A HOW-TO GUIDE FOR BUILDING YOUR OWN

RAIN GARDEN

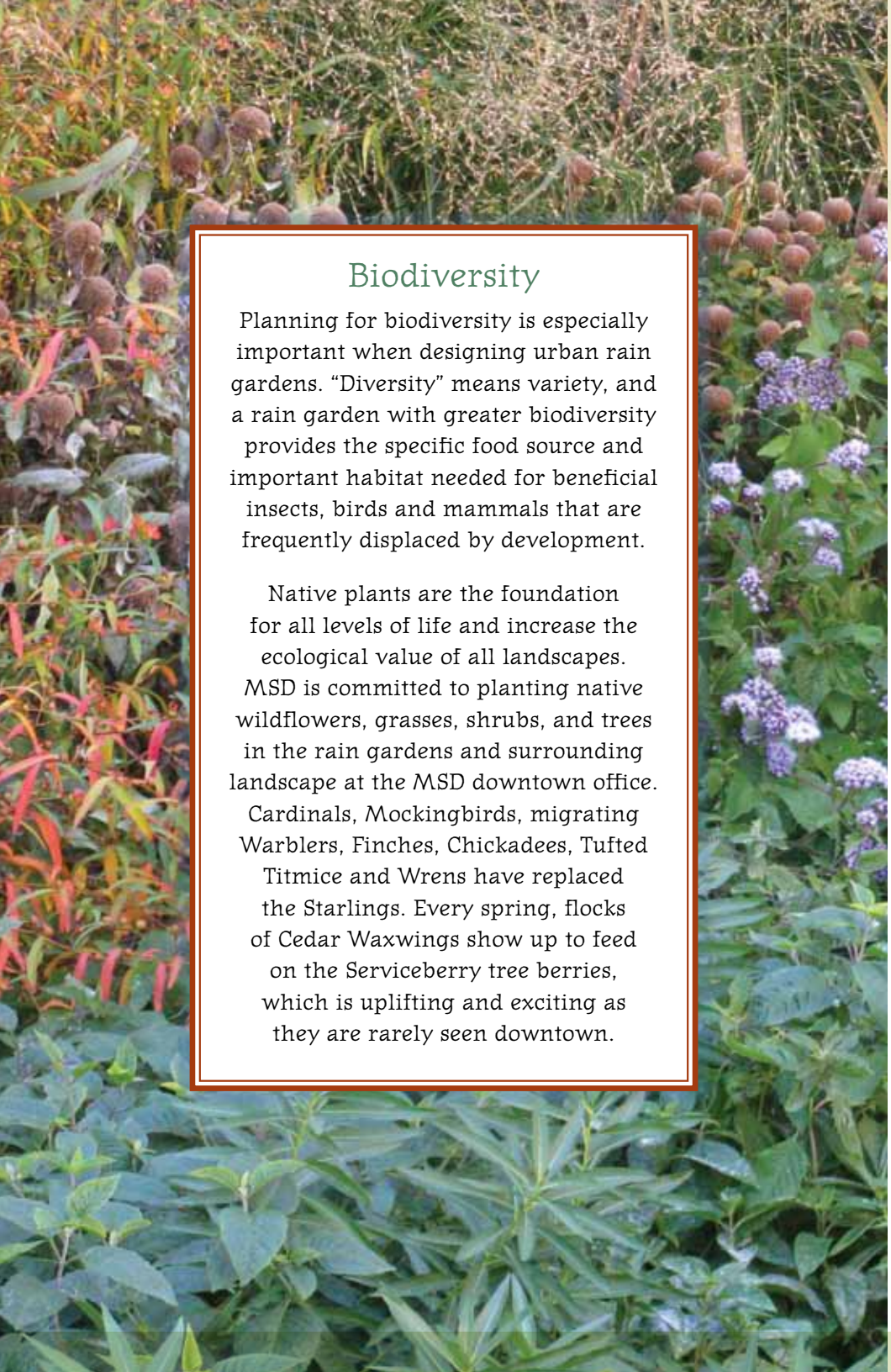
A BEAUTIFUL SOLUTION

3rd EDITION

MSD

Metropolitan Sewer District

Winterberry shrub



Biodiversity

Planning for biodiversity is especially important when designing urban rain gardens. “Diversity” means variety, and a rain garden with greater biodiversity provides the specific food source and important habitat needed for beneficial insects, birds and mammals that are frequently displaced by development.

Native plants are the foundation for all levels of life and increase the ecological value of all landscapes. MSD is committed to planting native wildflowers, grasses, shrubs, and trees in the rain gardens and surrounding landscape at the MSD downtown office. Cardinals, Mockingbirds, migrating Warblers, Finches, Chickadees, Tufted Titmice and Wrens have replaced the Starlings. Every spring, flocks of Cedar Waxwings show up to feed on the Serviceberry tree berries, which is uplifting and exciting as they are rarely seen downtown.

RAIN GARDENS *Why?*

The increase in urban growth and development has pushed our infrastructure to the limits of its ability to handle storm-water runoff. Rain runs off roads, parking lots, rooftops, patios and other surfaces that it can't penetrate.

As stormwater flows from these hard surfaces into storm pipes, drainage channels and streams, it collects harmful oil-based products, lawn chemicals, pesticides, pet waste and toxic substances. In a heavy downpour, when the drainage system fills to capacity, water mixed with pollutants and sewage overflows into streams — harming fish and wildlife, killing native vegetation and making recreational areas unsafe.

We can minimize the negative consequences that occur during heavy rain events, and improve our environment at the same time by disconnecting downspouts from the collection system and redirecting runoff on our property.

Rain gardens help capture runoff before it reaches the drainage system. Designed with shallow, level bottoms, rain gardens soak up stormwater runoff and filter out pollutants. By diverting stormwater into rain gardens from our roofs and driveways, we improve the health of our local waterways and, at the same time create beautiful gardens which sustain biodiversity.

This reference guide contains information collected from many sources and provides the steps needed to create a residential rain garden. We’ve listed appropriate native plants and sources, and have provided some general design tips.

Our hope is that rain gardens will soon become a common feature of our community.

SIMPLE STEPS FOR A SUCCESSFUL RAIN GARDEN:

1. *Understand STORMWATER*
2. *Find the best LOCATION*
3. *Evaluate your SOIL*
4. *PLAN the rain garden*
5. *DESIGN the layout*
6. *CHOOSE the plants*
7. *PREPARE and PLANT the garden bed*
8. *MAINTAIN your garden*

The Buckeye butterfly is gathering pollen from the native Vernonia gigantea- Ironweed wildflower.

A Rain Garden:

Captures stormwater runoff.

Helps keep water clean by filtering stormwater runoff before it reaches our local streams.

Enhances the beauty of your yard and neighborhood.

Alleviates flooding and drainage problems.

Supports biodiversity by attracting birds and butterflies.

Helps replenish the ground water supply.

Reduces the need to mow.

What about mosquitoes?

A properly constructed Rain Garden isn't a breeding ground for mosquitoes. Rain Gardens are meant to drain quickly – usually within several hours after a "normal" rainfall. Even with a heavy rainfall, runoff will infiltrate the ground within a day. Mosquitoes need at least a week of standing water to complete their life cycle.

The Culex mosquito, the primary transmitter for several diseases including West Nile Virus, breeds in stagnant water. Poorly maintained birdbaths, gutters and saucers under planters serve as ideal mosquito breeding grounds.

TOP: *Butterfly Milkweed*

Water runoff from roofs diverted into Rain Gardens and Rain Barrels prevent stormwater and pollutants from reaching storm drains, and eventually our streams and rivers.

Most of the Beargrass Creek Watershed – including downtown Louisville, St. Matthews, Buechel and Newburg – has more than 30% impervious (hard) surface.

Stormwater runoff from all the hard surfaces in our urban community puts a tremendous burden on our aging infrastructure and stresses the watershed environment.

I. Understanding Stormwater

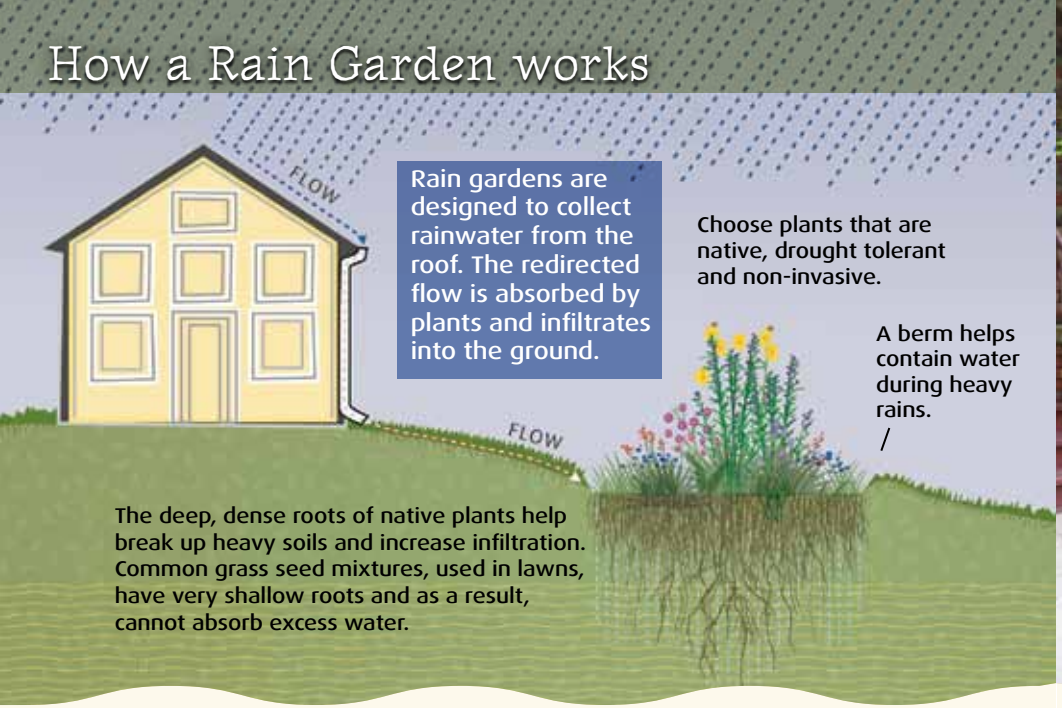
It doesn't take much of a rain event to trigger stormwater runoff. Most of the pollutants we find in the water of our local streams arrive with the first flush of a substantial rain. Few of us realize what an impact a rain garden could make in soaking up (infiltrating) this water.

An average roof of a 30' X 50' small house equals 1,500 square feet. Cover that square footage with one inch of rain water and the roof has quickly generated a volume of 935 gallons of water – or the amount required to fill 16 rain barrels! Even a small rain garden can manage a lot of runoff from a disconnected down spout.

Water redirected from the roof gutter now flows into this Rain Garden at The Louisville Nature Center

Strategically placed rain gardens can keep runoff from hard surfaces such as driveways, sidewalks or patios from ever reaching a local stream. Each site is different, and requires thought and investigation. The best time to analyze the specifics of your stormwater runoff is when it's raining. So, grab an umbrella, go outside and observe where the water is draining.

Asking yourself some questions before you begin to construct your rain garden will help to avoid unforeseen problems. How does the water flow through your yard? Are there places where the runoff is causing erosion along the edge of a patio or driveway? These are things you will want to consider as you proceed with the design of your rain garden.



Even a small rain garden can make a big difference.

2. Finding the best Location

Rain gardens are not only functional, they are beautiful. Of course, there are practical considerations in locating your rain garden, but it should also be situated where it can be enjoyed!

One accepted rule of thumb is to place your garden 10' or more from the house foundation to avoid any possibility of water seepage into the basement. The garden should be located close enough to the source of water runoff — your disconnected downspout or driveway — so that water can easily be directed into the garden bed. The distance from the end of the downspout can be extended by adding a length of 4 inch PVC or black plastic drain pipe to the edge or center of the garden.

It is important to place your rain garden in an area that does not tend to hold water. Wet areas of shallow water indicate slow percolation and heavy soils with no infiltration. A rain garden is not a pond nor a wetland – it is designed to absorb water, and at the longest, shouldn't have standing water for more than 24 hours.

Locate your garden to capture runoff as it drains from the roof through the downspout. Many houses have four or more downspouts, each taking a percentage of the entire roof surface area. Walk around the house and observe what portion feeds the particular downspout that will empty into your garden. The more captured runoff, the more area needed for the garden. Capturing 100% of the roof runoff is sometimes possible but isn't always realistic, especially if you have a tiny yard or have a thin layer of soil before reaching bedrock.

Choose an area for your rain garden that is almost flat or gently sloping. Avoid too steep of a slope as the steeper the slope, the more digging necessary to make the finished garden level. The more complicated the site, the more technical assistance you may need.

In addition to determining where the runoff will enter your garden, be mindful of where the water could possibly overflow in the event of a severe storm. You don't want to send water in an unwanted direction such as towards your neighbor!

Full or partial sun works best, although rain gardens can also work in shady areas with careful plant selection. It's not a good idea to place a rain garden under a large, mature tree where garden construction may damage tree roots. Small trees and shrubs can be successfully incorporated into the rain garden design.

Useful tools to have or borrow:

Garden tiller

Shovel

Rake

Trowel

Wheelbarrow

Garden hose with spray nozzle

Length of 4 inch PVC or black plastic drain pipe, if needed, to direct downspout water to the garden

3. Evaluating your Soil

Soil texture determines how well water will soak through, or infiltrate, the soil. Soil is composed of three mineral particles – sand, silt and clay (often referred to as "the texture"). When soil is made up of a high percentage of clay, stormwater will not soak in.

In photo at right, Kurt Mason, soil scientist with Jefferson County Soil Conservation District, uses a soil probe and shovel to evaluate a rain garden that was not functioning properly. The test revealed the need to amend the subsoil to improve infiltration. Remember that standing water indicates the soil is holding water and is probably not a good site for a rain garden.

For a quick way to determine your soil's texture, grab a small handful of moist soil. Begin pressing the soil between your thumb and index finger to make a ribbon. Soil with a high clay content will form a ribbon longer than two inches. Also, clay soil will stick together and be light in color.

The darker the soil, the higher the organic content enabling runoff to infiltrate.

Dense, compacted soils or soils with high clay content will need to be amended to ensure proper drainage. To improve water infiltration, mix in some sand and a lot of organic material such as compost to increase the total volume by 50%. If needed, you can have your soil tested by the Jefferson County Extension Service. (website: http://ces.ca.uky.edu/jefferson)

Young native plants from a local nursery, ready to be put in the ground

Harvard Street rain garden, Louisville, Kentucky

Street bio-swale and residential rain garden in Madison, Wisconsin

TOP: *Day Lilies*

4. *Planning* the Rain Garden

Surface size Rain gardens come in all sizes and shapes. Choose what is best for your yard, budget and your ability to manage. A small rain garden can handle a variety of rain events, even though it may not capture 100% of the runoff from your roof.

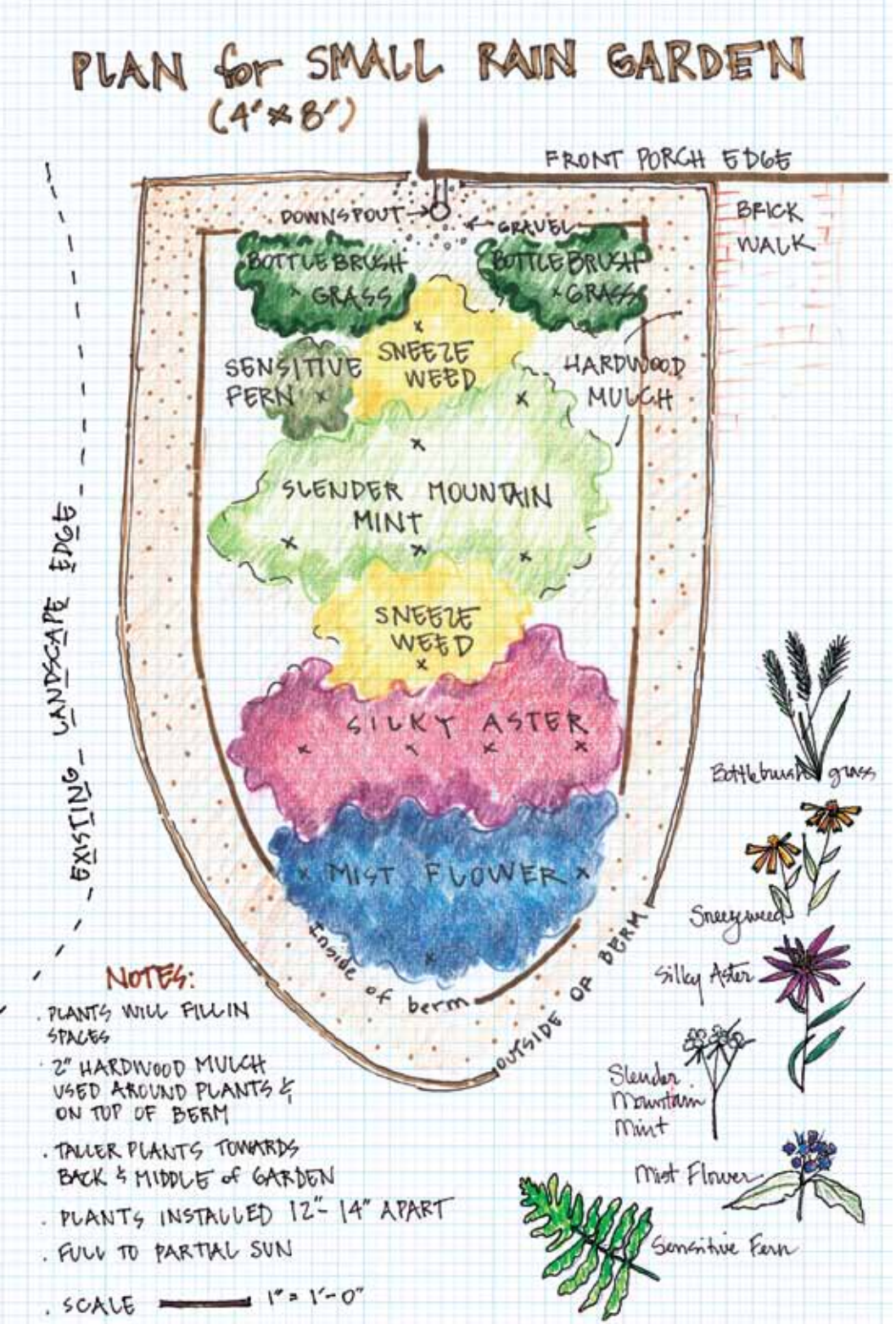
The surface area of the rain garden should equal the size of the drainage area that will feed it. To calculate the approximate drainage area of your roof, measure the length and width of the house and multiply the two together. Divide that number by the number of downspouts. The result gives you the square footage of the roof surface drained by each downspout.

EXAMPLE: 20' x 60' =1200 sq. ft.; 1200 ÷ 4 downspouts = 300 sq. ft. resulting in a garden size of 10' x 30'

Keep in mind that every project is unique and the goal is to capture as much runoff as possible. The rain garden needs to be wide enough to spread water evenly over the entire area, reaching all the plants. To achieve this, make sure the downspout extension reaches far enough into the garden to disperse the water.

Depth Your rain garden should be dug deep enough to drain within 24 hours. To measure the drainage rate of your soil, dig a hole the size of a coffee can and insert a ruler. Fill the hole with water and mark the level on the ruler. Wait four hours and mark the water level again. To determine the daily percolation, multiply the number of inches drained in four hours by six. For example, if the water drains 1 inch in 4 hours, it will drain 6 inches in 24 hours (1 inch every 4 hours x 6 = 6 inches every 24 hours). In this example, you would dig your garden 6 inches deeper than the surrounding soil.

Most residential rain gardens will be about 6 to 12 inches deep. If the water in your test hole has not drained within the 24 hour period, it is probably best to select another location, or count on amending the soil to a depth of 18".



5. *Designing* the layout

Above is the newly planted rain garden based on the plan to the left.

Start by creating a rough layout of your garden. Graph paper is useful for designing to scale. Depending on the location, you may want to place taller plants in the back with medium and short plants in front. If it is possible to walk around your entire rain garden, you might consider placing the tallest plants in the middle.

How you arrange your plants determines the design. Some people like a more natural look modeled after how plants grow in nature. Others prefer a more refined, or not so "wild" look, grouping flowers and grasses in masses. In any case, you can accomplish your preference by using native flowers and grasses, including small trees and shrubs if you choose. Non-native plants are also acceptable as long as they are not invasive.

Plants survive best when their basic requirements are met. Some plants need a lot of sun for a longer period of time. Others prefer a more shaded environment. To be successful, do your homework and select the right plant for the right place.

Place a bird house or bird bath nearby to attract birds. Use rocks to define boundaries or add garden ornaments in and around your rain garden. Depending on its size, you can design a path through it with stepping stones, small gravel or mulch.

Rain gardens can provide a unique aesthetic beauty to your neighborhood. When locating the garden consider all views from both inside and outside your house. As with any garden they can be designed adjacent to a patio or right outside a dining area window — whatever best suits your yard.

TOP: *Coralberry*

Monarch butterfly on Common Milkweed

Pictured above, a Jeffersontown Elementary Third Grade Class watch a spring migrating Monarch lay her eggs on a Butterfly milkweed plant. The children planted Milkweed in their rain garden knowing that Monarch butterflies depend on these native plants as a food source for their larvae.

Serviceberry leaves with Fall color

TOP: Phlox

6. Choosing your plants

Native plants connect us with our natural heritage and celebrate our unique eco-region. They attract an entire network of critters that support our local biodiversity. Many butterflies depend on native plants to sustain them on their migration journey.

Native Honeysuckle

Native plants have deep roots and once established, require little maintenance. They have the ability to withstand extremes in weather and long periods of drought.

As with any plant, it is best to select natives from our local genotype. A purple coneflower from Oregon will not survive as well as a purple coneflower from Kentucky because of differences in climate and soil conditions.

There is growing public concern about invasive non-native plants. A "non-native" plant comes from somewhere else other than our regional ecosystem. "Invasive" plants are just that — they are impacting our native habitats and parks at an alarming rate, resulting in homogenized landscapes that don't support biodiversity. They frequently out-compete the native varieties and, once established, are difficult to remove. Purple Loosestrife, Crown Vetch, Wintercreeper, English Ivy, and Burning Bush are several plants that are considered invasive, yet are commonly available at nurseries and home improvement stores.

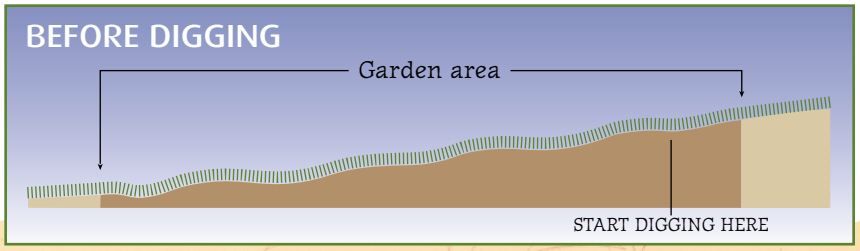
Non-native plants are acceptable if they are not invasive. There are plenty of non-native, non-invasive perennial species that do well in rain gardens. Hostas and oakleaf hydrangeas are examples of some of the easy-to-grow, non-native plants suitable for your garden.

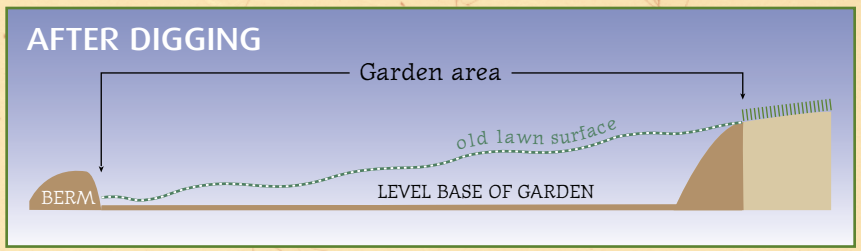
The lists on the following pages identify some of the Kentucky native plants, shrubs and trees suitable for rain gardens.

This chart is a partial list of desirable plants, shrubs and trees to help you get started on your rain garden. For more suggestions, consult with your local nursery, or research Kentucky native plants on the Internet. Plant books, available free from the library, are helpful tools in planning your rain garden. Consult the MSD website at www.msdlouky.org for additional resources, schedules of workshops and other events.

BLOOMING PERIOD	SPECIES NAME	COMMON NAME	HEIGHT	SUN or SHADE
GRASSES/SEDGES/RUSHES				
EARLY SUMMER to FALL	*Chasmanthium latifolium*	River Oats	3′	full/part sun
EARLY to LATE SUMMER	*Hystrix patula*	Bottlebrush Grass	3′	full/part sun
SUMMER	*Andropogon gerardii*	Big Bluestem	3 - 9′	full sun
	Schizachyrium scoparium	Little Bluestem	2 - 3′	full sun
	Carex frankii	Frank's Sedge	2 - 3′	full/part sun
	Carex vulpinoidea	Fox Sedge	2 - 3′	full/part sun
	Elymus virginicus	Virginia Wild Rye	3′	full/part sun
	Juncus effusus	Soft Rush	3′	full sun
	Sorghastrum nutans	Indian Grass	4 - 8′	full sun
	Sporobolus heterolepis	Prairie Dropseed	2 - 4′	full sun
	Veronicastrum virginicum	Culver's Root	4 - 5′	partial sun
SMALL TREES AND SHRUBS				
SPRING	*Amelanchier laevis*	Serviceberry	25'	full/part sun
	Asimina triloba	Pawpaw	12 - 20'	shade/part sun
	Betula nigra	River Birch	25 - 40'	full/part sun
	Cornus amomum	Silky Dogwood	7 - 10'	shade/full sun
	Hydrangea arborescens	Wild Hydrangea	3 - 5'	shade
	Ilex verticillata	Winterberry	10 - 12'	full/part sun
	Lindera benzoin	Spicebush	4 - 5'	full/part sun
	Rhus aromatica	Fragrant Sumac	2 - 8'	full/part sun
	Rosa palustris	Swamp Rose	2 - 7'	full sun
	Sambucus canadensis	Elderberry	up to 10'	shade/full sun
	Viburnum dentatum	Arrowwood	10 - 15'	full/part sun
	Viburnum lentago	Nannyberry	12 - 15'	full/part sun
	Viburnum prunifolium	Blackhaw Viburnum	10 - 15'	shade/full sun
SUMMER	*Cephalanthus occidentalis*	Buttonbush	3 - 10'	full/part sun
	Symphoricarpos orbiculatus	Coralberry	2 to 2.5'	shade/part sun
FERNS				
	Athyrium filix-femina	Lady Fern	2 – 3′	shade
	Onoclea sensibilis	Senstive Fern	1 – 2′	shade
	Osmunda regalis	Royal Fern	2 – 5′	shade
	Osmunda cinnamonea	Cinnamon Fern	3 – 5′	shade
	Polystichum acrostichoides	Christmas Fern	2'	shade

BLOOMING PERIOD	SPECIES NAME	COMMON NAME	HEIGHT	SUN or SHADE
WILDFLOWERS (Forbs)				
SPRING	*Aquilegia canadensis*	Columbine	2 - 3'	full/part sun
	Asarum canadense	Wild Ginger	4 - 8"	shade
SPRING/SUMMER	*Baptisia australis*	Blue False Indigo	3 - 4'	full/part sun
	Iris virginica	Blue Flag Iris	1 – 2′	full sun
	Polemonium reptans	Jacob's ladder	1 – 2′	shade
	Stylophorum diphyllum	Celandine Poppy	2′	shade
	Tradescantia ohiensis	Ohio Spiderwort	2 - 4'	full/part sun
EARLY SUMMER	*Desmanthus illinoensis*	Illinois Bundleflower	2 - 3'	full/part sun
	Phlox paniculata	Phlox	2 - 3'	full/part sun
	Monarda fistulosa	Bee Balm	3'	full sun
	Polygonatum biflorum	Soloman's Seal	1 – 3′	shade
SUMMER	*Asclepias incarnata*	Swamp Milkweed	3 - 6'	full sun
	Asclepias syriaca	Common Milkweed	3 - 4'	full/part sun
	Asclepias tuberosa	Butterfly Milkweed	2 - 3'	full/part sun
	Blephilia ciliata	Downy Wood Mint	12 - 18"	full/part sun
	Dalea purpurea	Purple Prairie Clover	up to 3'	full sun
	Echinacea pallida	Pale Purple Coneflower	3 - 4'	full/part sun
	Eryngium yuccifolium	Rattlesnake Master	up to 3'	full sun
	Ludwigia alternifolia	Rattlebox	2 - 3'	full/part sun
	Parthenium integrifolium	Wild Quinine	3 - 5'	full sun
	Penstemon digitalis	Foxglove Beardtongue	2 - 4'	full/part sun
	Polymnia uvedalia	Leaf Cup	up to 5'	partial sun
	Pycnanthemum tenuifolium	Slender Mountain Mint	2 - 3'	full/part sun
	Silene regia	Royal Catchfly	3'	full/part sun
	Silphium trifoliatum	Whorled Rosinweed	up to 7'	full sun
	Vernonia gigantea	Ironweed	6'	full/part sun
LATE SUMMER	*Eupatorium fistulosum*	Joe-Pye Weed	7 - 8'	full sun
	Eupatorium perfoliatum	Boneset	4'	full/part sun
	Verbena hastata	Blue Vervain	4 - 6'	full sun
LATE SUMMER/FALL	*Aster novae-angliae*	New England Aster	3 - 5'	full/part sun
	Coreopsis tripteris	Tall Tickseed	3 - 7'	full/part sun
	Helenium autumnale	Sneezeweed	2 - 5'	full/part sun
	Helianthus giganteus	Giant Sunflower	8 - 10'	full sun
	Liatris spicata	Dense Blazing Star	3 - 6'	full/part sun
	Lobelia cardinalis	Cardinal Flower	2 - 5'	full/part shade
	Lobelia siphilitica	Blue Lobelia	1 - 4'	full/part sun
	Ratibida pinnata	Yellow or Gray-Headed Coneflower	3 - 6'	full sun
	Rudbeckia hirta	Black-eyed Susan	1 - 3'	full/part sun
	Silphium laciniatum	Compass Plant	4 - 10'	full sun
	Silphium perfoliatum	Cup Plant	8'	full/part sun
	Solidago sp.	Goldenrod—Kentucky's State Flower	various	full sun
FALL	*Aster sericeus*	Silky Aster	1 - 3'	full/part sun
	Eupatorium coelestinum	Mist Flower	1 - 3'	full/part sun
	Helianthus angustifolius	Narrow-leaved Sunflower	4 - 6'	full sun
	Liatris squarulosa	Southern Blazing Star	2 - 4'	Full/part sun
	Silphium pinnatifidum	Cut-leaf Prairie Dock	7 - 10'	full sun
	Silphium terebinthinaceum	Prairie Dock	6 - 10'	full sun





Getting rid of grass

There are several ways to remove vegetation such as grass and weeds. The cost will depend on the amount of labor you are willing to do yourself.

Grass is efficiently eradicated by use of an herbicide containing glyphosate (*Round-Up®*, *Kleen-up®*, *Blot Out®*, and *Knock Out®*). Be sure to follow instructions. Don't allow kids or pets on the area for a day following an application. Also check the weather and only apply when there isn't rain predicted for 2 or 3 days.

Another method to get rid of grass is to use black plastic. Black plastic heats up the ground underneath and keeps light out, allowing the grass to die slowly over several months. The downside of using black plastic is that accomplishing a "good" kill takes time.

Renting a sod cutter from a local equipment company provides instant gratification. Although the cutter uses gas to drive the motor, there isn't a need for herbicide application.

7. *Preparing* the garden bed

Prior to digging, use spray paint or a garden hose to outline the edges of the garden. If building the rain garden in an existing lawn, digging is made easier by killing the grass first or removing grass with a rented sod cutter. (See GETTING RID OF GRASS sidebar.)

ALWAYS call **BEFORE U DIG** (BUD) at 800.752.6007 to identify buried utility lines that may be in the way of the shovel or tiller.

The deeper the rain garden, the more stormwater will infiltrate. For most residential gardens, 8 – 10 inches will be the average. Dig a level depression. If the soil is compacted, mix in compost while tilling the bed to about a foot deep to loosen the soil. Grade the garden so that water will spread out over a large area.

In the first year, you may want to cut a notch at the bottom, or downside, of the garden to let rain water flow out so that the bed will not fill to the top and drown young plants before they have been able to establish root systems for infiltration.

Planting the garden Once you've decided on the plan, lay out the plants according to your design approximately one foot apart. Keep the plants in containers until you are ready to put them in the ground to prevent the roots from drying out. Never "work" soil when it is wet. Squeeze a handful of soil and if it crumbles, it is dry enough to "work" or till.

For a shrub or tree, dig the hole twice as wide as the root ball or container and deep enough to keep the crown of the plant level with the existing grade, just as it was in the container. Fill the hole and firmly tamp around the roots to avoid air pockets.

It is always a good idea to label your plants as you plant. When it comes time for weeding, you'll want to be clear about what is a weed and what's not.

TOP: *Lady fern and Christmas fern*

COST

The cost of any rain garden depends on how much of the work you are doing yourself, the size of the garden, the size and quantity of plants you buy, how much your soil needs to be improved, and the amount of materials you buy.

On average, a rain garden will cost $2 to $5 a square foot. Therefore, a 400 square foot rain garden could cost anywhere from $500 to $2,000.

During April and May many local plant sales take place. Watch the newspaper for notices. Also, neighborhoods, organizations such as *Wild Ones*, and individuals often hold plant swaps, where you can acquire plants for little or no cost.

Fall is a good season to plant trees and shrubs. During Labor Day weekend many nurseries have sales to reduce stock.

River Oats in winter

Black-eyed Susan

8. *Maintaining* your garden

As with any garden, your rain garden will need some basic maintenance to keep it healthy and functioning. Although mulching will help reduce weeds, some weeding will be required, especially in early spring before the plants have filled out. Weeds should be pulled when young, by hand. Labeling as you plant will make it easier to recognize the weeds from the young native plants.

Mulching is an important part of garden maintenance. The main purposes of mulch are to keep the soil moist, prevent the soil surface from developing a hard crust, and add nutrients to the soil as it breaks down. Spreading 2 to 3 inches of double shredded hardwood or leaf mulch before planting is recommended, clearing away a space for the plants. (Be sure to keep the mulch from touching the plant stems, avoiding mold or rot.) Both types of mulch add nutrients to the soil.

The rain garden will require watering, especially during the first year after planting while young plants are developing roots. Once plants are established, watering will only be required during periods of extreme drought.

Never spread or spray fertilizers too closely to your rain garden as it may increase weed production. Plants that are not doing well may need to be relocated or removed entirely from the garden. Every garden is a unique situation and requires tending until established.

RAIN GARDENS ARE POPPING UP ALL OVER THE COMMUNITY. WATCH THE MSD WEBSITE FOR ANNOUNCEMENTS OF RAIN GARDEN PRESENTATIONS AND WORKSHOPS. LOOK FOR NOTICES OF NATIVE PLANT SALES IN THE NEWSPAPER. ARRANGE FOR A SPEAKER TO COME AND TALK TO YOUR NEXT NEIGHBORHOOD MEETING. RAIN GARDENS ARE A BEAUTIFUL SOLUTION TO OUR STORMWATER MANAGEMENT.

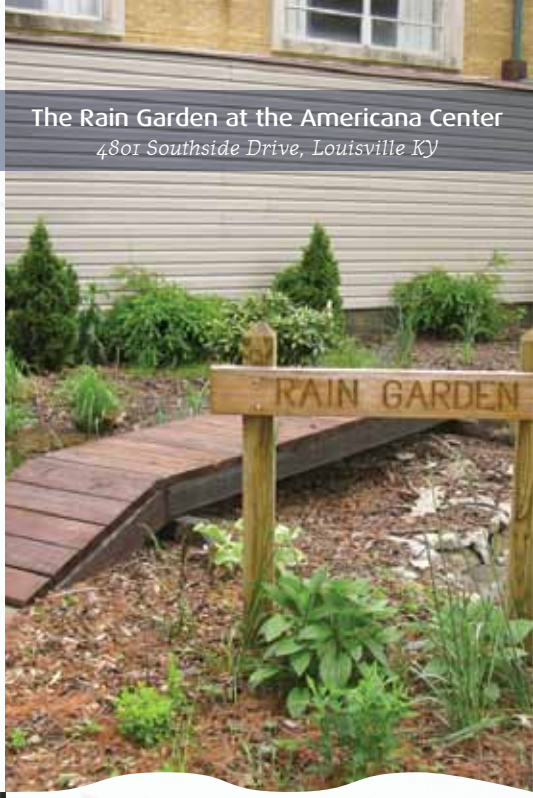
MSD Metropolitan Sewer District

PROJECT WIN Waterway Improvements Now

Dropseed Native Plant Nursery

TOP: *Dense Blazing Star*

In 2008, the landscape team at the Americana Community Center designed and built a large rain garden to soak up runoff from the building's roof and prevent it from entering the city's sewers. The garden was built by eight immigrant and refugee youth from Bosnia, Croatia, Democratic Republic of the Congo, Haiti, Liberia and Somalia. When the team was asked how they accomplished such a beautiful, functioning project, one answered "We thought about it a long time and when it rained, we went outside and watched where the storm water was coming from and where it went. The run off told us where to put the rain garden."



The Rain Garden at the Americana Center
4801 Southside Drive, Louisville KY

MSD
Metropolitan Sewer District

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Produced by Phyllis Croce for MSD

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