Baden Pilot Project

an adaptive landscape strategy

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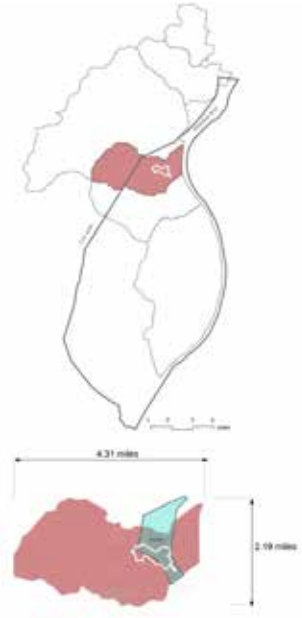
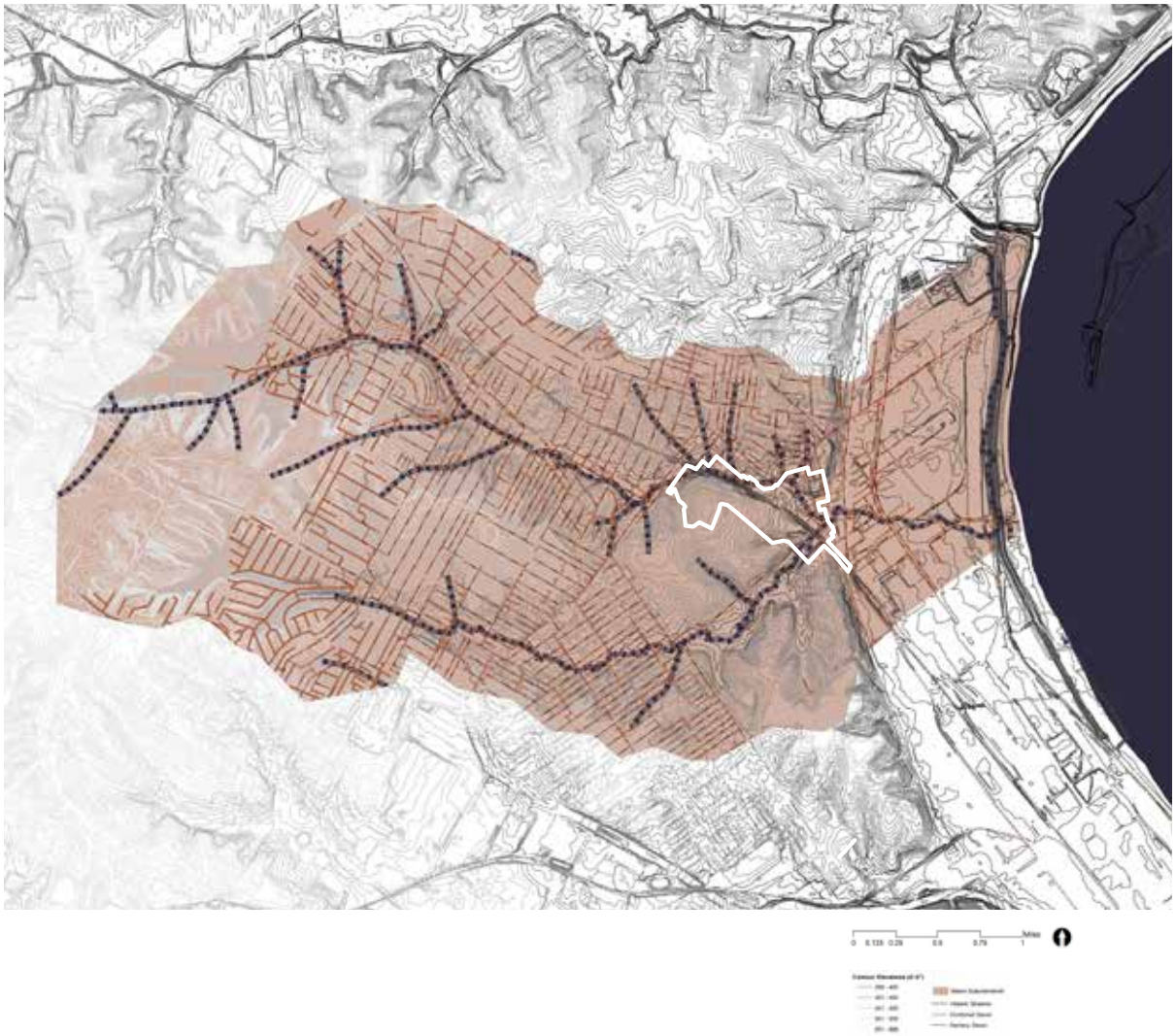
presented to East/West Gateway Water Resources Committee, March 16, 2018



Baden Subwatershed

MSD Service Area



The UVEI is a collective effort between local environmental leaders, community-based organizations, and academic institutions to promote urban conservation and connect residents to urban nature in St. Louis. The UVEI was established in 2013 through a cooperative agreement between the City of St. Louis, the Missouri Department of Conservation (MDC), and the Missouri Botanical Garden (MBG), to achieve goals laid out in the City of St. Louis Sustainability Plan related to **urban biodiversity conservation** and **urban green space enhancement.**

partners:

Urban Vitality & Ecology Initiative of the City of St. Louis Mayor's Office of Sustainability
(Now UVE, supported as Green Cities Coalition in partnership with the Missouri Botanical Garden + Missouri Department of Conservation)

Washington University in St. Louis
(graduate programs in Landscape Architecture, Environmental Studies, Business, + Social Work)

Metropolitan Sewer District (MSD)

Riverview West Florissant Development Corporation

Revitalization of Baden Association (ROBA)

Our Lady of the Holy Cross Church (OLHC)

City of St. Louis Board of Aldermen

City of St. Louis Neighborhood Stabilization Team

University of Missouri–St. Louis (UMSL)

Urban Vitality & Ecology (UVE) Initiative pilot project areas in the City of St. Louis, all underserved areas with opportunities for strategic redevelopment of green infrastructure

1 Baden
2 Barrett Brothers Park
3 Bevo Mill | N. Hampton | Southampton
4 Gravois | Chippewa
5 MLK | Newstead
6 Northside | Branch St.
7 River View
8 Riverfront | Bellerive Park
9 St. Vincent Greenway

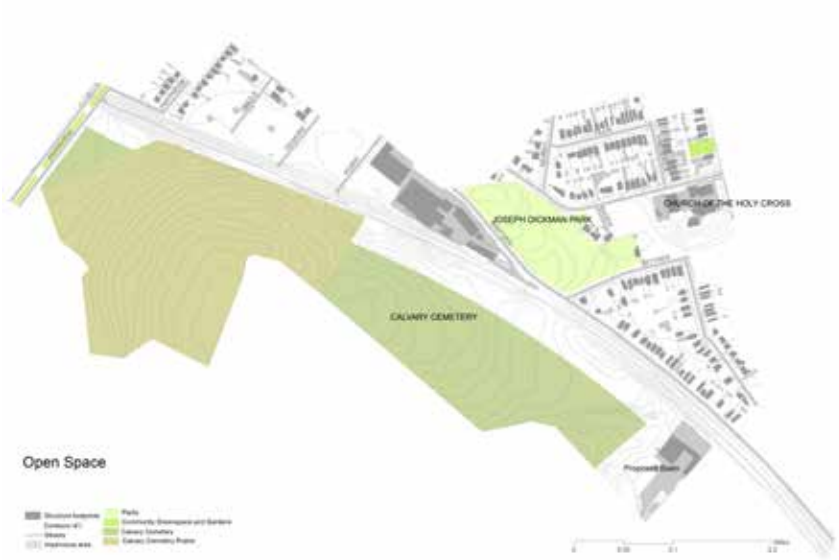
In December 2014, UVEI leadership outlined three initial efforts that interested partners could become involved in:

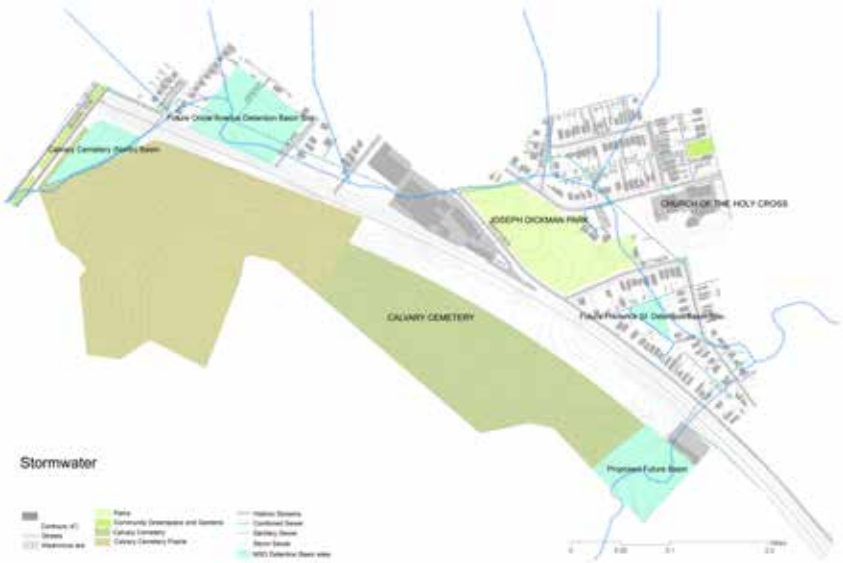
1. A neighborhood-scale pilot project designed to test on-the-ground strategies to implement urban greening projects that meet triple-bottom-line sustainability objectives

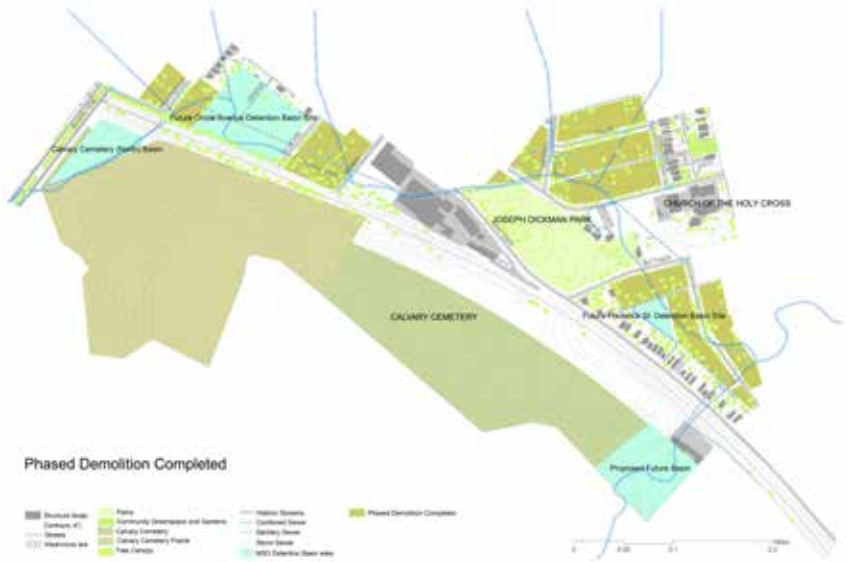
2. The St. Louis Butterfly project, or Milkweeds for Monarchs, which supports the creation of monarch butterfly conservation gardens throughout the City

3. Creation of an urban biodiversity inventory that would allow researchers and citizen-scientists to track urban biodiversity.

Baden Pilot Project > Site Conditions







Previously Existing Basin and Calvary Cemetery Remnant Tallgrass Prairie, from Riverview Blvd looking east

The WashU interdisciplinary team aims:

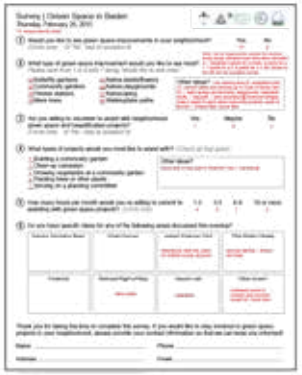
1. address the key findings of the project's community engagement process
2. achieve the drainage standards set by MSD
3. make the water cycle more visible
4. visually integrate drainage strauctures into the built environment
5. preserve and enhance landscape and heritage values
6. provide a liveable environment for all
7. develop an ecological park that acts as a benchmark and model for further projects
8. show how linking ecological urbanism and environmental justice provides a powerful approach to sustainable urban design

The aims and objectives were developed in accordance with a working research question. This eventually became the following:

Can a feasible, adaptive open space plan be developed for the Baden neighborhood that meets the objectives of MSD, UVEI and the community?

Baden Pilot Project > Project Timeline

Phase One
Project scoping
Baseline data
Surveys
Community engagement

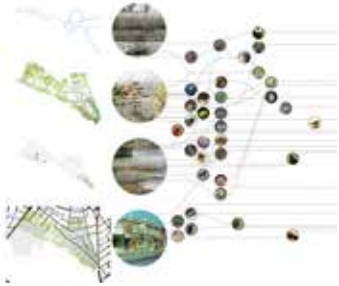


green space survey summary,
UVEI partners, February 28, 2015

physical activity and green space survey,
Brown School of Public Health,
Washington University, June 2015

community connection survey,
Olin Business School,
Washington University, in spring fall 2015

Phase Two
Landscape architecture studio with 6 MLA students:
Site and contextual analysis (hydrological, historical, ecological, demographic, circulatory)
System design
General open space plan
Basin design



Phase Three
Community workshop
Community feedback
Center for Experiential Learning
Survey results

Conceptual diagram
Open space plan: maps, diagrams, designs, renders

The Open Space Strategy outlined in this report has four physical components:

1. The detention basins designed and constructed by MSD

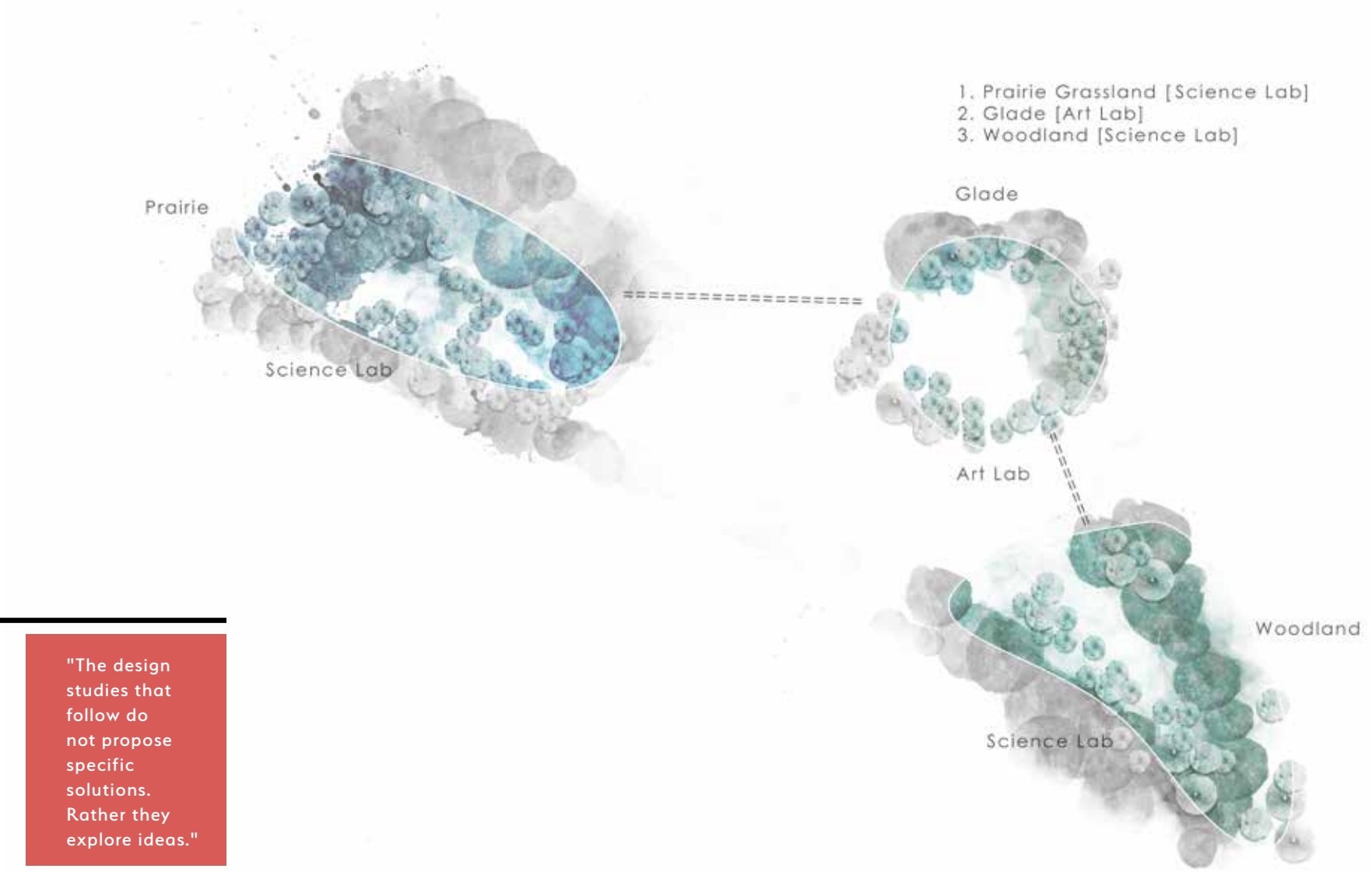
2. The GI enhancement of these basins (a number of options for each basin has been explored)

3. The supplementary terrain outside the basin zones, which includes raingardens, butterfly garden, orchard, bioswales and other possible amenities.

4. Dickman Park, which forms the heart of the plan as an already functioning open space. Its role in the Open Space Strategy is to provide a central setting for informal gathering and programmed events.

Baden Pilot Project > Adaptive Landscape Plan

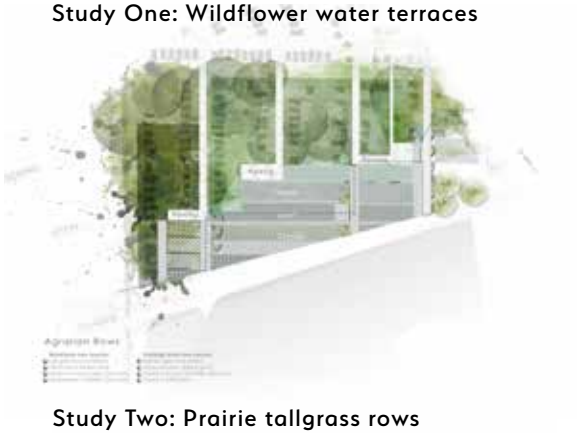
"The adaptive open space plan presented....is an attempt to apply the principles of ecological urbanism to the on-the-ground reality of Baden, and by doing so create an enduring community amenity."



"The design studies that follow do not propose specific solutions. Rather they explore ideas."

Baden Pilot Project > Patridge Basin Studies

Study One: Wildflower water terraces

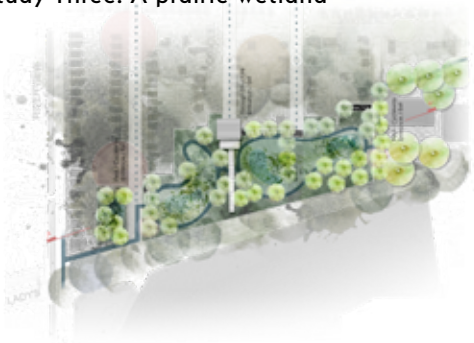


- a constructed prairie garden of stepped terraces:
  - north terrace - bioretention zone
  - middle terrace (lawn) - rainwater capture
  - lower south terrace (grasses) - rainwater capture and overflow
- planted for maximum flowering season impact

Study Two: Prairie tallgrass rows

- formalized prairie garden on a standard but leveled basin
- path and cycleway through the middle via berm or bridge
- picnic area

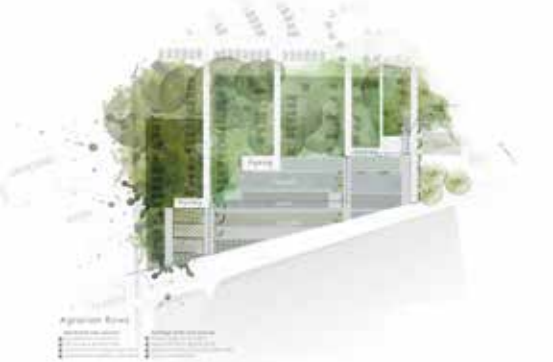
Study Three: A prairie wetland



- naturalistic wet prairie
- boardwalk, wooden pavilion, viewing deck
- water may stand in lowest contour after rain, or even be permanent—or dry detention area may be surrounded by smaller wet bioretention zones
- native species plantings are adapted to the variable conditions

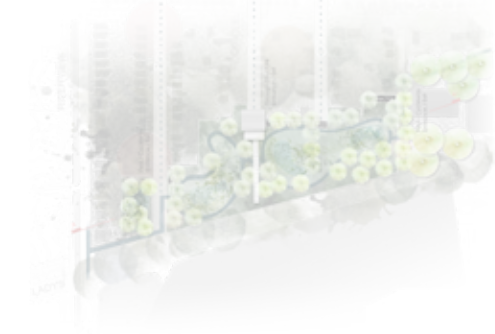
Baden Pilot Project > Patridge Basin Study One

Study One: Wildflower water terraces



Study Two: Prairie tallgrass rows

Study Three: A prairie wetland



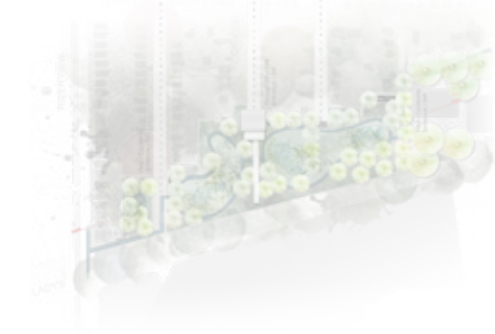
Wildflower terrace perspective

Baden Pilot Project > Patridge Basin Study Two

Study One: Wildflower water terraces

Study Two: Prairie tallgrass rows

Study Three: A prairie wetland



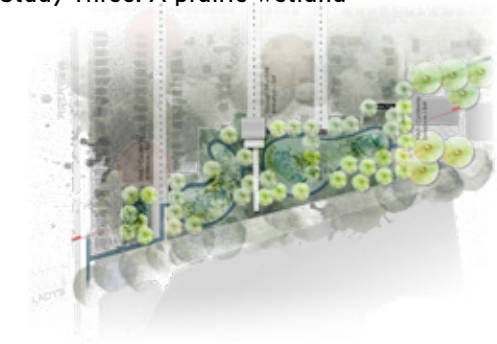
Tall rows of distinctive native species

Baden Pilot Project > Patridge Basin Study Three

Study One: Wildflower water terraces

Study Two: Prairie tallgrass rows

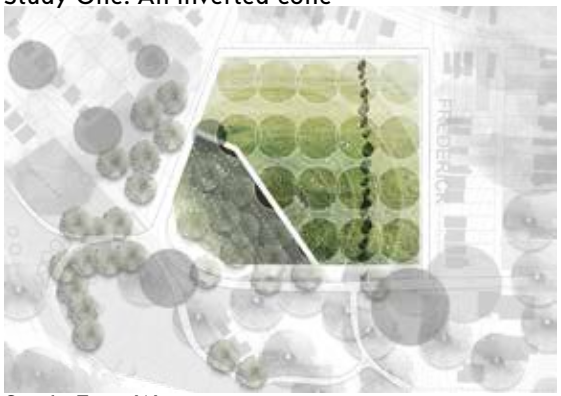
Study Three: A prairie wetland



Raised boardwalk perspective

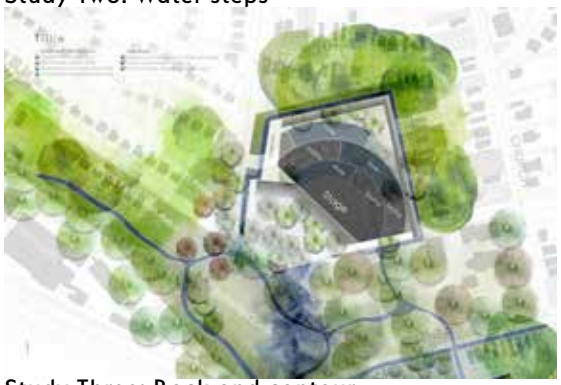
Baden Pilot Project > Tillie Basin Studies

Study One: An inverted cone



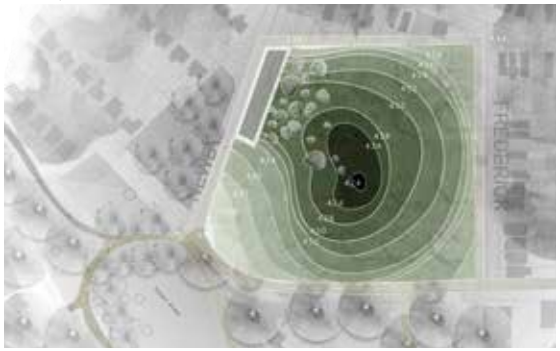
- prominent bowl form that fills in medium to large rain events
- instrument for measuring water level and correlating with plants
- edged by grasses and fastigiate trees in groves, lines, or arcs
- natural playground

Study Two: Water steps

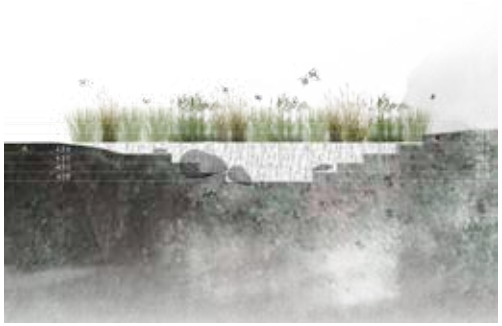


- broad, shallow steps of grass alternate with curved ponds
- ponds support aquatic plants
- stormwater is cleansed via a collector and retention pond sequence
- performance stage at the bottom with staircase
- lighting for night events
- possibility for fencing and gating

Study Three: Rock and contour

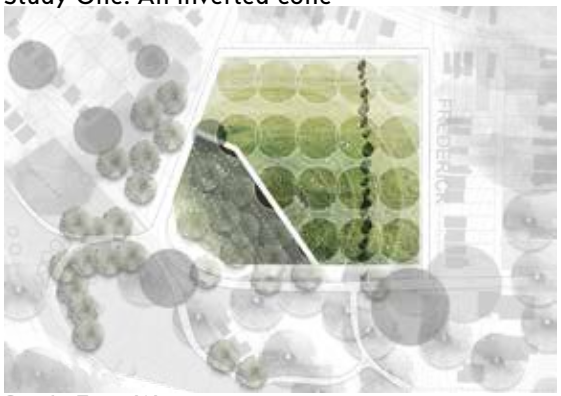


- planting strategy among rocks for scale and seating
- grading can be combined with steps, depending on level of outlet
- possibility of a retention function
- possibly pedestrian accessible

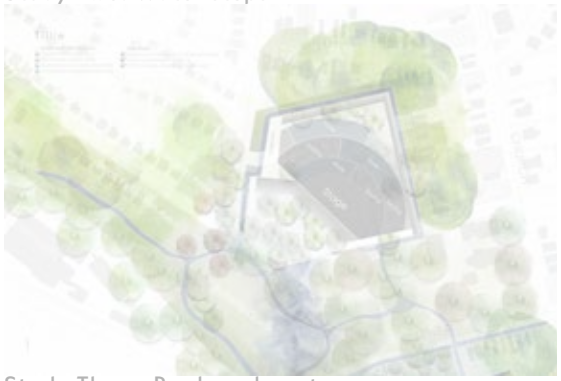


Baden Pilot Project > Tillie Basin Study One

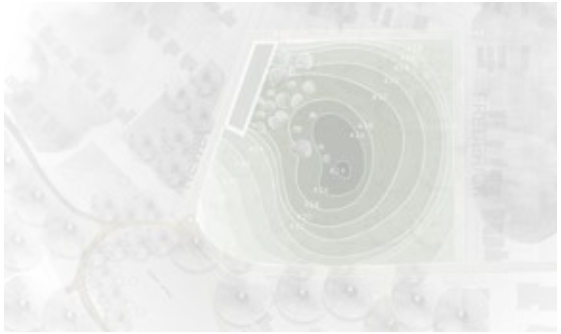
Study One: An inverted cone



Study Two: Water steps



Study Three: Rock and contour

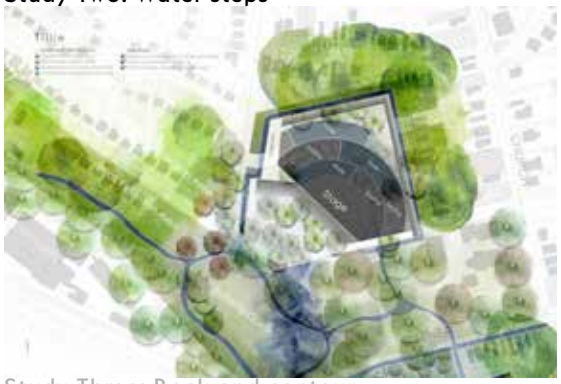


The line of rocks serves as a playground for children

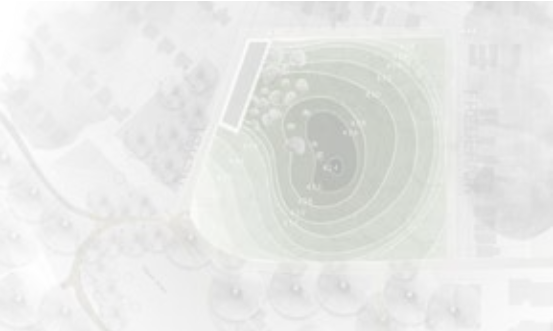
Baden Pilot Project > Tillie Basin Study Two

Study One: An inverted cone

Study Two: Water steps



Study Three: Rock and contour



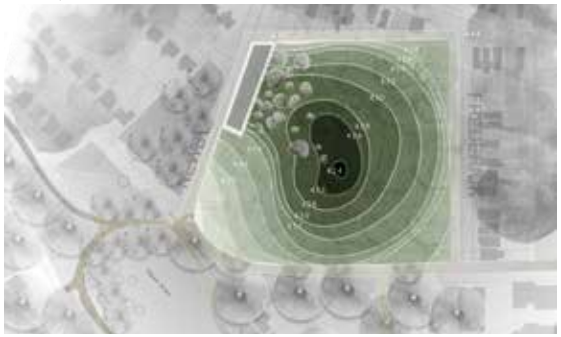
Section through amphitheater

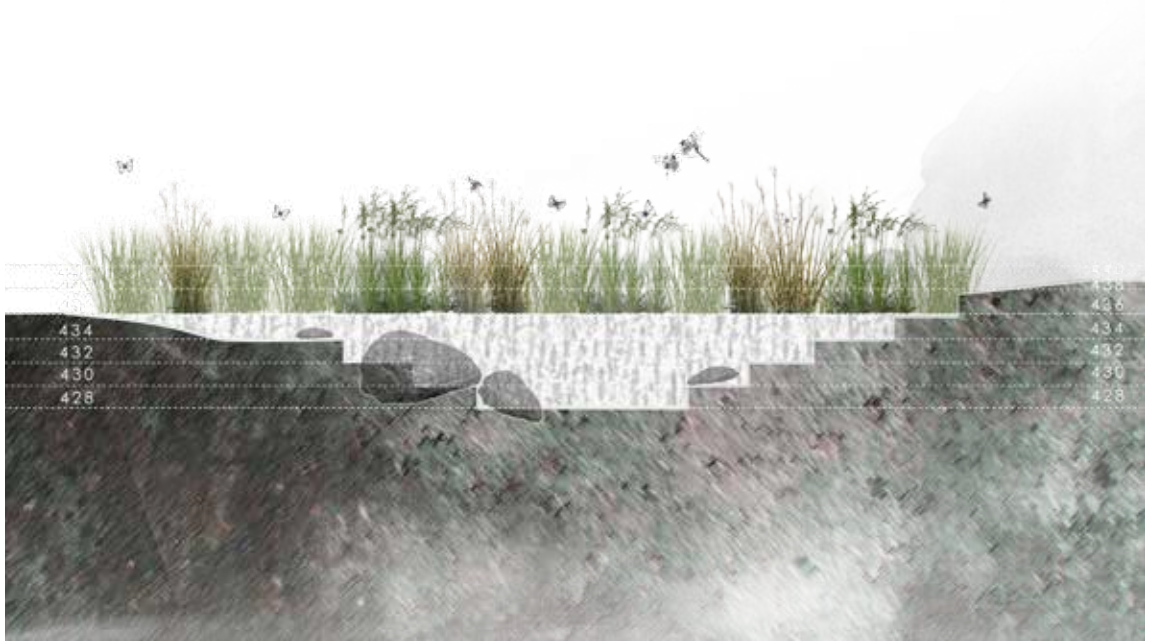
Baden Pilot Project > Tillie Basin Study Three

Study One: An inverted cone

Study Two: Water steps

Study Three: Rock and contour





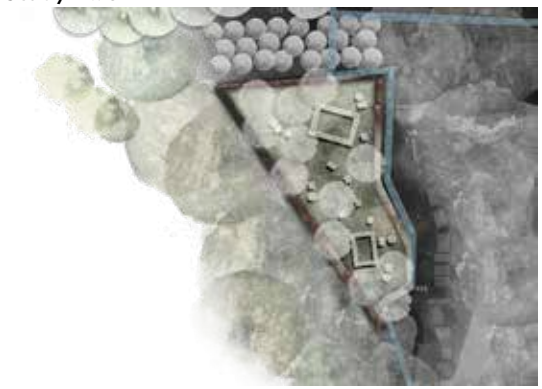
Collector section with steps

Baden Pilot Project > Frederick Basin Studies

Study One

- broad, shallow steps descend to central swale
- levels provide submerged, emergent, mesic, and dry habitat
- modest bridge for pedestrians and cyclists
- orchard typology at northern boundary
- opportunities for various edge treatments for maintenance and plant diversity
- serves as entrance to the neighborhood

Study Two

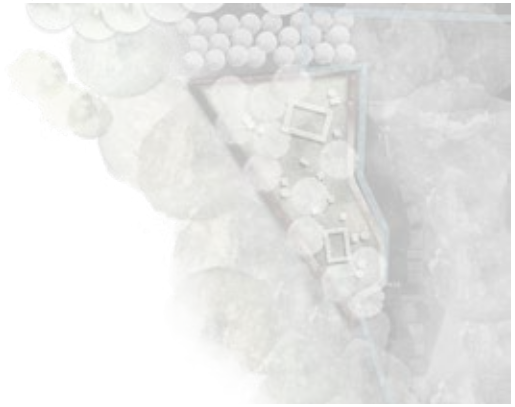


- leveled basin floor serves as an accessible play space
- various distributions of play elements explored
- possibility of large raised planting beds with various plant communities
- introduced elements serve as insect and bird habitat

Baden Pilot Project > Frederick Basin Study One

Study One

Study Two

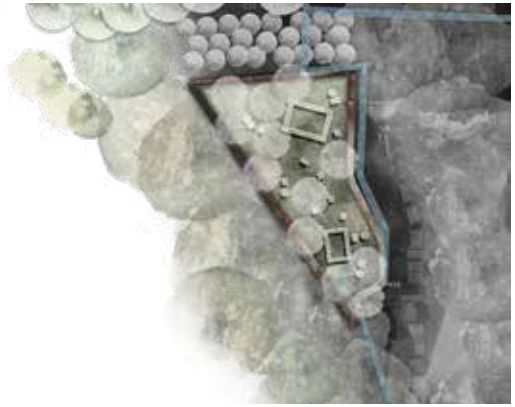


Cross-section of Frederick garden bridge and steps

Baden Pilot Project > Frederick Basin Study Two

Study One

Study Two



Sectional study showing an edge treatment for the Frederick sunken garden

The Baden Pilot Project offers a template for integrated long-term green infrastructure implementation, by "piggy-backing" on MSD's water management program for St. Louis. Such an initiative provides a wide range of social and environmental benefits for the community of Baden.

Social benefits include:

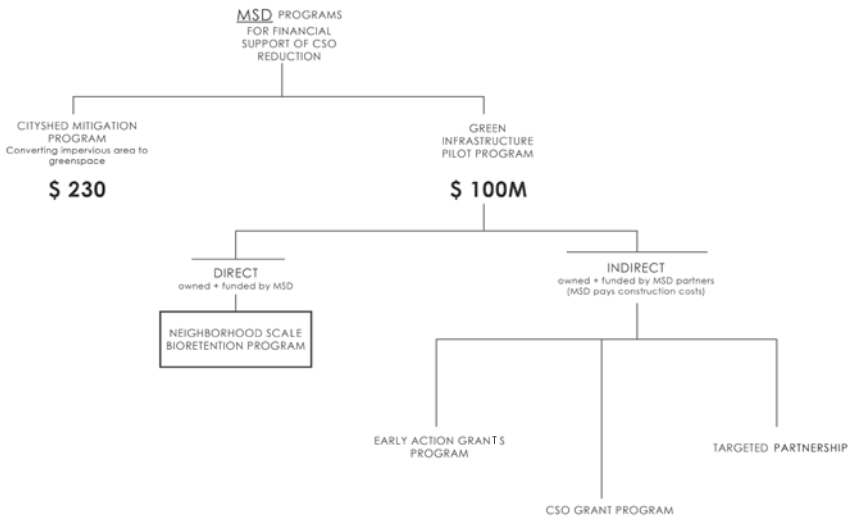
- local employment
- public health
- visible water management
- place-making, passive and active recreation
- educational benefits
- property value enhancement

Environmental benefits include:

- flood resilience
- increased biodiversity
- floral and faunal habitat
- pollinator plantings
- treatment of water where it falls

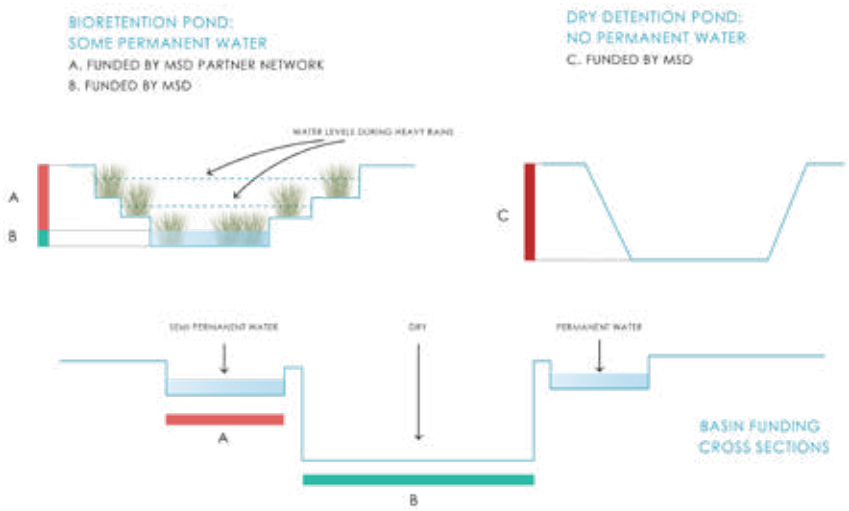
"After the establishment of this basic condition, multiple alternative landscape scenarios may evolve...The initial landscape condition should be an agreed platform with a set of broad, flexible rules, so that it is as open as possible to change, and can adapt to this change, becoming more robust in the process."

Baden Pilot Project > Resources



MSD financial possibilities

"[Communities] should develop a diverse network of partners who work together to fund the supplementary elements"—all of the additional urban greening infrastructure, bioretention pond freeboard, habitat, bike paths, gardens and other facilities.



Cross sections showing funding implications

"The Open Space Plan is a guide only. It sets the stage for community-driven design and citizen science to propel the evolution of the pilot, and create a vocal, committed constituency for urban nature and stewardship."

11.1 ...If a [Community Benefits Agreements and Land] Trust were formed it could pursue a Community Benefits Agreement with a developer (or developers) for the implementation of green infrastructure, and take advantage of funding available through MSD's Targeted Partnerships scheme.

Consider the formation of a hybrid Community and Conservation Land Trust.

11.2 The whole open space system can be thought of as a working landscape that involves an active and engaged citizenry, committed to managing and stewarding resources over the long term.

Create an implementation network and forge agreements with developers and organizations to enable the local labor resource to become involved in ongoing implementation and maintenance.

11.7 GI managers are on the frontline of urban change **and are drivers of design innovation. The open space** plan sets out a range of options for development. A GI manager would help the community decide the most appropriate approaches to each of the microsites within the larger system, in concert with MSD, bringing the tools of landscape design, economics and policy together to develop phased implementation and maintenance plans.

Consider the appointment of a green infrastructure manager. This may take the form of the reallocation of time within an existing portfolio, or it could be a part-time appointment.

11.8 The project needs a group that could coordinate with the GI Manager to work out how the landscape system would operate, who is responsible for what parts of it, who maintains it, and how and when. (This could include such necessary jobs as picking up trash and weeding invasive species). Perhaps ROBA could instigate this, or develop a sub-group.

Consider the role of Community-based Stewardship, a volunteer model, such as the Friends of the Park suggested by the Environmental Justice class.

11.13 The plan includes flexible spaces that accommodate multiple types of people and play. In these zones there are rocks to climb, steps and ramps to facilitate sitting, observation and walking, space-specific play structures created by the children themselves, raised plant beds for children to grow their own plants, places of discovery, and shared gathering areas for picnics, biking and playing.

Consider the sponsorship of the free play zones that are included in the plan.

11.14 Specific areas of the proposed greenspace could be designed in more detail, phased implementation plans drawn up, and implementation partners and resources identified and engaged.

Consider a Stage Two to the Baden Open Space Design Plan, in which community stakeholders partner with professionals to continue planning and design.

Material throughout adapted from *Baden Pilot Project: An Adaptive Community Park*, by Rod Barnett, prepared with the assistance of faculty and students of the Landscape Architecture and Environmental Studies programs of Washington University in St. Louis, August 2017.