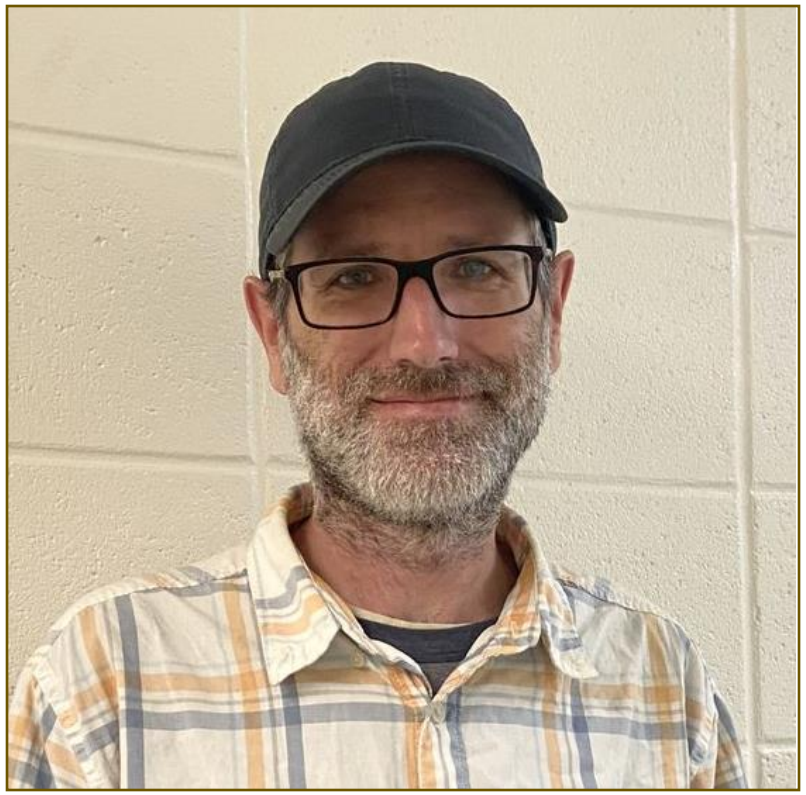
IOWA

Civil and Environmental Engineering

Luers Park Stormwater Management Project

December 2024

Thomas Riggio – Environmental
Focus Area: Sustainability



Daniel Boyle - Civil
Focus Area: Civil Practice

Abby Huls - Civil
Focus Area: Environmental

Client

Gregg Mandsager

City Administrator

Chase Williams

Public Works Director

Mike Brissey

Retired Public Works Director

Ringo Covert

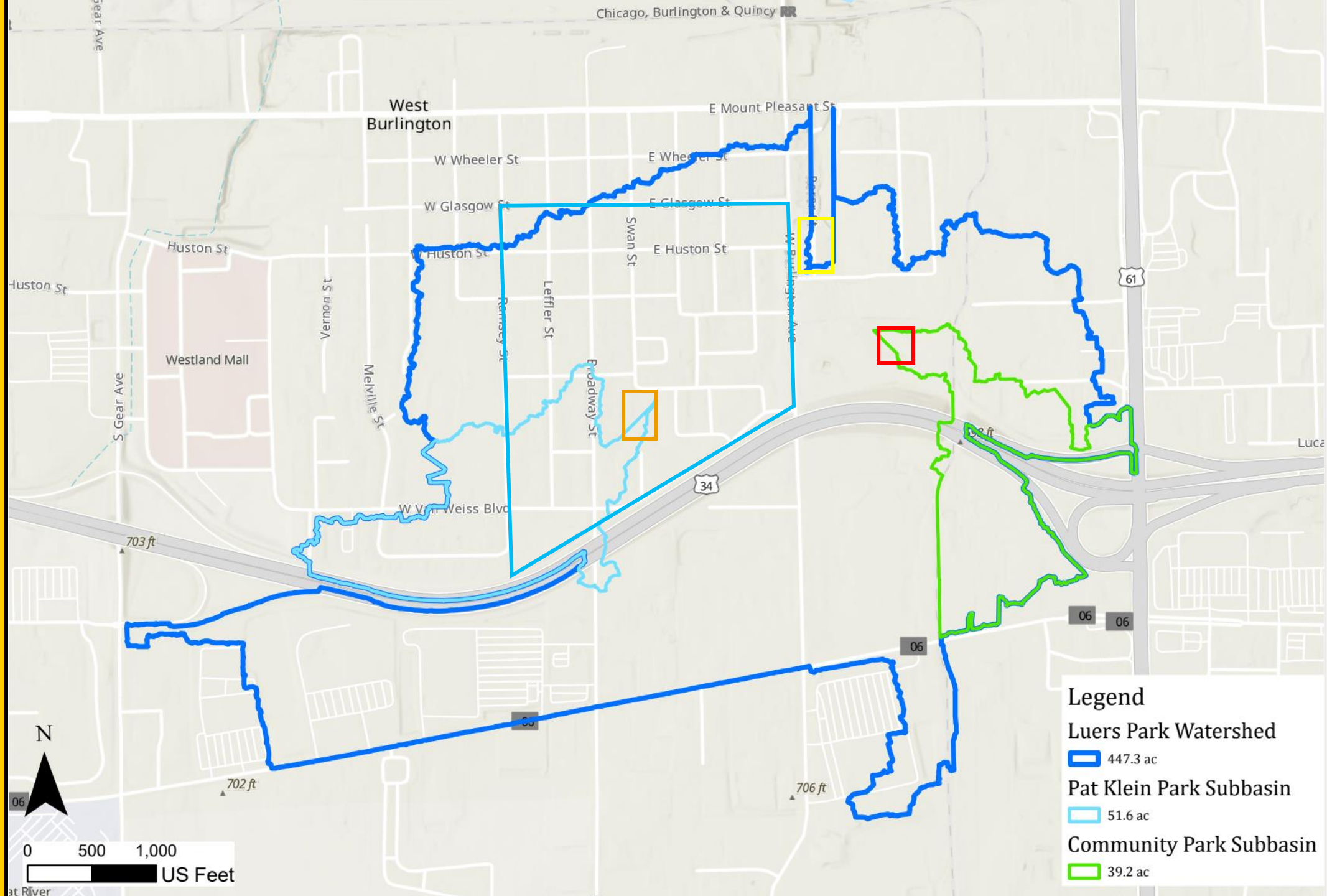
City Council Member

Agenda


Project Scope
Design Components
Cost Estimation
Alternative Designs
Concluding Remarks

Project Location

Site Watershed



Watershed Runoff

	2-year Storm	10-year Storm	50-year Storm
24-hr Precipitation (in)	3.1	4.5	6.4
TR-55 Flow Estimate (cfs)	36.1	61.5	94.5
Runoff Volume	71.6 acre-ft 23 m-gal	122.0 acre-ft 40 m-gal	187.3 acre-ft 61 m-gal

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Scope Summary

Goal: Slow, reduce, and treat stormwater runoff before it reaches Luers Park.

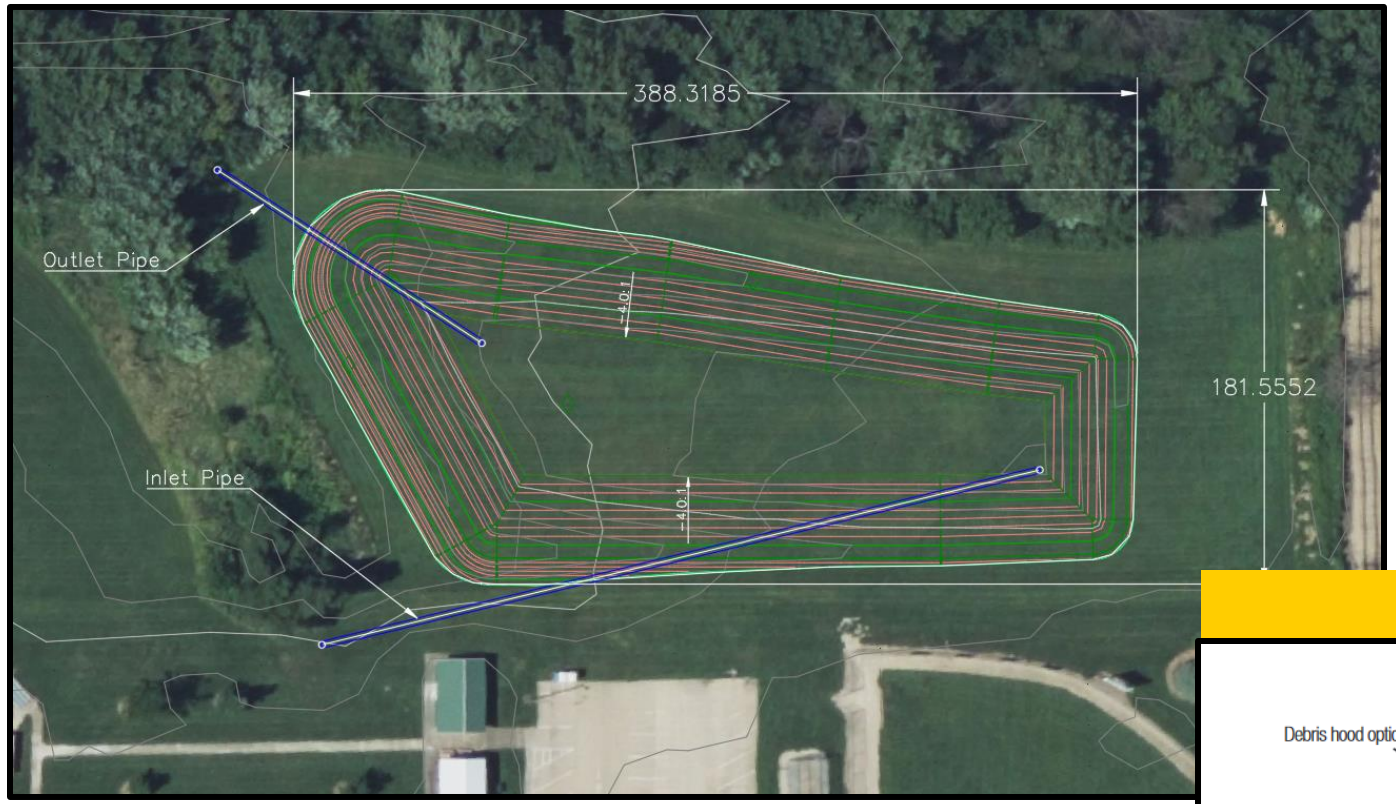
A detention basin, bioretention network, bioswale, and underground storage were designed.

Erosion and submerged outlet at Izaak Walton lake.

Community Park Flooding

Project Location

Community Park Detention Basin

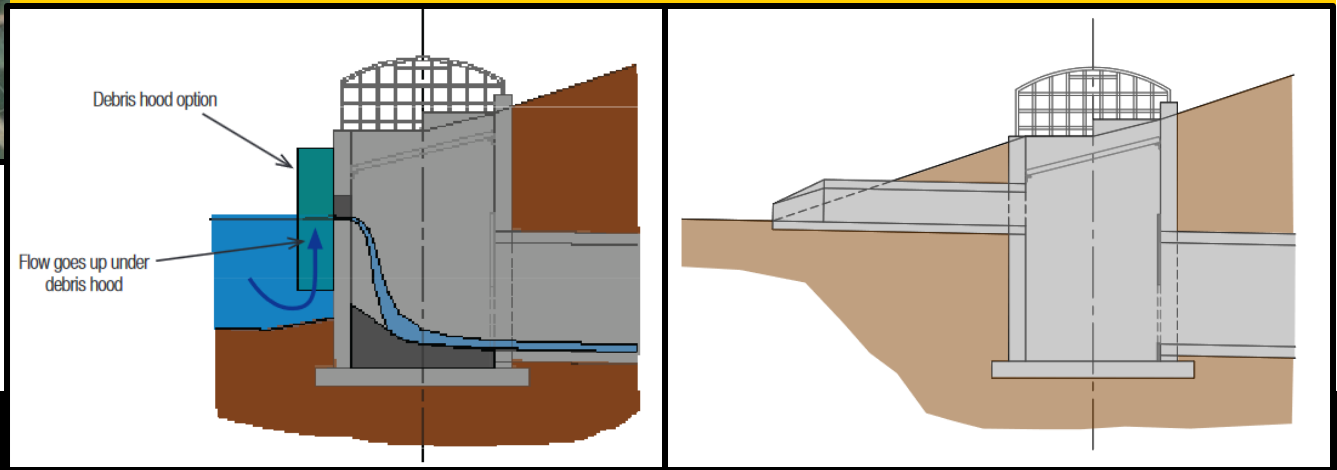


Current Landowner: Heartland Corrugated, Inc.

Provides 4.3 acre-ft (1.2 mgal)

During flood events, this will provide storage for runoff from the south-east part of watershed.

Inlet and Outlet Structures

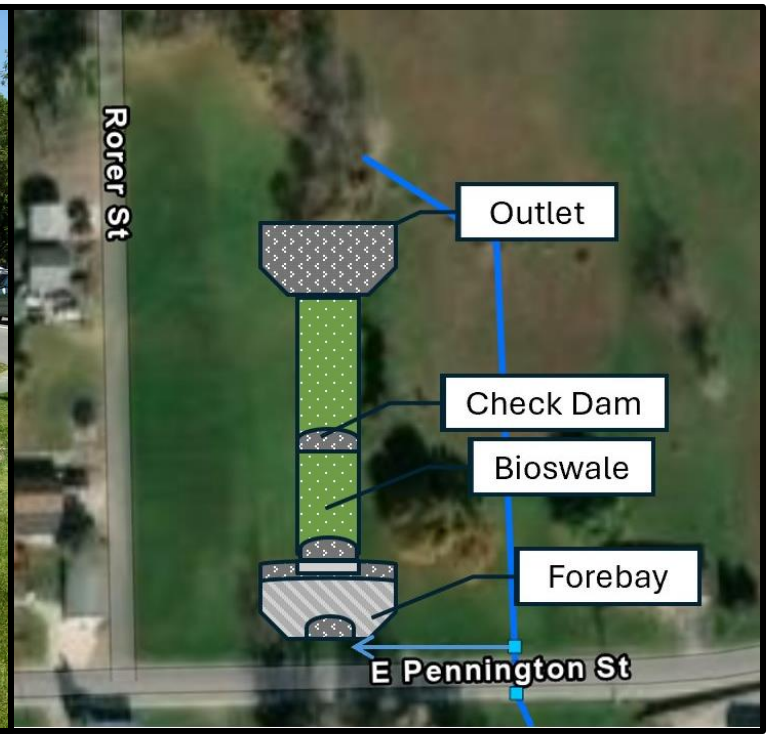


Luers Park Bioswale

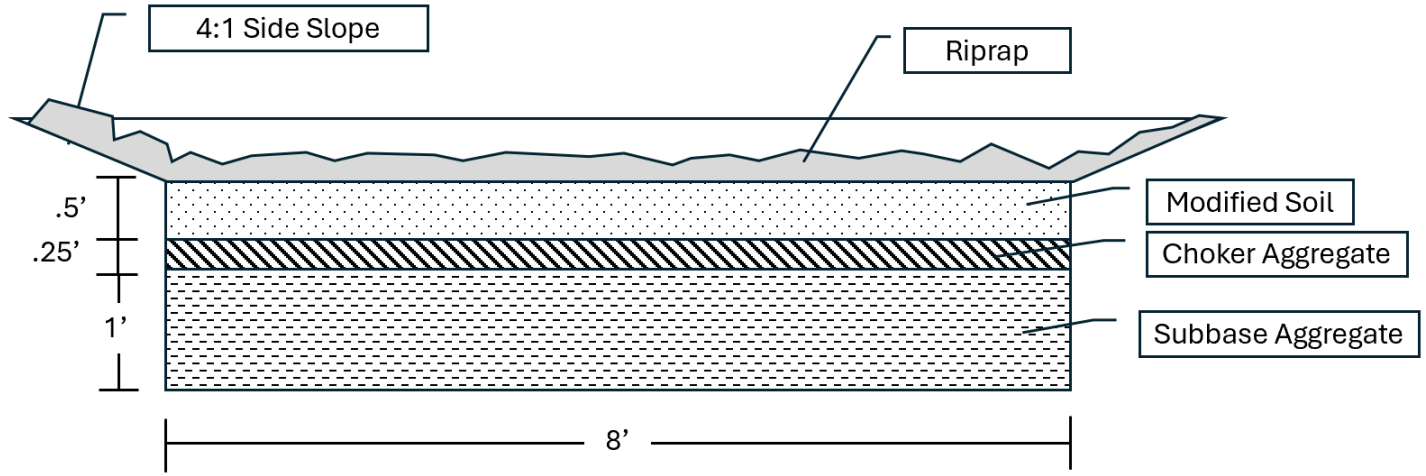
Current Landowner: BK Land, LLC

Provides 0.16 acre-ft (0.05 mgal)

The biowswale will slow stormwater, encourage infiltration, and reduce some sediment load.



Example Bioswale showcasing native vegetation.

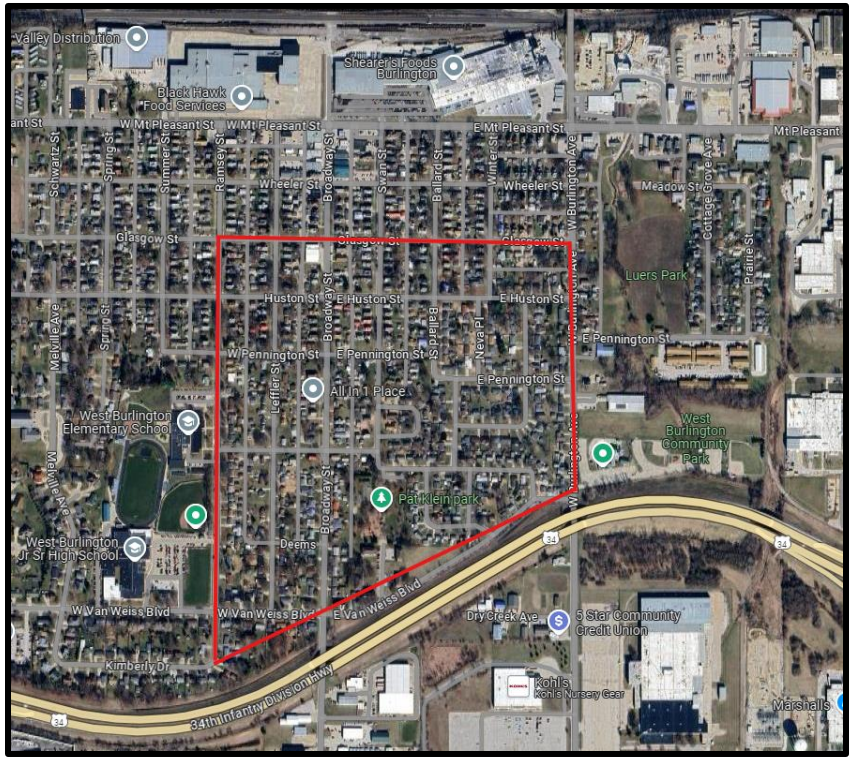


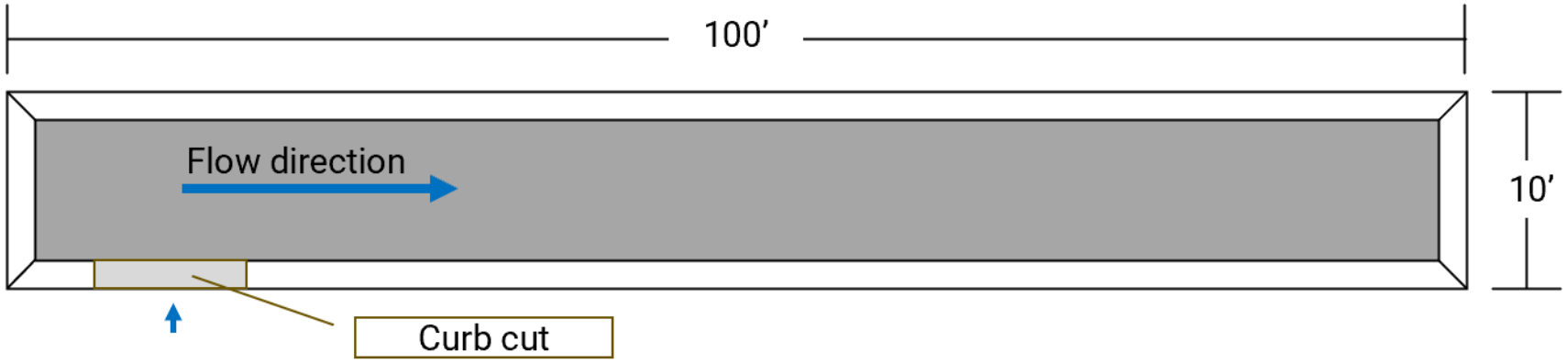
Neighborhood Bioretention Network

Current Landowner: City of West Burlington

115 cell add 3.4 acre-ft (0.95 mgal)
130 cells add 3.9 acre-ft (1.09 mgal)

The bioretention cells will provide runoff storage, reduce peak flow, and treat the stormwater.





Top view of standard bioretention cell.

Underground Storage

Ferguson Waterworks

R-Tank is modular underground storage system with 95% void space.

A 6’ depth was selected for maximizing storage.

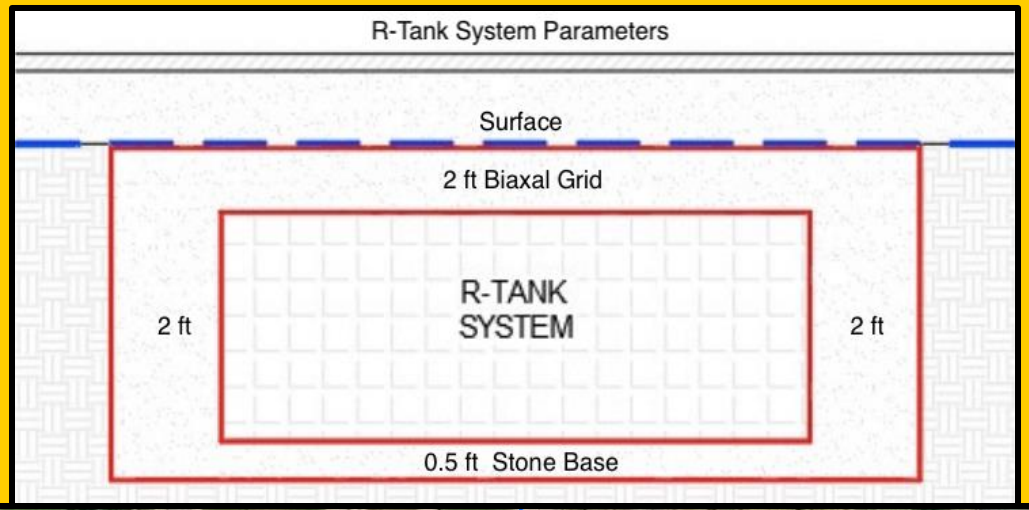
Pat Klein Underground Storage

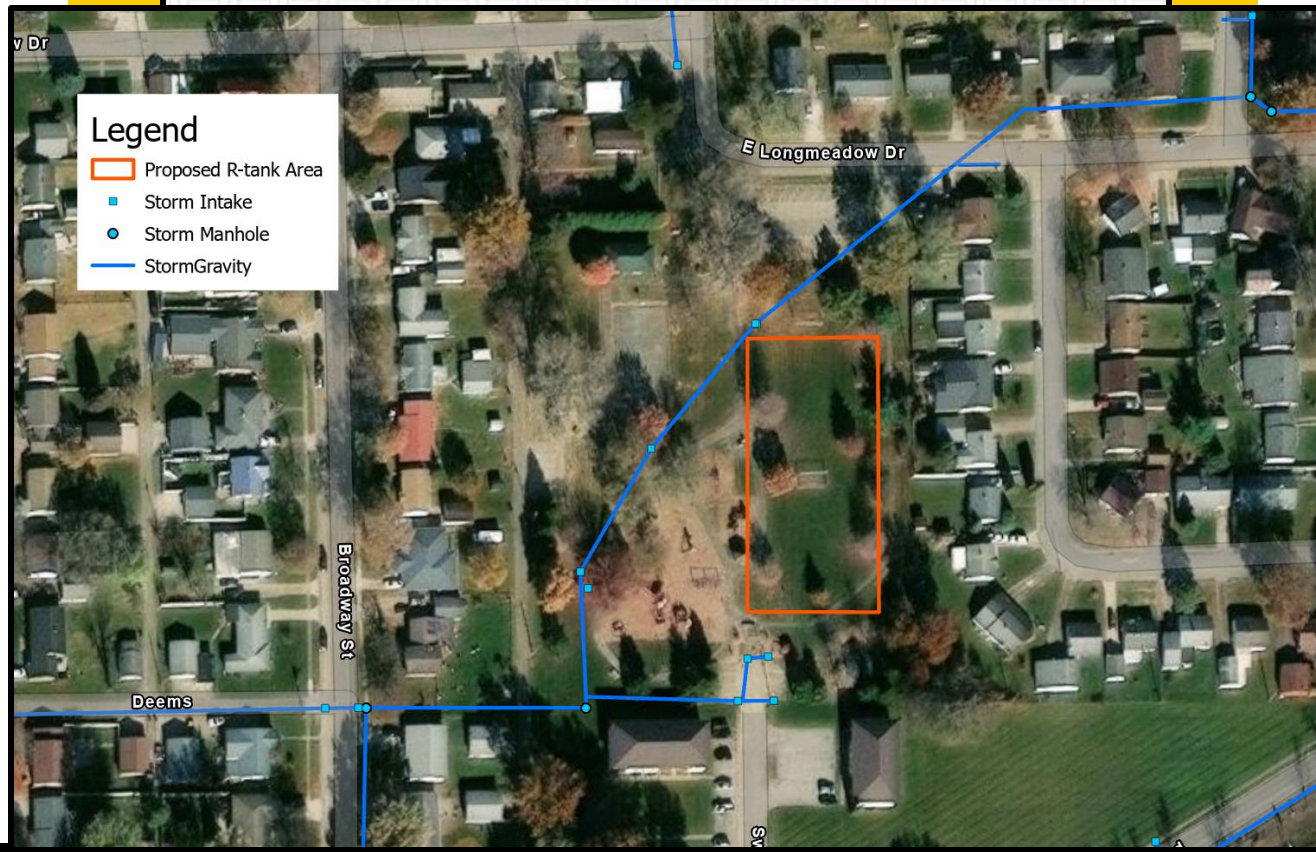
Current landowner: City of West Burlington

Net Acres: 0.46

Storage capacity: **2.6 acre-ft (0.73 mgal)**

The Pat Klein storage tanks will reduce peak flow at Luers Park. Will connect to existing storm sewer.





10% Runoff Reduction Plan for a 2-Year Storm

	115 Bioretention Cells	Community Park Detention Basin	Total
Storage Capacity	3.4 acre-ft 1.1 m-gal	4.3 acre-ft 1.4 m-gal	**7.7 acre-ft** **2.5 m-gal**
Cost	$1,792,000	$251,500	**$2,043,500**

Alternative Designs

% Reduction of 2-Year Storm	5%	15%	25%
Methods	❑ 115 Bioretention Cells	❑ Detention Basin ❑ R-Tank 6ft (0.46 acre) ❑ 130 Bioretention cells	❑ Detention Basin ❑ R-Tank 6 ft (1.69 acre) ❑ 130 Bioretention Cells ❑ Bioswale
Storage Capacity	3.4 acre-ft 1.1 m-gal	10.8 acre-ft 3.5 m-gal	17.9 acre-ft 5.8 m-gal
Cost	$1,785,500	$4,467,500	$10,394,300

Recommendations

- The cost to handle the volume of stormwater is considerable and very little space is available.
- Work to address discharge at Izaak Walton Lake is essential to resolve West Burlington's larger stormwater issues.

Stormwater outlet just upstream of Izaak Walton Lake.

Civil and Environmental Engineering

Thank you!

Thomas Riggio
Daniel Boyle Abby Huls

→ **Questions?**