

RAINGARDENS

TECHNICAL STANDARDS AND DESIGN EXAMPLES

STEP 1: INFILTRATION TEST

1. Call “811” before you dig to have your utilities located.
2. Dig 1-2 holes in the proposed garden area. (8” diameter & deep)
3. Clear out loose dirt, fill to top with water.
4. Allow water to soak in for 1-2 hours to saturate the soil.
5. Fill hole back up with water so that the water level is about 1” from the top.
6. Mark starting level with toothpick.
7. Measure how far water level falls at specific time intervals.
8. For sandy soils: 15 minutes, 30 minutes, 1 hour
9. For clay soils (more common in Oakdale): 1, 2 and 4 hours.
10. Based on the rate measured, calculate how many inches will soak into the soil over 24 hours.
11. The number of inches that soak in should be your raingarden depth.
12. 12” is the maximum raingarden depth, even if your test shows the soils can handle more.

Infiltration Example

Test shows .5 inch of infiltration after 4 hours.

$$\frac{.5 \text{ inch}}{4 \text{ hours}} \times \frac{24 \text{ hours}}{\text{day}} = 3 \text{ inches garden depth}$$



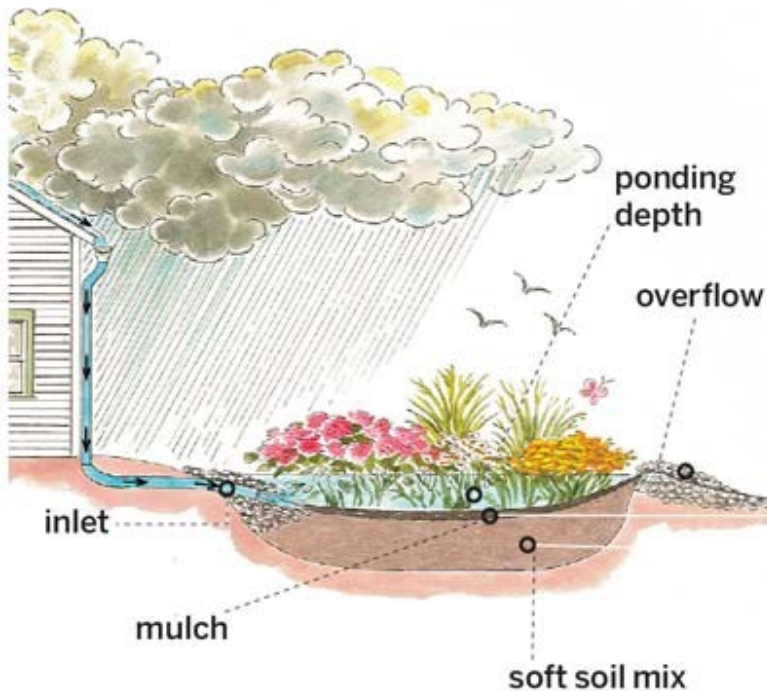
TIP

Make sure soils are saturated prior to infiltration test to accurately gauge how quickly water will drain from the garden during a rain event. Rain should be able to fully infiltrate into the garden within 24 hours of a rain event. This is important as it is far less time than required for mosquitos to transition from egg to insect.

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STEP 2: RAINGARDEN SIZING



1. Depends on yard space available and how much rain is meant to be captured.
2. Most residential raingardens are sized to hold about an inch of the rain that falls on the area that you want to drain into the raingarden (roof, driveway, etc).
3. Example: 200 square feet of roof that drains into a downspout

Infiltration test shows 5" of water per day will soak into the ground.

One inch of water capture = 1/5 the size of the roof.

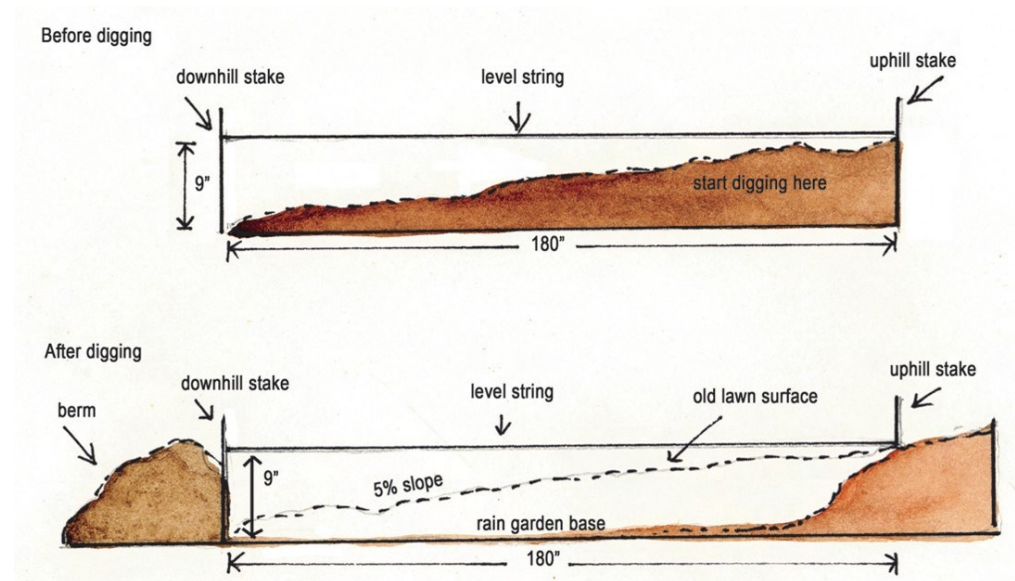
200 square feet of roof/5 = 40 square feet of total garden.

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STEP 3: DIRECTING FLOW AND GARDEN SHAPE

1. A variety of options are available to move water towards the raingarden, including: grass swales, rain chains, buried pipes, and creating a rock creek bed.
2. Basic shape is a wide, flat-bottomed depression.
3. Garden must have an overflow outlet, protected from erosion with rocks.
4. If yard is sloped, a small berm may be required to hold water in on the downhill side of the garden. Use stakes and string to be sure both sides are level.
5. **Garden must have some form of edging installed to keep grass out and to create a clean, purposeful look. Can be standard garden edging, stone, or brick.**
6. Test infiltration once again before planting!



SLOPED YARD DIAGRAM

A wide, flat-bottomed depression is necessary for a successful raingarden.

EXAMPLE #1

Bird and Butterfly Garden

#2A



#1



#2B



#3A



#6



#3B



#7A



#5



#7B



#4A



#4B



Bird & Butterfly Raingarden Key

Full Sun—6+ Hours/Day

#2A Indian Blanket

Daisy-like flower heads with yellow, orange, red and maroon that bloom between June to Sept.

#1 Big Bluestem: Tall, clump-forming grass.

Tall, clump-forming prairie grass, turns maroon color in fall.

#2B Daylily

Come in many colors, bloom June to Aug. Nectar source for hummingbirds. Hardy plant.

#3A Meadow Blazingstar

Bright rosy flowers that bloom July to Sept. Best for monarch butterflies and goldfinches.

#6 Joe-Pye Weed

Flat-topped purple flowers bloom July to Sept. Tall plant, native to Midwest.

#3B Sneezeweed

Yellow flowers bloom from Aug to Oct. Tall plant, may require staking. Deer resistant.

#7A Orange Coneflower "Goldsturm"

Yellow flowers bloom May to Aug. Very hardy, deer resistant, native to Midwest.

#5 Blue Flag Iris

Blue flowers bloom May to July. Low maintenance, native to Midwest.

#7B Black-eyed Susan

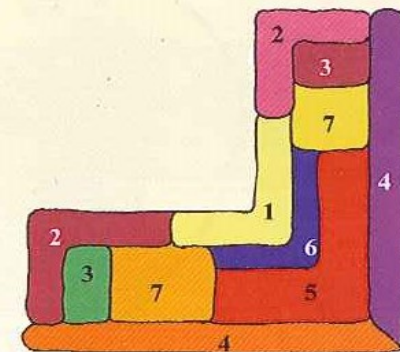
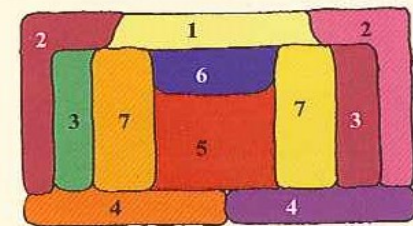
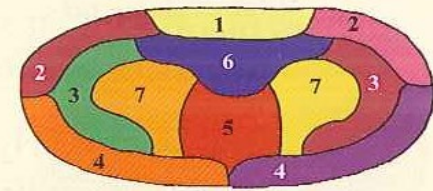
Bright yellow flower heads bloom from June to Sept. Self-seeding, may require replacement every few years due to decrease in density.

#4A Purple Dome Aster

Dark purple flower heads, attractive to migrating monarchs.

#4B Meadow Sage

Spikes of blue flowers bloom from May to June. Hardy and deer resistant.



These diagrams show how the planting zones change with changing garden shapes.

EXAMPLE #2

Native Prairie - Full Sun

#2A

#1

#2B

#3A

#6

#3B

#7A

#5

#7B

#4A

#4B

Native Prairie Raingarden Key

(Full Sun 6+ Hours/Day)

#2A Little Bluestem

Blue-green grass that turns bronze in fall. Low maintenance, drought tolerant.

#1 Indian Grass

Clump-forming grass that turns golden in the fall. Seeds used by songbirds.

#2B Showy Goldenrod

Prairie flower with clusters of bright yellow blooms July to Sept.

#3A Marsh Milkweed

Flat-topped pink flowers, attractive to monarchs. Self-seeding, prefers clay soils.

#6 Ironweed

Bright purple flowers that bloom July to Sept. Low maintenance, moisture loving.

#3B Sky Blue Aster

Bright blue flowers with yellow centers that bloom Sept to Oct.

#7A Nodding Sedge

Long, narrow seed heads, seeds food for birds and small mammals.

#5 Great Blue Lobelia

Bright blue flowers bloom Aug to Sept. Self-seeding, will fill in bare spots in garden.

#7B Fox Sedge

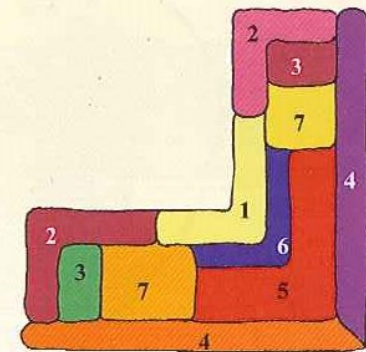
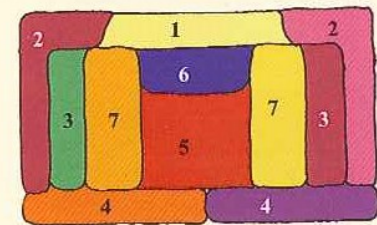
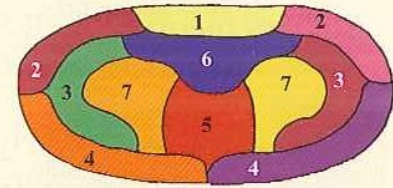
Golden colored seed heads bloom from May to July.

#4A Butterfly Milkweed

Flat-topped orange flowers, hardy plant. Not suitable for transplant. Monarch butterfly attracter.

#4B Prairie Smoke

Clump-forming, purple flowers bloom from May to June. Prefers drier soils.



These diagrams show how the planting zones change with changing garden shapes.

EXAMPLE #3

Native Prairie - Medium to Full Shade

#2A

#1

#2B

#3A

#6

#3B

#7A

#5

#7B

#4A

#4B



Native Prairie Raingarden Key

(Medium to Full Shade—Less than 4 hrs sun/day)

#2A False Solomon's Seal

Clump-forming white flowers bloom April to June, later becoming red berries.

#1 Greenheaded Coneflower

Yellow drooping flower heads, bloom July to Sept. Low maintenance.

#2B Wild Geranium

Vibrant purple flowers bloom April to May. Foliage turns reddish in fall, deer resistant.

#3A Lady Fern

Grows in a variety of soil types, 12 to 36 inches tall.

#6 Culver's Root

White flower heads bloom June to Aug. Do not plant in dry, sandy conditions.

#3B Turtlehead

White flowers bloom Aug to Oct. Attractive to caterpillars.

#7A Cinnamon Fern

Fern that grows in clumps, grows frond that turns brown in fall resembling cinnamon sticks.

#5 Southern Blue Flag Iris

Blue-violet flowers, low maintenance. Do not use Yellow Iris, is an invasive species.

#7B Sensitive Fern

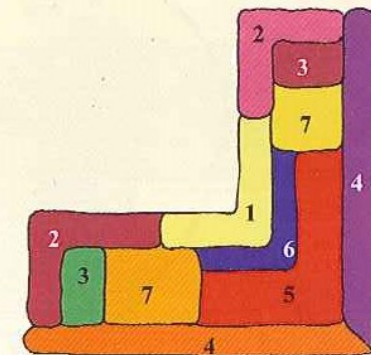
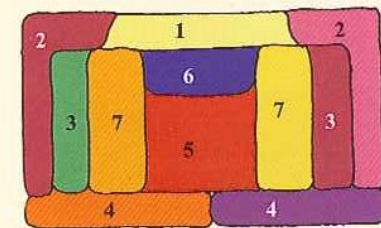
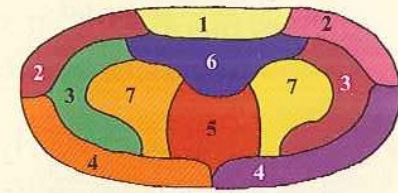
Light green fronds, attractive year-round. Can handle sunny conditions with additional moisture.

#4A Harebells

Bell-shaped flowers bloom from June to July. Tolerates all soils.

#4B Alum Root (Coral Bells)

Attractive foliage, available in a variety of flower colors.



These diagrams show how the planting zones change with changing garden shapes.