Sauk Creek Corridor Plan

CONCEPT REFINEMENT MEETING #2

PRESENTATION: 6:30-8:00PM

Q&A: 8:00PM-8:30PM

Presenters Bios:

Jojo O'Brien, PE - Project Manager, is a Water Resources Engineer and UW-Madison graduate with a B.S. Degree in Natural Resources and Environmental Engineering and Environmental Studies. She joined the City of Madison in 2016.

Maddie Dumas-Stormwater Vegetation Coordinator has a Master's of Science from UW-Madison. She joined the City of Madison in 2018, and previously managed 660 acres of restored prairie and wetland for a non-profit.

Sarah Kraszewski - Senior Ecologist at Heartland Ecological Group. She has 15 years of environmental consulting experience and has a Masters Degree in Land Resources from UW-Madison.

Supporting Staff Bios:

Janet Schmidt, PE - Principal Engineer for the City Stormwater section. Janet is a Civil Engineer and a 1994 UW-Madison graduate with a B.S. Degree in Civil & Environmental Engineering.

Greg Fries, PE - Deputy City Engineer. Greg is a Civil Engineer and a UW-Madison graduate with a B.S. Degree in Civil & Environmental Engineering and Masters Degree in Business.

Ian Brown - City Forester. Ian has a BA in Biology and MS in Natural Resources Management. He joined the City of Madison in 2023 after working with the WDNR and City of Milwaukee.

Ryan Schmidt - Engineering Operations Supervisor, joined the City of Madison in 2016, currently oversees construction and maintenance operations for the City of Madison's Pond and Greenways.

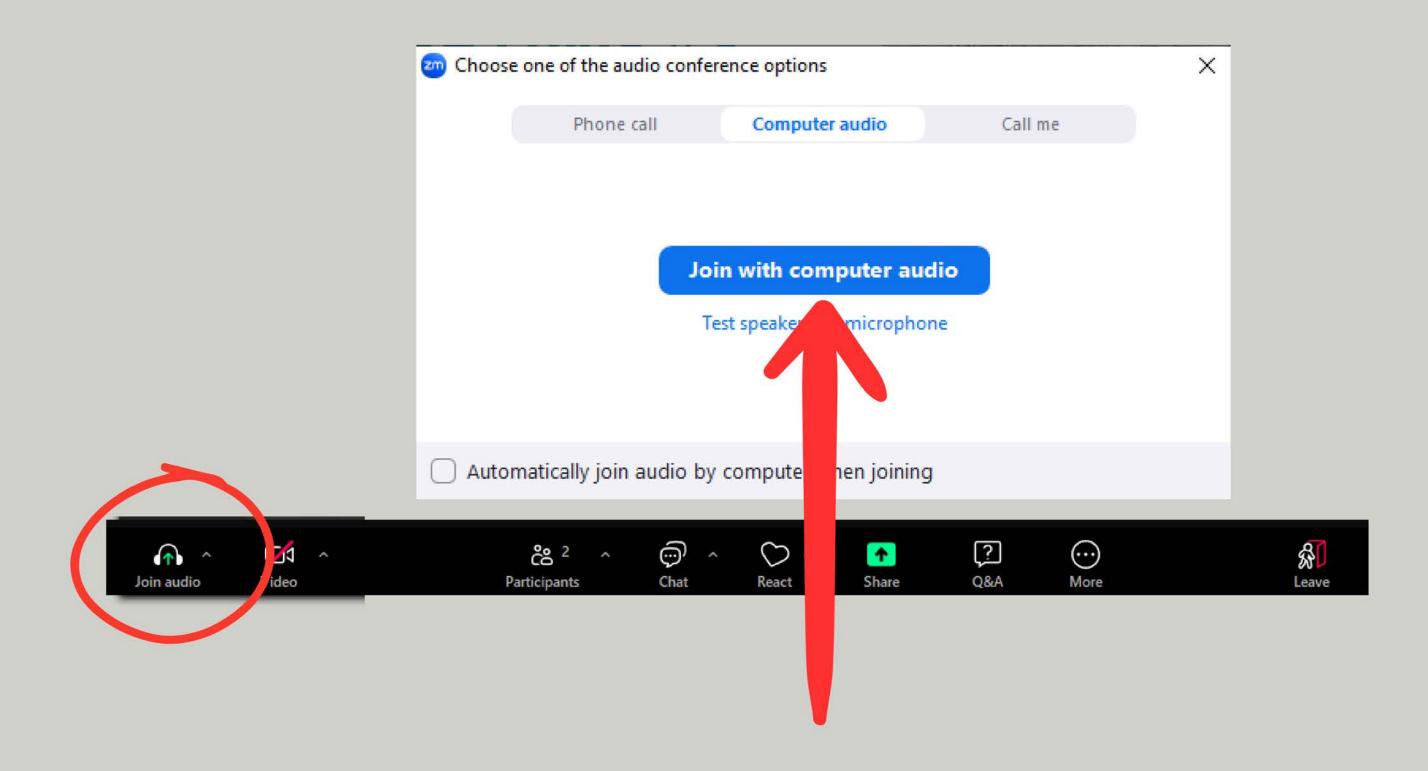


Meeting Technical Housekeeping

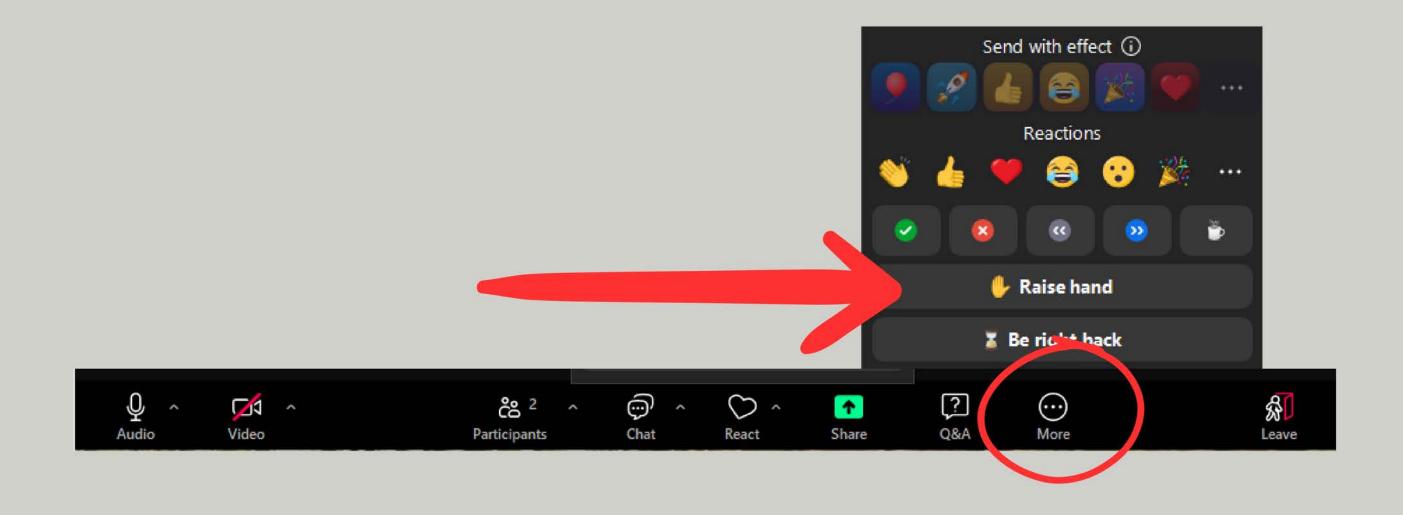
- •This meeting will be <u>recorded</u> and posted to the project page.
- •All attendees should be <u>muted</u> to keep background noise to a minimum.
- •Use the "Chat" button for technical issues with meeting to troubleshoot with staff to assist and when providing input.
- •Use the "Q&A" button to type questions about presentation.
- Questions will be answered live after the presentation.
- •Use the "<u>raise your hand</u>" button to verbally ask your question. You will be prompted to unmute when it is your turn.

THIS MEETING IS BEING RECORDED. IT IS A PUBLIC RECORD SUBJECT TO DISCLOSURE.

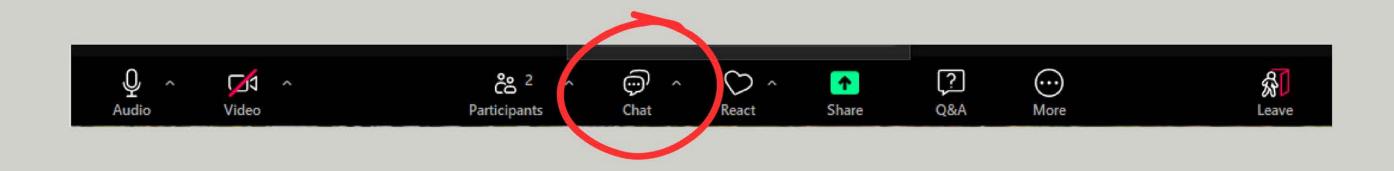
By continuing to be in the meeting, you are consenting to being recorded and consenting to this record being released to public record requestors.



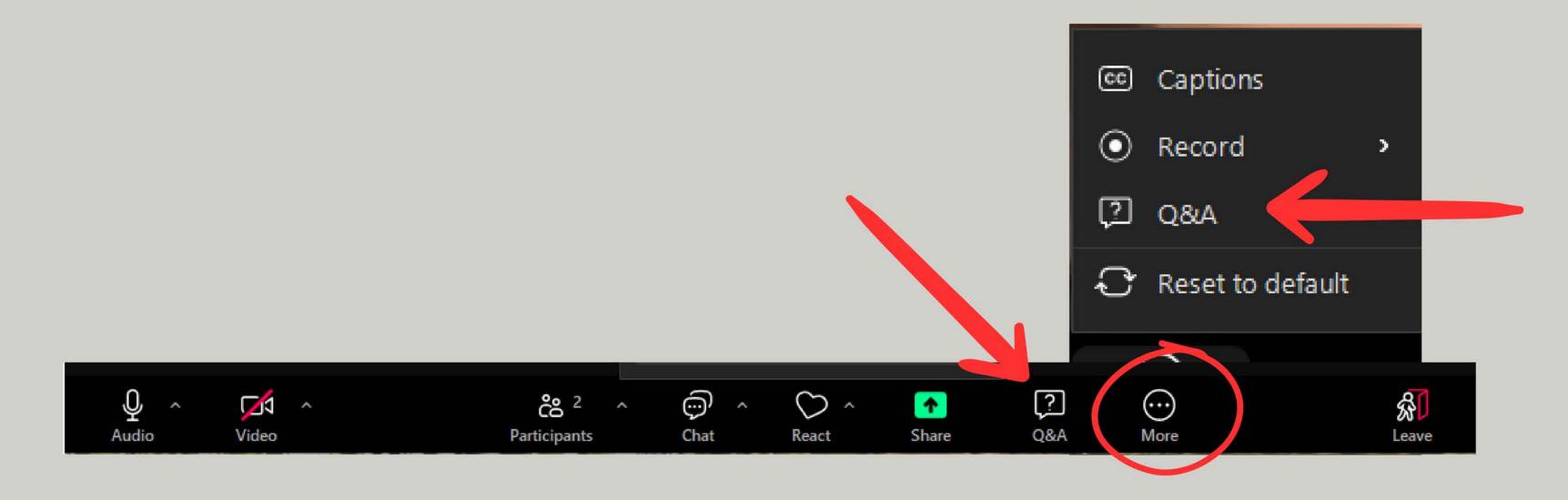
Make sure to join audio



Raise your hand to be unmuted for comments or ask additional questions. (click "More" for pop-up menu that includes "Raise Hand")



Use chat if you have technical issues or to provide input.

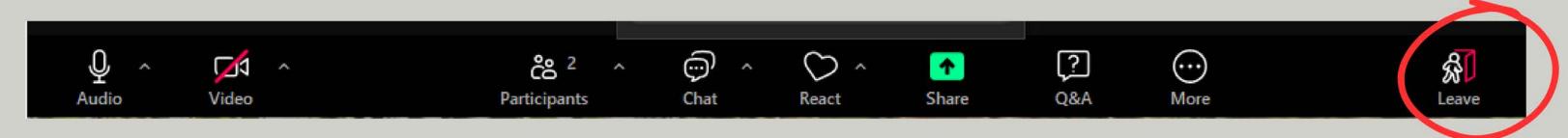


Use Q & A if you have questions.

We will answer after the presentation.



Click "Show Captions" for zoom automated captions.



To leave the meeting click here

Meeting Facilitation Requests

- Ask clarifying questions as we go. (e.g. explain a term)
- Save discussion questions for the end.
- Practice putting yourself in others' shoes, but speak from your own experience.
- Be respectful. Be open to listening. Respect others in this meeting the way you wish to be respected.
- Recognize that personal opinions differ, there are often competing priorities, differing values, and perspectives.



Our Team

Presenters Bios:

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Presentation Topics

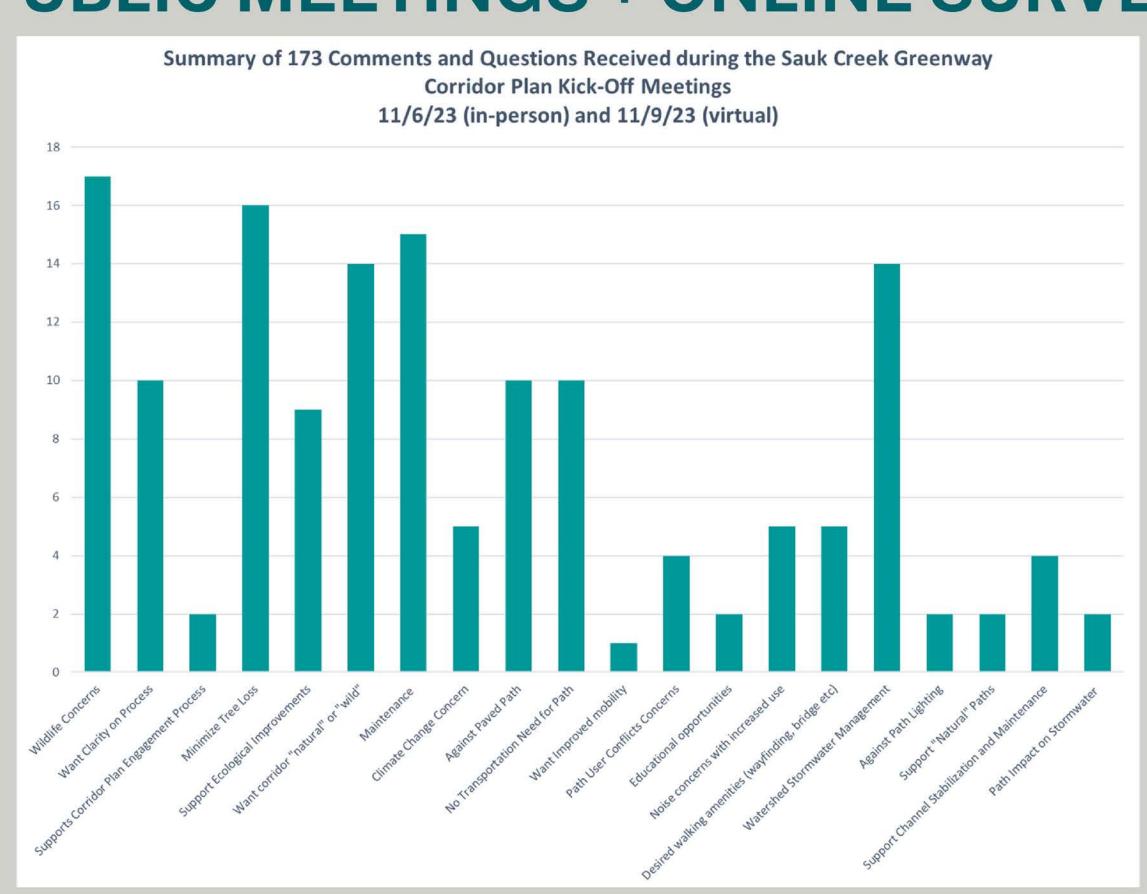
- What we heard
- Next Steps
- Stormwater clarifications
- Maintenance background
 - Practice poll question
 - 6 zoom polls to share your input
- Vegetation and stormwater background
- Channel Assessment
 - 2 zoom polls to share your input
- Ecosystem services background
 - 5 zoom polls to share your input
- Ecological Assessment
 - 4 zoom polls to share your input



We are going to share a lot of information with you, and ask for input. If you need time to consider what we are presenting, all the slides and **Ecological Assessment will be** posted on the project webpage, we'll have more opportunities to provide input throughout the Corridor **Planning process!**

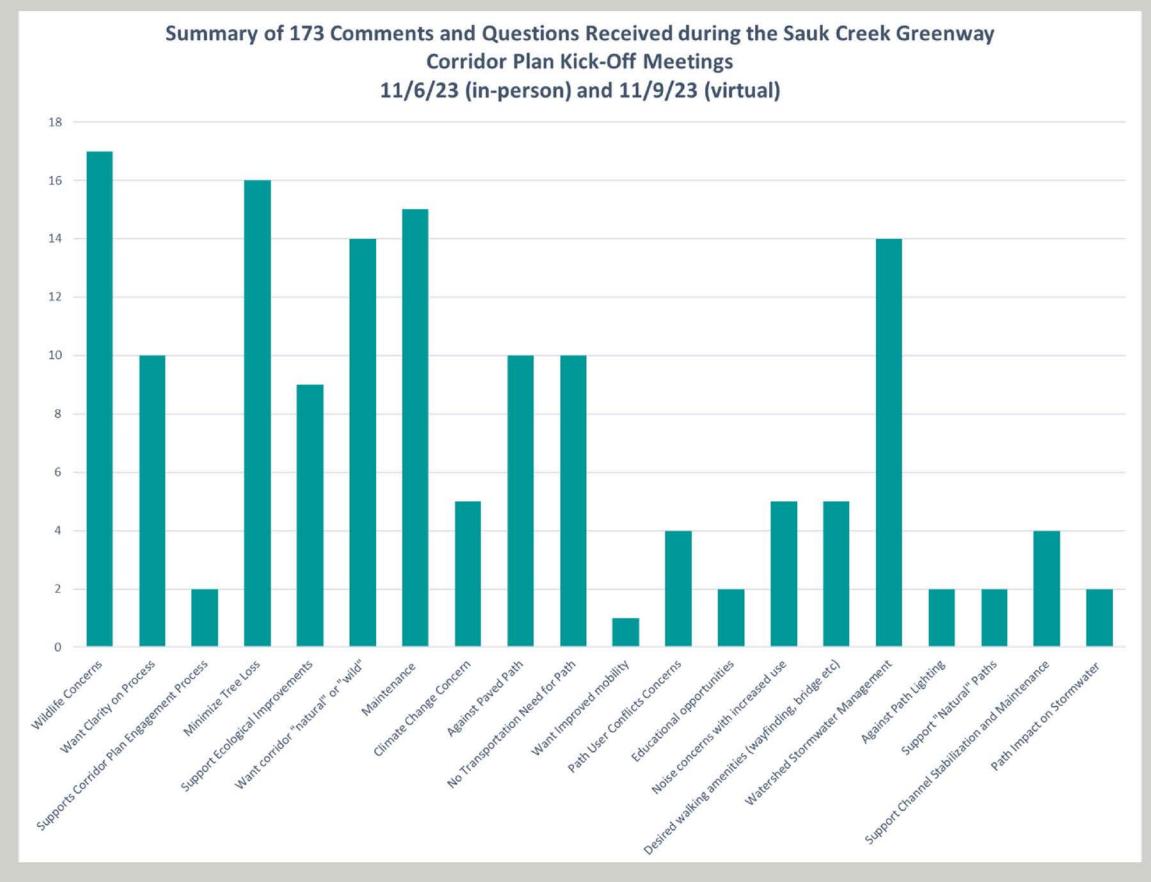
What we heard

PUBLIC MEETINGS + ONLINE SURVEY



What we heard

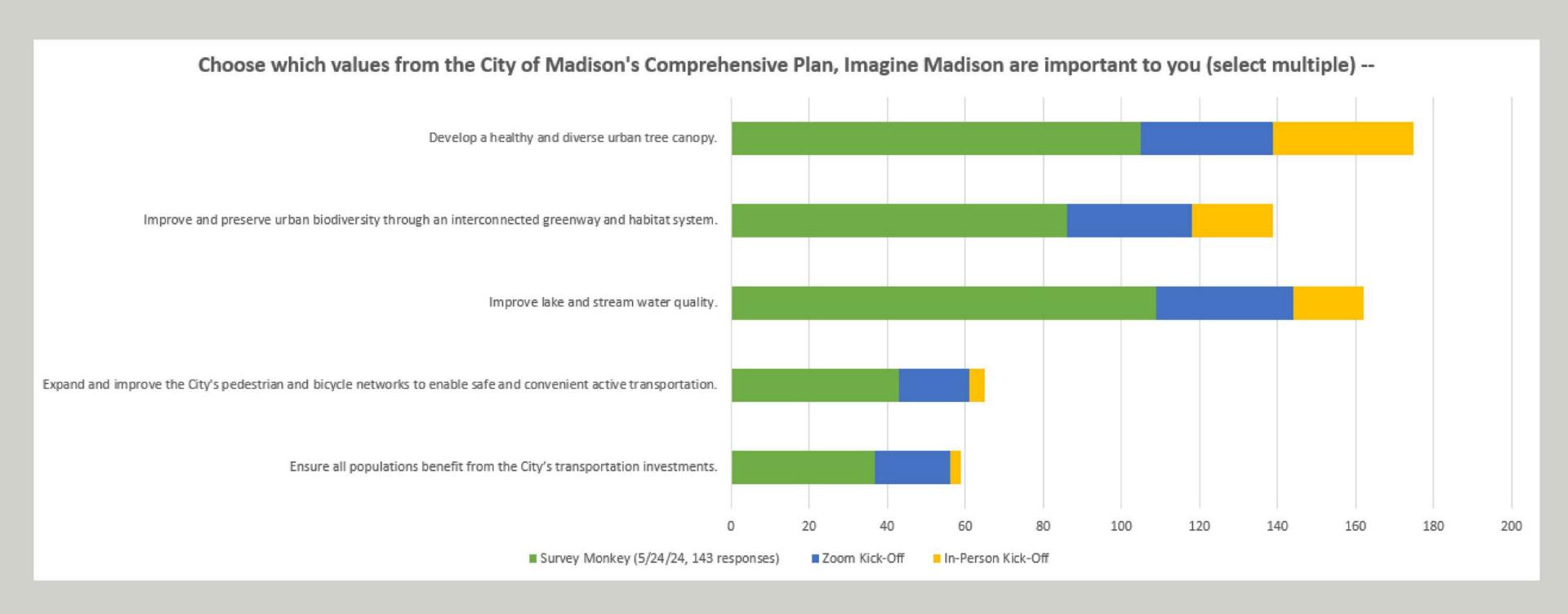
PUBLIC MEETINGS + ONLINE SURVEY



Top comments:

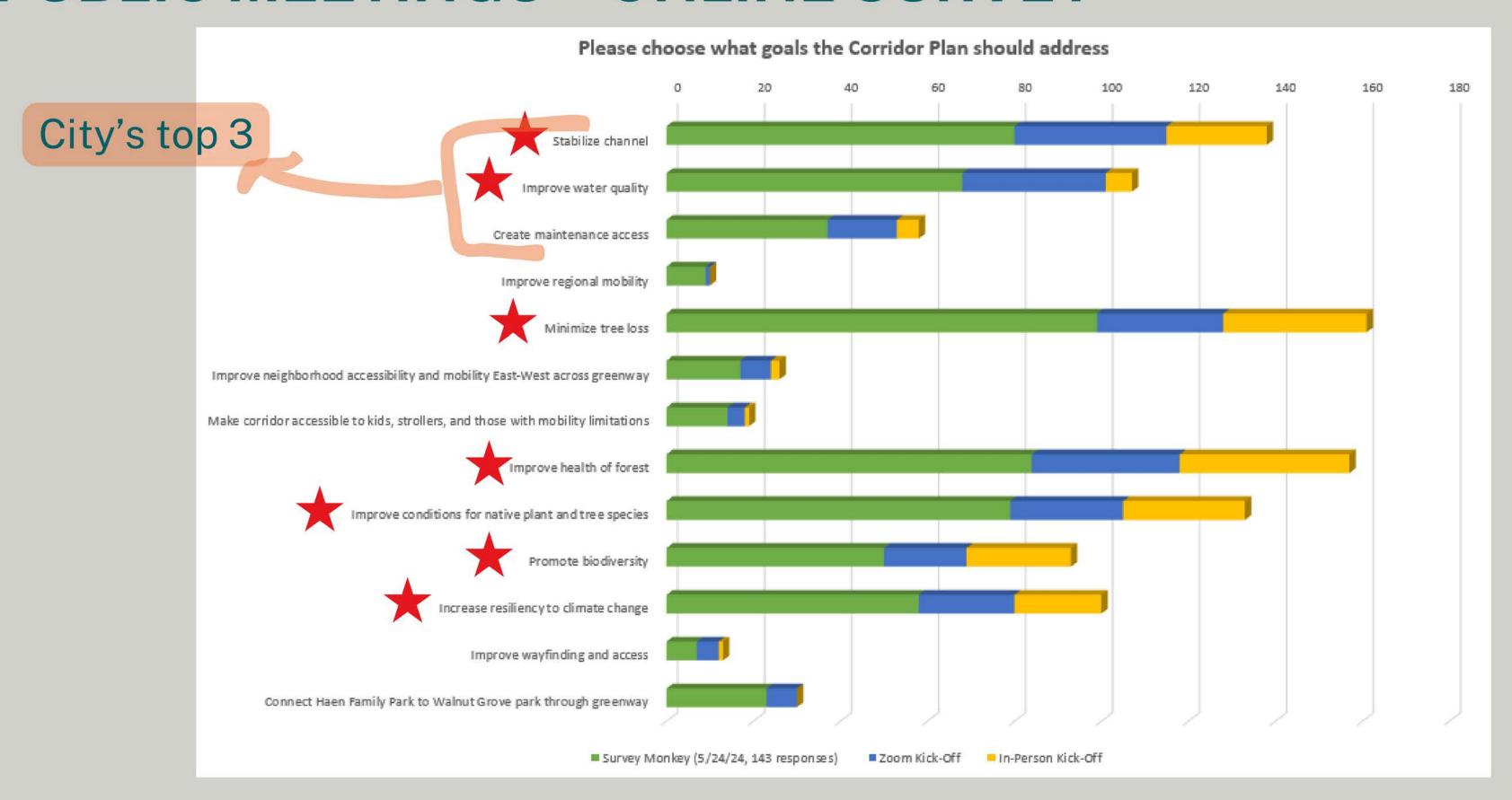
- Wildlife concerns
- Minimize tree loss
- Want "natural" or "wild" corridor
- Maintenance
- Watershed stormwater management

What we heard PUBLIC MEETINGS + ONLINE SURVEY

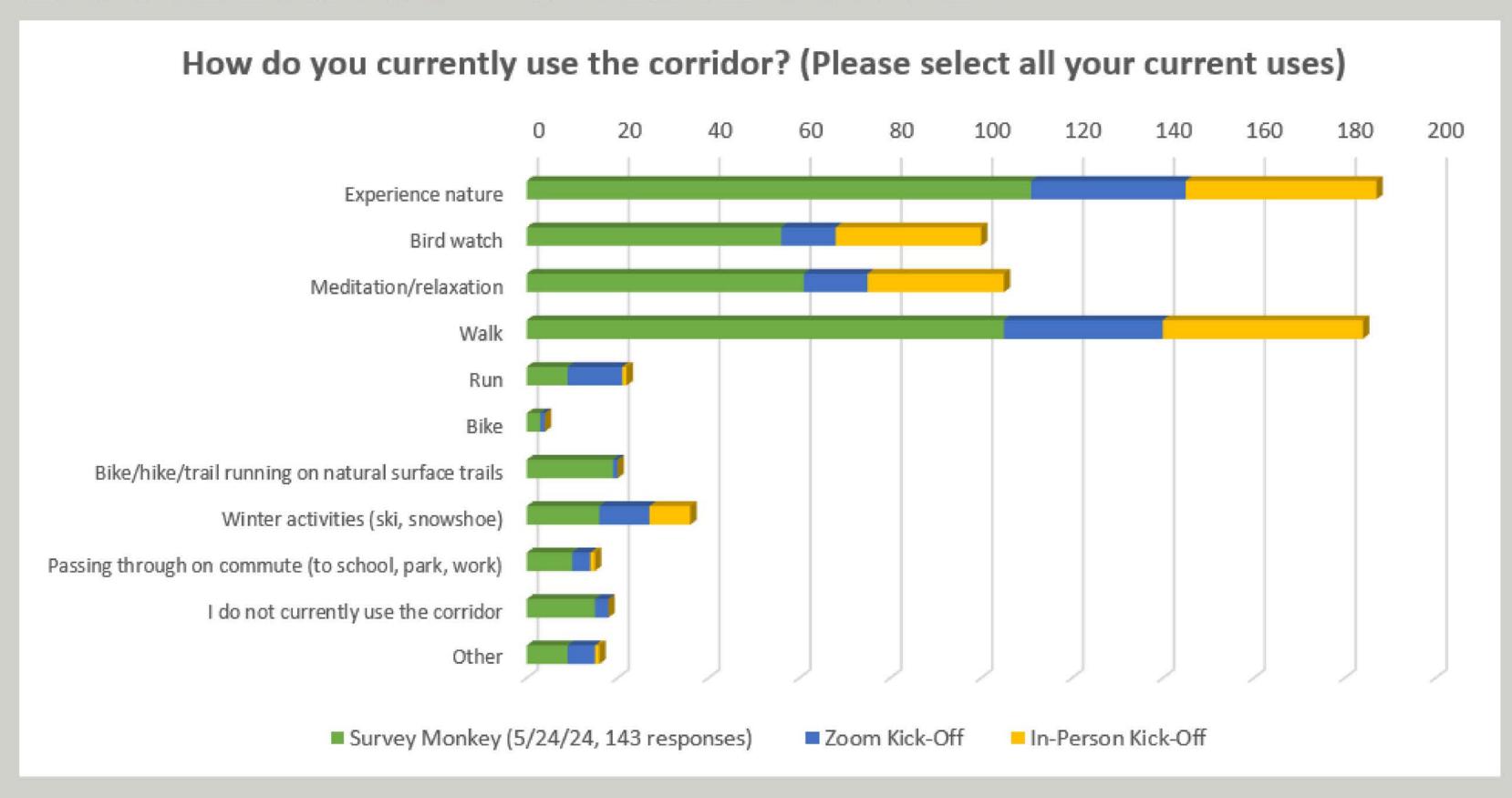


What we heard

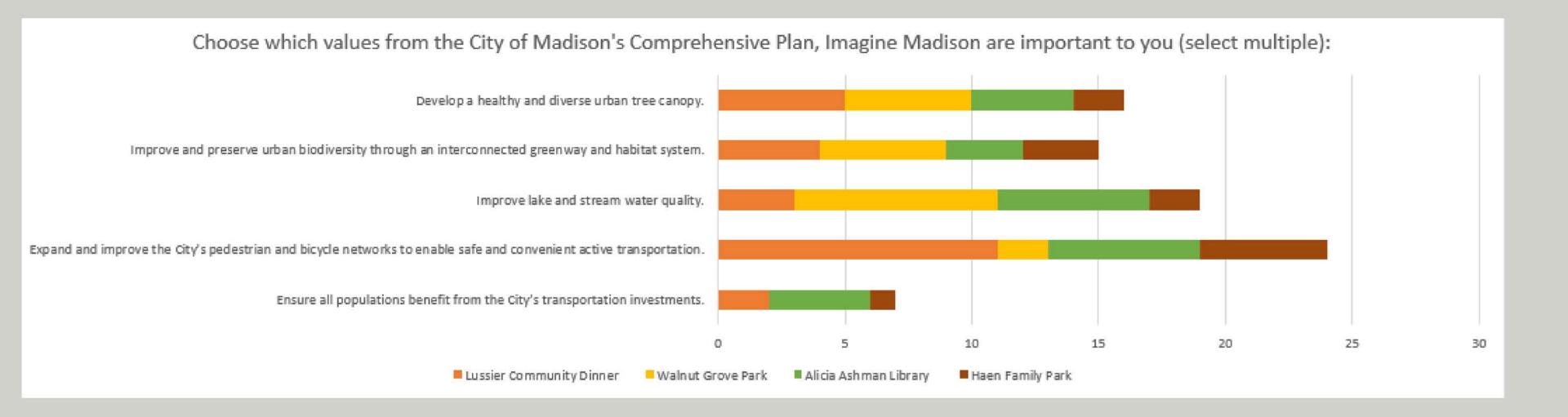
PUBLIC MEETINGS + ONLINE SURVEY



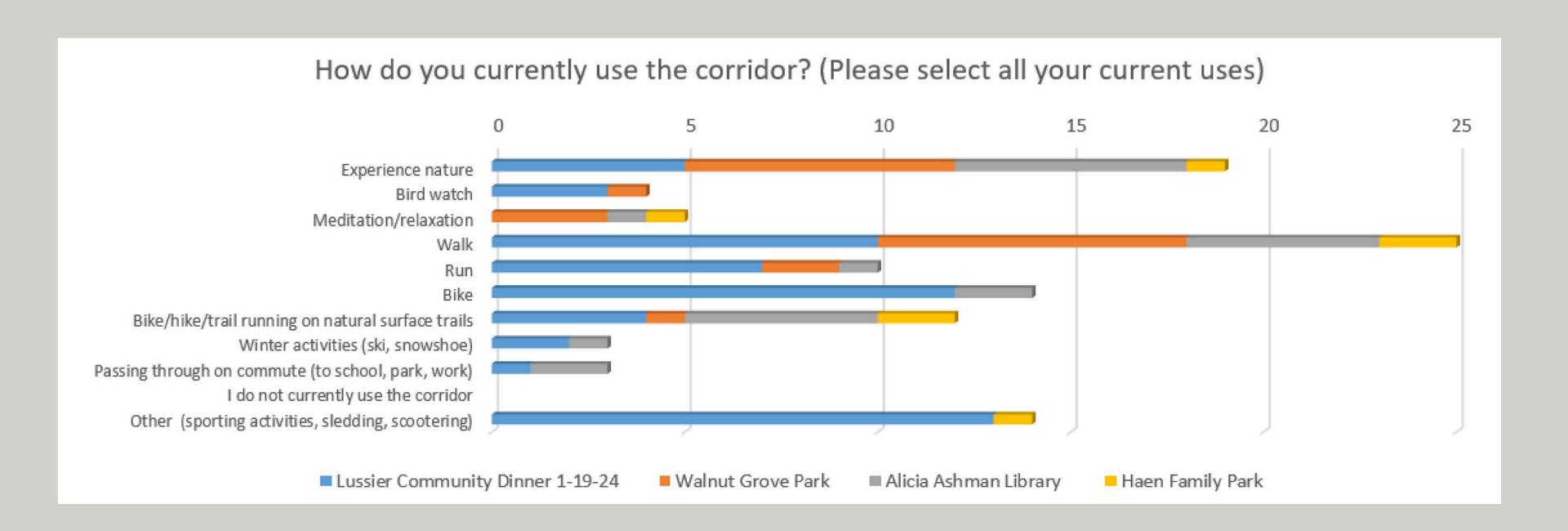
What we heard PUBLIC MEETINGS + ONLINE SURVEY



What we heard FOCUS GROUPS



What we heard FOCUS GROUPS



What we heard FOCUS GROUPS

- Broad desire for access to the corridor from Haen Family Park
- Families in Alicia Ashman library area interested in N-S access thru corridor to Tree Lane
- Broad support for improving biodiversity, improving water quality
- Interest in improving maintenance and removing down trees
- Confusion of where public property boundary is within corridor
- Concerns about existing path connectivity
 - Random dead-ends for hikers/mountain bikers
 - Not a clear north-south walking trail connection

Inconsistencies in Common Themes

People want corridor wild and natural	People want channel maintained, and invasives removed
People do not want multi-use paths	People want safer access over and around channel
Desire to minimize tree impacts	Requests by adjacent POs to remove down or hazardous trees
Concerns about citywide canopy coverage	~85% of trees on private property
The Urban Forestry Task Force Report encourages additional canopy citywide	The Urban Forestry Task Force Report Recommendation #8: "The City Forester and Engineering Division should work cooperatively to develop standards for tree plantings in greenwaysand identify strategies to minimize erosion from shaded exposed soil that can result with trees and moving stormwater while maintain the inherent functions of greenways."

What's changed since the last meeting

Alder Conklin recommended removing North-South multiuse path from Final Draft of West Area Plan

- East-West path still recommended in West Area Plan
- After we get input on the channel, maintenance and ecological aspects of the project, we will discuss potential paths, and how they relate/overlap with the other aspects of the work
 - Discussions will occur at a high level during the next meeting, and in more detail once the final West Area Plan is adopted

Next Steps

Today

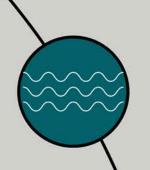
- City shares: Ecological Assessment, Channel Assessment, Maintenance info
- Community input on: ecological goals and concerns, channel stabilization, future maintenance

Next Meeting

- City Shares: Draft corridor plan options for the channel stabilization, maintenance access and ecological goals. High level info on paths currently in West Area Plan
- Community input on:
 - Draft corridor plan
 - Pond modification options
 - High level feedback on paths currently in West Area Plan

Paths in Corridor Plan?

- 1. Get community input on channel stabilization and maintenance access (today!)
 - City will incorporate input into draft plans
- 2. Look at preliminary design options for paths within West Area Plan based on how it overlaps with draft plans for channel stabilization and maintenance access
 - Analyze design constraints, how to address community concerns, and resulting incremental impact
 - Community input on high level concepts
- 3. Look at what paths are included in final, adopted West Area Plan (later this fall)
 - Community input on detailed design options
- 4. Based on findings and input, bring recommendation thru the approval process
 - Boards and Commissions are ultimate decision makers
 - Transportation Commission (Multi-use Path)
 - Board of Parks Commission (Parks Impacts)
 - Board of Public Works (Entire Corridor Plan)
 - Common Council (Entire Corridor Plan, Final Approval)



2018-2023 - CONDITIONS ASSESSMENT

- Tree inventory (complete)
- Topographic survey (complete)
- Pheasant Branch Watershed Study (complete)
- Wetland Delineations (complete)
- Ecological and Channel Assessment (2023)
- West Area Plan (2023-2024)



2023 - ISSUES AND OPPORTUNITIES

- Kick-off Meeting
- Focus Groups

Fall 2023



2024 - CONCEPT REFINEMENT

Public Meeting

July 2024



Corridor



2024 - DRAFT PRELIMINARY CORRIDOR PLAN

- Internal advisory group generates corridor concepts
- Public Meeting to gather feedback
 - Focus Groups to give input on vegetation

Fall 2024



2024 - DRAFT FINAL CORRIDOR PLAN

- Internal advisory group refines corridor concept
- Public Meeting to gather feedback

Fall/Winter 2024



2024 - FINAL CORRIDOR PLAN & IMPLEMENTATION

- Internal advisory group finalizes corridor plan
- Public Meeting to gather feedback

Winter 2024



2025 - APPROVAL PROCESS

Ultimate Decision Makers

- Transportation Commission (Multi-use path)
- Board of Parks Commission (Parks impacts)
- Board of Public Works Entire Corridor Plan
- Common Council Entire Corridor Plan, Final approval

Winter/Spring 2025

we are here

*Developed using the City of Madison Racial Equity and Social Justice Public Participation Resource Guide

Plan

*yellow indicates modifications since previously shared timeline

Stormwater Clarifications

- Funding
- New Development
- Existing Upstream Development
- Using Green Infrastructure to prevent downstream flooding

PEOPLE

LAND

WATER

Stormwater Utility Funding

- Not funded from property taxes, which funds the General Fund
- All stormwater related improvements are funded through a charge on your monthly water bill called "stormwater".
- The average single family house
 pays \$11/month which is used to
 fund ALL the operations of the
 entire stormwater sewer system as
 well as funding capital projects.

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LANDFILL		RATES WENT INTO EFF	FECT 06/01/2023		
Landfill Remediation					\$0
SEWER		RATES WENT INTO EFFECT 06/01/2023 (608) 266-47			
City Sewer Demand 5/8" Mete	er				\$7
MMSD Trtmnt Demand 5/8" M	leter				\$7
City Sewer Service		3,426	gallons at	0.001308	\$4.
MMSD Treatment Service		3,426	gallons at	0.003439	\$11
		Sewer Sul	b Total		\$31
SPECIAL CHARGES		RATES WENT INTO EFFECT 01/01/2023			(608) 243-58
Urban Forestry-Residential					\$6
Resource Recovery					\$4
		Special Ch	narges Sub Total		\$10.
STORMWATER		RATES WENT INTO EFF	FECT 05/01/2023		(608) 266-47
STORMWATER Stormwater Base		RATES WENT INTO EFF	FECT 05/01/2023		
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In 2020 Municipal Government Ordinance (MGO) 37

Revised to Increase Flood Resiliency

New Development

Added 0.5% chance detention requirement Increased sizing standards for greenway crossings Set low building openings for critical areas

Re-Development

Reduce 10% chance peak flow by 15%

Reduce 10% chance runoff volume by 5%

Green Infrastructure required

Set low building openings for critical areas

Utilize models created for watershed studies

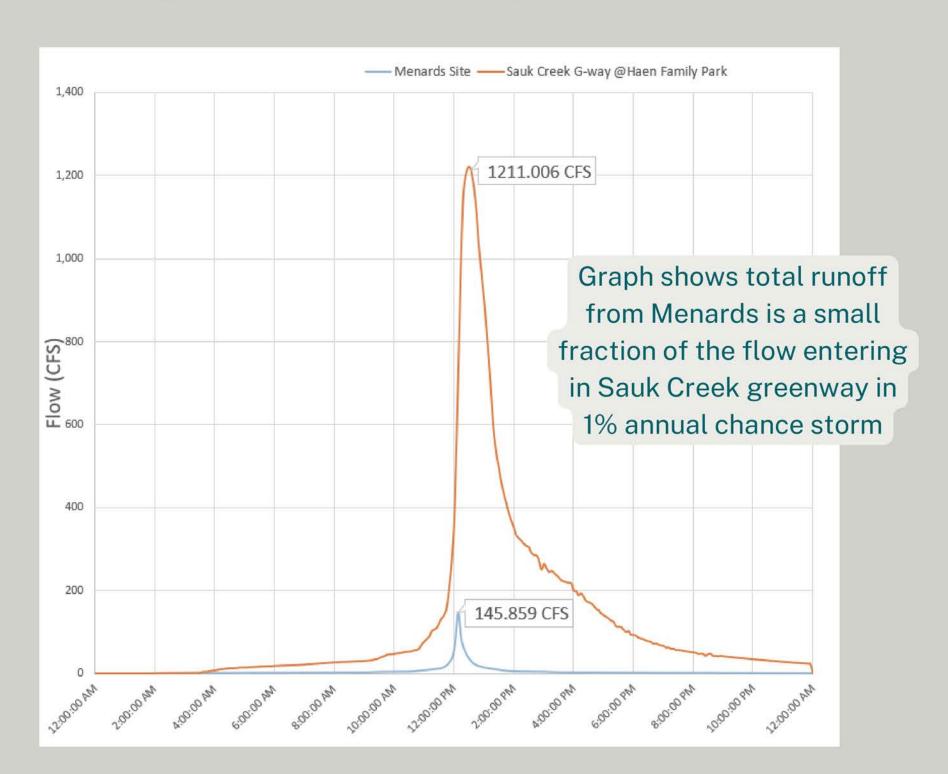


Photo Credit: CRG, Chapter at Madison

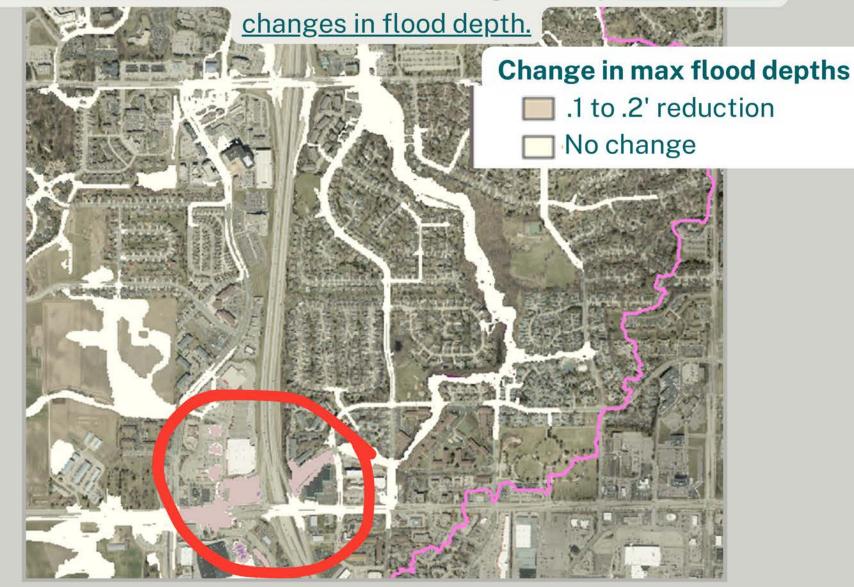
Impacts of Commercial Area Upstream of Sauk Creek

We heard public interest in having Menards hold more stormwater on their property to reduce amount of stormwater moving through Sauk Creek Greenway.

--->Analysis shows that this does not have an impact.

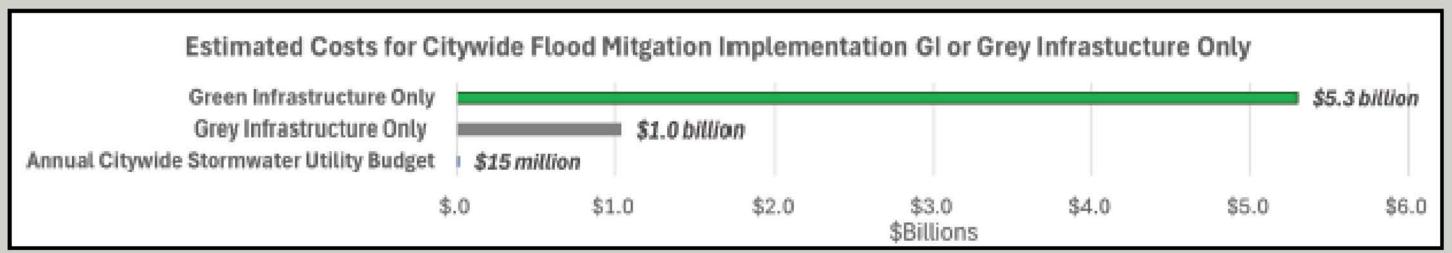


Hypothetical modeling removed all runoff on Menards from model. The result is small reductions in flood depths around Mineral Point Road and Target pond in 1% chance storm. By the time the water reaches the Sauk Creek greenway, there are no



Green Infrastructure (GI) Analysis

- A GI analysis was completed with the Pheasant Branch Watershed study to evaluate
 Green Infrastructure as a means to reach our flood mitigation targets
- Found significant GI needed to meet flood reduction targets
 - This is because GI is meant to improve water quality, and is designed for smaller frequent storms (which carry most of the pollutants), not large flood storms. When GI fills up at the start of a large storm, the water flows out like a cup that is full.
- Citywide implementation of GI as the primary flood control measure would exceed \$5 billion, several times the cost of necessary grey infrastructure.



*Does not include maintenance costs

For more information, including the GI analysis report, and summary fact sheet, please visit: www.cityofmadison.com/flooding/city-initiatives/watershed-studies/watershed-study-learning-hub/green-infrastructure-water

Green Infrastructure (GI) Analysis

 GI will continue to be a piece of the larger puzzle for flooding. GI has many ecological, water quality, and social benefits; and it can add resilience to the stormwater system

 The City encourages GI use through the stormwater ordinance, the rain garden program, and a GI Pilot Study.

• GI's many benefits are increased when we are able to infiltrate clean water--residents building rain gardens to infiltrate roof water is a great way to help!

- -->credit on your stormwater bill
- You can learn how to install a rain garden on your own property here:

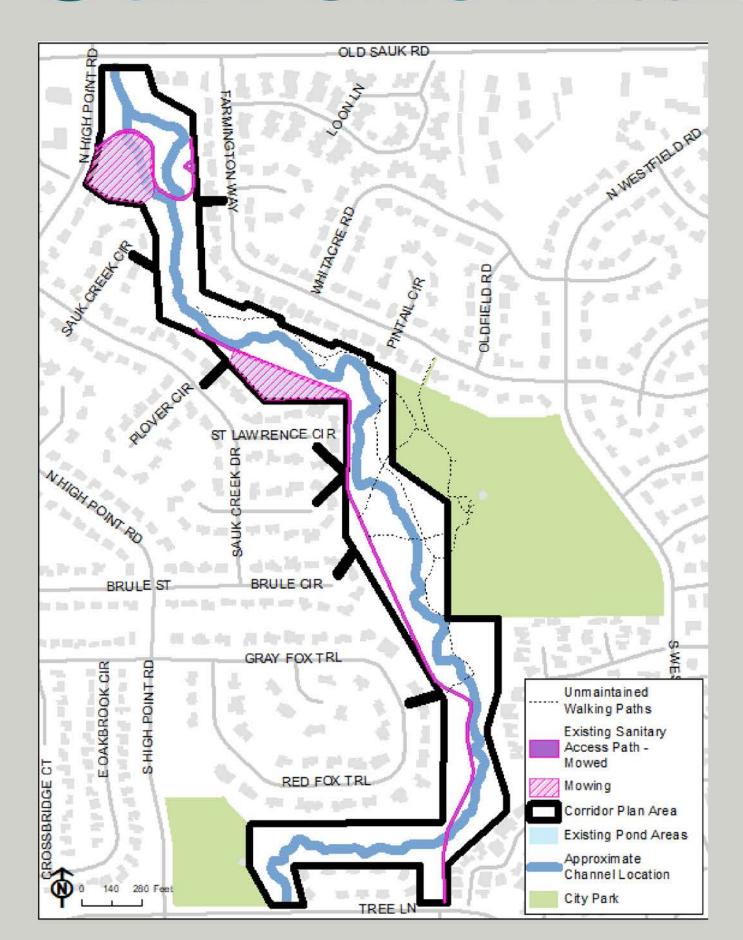


www.cityofmadison.com/engineering/stormwater/programs-initiatives/rain-gardens

Maintenance Background information

- The Stormwater Utility (SWU) owns 1,500 acres of vegetated land and additional 500 acres of public/private stormwater land
 - Sauk Creek Greenway is 34.5 acres (2.3% of SWU owned land)
- Additionally, City Engineering Operations maintains:
 - 790 miles of sanitary sewer main
 - 549 miles of storm sewer
 - 39,313 stormwater structures

Current Maintenance



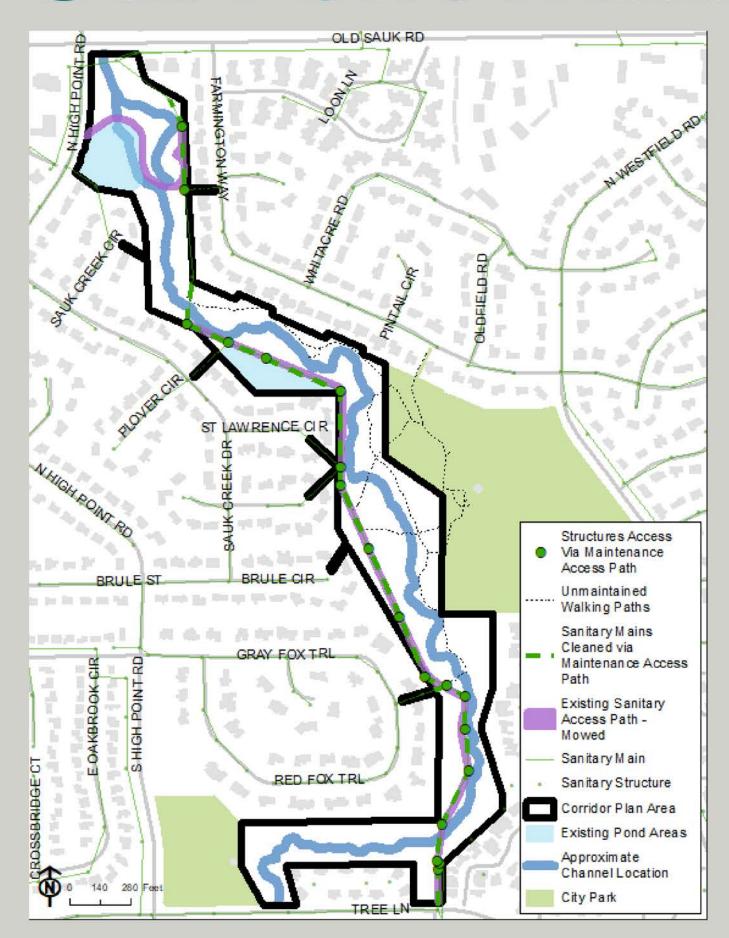


- Stormwater ponds are mowed ~1 year
 - Northern pond mowed less frequently because it's often too wet
- Sanitary access path mowed prior to cleaning sanitary sewer





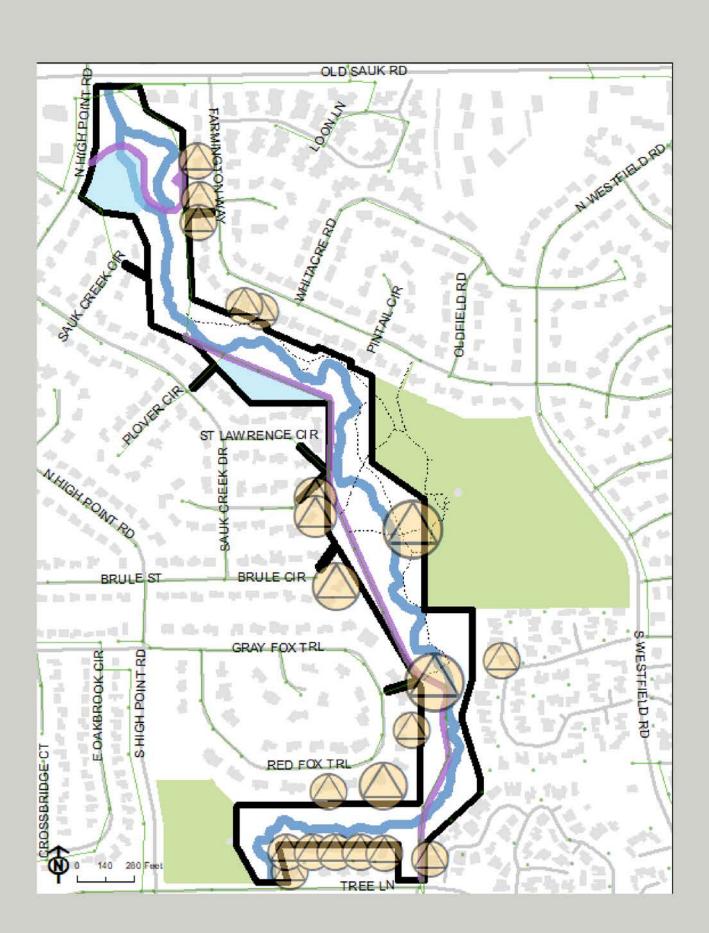
Current Maintenance





- Clean and televise sanitary sewer main
 - Prevents back-ups
- Access paths allows quick response during emergencies

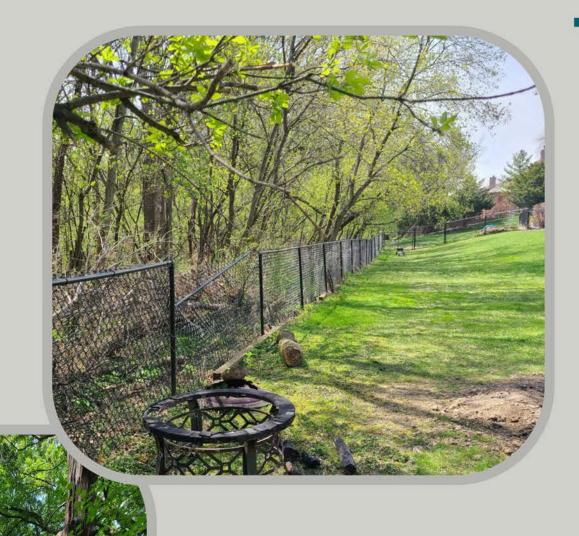
Maintenance Requests



Tree Removals

- The City receives frequent requests to remove standing dead, or fallen trees.
- Since 2018, Engineering Operations has received >40 requests for tree removals in the Sauk Creek Greenway alone

Maintenance Requests



Tree Removals

- Many requests for trees impacting private property are for trees that often grow quickly from the edges of the greenway and reach out over the property line to sunnier backyards
 - Trees that "reach" often are growing at an angle out of the ground, and can drop limbs or fall onto private property
- Often times areas are challenging to access and additional trees need to be removed to access the tree in question

Maintenance Requests

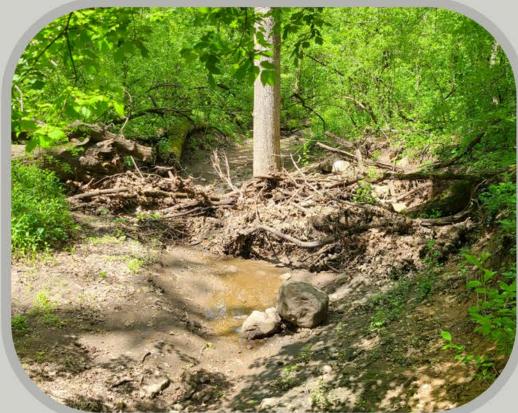
Tree Blockages in Channel

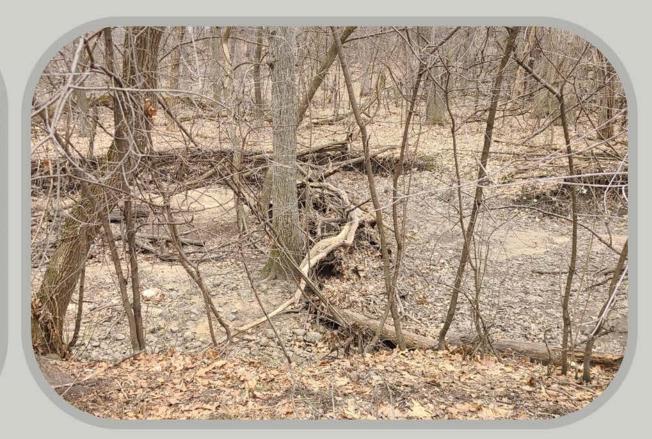
- Tree blockages can lead to water backing up, and eroding a wider channel
- they can also cause access issues for those crossing the channel on the unofficial paths (see top right photo)





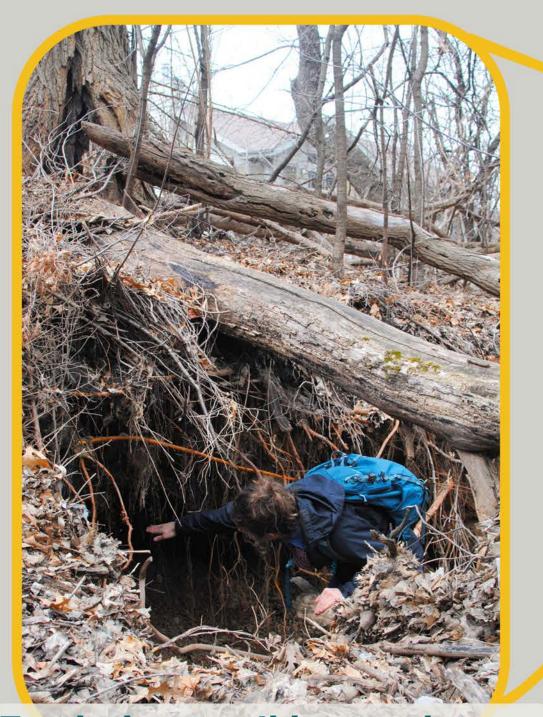


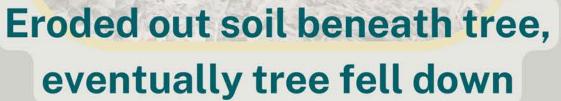




Maintenance Requests

Tree Blockages in Channel







Maintenance Equipment



Tandem Axel Dump Truck







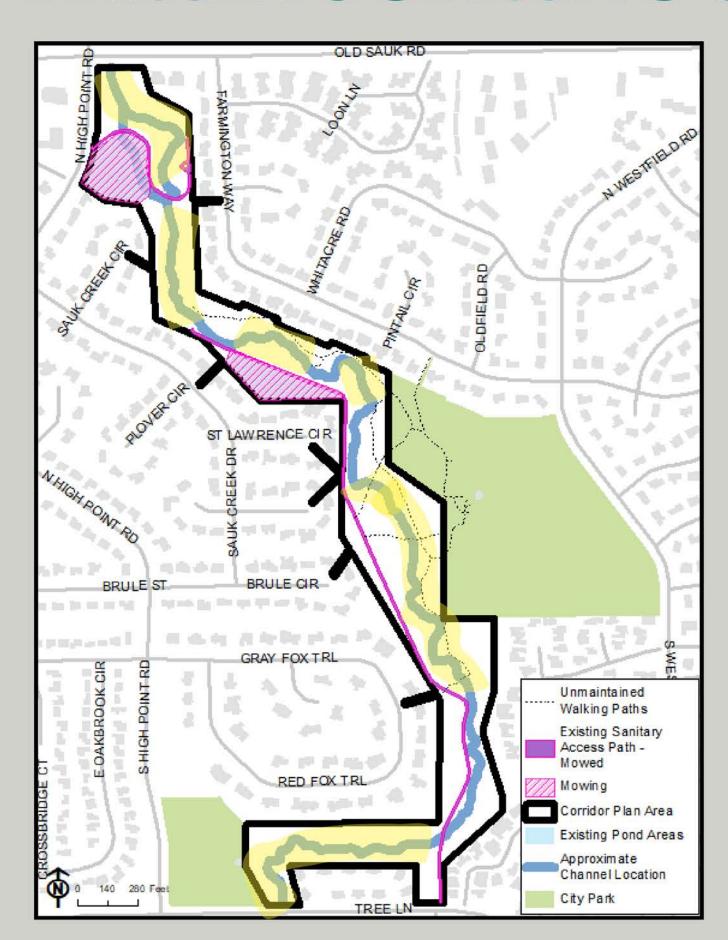








Maintenance Access Limitations



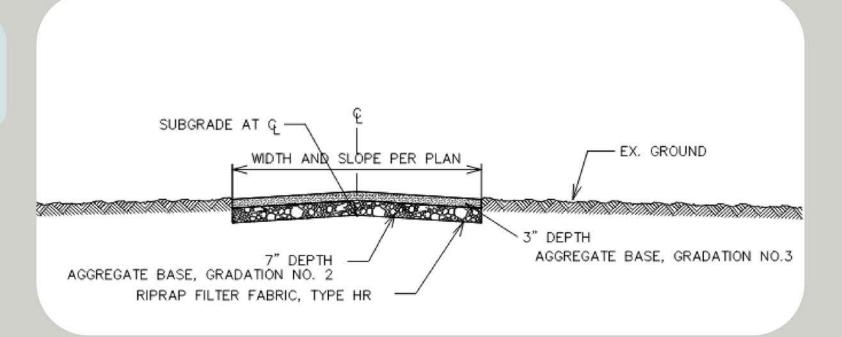
Highlighted sections of the channel are currently inaccessible to clear channel blockages

Access Path Make-Up

One thing in common for all access paths = gravel base

Considerations:

- Path needs to support equipment intended to use it
 - Don't want equipment to rut out paths or get stuck
 - Need access to essential infrastructure (sanitary sewer) during an emergency
- Path needs to hold up to stormwater flows
 - Don't want paths to be washed away, or need regular repair





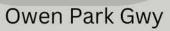


Access Path Make-Up

Considerations for Cover

- 1. Soil and Vegetation
 - a. Can limit access when area is wet to avoid rutting
 - b. Rutting can lead to less level surface for other users
 - c. Needs annual mowing
 - d. Less clear edges
- 2. Gravel Only
 - a. Can washout and need repair
 - b. More defined edges of path
- 3. Paved
 - a. Universal access
 - b. More expensive to repair
 - c. Clearly defined edges of path







Quarterdeck Gwy



How To Participate in Polling Questions

- We will read the question aloud on each slide
- Next, a box will pop up on your screen to answer the question
 - You will be able to select a single choice, or multiple choice, depending on question
- Questions will be open for ~1 min, or until response rate decreases and most have taken the poll
- Aggregated responses will be appear on your screen once the polling question is closed

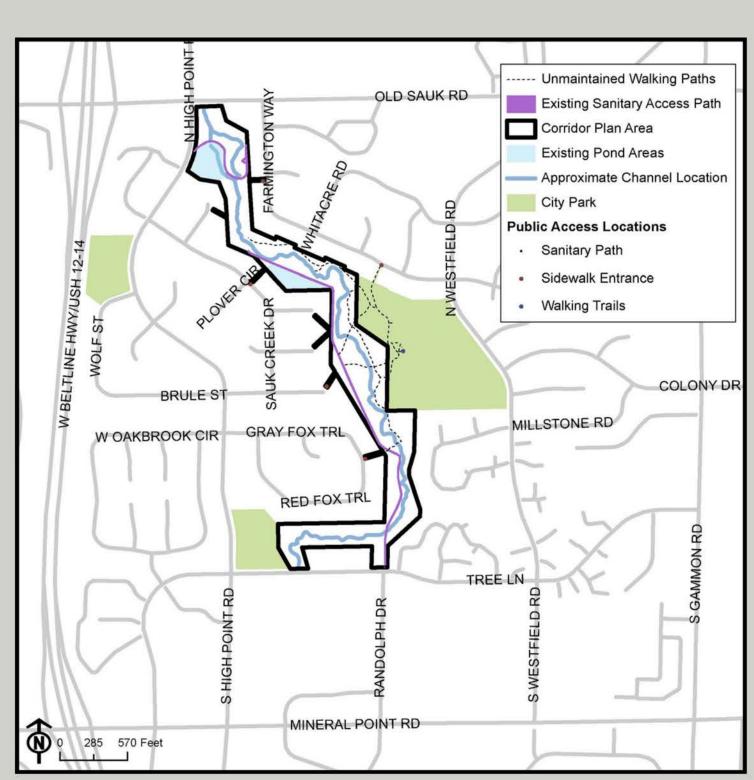
PRACTICE QUESTION



Where do you live in relation to the Sauk Creek Greenway corridor?

Single choice.

- 1. I live directly adjacent to the Sauk Creek Greenway Corridor
- 2. I live within ~5 blocks of the Sauk Creek Greenway
- 3. I live within walking distance of the Sauk Creek Greenway
- 4. I live within the City of Madison
- 5. Other



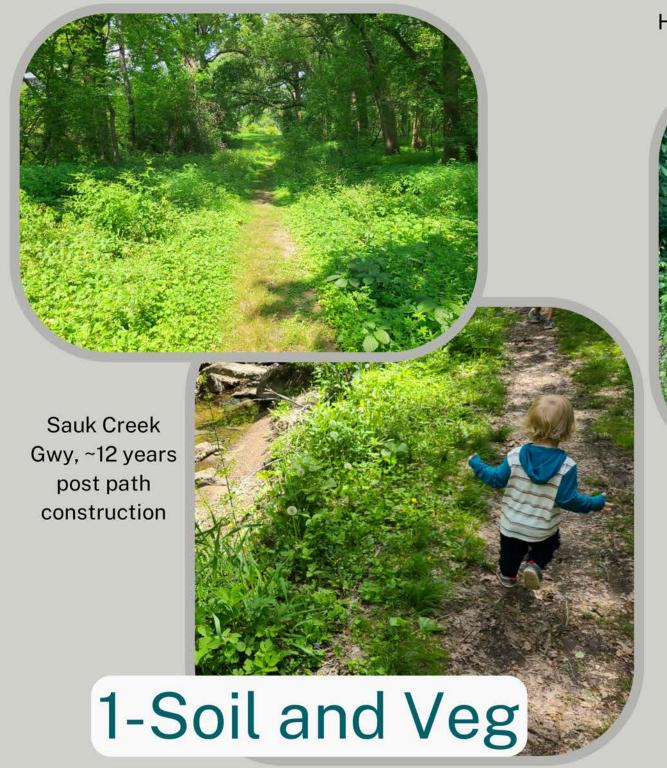
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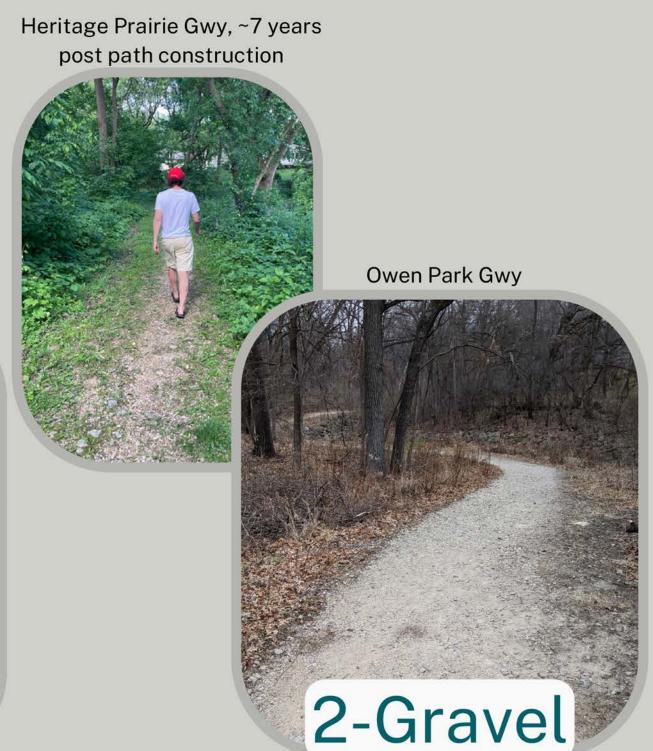
Where do you live in relation to the Sauk Creek Greenway corridor? Single choice.

- 1. I live directly adjacent to the Sauk Creek Greenway Corridor a. Response: 29
- 2. I live within ~5 blocks of the Sauk Creek Greenway a. Response: 32
- 3. I live within walking distance of the Sauk Creek Greenway a. Response: 9
- 4. I live within the City of Madison a. Response: 1
- 5. Other a. Response: 0

MAINTENANCE ACCESS PATH

Where increased access is included in the plan, which type of access cover you would you be OK with? (select multiple)







Response

Where increased access is included in the plan, which type of access cover you would you be OK with? (select multiple)

- 1. Soil and Veg Response: 47, 68%
- 2. Gravel Response : 47, 68%
- 3. Asphalt-Response: 6, 9%

MAINTENANCE ACCESS PATH

How important is it to you that the City have access to the greenway to remove dead/downed trees?

Single choice.

- Something else we missed?
 Add it to the chat!
- 1. It is not important to me that the City have access to the greenway to remove dead/downed trees.
- 2. It is somewhat important to me that the City have access to the greenway to remove dead/downed trees.
- 3. It is very important to me that the City have access to the greenway to remove dead/downed trees.
- 4. Not sure

Response

How important is it to you that the City have access to the greenway to remove dead/downed trees? Single choice.

- 1. It is not important to me that the City have access to the greenway to remove dead/downed trees.
 - a. Response 7, 10%
- 2. It is somewhat important to me that the City have access to the greenway to remove dead/downed trees.
 - a. Response 35, 51%
- 3. It is very important to me that the City have access to the greenway to remove dead/downed trees.
 - a. Response 24, 35%
- 4. Not sure
 - a. Response: 2, 3%

MAINTENANCE ACCESS PATH

How important is it to you that the City have access to the greenway to remove dead/downed trees?

Does your answer to the above question change based on location? For example: Dead or downed trees <u>on neighbor's fences/yards?</u>

Single choice.

- 1. It is not important to me that the City have access to the greenway to remove dead/downed trees.
- 2. It is somewhat important to me that the City have access to the greenway to remove dead/downed trees.
- 3. It is very important to me that the City have access to the greenway to remove dead/downed trees.
- 4. Not sure

Something else we missed?
Add it to the chat!

Response

Q3 - Maintenance Access Path

Meeting poll | 1 question | 69 of 77 (89%) participated

1. How important is it to you that the City have access to the greenway to remove dead/downed trees? Does your answer change based on location? For example: Dead or downed trees on neighbor's fences/yards?

(Single choice)

69/69 (100%) answered

It is not important to me that the City have access to th... (7/69) 10%

It is somewhat important to me that the City have acce... (35/69) 51%

It is very important to me that the City have access to t... (26/69) 38%

Not sure (1/69) 1%

MAINTENANCE ACCESS PATH

How important is it to you that the City have access to the greenway to remove dead/downed trees?

Does your answer change based on location? For example: Dead or downed trees creating a blockage in the channel?

Single choice.

- 1. It is not important to me that the City have access to the greenway to remove dead/downed trees.
- 2. It is somewhat important to me that the City have access to the greenway to remove dead/downed trees.
- 3. It is very important to me that the City have access to the greenway to remove dead/downed trees.
- 4. Not sure

Something else we missed?
Add it to the chat!

Response

Q4 - Maintenance Access Path

Meeting poll | 1 question | 67 of 77 (87%) participated

1. How important is it to you that the City have access to the greenway to remove dead/downed trees? Does your answer change based on location? For example: Dead or downed trees creating a blockage in the channel?

(Single choice)

67/67 (100%) answered

It is not important to me that the City have access to the ... (6/67) 9%

It is somewhat important to me that the City have acce... (24/67) 36%

It is very important to me that the City have access to t... (37/67) 55%

Not sure (0/67) 0%

MAINTENANCE ACCESS PATH

How important is it to you that the City have access to the greenway to remove dead/downed trees?

Does your answer to the above question change based on location? For example: Dead or downed trees creating <u>a blockage in the channel where you like to walk across the channel</u>?

Single choice.

- 1. It is not important to me that the City have access to the greenway to remove dead/downed trees.
- 2. It is somewhat important to me that the City have access to the greenway to remove dead/downed trees.
- 3. It is very important to me that the City have access to the greenway to remove dead/downed trees.
- 4. Not sure

Something else we missed?
Add it to the chat!

Response

Q5- Maintenance Access Path

Meeting poll | 1 question | 67 of 77 (87%) participated

1. How important is it to you that the City have access to the greenway to remove dead/downed trees? Does your answer to the above question change based on location? For example: Dead or downed trees creating a blockage in the channel where you like to walk across the channel? (Single choice)

67/67 (100%) answered

It is not important to me that the City have access to t... (11/67) 16%

It is somewhat important to me that the City have acce... (22/67) 33%

It is very important to me that the City have access to t... (33/67) 49%

Not sure (1/67) 1%

MAINTENANCE ACCESS PATH

How important is it to you that the City have access to the greenway to remove dead/downed trees?

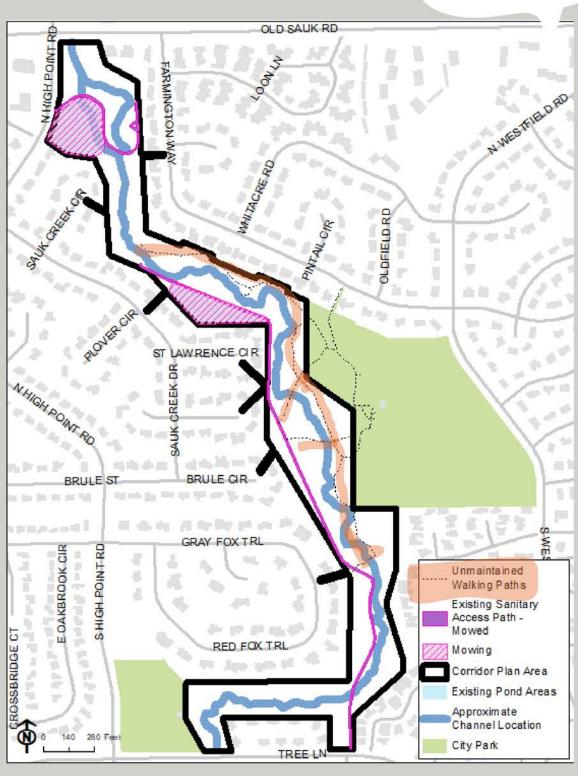
Something else we missed? Add it to the chat!

Does your answer to the above question change based on location? For example:

Dead or downed trees on unofficial walking paths?

Single choice.

- 1. It is not important to me that the City have access to the greenway to remove dead/downed trees.
- 2. It is somewhat important to me that the City have access to the greenway to remove dead/downed trees.
- 3. It is very important to me that the City have access to the greenway to remove dead/downed trees.
- 4. Not sure



Response

Q6 - Maintenance Access Path

Meeting poll | 1 question | 69 of 76 (90%) participated

1. How important is it to you that the City have access to the greenway to remove dead/downed trees? Does your answer to the above question change based on location? For example: Dead or downed trees on unofficial walking paths? (Single choice)

69/69 (100%) answered

It is not important to me that the City have access to t... (25/69) 36%

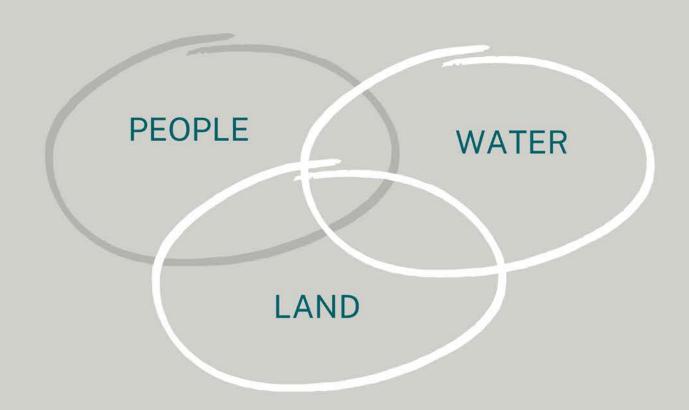
It is somewhat important to me that the City have acce... (30/69) 43%

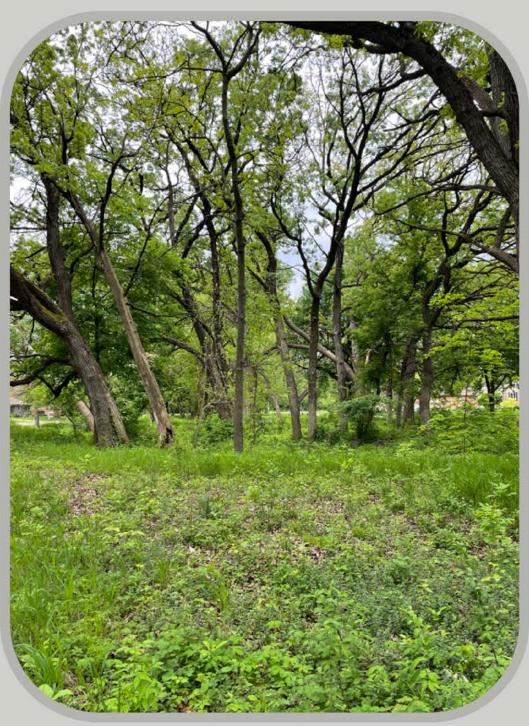
It is very important to me that the City have access to t... (14/69) 20%

Not sure (0/69) 0%

Why are plants important in the stormwater lands?

- Infiltration
- Slope Stabilization and Erosion Control
- Ecosystem Services





City of Madison Stormwater Greenway



City of Madison Stormwater Utility Bioretention Pond

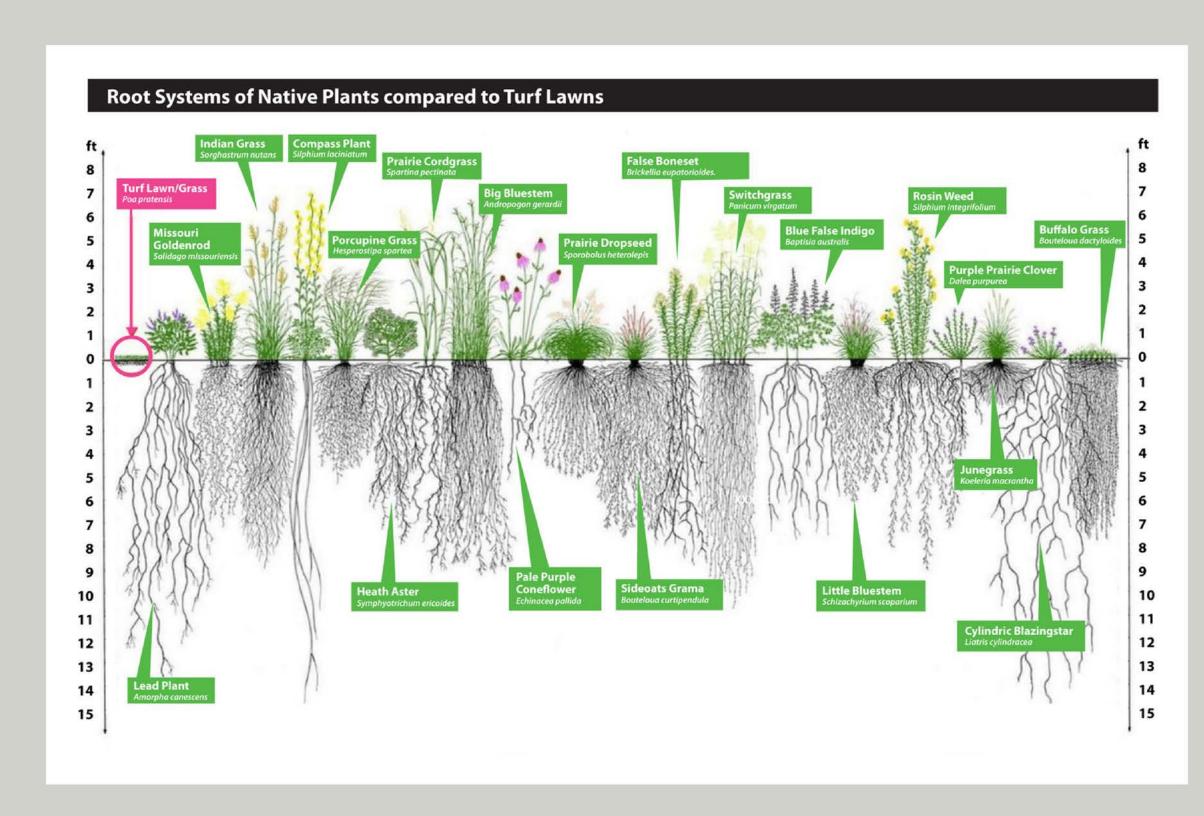
Slope Stabilization and Erosion Control

- Trees and shrubs provide deep, structural support to help hold the soil in place.
- Fibrous roots of the herbaceous groundlayer plants hold together soils on slopes, with low susceptibility to uprooting.
- Shallow rooted species are more prone to washout and can contribute to infrastructure damages during flood events.
- As much as possible, we need stormwater land to be vegetated! Exposed soil leads to an increase in erosion and sediment loss – worsening the water quality in our waterways.



Infiltration

- Deep root systems improve the soil's ability to infiltrate stormwater. Some native herbaceous plant's root systems can grow up to 16' deep!
- Lots of fibrous roots create channels through the soil increasing soil porosity
- Reduces compaction
- Native switchgrass infiltrates 7.5in/hr compared to urban turf at .29 in/hr



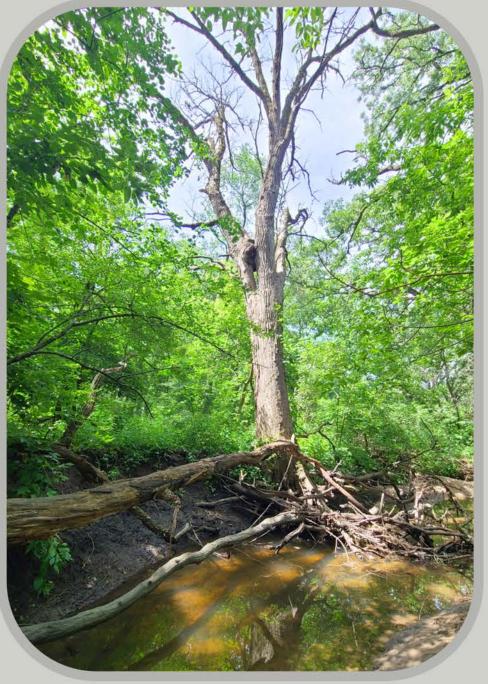
What are other ecosystem services stormwater vegetation provides?

- Urban Canopy: Dane County Office of Energy & Climate Change Tree
 Working Group created <u>online mapping tool</u> to identify communities
 that could most benefit from increased tree canopy
- Wildlife Habitat <u>Urban Refuge: How Cities Can Help Solve the</u>
 <u>Biodiversity Crisis</u> Yale Environment 360
 - Pollinator Habitat: The greatest threat to native pollinators is habitat loss, degradation and fragmentation – Wisconsin DNR
- Carbon storage: <u>prairie systems contain more soil organic carbon than</u> <u>any other ecosystem</u> – MN Board of Water and Soil Resources
- Biodiversity United Nations Climate Action Group calls Biodiversity "our strongest natural defense against climate change"

WATER - Channel Stabilization

State regulations assume that channels within a municipality are stable.









WATER - Channel Stabilization

Stabilizing the banks of badly eroding channels is in alignment with:

- The City of Madison Comprehensive Plan, <u>Imagine Madison</u>, to improve lake and stream water quality
- The Renew the Blue guide from the Yahara CLEAN compact, which specifically lists stabilizing drainage corridors as a recommended action





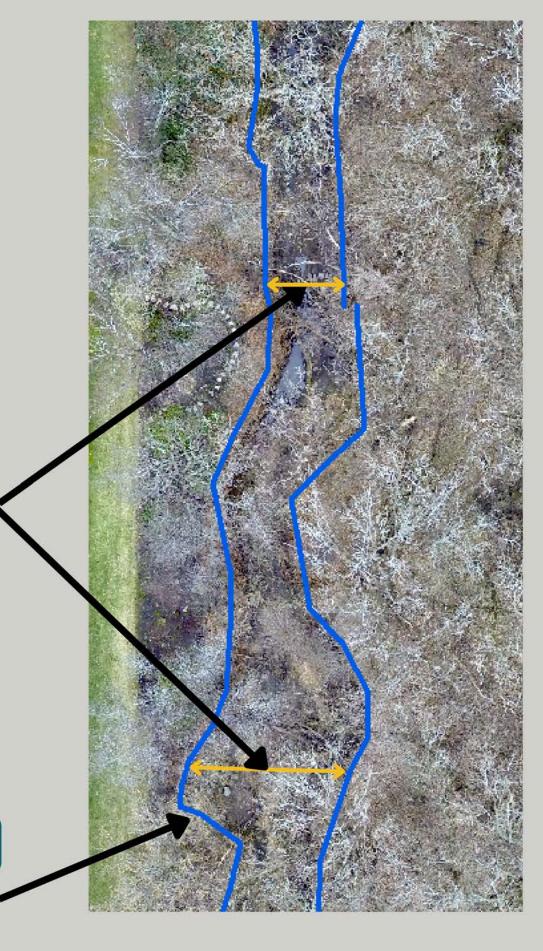
WATER - Channel Stabilization

We can see clear sections of channel that have widened over time, often due to tree blockages



WIDTH OF CHANNEL

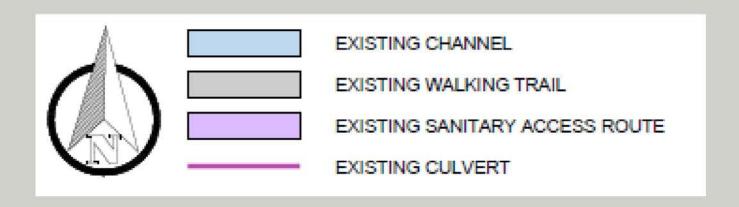
SURVEYED TOP OF CHANNEL BANK



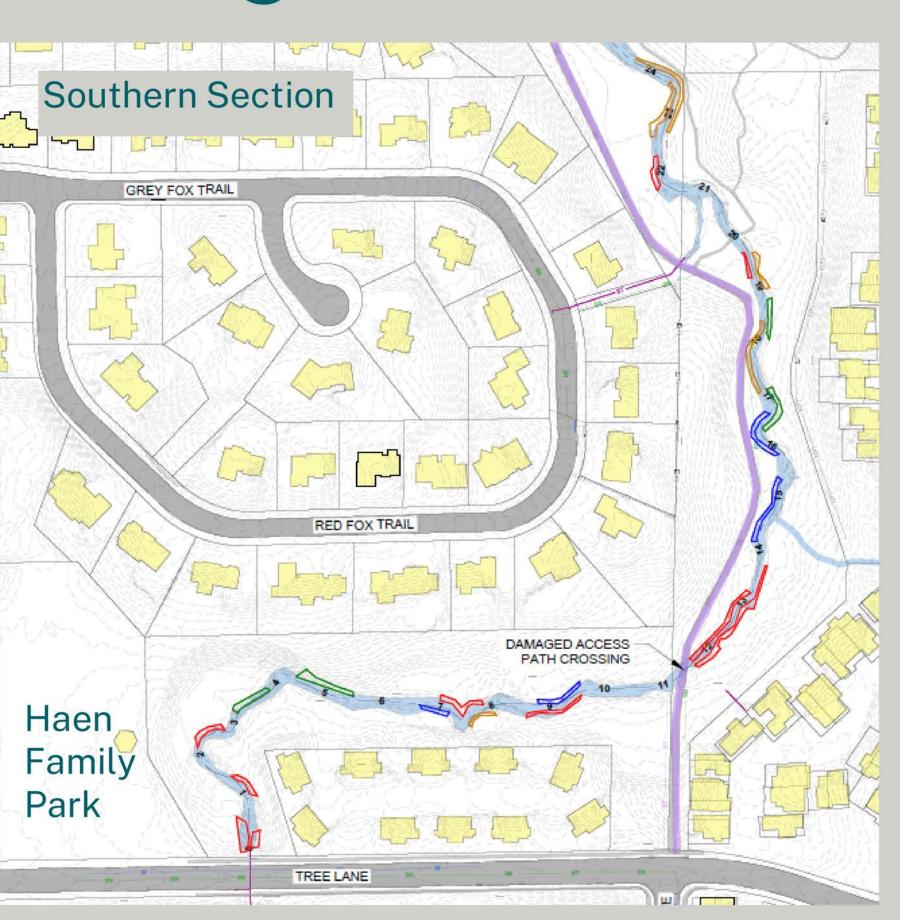
Channel Assessment – Existing Conditions

Steep, vertical and undercut banks over 3 feet high

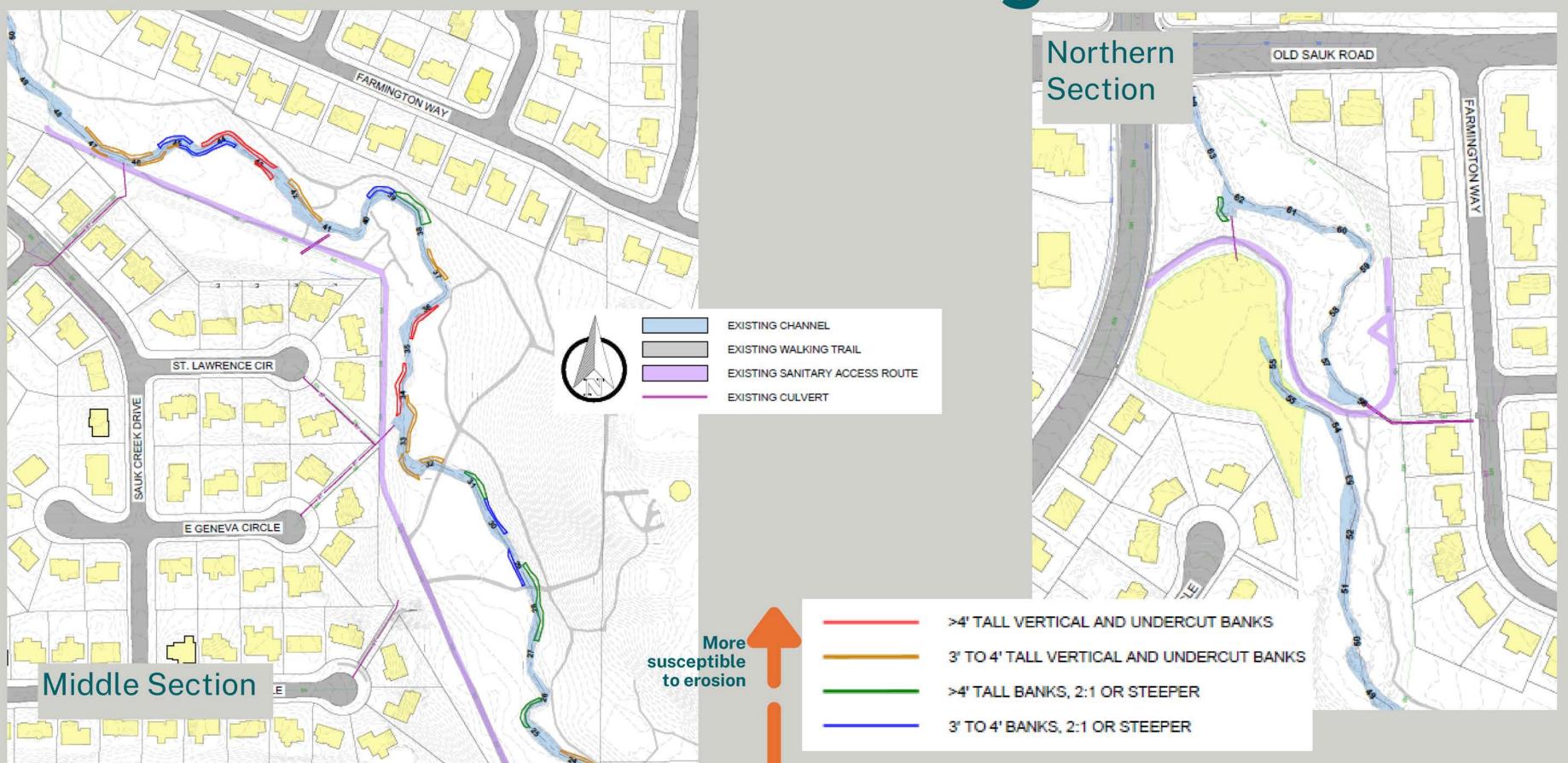




Maps based on existing survey data - field verification needed to finalize exact locations.



Channel Assessment – Existing Conditions



Maps based on existing survey data - field verification needed to finalize exact locations.

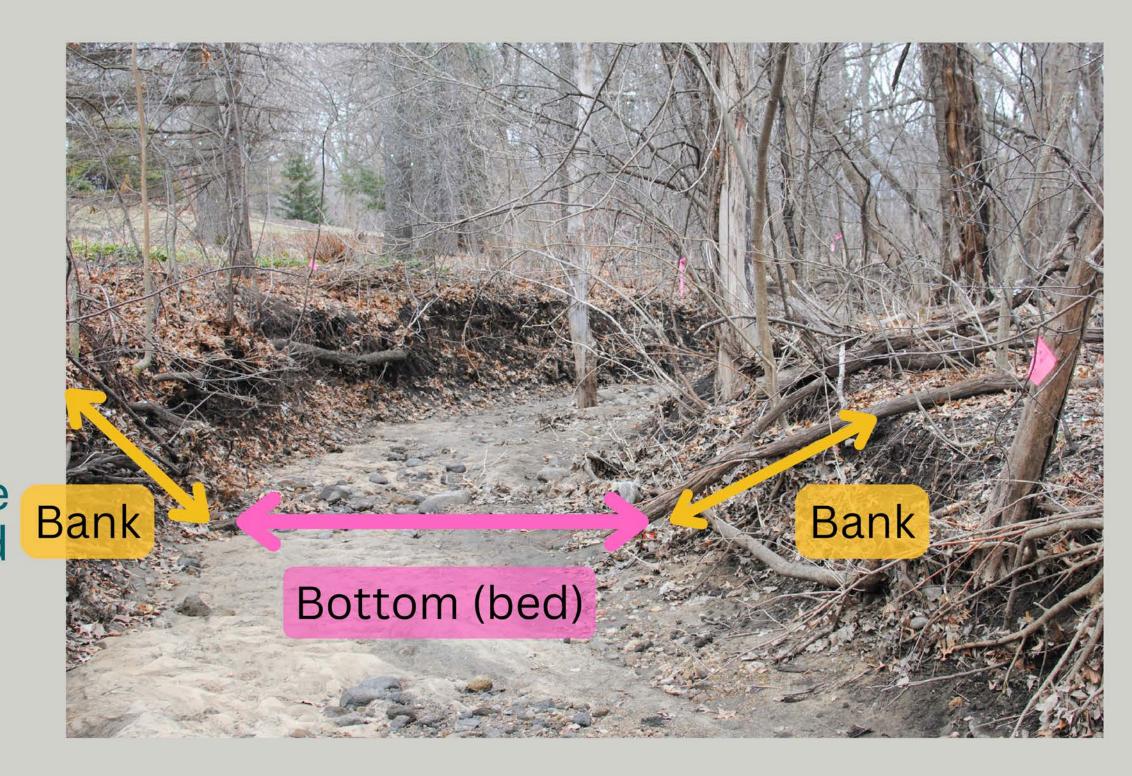
Channel Assessment Modeled Erosion Potential

- Erosion Potential is related to the forces caused by quickly moving stormwater (flow velocity)
- Bank erosion potential determined by modeling the peak flow velocities of the 10% annual chance storm



Channel Assessment

- Assessment found that the bed (bottom) of the channel was stable, and that the floodplain (area where the water leaves the channel) functions well to dissipate higher flows
- As such, the banks are the largest supplier of additional sediment, and the recommendations are based on <u>stabilizing the banks</u>
 - NOT expanding or lowering the entire channel



Less grading, less adjacent impacts

Boulders (Riprap)

- More permanent
- Less in-channel habitat
- Challenging to manage weeds and volunteer trees that can eventually grow into riprap

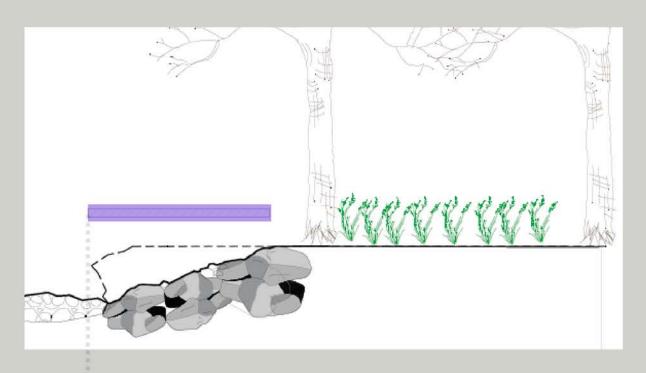
Boulder footer with Soil Lifts

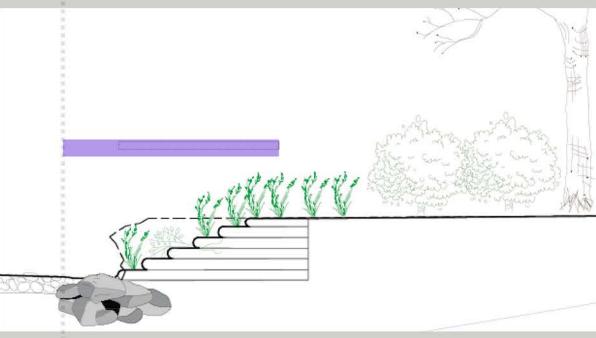
- Challenging to build
- Challenging to establish vegetation
- Selective thinning needed adjacent to bank for light to reach vegetation
- Most expensive
- Medium long-term maintenance

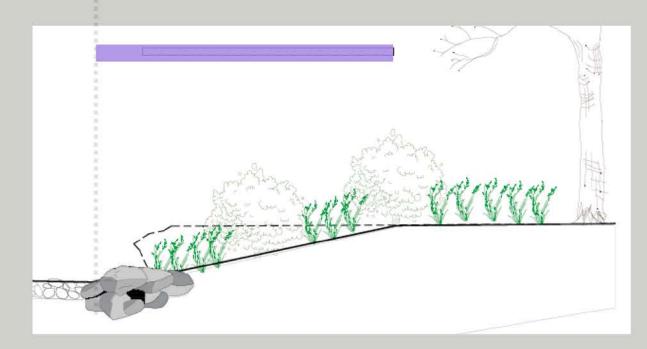
More grading, more adjacent impacts

Boulder footer and vegetation

- Challenging to establish
- Selective thinning needed adjacent to bank for light to reach vegetation
- Most long-term maintenance







Boulders (Riprap)

BOULDERS DO NOT NEED LIGHT
TO STABILIZE BANKS -ADJACENT TREES DO NOT NEED
THINNING FOR LIGHT TO REACH
BANK

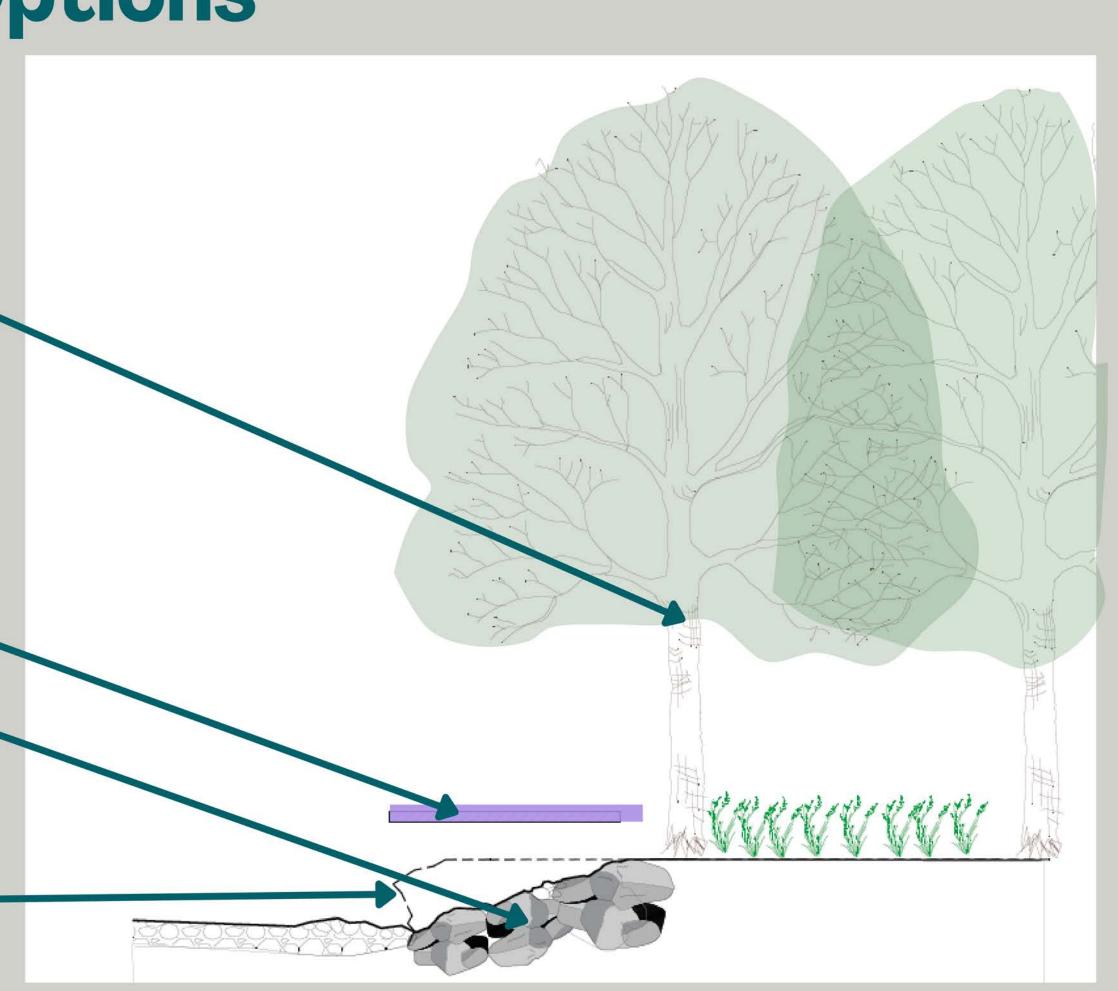
APPROXIMATE

RELATIVE

DISTURBANCE

BOULDERS (RIPRAP) 2.5: 1 MAX SLOPE

EXISTING BANK (4' VERTICAL)



Boulder Footer with Soil Lifts

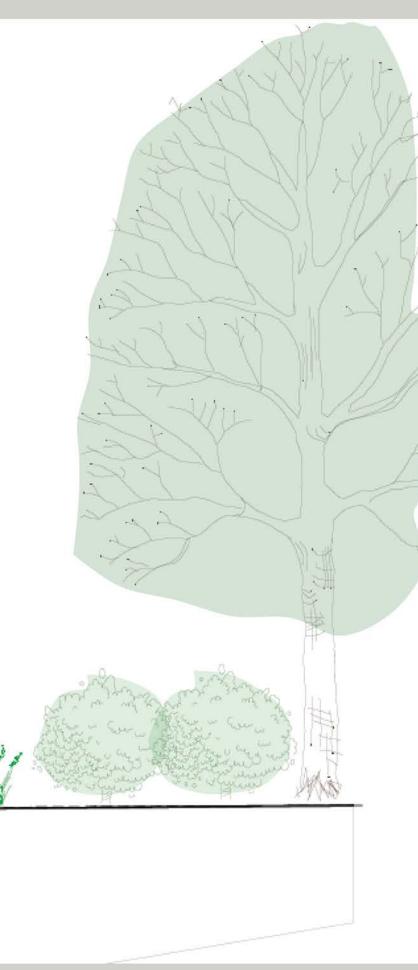


Example of soil lifts used on lake shoreline in Vermont
Source: Vermont BioEngineering Manual

SOIL LIFTS WRAPPED
IN FABRIC SLOPE VARIABLE,
SHOWN 2.5:1

EXISTING BANK (4' VERTICAL) APPROXIMATE
RELATIVE
DISTURBANCE

VEGETATION NEEDED
TO STABILIZE BANKS -ADJACENT TREES TO
BANK NEED SELECTIVE
THINNING FOR LIGHT
TO REACH BANK



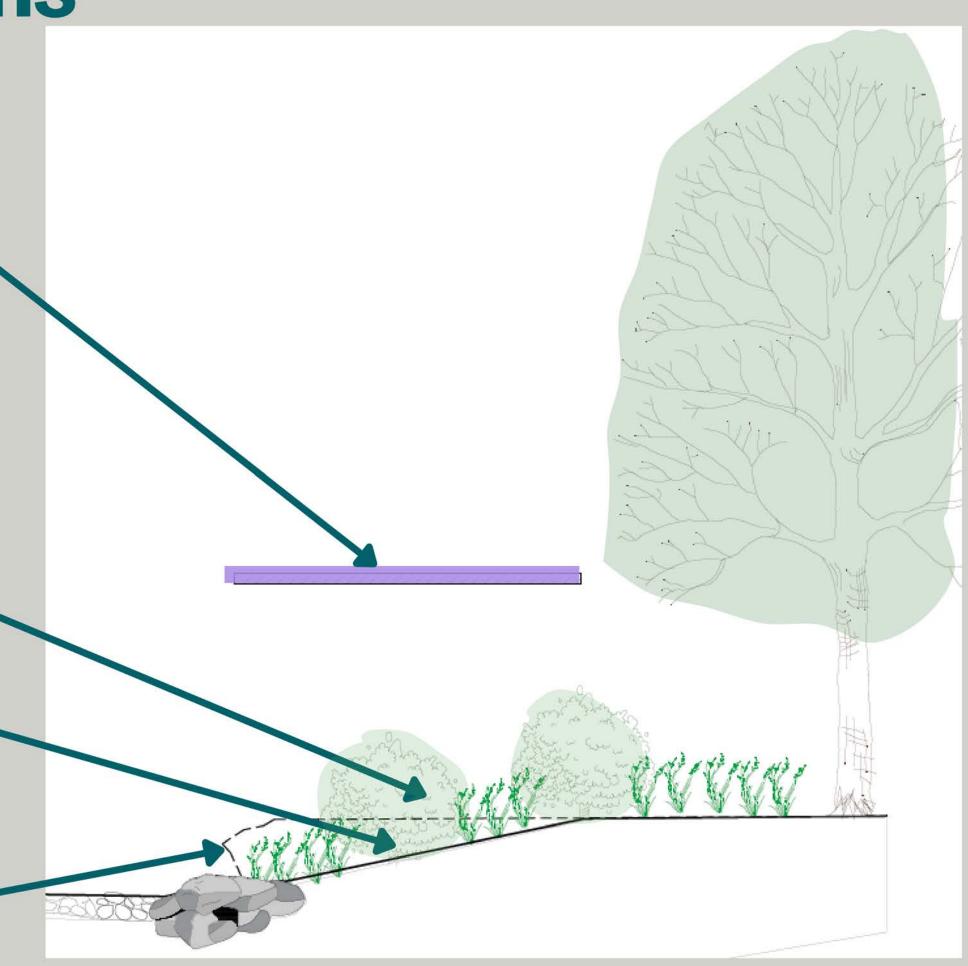
Boulder Footer and Vegetation

VEGETATION NEEDED
TO STABILIZE BANKS -ADJACENT TREES TO
BANK NEED SELECTIVE
THINNING FOR LIGHT
TO REACH BANK

APPROXIMATE
RELATIVE
DISTURBANCE

PLANTINGS ON 4:1
SLOPE

EXISTING BANK (4' VERTICAL)



Channel Assessment – Option 1: Selective Mitigation, City Priority Areas

Pros

Less impacts to adjacent trees

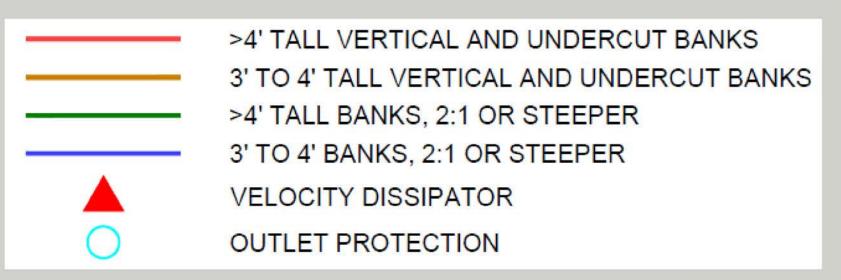
Cons

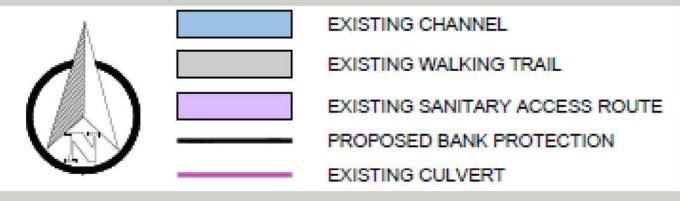
- Still sending sediment downstream to Wexford Pond, Pheasant Branch Conservancy, and Lake Mendota
- Likely need for future projects to stabilize other parts of channel
 - Future projects would be evaluated after the initial construction phases are complete and may take several years to finish work in the corridor.

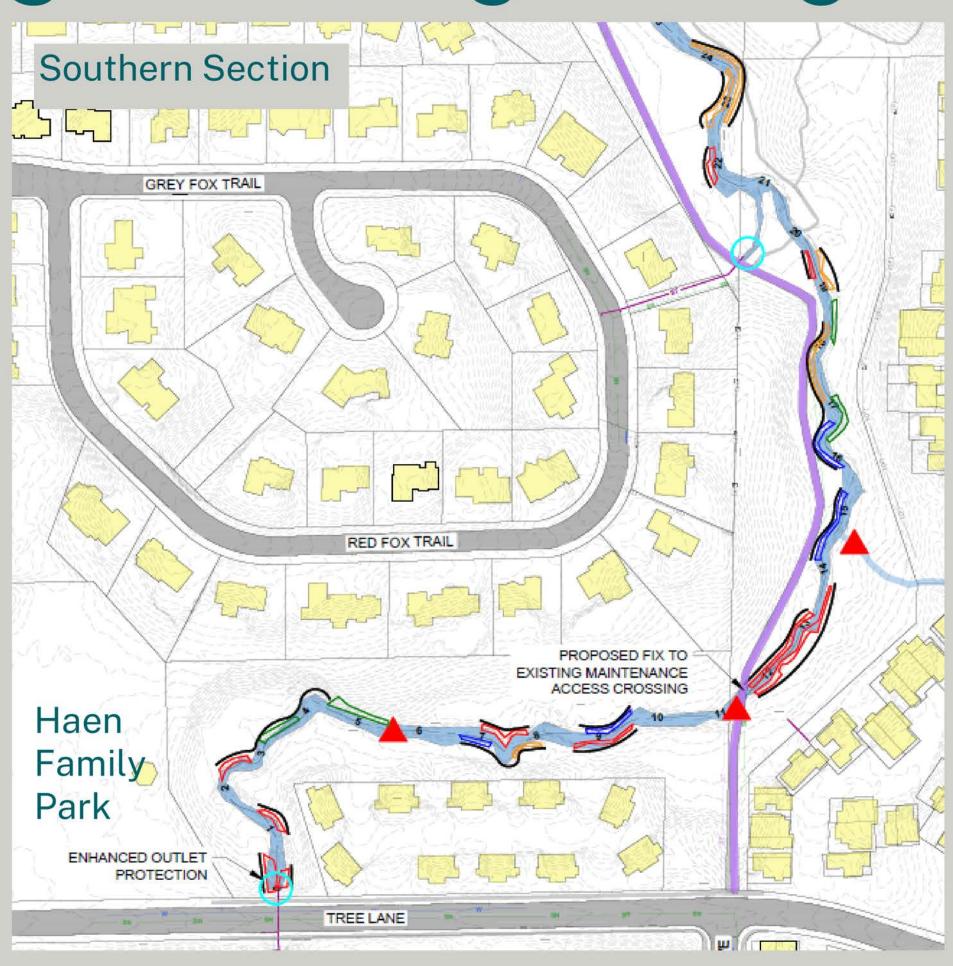
Option 1: Selective Mitigation – City Priority

Areas

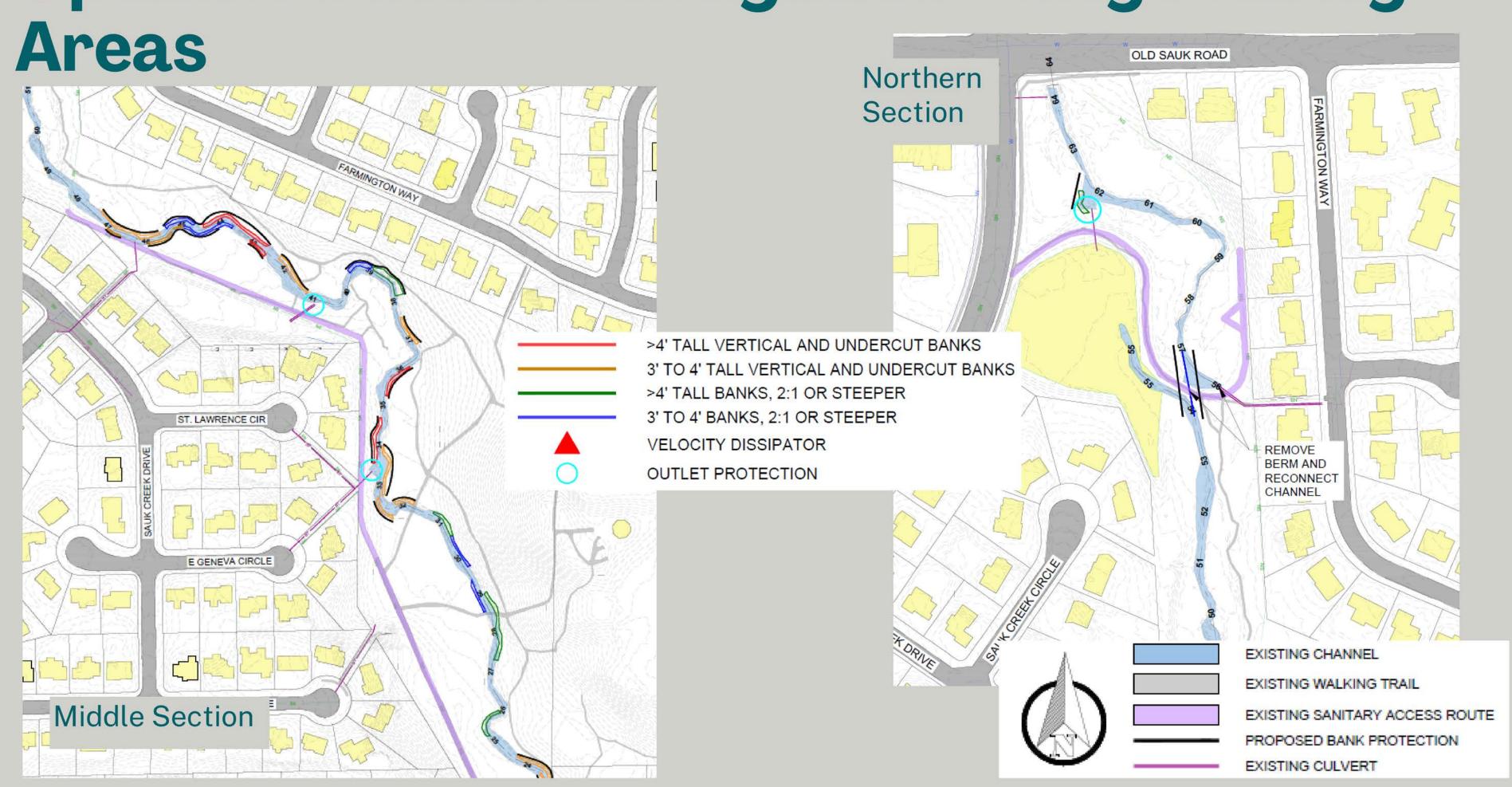
- Stabilize channel banks where banks are vertical or undercut (red or orange).
- Additional 2:1 or steeper areas (green and blue) where banks at high potential for erosion (per modeling), adjacent to other repairs, or could damage adjacent infrastructure







Option 1: Selective Mitigation – City Priority



Channel Assessment – Option 2: Full Mitigation

Pros

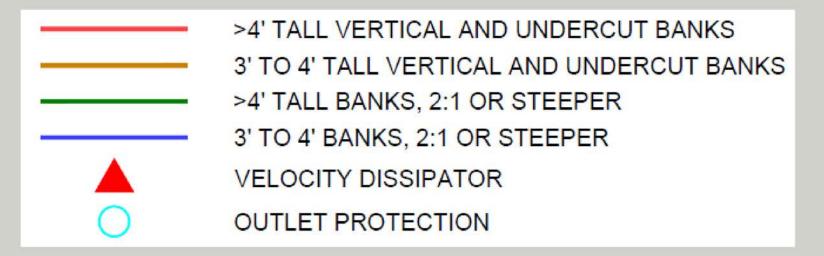
- More permanent stabilization
 - Less likely for "edges" of stabilization to become a new weak point
- Less sediment downstream

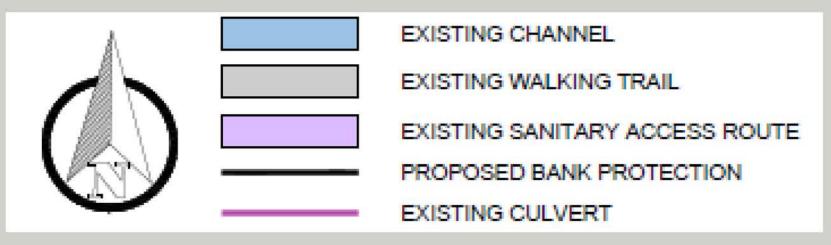
Cons

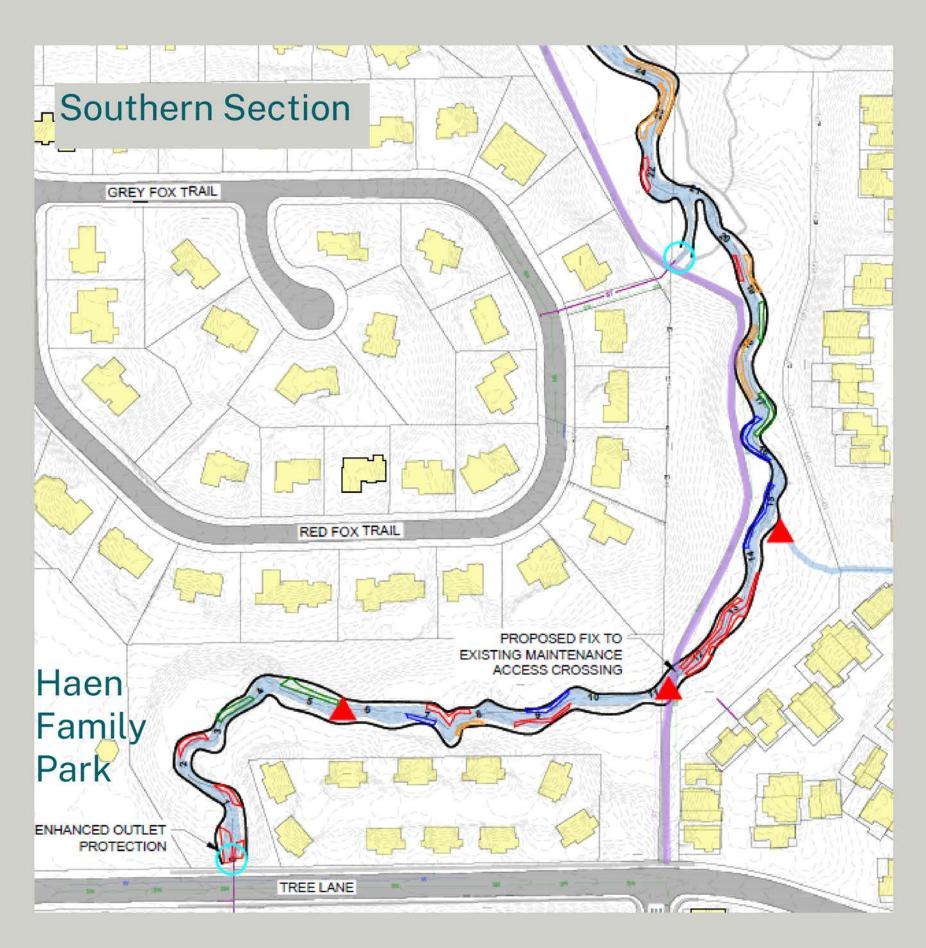
- More impacts to adjacent trees
- More expensive

Option 2: Full Mitigation

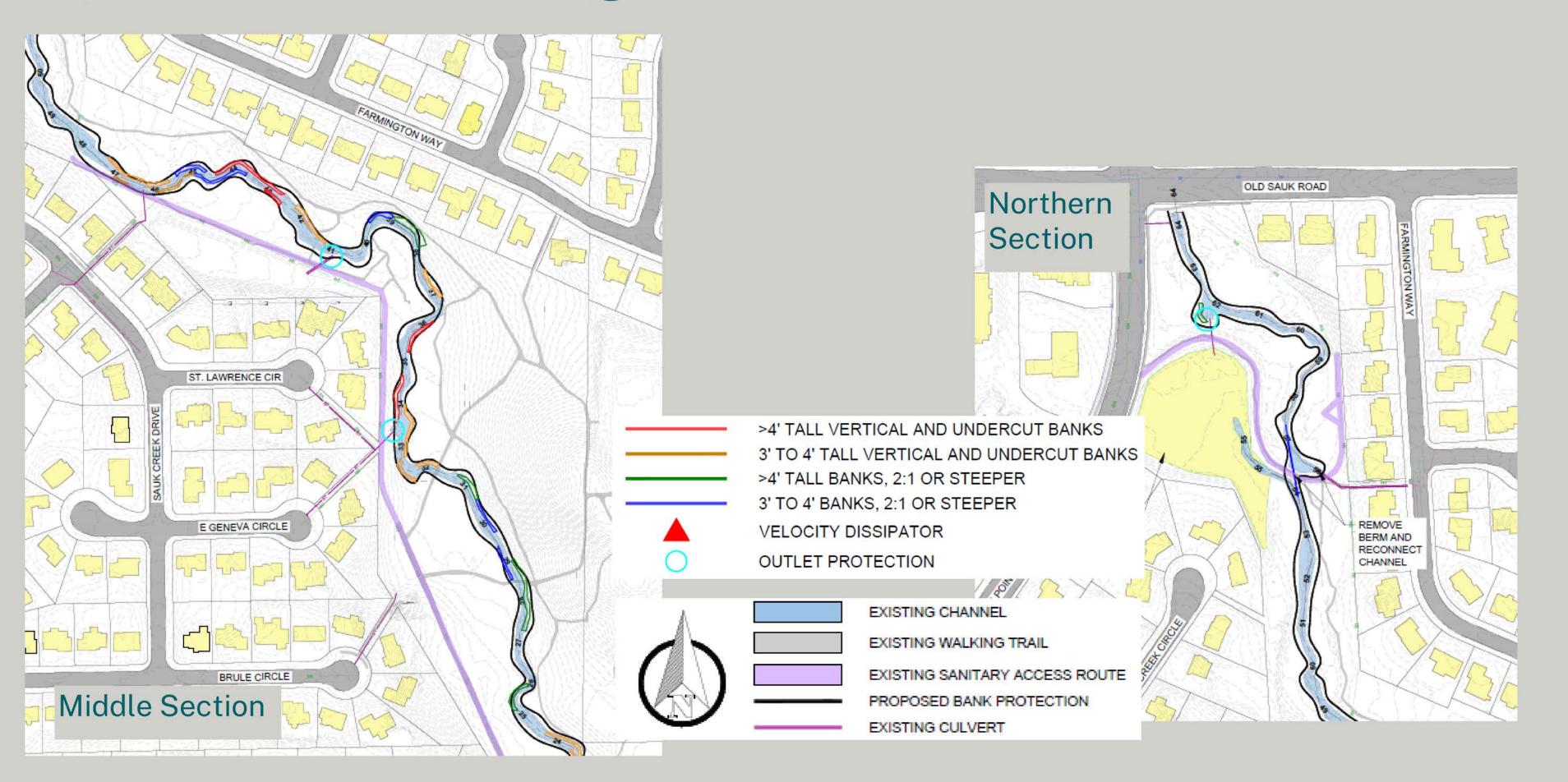
Stabilize all channel banks







Option 2: Full Mitigation



Clarifying Impact

- To reiterate, what is being proposed does <u>not</u> include impacting the entire width of the corridor
 - Bank stabilization + construction access will have impact, but will leave whole sections of wooded area intact
- We are looking for your input on the options for the extent of the channel stabilization, as well as the type of bank treatment
 - Your input will help determine the construction limits (or area of impact)

CHANNEL

What extent of channel stabilization are you most interested in?

Select one.

Something else we missed?
Add it to the chat!

- 1. Option 1: Begin with bank stabilization in City's priority areasonly (red/orange banks -- least stable)
- 2. A mix of Option 1 and Option 2: Begin with bank stabilization in all areas identified to have steep or vertical/undercut banks
- 3. Option 2: Stabilize all banks throughout channel

Response

Q7 - Channel

Meeting poll | 1 question | 66 of 76 (86%) participated

 What extent of channel stabilization are you most interested in? (Single choice)

66/66 (100%) answered

Option 1 - Begin with bank stabilization in City's priori... (30/66) 45%

A mix of Option 1 and Option 2 - Begin with bank stab... (29/66) 44%

Option 2 - Stabilize all banks throughout channel (7/66) 11%

Bank Protection Options

Less grading, less adjacent impacts

Boulders (Riprap)

- More permanent
- Less in-channel habitat
- Challenging to manage weeds and volunteer trees that can eventually grow into riprap

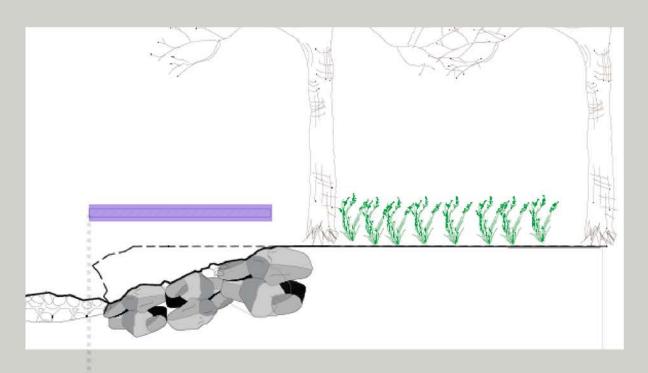
Boulder footer with Soil Lifts

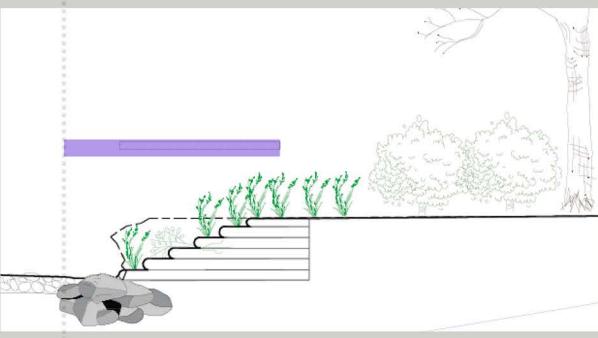
- Challenging to build
- Challenging to establish vegetation
- Selective thinning needed adjacent to bank for light to reach vegetation
- Most expensive
- Medium long-term maintenance

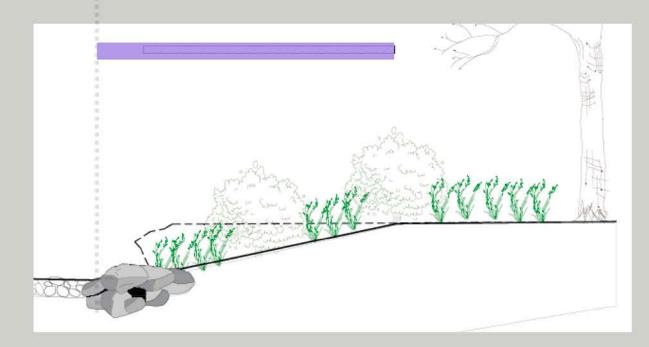
More grading, more adjacent impacts

Boulder footer and vegetation

- Challenging to establish
- Selective thinning needed adjacent to bank for light to reach vegetation
- Most long-term maintenance







CHANNEL

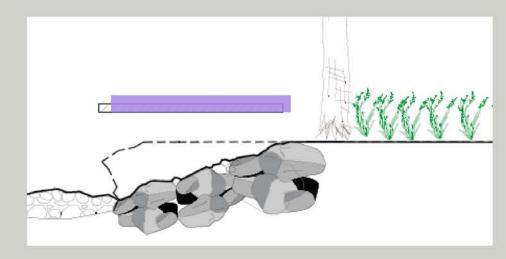
The City may use a variety of bank stabilization techniques. Which techniques are you most interested?

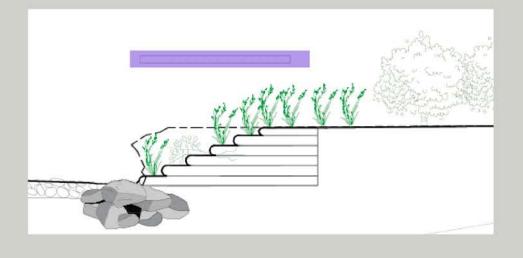
Select one.

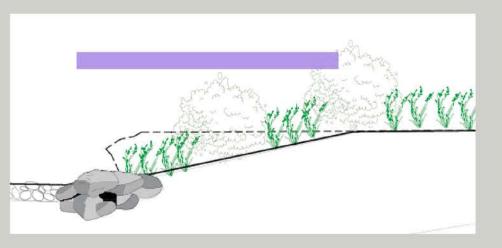
1. Boulders (riprap)

2. A mix of boulders (riprap), vegetation, and other natural materials (such as soil lifts)

3. Use as much vegetation as possible









Response

Q8 - Channel

Meeting poll | 1 question | 65 of 76 (85%) participated

 The City may use a variety of bank stabilization techniques. Which techniques are you most interested? (Single choice)

65/65 (100%) answered

Boulders (riprap) (39/65) 60%

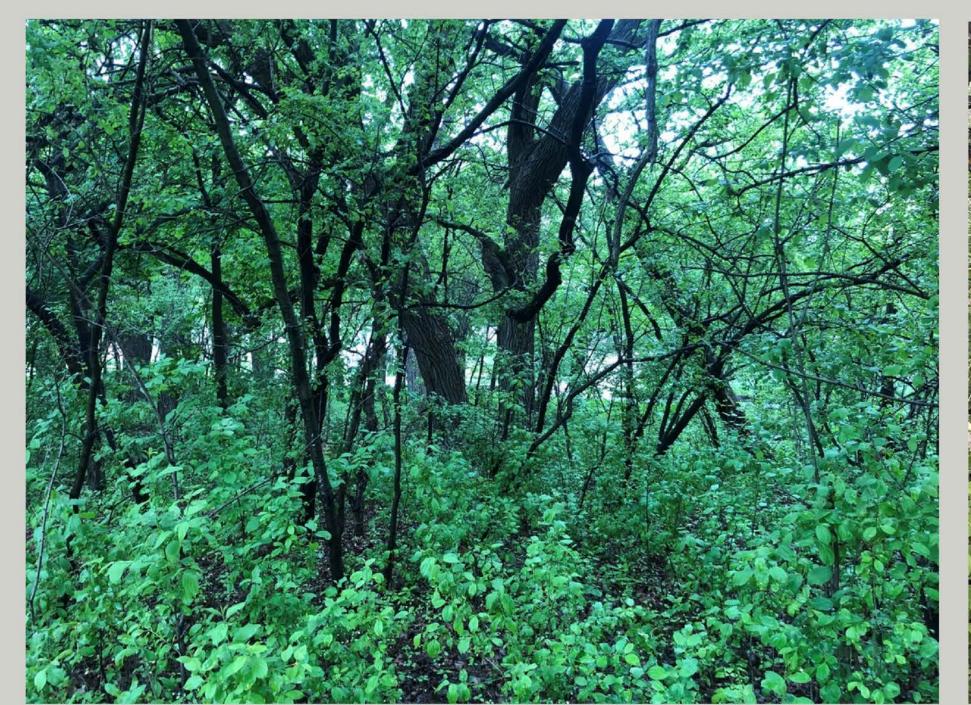
A mix of boulders (riprap), vegetation, and other natur... (21/65) 32%

Use as much vegetation as possible (5/65) 8%

Species Composition helps Determine Ecosystem Services: Which of these images do you think has greater biodiversity?

Image A

Image B



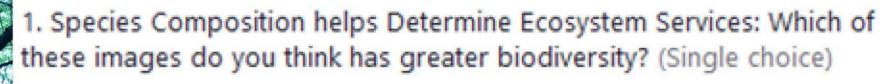


Species Composition helps Determine Ecosystem Services: Which of these images do

you think has greater hindiversity?

Image Q9 - Species Composition

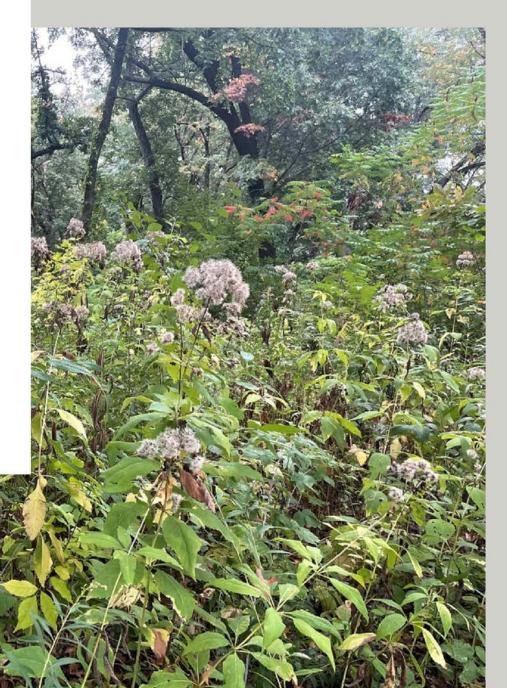
Meeting poll | 1 question | 60 of 74 (81%) participated



60/60 (100%) answered

Image A (12/60) 20%

Image B (48/60) 80%



Species Composition helps Determine Ecosystem Services



Only two species shown here. Buckthorn casts dense shade and exudes allelopathic chemicals that prevent germination of understory species and suppresses oak regeneration. Oaks provide many habitat offerings, but this oak's growth is being suppressed by faster-growing buckthorn.

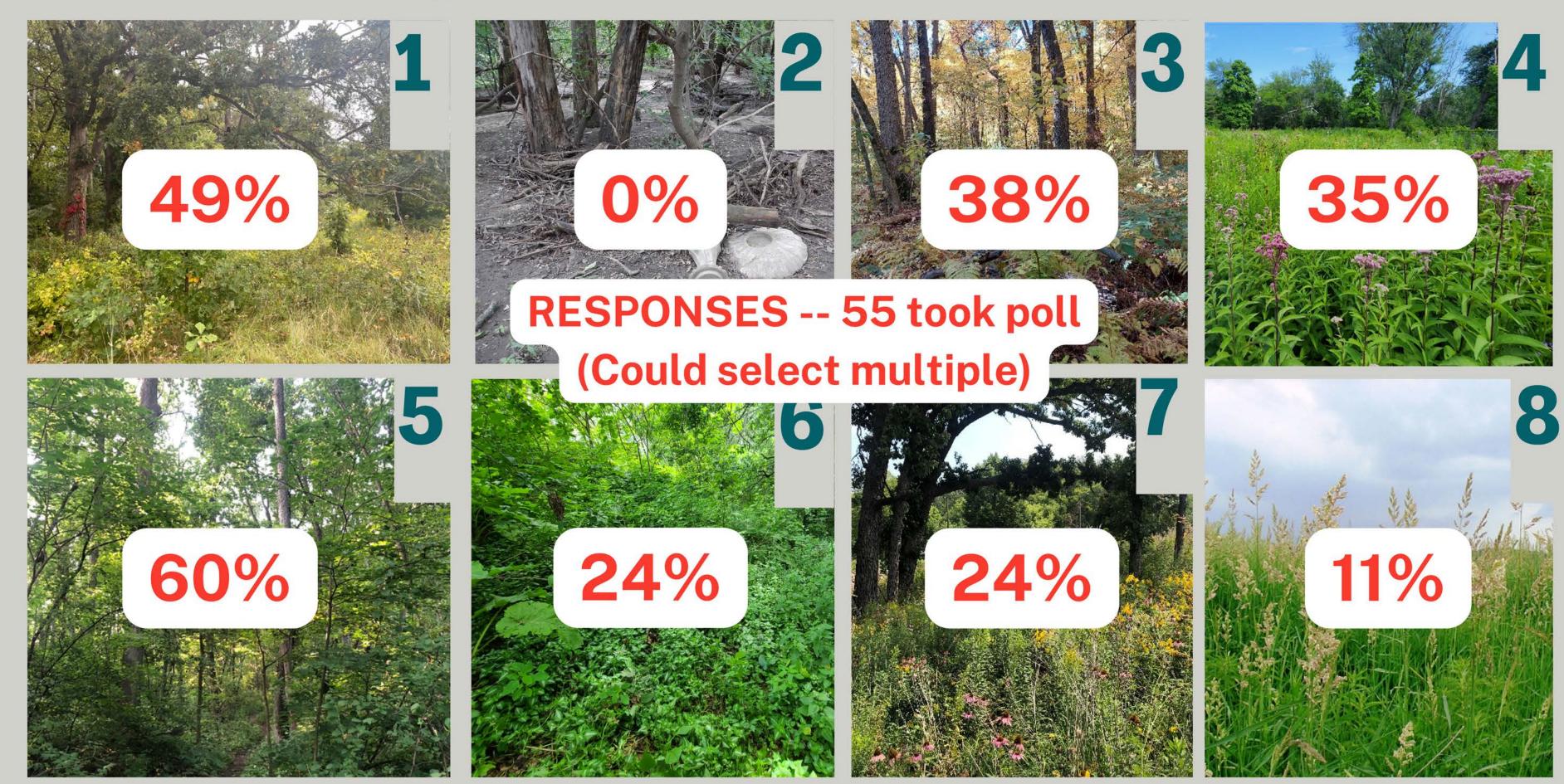


This southern mesic hardwood forest has high biodiversity: mature oak-hickory canopy, native shrub layer, and native herbaceous understory. Dappled light allows for diverse layers of species, and hardwood tree regeneration. Flowering herbaceous species provide resources for pollinators. Deep, fibrous roots of native herbaceous plants complement deeprooted trees to provide good erosion control.

The landscape I prefer from an aesthetic viewpoint is: Q10



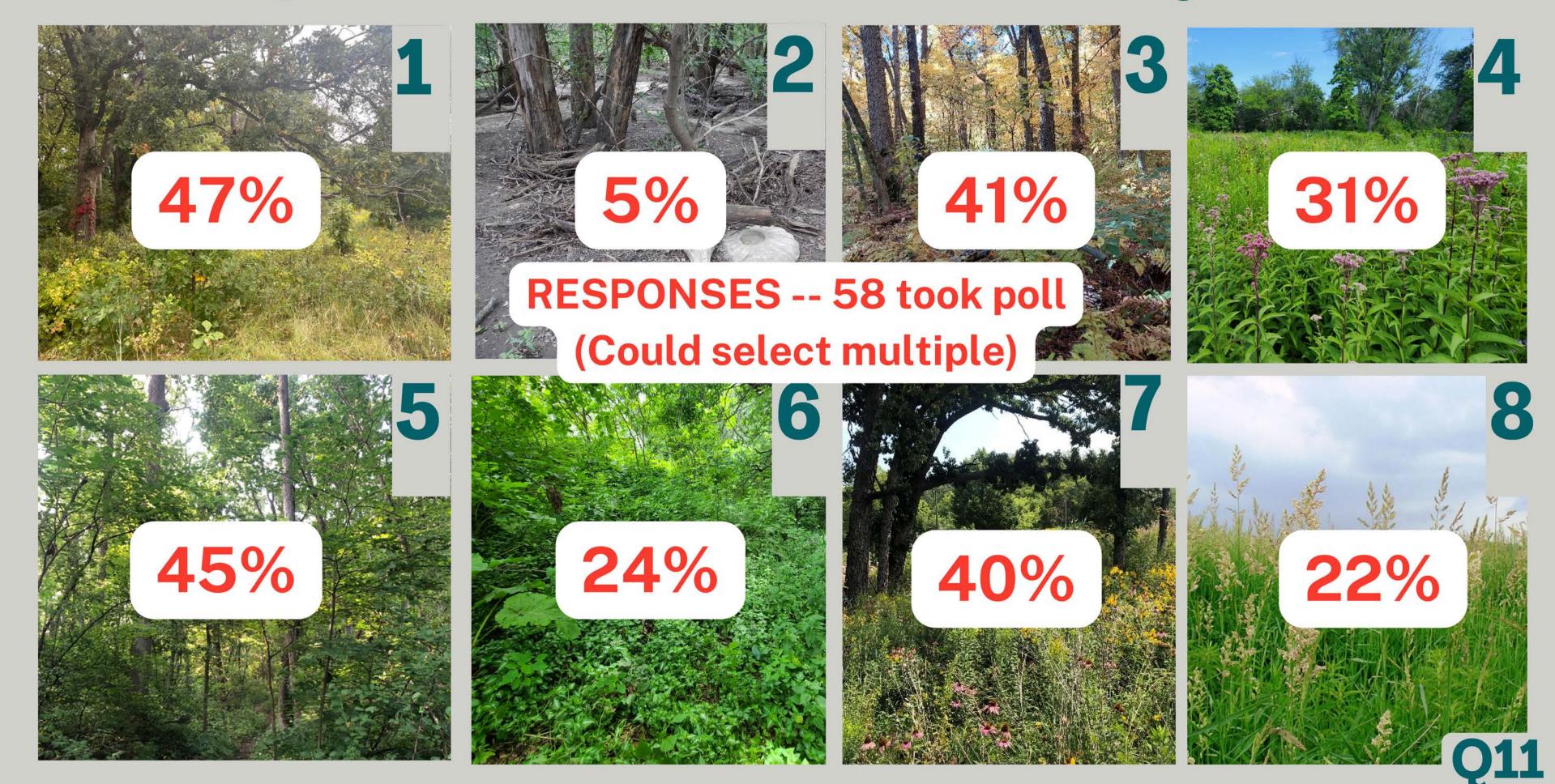
The landscape I prefer from an aesthetic viewpoint is: Q10



The landscape that I think is most resilient to flooding and erosion is:



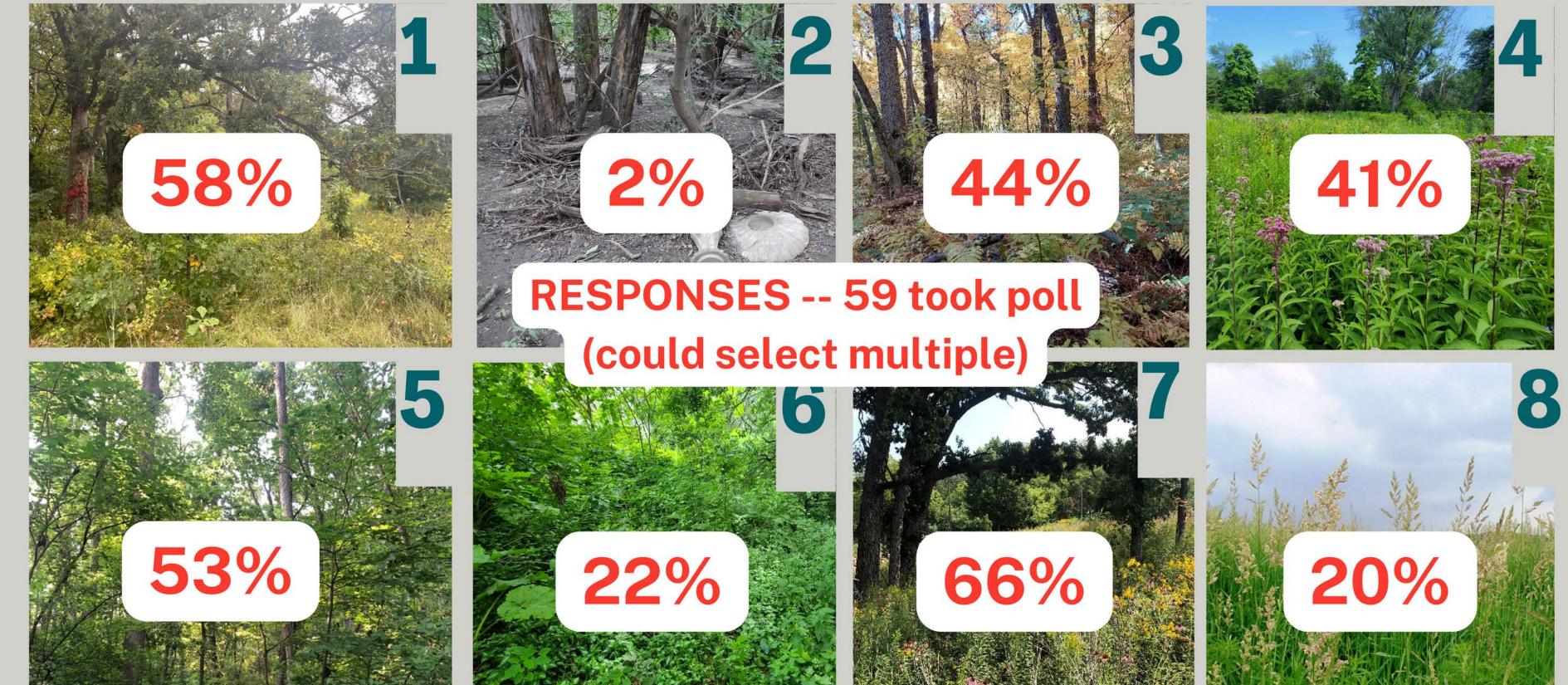
The landscape that I think is most resilient to flooding and erosion is:



I think the following landscapes are most beneficial to other ecosystem services (pollination, endangered species etc.) You may select more than one:

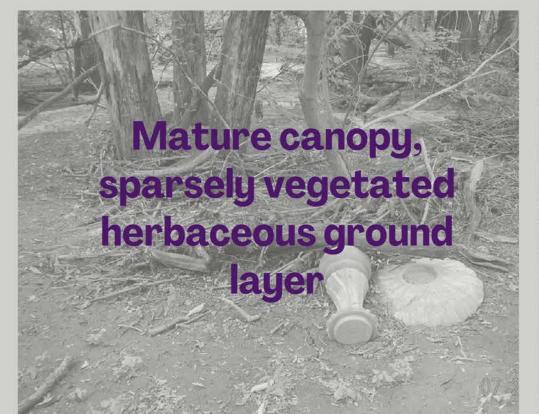


I think the following landscapes are most beneficial to other ecosystem services (pollination, endangered species etc.) You may select more than one:



Based on the description of these areas would any of your answers change? Is there an image you would select for all three?

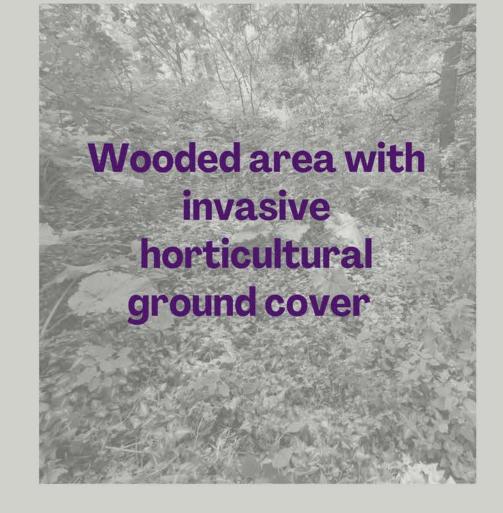
Mixed native and non-native species, several native oak trees, mixed native and non-native understory.

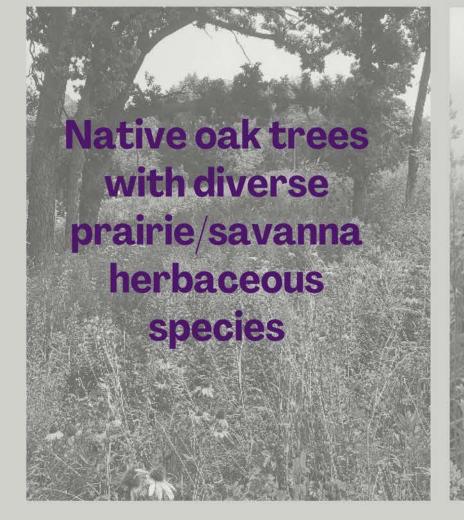


Native forest overstory, with native diverse understory.

Diverse wetland community comprised of native wildflowers, grasses, sedges etc.

Understory is invasive buckthorn shrub monoculture which prevents growth of herbaceous groundlayer, overstory includes native and non-native trees.





Close-up of invasive and non-native reed canary grass monoculture.

Q13

Based on the description of these areas would any of your answers change? Is there an image you would select for all three?

Mixed native and non-native species, several native oak trees, mixed native and non-native understoru

Mature canopy, sparsely vegetated herbaceous ground

Native forest overstory, with native diverse

Diverse wetland community community comprised of native wildflowers, grasses, sedges etc.

RESPONSE -- 51 took poll

Based on the description of these areas would any of your

Understory is invasive buckthorn shrub monoculture which prevents growth of herbaceous groundlayer, overstory includes native and non-native trees.

answers
Yes - (28
Wooded a No - (23)
invasive
horticultural
ground cover

Yes - (28/51) 55%
No - (23/51) 45%

/e
prairie/savanna
herbaceous
species

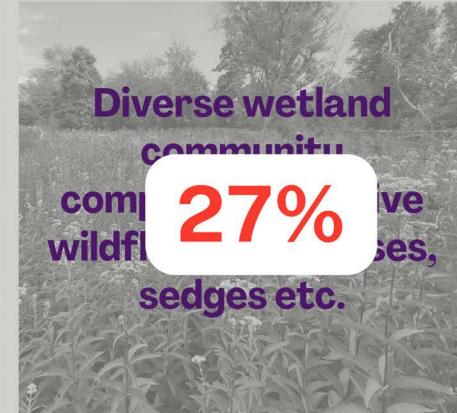
Close-up of invasive and non-native reed canary grass monoculture.

Q13

Based on the description of these areas would any of your answers change? Is there an image you would select for all three?

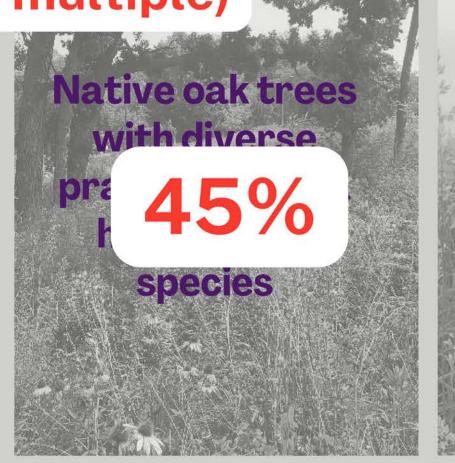
Mixed native and non-native species several m 20% non-native understory.

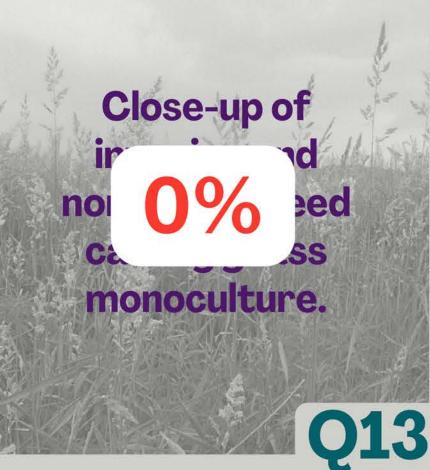




Understory is invasive buckthorn shrub monoculture which vth of pre groundinger, overstory includes native and nonnative trees.







Vegetation perceptions and values

 Does anyone want to share which images they selected and why? Please put responses in the chat!

Ecological Assessment

- Much of the greenway was likely oak savanna and oak woodland historically
 - Original Land Survey in 1830s bur oak and white oak trees
 - Bordner Survey in 1939 low to medium density oak-hickory woods surrounded by pasture and cropland
- More recent impacts from residential development:
 - Fire suppression
 - Further fragmentation
 - Invasive species
 - Erosion and soil disturbance
 - Stormwater issues





Ecological AssessmentSummary of findings

- Oak dominated woodlands are still prevalent in the Study Area
 - Oak communities are in decline and are being replaced by disturbed communities that provide less ecological function
 - Canopy closure, only a few oak saplings observed
 - Box elder is a dominant species
 - Dead and downed woody material common
 - Shrub and herb layers are dominated by invasive species
- Channel lacks stability overall. Channel and stormwater ponds are not providing optimal stormwater function.
- Impacts from human use (erosion, yard waste dumping, mowing, spread of horticultural plants)
- The greenway is a important corridor for wildlife habitat and passive recreation in an urbanized landscape.

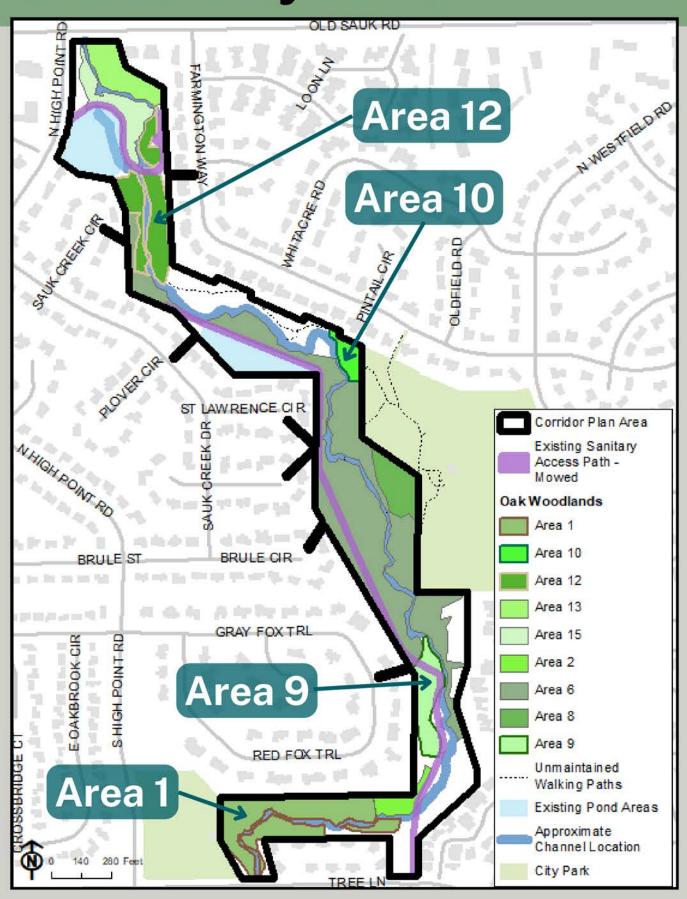


Ecological Assessment

Current Ecological Conditions of Sauk Creek Corridor by Area

Oak Woodlands

- Areas 1, 2, 6, 8, 9, 10, 12, 13, & 15
 - Large oaks prominent in canopy but in decline
 - Lack native understory species indicative of oak savanna and oak woodland
 - Degraded by invasive species
 - Oaks being replaced by more mesic species that can tolerate lower light levels and are not fire-dependent
- Area 1
 - Channelized erosion
- Area 12
 - Significantly degraded by flooding and sedimentation
- Areas 9 & 10
 - Less soil disturbance and invasive herbs compared to other woodland areas



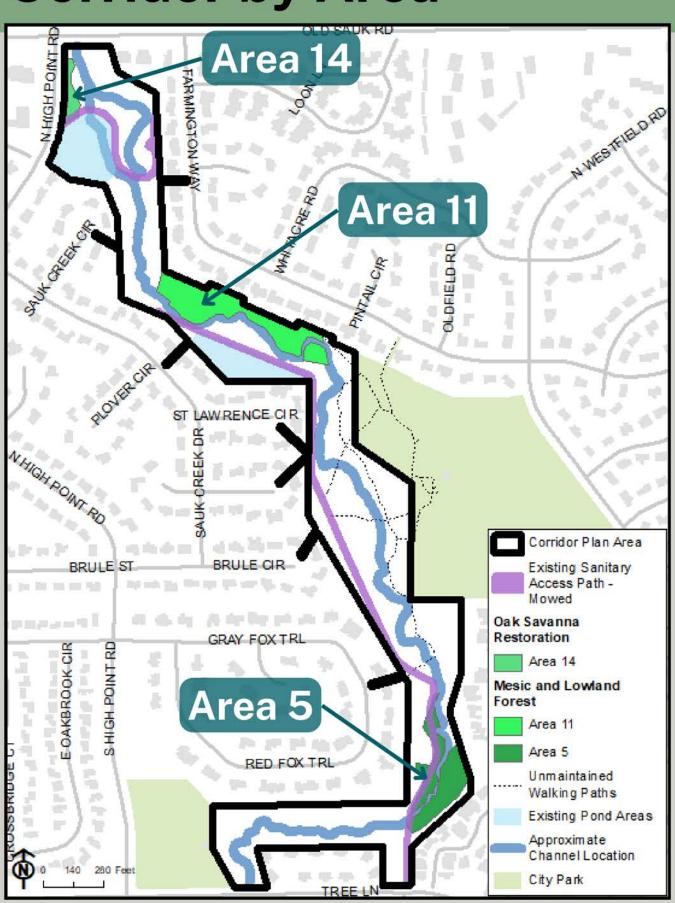
Ecological Assessment Current Ecological Conditions of Sauk Creek Corridor by Area

Oak Savanna Restoration

- Area 14
 - Understory clearing
 - Native vegetation and oak regeneration

Mesic and Lowland Forest

- Areas 5 and 11
 - Low to no tree cover in 1937 aerial
 - Area 5
 - Degraded lowland/floodplain forest dominated by cottonwood, dying green ash, and box elder
 - Lawn encroachment, eroded channels, sedimentation from channel flooding
 - Area 11
 - Mesic trees such as black walnut, hackberry, and elm with limited oaks and a degraded understory
 - Horticultural plants



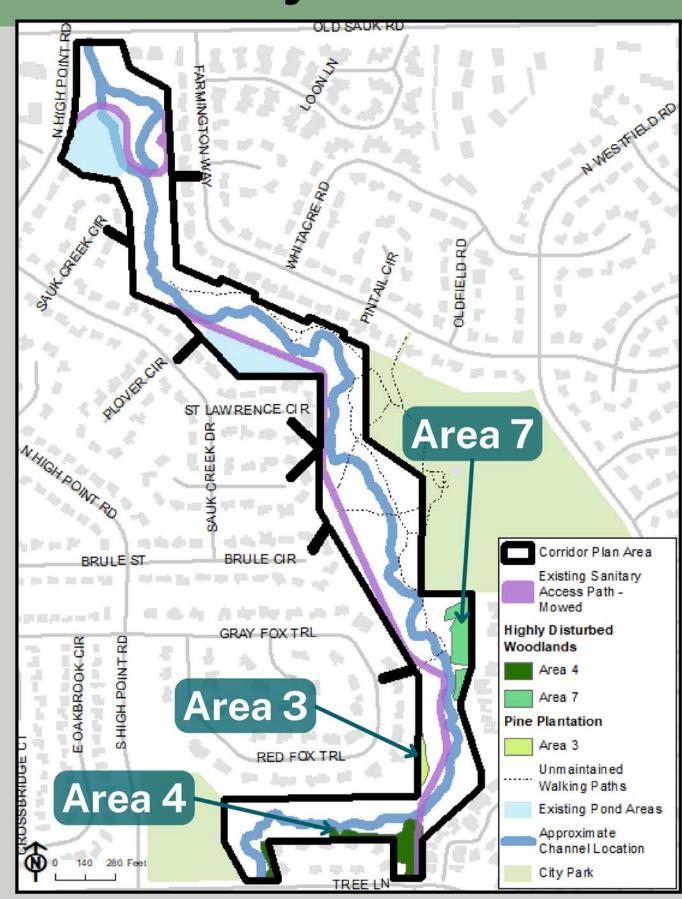
Ecological Assessment Current Ecological Conditions of Sauk Creek Corridor by Area

Pine Plantation

- Area 3
 - Planted red and white pine
 - Red pine in poor health dying or have fallen
 - Sparse understory

Highly Disturbed Woodlands

- Areas 4 & 7
 - Appear pastured with no trees in 1937 aerial
 - Not representative of natural woodland communities
 - Few desirable canopy trees with degraded understories
 - Stormwater runoff, horticultural ground covers



Ecological AssessmentThreats to the Sauk Creek Corridor

Replacement of Oaks

- Oaks are being replaced by trees that are more common in the landscape and provide less ecological value.
- Tree inventory completed by others shows ~20% of oaks are in poor or very poor condition (2017 inventory + 2023 scouting of additional oaks in decline)
- Oaks are considered critical keystone species that provide an enormous contribution to our food webs, as many moths, butterflies, and insects depend on oaks to lay their eggs.

Invasive species

- Invasive species are replacing native species, limiting the regeneration of desirable trees and shrubs, and are altering the litter layer and soil chemistry of the greenway. The most prevalent invasive species include:
 - Dame's rocket
 - Garlic mustard
 - Reed canary grass
 - Common buckthorn
 - Invasive bush honeysuckle
 - Horticultural species such as day-lily and periwinkle
- Garlic mustard and common buckthorn are allelopathic and release chemicals into the soil that can inhibit the growth of other plants and alter the soil chemistry.

Ecological AssessmentThreats to the Sauk Creek Corridor

Land Use & Encroachments

- Yard waste dumping, mowing or allowing lawn and invasive horticultural plants to grow into the greenway spreads non-native species that are outcompeting native herbaceous species
- The loss of native plant biodiversity results in reduced ecosystem services such as pollinator habitat and may leave the greenway more susceptible to the negative impacts of climate change

Erosion

- Steep slopes in the woodland, steep channel banks are susceptible to erosion
- Areas lacking herbaceous perennial vegetation are more prone to erosion
- Feedback loop
- Reduces water quality

Flooding and Sedimentation from Channel

- Sedimentation from channel flooding leads to loss of herbaceous layer
- Tree health impacted when the bases of trees are smothered by sediment



Background – Existing Ecological Restoration Resources

Ecology Staff

- o (2) Fulltime staff with Ecology Background
- o (2) Seasonal Interns Work from May to August

General Mowing/Brush Removal Staff

 (4) Operations Field Staff – Mowing and brush control, no conservation training/background

Annual Budget

\$20,000 for Supplies related to restoration work

 \$75,000 for Purchasing Services (e.g. hiring private ecological firm)

Operation Fresh Start

 Youth crew, primarily invasive removals (by hand, no pesticide application), with guidance from ecology staff

Reminder/Disclaimer about Resources and Scope

- We have limited resources and will not be able to meet all the ecological goals corridor-wide.
 - We will take public priorities and overlay with where we are completing channel stabilization work
- Input on the channel, maintenance access, and ecological conditions are intertwined.
 - City will look at input from today and previous meetings to propose how to balance any competing interests with the resources we have

Ecological Assessment - Threats

What threats to ecological health identified in the Ecological Assessment are you most concerned about in Sauk Creek Greenway?

Choose multiple.

- 1. Replacement of oaks
- 2. Invasive species
- 3. Land use & encroachments
- 4. Erosion
- 5. Flooding and sedimentation from the channel
- 6. I am not concerned about the threats to ecological health identified in the Ecological Assessment.

Something else we missed?
Add it to the chat!

Response

Q14 - Ecological Assessment - Threats

Meeting poll | 1 question | 58 of 68 (85%) participated

 What threats to ecological health identified in the Ecological Assessment are you most concerned about in Sauk Creek Greenway? (Multiple choice)

58/58 (100%) answered

Replacement of oaks	(34/58) 59%
Invasive species	(39/58) 67%
Land use & encroachments	(20/58) 34%
Erosion	(38/58) 66%
Flooding and sedimentation from the channel	(32/58) 55%
I am not concerned about the threats to ecological healt.	(3/58) 5%

NATIVE SPECIES

How concerned are you about preserving the health of existing oaks in the Sauk Creek Greenway?

Single choice.

- Something else we missed?
 Add it to the chat!
- 1. I am not concerned about preserving the health of existing oaks in Sauk Creek Greenway.
- 2.I am somewhat concerned about preserving the health of existing oaks in Sauk Creek Greenway.
- 3.1 am very concerned about preserving the health of existing oaks in Sauk Creek Greenway.
- 4. Not sure

Response

Q15 - Native Species

Meeting poll | 1 question | 59 of 68 (86%) participated

 How concerned are you about preserving the health of existing oaks in the Sauk Creek Greenway?
 (Single choice)

59/59 (100%) answered

I am not concerned about preserving the health of existi... (2/59) 3%

I am somewhat concerned about preserving the health... (14/59) 24%

I am very concerned about preserving the health of ex... (43/59) 73%

Not sure (0/59) 0%

we missed?

Add it to the chat!

NATIVE SPECIES

How important is getting new oaks to grow in the Sauk Creek greenway? Something else

Single choice.

- 1. It is very important to get new oaks to grow in the Sauk Creek Greenway.
- 2. It is somewhat important to get new oaks to grow in the Sauk Creek Greenway.
- 3. It is not important to get new oaks to grow in the Sauk Creek Greenway.
- 4. Not sure

NATIVE SPECIES

Q16 - Native Species

Meeting poll | 1 question | 56 of 68 (82%) participated

 How important is getting new oaks to grow in the Sauk Creek greenway? (Single choice)

56/56 (100%) answered

It is very important to get new oaks to grow in the Sau... (26/56) 46%

It is somewhat important to get new oaks to grow in t... (26/56) 46%

It is not important to get new oaks to grow in the Sauk C... (1/56) 2%

Not sure (3/56) 5%

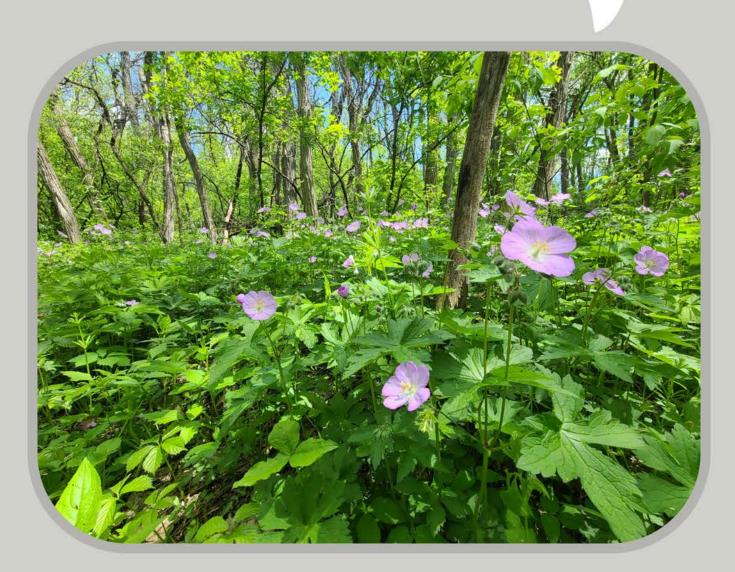
NATIVE SPECIES

How interested are you in expanding coverage and increasing the diversity of native herbaceous species in Sauk Creek Greenway?

Something else

Single choice.

- 1. I am not interested in expanding coverage and increasing diversity of native herbaceous species in Sauk Creek.
- 2. I am somewhat interested in expanding coverage and increasing diversity of native herbaceous species in Sauk Creek.
- 3. I am very interested in expanding coverage and increasing diversity of native herbaceous species in Sauk Creek.
- 4. Not sure



we missed?

Add it to the chat!

Q17 - Native Species

Meeting poll | 1 question | 60 of 68 (88%) participated

 How interested are you in expanding coverage and increasing the diversity of native herbaceous species in Sauk Creek Greenway? (Single choice)

60/60 (100%) answered

I am not interested in expanding coverage and increasin... (4/60) 7%

I am somewhat interested in expanding coverage and ... (23/60) 38%

I am very interested in expanding coverage and increa... (29/60) 48%

Not sure (4/60) 7%

Ecological Resources

Native Landscaping

- WDNR and UW-Extension <u>"Landscaping Alternatives for Terrestrial Invasive</u> <u>Flowers and Grasses"</u>
- Woody Invasives of the Great Lakes Collaborative (WIGL) <u>"Landscape</u>
 Alternatives for Invasives Trees, Shrubs & Vines"
- Native and non-native root comparison chart

Invasive Plants

- Dane County Invasive Tree & Brush Removal
- Woody Invasives of the Great Lakes Collaborative (WIGL)
- Invasive Plants Association of Wisconsin (IPAW)

Oak ecosystems are among the most highly productive ecosystems in the world but are rapidly declining and globally imperiled.
Oaks are a keystone species, providing habitat structure and critical compositional features for 250+ species of birds, 500+ species of plants.

 Natural Resources Conservation Service (NRCS)

Keeping You Informed

Other City Initiatives You May Be Interested In

West Area Plan - ongoing

- www.cityofmadison.com/WestPlan
 - Upcoming meetings to be announced based on Common Council referral of a forthcoming final draft to boards, committees, and commissions.
 - Summary of public feedback to be posted to project webpage

Keeping You Informed

Other City Initiatives You May Be Interested In

Stormwater Utility Vegetation Management Plan

- www.cityofmadison.com/StormVMP
- GOAL: Create a framework for sustainable and resilient vegetation management for citywide stormwater utility land.
 - The plan will reflect anticipated climate change impacts within the context of existing city resources and respond to community concerns.
 - It will not look at individual ponds and greenways.

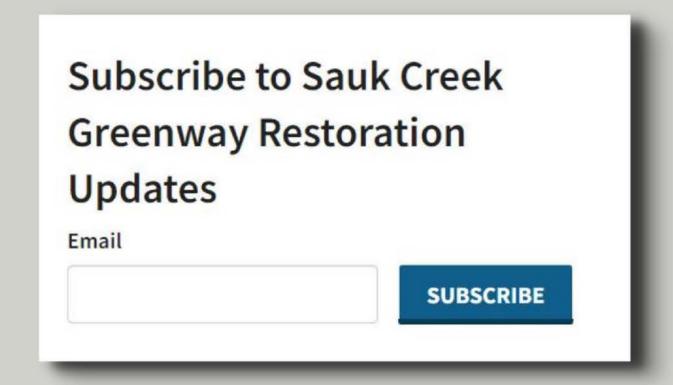
Contact Information & Resources

Contacts

- Project Manager, Jojo O'Brien
 - Email: jobrien@cityofmadison.com
- Path Project Planner, Renee Callaway (if paths included in West Area Plan)
 - Email: <u>recallaway@cityofmadison.com</u>

Project website

- www.cityofmadison.com/SaukCreekGwy
 - Sign-up for project email updates on the website
 - Updates on plan status will be posted to the project website
 - Recording for virtual meeting, and meeting slides will be posted
 - Ecological Assessment will be posted online



Next Steps

Draft Preliminary Corridor Plan

- Internal advisory group meets to use your input to create draft preliminary corridor plan
- In fall 2024, the City will host another public meeting to share the draft preliminary corridor plan and seek input
 - Lots more opportunities to help shape the corridor plan!

Thank you for coming!

Please take our survey to:

- Provide input on how the meeting went
- Provide additional comments by category to make sure we can address them in upcoming meetings
- https://www.surveymonkey.com/r/MBFC7XW
 - We will email this out to everyone after the meeting

Scan QR code with phone photo app



Questions?

Contact Information & Resources

Contacts

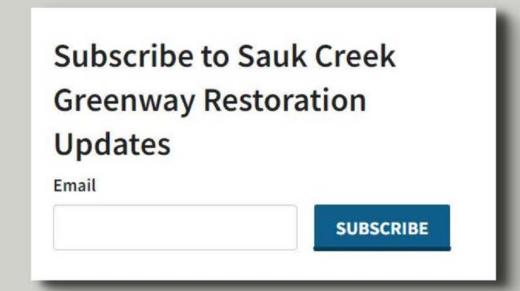
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Scan me