



Photo: Parmenter School - Franklin, MD

Photo: The Watershed Institute

RETHINKING APPROACHES TO RAIN GARDENS & GREEN INFRASTRUCTURE

SEPTEMBER 30, 2021
MICROSOFT TEAMS



AGENDA

- Welcome & Housekeeping
- Speakers
 - Mike Heimos, City of Columbia, MO
 - Lisa Treese, City of Kansas City, MO
- Q&A Roundtable
- NCTCOG Resources
- Thank You & Conclusion

WELCOME & HOUSEKEEPING

- Please keep your line on mute until the end of all the presentations.
- We will have an open Q&A session at the end of the presentations. Please type your question in the chat box or type in your request to speak.
- The webinar slides and recording will be posted on NCTCOG's website under green banner called "Webinars and Trainings" at the link below. Follow-up emails to come.
 - www.nctcog.org/envir/watershed-management/stormwater/public-education-task-force



SPEAKER BIOS

Mike Heimos

Mike Heimos has worked for the City of Columbia for the last 15 years. Mike started with the City of Columbia's Solid Waste division working with the outreach and education recycling program. He is currently is the City of Columbia's Stormwater Educator. He coordinates education and outreach programs for the Stormwater Utility; city wide staff training on BMP's for good housekeeping and works with local community groups and organizations to help keep Columbia waterways clean and healthy.

Lisa Treese

Ms. Treese is a registered landscape architect in the State of Missouri. In November of 2012, she joined KC Water. Her primary focus areas at KC Water are green infrastructure, site design, monitoring green infrastructure maintenance agreements, and advising internal maintenance programs. Ms. Treese also leads the City's interdepartmental KC Green Infrastructure team which works to identify, track, encourage, and support new green infrastructure capital projects in Kansas City. She formerly worked at Wallace, Roberts & Todd (WRT) and Vireo. Ms. Treese holds a Bachelor of Landscape Architecture with a secondary major in Natural Resources and Environmental Science, is a legacy LEED accredited professional, a participant in the Green Infrastructure Leadership Exchange (GILE), and is a National Green Infrastructure Certification Program (NGICP) Trainer.



MIKE HEIMOS

STORMWATER EDUCATOR
CITY OF COLUMBIA, MO



City of Columbia Adopter Volunteer Meeting

Welcome and Thank you!!



City of Columbia Vision & Mission

- ▶ **Vision:** Columbia is the best place for everyone to live, work, learn and play.
- ▶ **Mission:** To serve the public through democratic, transparent and efficient government.

City of Columbia Core Values

- ▶ **Service:** We exist to provide the best possible service to all.
- ▶ **Communication:** We listen and respond with clear, compassionate and timely communication.
- ▶ **Continuous improvement:** We value excellence through planning, learning and innovative practices.
- ▶ **Integrity:** Our employees are ethical, fair, honest and responsible.
- ▶ **Teamwork:** We achieve results by valuing diversity and partnerships within our own organization and the community.
- ▶ **Stewardship:** We are responsible with the resources the community entrusts to us.

Mission of Volunteer Programs

- ▶ The mission of the City's Volunteer Programs is to provide *valuable* opportunities to *build community* while volunteering in city government.

Why do you volunteer?

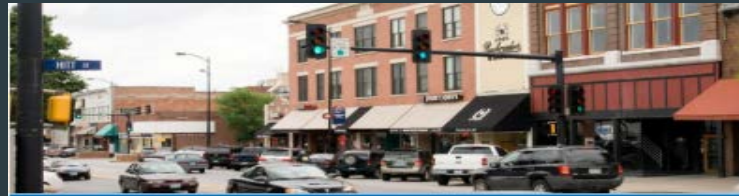
1. Public Service – my volunteering helps the community.
2. Personal satisfaction – from a job well done!
3. Opportunity to be outdoors and enjoy nature.
4. Make an impact on sustainability.

CAAP

City of Columbia Climate Action and Adaptation Plan



Energy



Housing, Buildings & Development



Transportation



Health, Safety & Well-Being



Natural Resources



Waste

CAAP: Where do you fit?

Implementation

Implementation-3. Strengthen City capacity to support community climate action.

Strategy I-3.3: Develop community leadership capacity for and involvement in climate action.

Natural Resources

Goal NR-1. Increase climate resilience and carbon sequestration potential of public and private lands.

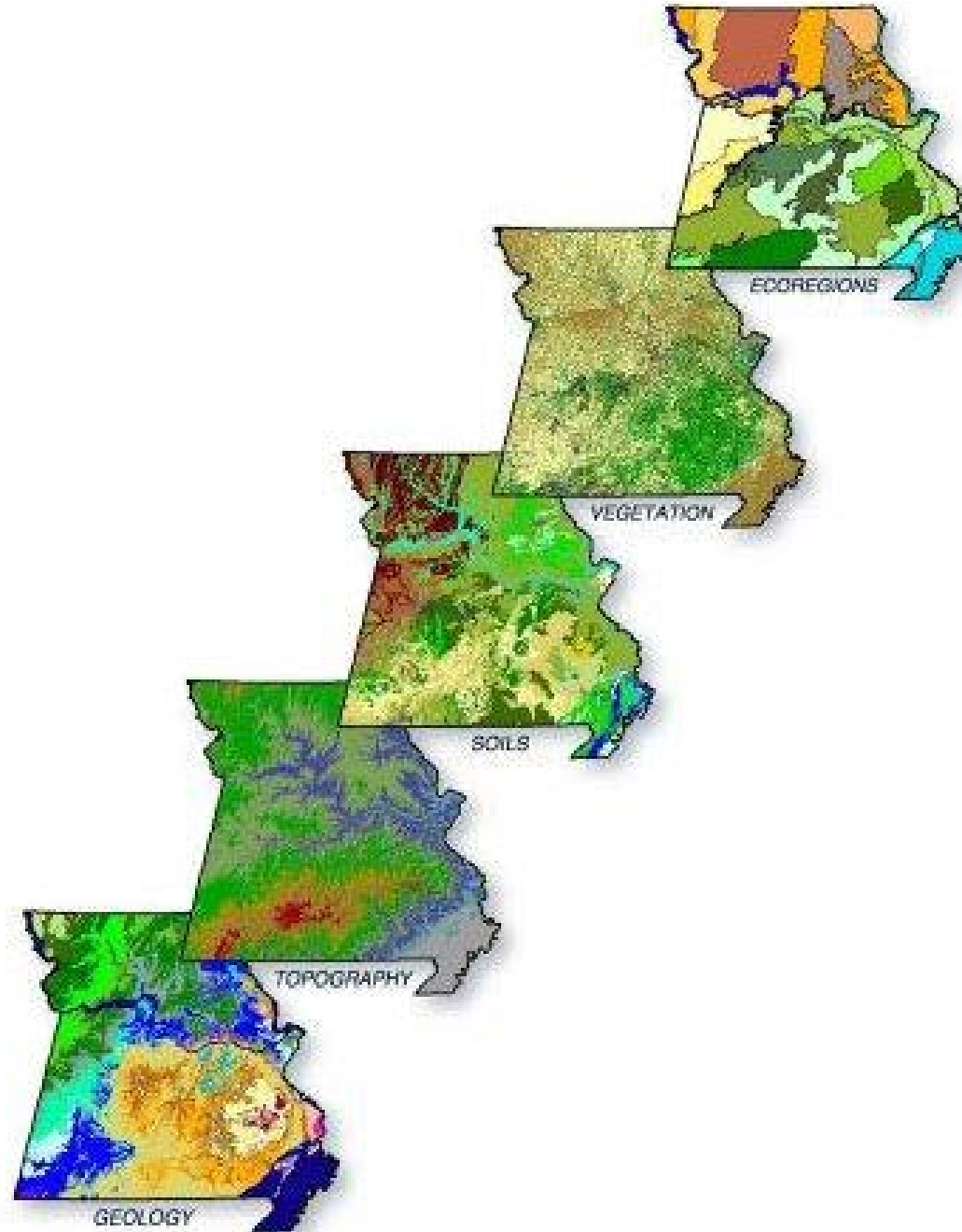
Strategy NR-1.1: Increase the accessibility and quality of habitat for native plants and animals.

Native Plant Landscaping

Native plants are better to landscape with because...

- ▶ they require less water
- ▶ no fertilization
- ▶ no pesticides
- ▶ can survive harsh Missouri summers and winters

How are they able to do this?



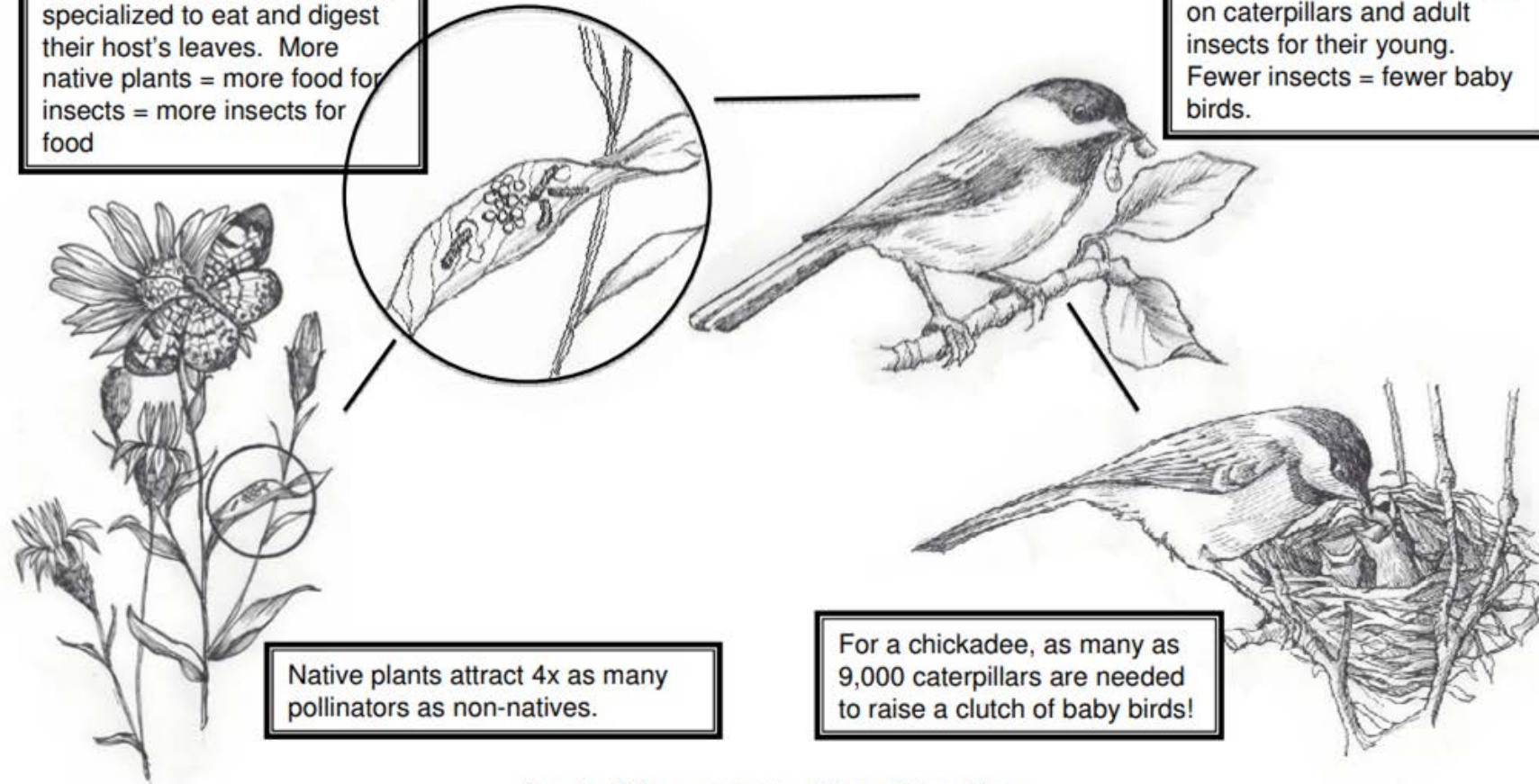
Ecoregion: The area that these plants are native to is called an ecoregion and it is identified by its geology, topography, soils, and vegetation.

The Native Link

There is a strong, ecological connection between native plants and the insect and animal world, especially the bird population.

Our native insects have evolved with our native plants, specialized to eat and digest their host's leaves. More native plants = more food for insects = more insects for food

96% of North American bird species rely overwhelmingly on caterpillars and adult insects for their young. Fewer insects = fewer baby birds.

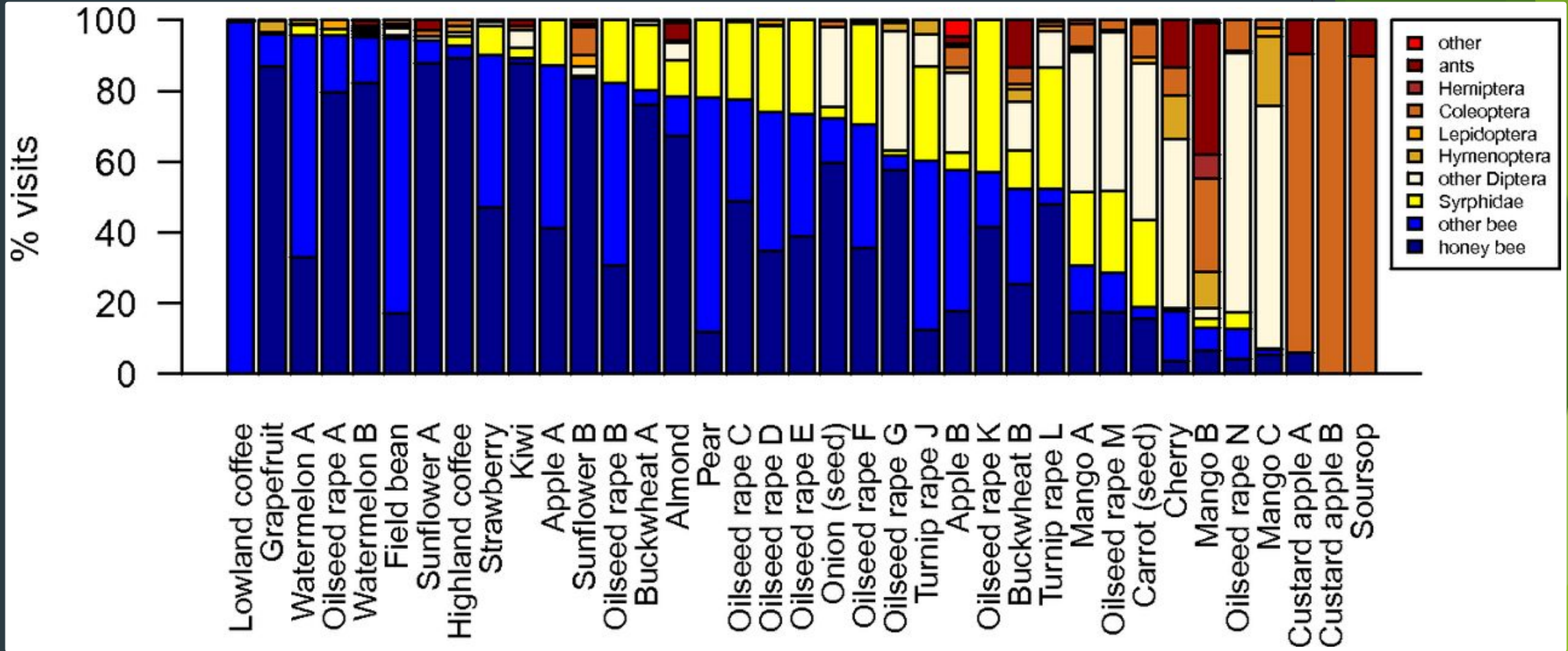


Native plants attract 4x as many pollinators as non-natives.

For a chickadee, as many as 9,000 caterpillars are needed to raise a clutch of baby birds!

Douglas Tallamy research – *Bringing Nature Home*

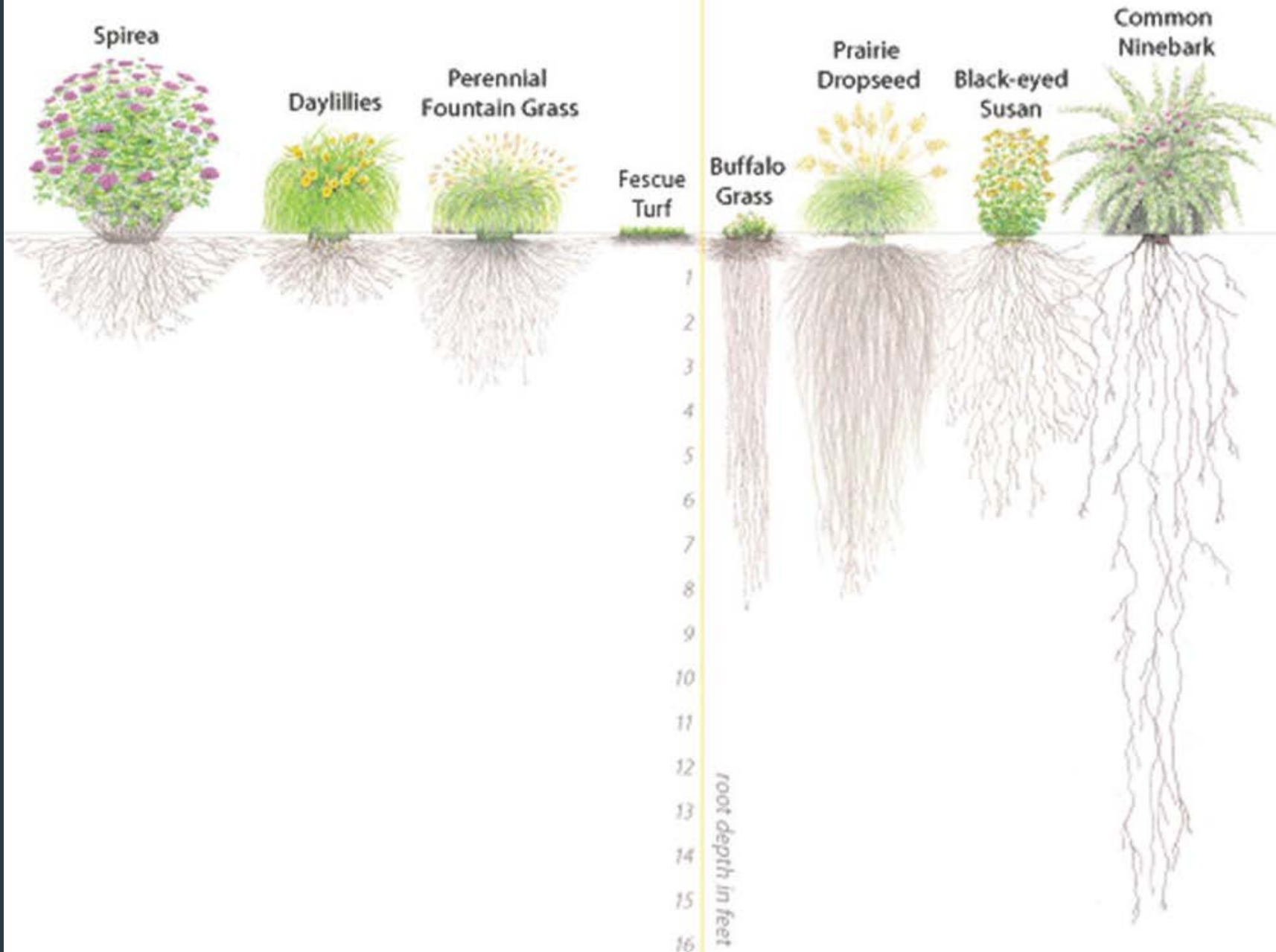
If you don't care about birds...



...then you should still care about insects!

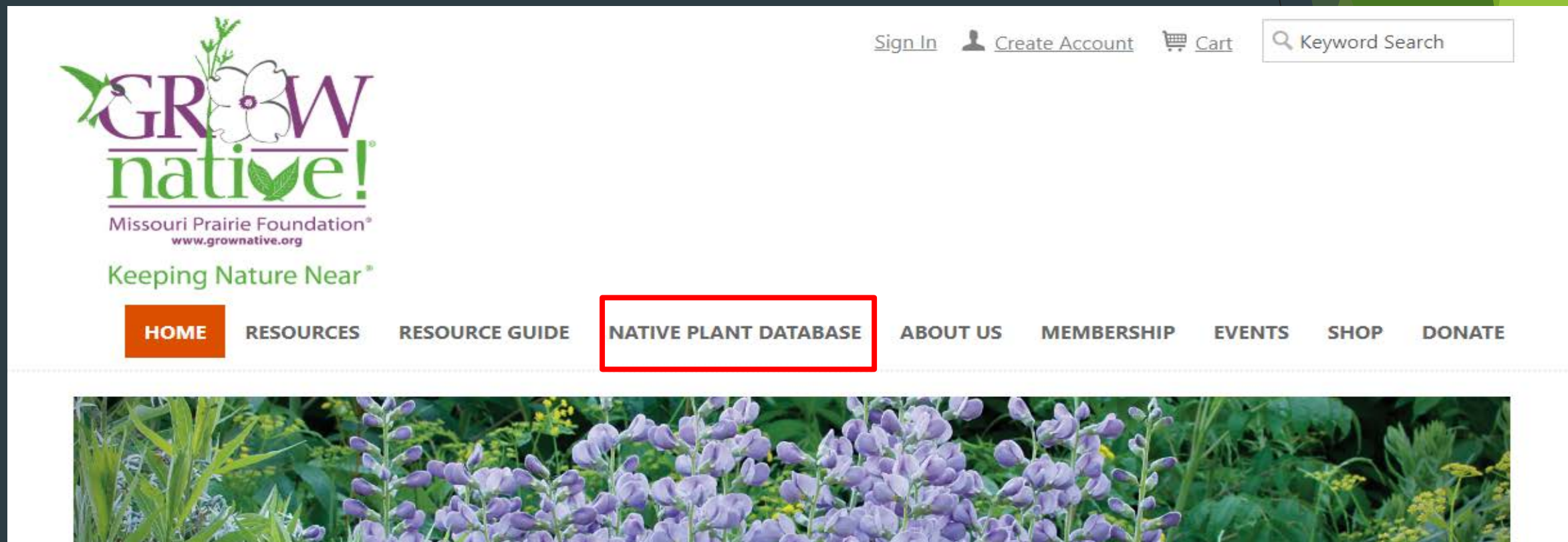
Non-Natives

Natives



How do I use native plants in my Adopt-a-Spot?

- Site assessment
 - soil, sun, water, salt tolerance
- Grownative.org



The image shows the top portion of the Grownative.org website. On the left is the logo for Grownative!, featuring the word "GROWNATIVE!" in a stylized font with a plant stem and leaves integrated into the letters. Below the logo is the text "Missouri Prairie Foundation®" and "www.grownative.org", followed by the tagline "Keeping Nature Near®". On the right side of the header, there are links for "Sign In", "Create Account", and "Cart", along with a search bar labeled "Keyword Search". Below the header is a horizontal navigation menu with the following items: "HOME" (highlighted in an orange box), "RESOURCES", "RESOURCE GUIDE", "NATIVE PLANT DATABASE" (highlighted with a red rectangular border), "ABOUT US", "MEMBERSHIP", "EVENTS", "SHOP", and "DONATE". At the bottom of the screenshot is a photograph of a field of purple lupine flowers.

Native Plant Database

Native Plant Info

[Alternative Species](#)

[Grow Native! Top Ten Native Plant Lists](#)

[Missouri Invasive Exotic Plant Species Task Force](#)

[Native Plant Database](#)

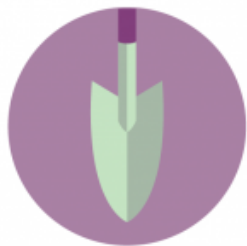
▶ [Natives for Landscaping](#)

▶ [Other Plant Lists](#)

▶ [Seedling Identification](#)

“Biological diversity is the key to the maintenance of the world as we know it.”

~ E.O. Wilson, Biodiversity



Picking the right plant for the right place isn't always easy. This fun-to-use search feature, however, helps narrow the hunt. Choose the criteria that meet your needs in one or more of the fields below and click on Find Plant for a list of plants that satisfy your criteria. For instance, if you want to attract hummingbirds, click on “hummingbird” in the Attracts box below and then click on Find Plants to create a list of plants that will attract hummingbirds throughout the year. If you want all blue blossoms in your garden, you can tailor your search to pick plants that meet that criteria. You can search for water-loving plants or drought-resistant plants. The possibilities are endless.

Learn about the [Native Environment\(s\)](#) inhabited by the plants in this database.

Get started with our [Resource Guide](#) of garden centers, seed sources, landscapers, education resources, and more.

Check out the Grow Native! Committee's [Top Ten picks](#) of native plants for a particular purpose.

Filter Plant Listings

Alphabetical Color Fall Color Plant Type Season Wildlife Animal resistance

Attracts Special Usage Sun Soil Features Native Environment

Current Filters:

Herbaceous Perennials Full Sun Dry



Aromatic Aster

(Symphyotrichum oblongifolium)

One of the last wildflowers to bloom, this aster is loaded with blue-purple daisy-like flowers in late fall. This aster grows into a tidy, compact, self-supporting mound and may be grown as a hedge. Part of our Pollinator Buffet plant tag series. Active spring to fall, the small carpenter bee looks like a fat, iridescent black ant. [...]



Bee Balm

(Monarda bradburiana)

A clump-forming plant producing many long-lasting lavender

How do I use native plants in my Adopt-a-Spot?

- Site assessment
 - soil, sun, water
- Grownative.org

[Sign In](#)



[Create Account](#)



[Cart](#)



Missouri Prairie Foundation®
www.grownative.org

Keeping Nature Near®

[HOME](#)

[RESOURCES](#)

[RESOURCE GUIDE](#)

[NATIVE PLANT DATABASE](#)

[ABOUT US](#)

[MEMBERSHIP](#)

[EVENTS](#)

[SHOP](#)

[DONATE](#)



Resource Guide

Allied Industries/Related Products and Services

Arborists

Forest Management

Grow Native! Map of Retailers

Institutional Supporters

Landscape Designers

Plugs, Wholesale

Shrubs and Trees

Education

Landscape Architects

Land Care & Landscape Services

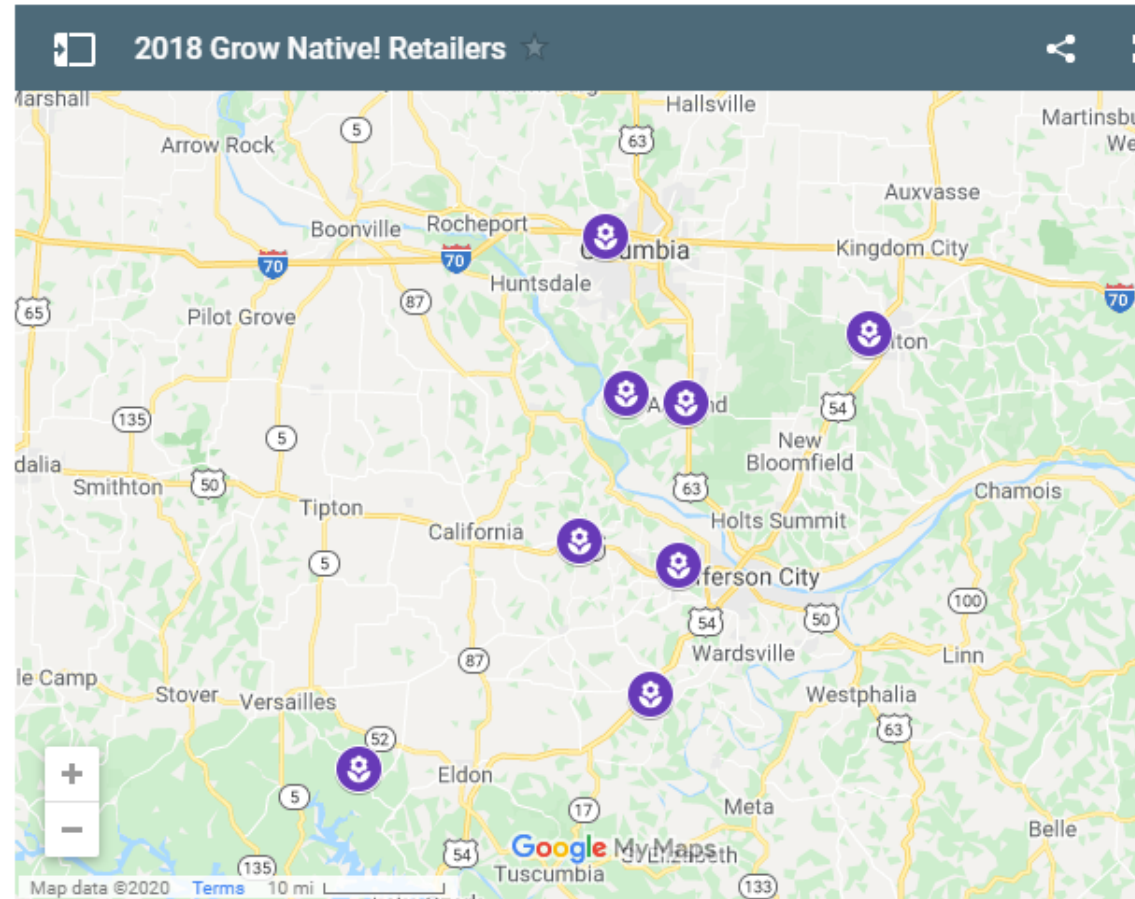
Plants

Seeds

Wildlife Habitat & Ecological Services

Grow Native! is a native plant marketing and education program of the Missouri Prairie Foundation. This map represents locations of Grow Native! members who are retailers where you can go to buy native plants in-person. For all other native plant products and services, including those who sell plants and seeds via mail order and wholesale, please visit our [Resource Guide](#).

Grow Native! recommends that you call retailers before visiting them to check on plant availability and seasonal hours.



“Biological diversity is the key to the maintenance of the world as we know it.”

Tips for Establishment

- ▶ Plan, then plant.
 - ▶ need multiple species for year-round color/food for pollinators
 - ▶ right plant, right place
 - ▶ diversity is good - plants in pea family fix nitrogen in soil which feeds neighbors
- ▶ Plant in the fall - as long as the ground is not frozen natives can be planted.
- ▶ If you plant in the spring, then be sure to water them throughout the summer.

Tips for Establishment

- ▶ Do not mulch natives like you would non-native plants . 1-2 inches of mulch maximum.
- ▶ Be careful not to over-water.
- ▶ Insects will eat your native plants - this is what we want!
- ▶ It takes 2-3 years for native plants to mature - be patient.

Adopt-A-Spot Beautification - Sabrina Lambrecht

- ▶ 101 Beds - 96 are adopted
 - ▶ 94% adoption rate
- ▶ Program expectations: Beds are to be weed free and should have color in spring, summer and fall
- ▶ Adopter requests:
 - ▶ Water - we will be turning water on by request only by April 15
 - ▶ Mulch - Provided once annually
 - ▶ Annual flowers - the City will reimburse \$50 per spot; please submit your receipts
 - ▶ We have a form you can fill out for your spring requests!

More notes on water...

- ▶ Maintaining the water hydrants continues to be a significant expense to the City
- ▶ We ask that volunteers not use timers - please be present to water your plants
- ▶ Water will be turned on by request only
- ▶ It's OK to NOT turn on your hydrant if you are not using it!



Compost

City landfill: 5700 Peabody Rd.
573-874-2489

Compost

- ▶ Available for purchase: March-October
- ▶ Thursdays 1-4 p.m.
- ▶ 2nd Saturday of each month 8 a.m.-12 p.m.
- ▶ \$20/ea. cubic yard
- ▶ Loader on site
- ▶ Call before you go!

Plant Sharing

A suggestion from the volunteer survey was to support adopters through the sharing of plants.

If you have a surplus of bulbs or plants you are dividing, or have a friend or neighbor who does and want to share let us know.

We will help get the word out to other adopters!



LANDSCAPING FOR POLLINATORS

USING NATIVE PLANTS TO ATTRACT
POLLINATING BIRDS AND INSECTS

Topics include: Diversifying plant choices and bloom times, adding color to your landscape, benefits of using natives, and more.

Special Guest Speaker: Nadia Navarrete-Tindall, Native Plant Specialist

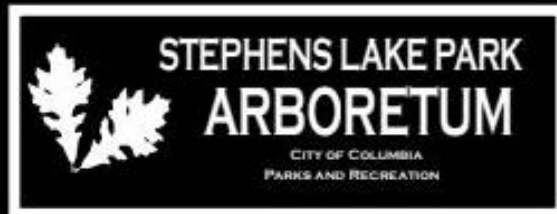
Thursday, Mar. 12th 2020

6-8 p.m. Riechmann Pavilion

Stephens Lake Park Arboretum

2300 E Walnut St, Columbia, MO 65201

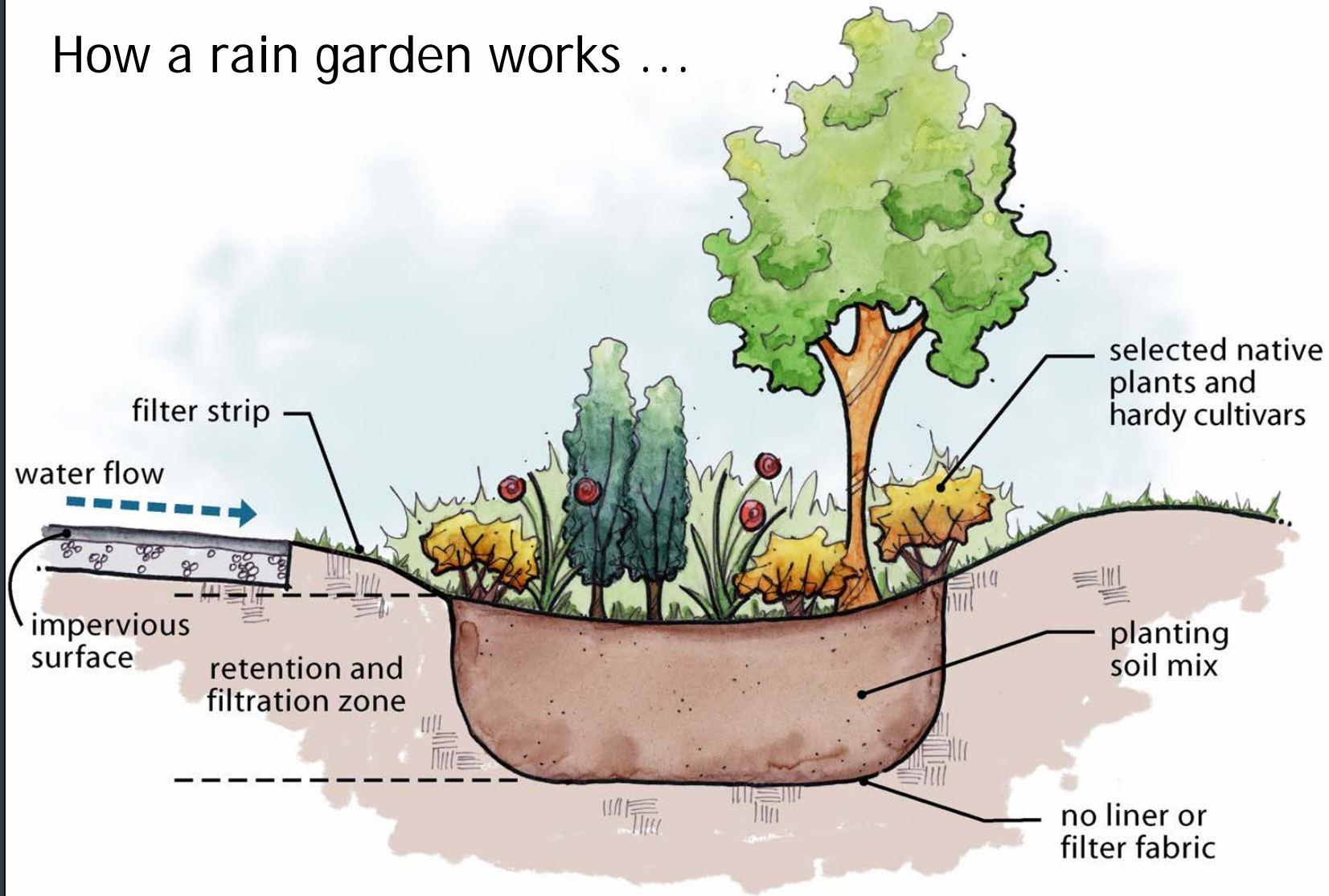
To register call 573-874-7460 or visit CoMO.gov
(Search WebTrac)



Rain Gardens



How a rain garden works ...



Rain gardens built and cared for by volunteers like you!



City of Columbia Adopt-A-Spot Litter Program

- ▶ Litter is a problem in our City!
 - ▶ 22% of residents were dissatisfied with cleanup of trash and litter issues
 - ▶ Cleanup of trash and litter is the MOST IMPORTANT issue residents had related to code enforcement and neighborhood services.
- ▶ Thank you for making a difference!
 - ▶ 51% are SATISFIED with the cleanup of trash and litter!
 - ▶ This is higher than....
 - ▶ 39% for other cities in Missouri and Kansas
 - ▶ 42% for other cities nationally

**Data from the 2019 Citizen Survey*



Adopt-A-Spot Litter Program

- Work during daylight hours
- When possible, plan work near roads when traffic volume is low.
- Park vehicles in legal parking spaces or off roadside, not on the shoulder of the road. Do not obstruct traffic.



Adopt-A-Spot Litter Control

- ▶ Seventy-Three Adopters
- ▶ Program expectations - 4 cleanups per year
- ▶ Recyclables
- ▶ Bag Fairy
- ▶ Report, Report, Report!
- ▶ Supplies - we have them for you today!



Safety tips

- Always face oncoming traffic
- Do Not wear ear buds or headphones
- Provide water for volunteers
- Avoid overexertion



Safety Tips

- Use caution when walking on slopes and be alert for holes and obstacles.
- Stay clear of any construction projects.
- Do Not remove hazardous substances



Safety tips

- Every crew should have a first aid kit.
- Have transportation available at all times.
- Know the location of the nearest hospital or emergency room.

**ALWAYS BE PREPARED FOR
AN EMERGENCY!**



Safety tips

- Adult supervision is required when children are present. The suggested child to adult ratio is 1 to 5.





Safety tips

- Leaders should review safety measures with your group prior to work.
- Follow suggested safety precautions at all times.
- Safety vests and gloves are provided.
- Wear clothes and shoes that are appropriate for your work area and the weather.





Placement of Bags



Along streets



In parks and from trails

Illegal Signs



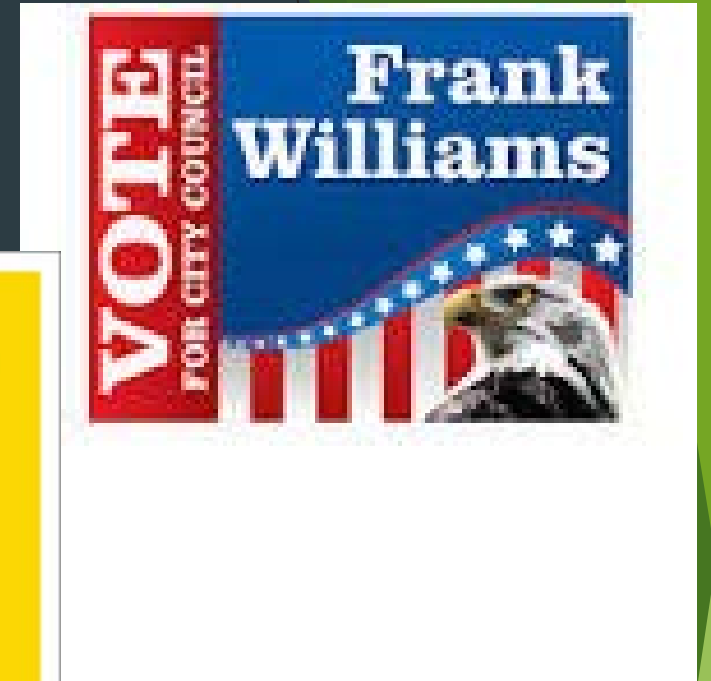
Chapter 29 in the City of Columbia Code prohibits the placement of advertisements within the right-of-way of any public thoroughfare with the exception of those signs permitted by this section.



Public right-of-way usually includes the area from the street curb to the edge of the public sidewalk. Advertising within this area, adopt-a-spot beds, and parks can be removed.



Private advertisement on public utility poles and street signs is prohibited and can be removed.



Signs that are political in nature, need to be referred to the City for further enforcement if a violation is believed to exist. (Contact Building & Site at 573-874-7474)



Sign disposal area is located behind City Hall, 701 E. Broadway. Located on the east side of 7th street between City Hall and the Plaza Parking Garage.

Volgistics

- ▶ Our online volunteer management system
 - ▶ Allows you to self-report your hours
 - ▶ Update your volunteer profile
- ▶ Please communicate with us via email for other issues:
 - ▶ Pick up of filled bags
 - ▶ Water/mulch requests



Login

Volunteers who have submitted applications or have been entered into our system may log in to our volunteer information center.

Enter your email address and your volunteer information center password, and then click the Go button.

If you do not have a login or password but would like to volunteer, please email us at volunteer@GoColumbiaMo.com.

Thank you and we appreciate your service as a volunteer!!

Login name:

Password:

[Forget your password?](#) [Help](#)

Go



Volunteer Information Center

Volunteer information for Leigh Britt (Leigh's Group)

[Home](#)[Mail](#)[My Profile](#)[My Schedule](#)[My Service History](#)[Time Sheet](#)[Account](#)[Check your schedule](#)[Post your hours](#)[Check messages](#)[Sign-up](#)[Text message opt-in](#)

Statistics

Overall

Volunteers: 1757

Cumulative hours of service: 62,219
(as of yesterday)

[Exit](#)

News

Welcome to the Volunteer Information Center. This new online feature gives you an easy way to keep-in-touch with the volunteer program. You can check your schedule, post your volunteer service, receive messages, and much more: anytime, and from any Internet connected computer.

Your Assignments

*Cleanup Columbia [Community Development] (Assigned)

Columbia Crawdads [Public Works] (Assigned)

Downtown Parking Audit [City Manager's Office] (Assigned)

Heritage Festival [Parks & Recreation] (Assigned)

Master Composter Projects [Public Works] (Assigned)

Park Clean Team [Parks & Recreation] (Assigned)

Park Patrol [Community Development] (Assigned)



Volunteer Information Center

Volunteer information for Leigh Britt (Leigh's Group)

[Home](#) [Mail](#) [My Profile](#) [My Schedule](#) [My Service History](#) [Time Sheet](#) [Account](#)

Instructions

To post your hours, enter your service information in the Time Sheet box and then click the "Continue" button.
If you are entering hours for a group please know our system will not auto-calculate your hours so please enter the total hours for your group.

Group Time Sheet

What was the **beginning** date of your service?

What was the **ending** date of your service?

Which assignment did you serve in?

What were the total number of hours served by your group? hours, minutes

Volunteers: (How many members from your group participated in this service?)

How much # of trash bags collected?

[Continue](#)

Your group's recent service entries:

Date	Assignment	Hours # of trash bags collected	Volunteers
08-28-2015	Downtown Parking Audit [City Manager's Office]	1.50	0.0 1
06-20-2015	Park Patrol [Community Development]	0.05	0.0 1

For your complete service history select the "My Service History" tab.

[Exit](#)



Volunteer Information Center

Volunteer information for Leigh Britt (Leigh's Group)

[Home](#)[Mail](#)[My Profile](#)[My Schedule](#)[My Service History](#)[Time Sheet](#)[Account](#)

Instructions

Click the "Printable view" button for a printable view of this information.

Totals

Year-to-date hours: 0.00

Life hours: 1.55

Service by year

Click on a year to view your records for the year.

Year	Hours	# of trash bags collected
2015	1.55	0.0
2014	0.00	0.0
Life total:	1.55	0.0

[Printable view](#)[Exit](#)

Cleanup Columbia will be
Saturday, April 11!

It's not my trash, but it's my City.

CLEANUP
COLUMBIA 2020

April 11



THANK YOU!

Your commitment and time is making
Columbia a better place to live.













LISA TREESE, RLA, LEED AP
SENIOR LANDSCAPE ARCHITECT
KC WATER (CITY OF KANSAS CITY, MISSOURI)
SMART SEWER PROGRAM





Practice Makes Perfect: Tips for Good Green Infrastructure Outcomes

PRESENTATION FOR NCTCOG, SEPTEMBER 30, 2021



Outline

- Green infrastructure project goals
- Overview of Smart Sewer green infrastructure portfolio
- Design & Beauty
- Implementation





Green Infrastructure Project Goals



Improving Water Quality



Green Infrastructure Project Goals

1. Protect water resources through cost-effective stormwater management using green infrastructure
2. Maximize community benefits





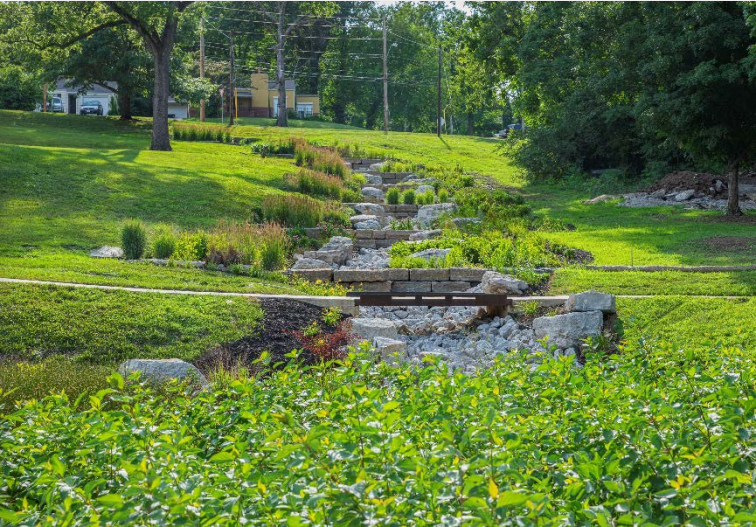
Smart Sewer Program Green Infrastructure Portfolio Overview



Growing Portfolio



Swope Campus



Middle Blue River Pilot



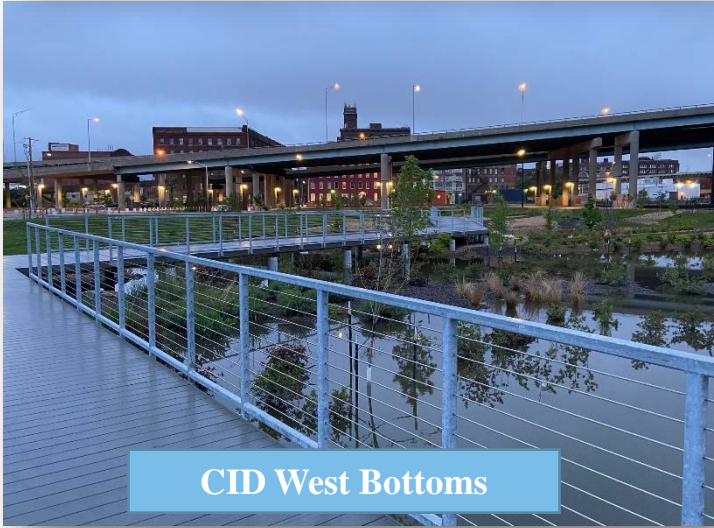
Target Green
Marlborough



Growing Portfolio



East High School



CID West Bottoms



NEID



Blue River Trailhead



Design & Beauty



Design & Beauty

Beauty is subjective.

Everyone has their own definition of “beautiful.”

Balance wildness with artfulness, in varying degrees, depending on context.

Let’s discuss tips that can help make green infrastructure appeal to the maximum quantity of people in the **urban and suburban context.**



“Form follows function - that has been misunderstood. Form and function should be one, joined in a spiritual union.”

-Frank Lloyd Wright

Tip: Clean Edges

- Short Hedges
- Small Stone Walls
- Decorative Rock
- Sod “Filter Strip”

Avoid having plants flop into walks or roadways.



Photo: wef.org

Left Photo: Shockey Consulting Services

Bottom Photo: Green Infrastructure in Omaha



Tip: Hardscape

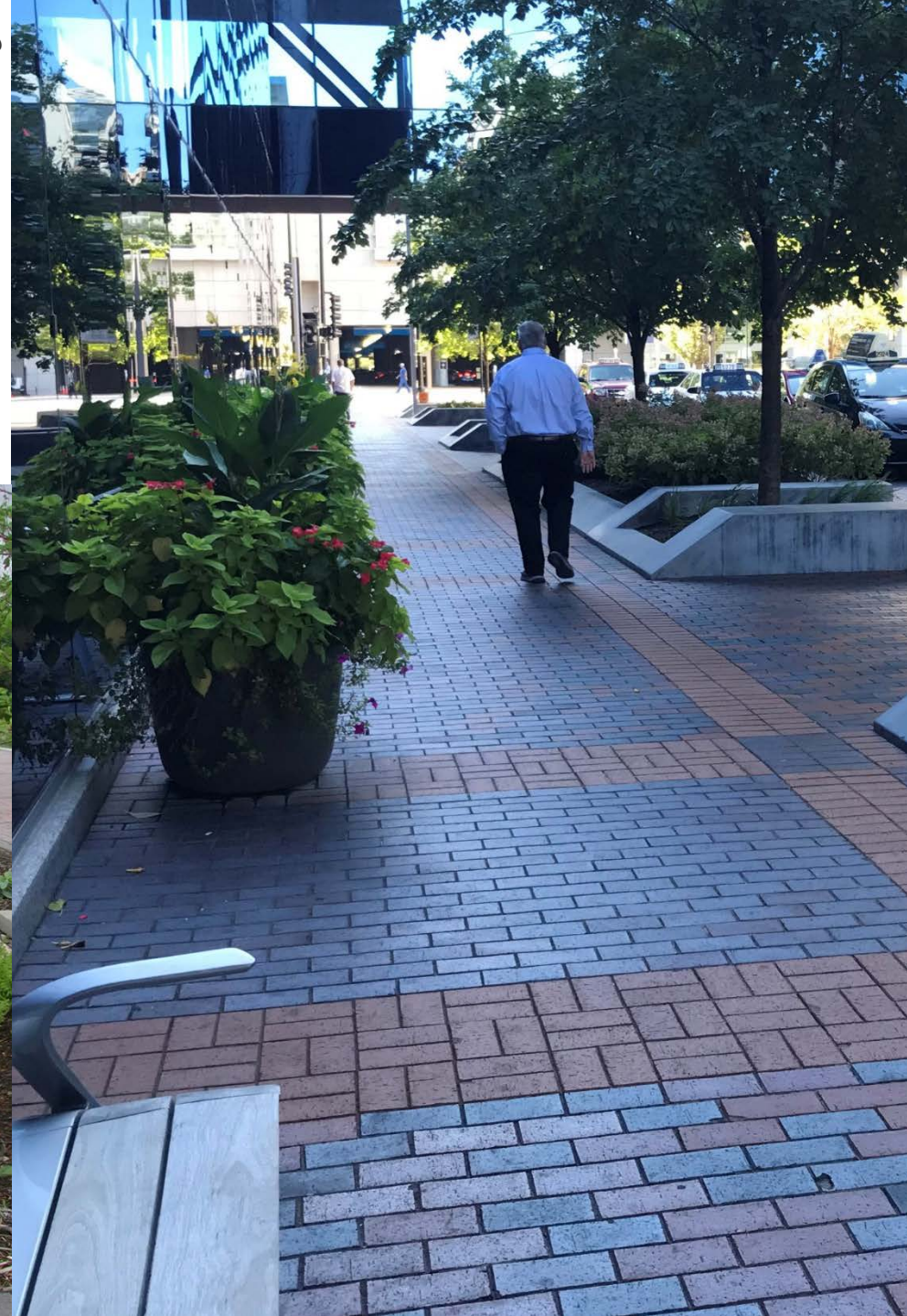
Hardscape features make BMPs look intentional and tie them to the greater landscape.



Photo: Aecom



Photo: Aecom



Green Infrastructure in Chicago

Tip: Hardscape

Photo at right: Vireo



Photo: ParioPlan



Tip: Geometry

Geometric “bones” lend structure to BMPs and can enhance sense of place.



Photo: HNTB photo of a KC Water project



Photo: Aecom

Tip: Geometry

- Classic design theory
- Arcs, straight lines, geometric shapes, dramatic curves, golden ratio
- Form and function united
- If you aren't a designer, collaborate!



Photo: Human Nature, Inc.

Tip: Art

- Art in BMPs can enhance community identity.
- Work with a local artist, welder, stone mason, or craftsman to include artistic features.



Tip: Plant Selections

Photo: High Point Seattle

- Some traditional non-native plants, strategically used, can help people initially feel comfortable with BMPs.
- Ease people into it – then educate why the native plants that may look “wilder” are so important to the garden.



Photo: Human Nature, Inc

Tip: Plant Selections

- Use classic landscape design principles: Form, texture, color, pattern, repetition, etc.
- The complexity of your plantings should be tempered by maintenance skills and budget.
- Make sure to have native plants in the “working” part of the BMP.
- A rule of thumb: 75% native minimum, up to 25% non-native.

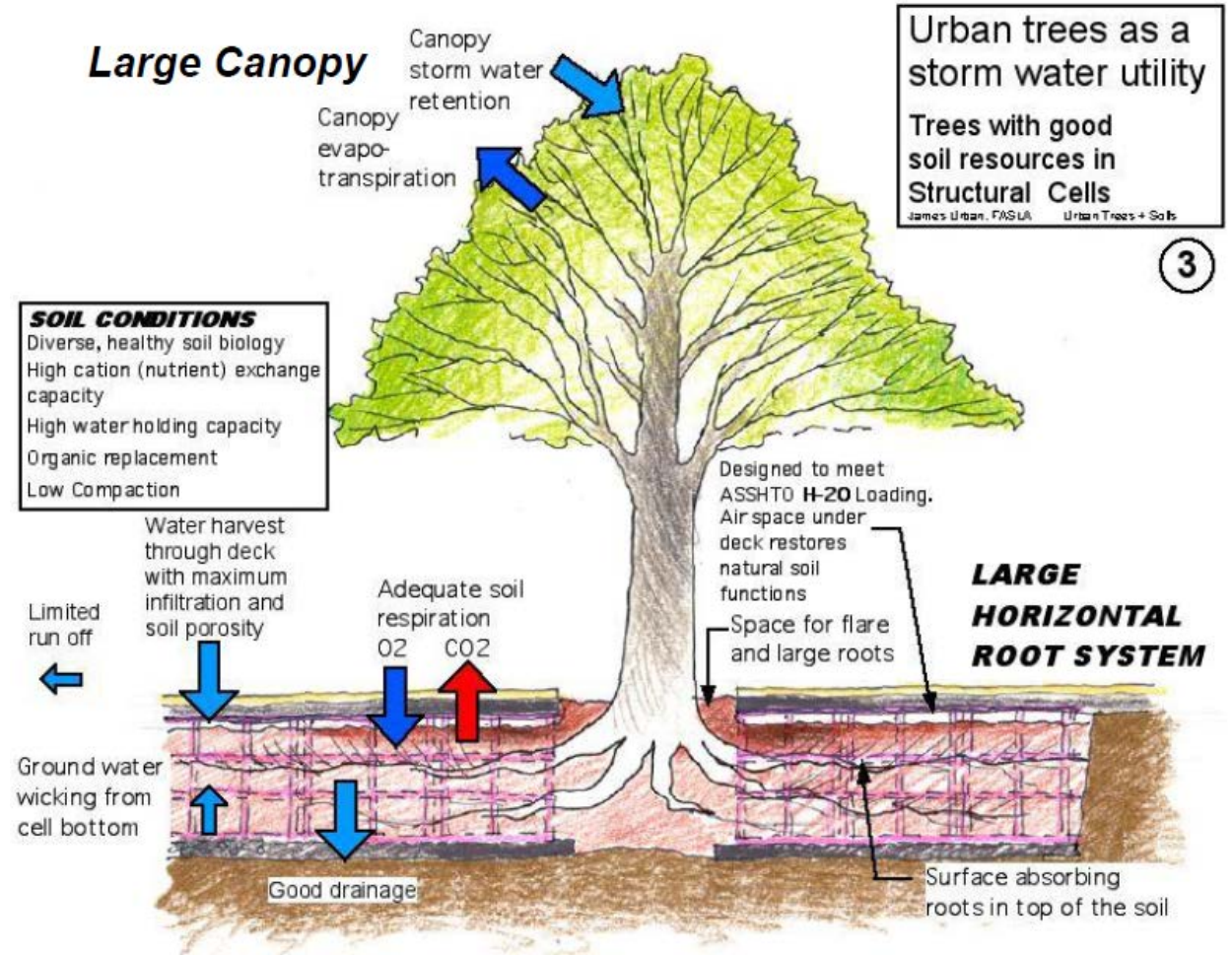
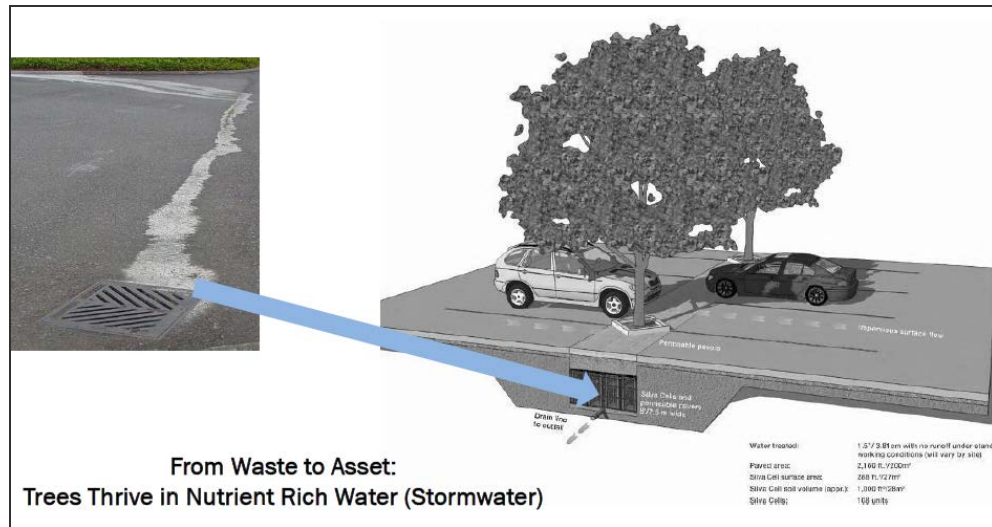
Photo: City of Portland, OR



High Point. SEATTLE, WA
Credit: Seattle Public Utilities

Tip: Trees

- Trees in suspended pavement systems
- Traditional look on the surface
- Leverage the extra benefits of trees



Urban trees as a storm water utility

Trees with good soil resources in Structural Cells

James Urban, FASLA Urban Trees + Soils

Images: James Urban and Kestrel Design Group

Tip: Water Features

The sound of flowing water can be soothing and most people like to watch waterfalls, fountains, and streams.



Photo: Vallinkoski



Photo: Human Nature, Inc.



Left Photo: Green Infrastructure in Wash. D.C.; Right Photo: penick.com

Tip: Water Features

Add water features that come to life when it rains or utilize recirculating solar pumps.

Photo: KC Water



Photo: Green Infrastructure in Toronto



Photo: Vireo

Tip: Water Features



Photo: KC Water

Photo: D. Dods



Implementation



Renderings & Reality

- Manage expectations
- Show what the planted features will look like at installation AND after a few years
- They will look different!



Photo: Vireo

Photo: Aecom

Solicit Community Feedback

- Offer options for public and confidential input
- Make sure to include existing neighborhood groups
- Remember that the loudest voices may not represent the majority of opinions



Photo: Shockey Consulting

Infrastructure Costs

- May be necessary to invest in other public infrastructure at the same time
- Leaving damaged public infrastructure can lead to green infrastructure damage when repairs eventually do happen
- Especially true in the street right-of-way

**Sewer Rehabilitation
& Construction**

\$2,967,094

Street Improvements

\$1,420,000

Green Infrastructure

\$6,023,217

Complete the Picture

- Repair adjacent pavement pieces that are broken or missing
- Repair deteriorated curb inlets within the green infrastructure improvement
- Make it part of the project



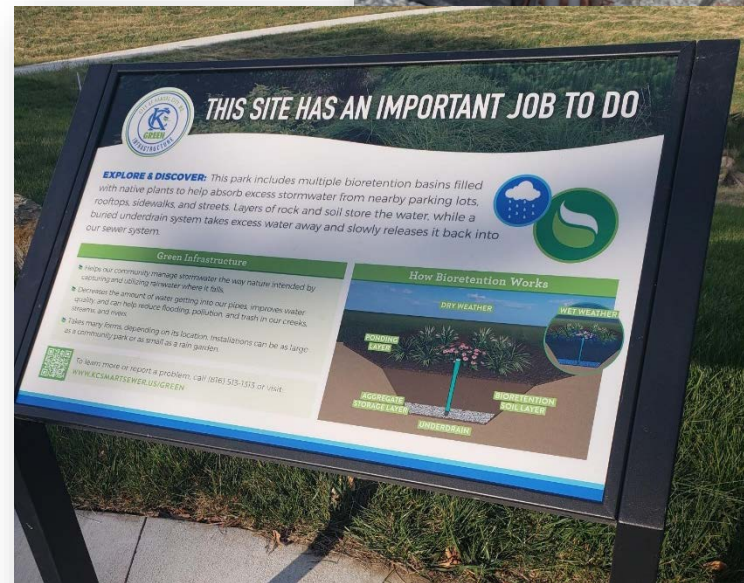
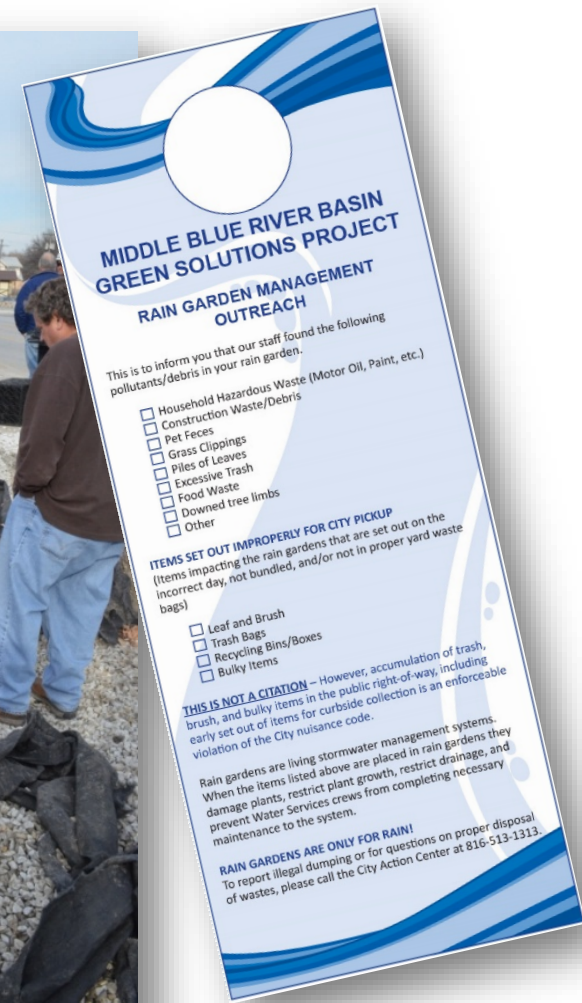
Maintenance Costs & Planning

- A ballpark figure is approximately \$1 to \$2 per square foot per year to maintain a project with surface and subsurface components
- Clearly define expectations and responsibilities for maintenance during design phase of project



Stay Communicative

- Continue public outreach through construction and the transition to maintenance
- Use multiple methods of communication from signs, door hangers, letters, to social media
- Don't let excavation of the job site be the first time a resident hears from you!



Erosion Control

- Makes or breaks the construction process
- SWPPP Form maintained by Contractor
- Oversight needed by owner's representative
- Watch out for cover crop, use biodegradable (not photodegradable) erosion control blanket
- **Plans must clearly define who pays for erosion control work**



Optimize Porous Pavements

- Porous pavements should be away from chronic sediment sources
- Porous sidewalks should have a buffer panel of standard pavement at driveway edges
- Not a panacea, place them where they make sense
- Parking lots are often the most manageable application (sidewalks less so)



Pretreatment

- An essential functional component
- Ensure that pretreatment methods do not pond water at all, or do not pond water longer than 24 to 48 hours
- Keep pretreatment method at street level rather than down in the bottom to make sure it drains



Intersections

- Check intersection sight lines carefully
- Our guideline is that plants within approx. 40' intersection sight triangle should not be taller than 18" above the top of curb



Resources

- Green Stormwater Infrastructure Story Map
- Green Stormwater Infrastructure Manual
 - Introduction Video for the Available Tools
 - GSI Site Activity Plan
 - Editable GSI Specifications
 - Editable GSI Construction details

can be found at:

<https://www.kcsmartsewer.us/initiatives/kc-green-infrastructure/green-infrastructure-resources>

- KC's Green Infrastructure Resources:

<https://www.kcsmartsewer.us/initiatives/kc-green-infrastructure>

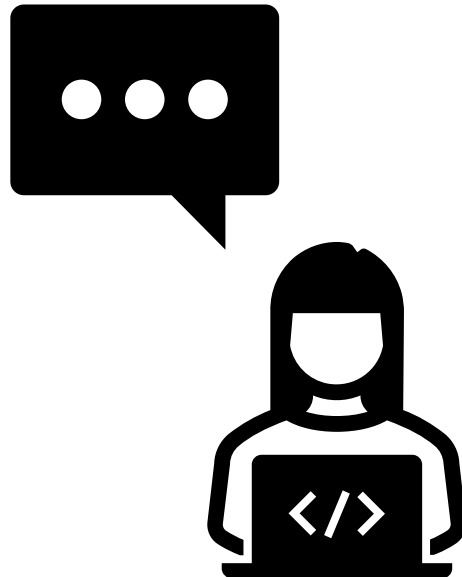


Thank you!



Q&A ROUNDTABLE

- Have a question? Please unmute your line or place your question in the chat.

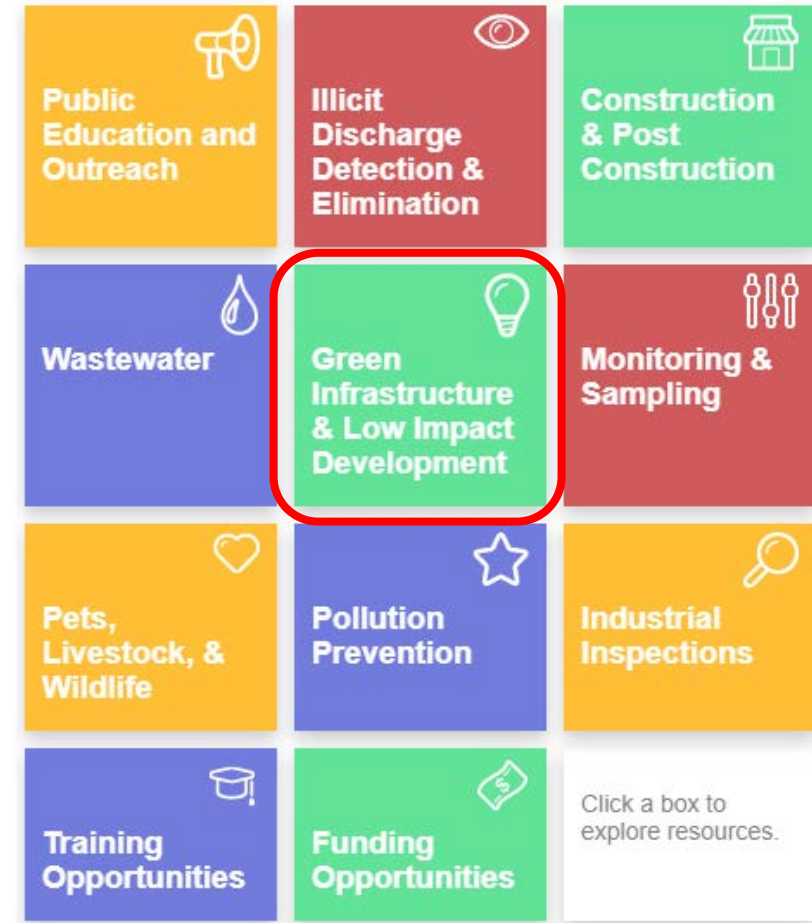


NCTCOG RESOURCES

NCTCOG RESOURCES

Stormwater BMP Library

- Organized by general topics
- Easy to search for specific items for your individual situation



NCTCOG RESOURCES

Integrated Stormwater Management (iSWM) Resources

integrated Stormwater Management iSWM

WHAT IS ISWM? ▾ RESOURCES ▾ CASE STUDIES ▾ CONTACT

Resources Home / Resources

Resources for Local Governments

Criteria Manual

Criteria that cities and counties may use as a component of their stormwater management related development regulations.

- 2015 Criteria Manual
- PDF And Word Formats
- Legacy Versions

[VIEW CRITERIA MANUAL](#)

Program Guidance

Documents that guide local governments in adopting and implementing the iSWM Program.

- Implementation Review Process Guide
- Program Implementation Tiered Measurement
- Guidance For Partial Application
- Redevelopment Guidance
- Benefits And Incentives

[VIEW PROGRAM GUIDANCE](#)

Technical Manual

iSWM Technical Guidance documents.

- Planning
- Water Quality
- Hydrology
- Hydraulics
- Site Development Controls
- Construction Controls
- Landscape

[VIEW TECHNICAL MANUAL](#)

NCTCOG RESOURCES



- Sustainable Public Rights of Way Subcommittee ([SPROW](#))
 - SPROW Best Management Practices Guidebook, under development!
 - For more information, please contact Tamara Cook at tcook@nctcog.org

NCTCOG RESOURCES

- Blue-Green-Gray Funding Opportunity
 - Promotes the planning and construction of green or sustainable infrastructure in the region.
 - Focuses on busting silos between:
 - Blue – Water
 - Green – Environment
 - Grey – Transportation Infrastructure
 - Advances small projects with innovative outcomes that can be replicated regionally or provide seed money to develop ideas for full funding/implementation
 - Learn more and look for future funding cycles here:
<https://www.nctcog.org/trans/quality/land-use/green-infrastructure>

NCTCOG RESOURCES

- Green Transportation Infrastructure Virtual Workshop
 - Held on August 24, 2021
 - [Workshop Recording](#)
 - [Morning Session Presentations](#)
 - [Afternoon Session Presentations](#)
- [North Central Texas Green Infrastructure Guidebook](#) (published May 2017)

EPA RESOURCES

EPA RESOURCES

- [Green Infrastructure Modeling Toolkit](#)
 - Storm Water Management Model (SWMM)
 - National Stormwater Calculator (SWC)
 - Green Infrastructure Wizard (GIWiz)
 - Watershed Management Optimization Support Tool (WMOST)
 - Visualizing Ecosystems for Land Management Assessment (VELMA) Model
 - Green Infrastructure Flexible Model (GIFMod)
 - Community-enabled Lifecycle Analysis of Stormwater Infrastructure Costs (CLASIC) Tool
- [Green Infrastructure in Parks: A Guide to Collaboration, Funding, and Community Engagement](#)
- [Soak Up the Rain](#)

WEBINAR RECORDING AND PRESENTATION SLIDES

- Presentation Slides and today's Recording will be posted on NCTCOG's website under the green "Webinars and Trainings" banner here: www.nctcog.org/envir/watershed-management/stormwater/public-education-task-force
- Follow-up emails to come to all registrants.
 - Email Crysta Guzman, cguzman@nctcog.org, if you did not register but would like to be added to follow-up emails.

Contact

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 nctcog.org/envir

THANK YOU!

