Municipal Separate Storm Sewer System and Combined Sewer Overflow Control Program – Public Meeting

March 5, 2024

CITY OF PEORIA

Meeting Agenda

1. Introductions
2. Storm Sewer System
3. Stormwater Permit Obligations
4. Stormwater Program
5. Combined Sewer System
6. CSO Regulations for Peoria
7. CSO Program
8. Similarities
9. Difference
10. Questions

Introductions: Representing the City of Peoria

CITY OF PEORIA

Andrea Klopfenstein, PE
Deputy Director –
City Engineer

CMT

Stormwater
Program Manager

Eric Hansen, PE
Program Manager

Tim Sumner, PE
Project Manager

Krista Tippey
Project Coordinator

Mead&Hunt

Sewer/Combined Sewer
Program Manager

Greg Myroth, PE
Program Manager

Eric Carlson, PE
Senior Engineer

“Wet weather”

The rain and melting snow that our city infrastructure must handle, in the form of runoff and infiltration.

EVERY PART OF PEORIA SUFFERS FROM WET WEATHER PROBLEMS.

Peoria's Sewer Systems

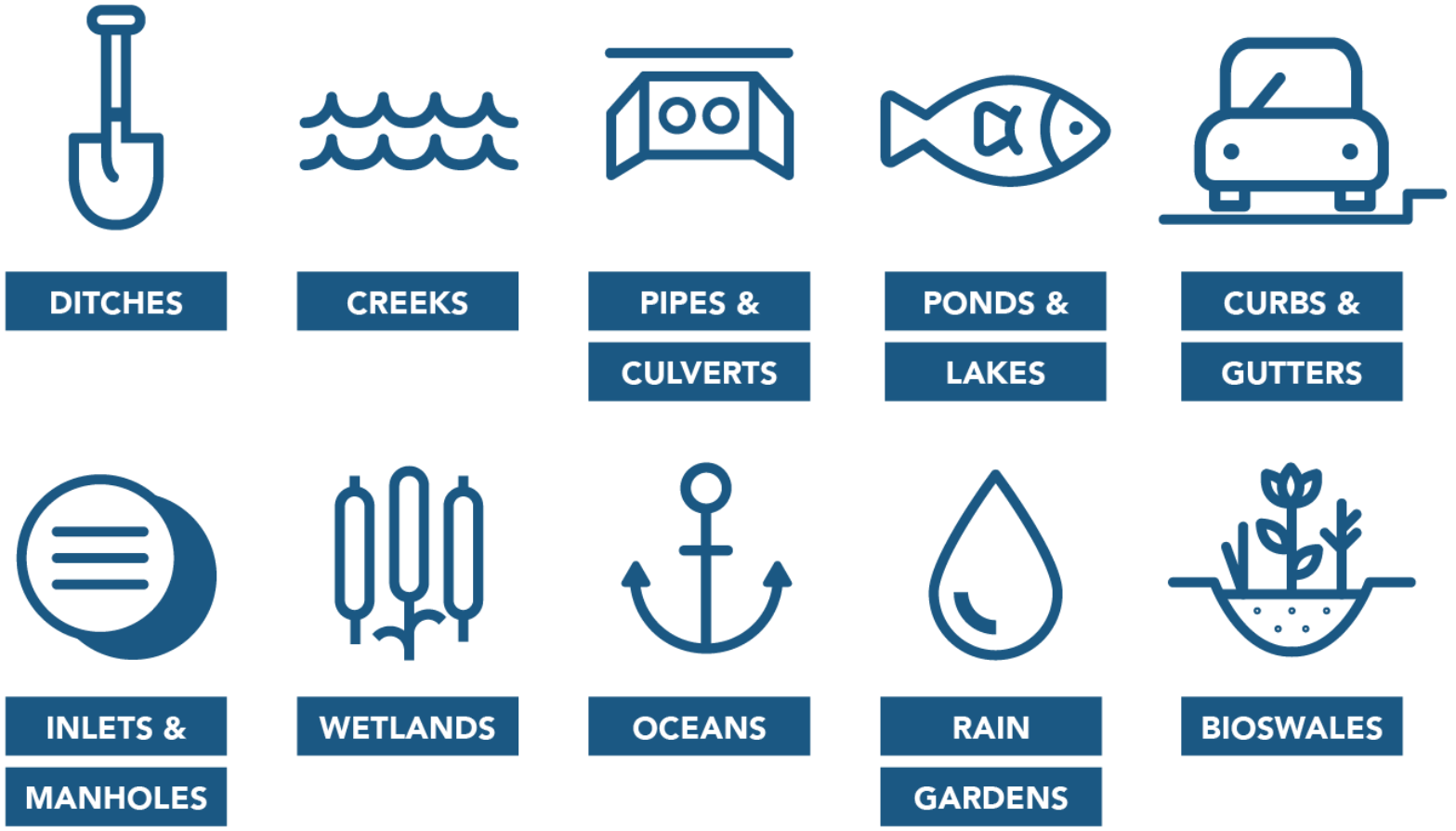
	SANITARY-ONLY SEWERS	STORM-ONLY SEWERS	COMBINED SEWERS
Function	Carry wastewater	Carry rain/snow	Carry rain/snow AND wastewater
Owns/ Maintains	GPSD 450 miles City 64 miles	City 198 Miles (mapped)	City 136 Miles
Funding	User charge- GPSD sewer bill	User charge- City Stormwater Utility	User charge GPSD sewer bill

Storm Sewer System

CMT STORMWATER PROGRAM MANAGER

Storm Sewer System

What is stormwater infrastructure? Do I use it?



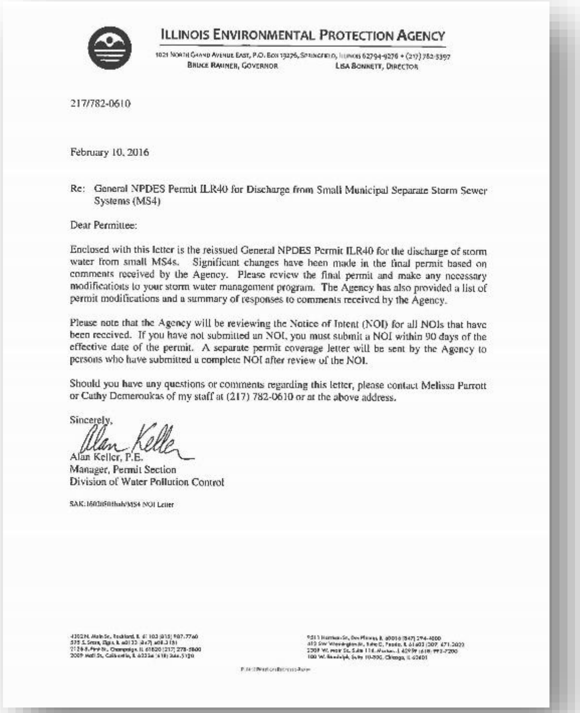
Peoria's Stormwater Permit Obligations

Clean Water Act (CWA) of 1972 established the NPDES permit program.

- Reauthorization of CWA in 1987 required addressing stormwater point discharges through NPDES program.
- **Municipal Separate Storm Sewer System (MSSSS= MS4)**
- **An MS4 is a conveyance or system of conveyances that is:**
  - Owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.;
  - Designed or used to collect or convey stormwater (including storm drains, pipes, ditches, ponds, etc.);
- **All Illinois, small, MS4 communities issued the same permit: ILR40**

Peoria's Permit Obligations

- Design a program around the six minimum control measures that accomplishes:
  - Reduced discharge of pollutants from stormwater through best management practices (BMPs)
  - Protects water quality
  - Satisfies the Clean Water Act (CWA)
- Prepare an annual program status report to IEPA



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 • (217) 782-3397

Bruce Rauner, Governor — Lisa Bonnett, Director

217/782-0610

February 10, 2016

Re: General NPDES Permit ILR40 for Discharge from Small Municipal Separate Storm Sewer Systems (MS4)

Dear Permittee:

Enclosed with this letter is the reissued General NPDES Permit ILR40 for the discharge of storm water from small MS4s. Significant changes have been made in the final permit based on comments received by the Agency. Please review the final permit and make any necessary modifications to your storm water management program. The Agency has also provided a list of permit modifications and a summary of responses to comments received by the Agency.

Please note that the Agency will be reviewing the Notice of Intent (NOI) for all NOIs that have been received. If you have not submitted an NOI, you must submit a NOI within 90 days of the effective date of the permit. A separate permit coverage letter will be sent by the Agency to persons who have submitted a complete NOI after review of the NOI.

Should you have any questions or comments regarding this letter, please contact Melissa Parrott or Cathy Demeroukas of my staff at (217) 782-0610 or at the above address.

Sincerely,

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

Peoria's Stormwater Management Program

Permit is structured around six minimum control measures (MCM):

1. Public education & outreach
2. Public involvement & participation
3. Identify & eliminate illicit discharges
4. Control construction site runoff
5. Control stormwater runoff from development & redevelopment
6. Reduce pollutant runoff from municipal government operations

Public Education & Outreach

- Distributed educational handouts:
  - *Rain Gardens*
  - *Our Water – Our Way*
  - *Watershed Moments*
  - *Investing in Smart Wet Weather Solutions*
  - *Green Infrastructure*
  - *Where Does It Go When It Overflows*
- Participated in *Clean Water Celebration*
- Hosted Peoria Public Works Open House
- Maintain Peoria Public Works Stormwater Webpage

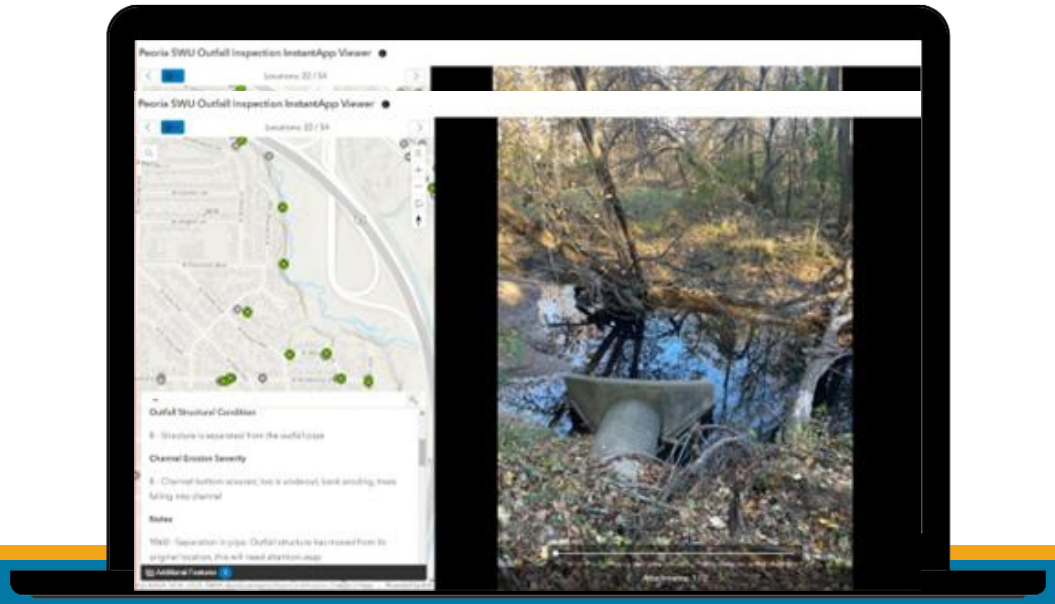
Public Involvement & Participation

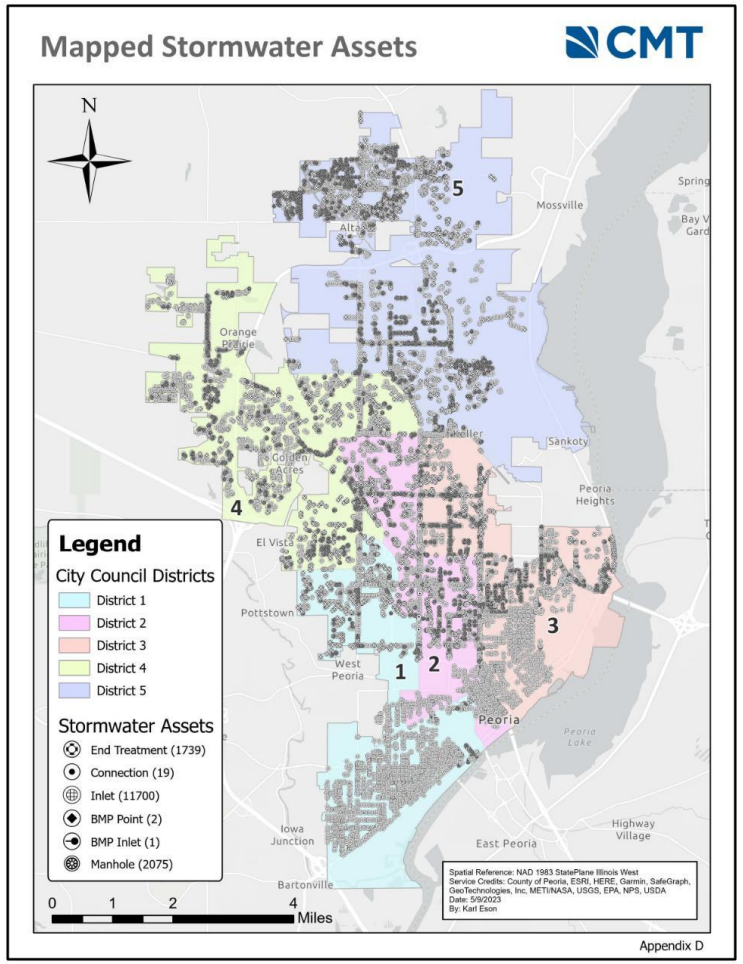
- Project specific public meetings, such as Deerbrook Drive Reconstruction
- Private property drainage program
- Rain Barrel Grant Program
- Green Infrastructure Grant Program
- Great American Cleanup
- Mayor’s Litter Commission

Illicit Discharge Detection & Elimination

MCM 3

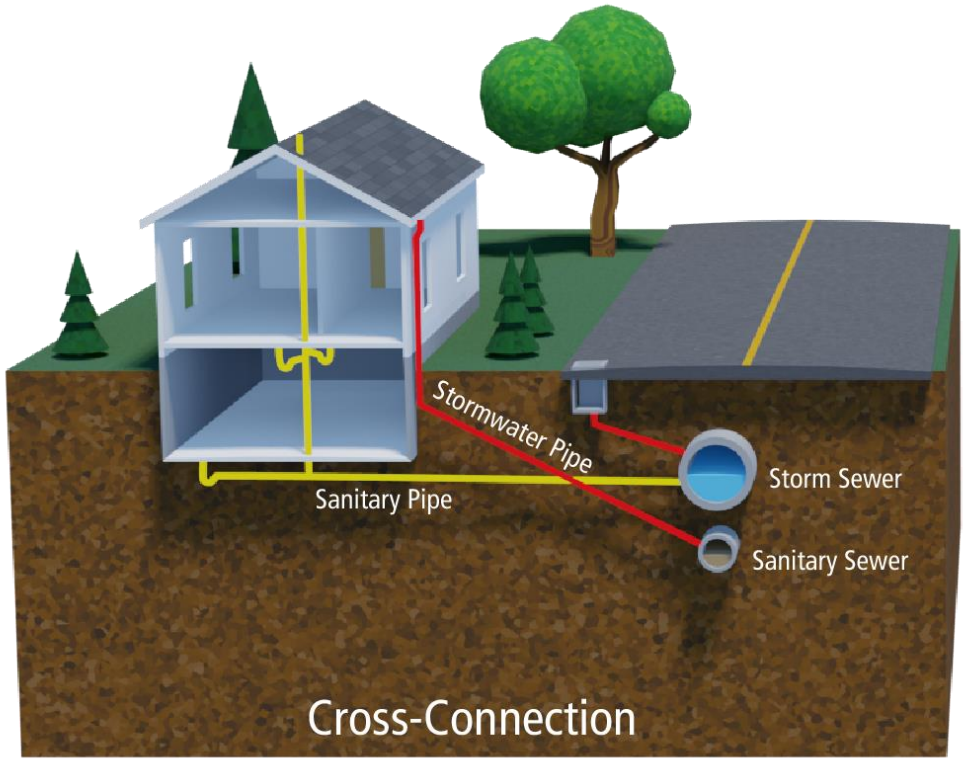
- Developed and continually update GIS storm sewer system map
- Screen stormwater outfalls during dry weather for illegal discharges





Illicit Discharge Detection & Elimination

- Enforce city ordinances, coordinate with other departments
- Track complaints received from the public about illegal dumping
- Evaluate septic systems within city limits



Construction Site Runoff

MCM 4

- Enforce the Erosion and Sediment Control ordinance for active construction sites.
- Review proposed site plans for compliance with Sediment and Erosion Control Ordinance.
- One-Stop-Shop: weekly meeting to discuss stormwater concerns.

Post Construction Stormwater Management

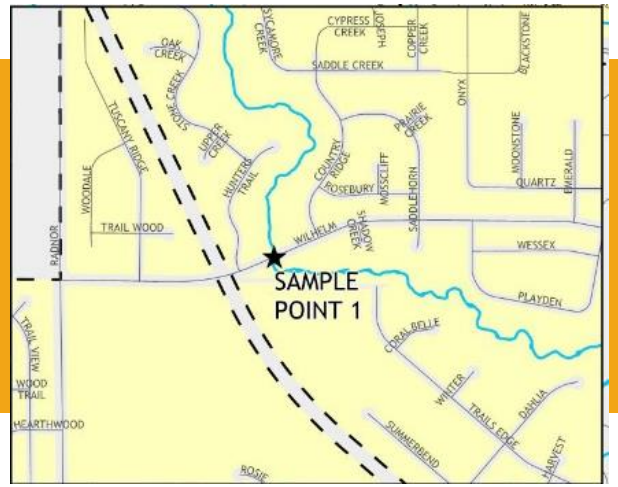
- Incorporate stormwater green infrastructure features into all projects.
- Respond to BMP complaints
- Adopted Volume Control Ordinance in 2016: all developments disturbing >5,000 SF of area must control the first 1-inch of runoff from impervious areas.

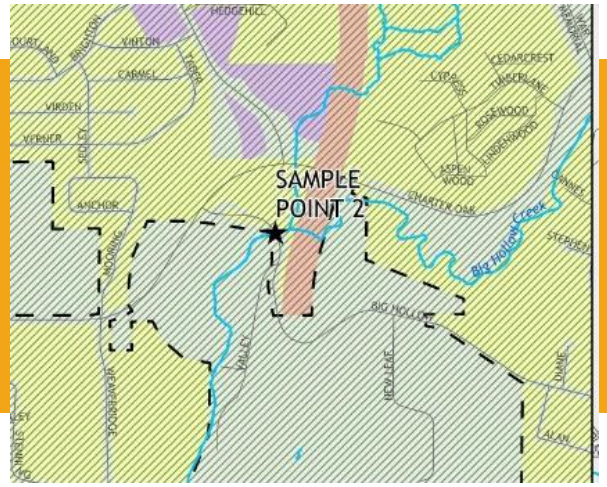
Post Construction Stormwater Management

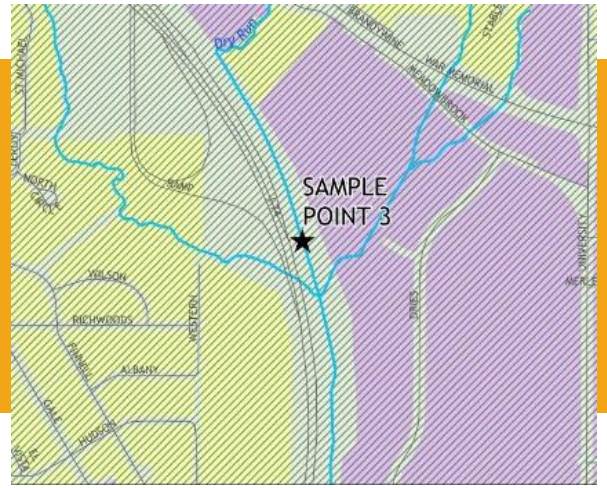
- Evaluate water quality impacts through monitoring and sampling:
  - Collect water quality grab samples every quarter at four locations (8 parameters tested at each site)
  - Added two rain gauges to the network
  - Purchased two flow meters and sampling equipment to monitor flow in two streams to address the bacteria TMDL requirements.

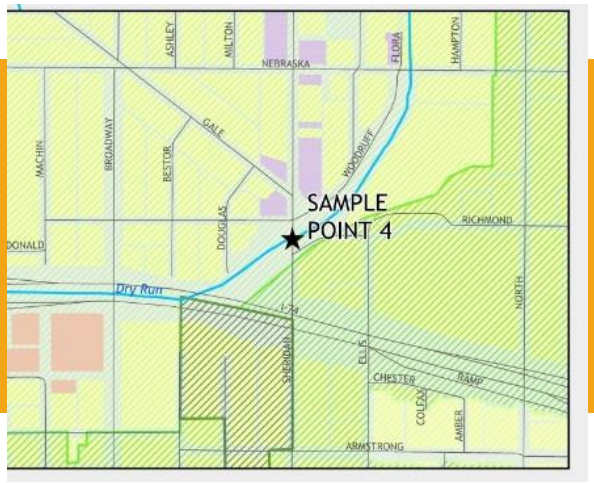
Water Quality Sampling Sites

Location #1: Kickapoo Creek at Wilhelm Road
Location #2: Big Hollow Creek at Big Hollow Road
Location #3: Dry Run Creek near I-74 & Dries Lane
Location #4: Dry Run Creek at Richmond Ave.







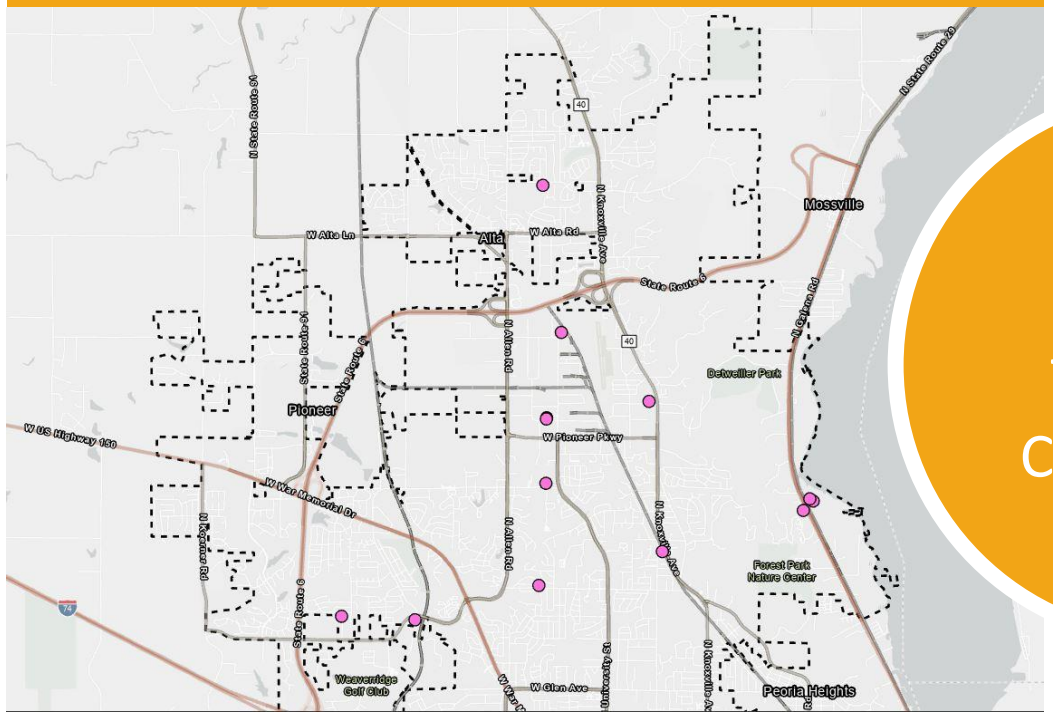


Pollution Prevention & Good Housekeeping

- City streets were swept 10 times in 2022, collecting 2,700 tons of debris.
- 75,000 feet of storm sewer was cleaned and televised in 2022.

Pollution Prevention & Good Housekeeping

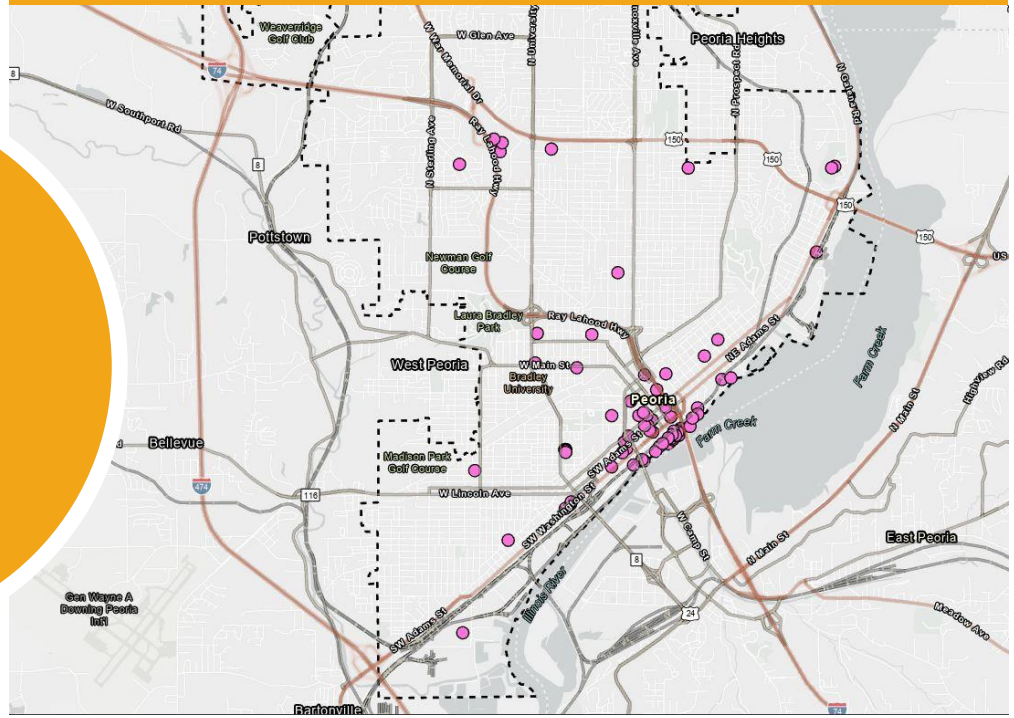
PUBLICLY OWNED FACILITIES NORTH OF WAR MEMORIAL



88

Total # of City Owned Facilities

PUBLICLY OWNED FACILITIES SOUTH OF WAR MEMORIAL



Stormwater Utility

A STORMWATER UTILITY IS A PUBLIC UTILITY ORGANIZED AS A SEPARATE ENTERPRISE IN THE SAME FASHION AS THE WATER UTILITY, SEWER UTILITY, OR PARKING UTILITY.

A stormwater utility is an equitable and responsible way to fund wet weather management.

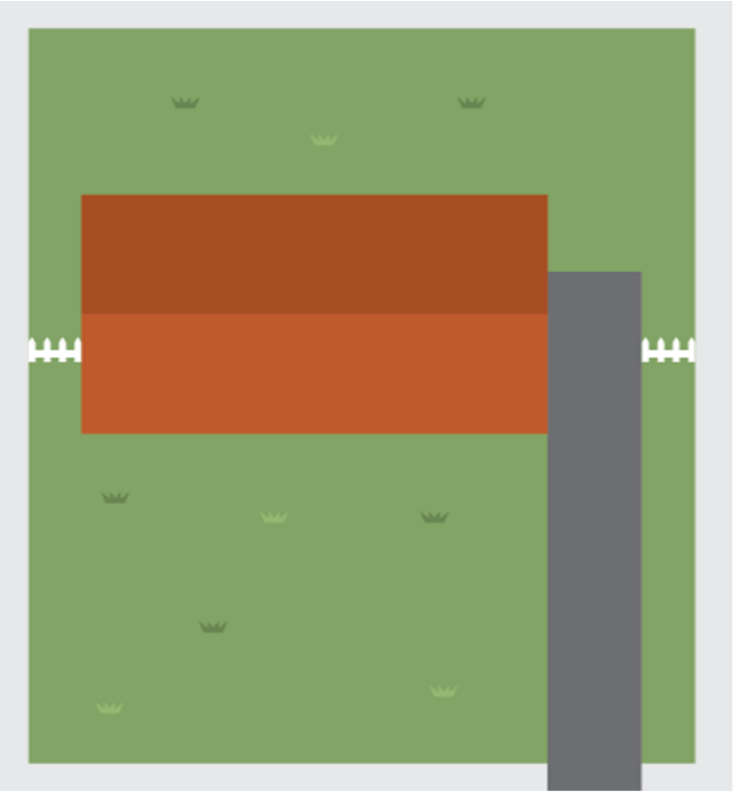
Reasons for supporting a stormwater utility:

- It serves as a dedicated revenue stream
- All properties participate—if you use the system, you pay
- It provides incentives for responsible actions

ONEWATER COMMITTEE

Stormwater Utility Rate

- Impervious area makes it hard for stormwater to be absorbed by the ground
- Each fee will correlate to runoff and thus the impact on stormwater costs
- Billing units are set per 1,000 SF of impervious area
- **We recommend this method because:**
  - The fee is directly related to runoff contribution
  - Easy to understand
  - We have detailed data on impervious area
  - Has been legally upheld in IL
  - Credit program encourages property owners to minimize runoff



SWU Credits and Grants

CREDITS

A credit is an ongoing reduction to the stormwater bill. Sometimes credits are for a limited time and have to be renewed; other times they are ongoing.

GRANTS

A grant is a onetime reimbursement for installing or constructing a best management practices such as rain barrels.

SWU Credits

- **Rate reduction (detention)**
  - 15% credit if meet current ordinance requirements for rate reduction and 30% credit if meet current ordinance and designed to accommodate the 100 year/24-hour storm event
- **Volume reduction (infiltration)**
  - 15% credit if meet current ordinance requirement to capture 1 inch storm and 30% credit if capture 1.6-inch storm
- **Water Quality**
  - 10% credit if you can remove 50% total suspended solids (TSS) and 20% for removing 75% Total suspended solids
  - Open to other water quality improvements as well

SWU Credits (cont.)

- **Fee Exclusion**
  - 50% exclusion for detaining and cleaning no less than one half of stormwater
  - 90% exclusion if none of the stormwater emanating from the property discharges or enters the City's stormwater system
- **Education**
  - $5/student/year NTE 80%, all students in all grades
- **Partnership Credit**
  - Intergovernmental Agreements with park & school districts
- **Innovation**
  - Will be evaluated on a case-by-case basis
  - Want to encourage innovative ways to handle storm water runoff

SWU Grants

- **Rain Barrel**
  - $50/barrel limit of 2
- **Green infrastructure Grant (Rain Garden & Permeable Pvt)**
  - Infiltrate 1 inch storm - $1/SF (Max payment the smaller of $30,000 or 10 yr of SWU bill.) or Infiltrate 2-inch storm - $2/SF (Max payment the smaller of $60,000 or 20 yr of SWU bill.)
- **Private Property Drainage Assistance Program**
  - Reimburse 75% of Project Cost up to max of $10,000
- **Stormwater Infrastructure Investment Grant**
  - Reimburse 75% of Project Cost up to max of $100,000 and requires professional engineering

Peoria Stormwater Projects - Completed

Erosion Control Improvements – East Branch Dry Run Creek at McClure

Box Culvert Replacement – Merle & Knoxville

Streambank Stabilization Oak Park Drive

Peoria Stormwater Projects - Upcoming

Engineering:

- Various drainage studies and modeling

Construction:

- Drainage Improvements – Deerbrook Drive and Green Street
- Drainage Improvements – Kinsey Street
- Channel Stabilization – Stone Creek at Wilhem Bridge
- Outfall Repair – Springdale Creek at Lake Avenue
- Sewer Separation - Martin Luther King Jr. Drive

Maintenance:

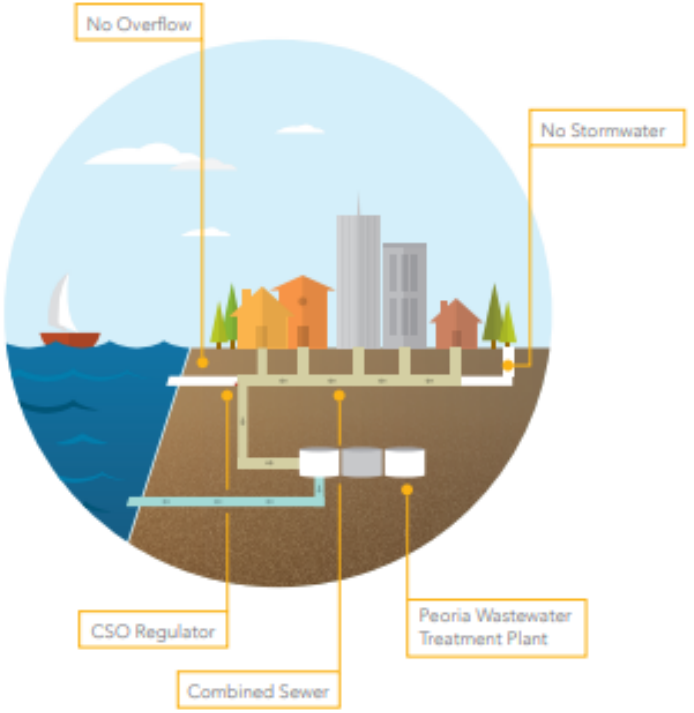
- Green Infrastructure: trash removal, weeding, replanting, upkeep
- Storm sewer inspection and cleaning
- Storm sewer repairs and lining

Combined Sewer System

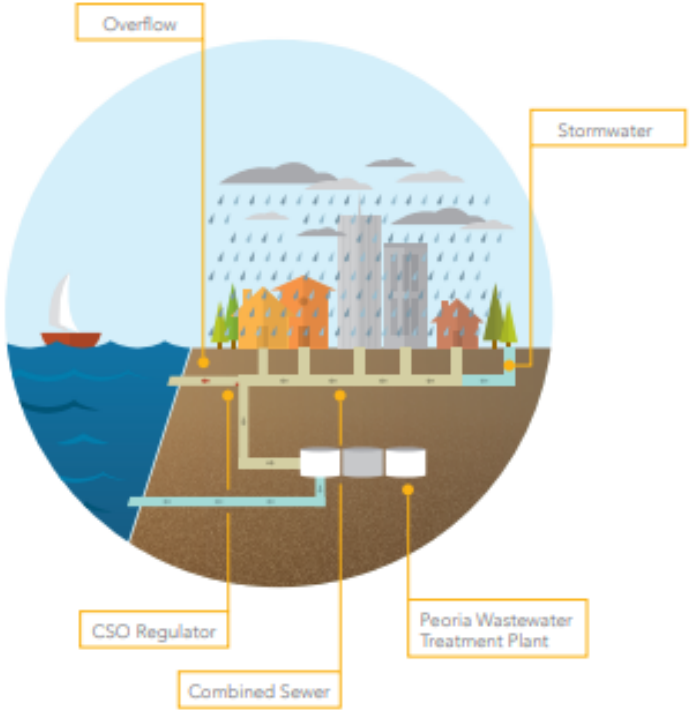
MEAD & HUNT CSO PROGRAM MANAGER

Combined Sewer System

How Combined Sewers Function

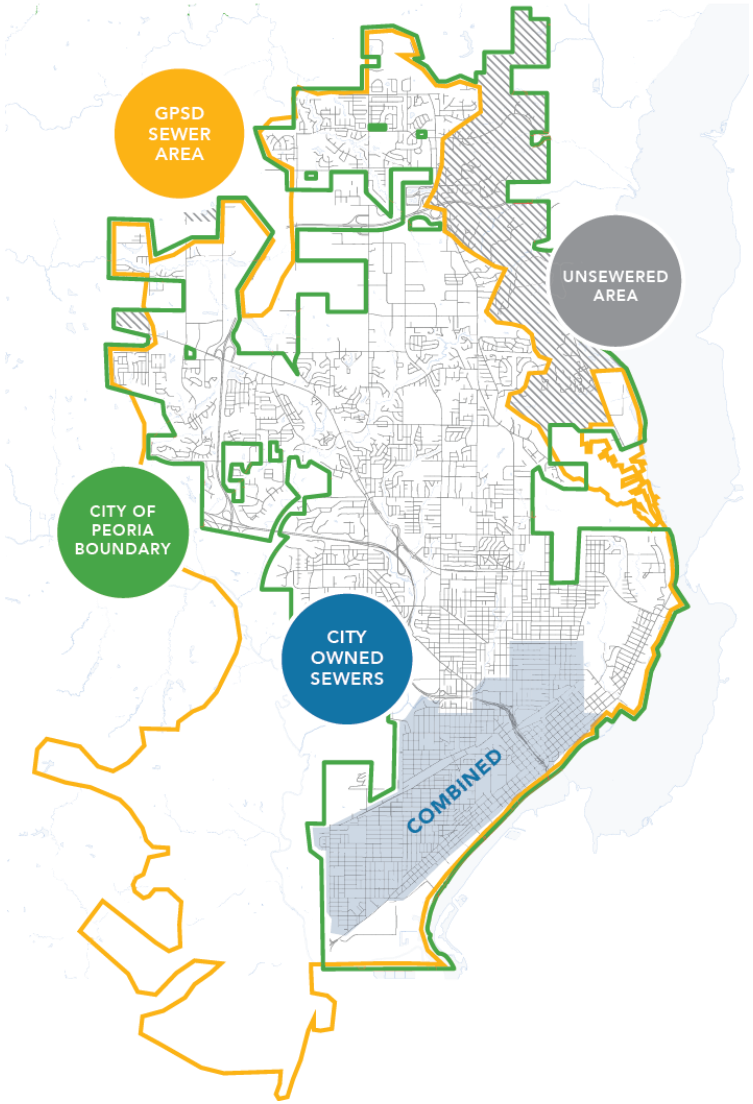


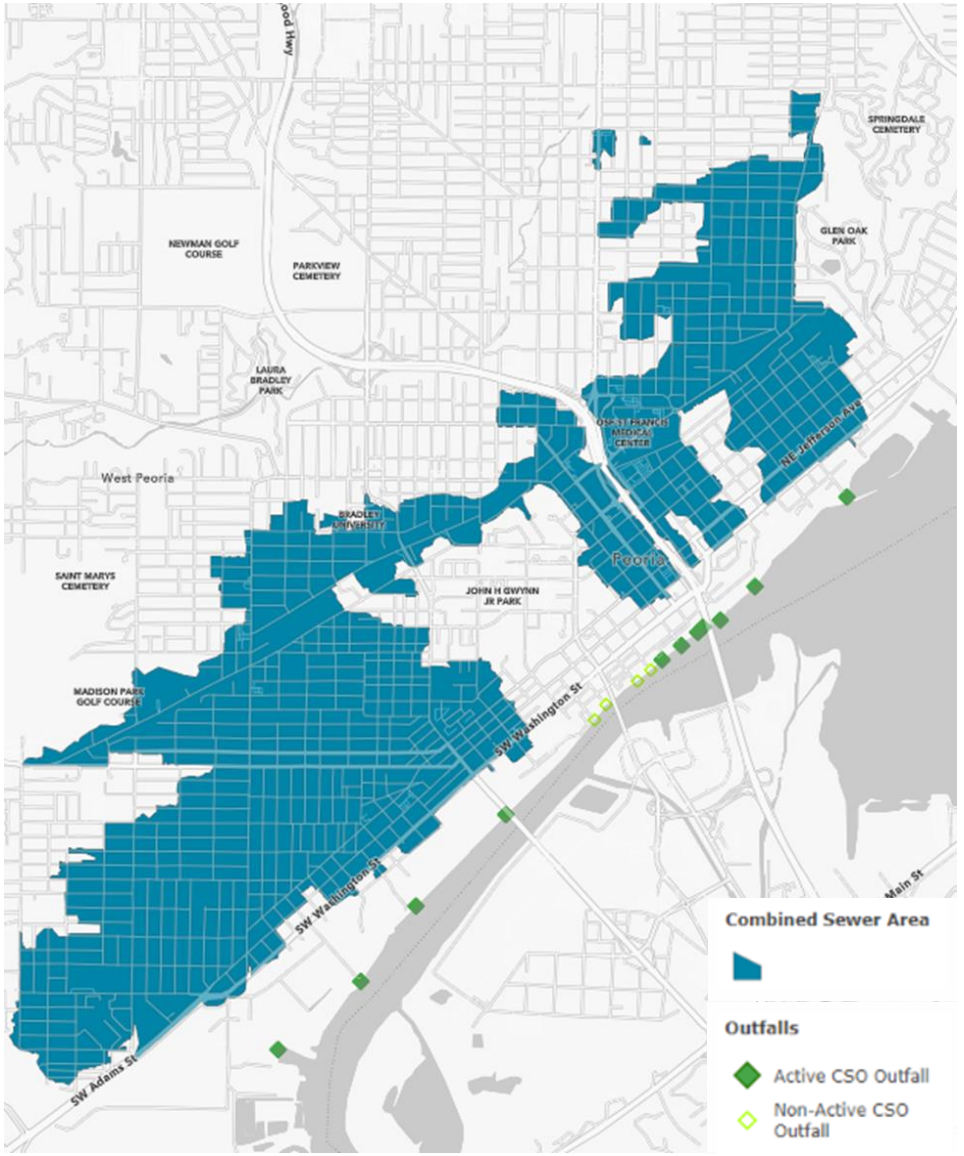
During dry weather...
Peoria's combined stormwater/sanitary sewers work much like a modern sanitary sewer. All sewage from homes and businesses is sent to the treatment plant by a "regulator," or small dam, in the sewer.



During wet weather...
Between 20 and 30 times a year, stormwater from rain or melting snow overloads these sewers. They don't have enough capacity to carry wastewater to GPSD's treatment plant. So untreated sewage flows over the internal dam into the Illinois River.

Peoria's Combined Sewer Area



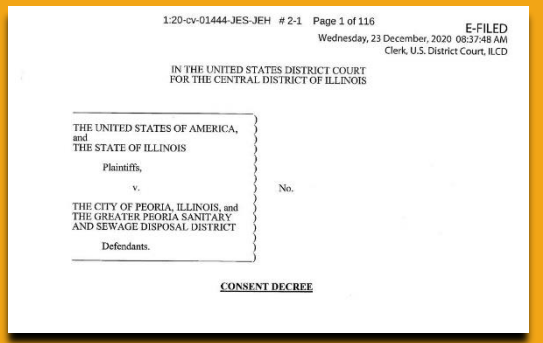


What are the Impacts of CSOs?

- Pollution discharging into the Illinois River
- CSO discharge adversely affects:
  - Human health
  - Aquatic life
  - Riverine health
  - Recreation opportunities

CSO Regulations for Peoria

- Conditions dictated in Consent Decree (CD) from USEPA
- Final CD Performance Criteria
  - Eliminating CSOs during all storms less than or equal to the hourly rainfall intensity and the total rainfall depth produced by the Six-Month Design Storm.
  - Eliminating CSOs for all but one precipitation event (July 21, 1949) during Peoria's Typical Year.
  - Limiting the CSO volume discharged during July 21, 1949, storm to no more than 16.3 million gallons when analyzed in Peoria's approved Final Conditions H&H Model.



1:20-cv-01444-JES-JEH # 2-1 Page 1 of 116 E-FILED
Wednesday, 23 December, 2020 08:37:48 AM
Clerk, U.S. District Court, ILCD

IN THE UNITED STATES DISTRICT COURT
FOR THE CENTRAL DISTRICT OF ILLINOIS

THE UNITED STATES OF AMERICA,
and
THE STATE OF ILLINOIS
Plaintiffs,
v.
THE CITY OF PEORIA, ILLINOIS, and
THE GREATER PEORIA SANITARY
AND SEWAGE DISPOSAL DISTRICT
Defendants.

No.

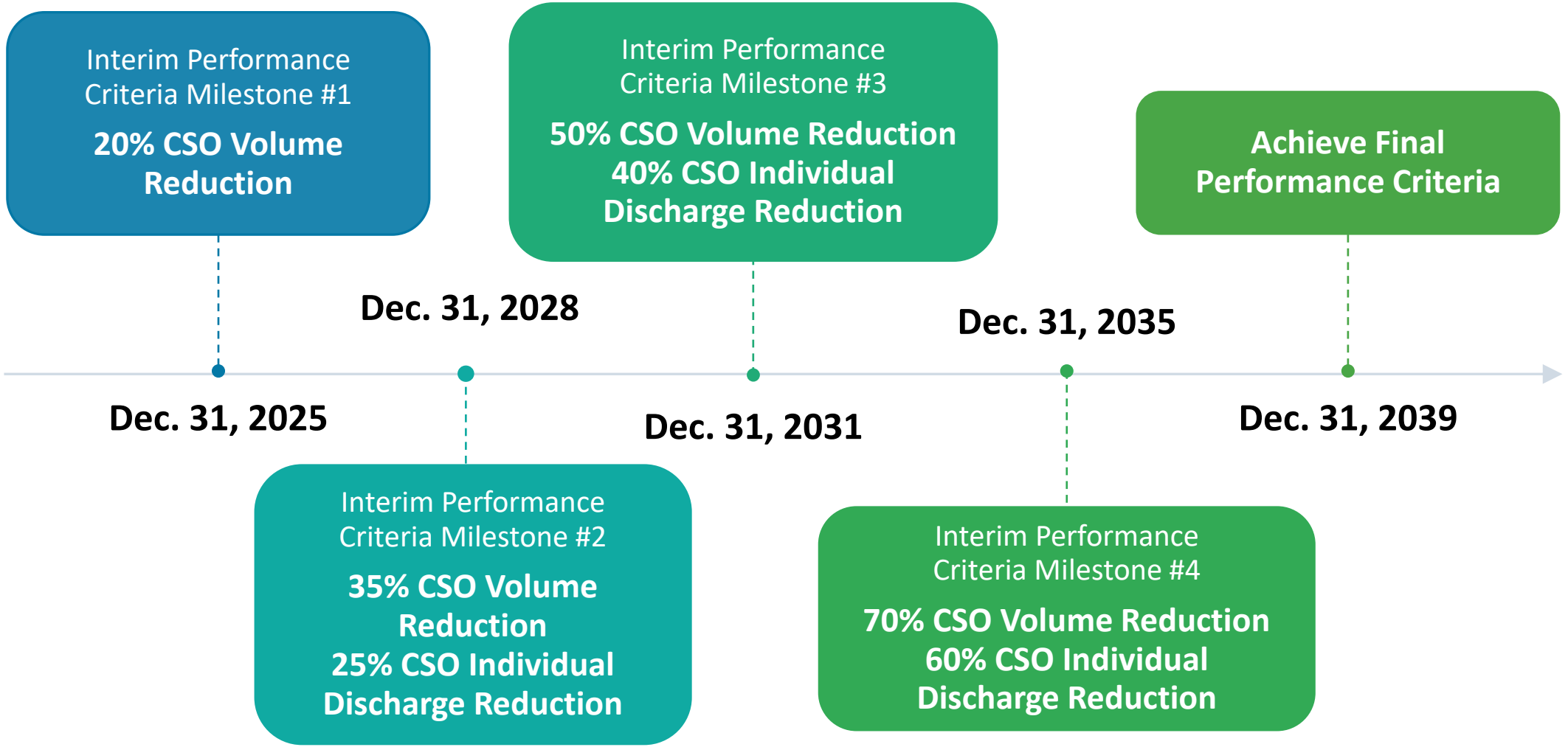
CONSENT DECREE

CSO Regulations for Peoria

- Final CD Performance Criteria (cont.)
  - No CSOs during a precipitation event equal to or smaller than:
    i. Peoria's Six-Month Design Storm event and
    ii. Peoria's Typical Year precipitation events (excluding the July 21, 1949, Typical Year precipitation event) from December 31, 2039, to the termination of the Consent Decree.

CSO Regulations for Peoria

Consent Decree Performance Milestones



Peoria's CSO Program

Definitions

Combined Sewer

Combined Sewer Overflow (CSO)

Green Infrastructure (GI)

Best management practices (such as bioretention and permeable pavement) that use an approach to water management that protects, restores, or mimics the natural water cycle.

Consent Decree to Reduce CSO Discharges

- In December 2020, the City entered into a Consent Decree with U.S. EPA **to reduce CSO discharges** to the Illinois River
- **18-year implementation period**
  - Starting January 2022
  - Ending December 2039

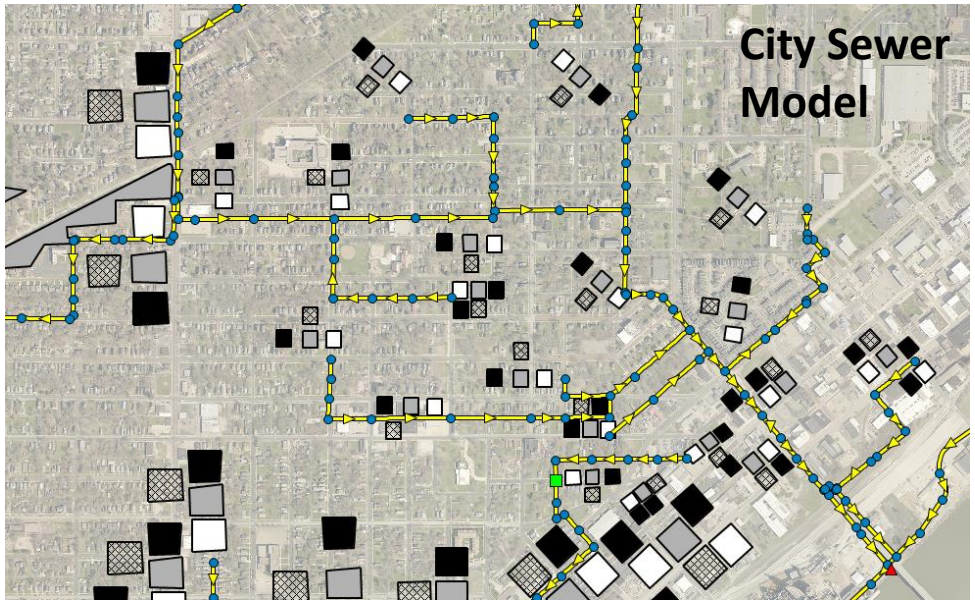
Projects to Achieve CSO Goals

City has **flexibility to implement a variety of projects**

Green infrastructure is cost effective in specific areas and will be utilized as the **preferred method of CSO control**

Projects to Achieve CSO Goals

- When GI is not the most cost-effective solution below ground storage will be utilized
- Flow monitoring will be used to ensure projects are sized and located appropriately



How Project Locations Were Determined

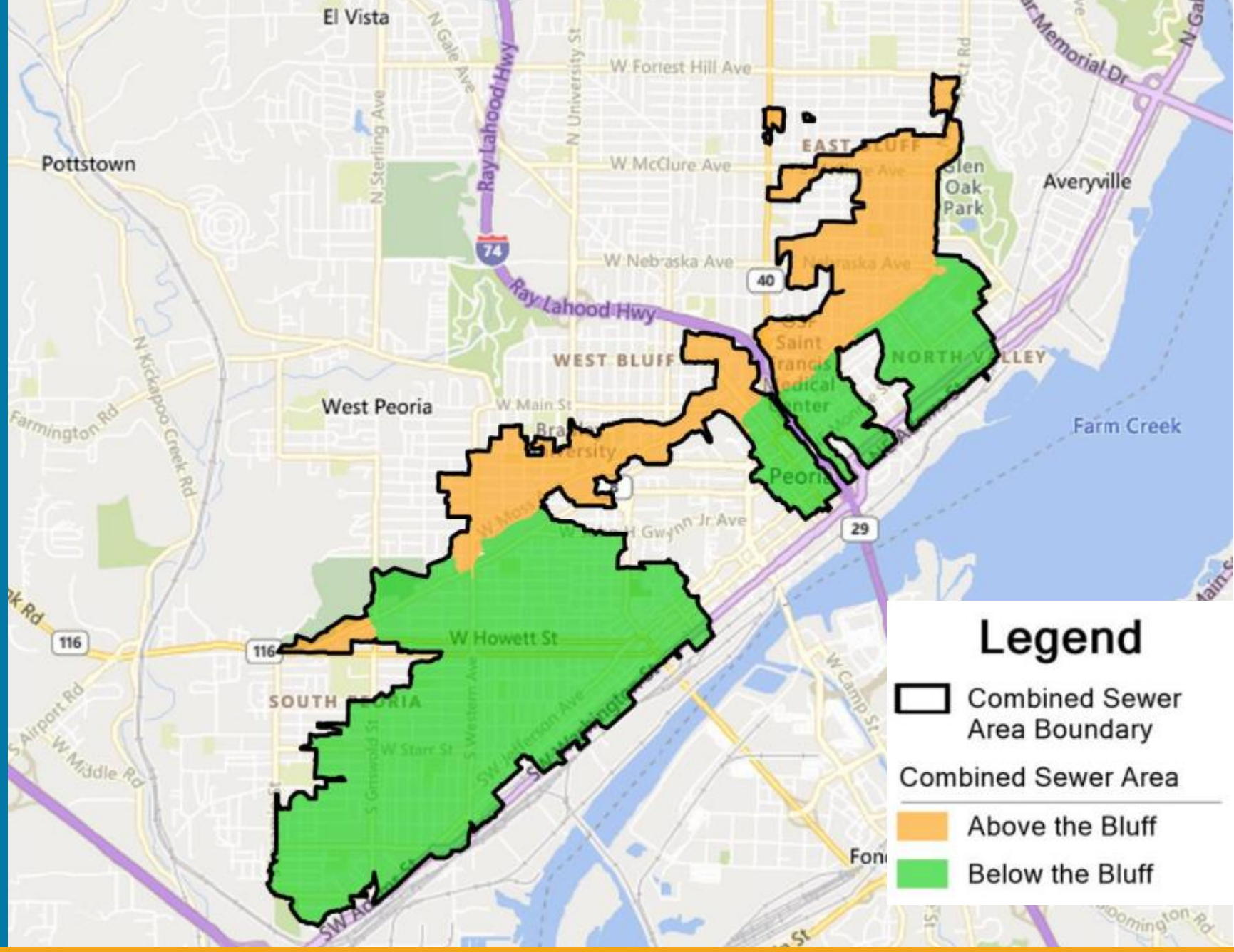
Inlet locations – low point where water goes, GI needs to capture flow before it gets to inlet

Infiltration tests – used to determine the most suitable locations for GI

City's sewer model – used to determine the size of GI needed at each location

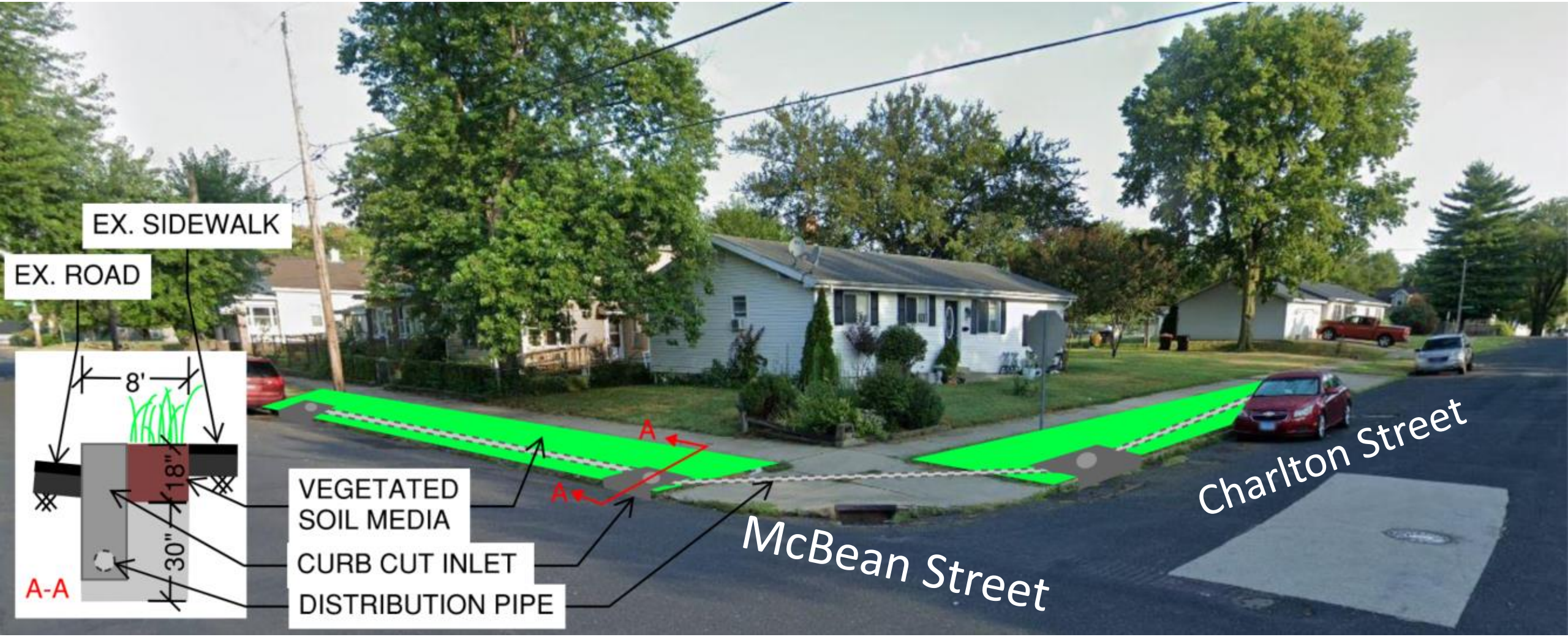
Location of Projects

- In the combined sewer area (black outline),
- Below the bluff (green shading), and,
- In the existing right-of-way



Types of Projects – Permeable Pavement

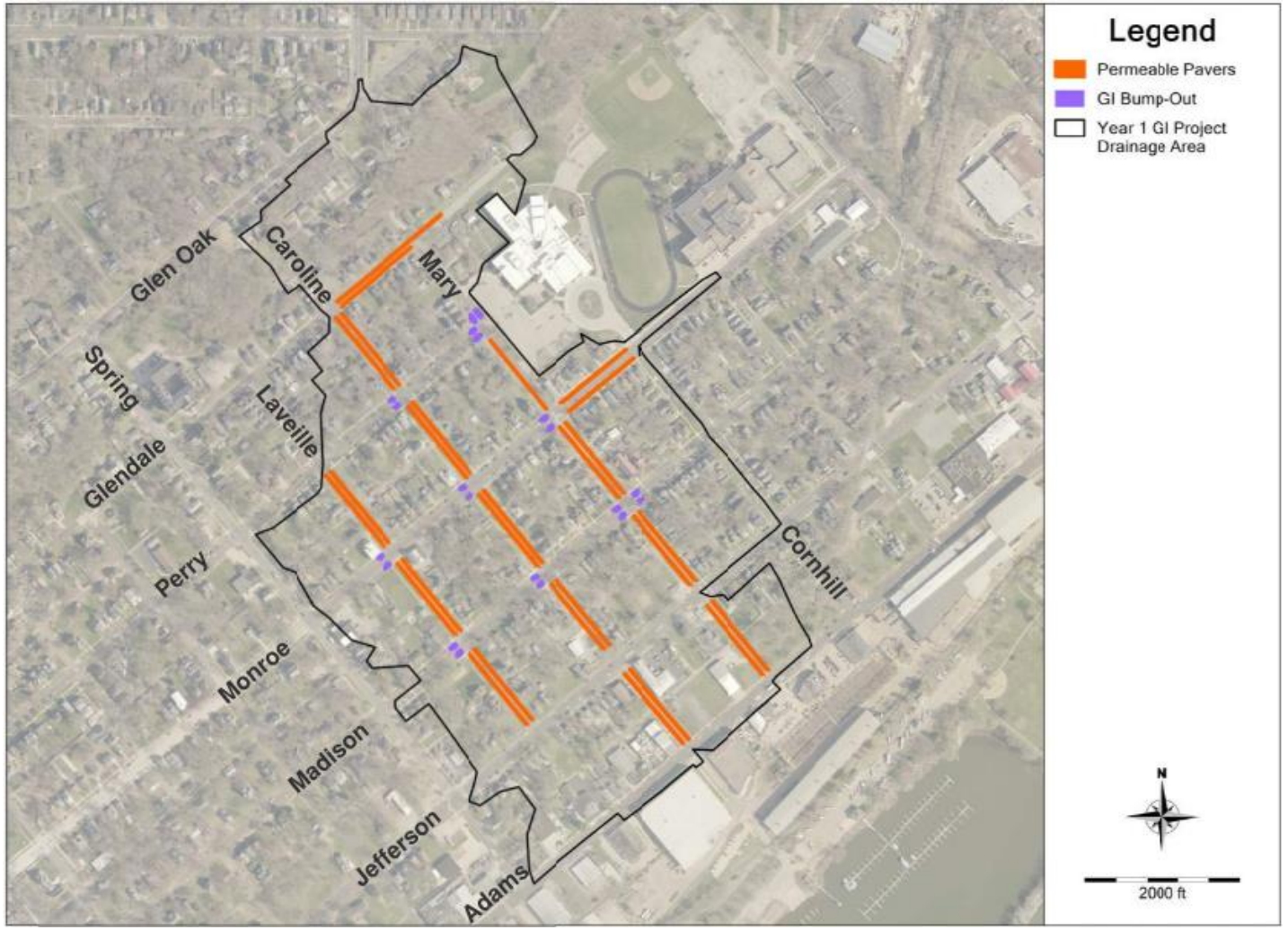
Types of Projects – Bump-ins



Types of Projects – Bump-outs

Year 1 CSO Control Project

- Green Infrastructure
  - Permeable paver parking lanes (>29,000 SF)
  - Stormwater bump-outs (20)
- Co-Benefits
  - Sidewalks (>9,000 SF)
  - Trees (43)

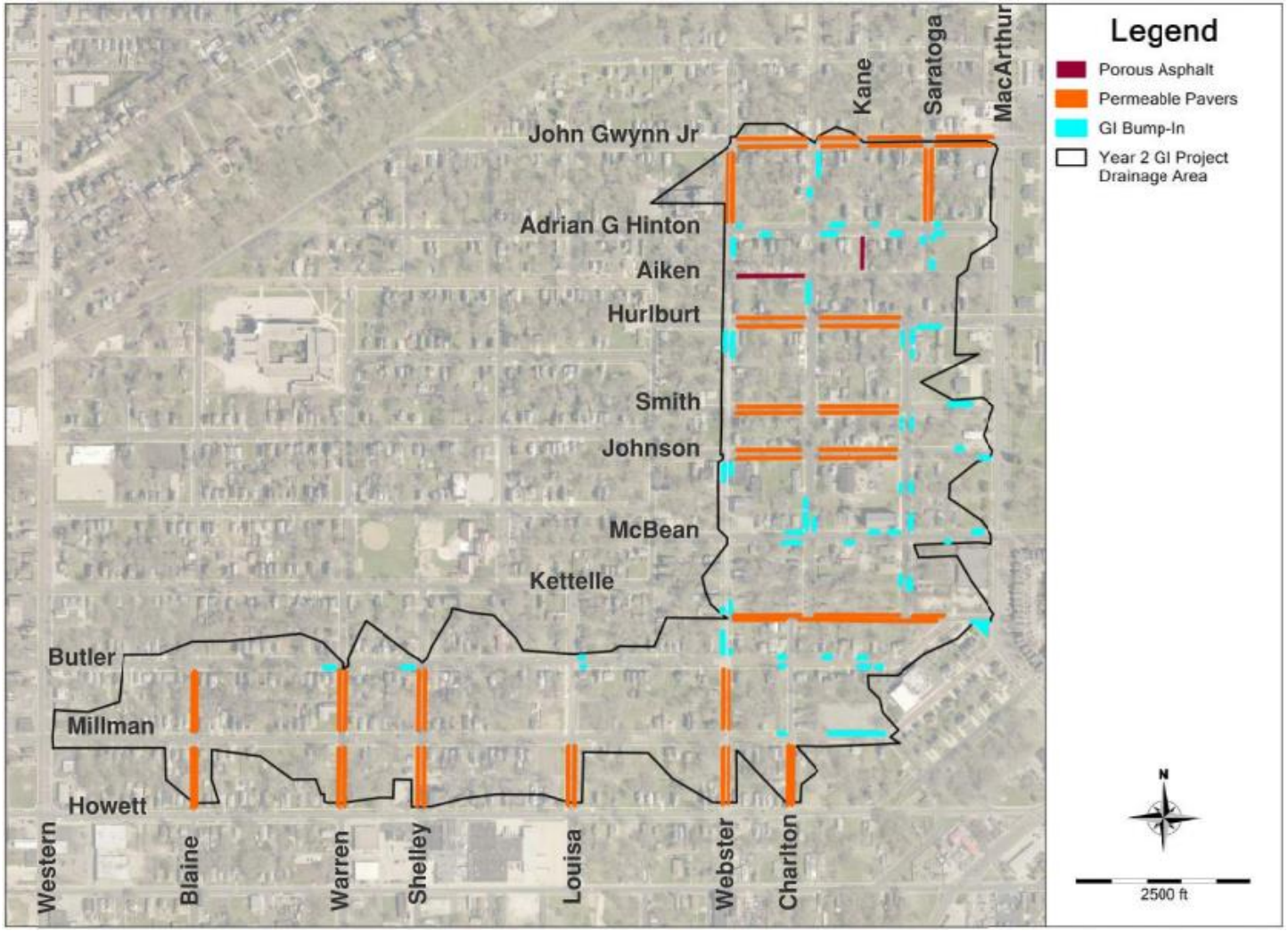


$3.8M Construction Cost

Completed Spring 2023

Year 2 CSO Control Project

- Green Infrastructure
  - Permeable paver parking lanes (>40,000 SF)
  - Stormwater bump-in (52)
- Co-Benefits
  - Sidewalks (>44,000 SF)
  - ADA Compliant Ramps (27)



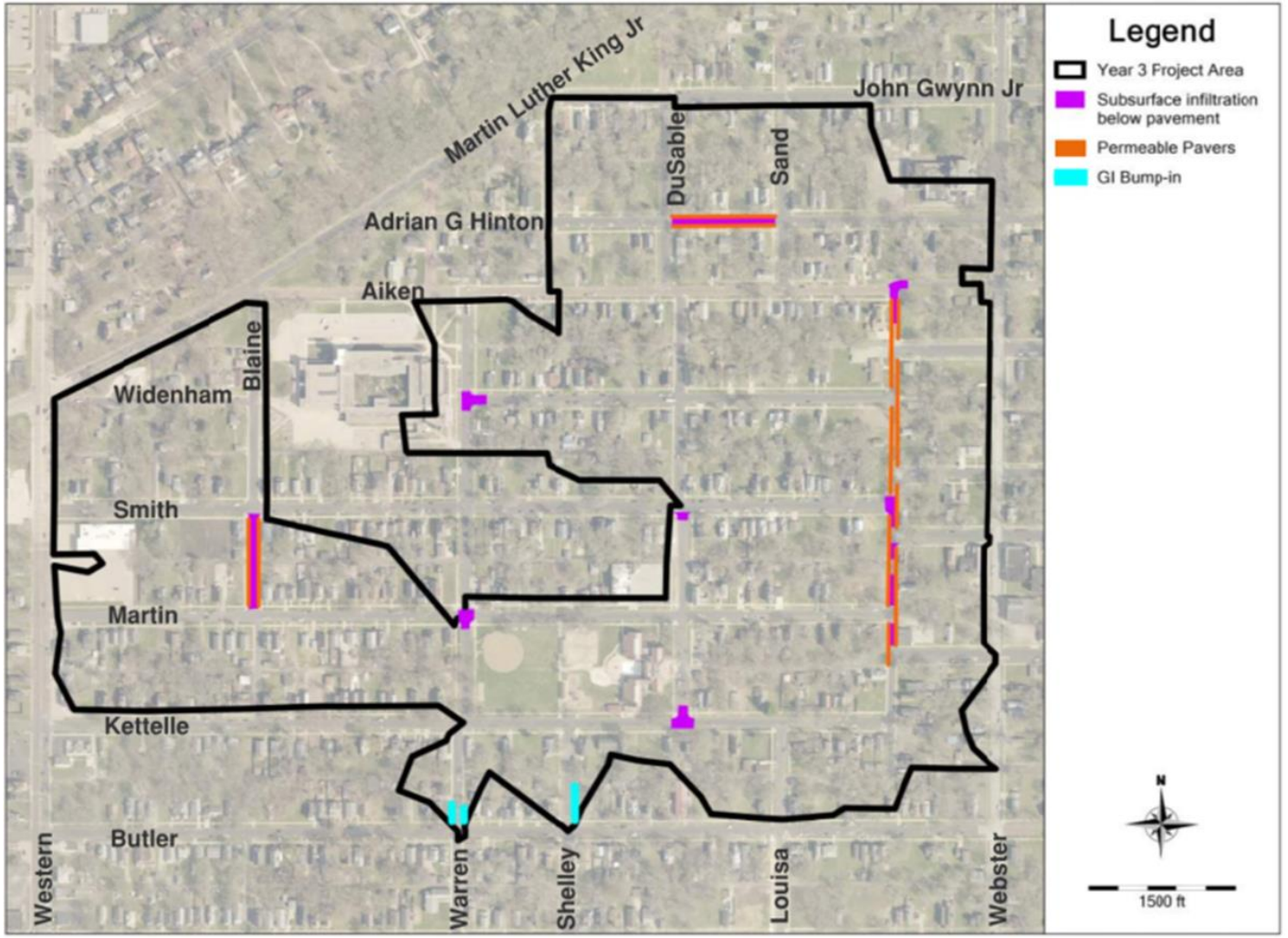
$7.85M Construction Cost

Started Spring 2023
Complete Fall 2024

Year 3 CSO Control Project

Preliminary Project Layout

- Green infrastructure to reduce stormwater flow to the sewer
- Will reduce CSO discharges to the Illinois River



$TBD Construction Cost

Start Summer 2024
Complete Fall 2025

Future CSO Projects

01

Summer 2024
Year 3 Project
Construction
begins

02

Fall 2024
Year 4 Project
Design completed

Year 5 Project
Design begins

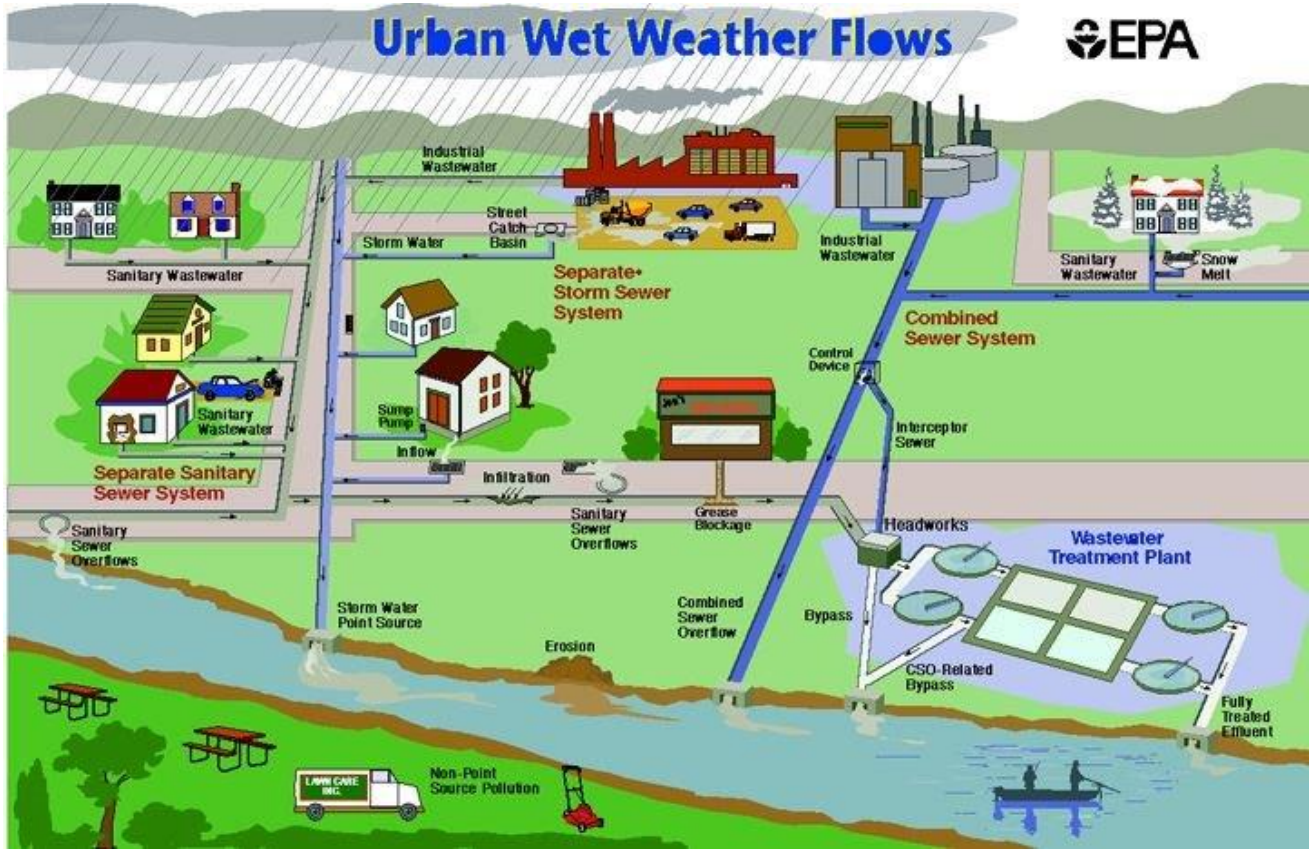
03

Spring 2025
Year 4 Project
Construction
begins

Similarities and Differences

Stormwater and Combined Sewer Similarities

- Both systems are used during rainfall and/or snowmelt i.e., wet weather.
- Both result in discharges to Peoria area waterways



Stormwater and Combined Sewer Similarities

SWU funds can be used to finance green infrastructure on stormwater and CSO projects.

DID YOU KNOW?

Green infrastructure reduces the stormwater going into both systems.

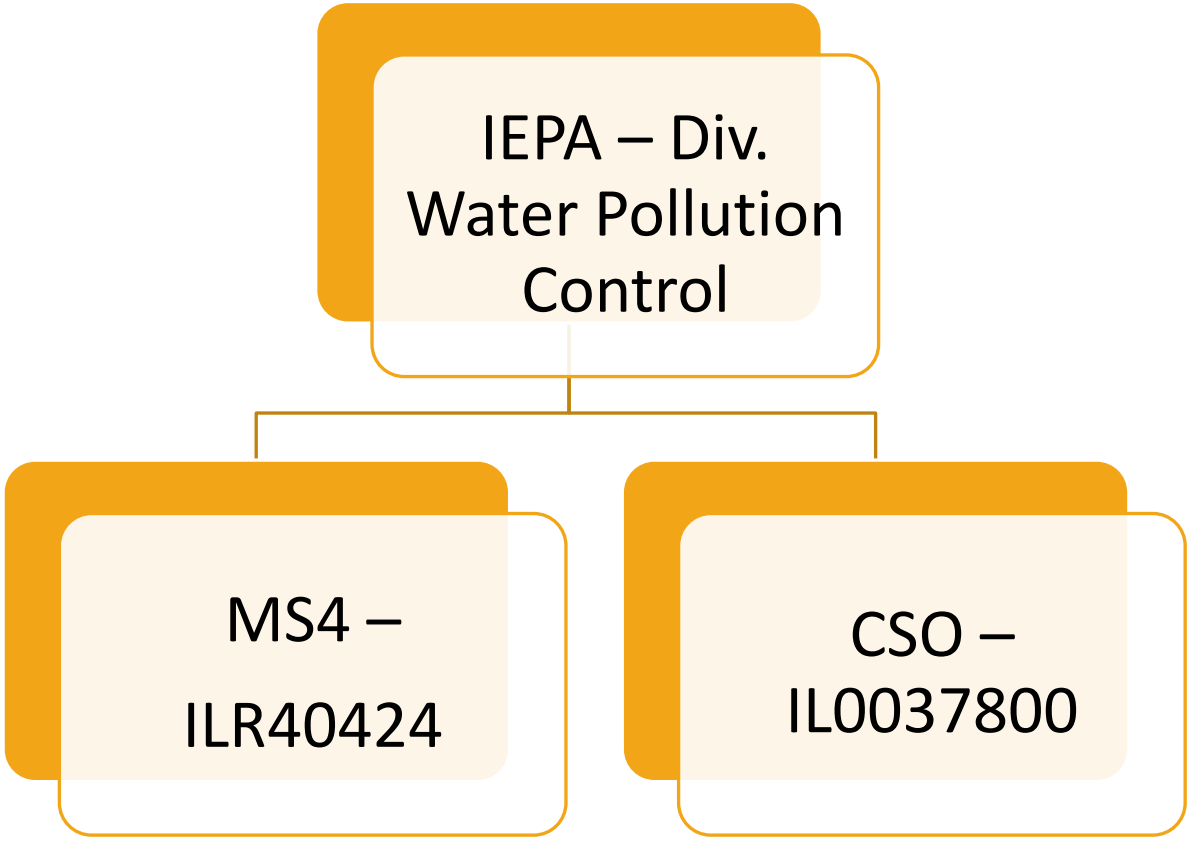
RAIN GARDENS

BUMP OUTS

GREEN ALLEYS

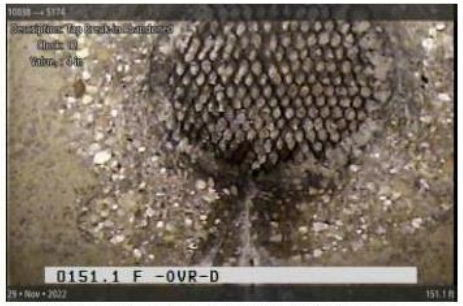
Stormwater and Combined Sewer Similarities

- Both are governed by regulatory permits issued by IEPA



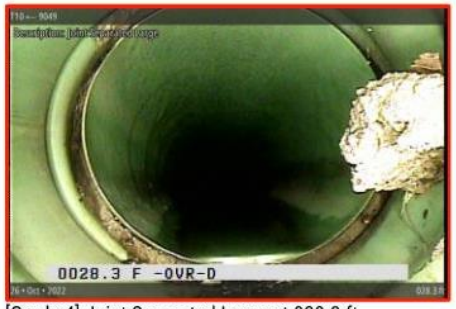
Stormwater and Combined Sewer Similarities

- City has responsibility to maintain both systems:



Tap Break-in Abandoned at 151.1 ft, 12 o'clock

[Grade 3] Fracture Longitudinal (finish) at 160.6 ft, 12 o'clock



[Grade 4] Joint Separated Large at 028.3 ft

[Grade 4] Broken at 028.7 ft, 12 - 2 o'clock

[Grade 3] Roots Medium Joint at 204.1 ft, 8 o'clock

[Grade 1] Roots Fine Joint at 208.3 ft, 5 - 7 o'clock

[Grade 5] Obstruction Intruding Through Wall at 028.7 ft, 3 o'clock

Miscellaneous Survey Abandoned at 028.7 ft | OBI

Differences Between Stormwater and CSO

Stormwater Harvesting

Stormwater can be infiltrated or harvested. Combined sewer flow cannot.

Signage

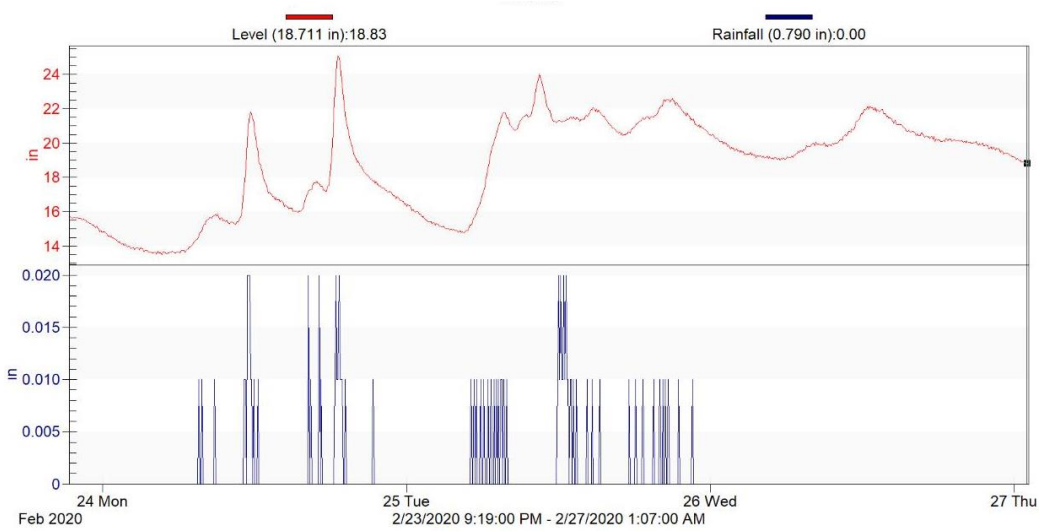
Public notification signs are required at combined sewer outfalls. Storm sewer outfalls do not require signs.

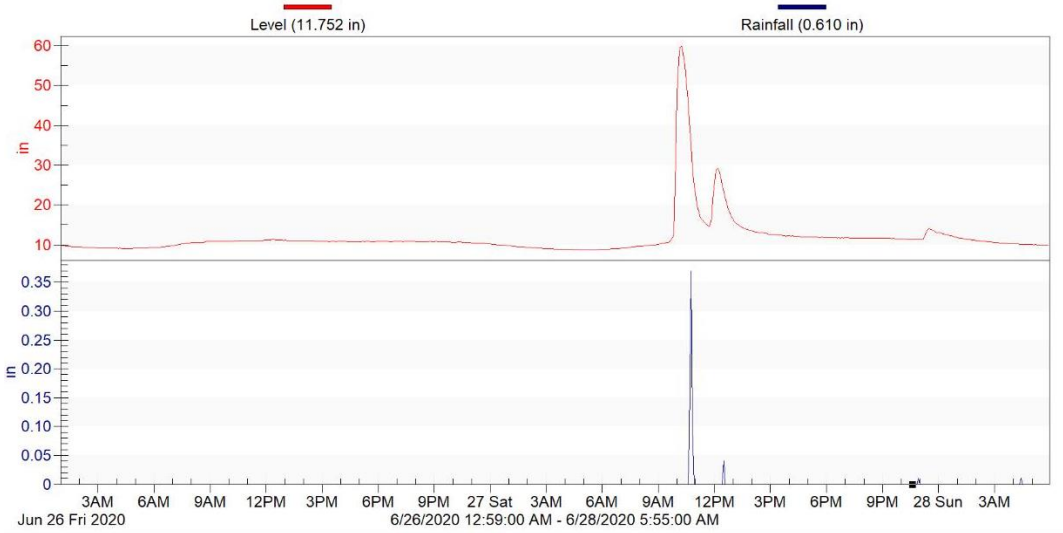
Aquifer

Stormwater can be used to recharge aquifers. Combined sewer flow cannot.

Program Differences

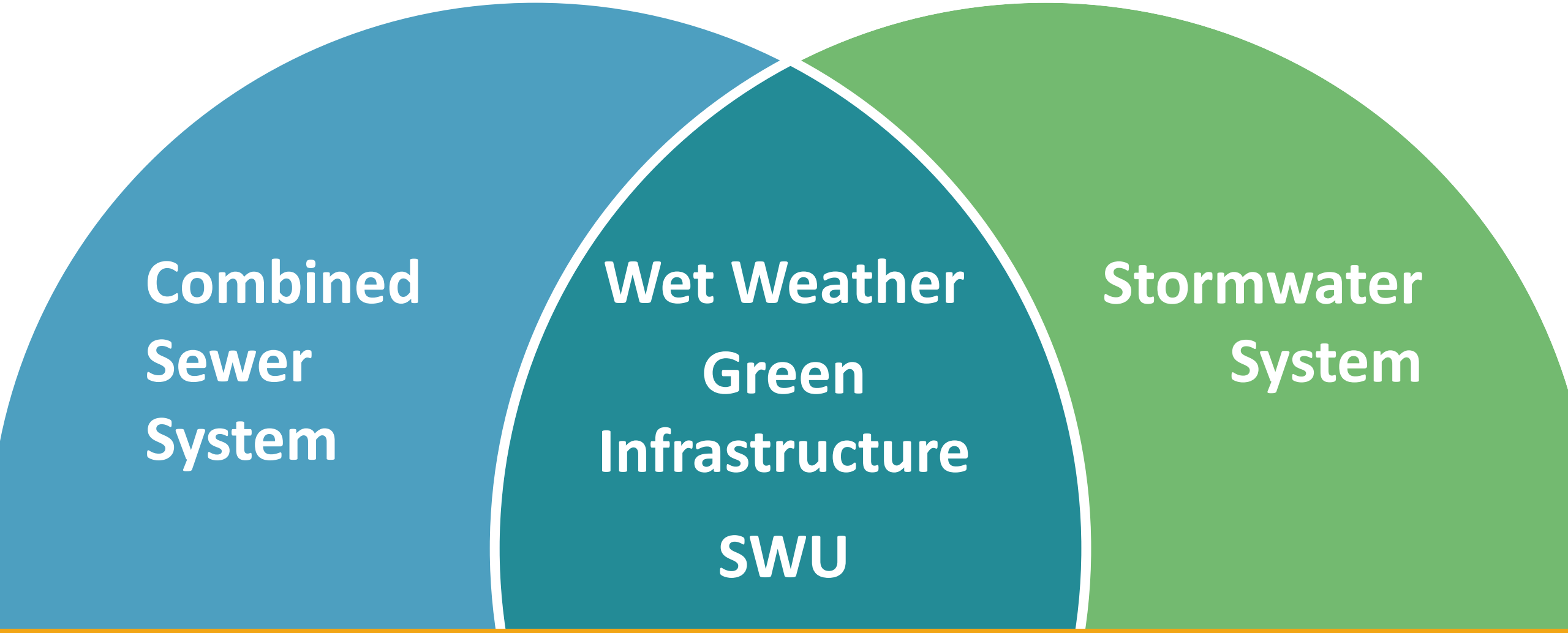
- Not all rainfall events cause a CSO discharge.
- Stormwater discharges don't have untreated sewage while CSO discharges may contain untreated sewage.
- USEPA enforced a consent order to nearly eliminate CSO events.





OVERLAP BETWEEN THE TWO SYSTEMS

Similar Approaches with O&M and Paying for Improvements



Questions

Thank you for your time.

Learn More at:

Peoriagov.org/488/Stormwater-Utility
PeoriaCSO.com

Andrea Klopfenstein, P.E.
Deputy Director –
City Engineer
309.494.8800
aklopfenstein@peoriagov.org

City of Peoria Public Works
309.494.8800
publicworks@peoriagov.org