

Stormwater Utility Vegetation Management Plan

Update to the Board of Public Works

City of Madison Engineering Division June 26, 2024



BPW Updates

- BPW on August 23, 2023 Draft Framework
- BPW on March 6, 2024 Public Engagement and RESJ Summary
- BPW today on June 26, 2024 What we heard from outside experts and next steps



What IS included in this plan.

- Community identified values and priorities.
- Big picture goals and strategies related to vegetation management on ponds and greenways.
- Identification of priorities for fiscally and environmentally sustainable vegetation management.
- Input from ecologists, stormwater engineers, and other experts in the field of climate change, land management, and ecological restoration.



What IS NOT included in this plan.

- Specific improvements to individual ponds or greenways.
- Recommendations for implementing green infrastructure, or larger sustainability initiatives outside of management of vegetation in stormwater utility owned lands.
- Overall vegetation within the city and road right of way.
- Vegetation on park land.
- Citywide Urban Forestry goals.
- Will not dictate a specific design but will be a companion document guiding the process for long term vegetation management and goals.
- This plan will not determine new land to acquire or new reconstruction projects.



Outside Expertise

- Technical questionnaire
- Focus Group Workshops
- Consultant review of the data, science, and trends related to top concerns



- Solicit volunteer expertise from ~ 160 people with professional or academic backgrounds in stormwater engineering, wildlife biology, ecology, land management, urban heat islands, lake and water quality, pollinators, carbon, climate and agronomy.
- Developed list from UW Sustainability Staff Search, Dane County and DNR professionals in these fields, recommendations from Advisory Working Group, and people who self identified as experts in the local community.
- Identify points of shared agreement and consensus, identify conflicting points and conservation trade-offs and incorporate this into strategies based on existing resources.



- Reached out to ~160 technical experts.
- ~ 110 responded that they would be interested in assisting
- Full questions and responses available here:
- https://www.cityofmadison.com/engineering/documents/projects/Technical%20Response%20Summary%20-%20April_0.pdf



- Overall Findings
 - Priorities and Solutions Differ Amongst Technical Experts
 - Multiple Ecosystem Resiliency is Complex with often Competing Solutions
 - Native Plants with Deep Root Systems Provide Stormwater Benefits
 - Areas of General Consensus
 - Areas of General Conflict

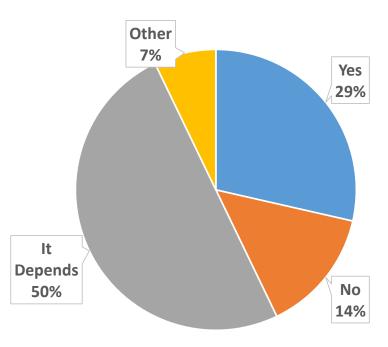
Important: The quotes in the following slides are not inclusive of all of the responses. They are chosen to help illustrate the diversity and depth of responses received. For the full responses, please review the project website:

https://www.cityofmadison.com/engineering/projects/city-engineering-stormwater-utility-vegetation-management-plan



Differing Views on Removing Natives that are not part of the Original Ecosystem

What about including removing native species that may not have been part of the original forest or ecosystem community? For example, removing box elders, slippery elm, silver maple, cottonwoods, etc. in areas that also have older populations of bur, white, and red oaks?



"Mesophication or the encroachment of native woody species that prefer shadier more moist environments or cannot tolerate repeated fire events within multiple years (i.e. maples, slippery elm, poplars, birch, and cherry) is one of the greatest threats to community health and diversity within wooded communities. It shades out the groundlayer and overtime starves the vegetation of the amount of sunlight it requires to grow."

"I am not in favor of blanket removal of native trees simply because they were not part of an original forest. If removal is part of a larger forest management plan that includes planting of oaks and a plan to manage the oak forest/woodland over time, that's fine."

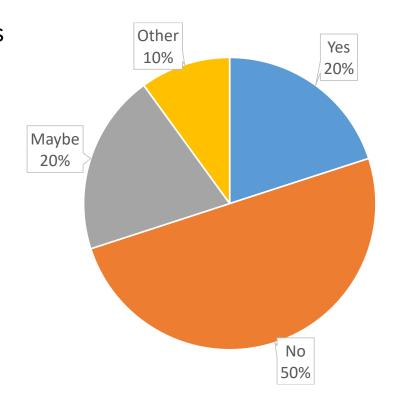
Timing and Method of Mowing in Herbaceous Communities is Site Specific

- "Mowing as a practice in prairie management is contextually both useful and potentially troublesome. In new (1 to 3 year old) prairies infrequent mowing can leave thatch behind that could potentially smother the developing basal rosettes of native species depending on the vegetation being mowed. If the vegetation being mowed is mostly sparse annual vegetation, or native aggressive plants which form a shading canopy (i.e. dogwood, canada goldenrod) mowing should not have a detrimental impact and should help the young prairie establish by preventing the buildup of those undesirable plants in the seedbank. In situations where grass is the primary vegetation being mowed, infrequent mowing leaves behind a layer of thatch which can be thick enough to smother a new prairie or reduce the biodiversity of an established prairie."
- "Spot mowing is not an issue. Broadcast mowing can be an issue if a large thatch layer is developed, potentially smothering native plants and creating cooler soil temperatures that will promote non-native cool season grass establishment."



Wary of Assisted Migration

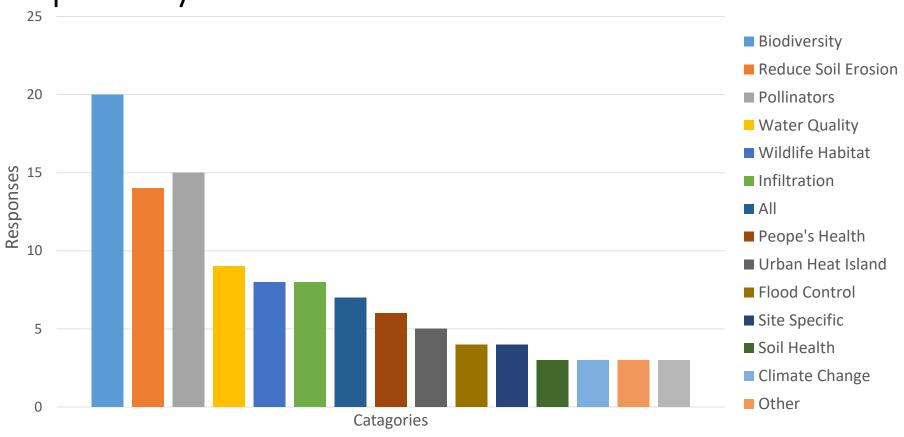
Should public lands encourage ecosystem shifts related to climate change? What are your thoughts on assisted migration, particularly with regards to plant selection for restoration of urban, public lands?



"At this time, I would caution against introducing native vegetation species found south of the Wisconsin border into local Madison ecosystems, unless we understand or know that each individual species introduced will not have a negative affect on local vegetation and wildlife."

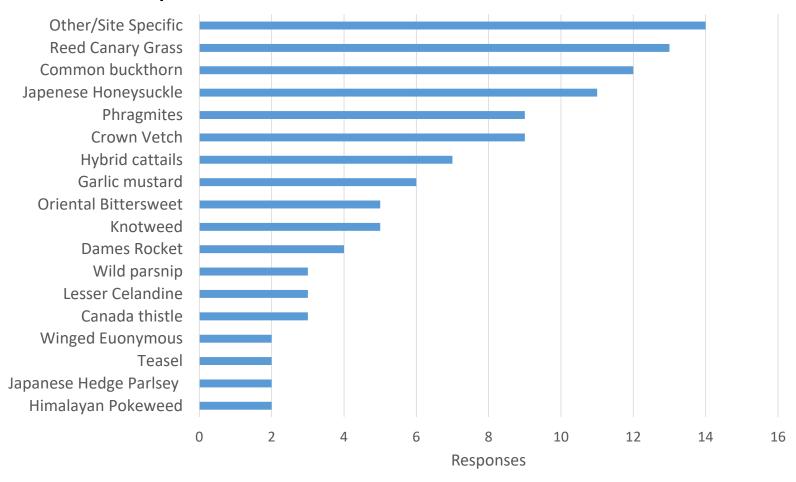
"I think assisted migration is an important tool in land management and is not at all problematic in Urban areas."

Top Ecosystem Services

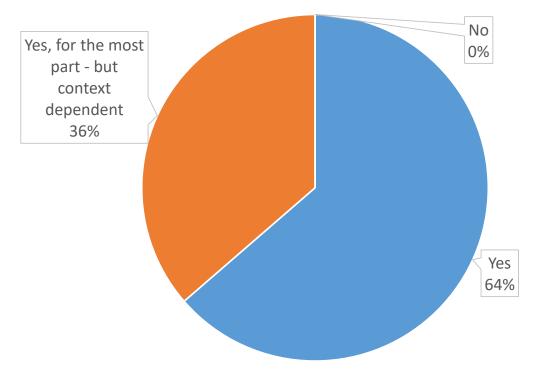




Invasive Species that Pose the Greatest Threat



Invasive Species Management is Important



Should invasive species removal be included on public land management goals?



https://www.cityofmadison.com/engineering/projects/city-engineering-stormwater-utility-vegetation-management-plan

Volunteer Technical Experts

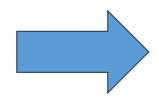
As part of plan development, the city solicited assistance from experts in the field of land management, stormwater engineering, climate change, conservation, native species, pollinators, water resources and other applicable topics.

We asked technical experts to:

- Answer questions related to plan development and stormwater vegetation. A summary of their responses, including an attachment with each individual response can be found below.
 - o Volunteer Expert Technical Response Summary PDF







Focus Group Workshop

- May 29 from 2:00 pm to 4:30 pm
- 29 experts volunteered to participate in focus group workshop
- Staff presented overview type/acres of land and existing resources
- Asked to provide draft vegetation management strategy on specific sites
- Asked to provide recommendations on system wide priorities
- Full exercises and responses available here:

https://www.cityofmadison.com/engineering/documents/projects/Focus%20Group%20Workshop%20Summary 0.pdf



Vegetation Management Exercise

Group 1 GR 6435-002 Group 2 GR 7052-005 Group 3 PD 1452-003 Group 4 GR 7052-005





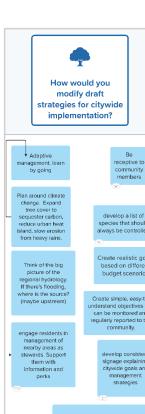




Systemwide Priorities

- How would you implement draft strategies for citywide implementation?
- What sites would you target first with limited resources? New restorations? Oak woodlands? Wetlands?
- What Integrated Pest Management Strategies would you use?
- Would you prioritize specific ecosystems or locations? Or generally try to improve all areas?
- Would you prioritize based on specific land uses?
- Wat are ways to achieve low maintenance, high biodiversity land management properties?





Use existing City Consider partnering with potential Eagle watershed studies Scouts to complete to help understand erosion potential in management as their areenways and community service potential restoration project to attain the techniques

> update permitting to allow for better preparation and planting



What sites would you target first with limited resources? New restorations? Oak woodlands? Wetlands?



What Integrated Pest Management Strategies would you use?



Would you prioritize specific ecosystems or locations? Or gradually try to improve all sites?



Would you prioritize restoring systems based on adjacent land use?



What are ways to achieve low maintenance, high biodiversity land management properties?

develop a list of species that should always be controlled

> Create realistic goals based on different budget scenarios

> > Create simple, easy-tounderstand objectives that can be monitored and regularly reported to the community.

develop consistent signage explaining citywide goals and management strategies

Faith F -- need to know hydrogeomorphic and hydrogeologic setting, pathway, and connectivity, flood management benefits of entire greenway, not separate channel and

Eagle Rank.

strategies

Support existing trees. Sometimes more Important than planting new ones,

to the site. 5. type of w

Plant more oaks. Jay: Save oaks are overused, limit these to seasonally wet areas. More white oak and bur

oak in upland areas.

1 - existing oak woodlands wetlands and new restoratio conditions and a million other

It seems like new restorations might be the most cost effective to keep in good shape

If we do end up focusing on newer restorations that might only focus work in suburban areas so that would leave the older neighborhoods with fewer resources and less

Consider the tree atlas in terms of what will biodiversity and the benefits grow well into the from these communities.

This choice could be informed, in part, by the surrounding community needs. For example if the area has had issues with flooding in recent years where we have had more intense rain evens we may focus more on wetland improvement and creation even if not the historical context, assuming it doesn't destro any remnant communities. This may help to garner more public support if ork may help flood mitigation in the community.

Begin changing the language and mindset around sites as 'high' or low' quality, Instead, consider the context and conditions of a site (soil, water coming into the site, adjacent and past land uses) to learn how why sites transition or are made up of particular species. 'Low' quality sites may actually be rich in learning

opportunities about urban sites.

friends group, 2, quality of management capability 4, access

least work first

Existing highquality areas of all types will be the easiest and cheapest to keep. followed by

new restorations I would prioritize the newer restorations to ensure

continued benefits from the recent investments, while hopefully planning restorations at the areas that have native remnants ike oak populations

https://

www.fs.usda.gov/nrs/

atlas/tree/

future here. Low hanging fruit: new high native diversity

Maximize floodplain forest

and limit soil disturbance. reestablish vertical grade in steen areas Generally maintaining cover, standing woody biomass, and keeping soil disturbance low could be priorities

sites with residential or recreational areas earby to maximize educational potential

Target sites that have the highest native highest native vs invasive cover. i.e. low hanging fruit for restoration potential

colonization by

potential for predetermined joals. city budget does not allow for gradual improvement on all sites, only slowed descent into low quality systems

Both, I think you prioritize but try to improve all sites

Prioritize sites with higher potential (do a

that have best chance for

can serve as demo sites.

headwater

areas.

benefits

Prioritize sites where

issues such as erosion could have negative downstream impacts.

This is mostly overly

shaded stream

diverse

Maybe a tiered process, where

few things well and then move add others and higher visibility sites (the majority of neonle live in urban areas and while a pristine environment imaginable, it might be the form of nature people interact with most

the higher

sites.

Prioritize sites with higher native plant cover.

ranked of the factors involved. each eco system is important but they need to prioritized.

at least don't decline), while select sites with high potentia or importance are prioritized. Prioritize areas that have multi

no -- hydrology. Also engineering is controlling thow habitats are connected through the extensive riparian corridors, need to think of more than pollinators.

are in better shape so they don't get worse.

> managing the Consider social edges to try to contain invasives and stop them community

Prioritization will be necessary. given budget constraints, but allowing volunteers to work in low priority areas could lead to improvement of all sites

you the best chance fo edge habitats, etc.)

Yes I think you have to consider adjacent lands priorize where you can

Yes a residential neighborhood, natural area with a walking path, etc will provide more exposure for ecological restoration as a practice.

Absolutely. Paying attention to where the less desireable plants and seeds are coming from and focusing on the system as a whole and not just individual areas can reduce problems

Be mindful that this does not

Underserved neighborhoods

may have fewer volunteer

currently involved, and have

lower quality landscapes. In

this sense, a protect would be

seen as "less potential for

success'

where their restoration is most important for limiting damage to other vulnerable nearby land uses

Prioritize based on quality of the system in question.

communities.

I think that that budget contstraints Prioritize lowdon't allow for this income

> Yes - both to limit adverse impacts from the adjacer land and to maximize benefits to nearby

Yes, and notential

quality with a good

short term effort

(thinking degraded

oak woodlands)

no -- need to prioritize based on hydrologic benefit and climate change projections, aoso what species are likely to die out because of diseease, need to be open minded.

Yes; this will affect efficacy of management and impacts of invasive control. Controlling invasive is key when surrounding land contains natives

Ensure long-term vailability of needed resources to protect storation investments a they're made

Practice good follow through once initial and more aggressive restoration investments are made.

creating basins could improve the basins in the long run. Currently developers and the city push for few treatments and quick plantin this leads to poor quality starts to many of these areas. allowing time and budget and permitting for extended periods of site prep could imp many sites right from the jump

Remove invasive Ensure that utilitarian maintenance will be tough been established first

answer of you.

Borders of some type need to be nut in place between lawn or otherwise mowed areas to prevent exotic coolseason grasses from creeping in to these natural areas

native species have

then add in more

conservative native

planting later.

Chosen species should be other without constant oversight

seed bed prep and grow in. good native

hydrology not only for management, but also appropriate hydrologic desired vegetation

managemen

between sites

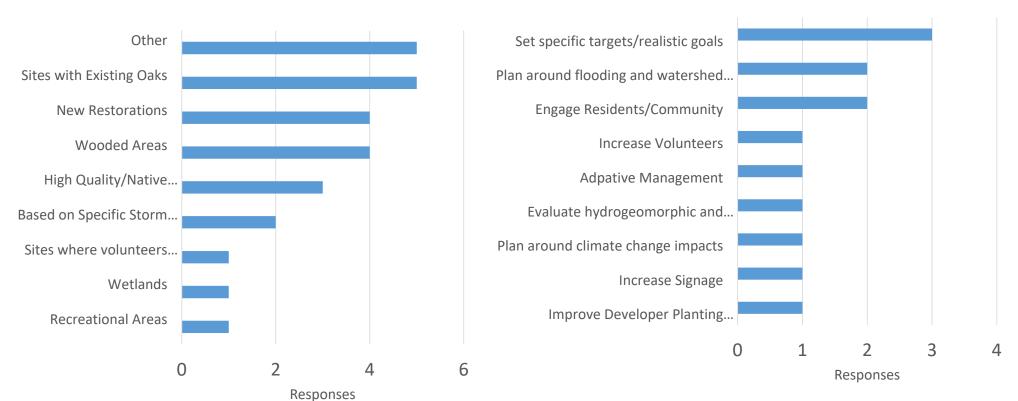
Engineering's general mowing staff should be trained to identify 10-20 common weeds mowing (EX; wild carrot, sweet clover, even perennials like reed canary grass) and tasks with mowing them when they bloom or otherwise as needed

make sure that nev development includes effective engage volunteers stormwater mitigation and with a wellplanting/monitoring that supported progra developers are held to



How would you modify draft strategies for citywide implementation?

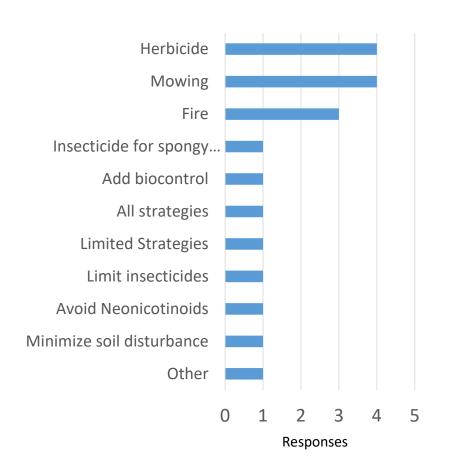
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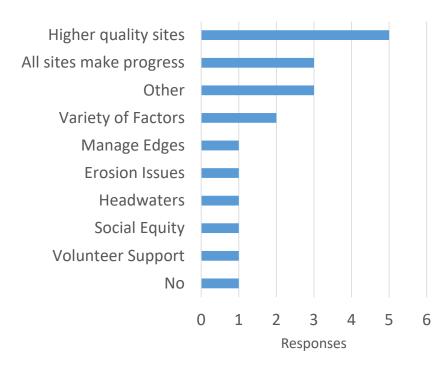


These are graphed by general categories and should not be interpreted as full recommendations from experts. Exact quotes are available on the project webpage.

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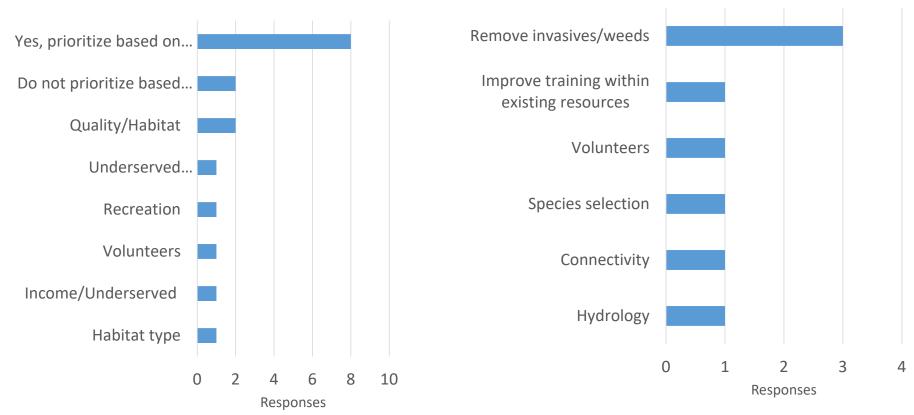




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Would you prioritize restoring systems based on adjacent land use?

What are ways to achieve low maintenance, high biodiversity land management properties?



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Next Steps

- Consultant review of the data, science, and trends related to top concerns based on feedback
- Specifically look areas where there was not consensus vegetation maintenance along channels that experience urban hydrological conditions to minimize erosion

