



Rain Garden/Streamside Buffer Mini Grant Workshop

March 16, 2024

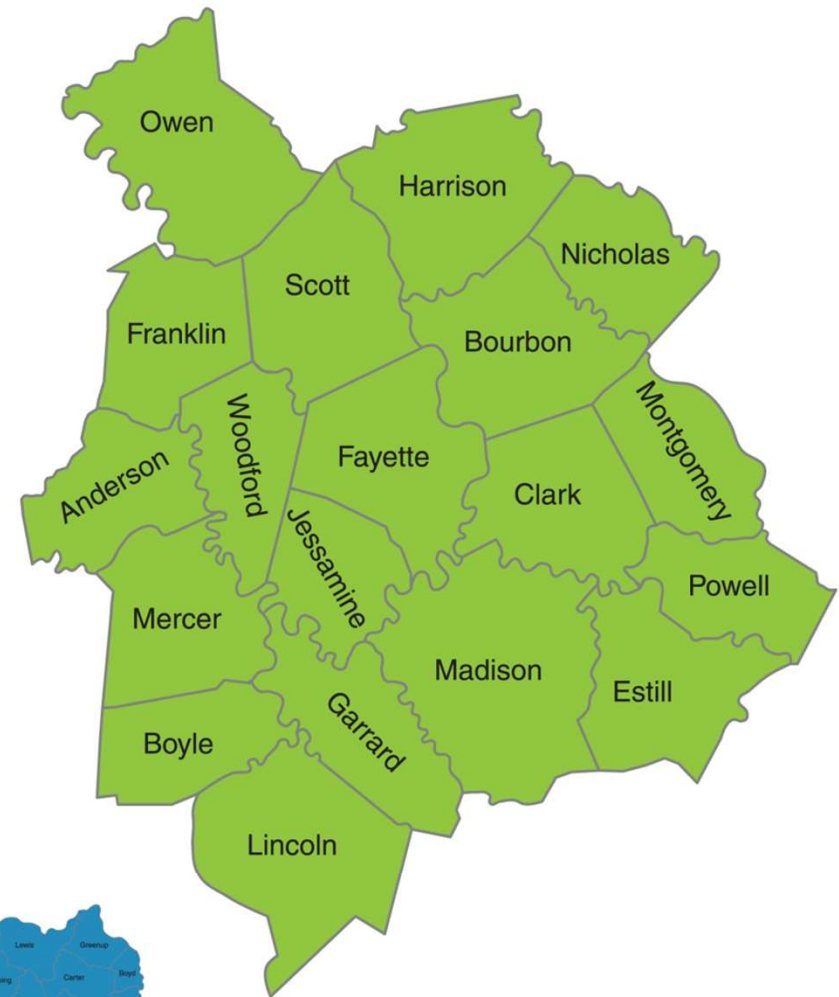
Mission:
Empower the Bluegrass to
create a sustainable
environment

small changes
BIG IMPACT



BLUEGRASS
GREENSOURCE

Service Area Map



BLUEGRASS GREENSOURCE

small changes BIG IMPACT

2021 COMMUNITY OUTREACH SNAPSHOT

198

Energy Efficiency
Workshop
participants

50

community-made
rain barrels

20

Green Check
certified
businesses

715

Main Street
Clean Sweep
volunteers

8,285
pounds

of trash
collected



24,875

Direct Engagements

1,357

PreK-12 classroom activities

\$49,565

invested in water quality

4%

Fundraising
Expenses

9%

Administrative
Expenses

87%

Program Expenses

*such as education, outreach,
trainings, resources, and more!*



20,655

total student
engagements

231

teachers provided
with professional
development

Water Quality Mini Grants!

Mini Grant Program

The mini grant program is designed to equip Fayette County homeowners with funding and expertise to plant riparian/streamside buffers on backyard streams or install rain gardens on their residential lots.

** Grants made possible by a Water Quality Incentive Grant through the City of Lexington

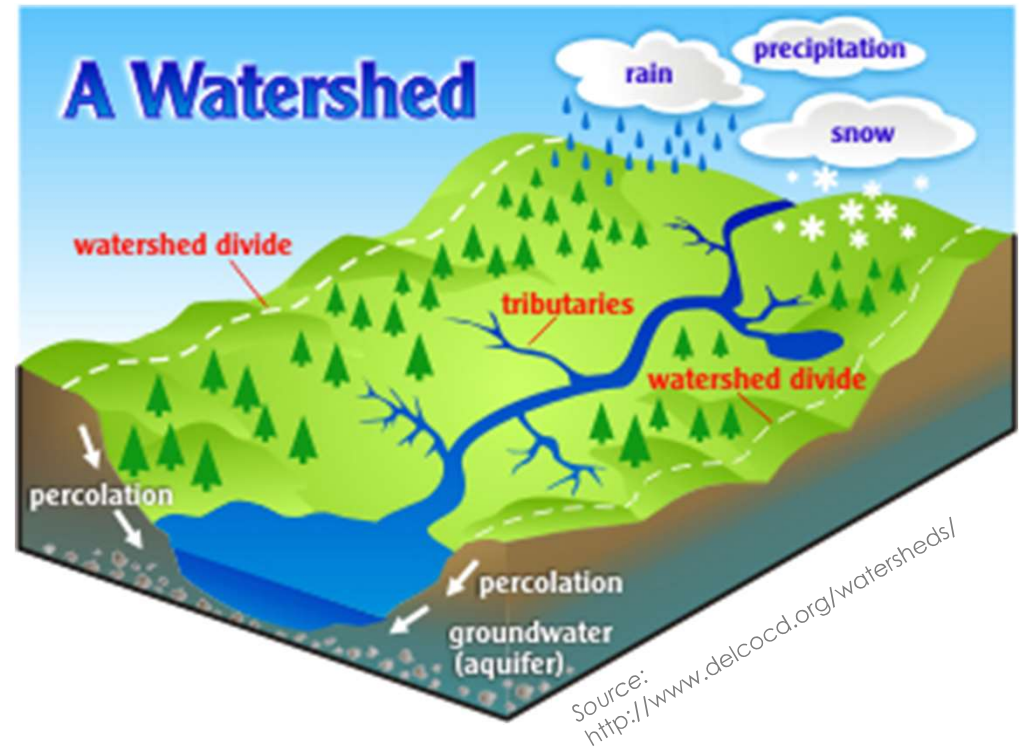
Agenda

- Water Quality
- Riparian Buffers
 - Planting a Buffer
- Rain Gardens
 - Building a Rain Garden
- Native Plants
- Mini Grant Specifics

Water Quality

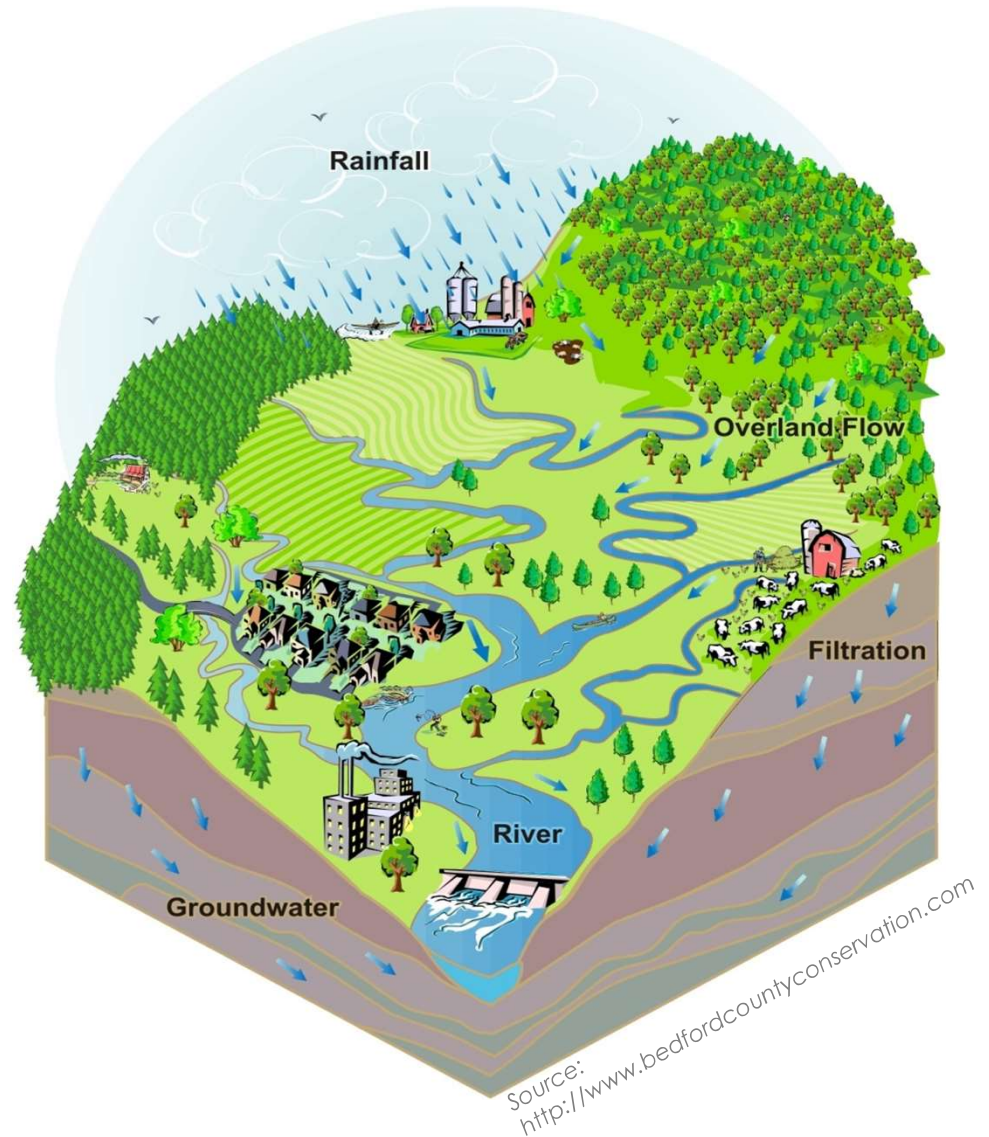
WHAT IS A WATERSHED?

- An area of land that drains to a common body of water
- Water moves from a high-point, like a hill or a ridge-top, to a low point, such as a stream, river, or creek
- **We ALL live in a Watershed**

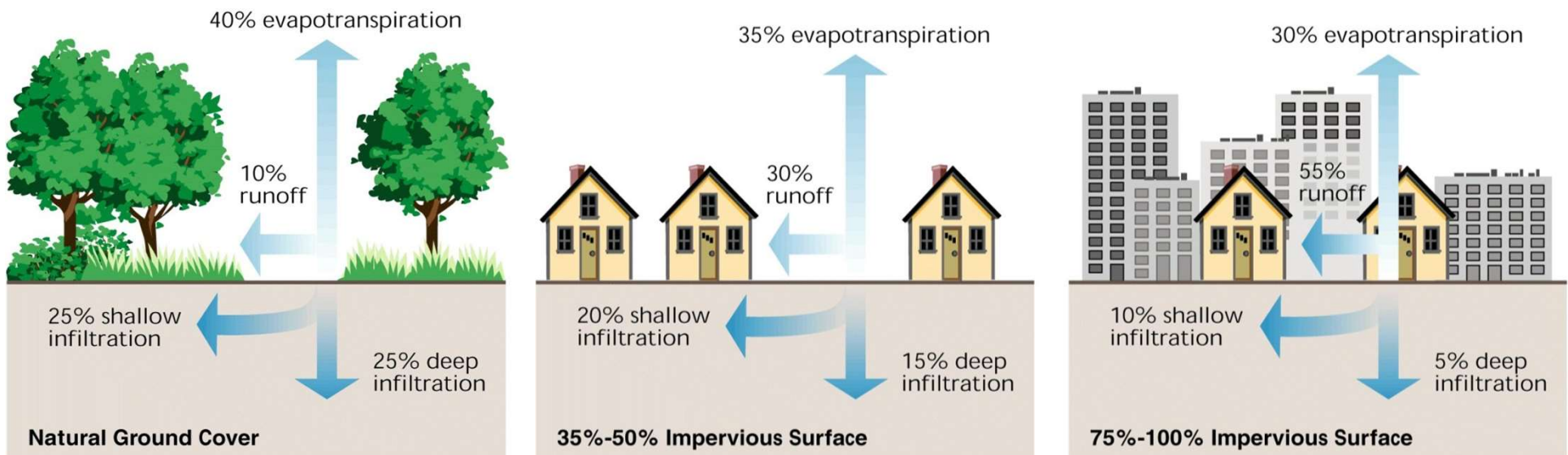


STORMWATER RUNOFF

- Everything on the ground ends up in the water
 - *Animal/human waste*
 - *Sediment*
 - *Fertilizers/pesticides*
 - *Metals from roadways*
 - *Vehicle Fluid leaks*
- And eventually filters through to groundwater



URBAN AND RURAL RUNOFF



Source: Federal Interagency Stream Restoration Working Group (FISRWG) (15 Federal agencies of the U.S.)

- Less infiltration (less water soaking into the ground)
More Impervious Cover → Results in MORE runoff
- Larger volumes of water coming through streams during rain events

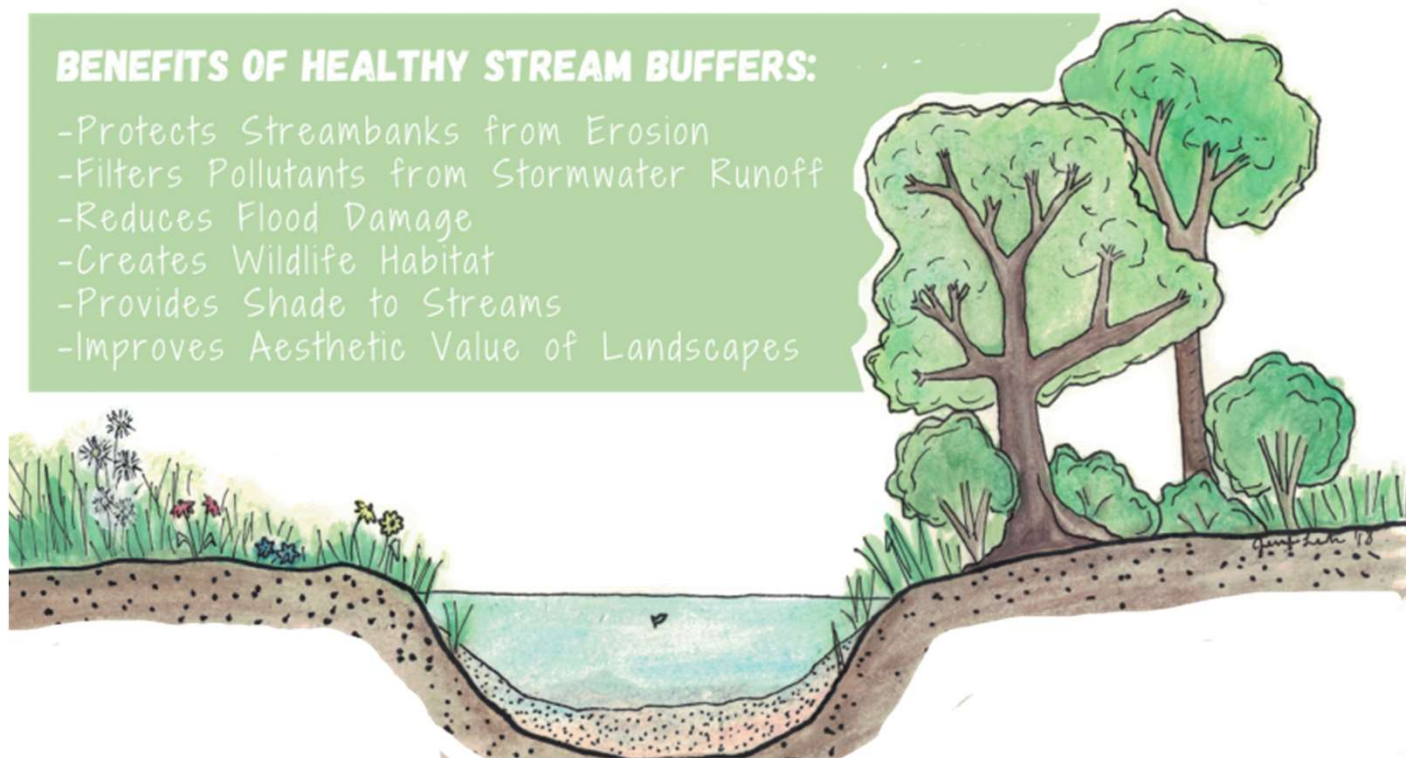
Riparian/Streamside Buffer

WHAT IS A RIPARIAN BUFFER?

A riparian buffer is an area adjacent to a stream, lake, or wetland that contains a combination of trees, shrubs, and/or other perennial plants and is managed differently from the surrounding landscape, primarily to provide conservation benefits.

BENEFITS OF HEALTHY STREAM BUFFERS:

- Protects Streambanks from Erosion
- Filters Pollutants from Stormwater Runoff
- Reduces Flood Damage
- Creates Wildlife Habitat
- Provides Shade to Streams
- Improves Aesthetic Value of Landscapes



STREAMBANK EROSION

- Removal of soil and other materials (rocks/vegetation) from streambanks
- Naturally occurring process but increased due to human activity like agriculture and urbanization



Source: <http://www.lincolnsacd.org/streambank-erosion.html>

Changes in land use can cause streambanks to erode at rates much faster than those seen in a natural system

STREAMBANK EROSION

- Larger volumes water
 - deeper waters
- Deeper waters
 - steeper side slopes
 - more stress on stream bed and banks
- More shear stress
 - higher streambank erosion rates



Source: <https://www.sustainablestreams.com/projects/>

Results in → INCISION

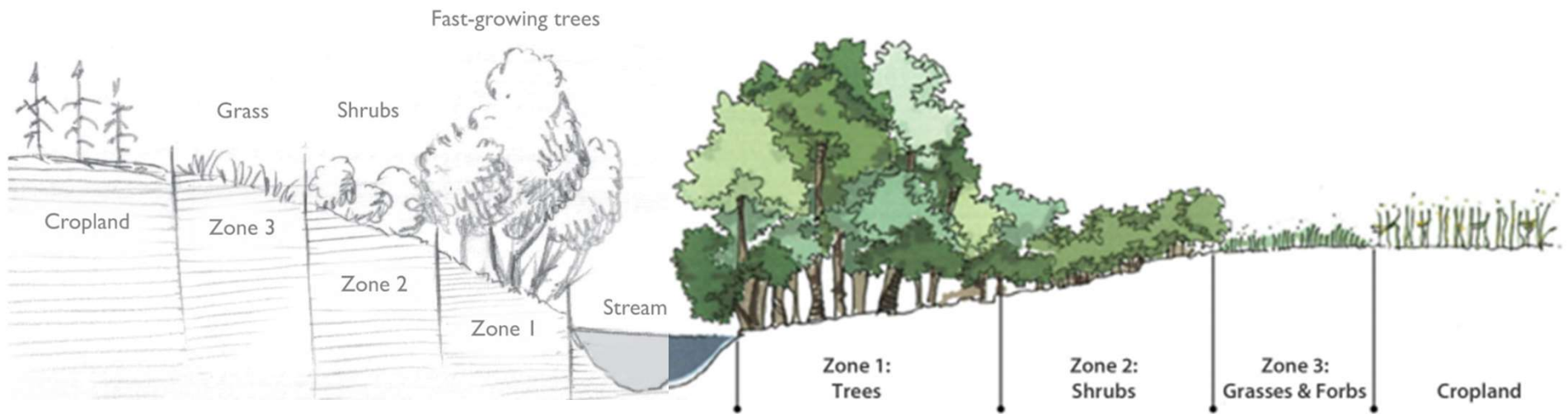
WHAT IS A RIPARIAN BUFFER?

- Located along the edge of waterways (streams)
- Transition between water bodies and upland uses like manicured lawns or agriculture
- Combination of fast/slow growing trees, shrubs, grasses and perennials



Source: <https://landstudies.com/help-fund-riparian-buffer-project/>

RIPARIAN BUFFER



Source: Corey Wilson, Landscape Architecture.

Source: <http://smallfarms.cornell.edu/2013/page/8/>

Zone 1: Native riparian buffer. Flood tolerant species.
Little or no harvest.

Zone 2: Flood tolerant trees or shrubs grown for fruit, nut, floral, timber, or other crops.

Zone 3: Perennial grasses grown for hay, livestock bedding, or biomass.

BENEFITS OF A BUFFER

- Filter stormwater runoff pollutant reduction
- Vegetation protects streambanks from erosion
- Reduce and dissipate energy slows flow
- Reduce flood damage
- Stores water and helps recharge aquifers
- Provide wildlife habitat
- Provide shade to streams improved dissolved oxygen levels
- Improve aesthetic value of landscapes

BENEFITS OF A BUFFER

How
buffers
protect
water

Trees

- Hold soil in place
- Use up nutrients
- Shade the water
- Provide habitat

Roots stabilize
soil and absorb nutrients

Ditch, stream,
or river

Cropland

Tall native grasses

- Prevent erosion
- Filter pollutants in runoff
- Provide habitat

Perennial buffers help maintain
ditches by preventing erosion and
fill-in

Source: <https://www.wsbeng.com/wsbpedia/blog/minnesota-statewide-buffer-program>

Planting a Buffer

TAKING THE FIRST STEPS

PERFORM A SITE ASSESSMENT

- Note erosion conditions and property lines
- What does it look like after a rain event?
- Are there deep and/or vertical banks?
- Is it hard to get to?
- What kind of plants are present?
- Document types of infrastructure



Source: <https://www.cuyahogawcd.org/blog/2015/09/16/solving-stream-problems-in-your-back-yard-series--streambank-erosion>

PASSIVE NO-MOW ZONE

- Easy, low maintenance
- Inexpensive - utilizing the existing seed bank and seed dispersed by wind and water
- Use markers to denote buffer location



Source:
<https://wmi.ch.edu/ehs/services/environmental/water-resources>



Source: <https://triblive.com/local/westmoreland/>

PASSIVE NO-MOW ZONE

- Unwanted plants will establish (honeysuckle, winter creeper, etc.)
- Mow only 1 to 2 times a year (first time in March or April) to help control
- Spot treatment for invasive plants



Source: <https://www.youtube.com/watch?v=NtmAY6ARDBc>

ACTIVE PLANTED BUFFER

- Deliberate planting of specific trees, shrubs, and grasses
- Create a planting plan
- Remove undesirable plants
- Stabilize streams
- Install erosion control



Source: 2018 Carmen Agouridis and Amanda Gumbert/ Riparian Buffer Vegetation 101

PLANTING IN ACTION



Area pretreated with herbicide to kill existing grass before installation of plugs.

Source: 2018 Carmen Agouridis and Amanda Gumbert/ Riparian Buffer Vegetation 101

COSTS OF STREAMSIDE BUFFERS

ITEMS TO CONSIDER:

- Plant Materials
- Erosion Control Materials
- Approved Herbicide and application equipment
- Labor
- Equipment Rental
- Slope Stabilization
- Match

Brief Description of Expenditure	Quantity	Unit	Cost per Unit	Total Cost of Line Item
Native Trees (B&B)	2	EA	\$100.00	\$200.00
Native Trees (3 gal)	20	EA	\$15.00	\$300.00
Native Shrubs (qt.)	30	EA	\$5.00	\$150.00
Native Grasses/Perennials (qt)	200	EA	\$5.00	\$1,000.00
Site Preparation: Equipment rental	1	LS	\$200.00	\$200.00
Erosion Control Blanket	3	Roll	\$80.00	\$240.00
Foliar Herbicide Sprayer	1	LS	\$80.00	\$80.00
Other:				
Total Project Cost				\$2,170.00

Reimbursed Expenses by Bluegrass Greensource (80% up to \$2,000)				\$2,000.00
Applicant Match Direct				\$170.00
Applicant Match In-Kind	24	HR	\$18.00	\$432.00
Applicant Match Total (20% minimum)			Over 20%	\$602.00

*CY = Cubic Yard, EA = Each, LS = Lump Sum

BUFFER CONSTRAINTS

- Supply Available
 - Native
 - Suitable for buffers
- Appearance
 - Manicured
 - Intentional wildness
 - Wild and woody
- Weed Ordinance



Source: Central KY Backyard Stream Guide, ID-242, UK Cooperative Extension Service

Strategic planning of masses of color and delineating boundaries with mowed edges, signage, and benches

MAINTAINING A BUFFER

- Inspect your stream regularly
- Remove litter after storm events
- Remove invasive plants annually
- Prune trees and shrubs as needed
- Remove previous years growth from perennials in later winter/ early spring
- Take pictures and share



SUCCESS STORIES



Rain Gardens

What is a Rain Garden?

A rain garden is an area that captures stormwater from an impervious service before it enters the stormwater system.

Planted with grasses and flowering perennials, rain gardens can be a cost effective and beautiful way to reduce runoff from your property.



Why Rain Gardens?

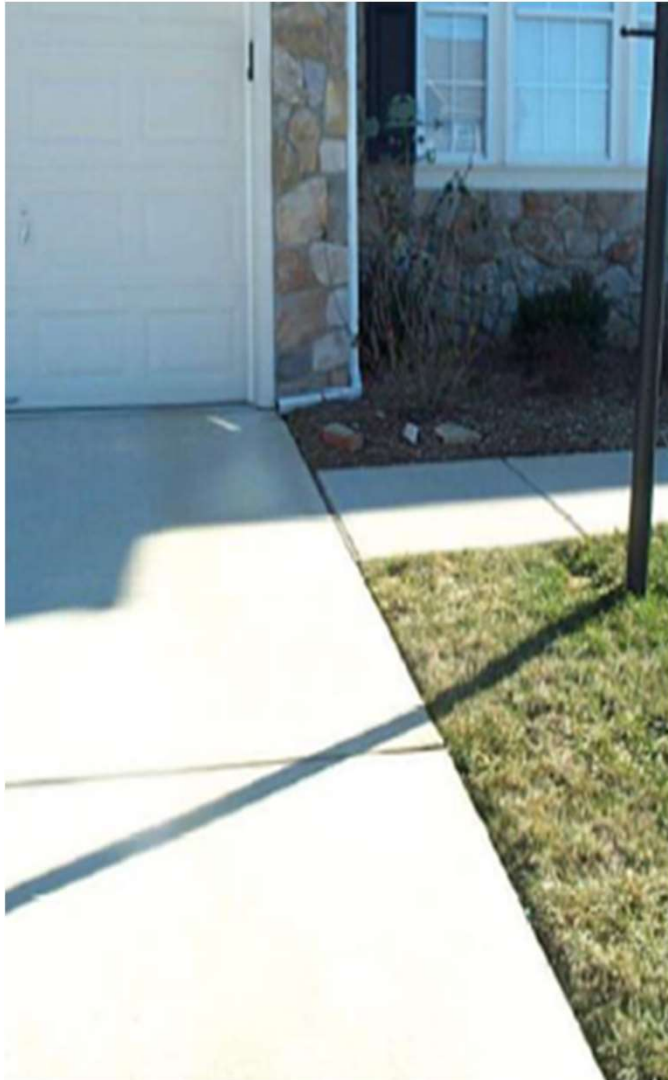


Runoff from impervious surfaces is the leading cause of water pollution in developed areas.

Pollution may come from many sources like:

- Sediment
- Pathogens (bacteria from pet waste and agriculture)
- Habitat alterations
- Nutrients (fertilizers)
- Motor oil
- Grease
- Salt

When it rains...



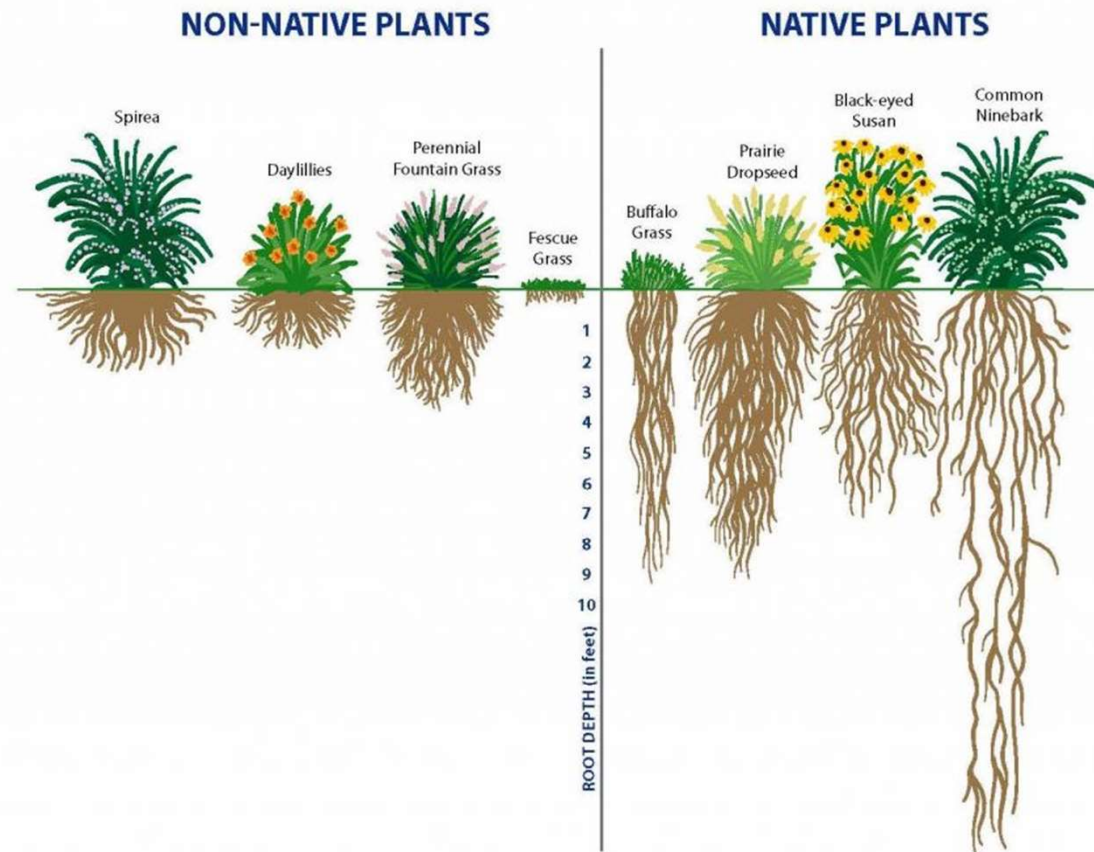
When it rains...



Rain Garden Benefits

- Natural process that improves water quality
- The roots of natives plants filter pollutants
- Reduces the amount of stormwater runoff because the water has time to percolate into the ground
- Can reduce water quantity
- Most designed to hold water from 1" rain events
- Can help with flooding problems

Native Plant Benefits



Building a Rain Garden

Planting a Rain Garden

- Location, Location, Location!
- Watch it rain
- Under downspouts
- Make sure it is at least 10 feet from a building
- Avoid tree canopies



How Deep? (Call 811!)

Performing a Percolation Test



Dig a hole 8" wide and 8" deep (about the size of a coffee can) in an area where you plan to place the deepest part of your rain garden.



Fill with water. Mark the water level by sticking a popsicle stick into the soil at the top of the water surface. Allow the water to sit for 1 hour to completely saturate the ground. Top off again with water.



After 4 hours, measure the difference between the popsicle stick and the new water line. Multiply this water level change by 6 to calculate how much water the soil can soak up in a 24 hour period. This is your rain garden depth, to a maximum of about 10".

Building A Rain Garden



- Make sure it's level for even water distribution
- Form a berm
- Provide a channel in the berm for water overflow when a storm delivers more than 1" of rain

How Big?

Average size of rain garden in Kentucky to capture water from a single downspout.

- 8" deep
- 8 X 10

Or $\frac{\text{Contributing Surface Area}}{\text{Rain Garden Depth}} = \text{RGA (sq.ft)}$



Design Your Garden

- Use your sizing calculations
- Shape your garden
- Add soil amendments
- Shady or Sunny
- Research plant bloom times, shapes, sizes
- Select natives plants
- Use hardwood mulch



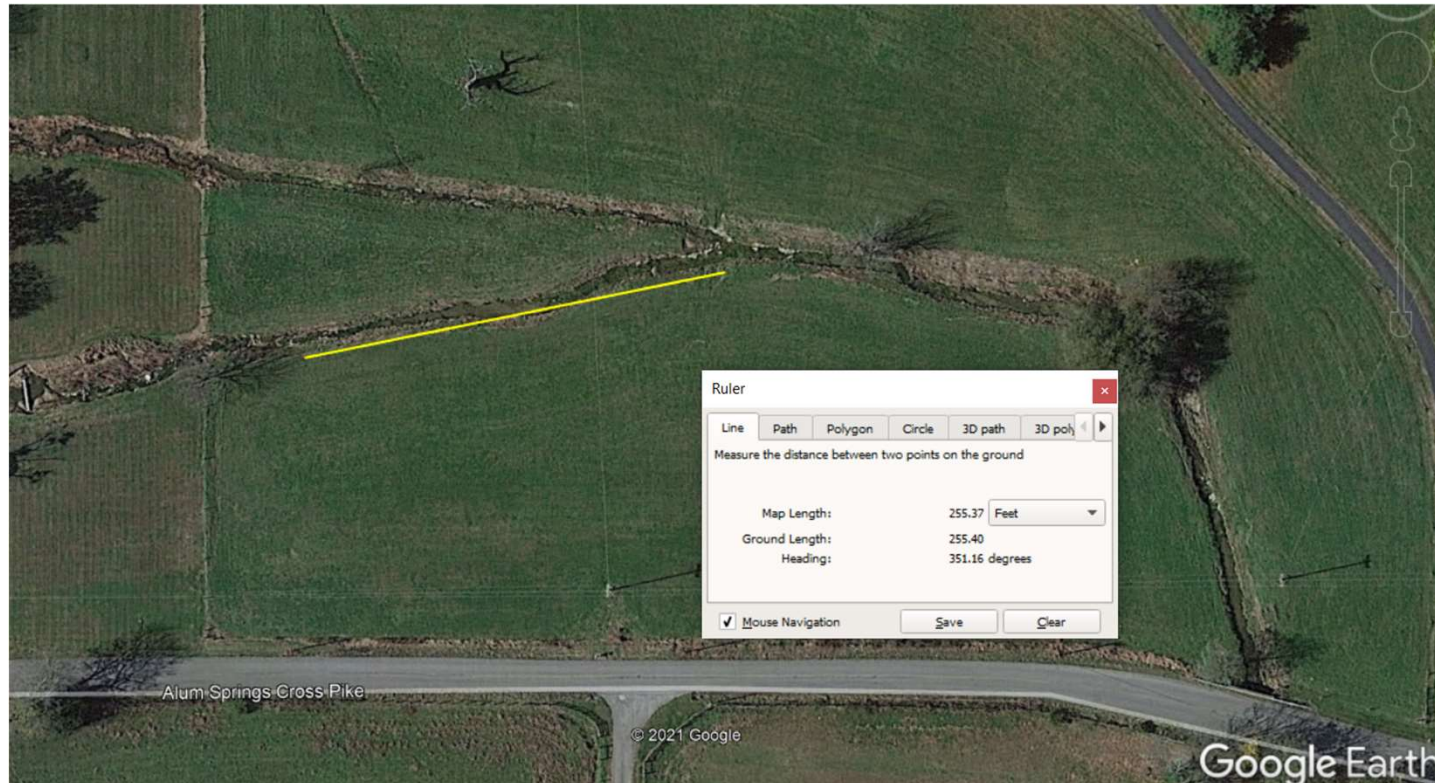
PLANT SELECTION

- Think horizontally and vertically (overhead wires, width, view shed)
- Preferences in color, seasonal interest, texture, shape
- Mass plants together for large swaths of color, blooming plants show purpose and act as buffer
- Think ahead: trees and shrubs will grow and fill space



Source: Amanda Gumbert, UK College of Agriculture, Fertilizer and Pesticide Use and Water Quality Presentation

MAKE A PLAN



Native Plants

REMOVE UNDESIRABLE PLANTS

- Common invasive, non-native plants in Central KY stream corridors:
 - Bush honeysuckle
 - Wintercreeper
 - Garlic mustard
 - Multiflora rose
- Outcompete native plants
- Not as effective at erosion control



Controlling undesirable plants is essential to establishing a healthy, functioning stream buffer or rain garden.

Why native plants?



First trophic level



Soil retention









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Streamside buffer planting: May 2023



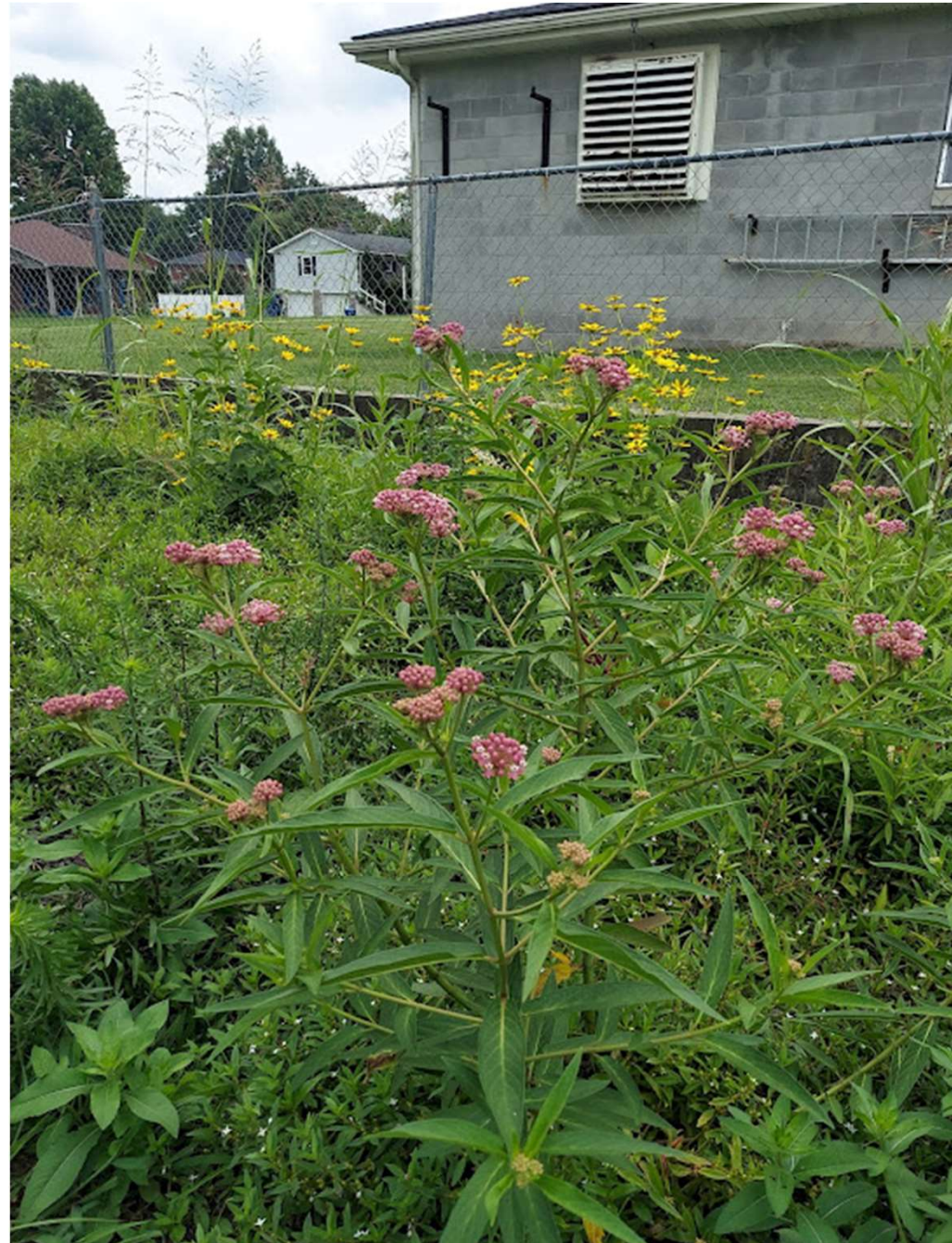
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July 2023



August 2023



November 2023



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Mini Grant Specifics

MINI GRANT SPECIFICS

- BGGS will **reimburse** direct expenses up to \$650 for approved projects
- 20% of the project will be required as matching funds provided by the recipient (materials or services)
- GRANT ELIGIBILITY
 - **Own property within Fayette County**
 - **Attend a workshop in person or online**

BGGS GRANT APPLICATION

- Sketch or photo of buffer area and surrounding structures and features
- Planting plan
- Budget estimate
- Visibility
- Photos/map of the site



Sample Budget

Sample Budget					
Item	Cost	Quantity	Grant \$	Match \$	Total
Mulch	\$ 2.00	20	\$ 40.00		\$ 40.00
Native plant plugs	\$ 5.00	50	\$250.00		\$250.00
Tiller rental	\$110.00	1	\$110.00		\$110.00
Trees	\$ 25.00	10	\$250.00		\$250.00
Mulching Labor	\$ 7.25	10		\$ 72.50	\$ 72.50
Planting Labor	\$ 7.25	13		\$ 94.25	\$ 94.25
Total			\$650.00	\$166.75	\$816.75
%			80%	20%	

Timeline

Grant Available	March 16, 2024
Grant Application Due	March 30, 2024
Notice of Award	April 12, 2024
Last day to return reimbursement requests	May 31, 2024

AWARD AGREEMENT

- Site Preparation and Planning
 - Call KY 811 before you dig
 - Remove undesirable, invasive plants
 - Obtain local permits, if required
 - Plant your buffer
 - Install erosion control
- Post Construction and Long-Term Maintenance, incl. watering recommendations



Questions?

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