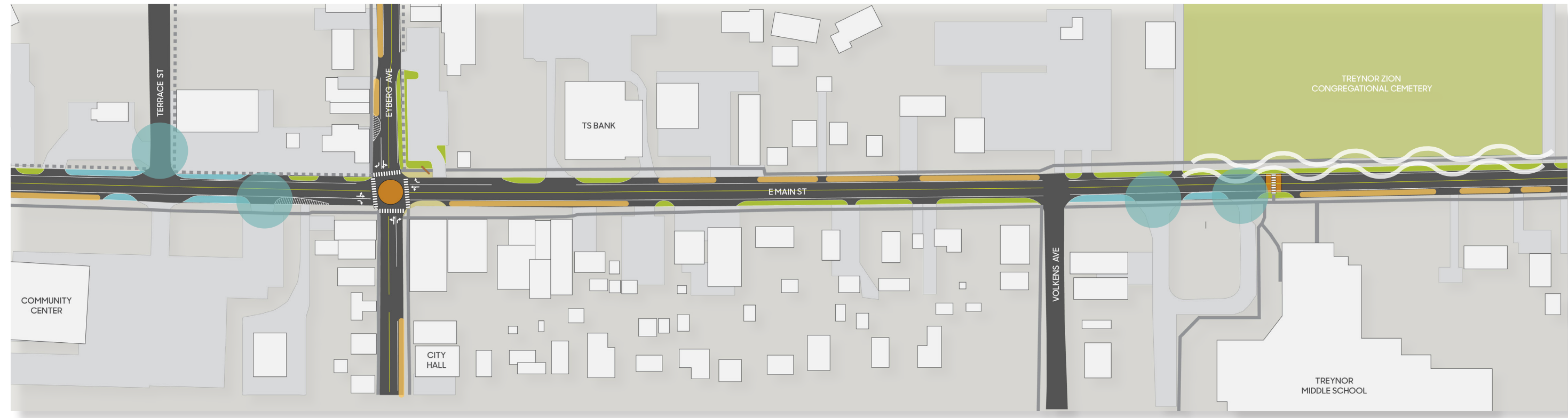
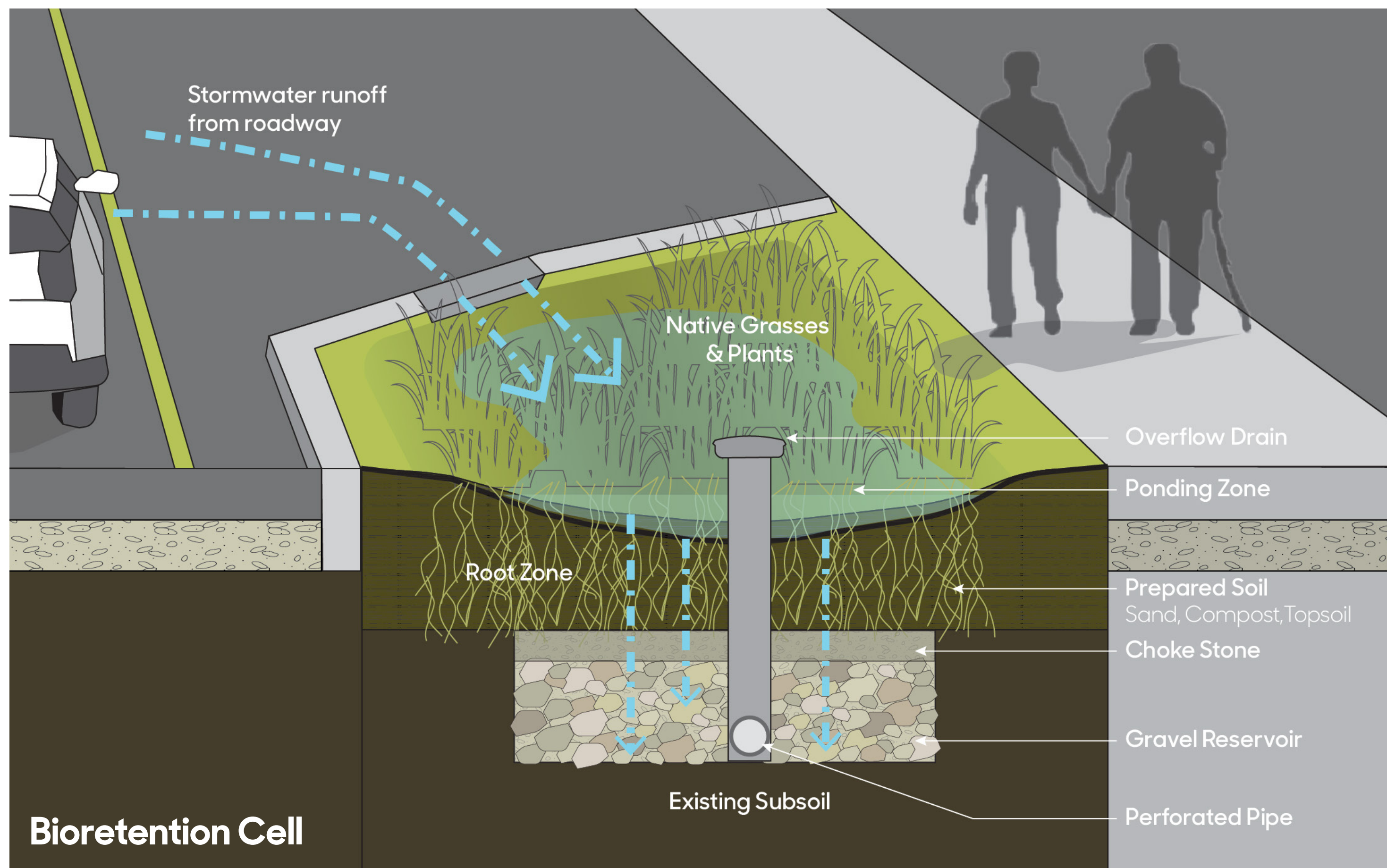


## Locations of Stormwater & Snow Concerns



Much of Treynor exists on a plateau within the Loess Hills. For the most part, stormwater sheds easily downhill and into storm drains. However there are small-scale topography changes within the infrastructure that can lead to poor drainage and ponding. Four main locations along HWY 92 were noted for ponding after rain events.

During community focus groups, drifting snow was identified as another major concern. This condition is persistent along the cemetery on HWY 92. Focus-group participants also pointed out that the problem exists along Ehrig Avenue, south of the elementary school.



## Green Infrastructure Precedents



**Bioswales**

Swales are shallow vegetated open channels designed to convey, reduce, and filter runoff. A wet swale includes design features that improve the contaminant removal and runoff reduction functions of a simple roadside ditch. Swales are often combined with rain gardens.

**Suggested Use:** Incorporate with addition of boulevards along Highway 92. The swale would reduce stormwater runoff and increase aesthetics along the street corridor.



**Rain Gardens**

Rain gardens and bioretention facilities use a combination of soil and plant material to capture and treat stormwater. Rain gardens are typically smaller systems that do not require engineering. They feature a planted or rock-based depression, designed to provide temporary rainwater storage and filter runoff. These are typically cost effective and easy to maintain options for both private and public land.

**Suggested Use:** Combine rain gardens with bioswales to place within boulevards. Plants used should require little water and maintenance. Decorative rocks/stones can be incorporated as well.



**Permeable Pavement**

Permeable pavement refers to surface treatment that is suitable for pedestrian or vehicular traffic and contains pore spaces or joints that allow stormwater to pass through to a stone base where it is infiltrated into the underlying native soil, or temporarily detained and conveyed to a stormwater management pond. Types of permeable pavement include: pervious concrete, porous asphalt, and permeable interlocking concrete pavers.

**Suggested Use:** Pavement changes create visual interest, which helps slow down traffic. Permeable pavers could be used to mark on-street parking or crosswalks. Place permeable pavement in a location that will not have high traffic speeds.

## Modifying Existing Drains



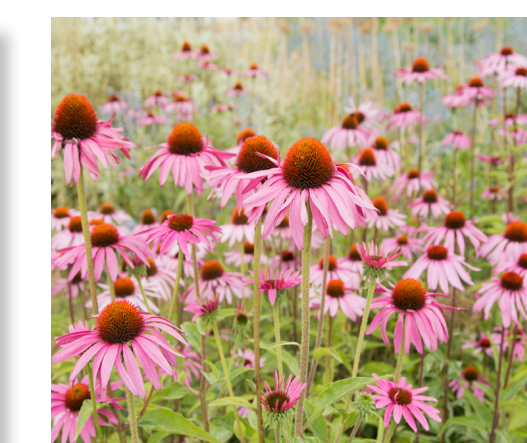
Where current stormwater inlets exist, the bump-outs would be formed to direct stormwater from the roadway to the existing drain. A steel grate can be implemented over the drainage way to maintain an even surface across the bump-out. This will allow for quick access to the existing inlet location.

## Recommended Plants

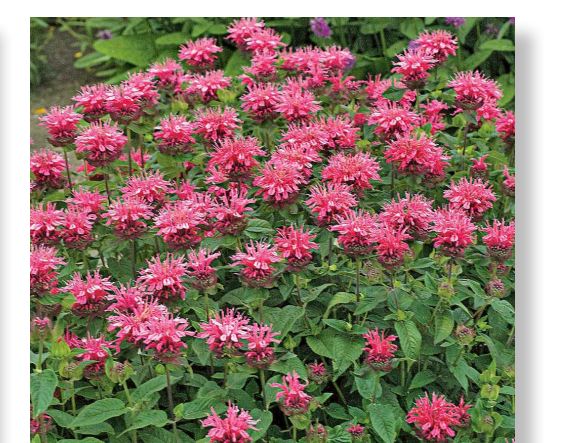
Low maintenance and drought tolerant plants should be considered for sun-exposed rain gardens, bioswales, and general landscaping in vegetated buffers along the roadway. Native species offer many advantages, such as better adaptation and provision of food for native pollinators. The practice of xeriscaping uses creative landscaping techniques, such as grouping drought-resistant vegetation, and creates an aesthetically interesting natural environment, which contributes to a sense of place.



Butterfly Milkweed



Coneflower



Bee Balm



Little Bluestem



Switchgrass



Redosier Dogwood

**Treynor**

Green Infrastructure

Iowa State University Community Design Lab

LAs: Chad Hunter & Carl Rogers

Collaborators: Brian Leaders & Payton Schafers, National Park Service RTCA

Iowa State University | Trees Forever | Iowa Department of Transportation

