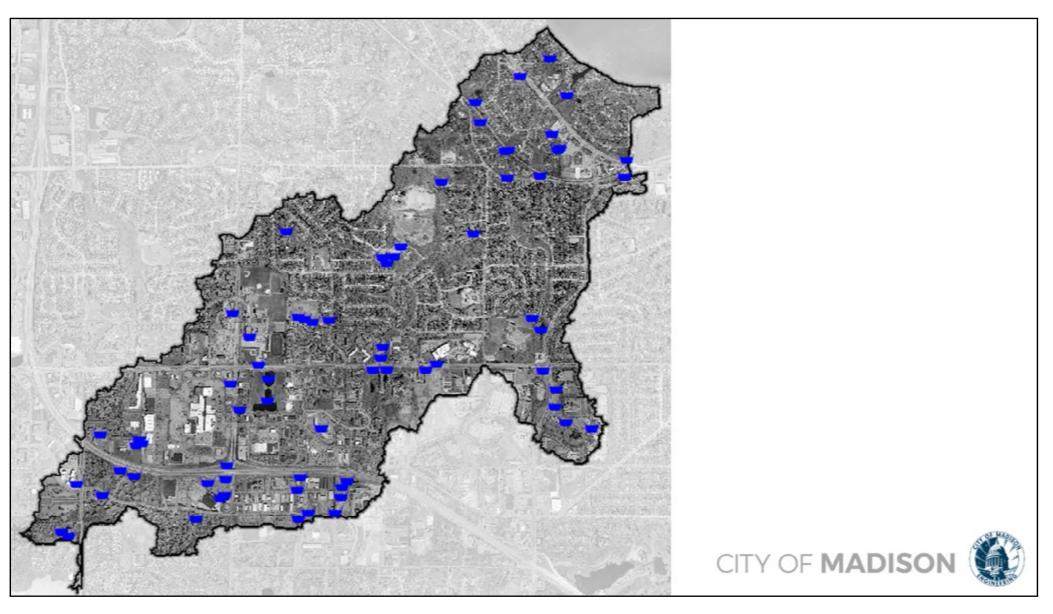
The yellow pipes are the parts of the City storm sewer system that are not in the model – mainly small lateral pipes from inlets. In summary, almost the entire storm sewer system within Spring Harbor is included in the model



Green outlines are City "greenways" – open ditches that move runoff through the watershed.

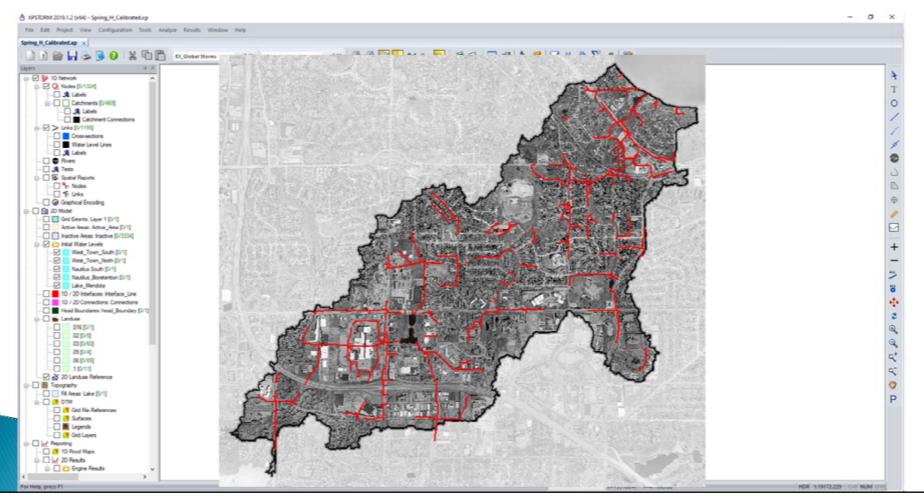
| Item | Quantity |
|---|-----------------------------|
| Watershed Area (acres) | 2,400 |
| Number of Subcatchments (#) | 471 |
| Public Stormwater Inlets and Access Structures in Watershed (#) | 1653 |
| Total storm sewer pipes in Watershed (#; length) | 1,648; 23.4 miles |
| Storm sewer pipes in Model (#; length) | 853 segments; 21.9 miles |
| Open channels in Model (#; length) | 179 segments; 5.3 miles |
| Detention Ponds/Storage Areas in Model (#) | 62 |





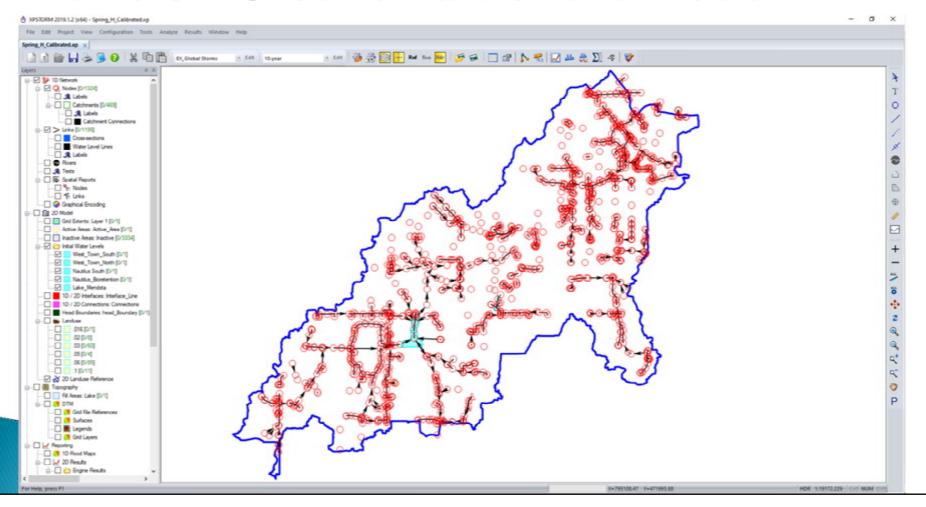
Each blue "bathtub" points are anywhere water can be temporarily or permanently stored. In the stormwater model, these areas are all modeled based on the terrain.

The Below Ground Part of the Model



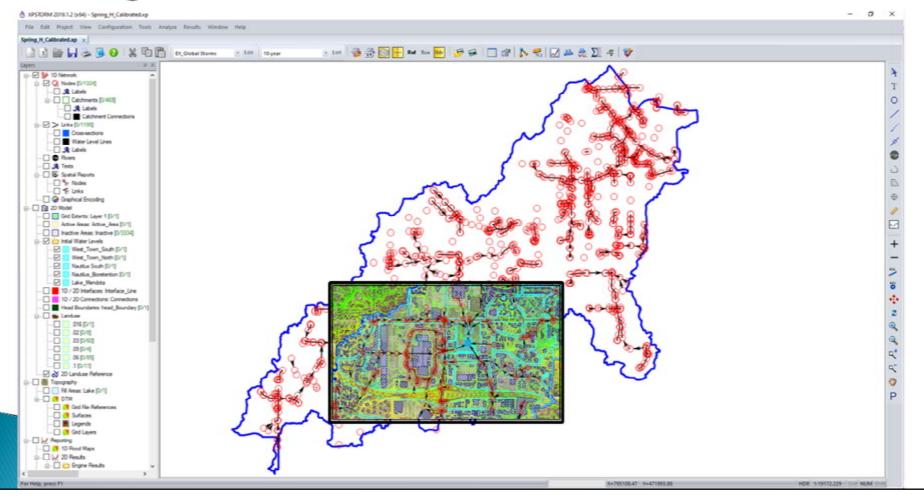
The red lines represent the portion of the City's storm sewer system that is in the model.

The Below Ground Part of the Model



The storm sewer system is represented in the model with a "ball and stick" diagram. The red balls represent junctions in the storm sewer system. The black sticks represent the storm sewer pipes.

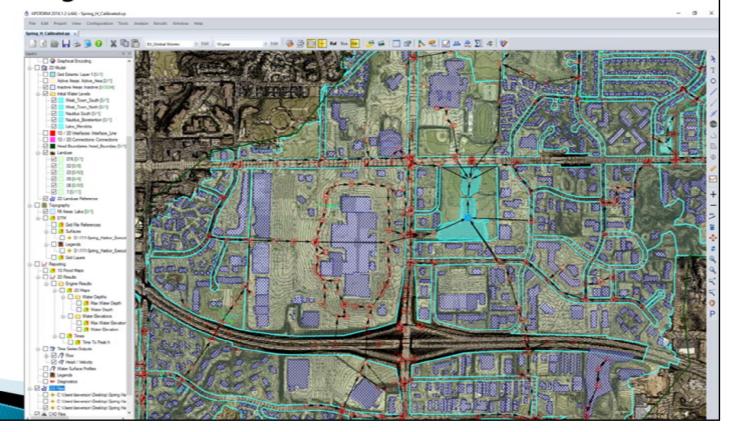
Linking the Below Ground Part to the Surface



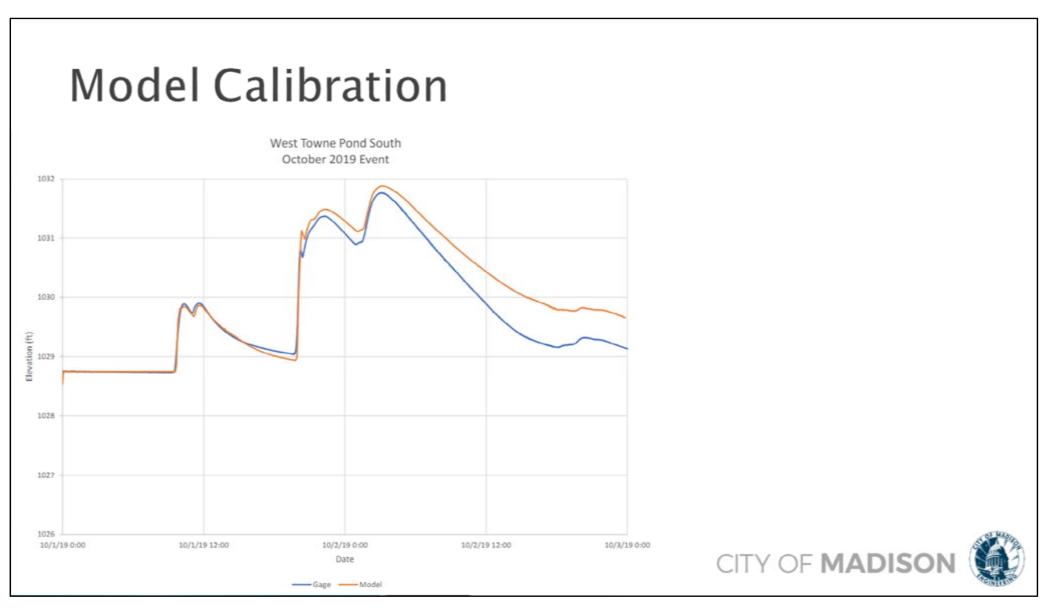
The next slide shows a portion of the model network in the West Towne Mall / Memorial High School area

Inputs to the Surface Part of the Model

What Makes Flooding



The surface drainage system is represented in the model with the surface terrain and land cover. Each red ball is then coded for how it connects to the surface to create overflow.



Calibration is comparing the model results to the monitored results and making changes so the model matches more closely. The important part about calibration is to develop a tool that is useful for making decisions about potential improvements in the future, not that it is exactly right for every storm in every location.

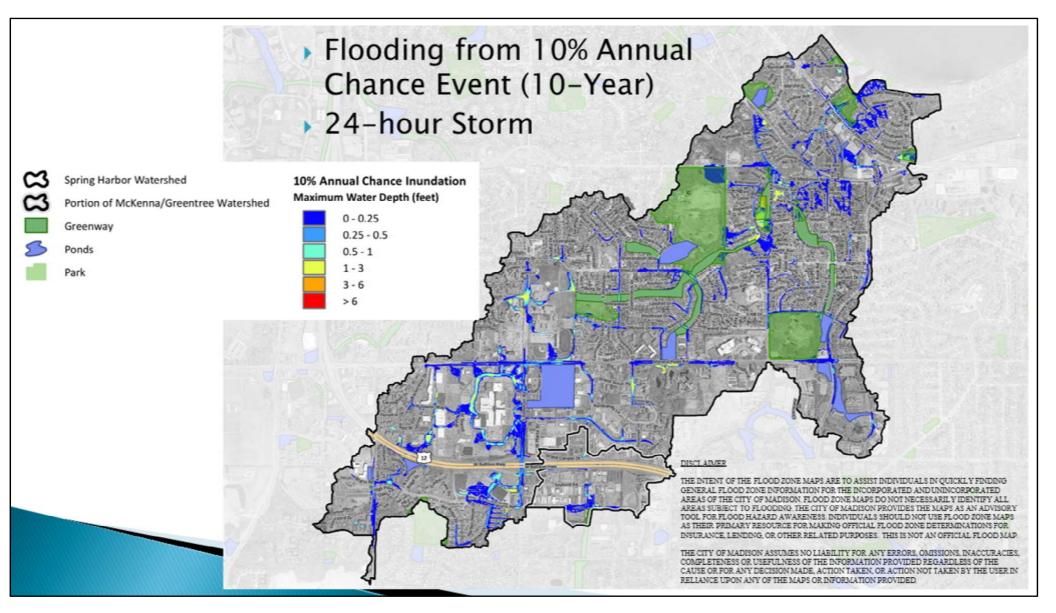
Draft Flood Inundation Mapping

The following slide shows the map from a model simulation of a rain event that has a 10% chance of happening each year



Purpose of presenting these maps tonight:

- Show our progress to date
- Review maps in Small Groups/Focus Groups following presentation Q&A



Solid Green: City Greenways Solid Medium Blue: City ponds

Utilizing computer models for analysis inherently has limitations since they require assumptions and are for one specific set of circumstances). In other words, it is impossible to create a model that is exactly right in every location for every possible rainstorm.

Draft Flood Inundation Mapping

- The following slide shows the map from a model simulation of a rain event that has a 10% chance of happening each year
- There will be maps in the back that you can view in more detail



Draft Flood Inundation Mapping

- The following slide shows the map from a model simulation of a rain event that has a 10% chance of happening each year
- There will be maps in the back that you can view in more detail
- Please let us know if it represents what occurs in your neighborhood/business



Next Steps in Watershed Study

- Evaluate Proposed Solutions
 - ▶ Green Infrastructure
 - ➤ Grey Infrastructure
 - ▶ Combination
- > PIM #3
- Final Report
- Begin Implementing Solutions



Where We Are in Study Process

Spring-Summer 2019:

Create and Calibrate Model



Spring – Summer 2020: 3rd Public Meeting







Meeting







Summer - Fall 2019:

Identify Flood Impacts Winter – Spring 2020:

Evaluate Solutions

Summer- Fall 2020: Complete Watershed Study



Retrofitting infrastructure takes a lot of time and money



- Retrofitting infrastructure takes a lot of time and money
- Not all problems can be solved



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- Repairs are not always easy, popular, or inexpensive



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- Best engineering solution may not be the one chosen



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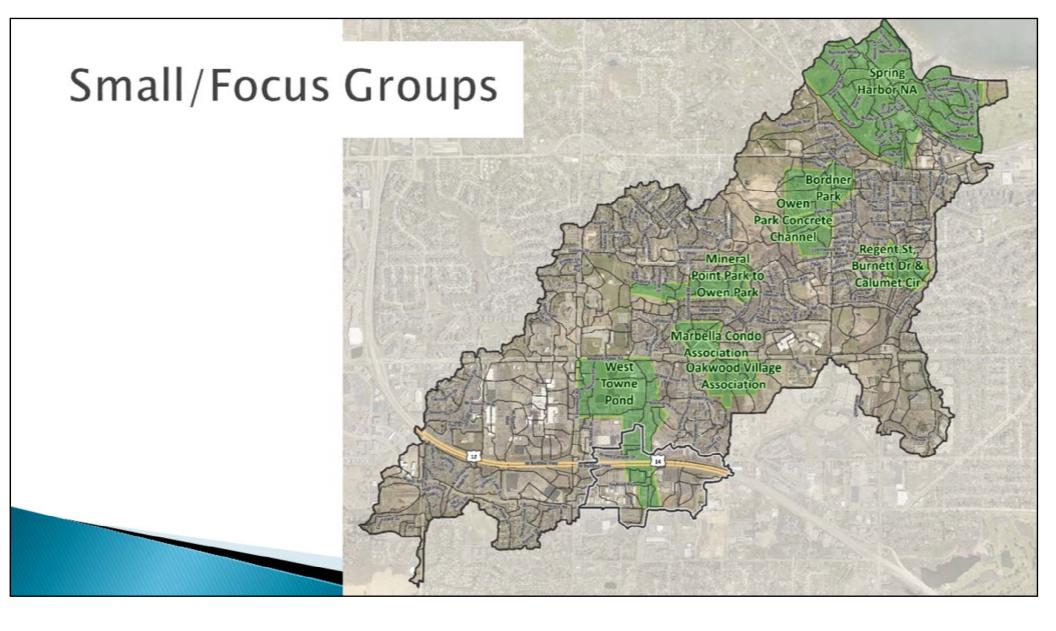
- Retrofitting infrastructure takes a lot of time and money
- Not all problems can be solved
- Repairs are not always easy, popular, or inexpensive
- Best engineering solution may not be the one chosen
- Property owners will need to create solutions too
- Solutions will need broad community cooperation
- Groundwater problems not easily addressed by infrastructure



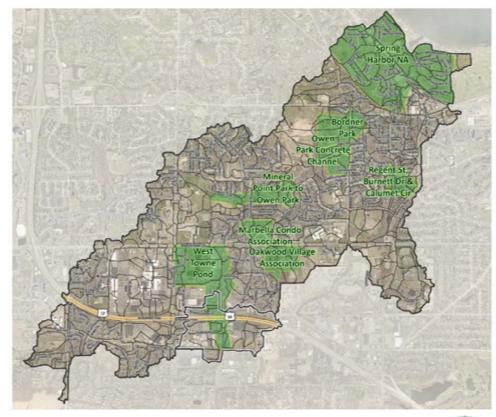
Question Cards

Please submit Question Cards to staff at this time



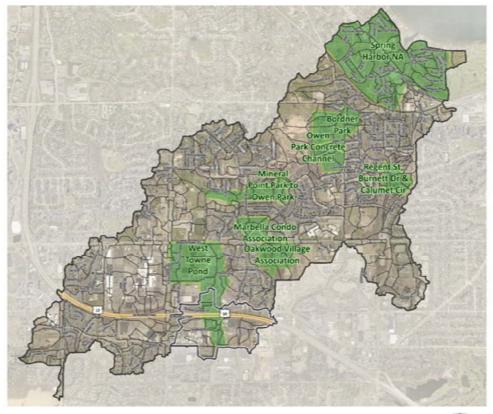


Locate your group's table



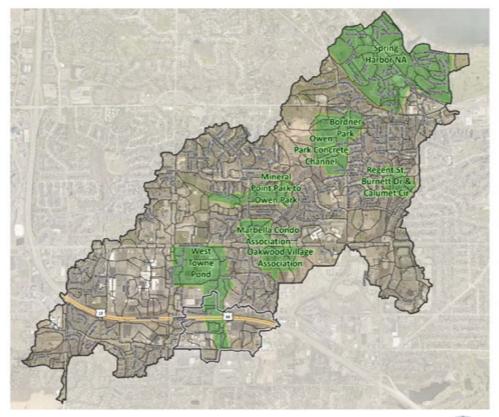


- Locate your group's table
- Bring your Feedback Cards



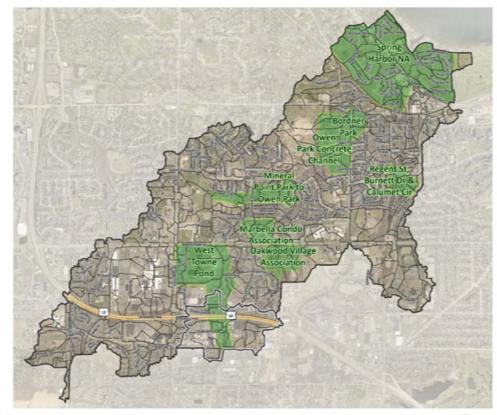


- Locate your group's table
- Bring your Feedback Cards
- Review maps



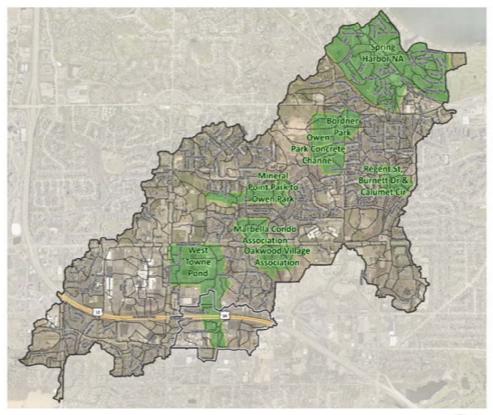


- Locate your group's table
- Bring your Feedback Cards
- Review maps
- Provide feedback on if they reflect what you experienced





- Locate your group's table
- Bring your Feedback Cards
- Review maps
- Provide feedback on if they reflect what you experienced
- If your property is not in a Focus Group area:
 - Join an area of interest to you, or
 - Review overall map





Odana Area Plan

- 2018 Comprehensive Plan: "redevelopment that includes substantial residential components should be preceded by adoption of a detailed City plan that addresses connectivity improvements, more parks and open space, and other amenities and infrastructure necessary to support residential development
- Facilitate redevelopment; prepare for BRT; integrate infrastructure improvements





Contact Information & Resources

- Project Manager: Jojo O'Brien, jobrien@cityofmadison.com, 608-266-9721
- Project Website: <u>www.cityofmadison.com/SpringHarborWatershed</u>
 - 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
- Everyday Engineering Podcast
- Facebook City of Madison Engineering
- Twitter @MadisonEngr





Small Groups/Focus Groups

- Locate your group's table
- Review maps
- Provide feedback on if they reflect what you experienced
- If your property is not in a Focus Group area:
 - Join an area of interest to you
 - Review overall map

