



# RORG TEAM



**Eliana Brown**  
Director  
Master Gardener Lead



**Kate Gardiner**  
Communications



**Layne Knoche**  
Landscape Designer



**Tony Heath**  
Project Engineer



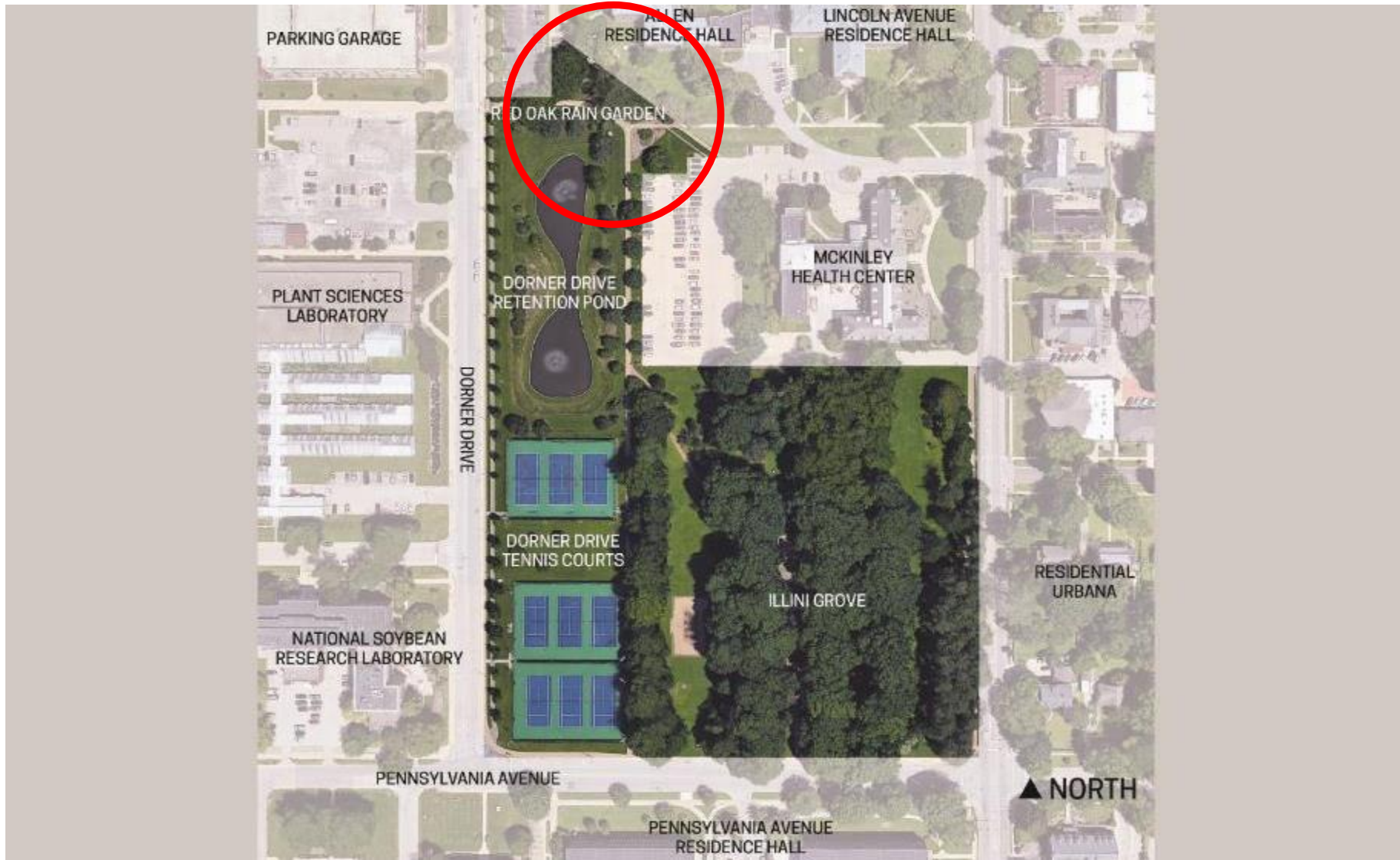
**Karen Folk**  
Master Naturalist Lead

# TODAY'S TOPICS

- **Design/build of the Red Oak Rain Garden (twice)**
- **Lessons learned**
- **Going forward**

# HISTORY





Location image: Google Earth



## Red Oak Rain Garden

*Location image: Google Earth*



# “BEFORE” STANDING WATER



*Standing water after heavy rain event in Spring of 2006*



# “BEFORE” SIDEWALK FLOODING

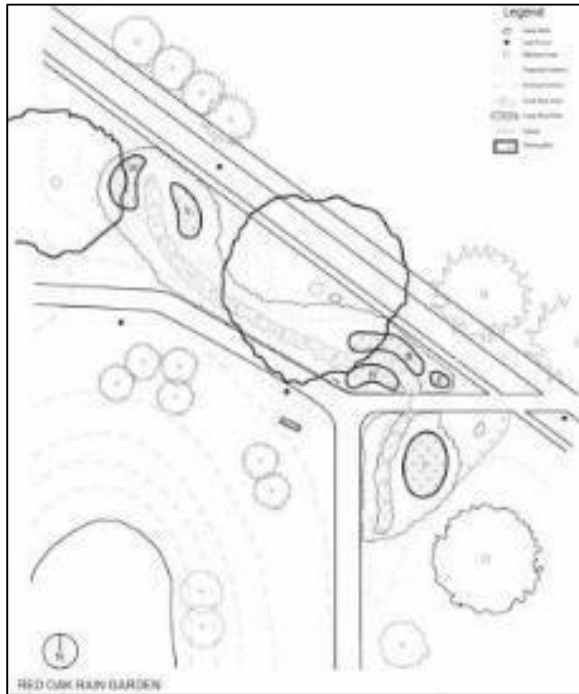


*Flooding after heavy rain event in Spring of 2006*



# FACULTY/STUDENT PROJECT

## Prof. Tony Endress' NRES Class 2006



*Original installation plan 2006*



*Students installing stone and plants in Fall 2006*

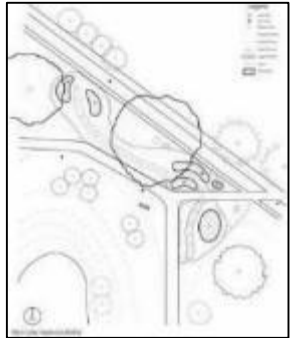




# IN THE BEGINNING



*Original Rain Garden with stone centered design in Fall 2006*

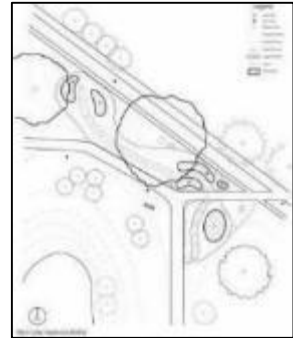




# 11 YEARS LATER: STONE FOULED

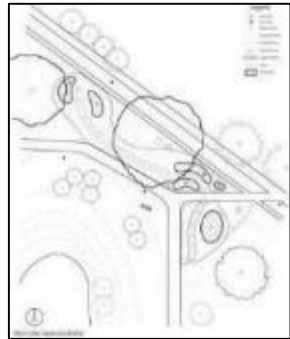


*Original Rain Garden with stone centered design in Spring 2017*





# PEDESTRIAN PATH OF DESIRE



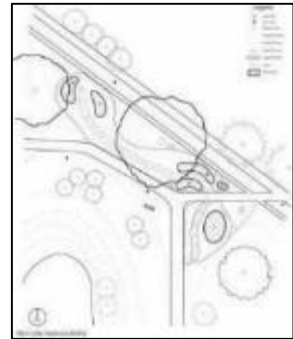
*Desire path through the garden in Winter 2017*



# PEDESTRIAN PATH OF DESIRE

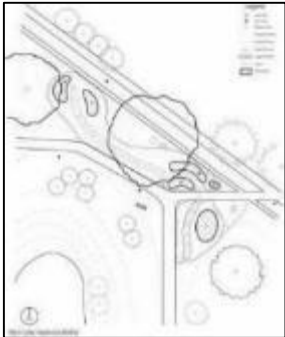


*Desire path following the ridge of a berm in 2017*





# SIDEWALK FLOODING RETURNED!



*Sidewalk flooding after a large rainstorm in 2017*



**CLOGGED PIPE**



**EXPOSED LANDSCAPE FABRIC**



*Additional issues identified in 2017*

# THE REDESIGN

# ILLINOIS EXTENSION HELD 2 STAKEHOLDER INPUT SESSIONS

## *INPUT SESSIONS SUMMARY*

**IDENTITY:** Identify the space with signs/markers

**PATHS:** Build paths through the garden

**ART:** Include more art

**INTERACTIVITY:** Incorporate more interactivity

**RESEARCH:** Collaborate with researchers to use the garden as a living, learning laboratory

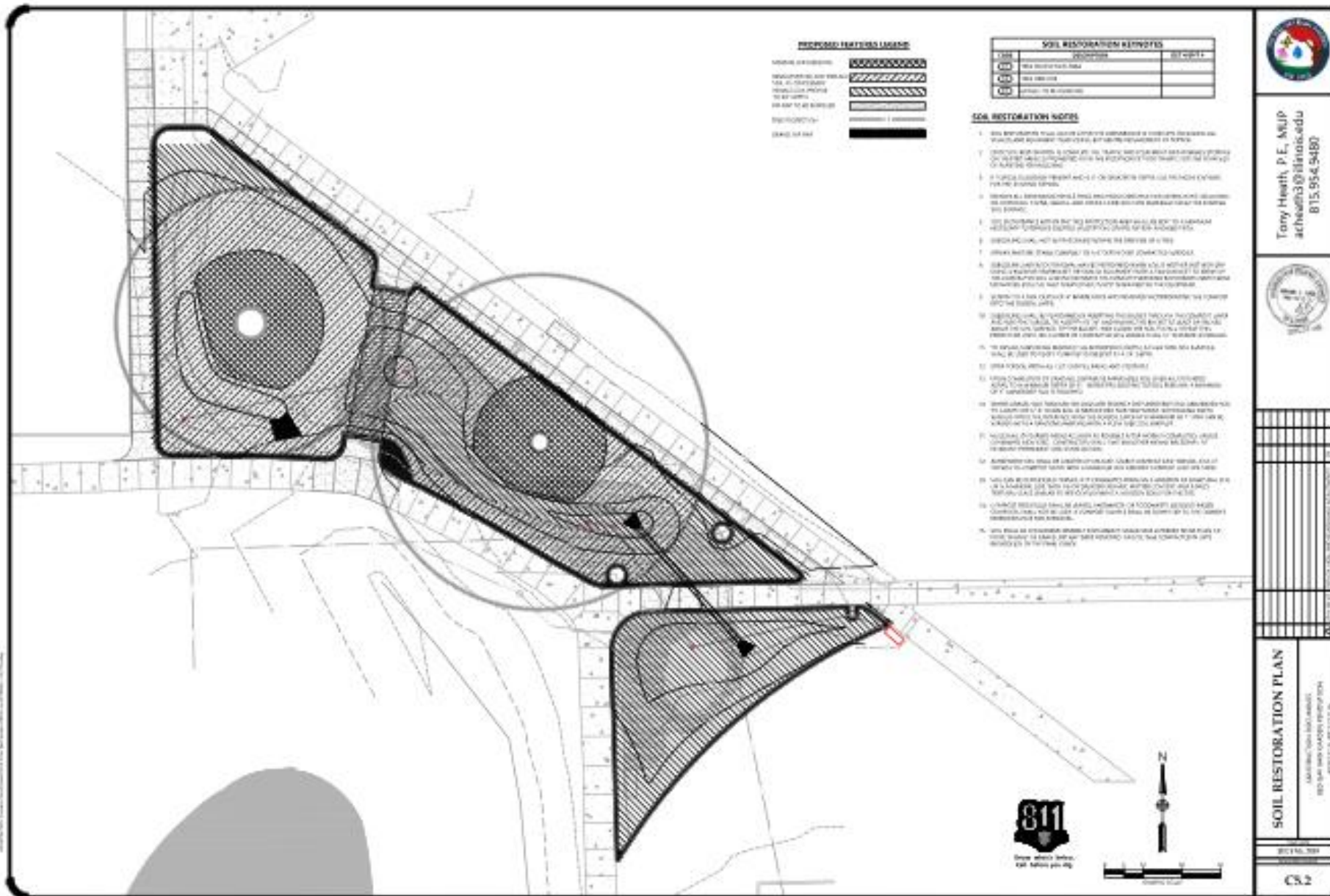
**PUBLIC EDUCATION:** Conduct outreach via digital, brochure, public events

**NATURE INTERPRETED:** Between formal and wild with multi-season interest



*Stakeholder input session 2016*





Renovation plan 2019

# PARTNERSHIPS

- Champaign County Extension Office
  - Champaign County Master Gardeners
  - East Central Illinois Master Naturalists
- Student Sustainability Committee
- The Pizzo Group
- Arborsmith
- Chastain and Associates Civil Engineering
- Filtrex
- Champaign County Audubon Society
- Champaign County Conservation and Design Foundation
- Facilities & Services
- Housing (Allen Hall + Lincoln Ave Residence Hall)
- Departments of
  - Landscape Architecture
  - Civil and Environmental Engineering
  - Crop Sciences (Horticulture)





# BEFORE RENOVATION



*Weedy and overgrown in May 2019*



# DEMOLITION



*The berm is gone! Note tree protection and grass smothering*



# DEMOLITION



*Removing the rock and landscape fabric in August 2019*



# DEMOLITION



*Removing the rock in August 2019*



# EXCAVATION AND SOIL MIX ADDITION



*Cell 1 excavated with soil mix addition in August 2019*



# THE PLANTING GRID



*Preparing for planting on September 15, 2019*



# PLANTING BEGINS



*Student Volunteers from HORT 100 installing plugs*





*Erin Harper and her HORT 100 students*





*Student volunteers and East Central IL Master Naturalists working side-by-side*





*Karen Folk, Lead Master Naturalist*



*Champaign Co Master Gardeners removing plugs from trays and prepping them for installation*





*Tony Heath watering Cell 1*













*Celebrating the installation of the final plug*

# LESSONS LEARNED

# DESIGN

- Create pathways for foot and cycling traffic.
- Very (very) few stones. Instead: plant centered design.
- Bioretention soil mix: 70% sand; 15% compost; 15% soil
- Set up for success: design with maintenance in mind
- Limit the number of plant species.
- Borders define the space

# VOLUNTEERS

- Pre-drill holes to be prepared for numerous volunteers
- Provide water and music
- Take photos (and/or drone footage)



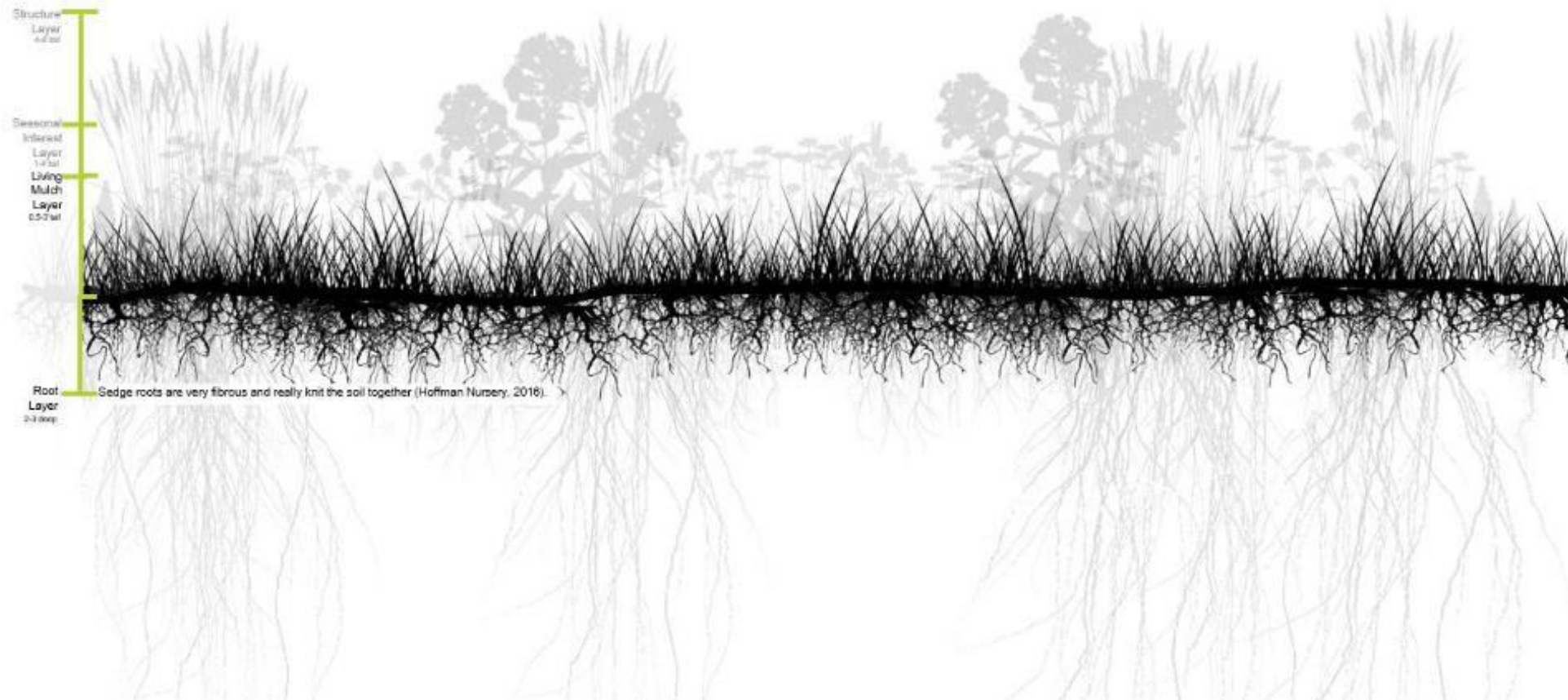


# PLANTING PLAN

Groundcovers, Structural, and Seasonals (oh my!)

Based on “Planting in a Post-Wild World” by Thomas Rainer and Claudia West

# GROUNDCOVER LAYER



# GROUNDCOVER LAYER

- RORG's Groundcover Layer consists of many species of grasses, sedges, ferns and several species of forbs.
- *Asarum canadense* - Wild Ginger
- *Athyrium filix-femina* - Lady Fern
- *Callirhoe involucrata* - Purple Poppy Mallow
- *Carex bicknellii* - Bicknell's Sedge
- *Carex pensylvanica* - Pennsylvania Sedge
- *Carex rosea* - Rosy Sedge
- *Carex emoryi* - Emory's Sedge
- *Deschampsia cespitosa* - Tufted Hairgrass
- *Geranium maculatum* - Wild Geranium
- *Geranium 'Rozanne'*
- *Heuchera richardsonii* - Alum Root
- *Juncus effusus* - Common Rush
- *Osmunda cinnamomea* - Cinnamon Fern
- *Polemonium reptans* - Jacob's Ladder
- *Polystichum acrostichoides* - Christmas Fern
- *Sporobolus heterolepis* - Prairie Dropseed
- *Tiarella cordifolia* - Foam Flower

Throughout RORG, the Groundcover Layer was planted first. This layer helped to define planting zones.

**See [redoakraingarden.org](http://redoakraingarden.org) for plant collection list.**





*Pennsylvania Sedge and Christmas Fern pictured in October 2019*

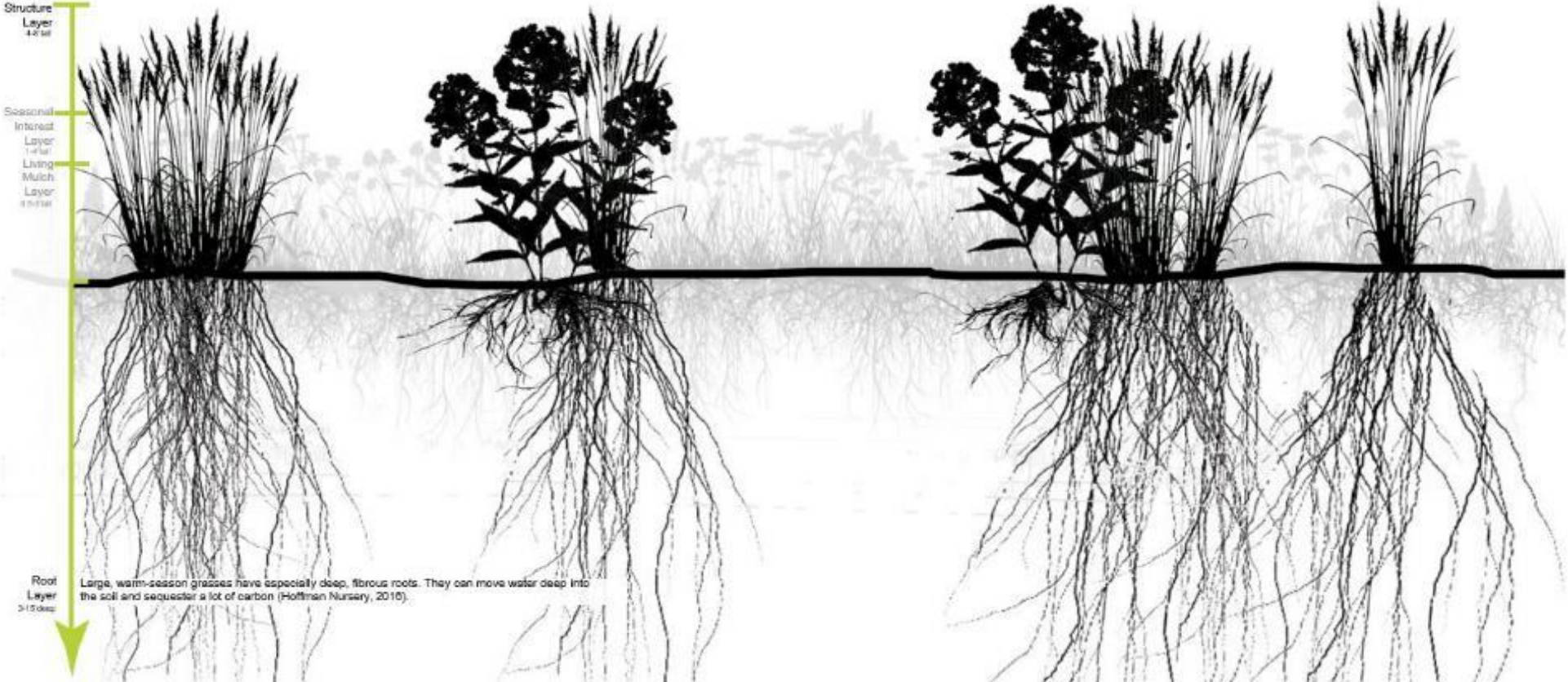




*Groundcover planting formed grids across the entire garden*



# STRUCTURAL LAYER



# STRUCTURAL LAYER

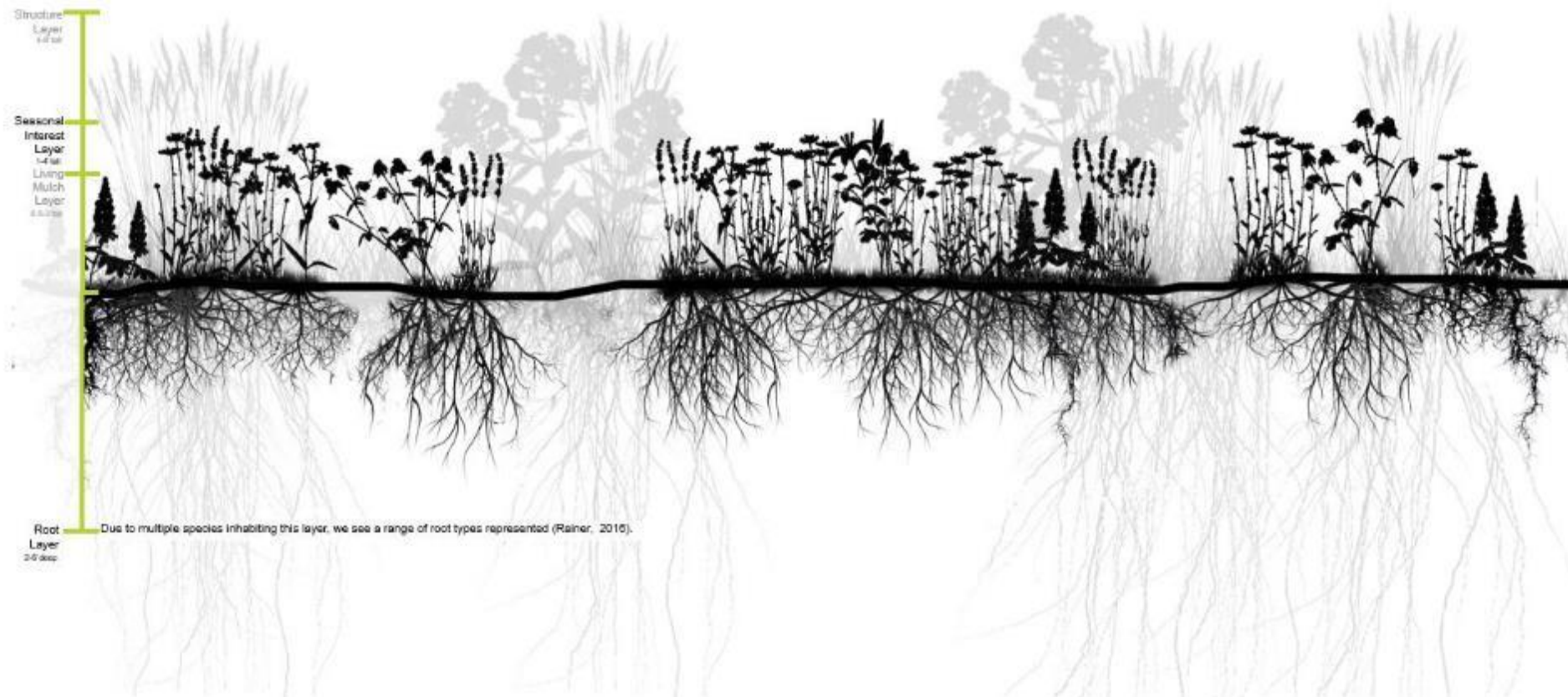
- RORG's Structural Layer consists of seven species of shrubs and several species of forbs.
  - *Aronia arbutifolia* – Red Chokeberry
  - *Ceanothus americanus* – New Jersey Tea
  - *Cephalanthus occidentalis* – Buttonbush
  - *Cornus sericea* – Red Twig Dogwood
  - *Ilex verticillata* – Winterberry
  - *Lindera benzoin* – Spicebush
  - *Viburnum dentatum* 'Christom' – Blue Muffin® Arrowwood Viburnum
  - *Actaea racemosa* - Black Cohosh
  - *Aruncus dioicus* – Goatsbeard
  - *Hibiscus laevis* - Rose Mallow
  - *Eutrochium purpureum* – Purple Joe Pye Weed
  - *Silphium laciniatum* – Compass Plant
  - *Silphium intergregifolium* – Rosinweed





*Fall color popping on a Red Chokeberry pictured in October 2019*

# SEASONAL LAYER





# SEASONAL LAYER

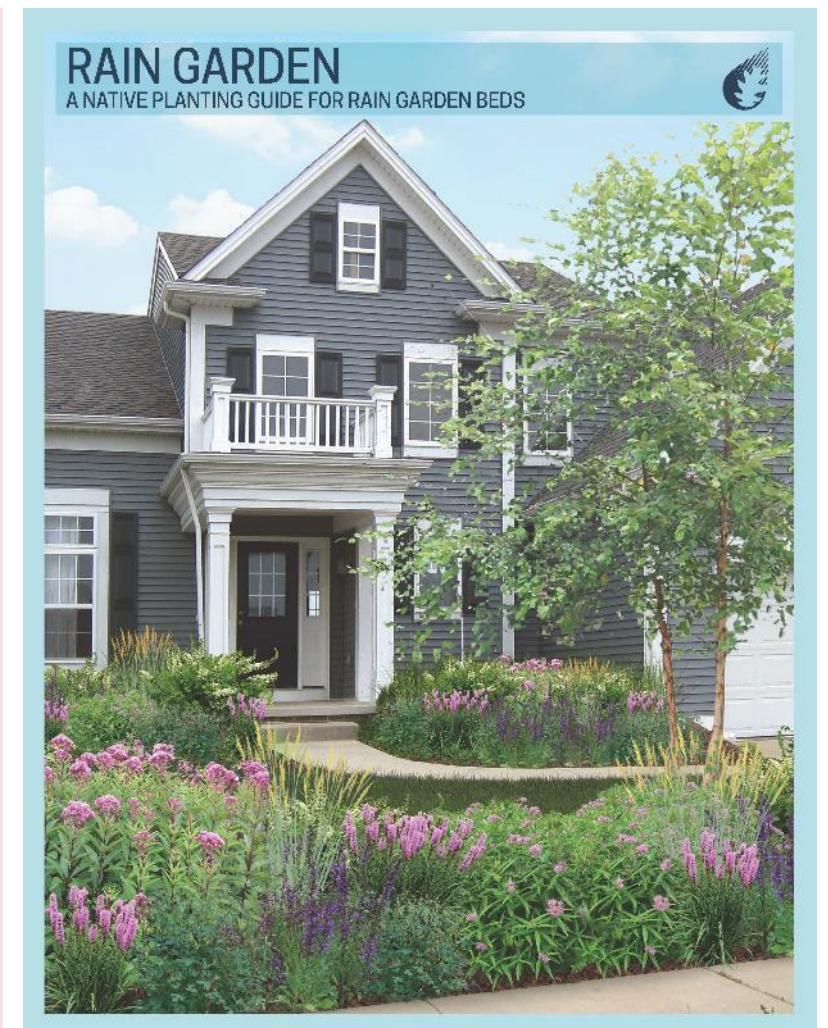
- RORG's Seasonal Layer will add seasonal drifts of color and interest.
  - *Antennaria plantaginifolia* – Pussytoes
  - *Asclepias incarnata* – Swamp Milkweed
  - *Asclepias sullivantii* – Prairie Milkweed
  - *Asclepias Tuberosa* – Butterflyweed
  - *Caltha palustris* – Marsh Marigold
  - *Chelone glabra* – Turtlehead
  - *Echinacea pallida* – Pale Purple Coneflower
  - *Echinacea purpurea* – Purple Coneflower
  - *Iris virginica* var. *Shrevei* – Southern Blue Flag Iris
  - *Lobelia cardinalis* – Cardinal Flower
  - *Phlox glaberrima* – Prairie Phlox
  - *Rudbeckia ful* var. *Speciosa* – Showy Black-Eyed Susan
  - *Silene regia* – Royal Catchfly
  - *Stylophorum diphyllum* – Celandine Poppy
  - *Symphyotrichum laeve* – Smooth Blue Aster
- The Seasonal Layer was planted last. The heavy gridding created by the Groundcover species made for easy placement of the final layer.



*Smooth Blue Aster pictured in October 2019*



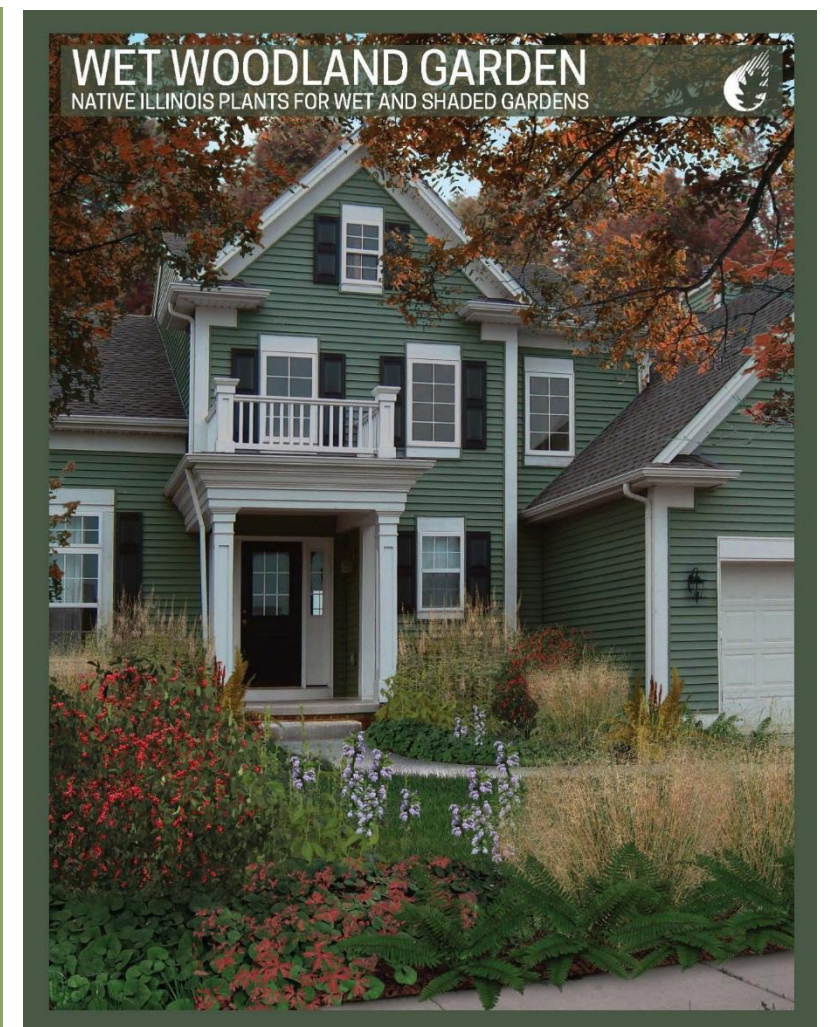
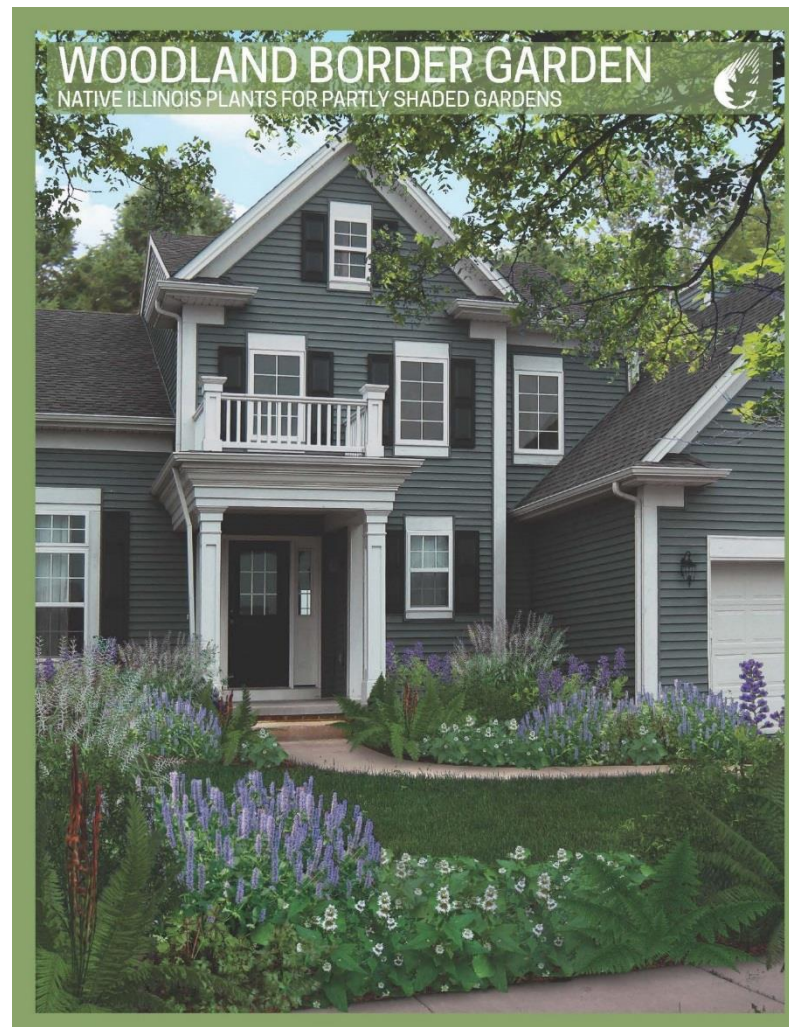
# BROCHURES: TAKING THE LESSONS HOME



*The above brochures are available online*



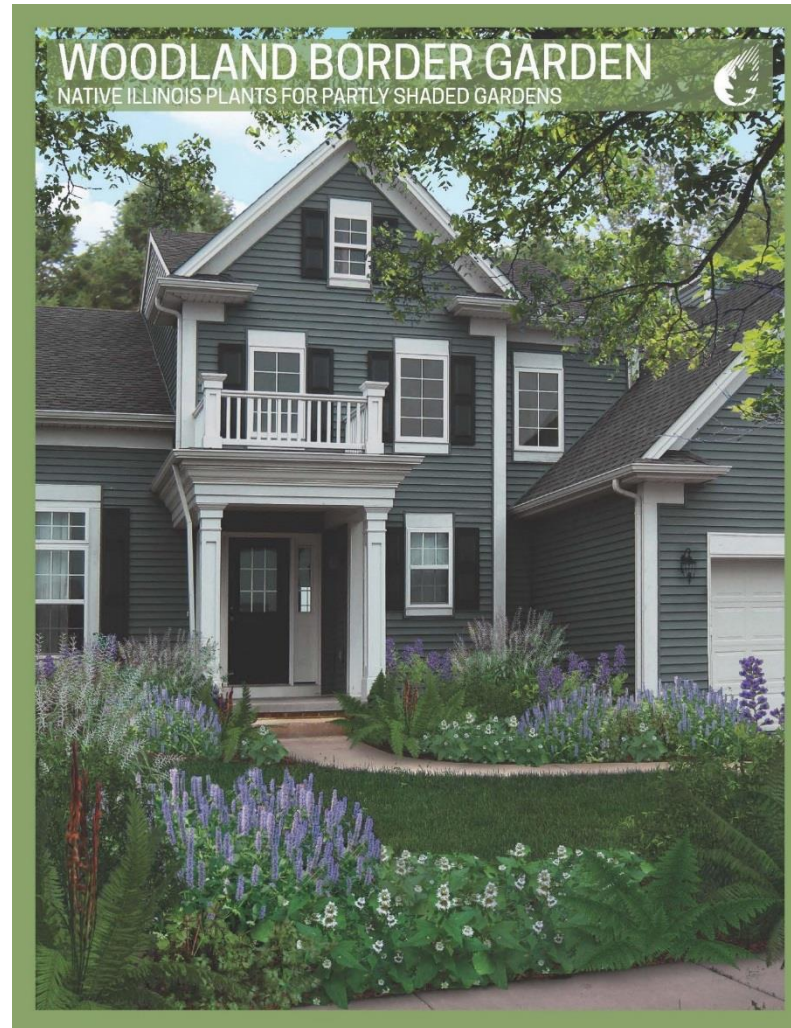
# BROCHURES: TAKING THE LESSONS HOME



*The above brochures are part of a larger series currently being developed*



# BROCHURES: TAKING THE LESSONS HOME



# BROCHURES: TAKING THE LESSONS HOME

## WOODLAND BORDER GARDEN

### NATIVE ILLINOIS PLANTS FOR PARTLY SHADED GARDENS

PLANTING PLAN FOR A 6' x 25' BED

GROUNDCOVER: Eastern Star Sedge (29), Wild Geranium (6)  
 SEASONAL: Virginia Bluebells (9), Wild Columbine (5), Hairy Woodmint (6), Smooth Blue Aster (5), Lady Fern (3), Anise Hyssop (3)  
 STRUCTURAL: Blue Wild Indigo (1), Bottlebrush Grass (5), Cinnamon Fern (2)  
 See the Red Oak Rain Garden Brochure for information related to the Groundcover, Seasonal, and Structural categories.

**FOUR SEASON INTEREST**

**PLANT LIST:**

- VIRGINIA BLUEBELLS (*Mertensia virginica*)
- WILD COLUMBINE (*Aquilegia canadensis*)
- WILD GERANIUM (*Geranium maculatum*)
- HAIRY WOODMINT (*Blephilia hirsuta*)
- BLUE WILD INDIGO (*Baptisia australis*)
- ANISE HYSOPO (*Agastache foeniculum*)
- SMOOTH BLUE ASTER (*Symphoricarum laeve*)
- EASTERN STAR SEDGE (*Carex radiata*)
- BOTTLEBRUSH GRASS (*Elymus hystrix*)
- LADY FERN (*Athyrium filix-femina*)
- CINNAMON FERN (*Osmunda cinnamomea*)

PLANT	HEIGHT	MOISTURE	SOIL	WOODLAND	WOODLAND OPENING	WOODLAND BORDER	LOW WOODLAND	ATTRACTS BEES	ATTRACTS HUMMINGBIRDS	ATTRACTS BUTTERFLIES	ATTRACTS MONARCH BUTTERFLIES	ATTRACTS CATERPILLARS	DEPTHS TO FRANT	SEMI-DEPTHS TO FRANT	NOT DEPTHS TO FRANT
VIRGINIA BLUEBELLS	1'-2 1/2'	WET	MOIST SOIL	WOODLAND											
WILD COLUMBINE	2'-3'	WET	SANDY, ROCKY, ACIDIC	WOODLAND											
WILD GERANIUM	1'-1 1/2'	WET	LOAM	WOODLAND											
HAIRY WOODMINT	1'-3'	WET	LOAM	WOODLAND OPENING											
BLUE WILD INDIGO	3'-4'	WET	ROCKY, LOAM	WOODLAND OPENING											
ANISE HYSOPO	2 1/2'-3'	WET	LOAM, CLAY-LOAM	WOODLAND OPENING											
SMOOTH BLUE ASTER	2'-4'	WET	LOAM, CLAY	WOODLAND BORDER											
EASTERN STAR SEDGE	1'-2'	WET	LOAM	WOODLAND											
BOTTLEBRUSH GRASS	2 1/2'-5'	WET	LOAM	WOODLAND											
LADY FERN	1'-3'	WET	LOAM	WOODLAND											
CINNAMON FERN	2'-4'	WET	SANDY, ACIDIC	LOW WOODLAND											

**SOURCES:** ILLINOIS WILDLIFE LOWER 311 (http://www.illinoiswildlife.gov/); POWERS MOON JERRY (http://www.powermoon.com/); GARDENER EXPERIENCE

**LEGEND:** WET SOIL, MOIST SOIL, MEDIUM SOIL, ATTRACTS BEES, ATTRACTS HUMMINGBIRDS, ATTRACTS BUTTERFLIES, ATTRACTS MONARCH BUTTERFLIES, ATTRACTS CATERPILLARS, DEPTHS TO FRANT, SEMI-DEPTHS TO FRANT, NOT DEPTHS TO FRANT



# BROCHURES: TAKING THE LESSONS HOME


**WOODLAND BORDER GARDEN**

It's no secret that grass can be difficult to grow in shaded areas of the yard. Luckily, Illinois is home to dozens of plant species adapted for exactly this situation. Instead of a traditional lawn, homeowners can mix shade-loving groundcovers, like sedges and ferns, with taller, blooming plants and spring ephemerals that flourish.


This guide features a planting plan focused on natives typically found in Illinois woodland borders. The plan creates year-round interest for homeowners and extends the foraging season for pollinators. Additionally, the trees and native plants help reduce stormwater runoff. Keep in mind that while only native plants are used in this example, non-natives can also benefit pollinators. For more information, visit the University of Illinois Extension Horticulture website.







**ADDITIONAL PLANTING OPTIONS**

If you have more space, you can take the basic planting plan and repeat it, as such.



If you have less space, below are groupings that are suitable for smaller beds.



 BLUE WILD INDIGO ☀️ ☀️ ☀️ 💧 💧	 ANISE HYSOPO ☀️ ☀️ ☀️ 💧 💧	 BOTTLEBRUSH GRASS ☀️ ☀️ ☀️ 💧 💧	 WILD GERANIUM ☀️ ☀️ ☀️ 💧 💧	 HAIRY WOOD MINT ☀️ ☀️ ☀️ 💧 💧	 SMOOTH BLUE ASTER ☀️ ☀️ ☀️ 💧 💧
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**WHERE TO FIND PLANTS AND MORE INFORMATION**

The plant palette is inspired by the Red Oak Rain Garden: [www.redoakraingarden.org](http://www.redoakraingarden.org). The Illinois Native Plant Society webpage lists sources of native plants. For more information about plants, see the University of Illinois Extension Horticulture website.


**PUT YOUR NATIVE PLANT GARDEN ON THE MAP**

You can be part of a network of native plantings by registering your Illinois native plant garden or rain garden. This helps build community and encourage native plant use.

Add your native plant garden to the map: <http://go.illinois.edu/GardenMap>

**ACKNOWLEDGMENTS**

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Produced by C. Eliana Brown, University of Illinois Extension.  
Researched and designed by Layne Knoche with contributions from Kate Gardiner, University of Illinois Extension.  
Edited by Irene Miles and Joel Davenport, Illinois-Indiana Sea Grant.















# GOING FORWARD

## Grant Application Plan of Work



Illinois Clean Energy  
*community foundation*



# SEASONAL LAYER 2.0

- Ephemerals

- *Dodecatheon meadia* – Shooting Star
- *Mertensia virginica* – Virginia Bluebells
- *Trillium grandiflorum* – White Trillium
- *Tulipa fosteriana* 'Orange Emperor' – Orange Emperor Tulip

- Additional forbs

- *Allium cernuum* – Nodding Onion
- *Phlox divaricata* – Woodland Phlox

- Additional species to be planted in fall 2020 will include select ephemerals and forbs. They will be installed in large drifts throughout the garden for additional seasonal interest and pollinator benefits.

# SEASONAL LAYER 2.0



*Early spring color from Woodland Phlox at Allerton Park in April 2018*



# SEASONAL LAYER 2.0



*Early spring color from bluebells at Allerton Park*









# RED OAK RAIN GARDEN

## BOARDWALK BRIDGE COMING SPRING 2020!

PLEASE STAY ON SIDEWALKS AS PLANTS ESTABLISH ROOTS



[redoakraingarden.org](http://redoakraingarden.org)







**WE GOT THE GRANT!!!!!!!!!!!!**

**3 to 1 donation match  
(info to follow)**





**THANK YOU!**

*redoakraingarden.org*  
*Follow us: @RainGardenUIUC*  
*go.illinois.edu/raingardenDonate*

