Pheasant Branch Greenway Proposed Improvements

Public Information Meeting #1
City of Madison Engineering Division
February 5, 2024

Thank you for attending. We will begin shortly…

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Meeting Technical Housekeeping

- This meeting will be **recorded** and posted to the project page.
- All attendees should be **muted** to keep background noise to a minimum.
- Use the **"chat"** button for technical issues with meeting to troubleshoot with staff to assist.
- Use the **"Q and A"** button to type questions about presentation. Questions will be answered live after the presentation.
- Inappropriate questions may be dismissed.
- Use the **"raise your hand"** button to verbally ask your question. You will be prompted to unmute when it is your turn.

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It is a public record subject to disclosure.

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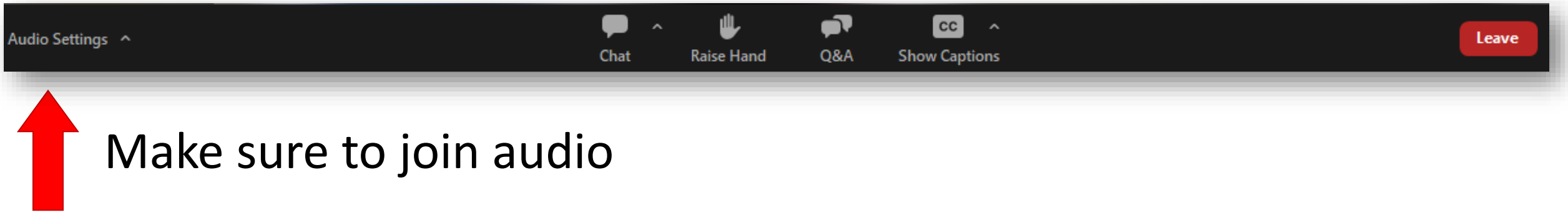

Make sure to join audio

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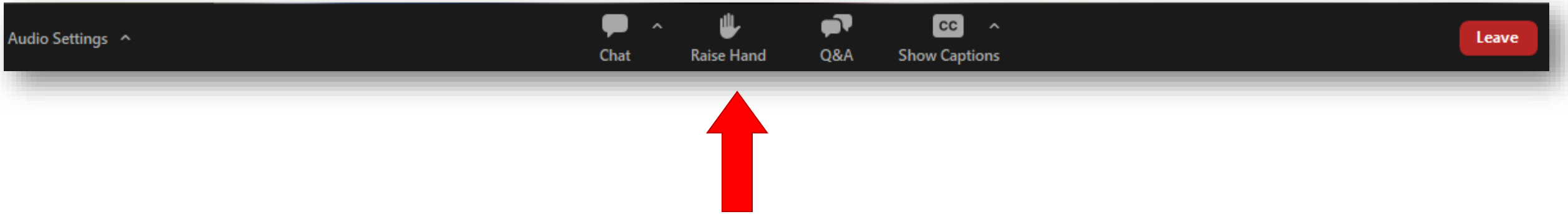

Raise your hand to be unmuted
To share comments or to ask questions.

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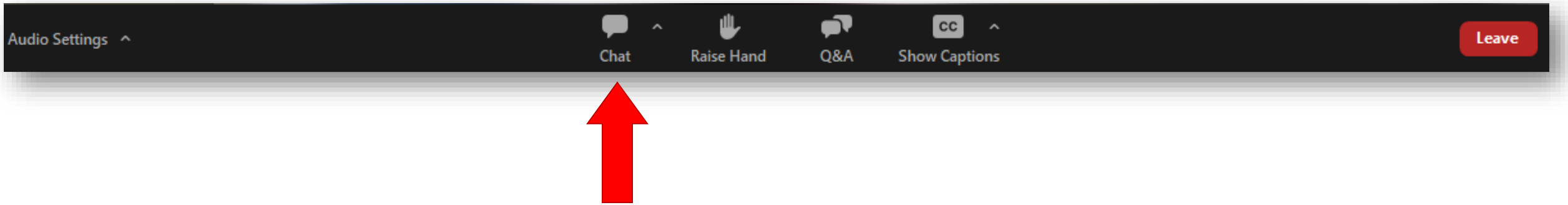

Use chat if you have technical issues
or a question for the panelists

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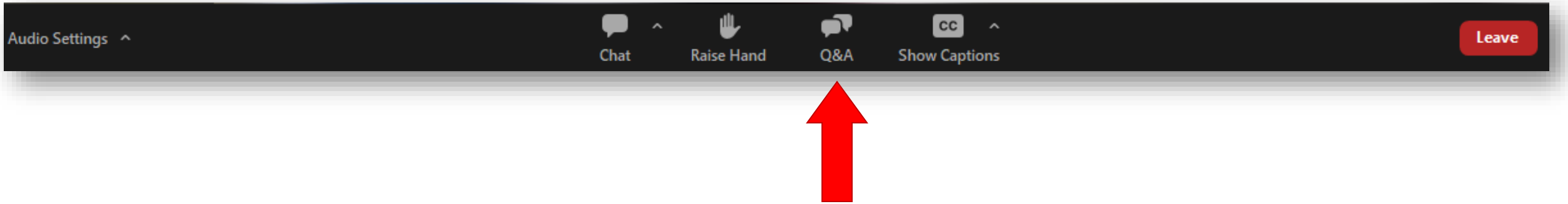

Use Q/A if you have questions.
We will answer after the presentation

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Closed Captioning

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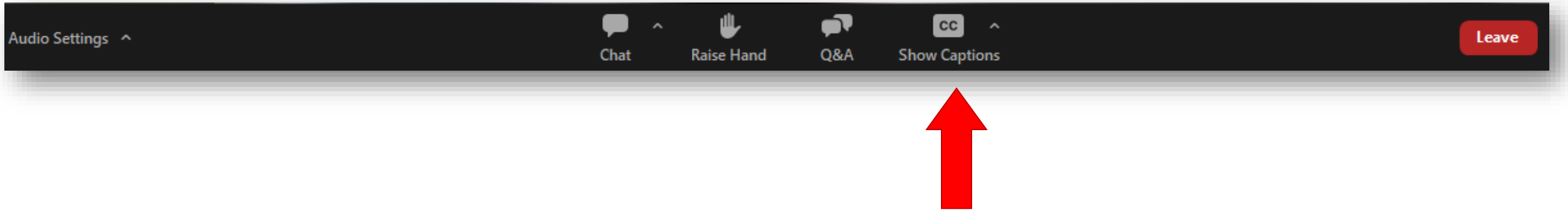
- This may already be enabled. If this is not enabled, click the button to allow closed captioning.



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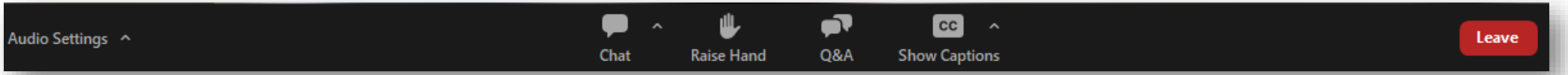

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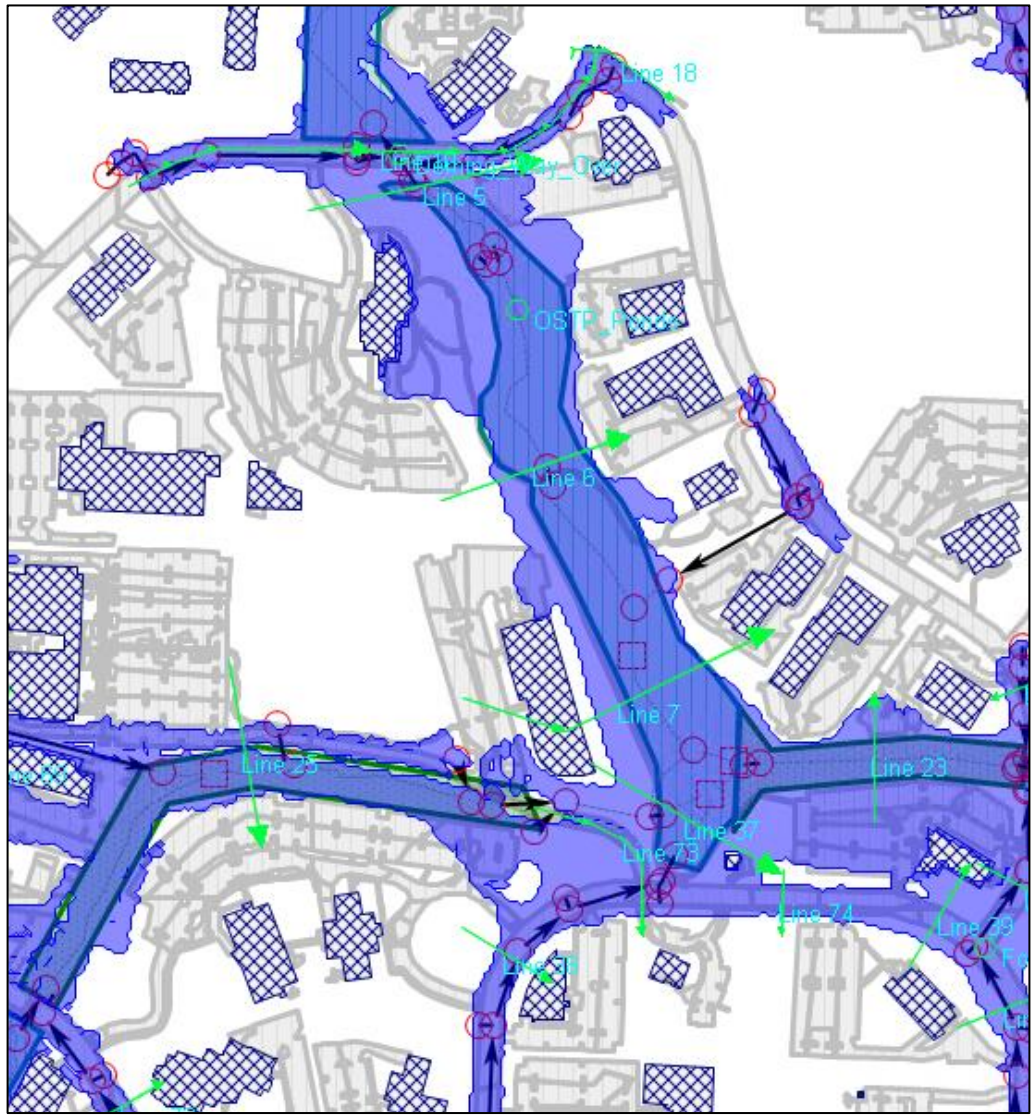
Introductions

- City of Madison
  - Jojo O’Brien (Project Manager)
  - Greg Fries, PE
  - Janet Schmidt, PE
  - Hannah Mohelnitzky
  - Maddie Dumas
- Merjent
  - Joe Connelly (Deputy Project Manager)



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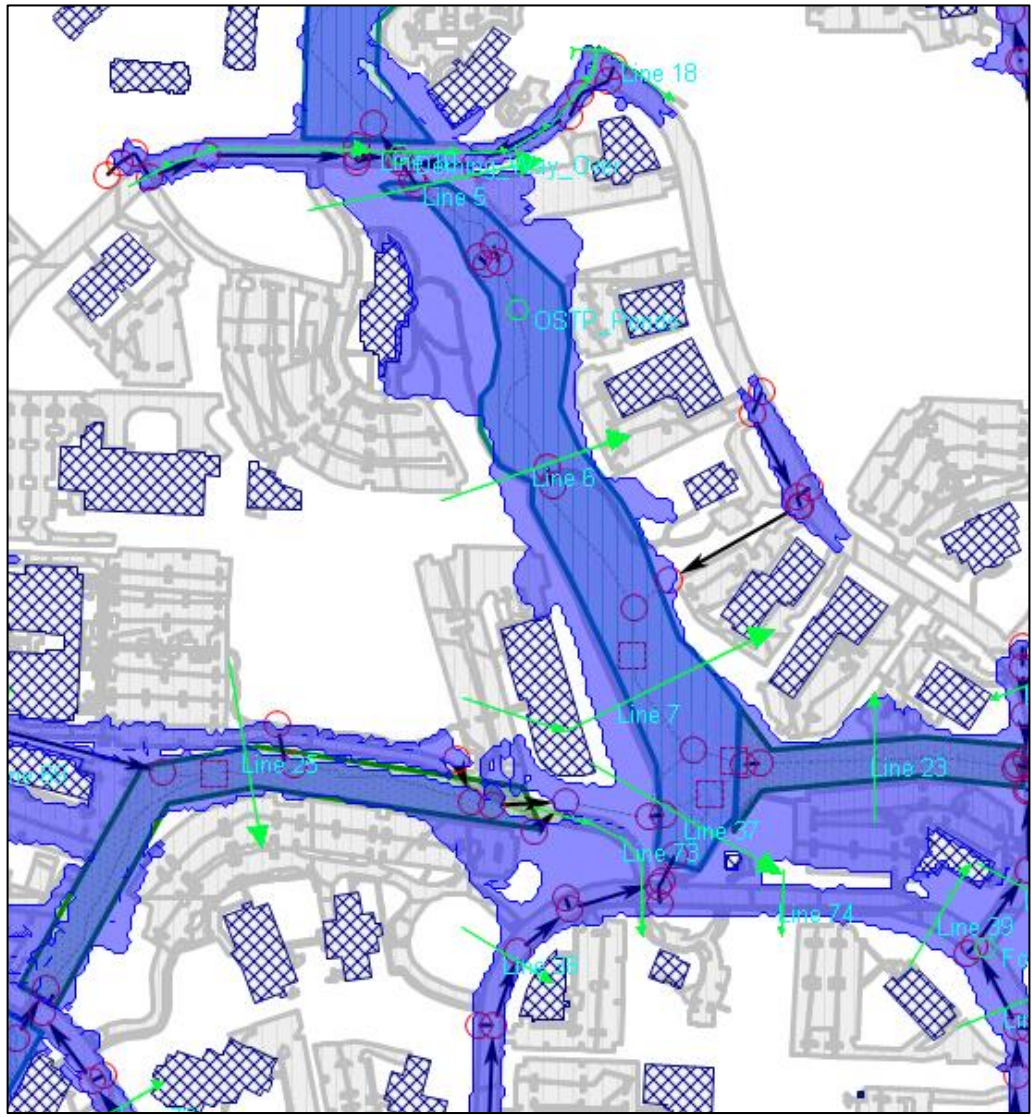
Differences between other projects in watershed

- Pheasant Branch Watershed Study recommended another conceptual solution that is in the planning stage – Sauk Creek Greenway
- Knowing the community interest surrounding both projects, the City presented to the Board of Public Works about the differences between these projects
  - The City will not be utilizing the same solutions for the Sauk Creek Greenway
- Key differences: flood risk and adjacent flooding impacts, stormwater flows and location within watershed, historical use of property, and topographical constraints
  - To learn more, you can view the presentation here: https://madison.legistar.com/View.ashx?M=F&ID=12591733&GUID=08CEF15B-43FD-4F6C-897C-89A45A387564

Agenda

- Project Background
- Watershed Study (2019)
- BRIC Grant Funding
- Preliminary Design/Early Evaluations
- Proposed Project
  - Pond improvements
  - Flooding impact
  - Restoration
  - Other impacts
- Tree Study Information
- Next Steps
- Additional Information
- Question & Answer



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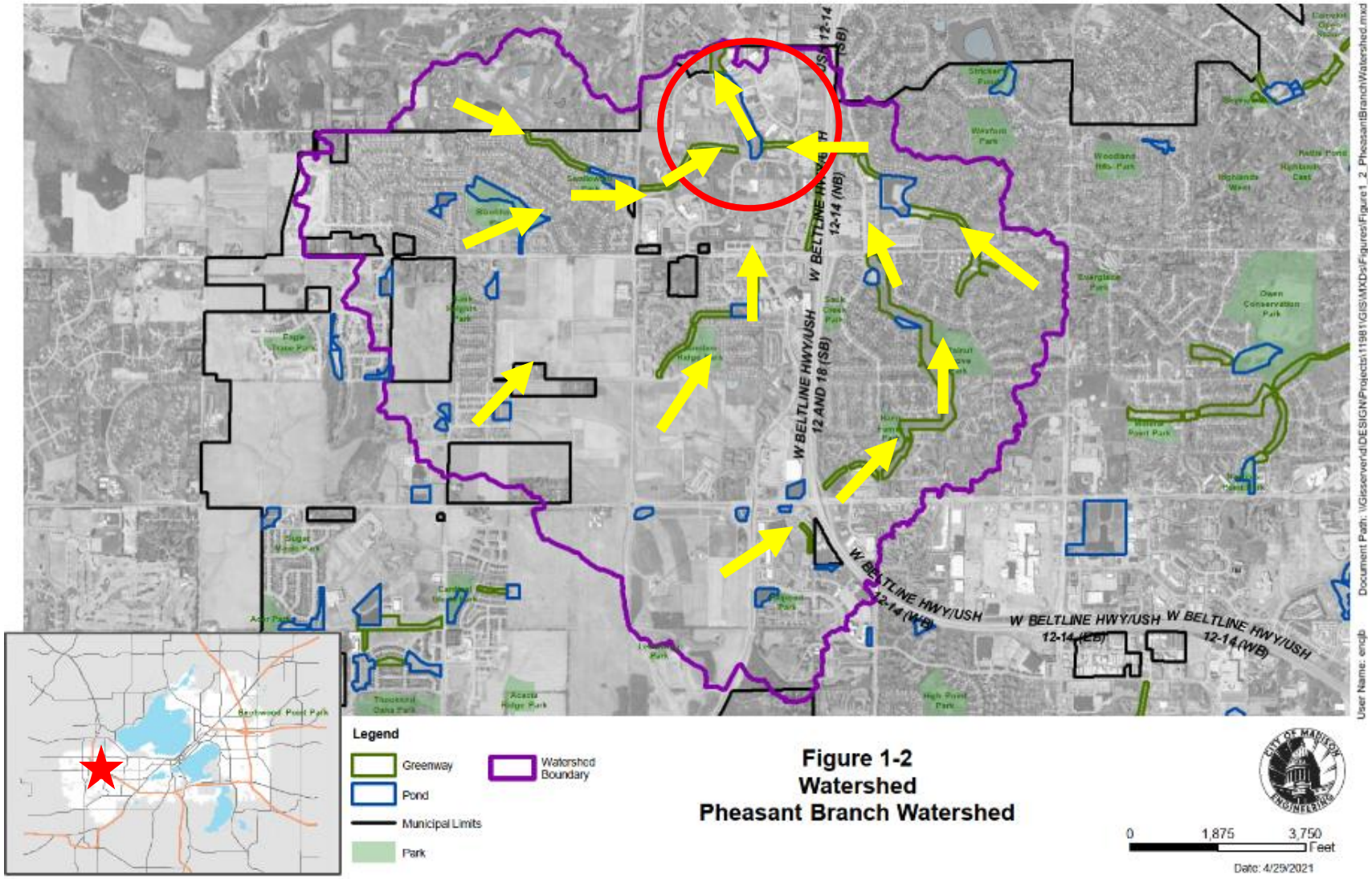
Project Location



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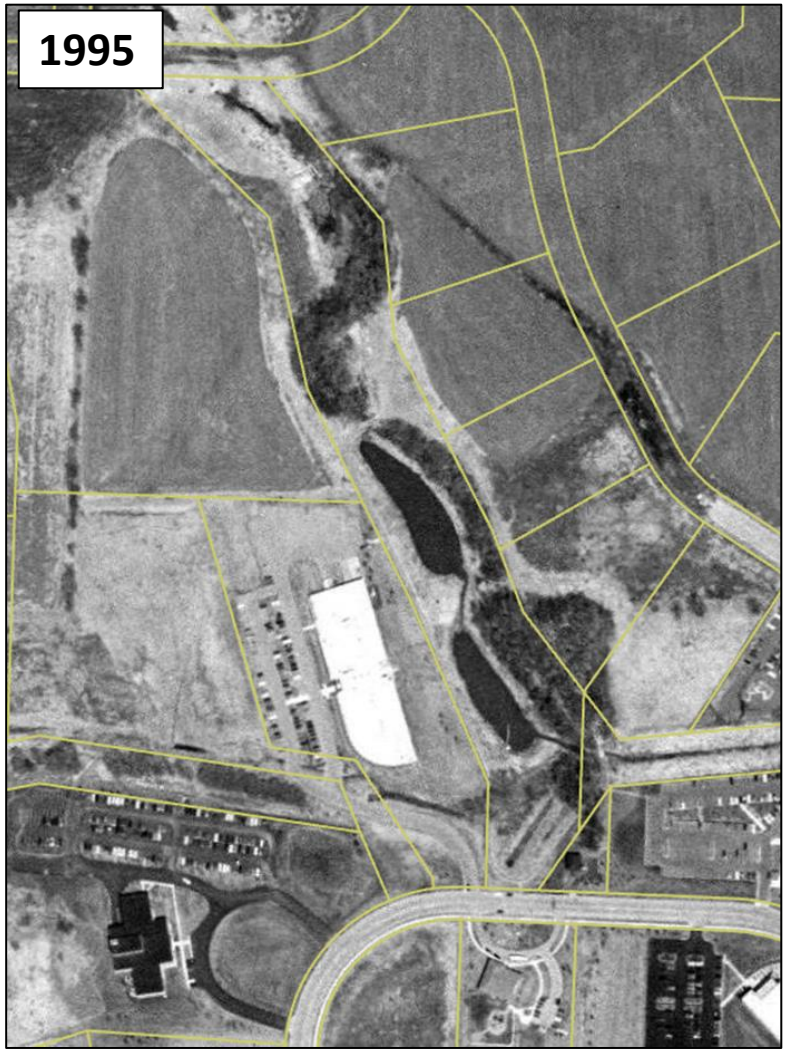
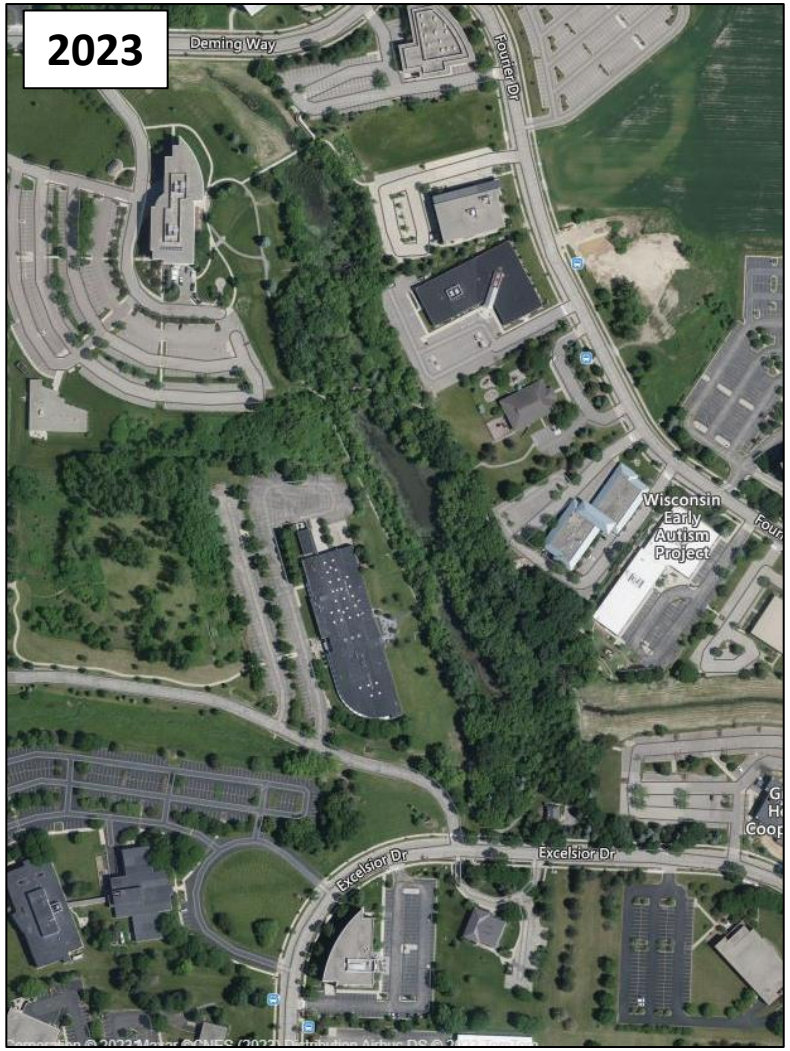
Historical Conditions





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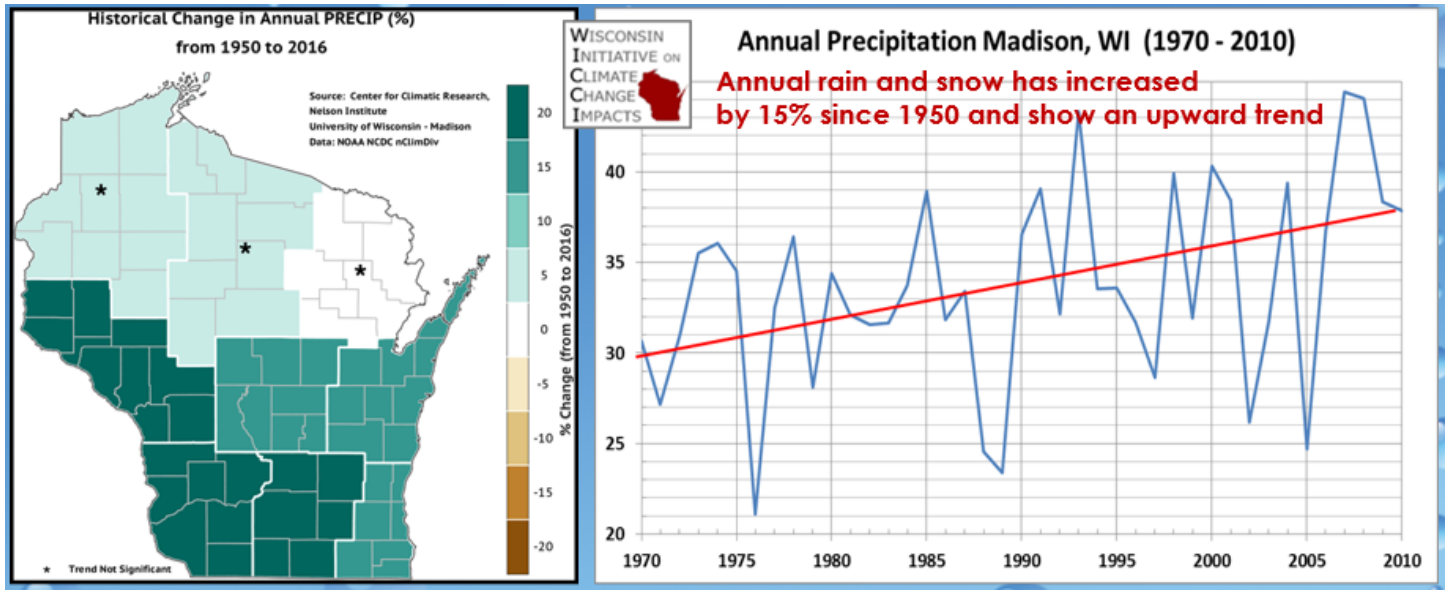
Reasons for Flooding Issues: Its Complicated!

- Increases in storm intensities due to climate change
- Increase in development as Cities expand
- Changing design standards
- Past design requirements for buildings created hard-to-solve flooding

➢ **We have better tools than we have ever had to help us understand flooding issues and work on addressing them.**



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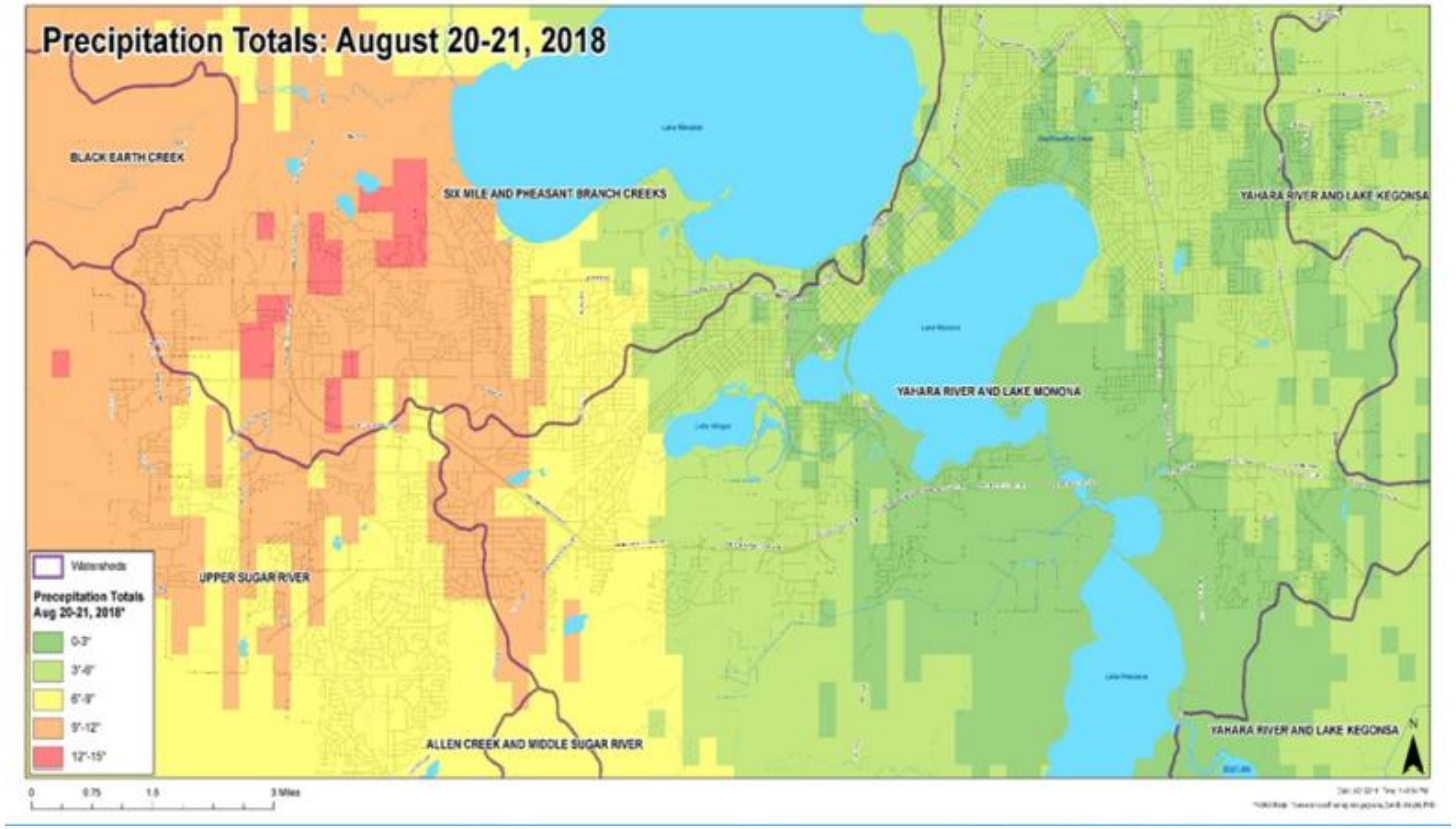
Project Background

- Rain Event in 2018 ~ USGS Rain Gauge recorded **10.5 inches** of rainfall over 12-hour period (>1,000-year flood)
- Flash flooding across the western half of the City
- Prompted the City to begin a comprehensive watershed planning process



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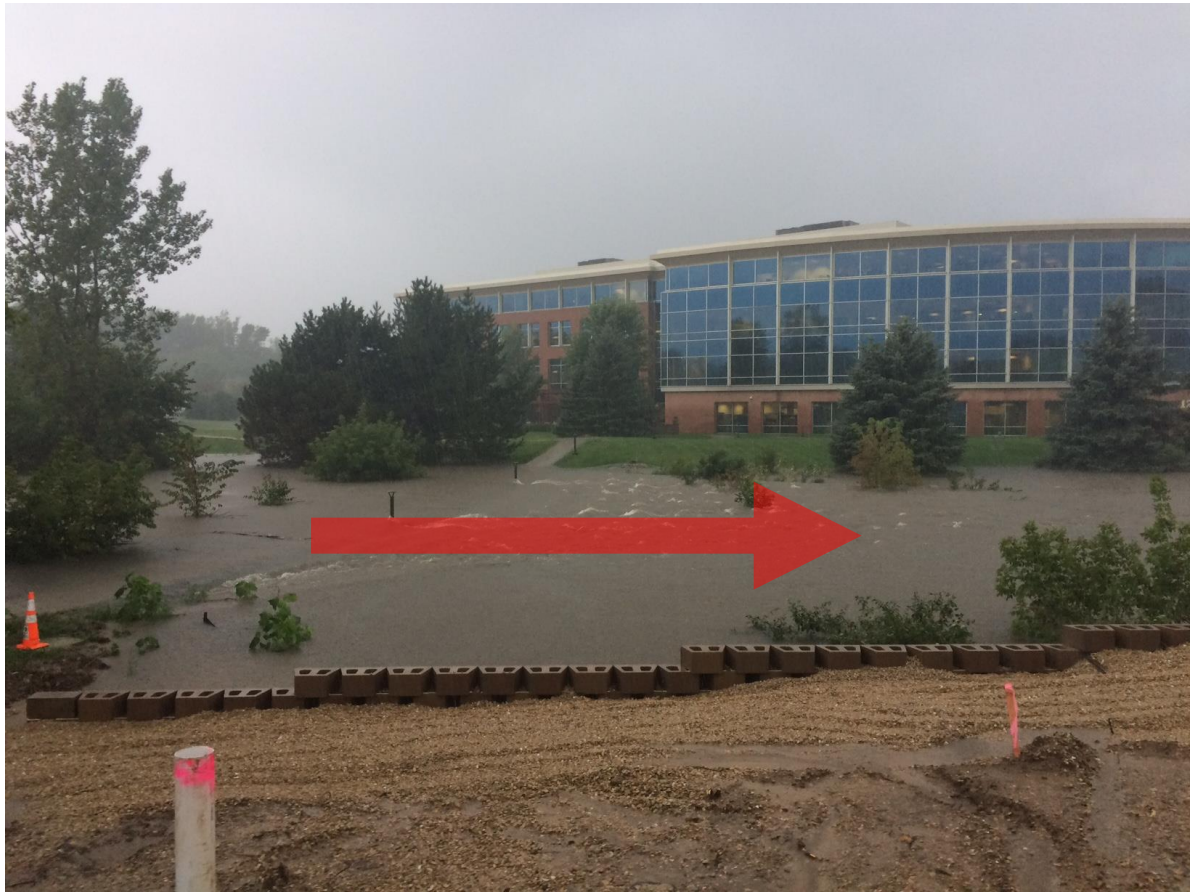
Project Background



August 20, 2018 flooding around ponds in Old Sauk Trails Business Park

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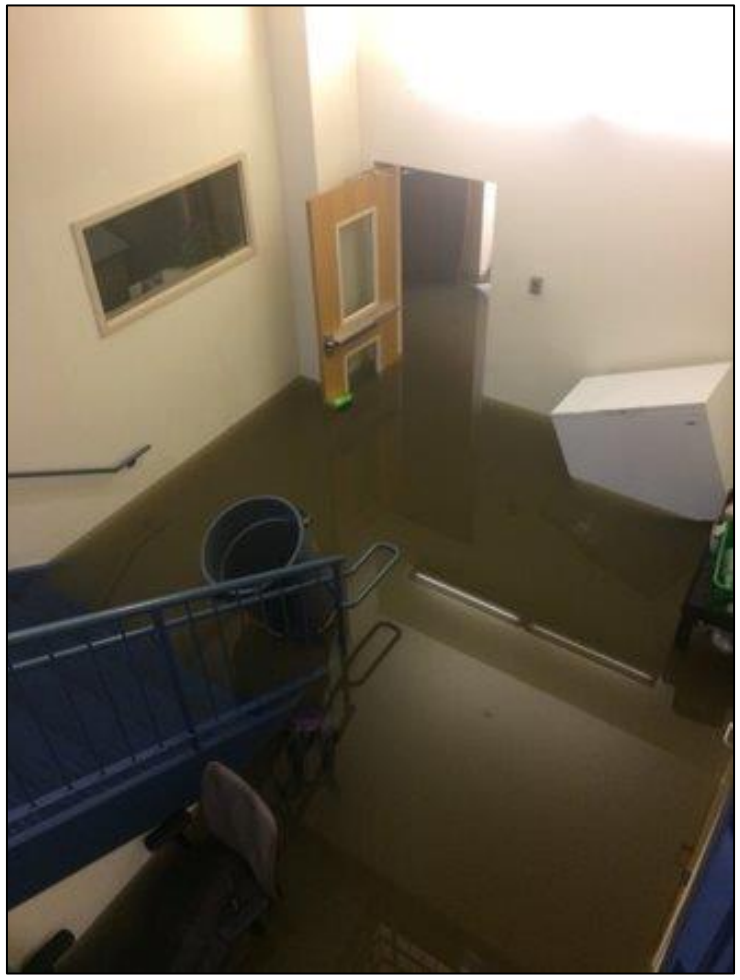
Project Background



August 20, 2018 flooding in Old Sauk Trails Business Park

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Project Background

August 20, 2018 flood impact at Deming Way (downstream end of project) in Old Sauk Trails Business Park

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Project Background

August 20, 2018 flooding inside buildings in Old Sauk Trails Business Park

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Project Background

August 20, 2018 debris line in ponds within Old Sauk Trails Business Park

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Impacted Buildings

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Building Resilient Infrastructure and Communities (BRIC) Grant Funding

- Received $6.25M for this project
- Supports states and local communities to reducing the risks on projects that are impacted disasters and natural hazards

Project Goals:

- Improvements to capacity and flood storage to protect existing adjacent structures in 100-year storm (1% annual chance) event
- Expansion of existing small stormwater ponds into a larger pond storage area
- New concrete culverts at critical points
- Improvements to existing storm sewer to mitigate street and building flooding

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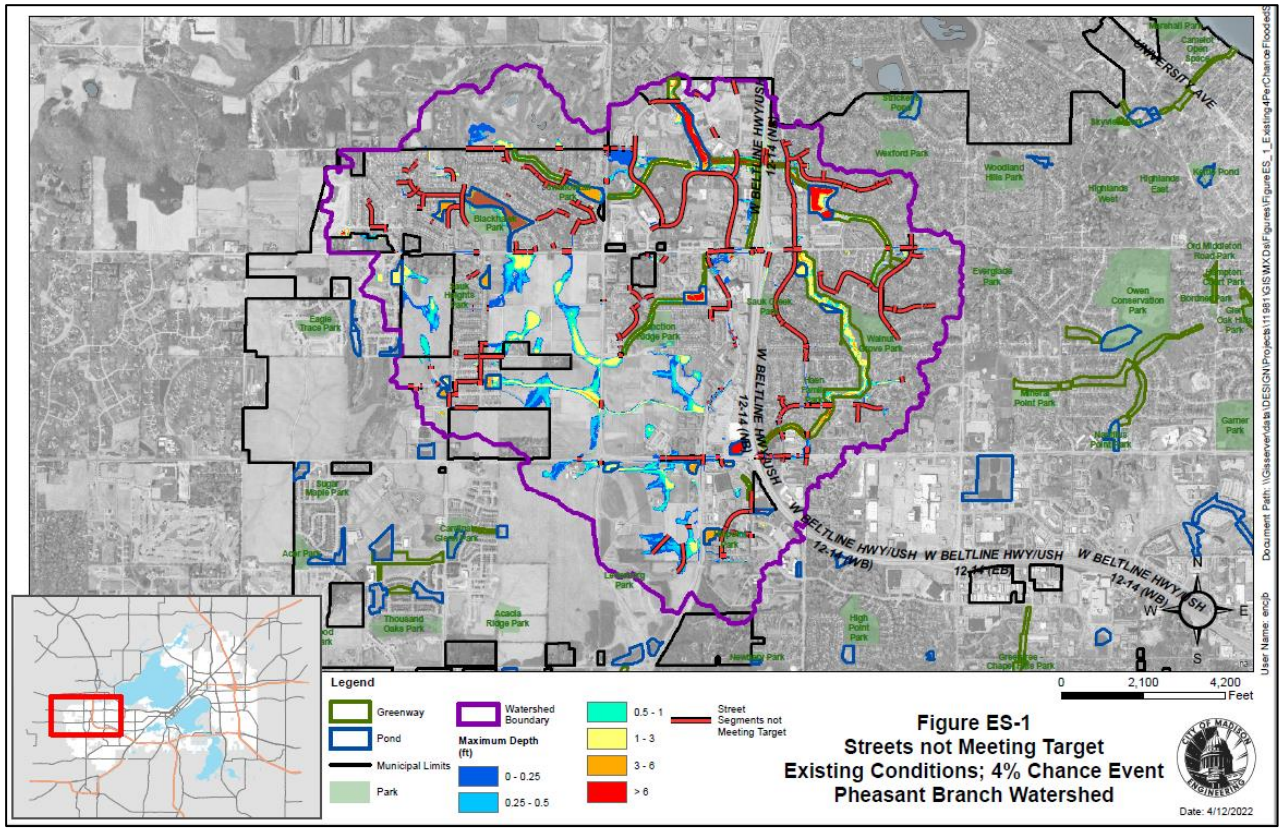
Pheasant Branch Watershed Study

- City of Madison completed a study of the Pheasant Branch Watershed (October 2022)
- Much of the current watershed does not reach flood mitigation targets
  - Roads are inaccessible to emergency vehicles (4% occurrence interval)
  - Structure flooding in extreme flood events (1% occurrence interval)
- Provided recommendations and conceptual solutions



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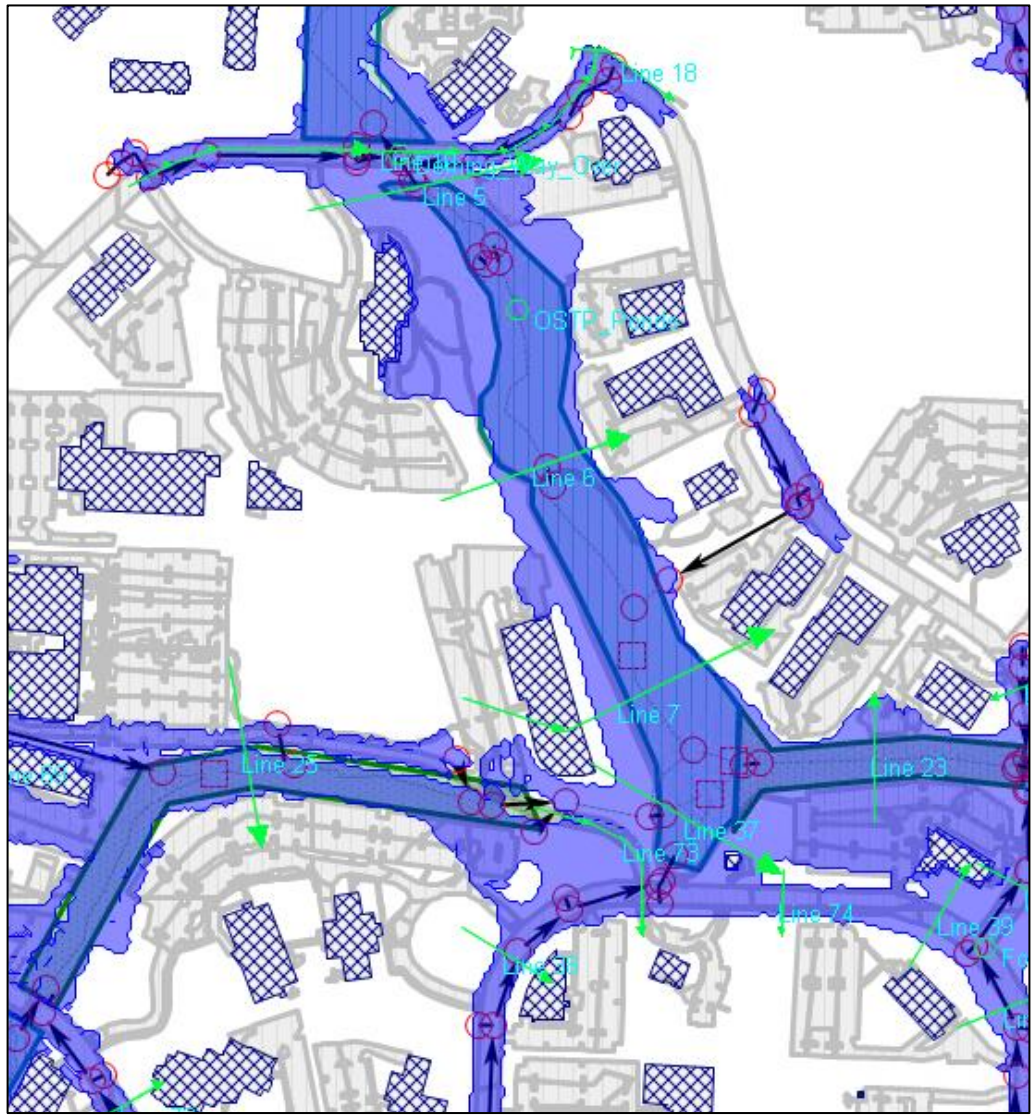
Modeling

- Flooding Analysis Model
- Models the storm sewers, culverts, open channels and ponds within the watershed
- Calibrated model based upon historical events (2018)
- Detailed iterations built off watershed study model to develop proposed design for this project



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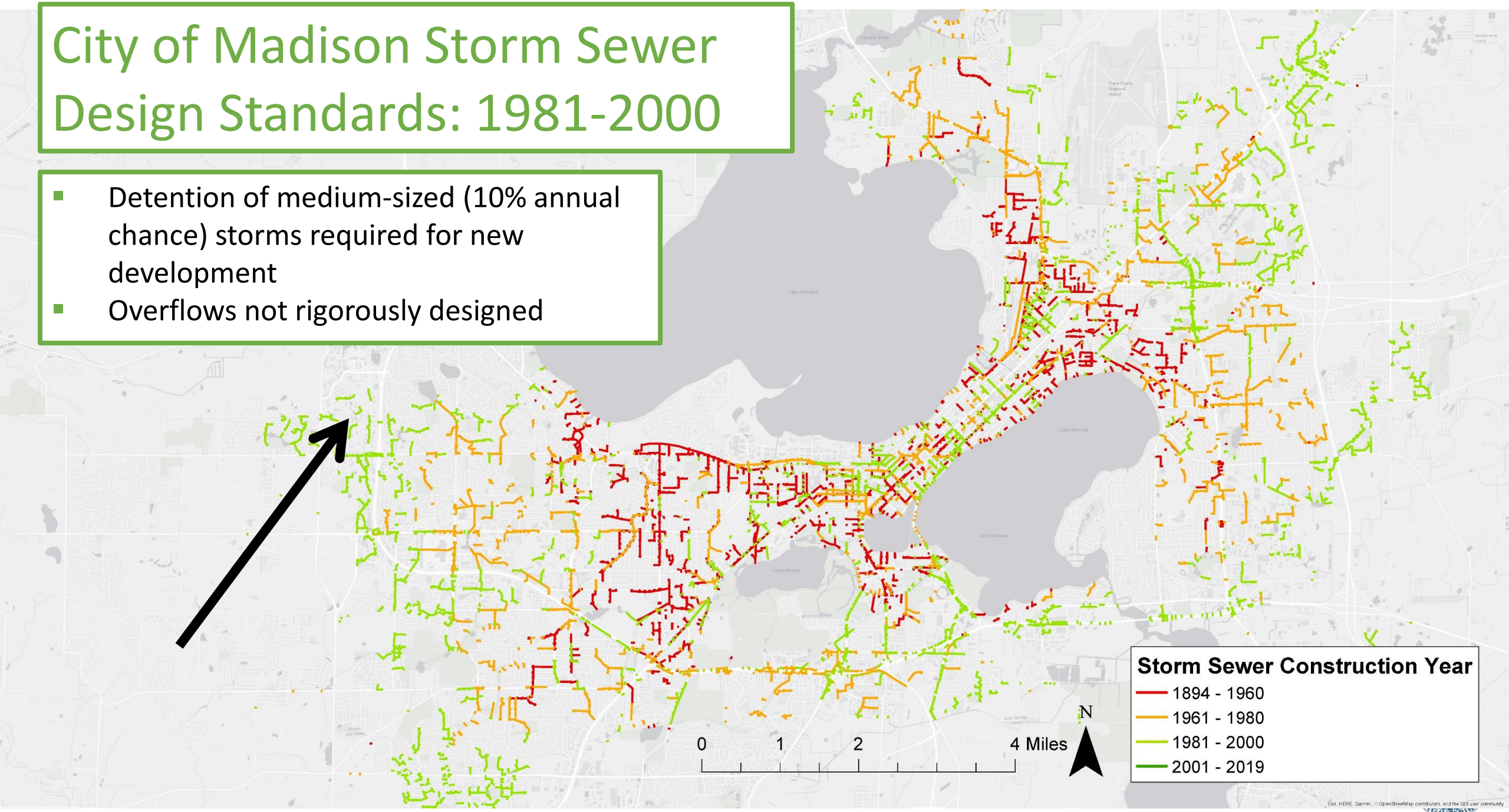
City of Madison Storm Sewer Design Standards: 1981-2000

- Detention of medium-sized (10% annual chance) storms required for new development
- Overflows not rigorously designed

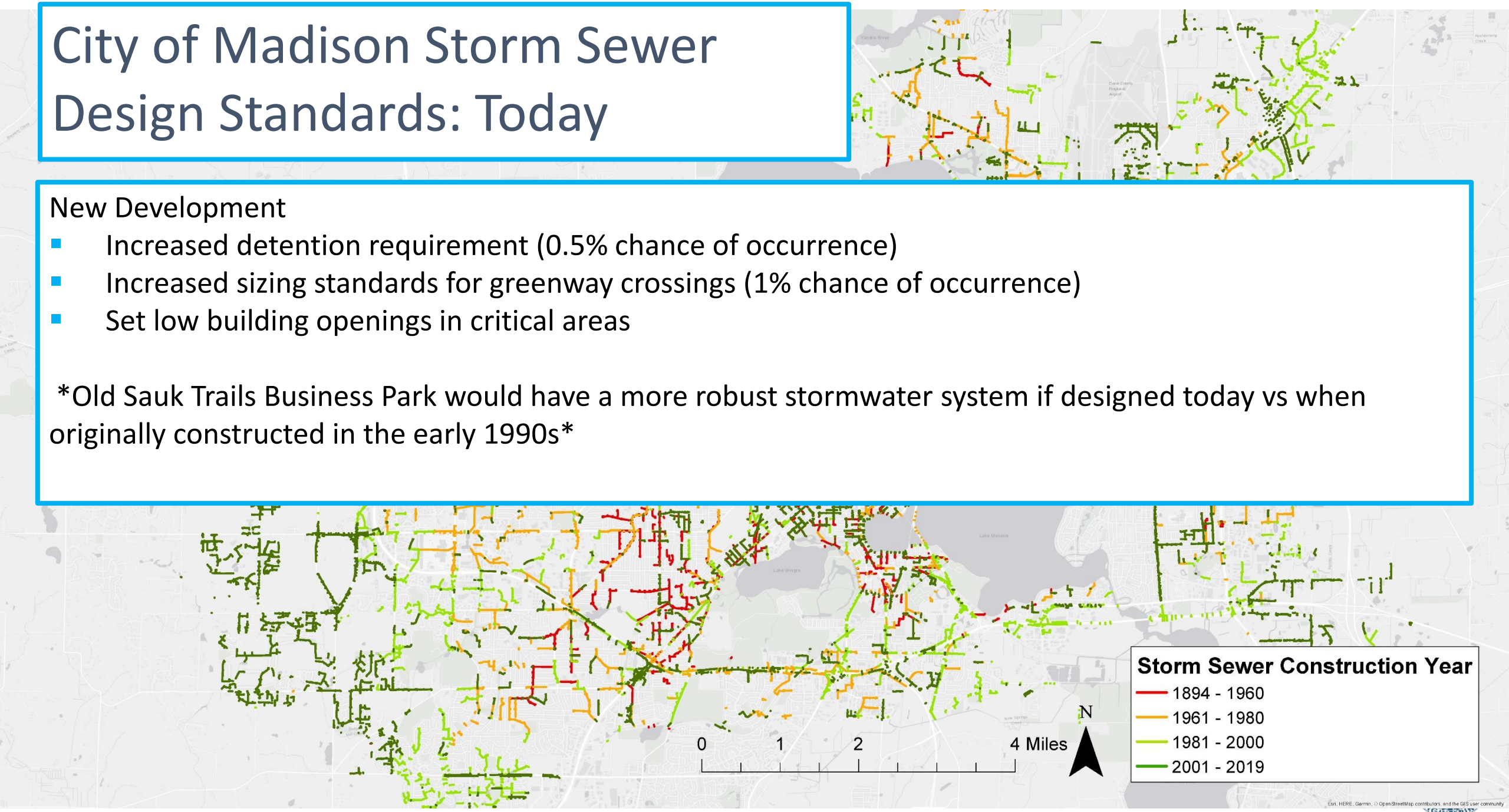


City of Madison Storm Sewer Design Standards: Today

New Development

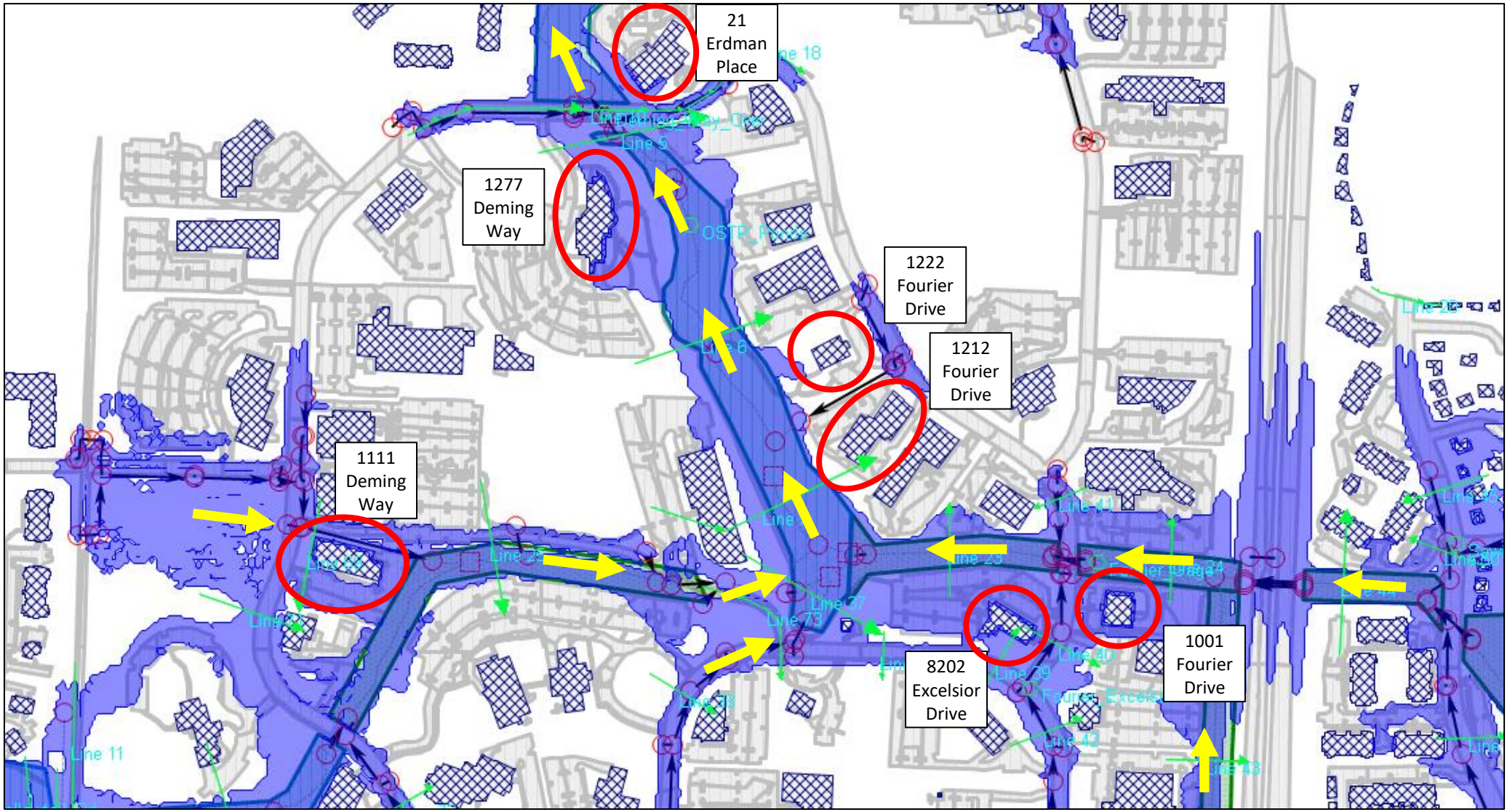
- Increased detention requirement (0.5% chance of occurrence)
- Increased sizing standards for greenway crossings (1% chance of occurrence)
- Set low building openings in critical areas

Old Sauk Trails Business Park would have a more robust stormwater system if designed today vs when originally constructed in the early 1990s



Existing Model Results

Maximum Water Depth (1% Chance of Occurrence)



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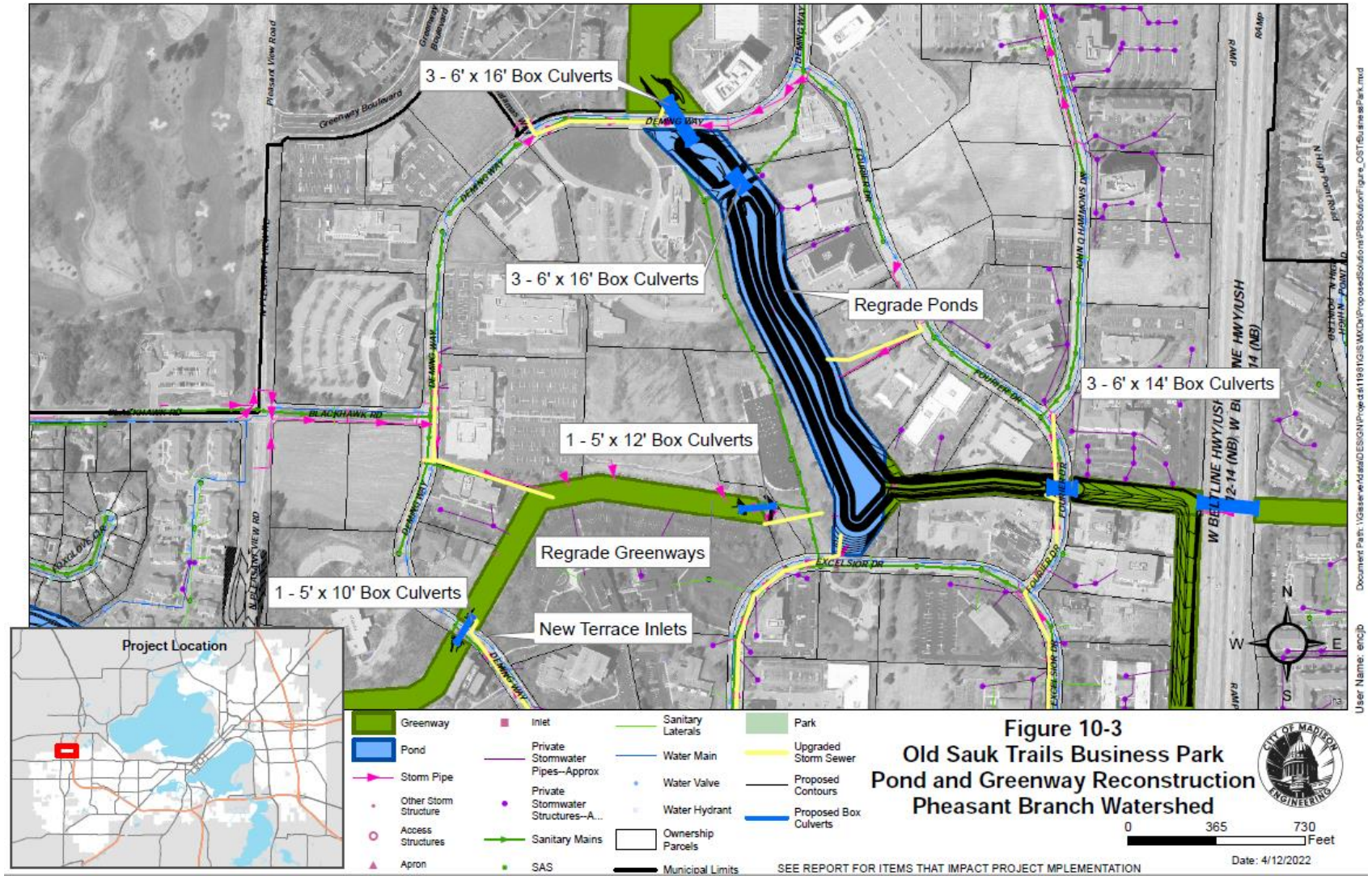
Conceptual Solution from Watershed Study (2018)



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Proposed Design – Project Overview

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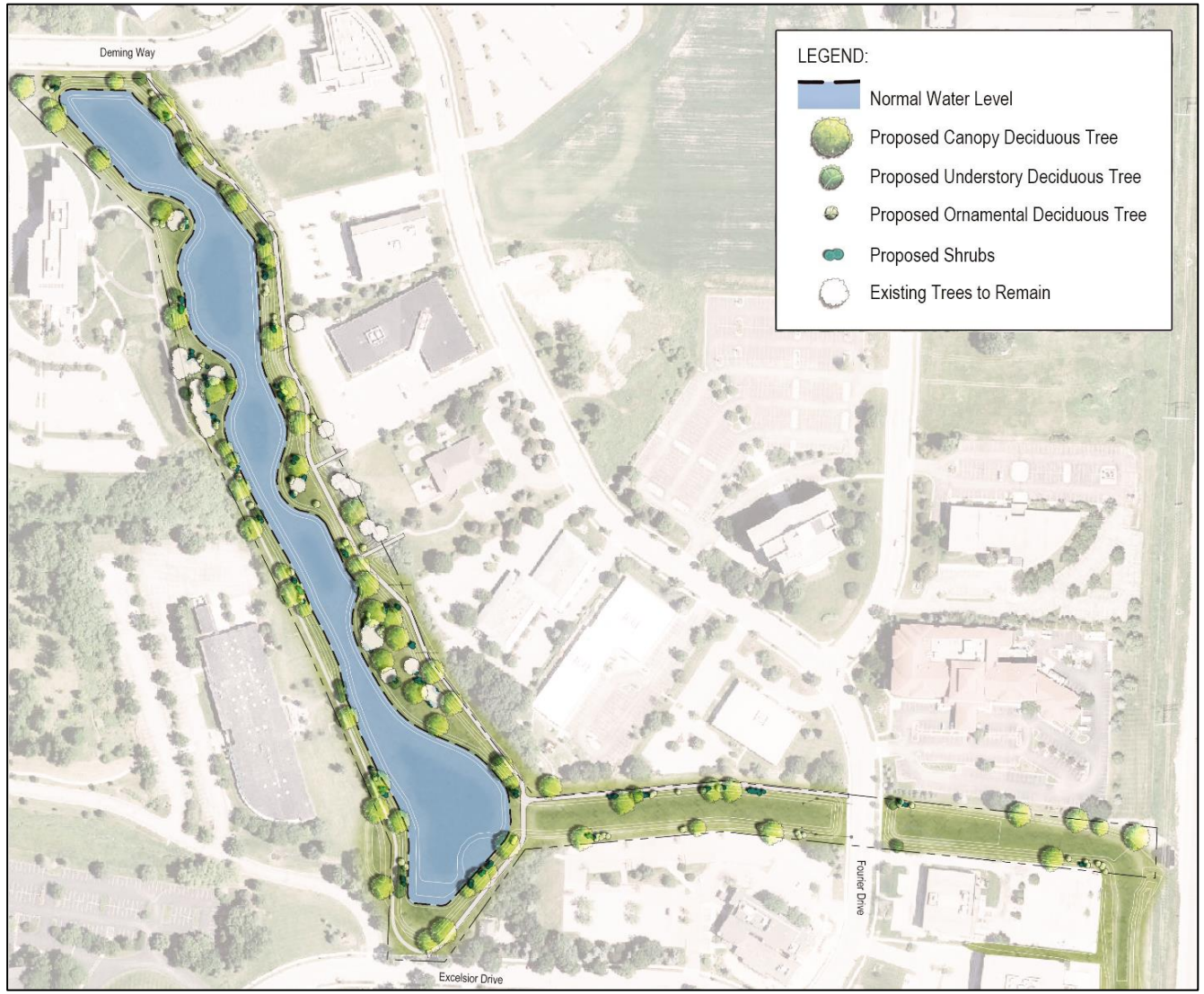
Proposed 90% Design – Project Overview



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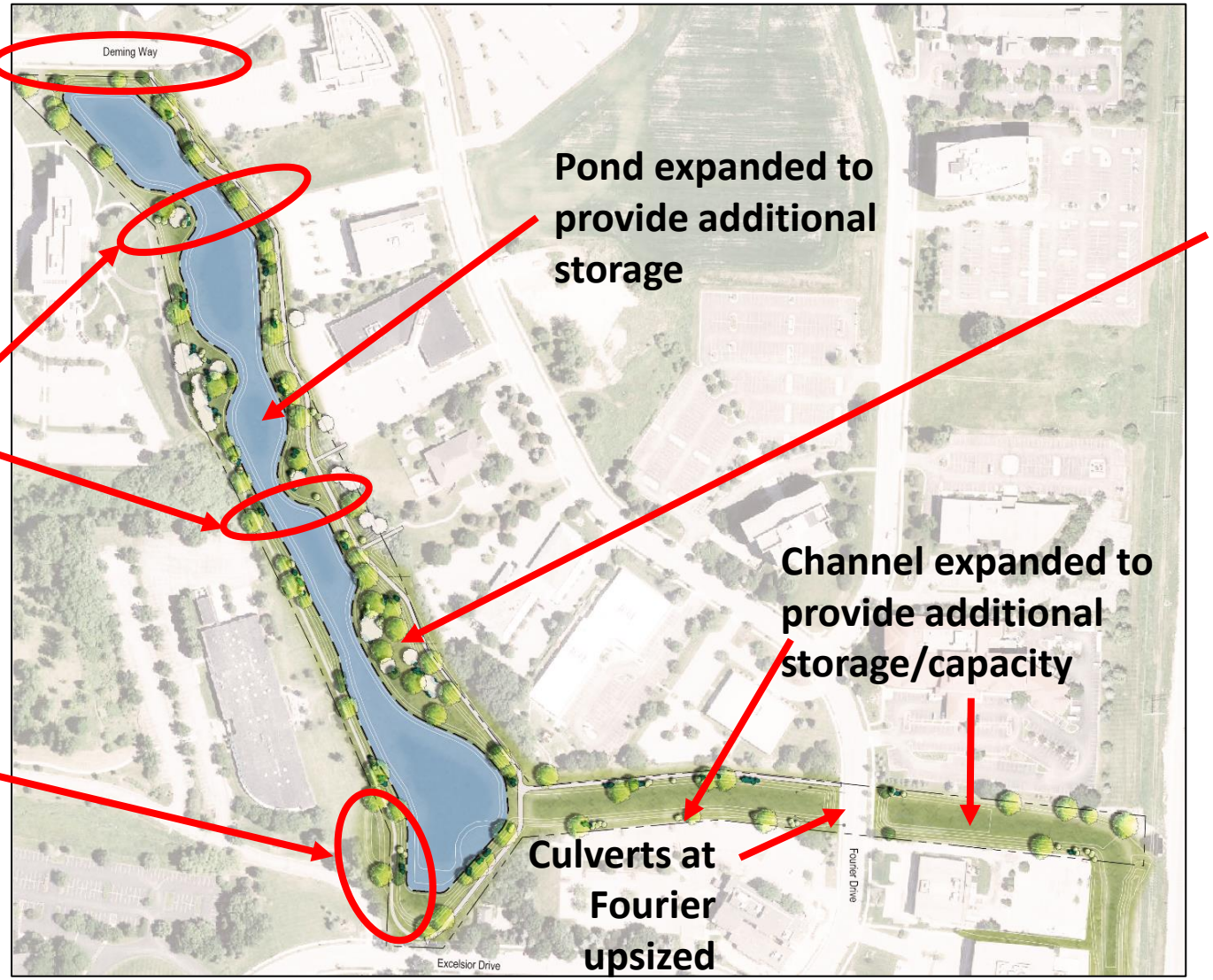
Proposed Design – Pond Features

Upsize from single to three culverts ~ large sanitary sewer reroute

Existing crossings to be removed due to proposed design

Modifications to existing storm sewer and pond inlets



Pond expanded to provide additional storage

Created bump-outs from original conceptual design to save as many healthy, mature trees as possible while meeting flood mitigation targets

Channel expanded to provide additional storage/capacity

Culverts at Fourier upsized

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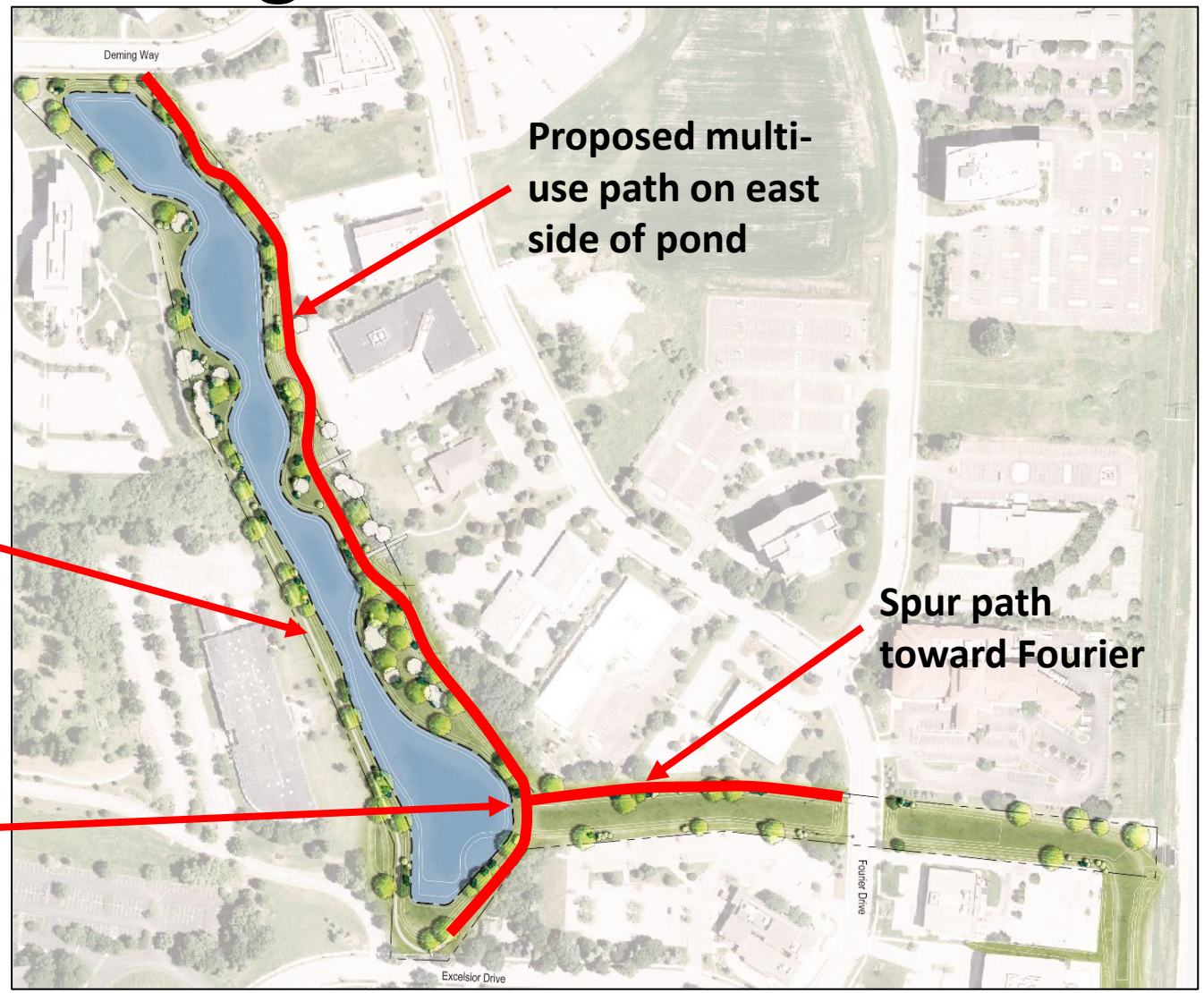
Proposed Design – Pedestrian Features



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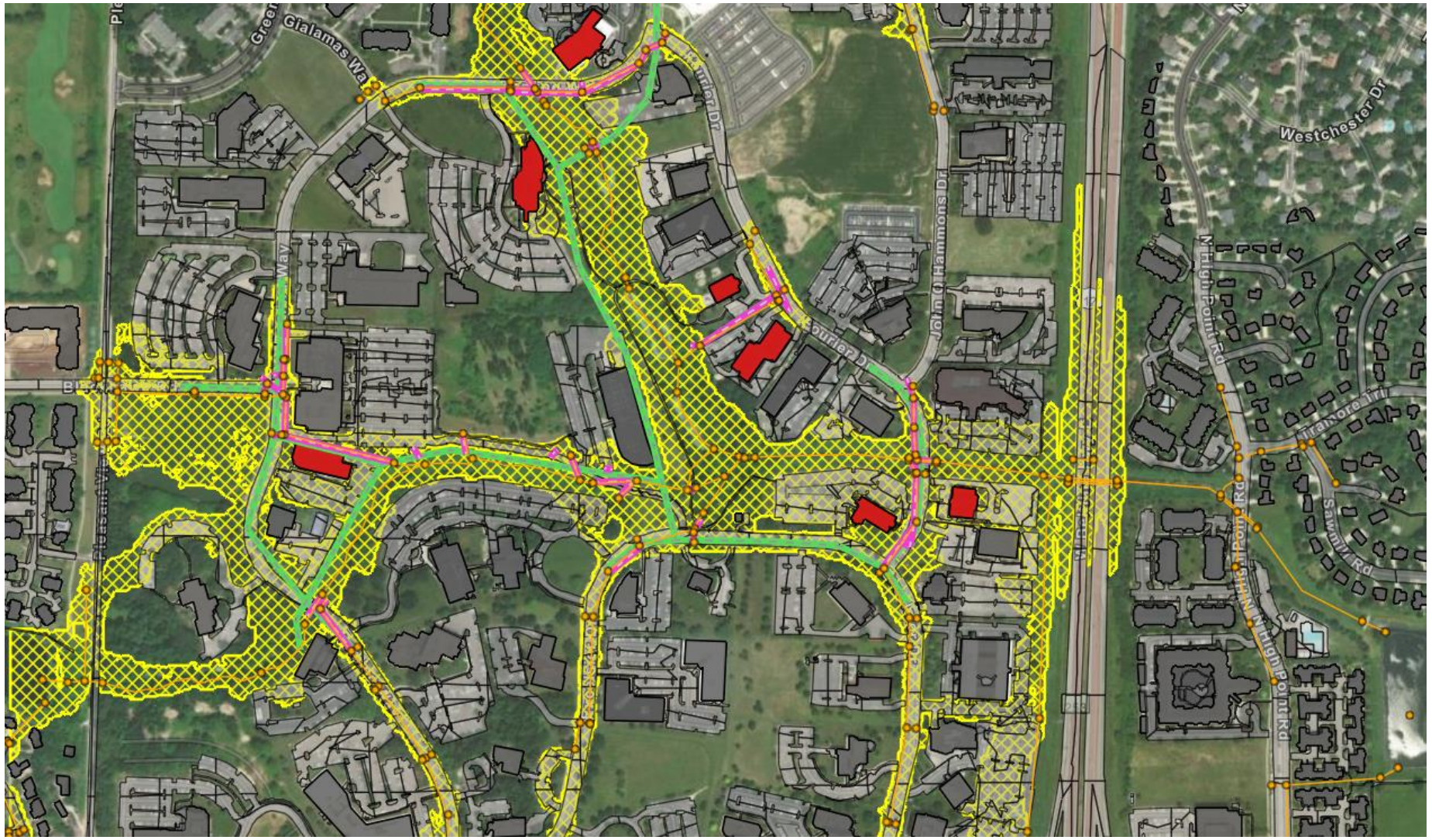
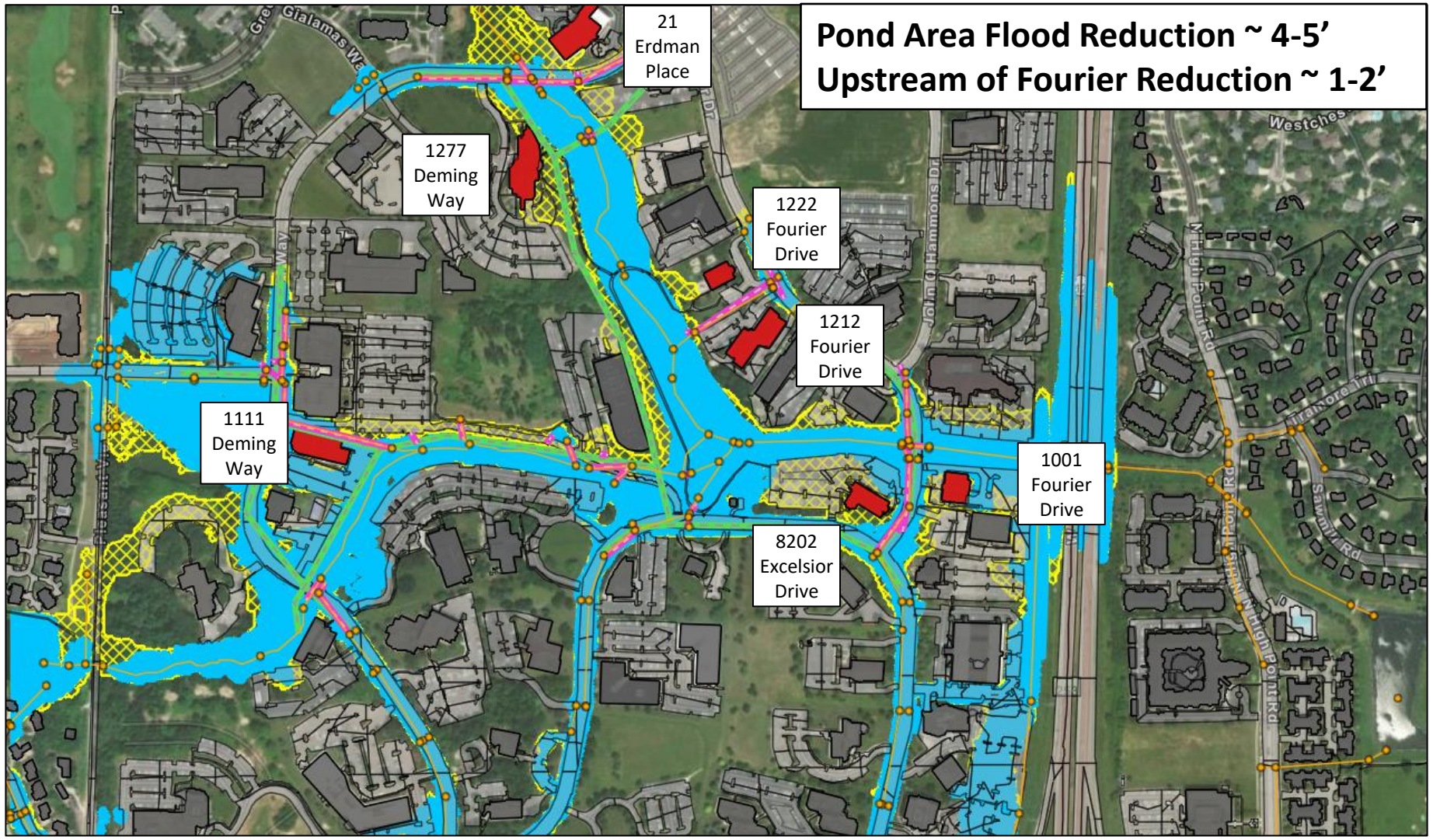
Existing vs. Proposed Model Conditions



Existing vs. Proposed Model Conditions



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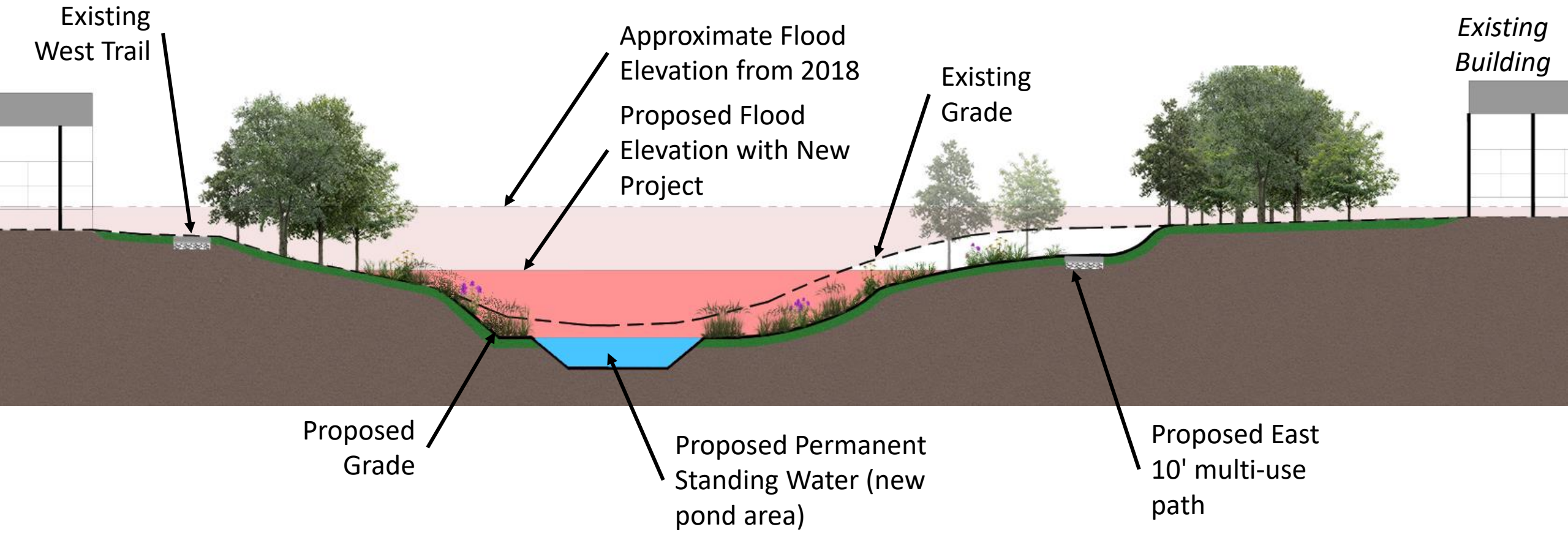
Cross Section of Flood Storage



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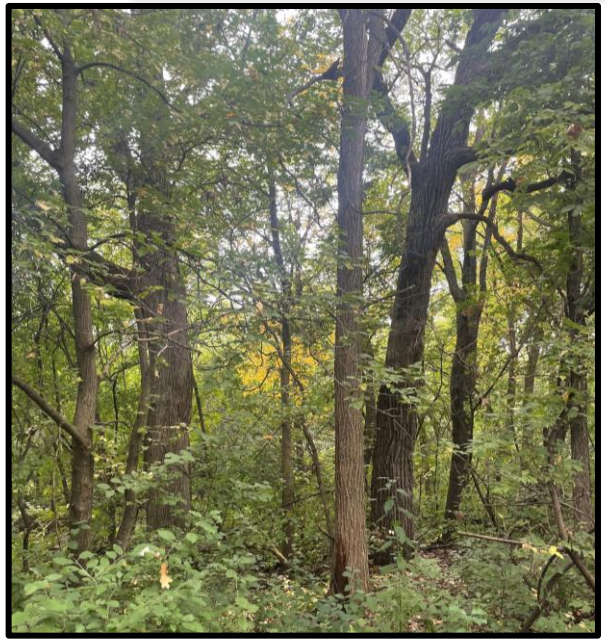
Existing Ecological Condition

Greenways:

- Cattails / Reed Canary Grass monoculture

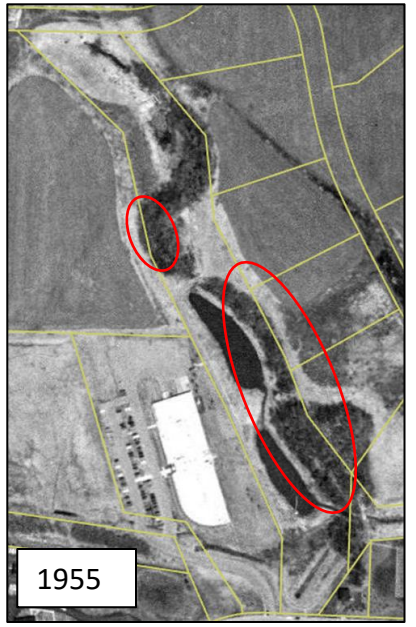
Ponds:

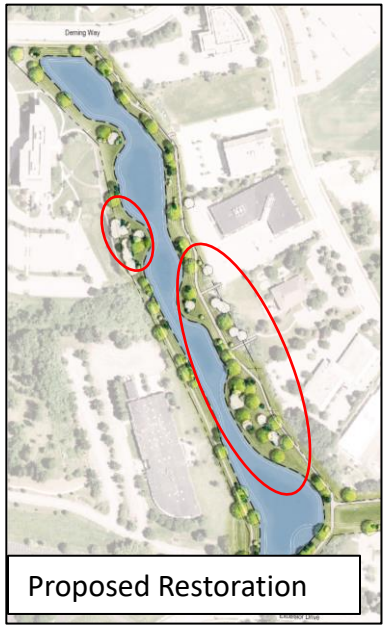
- Bank erosion
- Poison Ivy
- Dense understory
  - Competition with oaks
  - Preventing flows of stormwater
  - Shading out ground cover and preventing oak regeneration



Existing Tree Condition

- All trees inventoried by certified arborist and given a health rating
- 15% of existing trees are dead or have poor health rating
- 3% of trees have "excellent" health rating
- Oak trees of various ages and conditions
- Majority of trees are box elder





Damaged and Shallow Rooted Trees Adjacent to Pheasant Branch

Much of the damage to bridges, infrastructure and streambanks caused by the August 2018 flood event was caused by or exacerbated by shallow rooted tree species such as box elder (*Acer negundo*) that collapsed into the channel during flooding. These early successional or pioneering tree species have shallow root systems that do a poor job of stabilizing streambanks. They do, however, provide shade to streambanks preventing other more beneficial plant species from establishing or occurring. Many remaining box elder and other shallow rooted tree species that didn't collapse into the stream during the August 2018 flood event have been severely undermined and have the potential for causing damage in the future. Future restoration efforts in the Pheasant Branch Corridor should take into consideration removing all the down and damaged trees adjacent to the streambank to prevent damage in future flooding events. [1]

[1] See more info in Middleton's Pheasant Branch Corridor Restoration and Improvements Master Plan, which is downstream of this project.

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Proposed Project – Draft Pond Landscaping Plan

- Created bump-outs from original conceptual design to save as many healthy, mature trees as possible while meeting flood mitigation targets
- Remove 850 trees to reach flood mitigation target
- Consulted with Forestry on tree removals
- Replant >100 trees
- Remain stable under conditions of frequent, fluctuating water levels
- Functions as a coherent ecosystem to the greatest extent possible given difficult urban conditions
- Resilient to invasion, particularly by woody species, to minimize areas of bare, exposed soil
- Maximizes plant diversity to enrich overall biodiversity and habitat offerings

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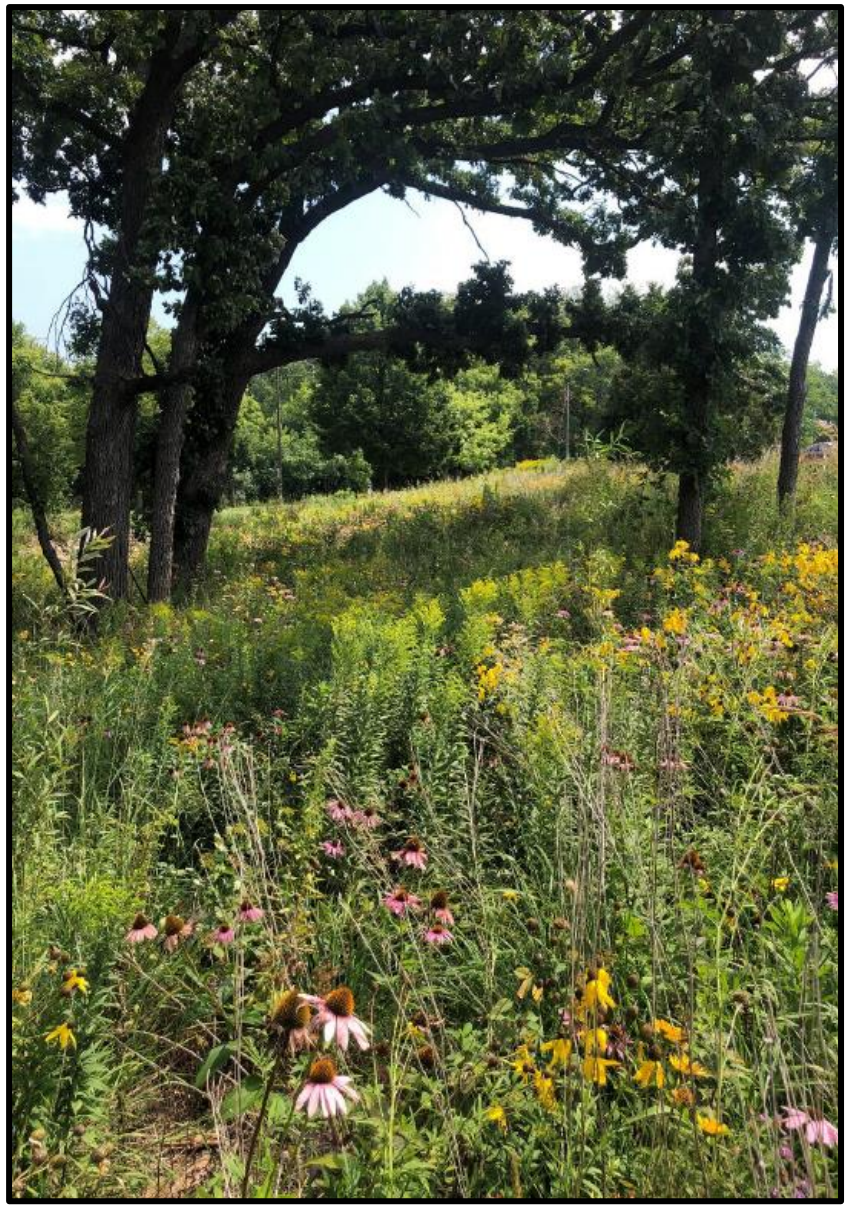
Proposed Project Examples – Ecological Lift & Benefits

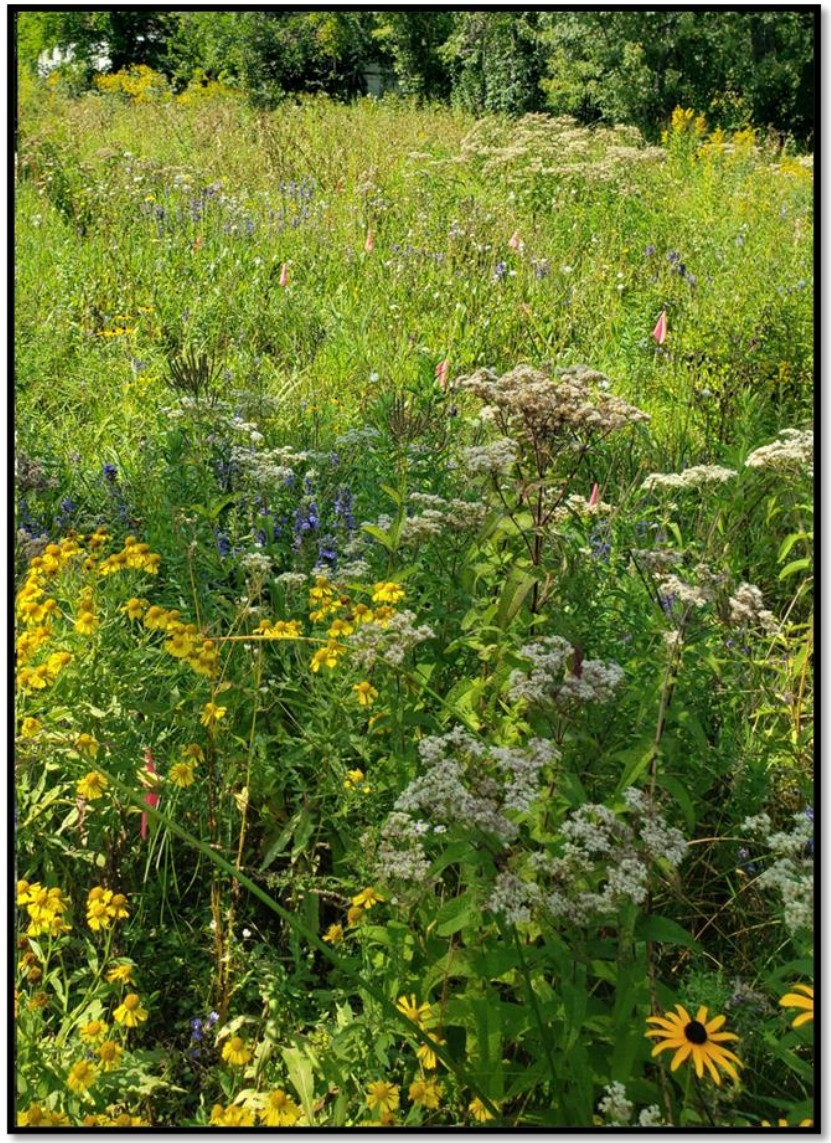


Upland Areas

Modeled after natural Wisconsin communities

- Mesic prairie
- Oak opening
- Oak woodland

Proposed Project Examples – Ecological Lift & Benefits



Pond Low-lands

Modeled after natural Wisconsin communities:

- Wet prairie (safety benches/pond shorelines)
- Wet-Mesic prairie (lower pond slopes)

Proposed Project Examples – Ecological Lift & Benefits

Channel

Modeled with natural Wisconsin communities:

- Southern Sedge meadow (channel)

Proposed Project – Ecological Lift & Benefits

- Increased biodiversity
- Decreased invasive species
- Increase in pollinators
- Increased habitat
- Increased ability to filter pollutants
- Bio-infiltration – higher permeability
- Decreased potential for washout/erosion
- Improved aesthetics
- Relocation of amphibians ahead of construction

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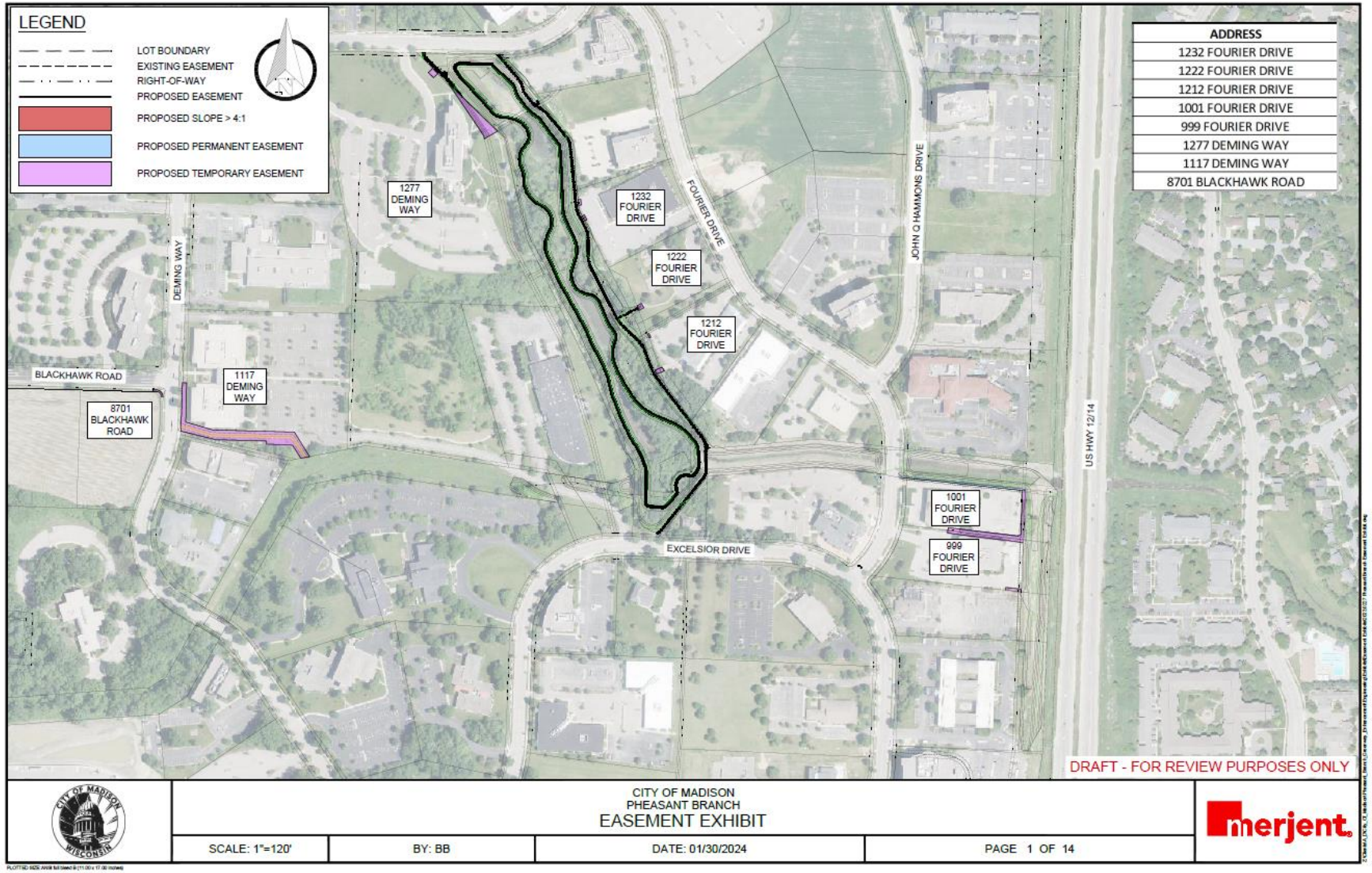
Proposed Project - Traffic Control/Impacts

- Replacement of culverts at Fourier and Deming Way (2 locations)
  - Require Temporary Roadway Closure during installation
- Minor roadway impacts at other points of project
  - Will require traffic control
- Closure of trails and pedestrian areas in pond during construction
  - Signed and notified

Easements



- Minor impacts to existing parcels
- Potentially 12 different parcels impacts
- Permanent & Temporary Easements Proposed
- City will work with individual landowners for their specific impacts
- Parcels adjacent to multi-use path – inform City soon if connections desired

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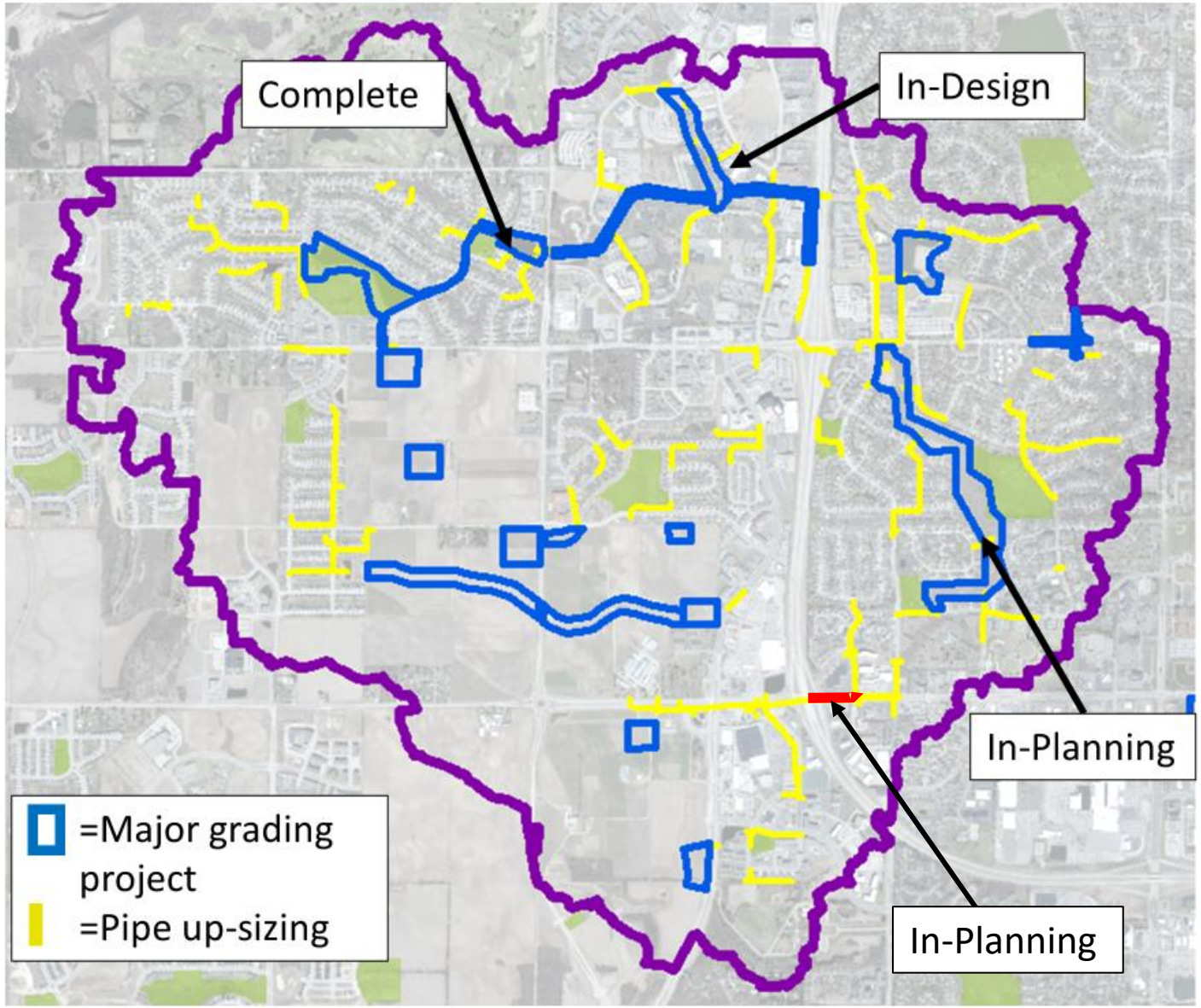
Other Flood Mitigation Projects



- $75M of projects within the Pheasant Branch Watershed
- $285M+ so far citywide
  - Cost will increase as more studies are completed
- City working to budget flood mitigation projects citywide

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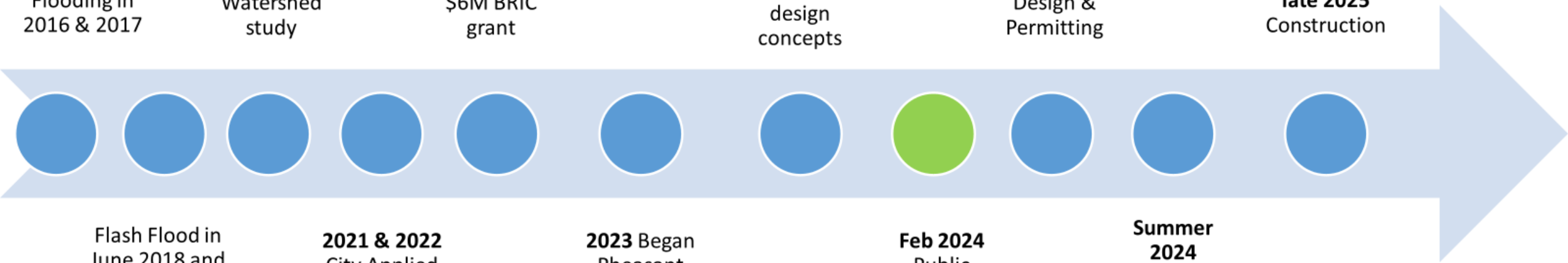
Timeline



Flooding in 2016 & 2017

2019-2022 Pheasant Branch Watershed study

2023 Official Award of $6M BRIC grant

Fall 2023 meeting with Business Park to share initial design concepts

2024 Final Design & Permitting

Dec 2024 – late 2025 Construction

Flash Flood in June 2018 and historic flood Aug 20, 2018 causing tens of millions in damages for the Business Park

2021 & 2022 City Applied for FEMA BRIC grant for Stormwater Mitigation Project

2023 Began Pheasant Branch Enhancement Flood Mitigation Design

Feb 2024 Public Information Meeting

Summer 2024 Approval of project for bidding by Common Council and Board of Public Works

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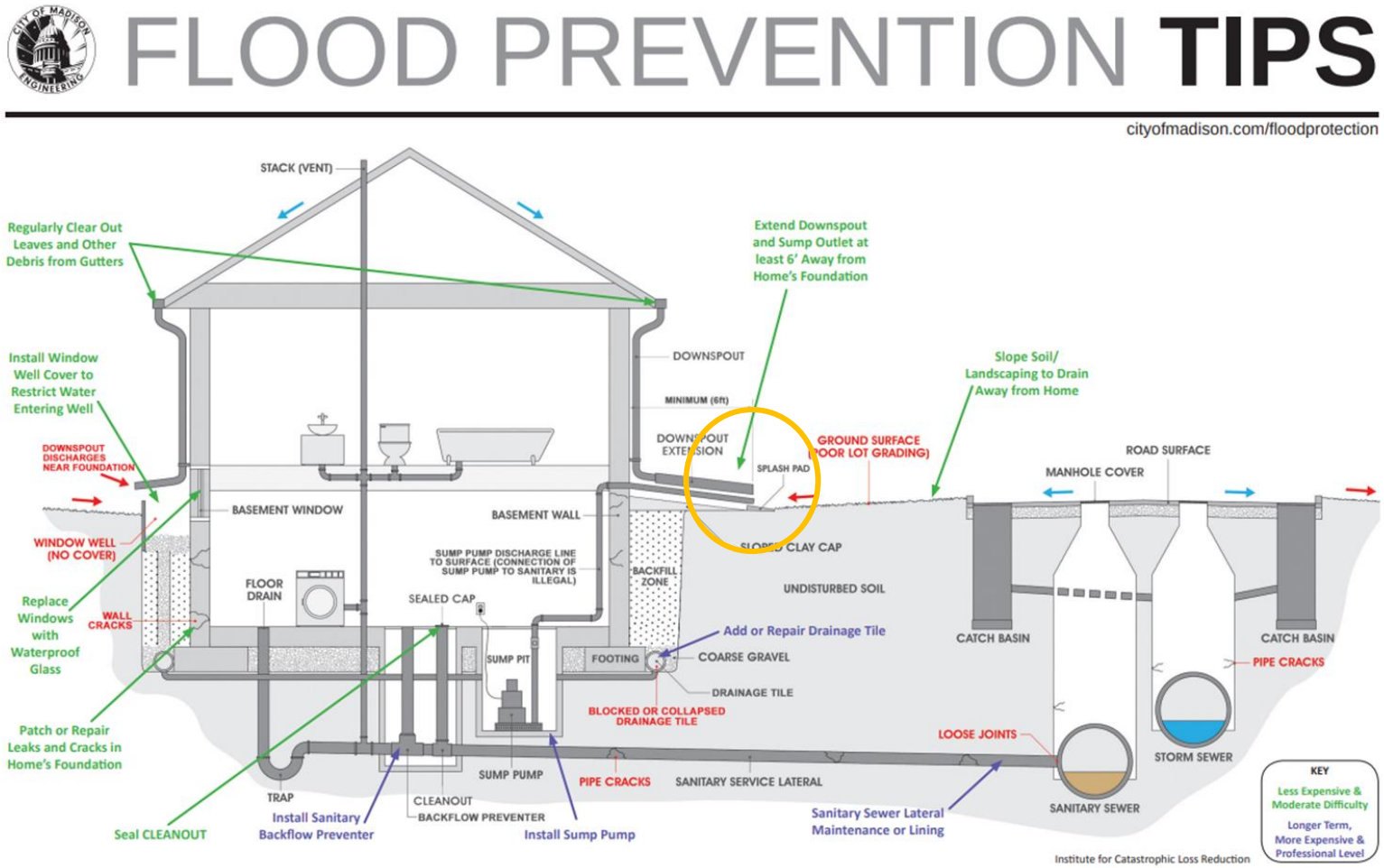
Private Property Responsibility

- City will be lowering flood elevation beneath first floor elevations
- Depending on how building drainage systems are configured, high water within the greenway could still cause basement flooding if sump or drainage systems outlet into an area that floods
- Check your building's drainage systems, and plan to make modifications or install backwater valves if needed



You can find more information at:

- cityofmadison.com/flooding/resources/prepare-your-home-general-flooding
- cityofmadison.com/flooding/resources/prevent-basement-flooding
- cityofmadison.com/engineering/stormwater/education/sump-pumps

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Keeping You Informed

Other City Initiatives You May Be Interested In

- **Stormwater Utility Vegetation Management Plan**
- www.cityofmadison.com/StormVMP
  - Provide input! Survey available until 2/23/24 to share your concerns
- GOAL: Create a framework for sustainable and resilient vegetation management for citywide stormwater utility land.
  - The plan will reflect anticipated climate change impacts and respond to community concerns.
  - It will not look at individual ponds and greenways.

Keeping You Informed

Other City Initiatives You May Be Interested In

- **City Sustainability Plan -** ongoing
- www.cityofmadison.com/sustainability
- The City of Madison is updating its Sustainability Plan to reflect the City's achievements, work underway, and priorities for the future.
- The Plan's goals and actions aim to ensure that Madison is a green and resilient place to live today and for future generations.

Questions and Answers

Use Q&A box or raise your hand to ask a question

Contact Information & Resources

- Engineering
  - Project Manager, Jojo O'Brien, 608-266-9721, jobrien@cityofmadison.com

- Project Website: www.cityofmadison.com/engineering/projects/pheasant-branch-enhancement
  - Sign-up for project email updates on the website
  - Updates on closures & work progress will be posted to the project website
  - Recording for this meeting will be posted on project webpage

- Other Resources:
  - Pheasant Branch Watershed Study Webpage
  - City of Madison Flood Website
  - Flash Flooding Resilience Story Map
    - **Note: Please view the story map using Firefox or Google Chrome browsers. Story maps are not viewable with Internet Explorer.*
  - Watershed Study Learning Hub
  - Facebook – City of Madison Engineering
  - Twitter – @MadisonEngr
  - Engineering Podcast: Everyday Engineering on iTunes, GooglePlay

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