# **Wetland Restoration -Allen Hall**



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# **PROJECT OVERVIEW**

The area in-between the Allen Hall parking lot and the road leading up to the Bellarmine Farm is a space in need of excess vegetation to absorb and filter out water<sup>1</sup> (Figures 1&2). The impervious surfaces which surround this area along with its location between two hills encourage inundation year-round. The addition of various native plants would filter out this flooding and also create a safe space for various aquatic organisms and pollinators<sup>3</sup>.



Figure 1: Satellite view of the wetland site (38.2165999"N, -85.7080701"W)

# WHAT IS A RAIN GARDEN?



Figure 3: Rain garden diagram (Washington State University)

Rain gardens can also be aesthetically pleasing and provide important habitat and nutrition for pollinators and other wildlife such as birds, butterflies, and bees<sup>3</sup> (Figure 4).



**Figure 2:** Photo of the wetland area featuring two Canadian geese (taken in April 2023)

Every time it rains, water runs off impervious surfaces thus collecting pollutants and sediments such as soil, fertilizer, oil, garbage, and bacteria. Rain gardens limit the amount of stormwater entering into waterways via absorption by soil and plants. With less stormwater ending up in waterways, localized flooding and erosion decrease<sup>2</sup> (Figure 3).



**Figure 4**: Rain Garden designed and installed by Master Rain Gardener Linda Prieskorn in Cincinnati, OH

#### **PHASE ONE**

Phase one is meant to prepare the area for future plantings via the implementation of various native grasses. Planting deep-rooted water-loving grasses will help break up hard soils and create channels for water to move through thus encouraging water and nutrient untake by the forbs in Phase II.





Fox sedge (Carex vulpinoidea)



Cattail sedge (Carex typhina)

Both of these sedges grow naturally on the banks of lakes, streams, and other waterways across the state of Kentucky. They provide wonderful a habitat for wildlife and protect from erosion.



River oats (Chasmanthium latifolium)



Little bluestem (Schizachyrium scoparium)

These grasses are common around Kentucky waterways as well but prefer well-drained soils. Both provide cover and food for birds and other wildlife.



ALL PLANTS WERE SPECIFICALLY CHOSEN AND ORGANIZED BASED ON THE SOIL CHARACTERISTICS AT THE SITE. ZONE 1 HAS EXTREMELY SATURATED SOIL WHEREAS ZONE 2 DRAINS MORE READILY (FIGURE 5).



**Figure 5:** A photo of the wetland area with zones 1&2 labeled and shaded with different colors (zone 1-pink; zone 2-blue)

All photos on this page, unless otherwise noted, were procured from Ironweed Nursery's website

# ZONE 1



Mist flower (Conoclinium coelestinum)



Cardinal flower (Lobelia cardinalis)

All of the forbs were chosen for their water-loving qualities. Most, especially those chosen for zone 1, are commonly found around waterways throughout Kentucky.

Table 1: The seven forbs organized by their flowering season

Plant Common Name	Scientific Name	Flowering Season
	Department and initiality	Contracting Seuson
Foxglove beardtongue	Penstemon digitalis	Spring
Butterfly milkweed	Ascepias tuberosa	Summer
Wild bergamot/bee balm	Monarda fistulosa	Late-summer
Cardinal flower	Lobelia cardinalis	Late-summer
Black-eyed susan	Rudbeckia hirta	Late-summer
Dense blazing star	Liatris spicata	Mid-summer/fall
Mistflower	Conoclinium coelestinum	Fall

As portrayed Table 1, an effort was made to ensure that blooms would be consistent over the duration of the growing season to support pollinators throughout the year.

## IMPLEMENTATION

The grasses will be purchased from Prairie Moon Nursery and seeded from early May to late July 2023. The forbs (as plugs) will be purchased from Ironweed Native Plant Nursery and planted in mid-October 2023.

A fence of rope will be put in place to protect the area from unwanted mowing or trimming.

Going forward, the garden will be maintained by Bellarmine University's groundskeeping and Environmental Science departments.

#### References:

1. Yuan J, Dunnett N, Stovin V. 2017. The influence of vegetation on rain garden hydrological performance, Urban Water Journal. 14:10, 1083-1089. DOI: 10.1080/1573062X.2017.1363251

2. Dietz M, Clausen J. A Field Evaluation of Rain Garden Flow and Pollutant Treatment. 2005. Water Air Soil Pollut, 167, 123–138. https://doi.org/10.1007/s11270-005-8266-8

3. Kim S, An K. Exploring Psychological and Aesthetic Approaches of Bio-Retention Facilities in the Urban Open Space. 2017. Sustainability. 9, 2067. https://doi.org/10.3390/su9112067

#### **Resources:**

- https://www.ironweednursery.com
  https://www.almanac.com/rain-garden-design-and-
- plants • https://www.cincyraingardener.org/what-is-a-rain-
- garden.html#/ • https://extension.wsu.edu/raingarden/featured-rain-
- gardens/ • https://www.klausinggroup.com/blog/what-are-the-
- https://www.klausinggroup.com/biog/what-are-thebest-plants-for-a-rain-garden-in-kentucky
- https://www.cityofdubuque.org/DocumentCenter/View /1391/Plants-for-rain-garden?bidld=

#### PHASE TWO

Dense blazing star (Liatris

Butterfly milkweed

(Asclepias tuberosa)

spicata)

Unce the soil has been prepped, various flowering plants will be nstalled to increase biodiversity for pollinators. Choosing nati flora of various colors and shapes will increase attraction as w



## **ZONE 2**



Wild bergamot (Monarda fistulosa )



Foxglove beardtongue (Penstemon digitalis)





