Success and Lessons Learnt, 7th Avenue Creek
City of St. Charles, IL

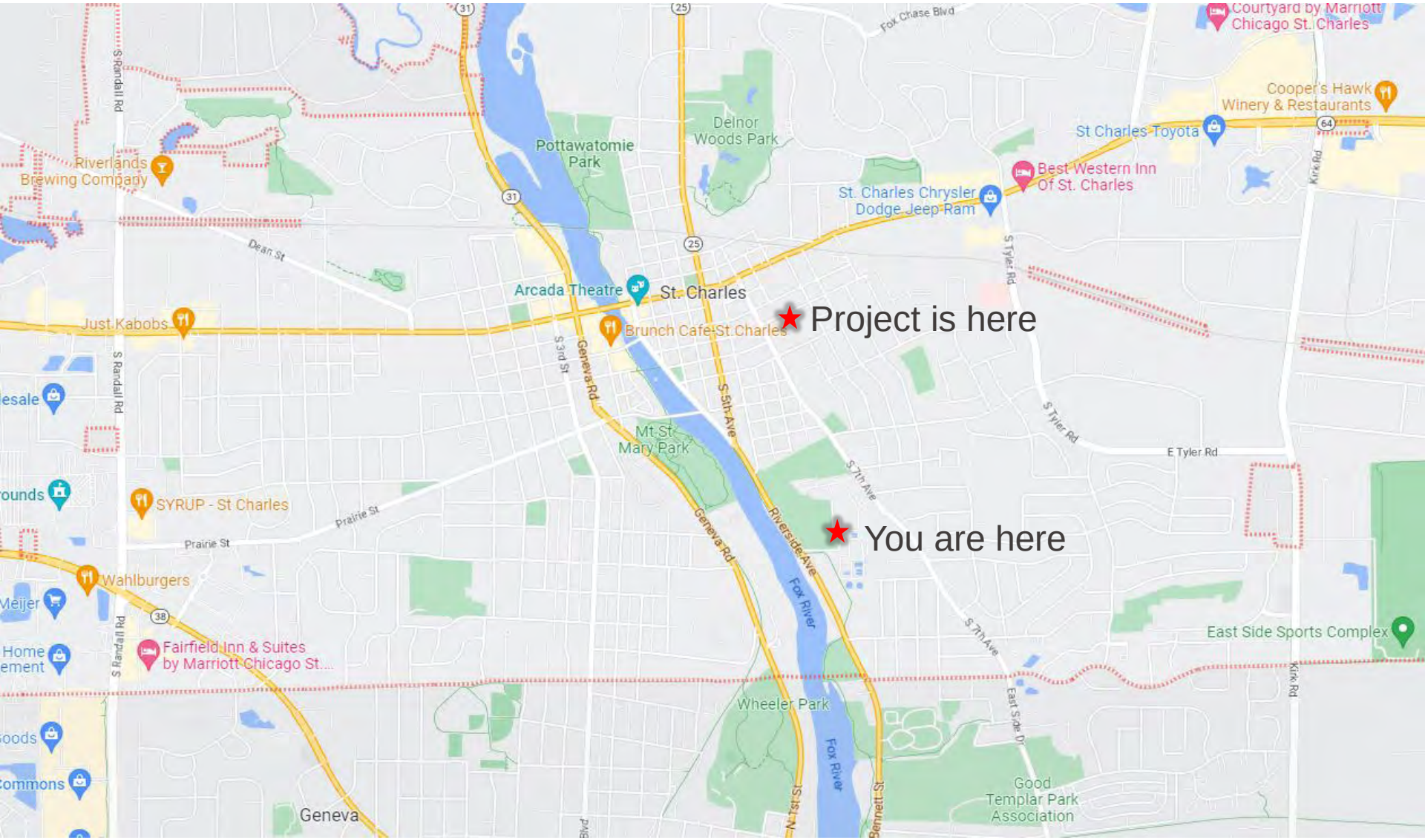
Fox River Ecosystem Partnership
FREP Noon Network
April 12th, 2023

Fox River Ecosystem Partnership
St. Charles Since 1834
HRGreen

AGENDA

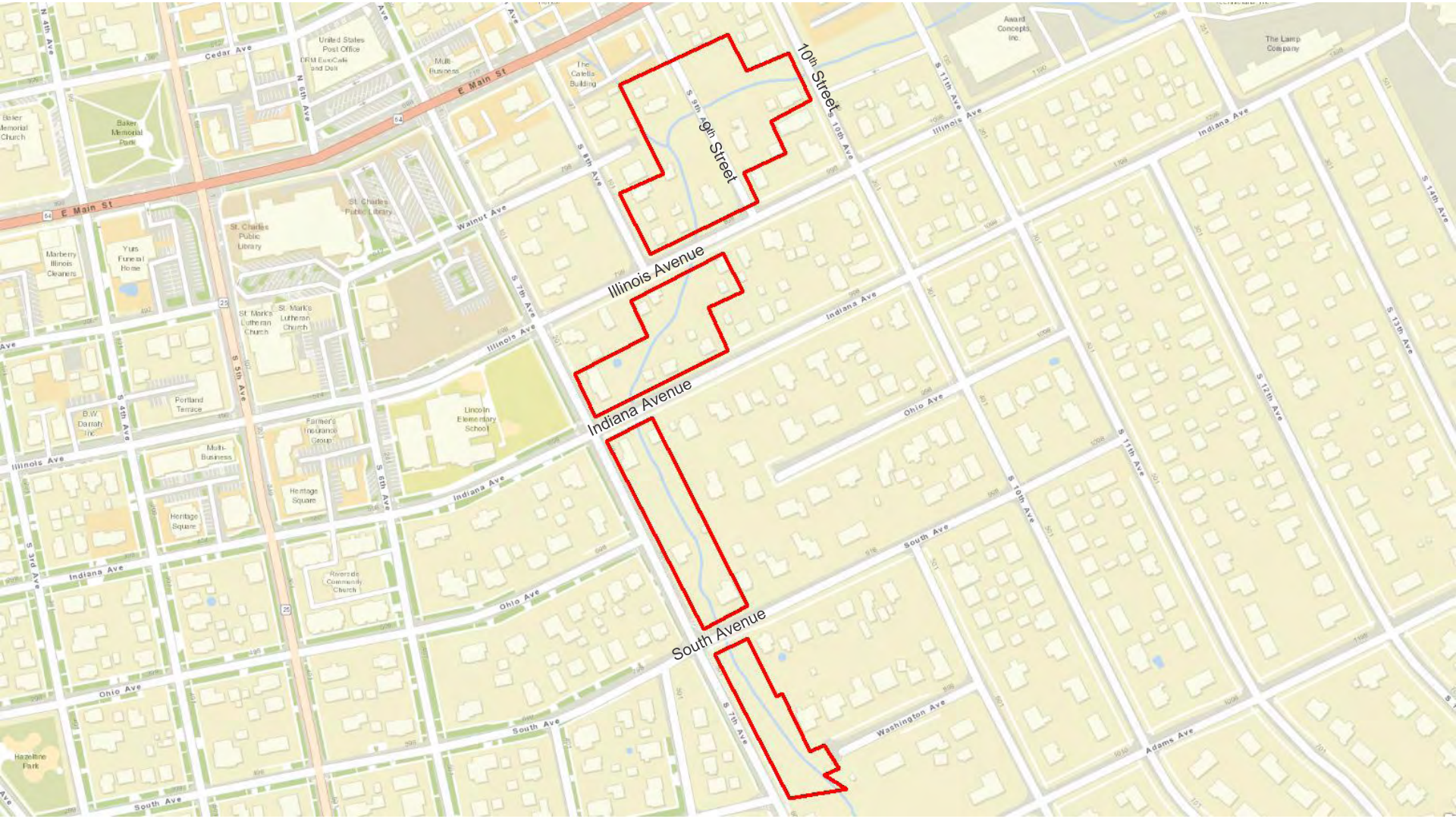
- PROJECT HISTORY
- EXISTING CONDITIONS
- PROPOSED DESIGN
- LESSONS LEARNT
- PROJECT PHOTOS

PROJECT LOCATION



HRGreen

PROJECT LOCATION



HRGreen

PROJECT HISTORY

- 2008 – Flooding!
- 2009 – FEMA study results in increased BFE
- 2009 to 2014 – FEMA remapping process underway
- 2014 – HR Green was hired to prepare flood mitigation plan
- **2015 – FEMA Preliminary Maps Issued**
- **2016 – Master Plan is completed**
- 2018 – 7th Avenue Creek / State Street Creek Watershed-Based Plan
- 2018 – CLOMR applied for based on proposed improvements
- 2018/19 – Section 319 and GIGO grants obtained
- **2020 – FEMA Maps becomes effective**
- **2021 – Construction of Phase 1 completed**
- 2022 – Ongoing vegetation maintenance

2008 RAIN EVENT

RESIDENTIAL STRUCTURE FLOODING

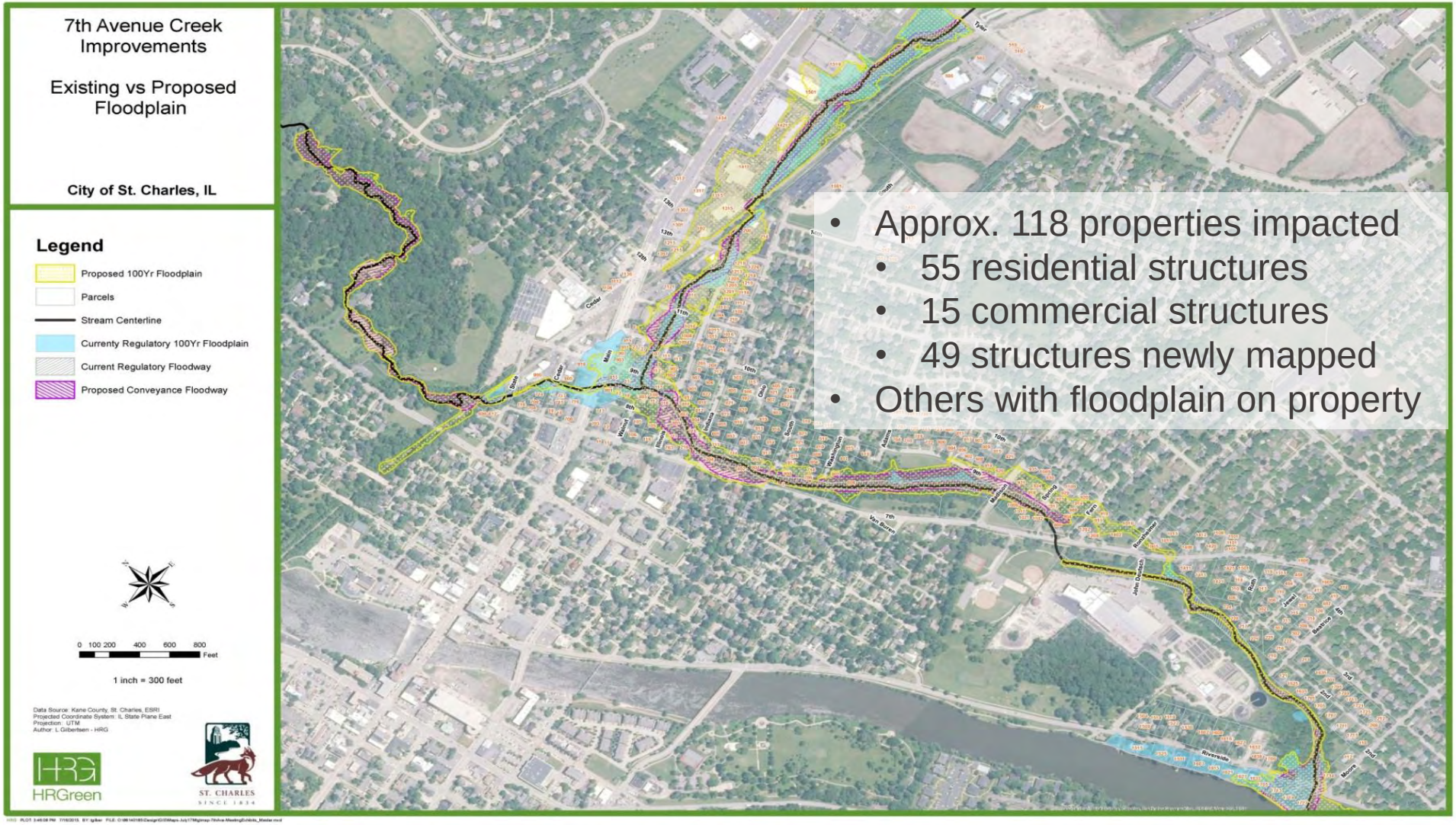
ROADWAY OVERTOPPING/STRUCTIRAL DAMAGE

COMMERCIAL STRUCTURE FLOODING

Il 68 COMMERCIAL CORRIDOR FLOODING

HRGreen

EXISTING VS. PROPOSED FLOODPLAIN



- Approx. 118 properties impacted
  - 55 residential structures
  - 15 commercial structures
  - 49 structures newly mapped
- Others with floodplain on property

PROJECT OBJECTIVES

FEMA

- Flood Risk Mapping (FEMA)

CITY

- Flood Mitigation (reduce below regulatory floodplain)
- Improve Aesthetics/Return Amenity to Residents
- Improve Water Quality
- Explore Funding
- Consider City's Comprehensive Plan
- Consider Economic Development Opportunities

EXISTING CONDITIONS

Many banks were highly eroded and threatening private property

Fox River Ecosystem Partnership

St. Charles Since 1834

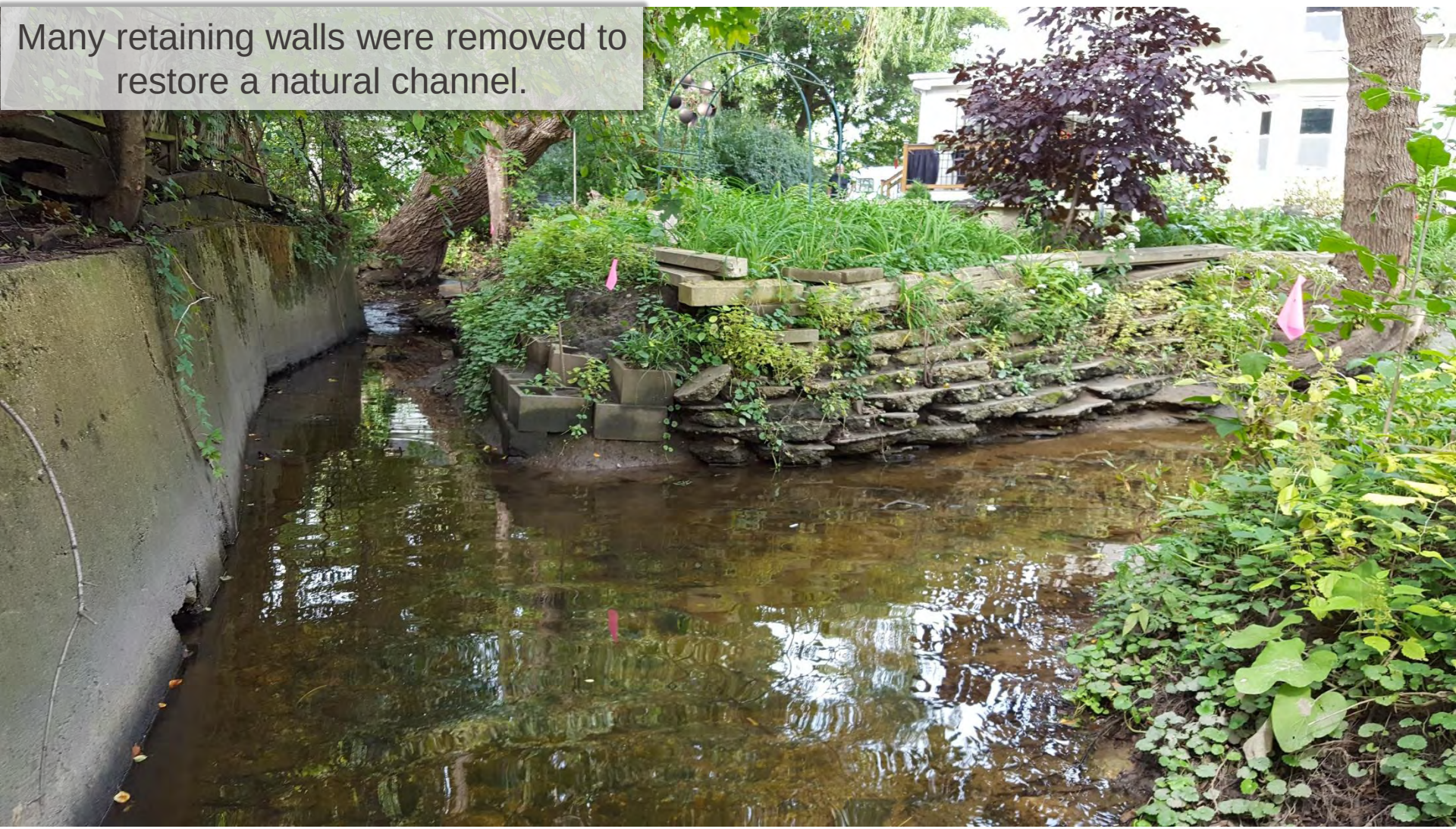
HRGreen

EXISTING CONDITIONS

EXISTING CONDITIONS

EXISTING CONDITIONS

Many retaining walls were removed to restore a natural channel.



Fox River Ecosystem Partnership

St. Charles Since 1834

HRG HRGreen

PHASE I CONCEPT PLAN

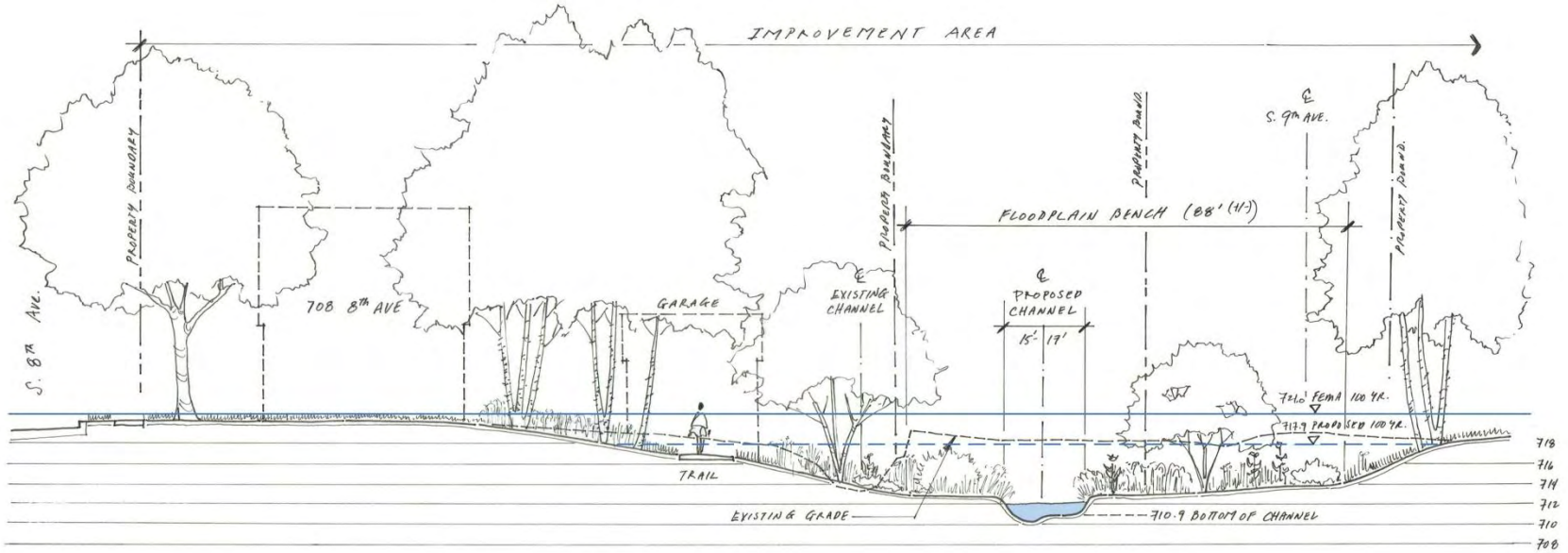
Reach 3 (7th 6): Reach 3 is per City Master Plan. 7th 6 is corresponding reach D per approved Watershed Basec Plan (Typ.)

7th Avenue Creek Stream Restoration Project

Reach 3, 5 & 6 Proposed Improvements **EXHIBIT 7**

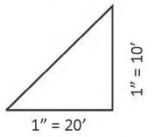
Fox River Ecosystem Partnership · St. Charles Since 1834 · HRGreen

PHASE I CONCEPT PLAN



Key Plan: Reach 5

Existing Photo



Draft: November 6, 2016

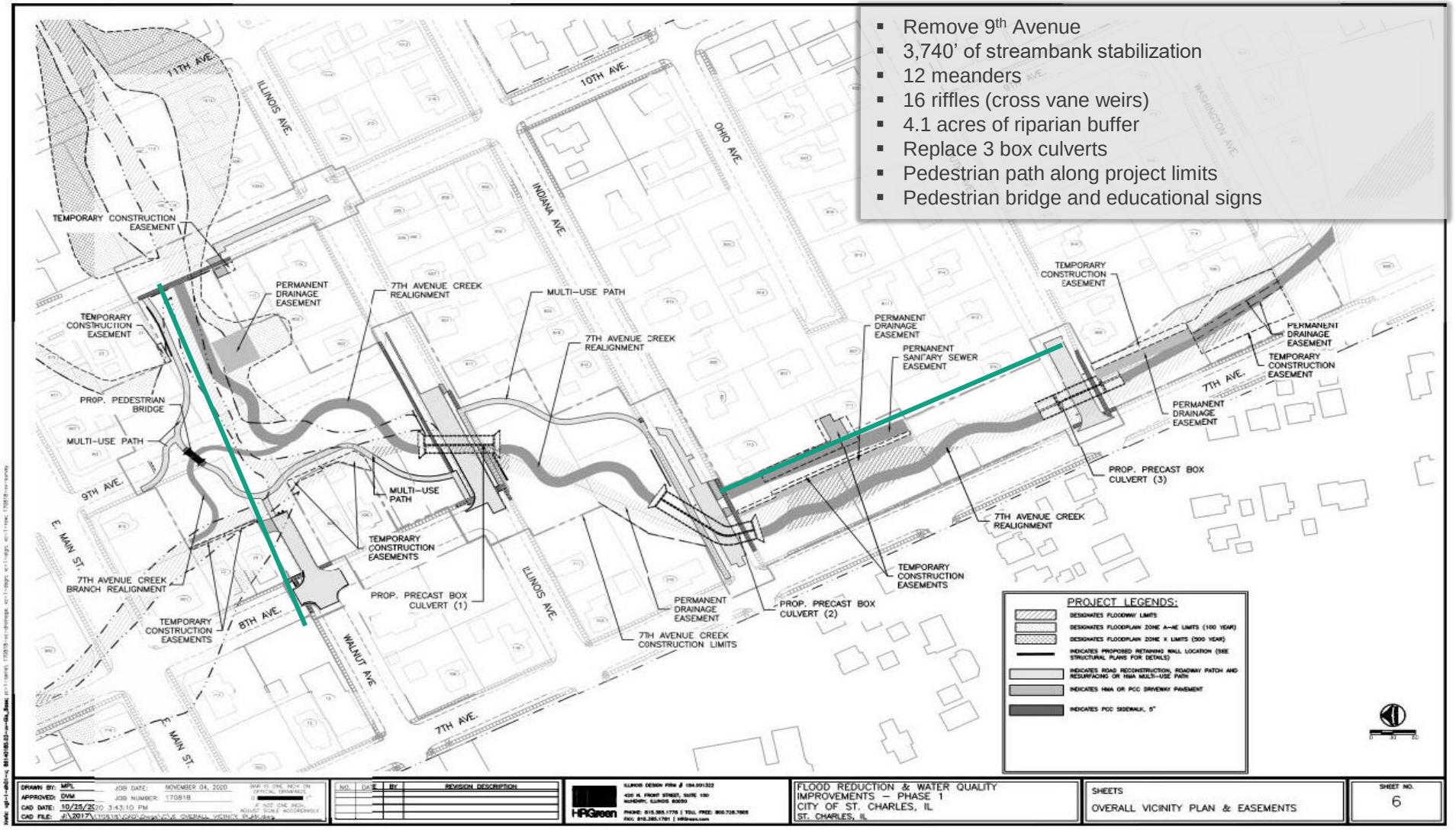
7th Avenue Creek

Reach 5 – Sta. 65+80, Proposed Section Looking Upstream

HRGreen

PHASE I FINAL PLAN

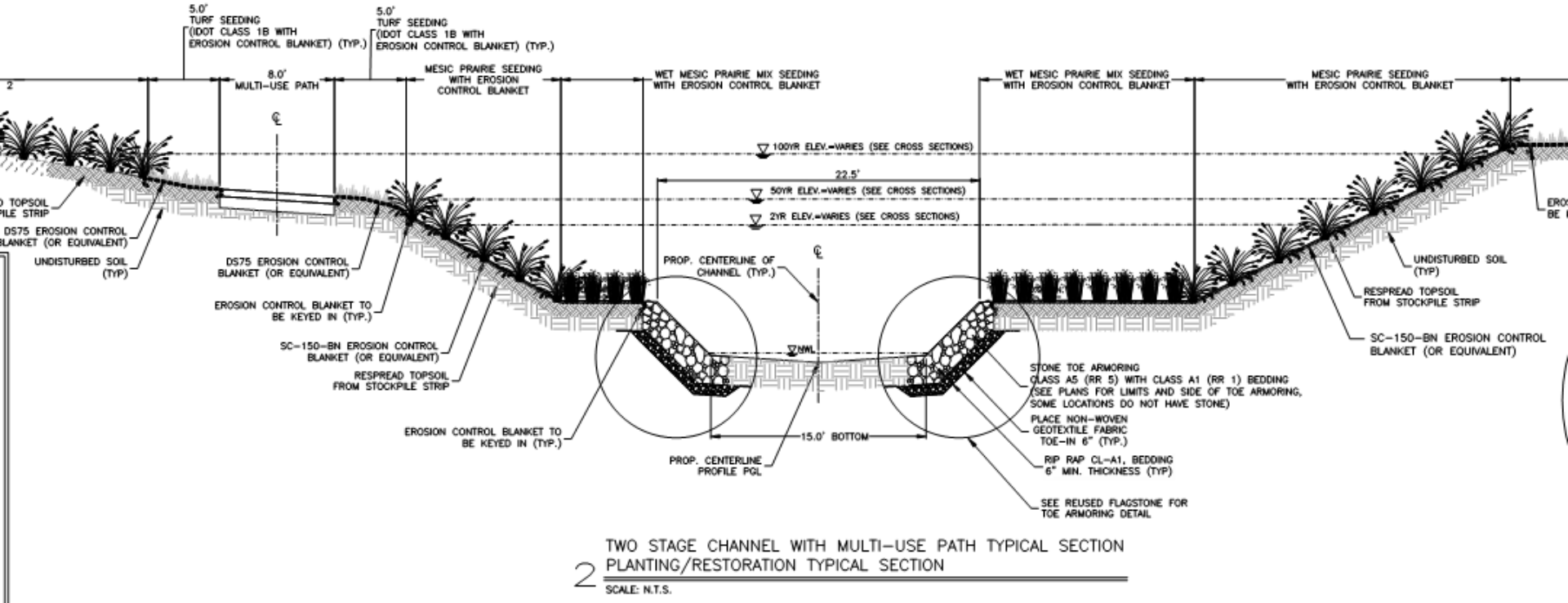
- Remove 9th Avenue
- 3,740’ of streambank stabilization
- 12 meanders
- 16 riffles (cross vane weirs)
- 4.1 acres of riparian buffer
- Replace 3 box culverts
- Pedestrian path along project limits
- Pedestrian bridge and educational signs



Fox River Ecosystem Partnership · St. Charles Since 1834 · HRGreen

PHASE I FINAL PLAN

- The low flow channel was sized based on upstream and downstream stable sections
- The high flow channel and floodplain bench were sized for the 100-year event
- The low flow channel meanders within the high flow channel.
- Wherever possible, the multi-use trail was located above the 50-year WSE



HRGreen

POLLUTANT REDUCTION BENEFITS

- Pollutant reduction calculations performed using the EPA's STEPL
- Final calculated pollutant reductions exceeded what was included in grant applications due to the inclusion of additional bank stabilization south of South Avenue

Pollutant	Reduction (lbs/yr)
Sediment	628,000 (314 tons/yr)
Total Suspended Solids (TSS)	17,758
Phosphorus	287
Nitrogen	715

*In-field testing has not been completed

FUNDING SUMMARY

- FEMA funded mapping revisions
- Obtained Riverboat Casino Grant
- Obtained 319 Grant for Phase I for eligible activities
- Obtained GIGO Grant for Phase I for eligible activities
- Phase I Completed (2021 construction)
- Total Construction Costs - $3.6M
- City's Share of Construction Cost ($1.7M or 47.4%)

- NOW ON TO THE PROJECT!

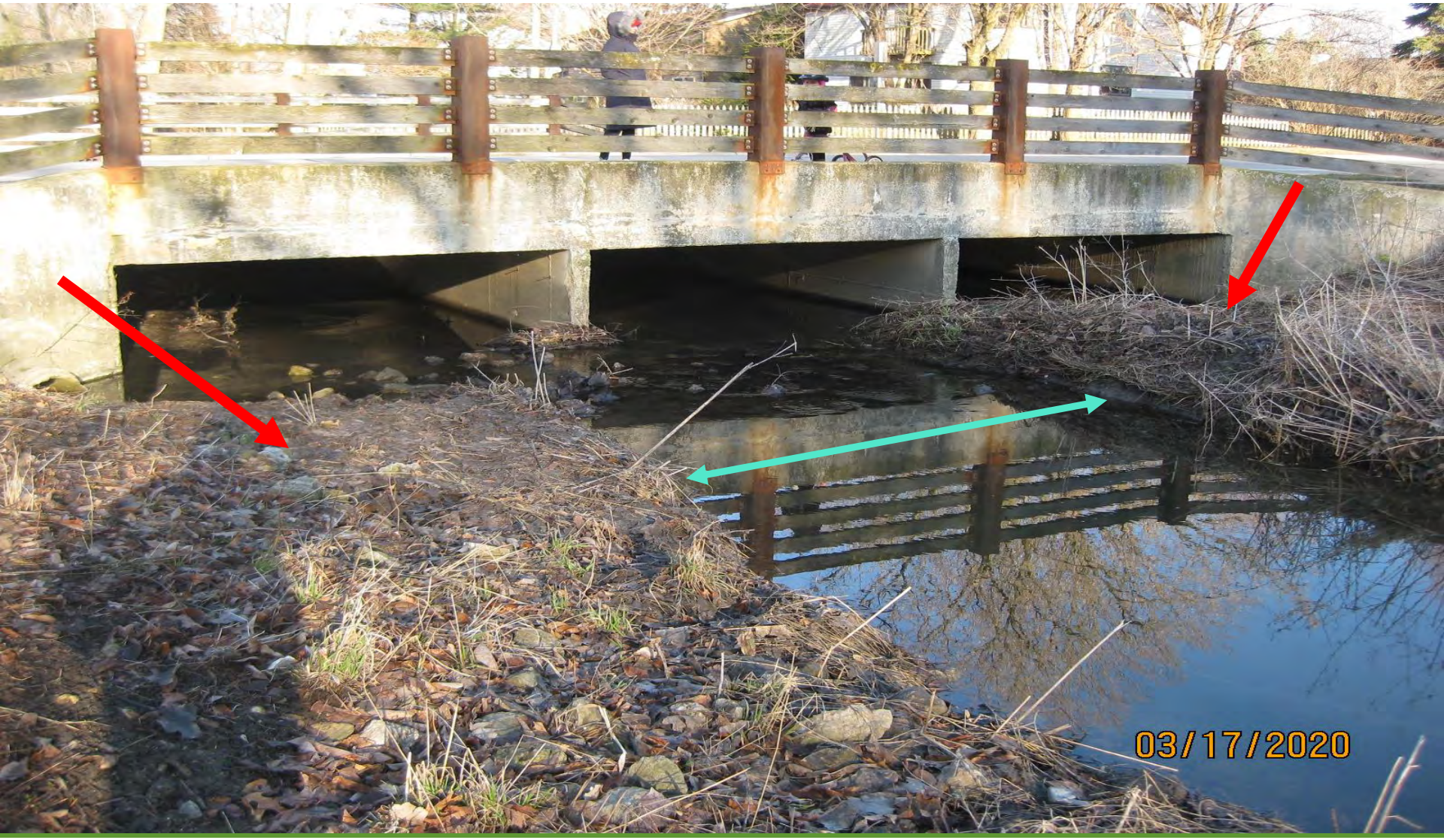
EARTHWORK

HRGreen

EARTHWORK

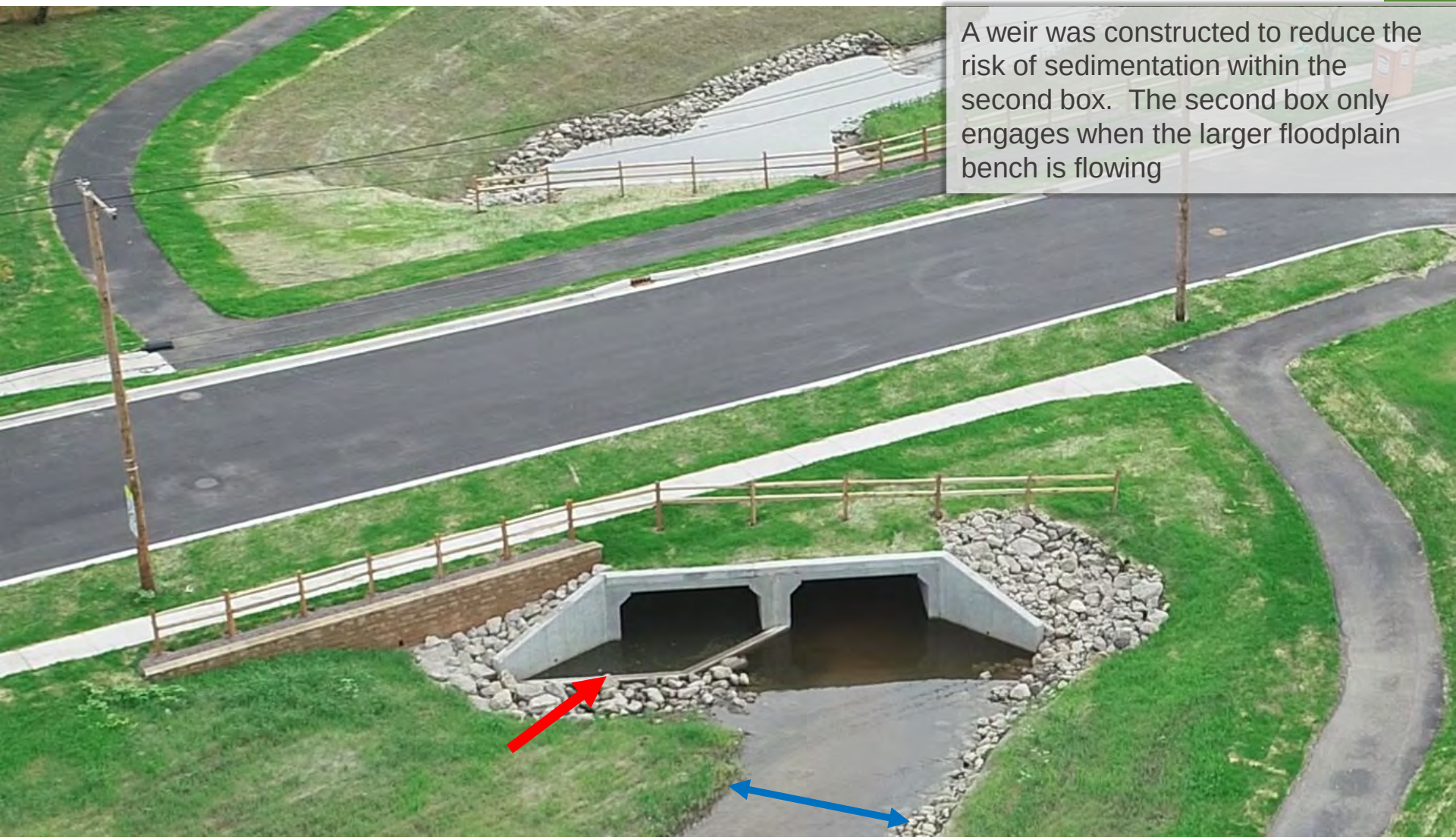
EROSION CONTROL

PREVENTING SEDIMENTATION W/I CULVERTS



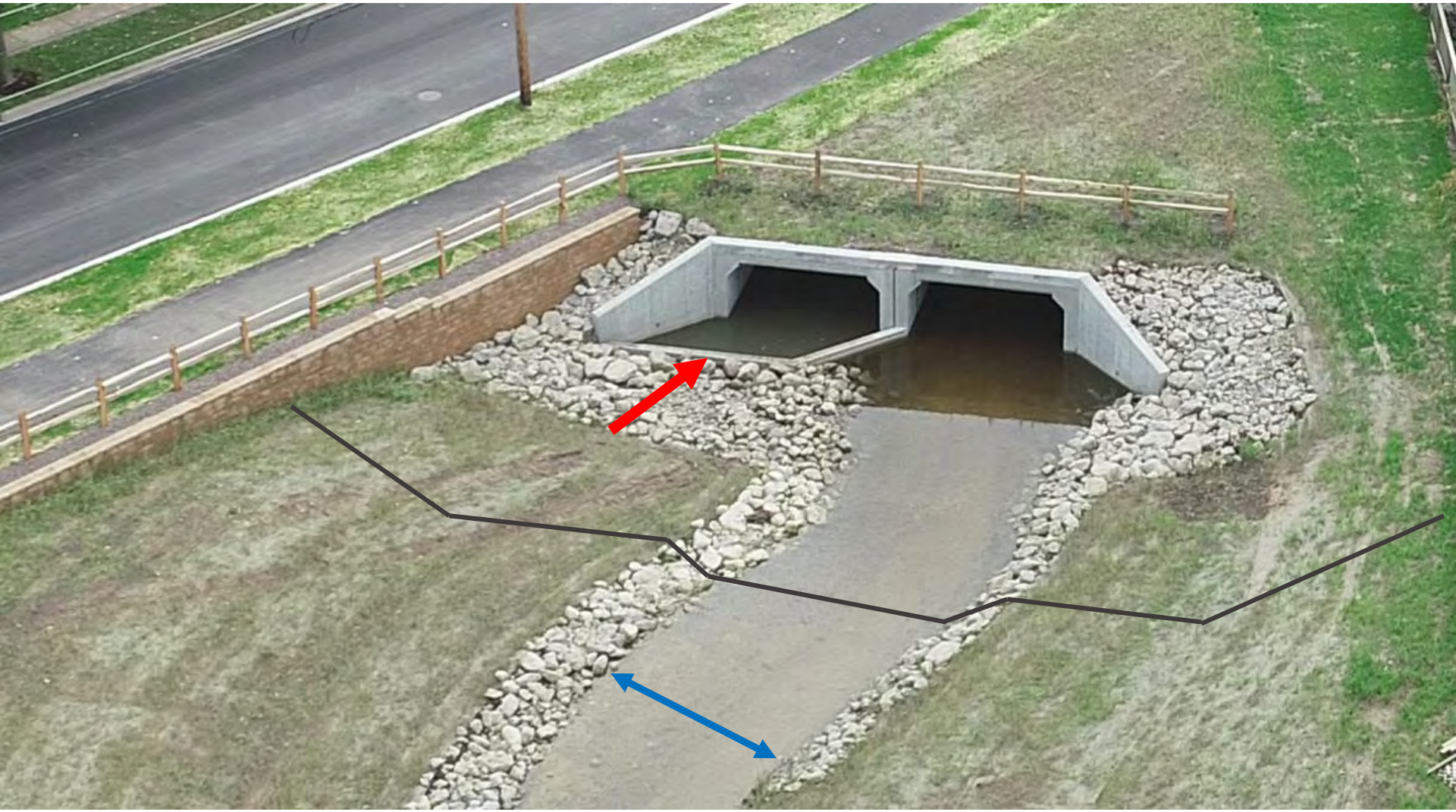
HRGreen

PREVENTING SEDIMENTATION W/I CULVERTS



A weir was constructed to reduce the risk of sedimentation within the second box. The second box only engages when the larger floodplain bench is flowing

PREVENTING SEDIMENTATION W/I CULVERTS



VEGETATION ESTABLISHMENT

NATIVE LANDSCAPE
Establishment and Maintenance

HRGreen

2022 – Sleep

- The site is primarily a temporary cover crop and weeds – This is normal!
- Mow the site to 8" twice during the growing season
- Spot treat the weeds with herbicide
- The native plants are focusing their energy into their root network

2023 – Creep

- The weeds are lessened and the native plants are spending more energy on growth
- Mow the site to 12" once or twice during the growing season
- Spot treat the weeds with herbicide

2024 – Leap

- The native plants are now starting to out-compete the weeds
- A controlled burn can now be implemented on a three year cycle
- Mowing in the late fall can be used in areas that are near trees that might be sensitive to burning

VEGETATION ESTABLISHMENT

MEANDER DESIGN

Meander Design Methodology:

- Spreadsheet tools;
- Radius of Curvature;
- Meander Length;
- Belt Width;
- Sinuosity;
- Wetted Width;
- Channel Slope;
- Stone used on the outer bends
- Vegetation used on inside bend

RETURNING AMENITY BACK TO RESIDENTS

HRGreen

RETURNING AMENITY BACK TO RESIDENTS

HRGreen

RETURNING AMENITY BACK TO RESIDENTS

HRGreen

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

HRGreen

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

RETURNING AMENITY BACK TO RESIDENTS

BEFORE AND AFTER STREAM CORRIDOR

From Indiana Ave, looking south, pre-construction

From Indiana Ave, looking south, post-construction

From Indiana Ave, looking north, pre-construction

From Indiana Ave, looking north, post-construction

HRGreen

FLAGSTONE AND BOULDERS REUSE

HRGreen

PROJECT COMPLETION – 2021

7th Avenue Creek | St. Charles, IL

HRGreen

PROJECT COMPLETION – 2021

7th Avenue Creek | St. Charles, IL

HRGreen

PROJECT COMPLETION – 2021

Fox River Ecosystem Partnership
St. Charles Since 1834
HRGreen

PROJECT COMPLETION – 2021

7th Avenue Creek | St. Charles, IL

Fox River Ecosystem Partnership

St. Charles Since 1834

HRGreen

PROJECT COMPLETION – 2021

7th Avenue Creek | St. Charles, IL

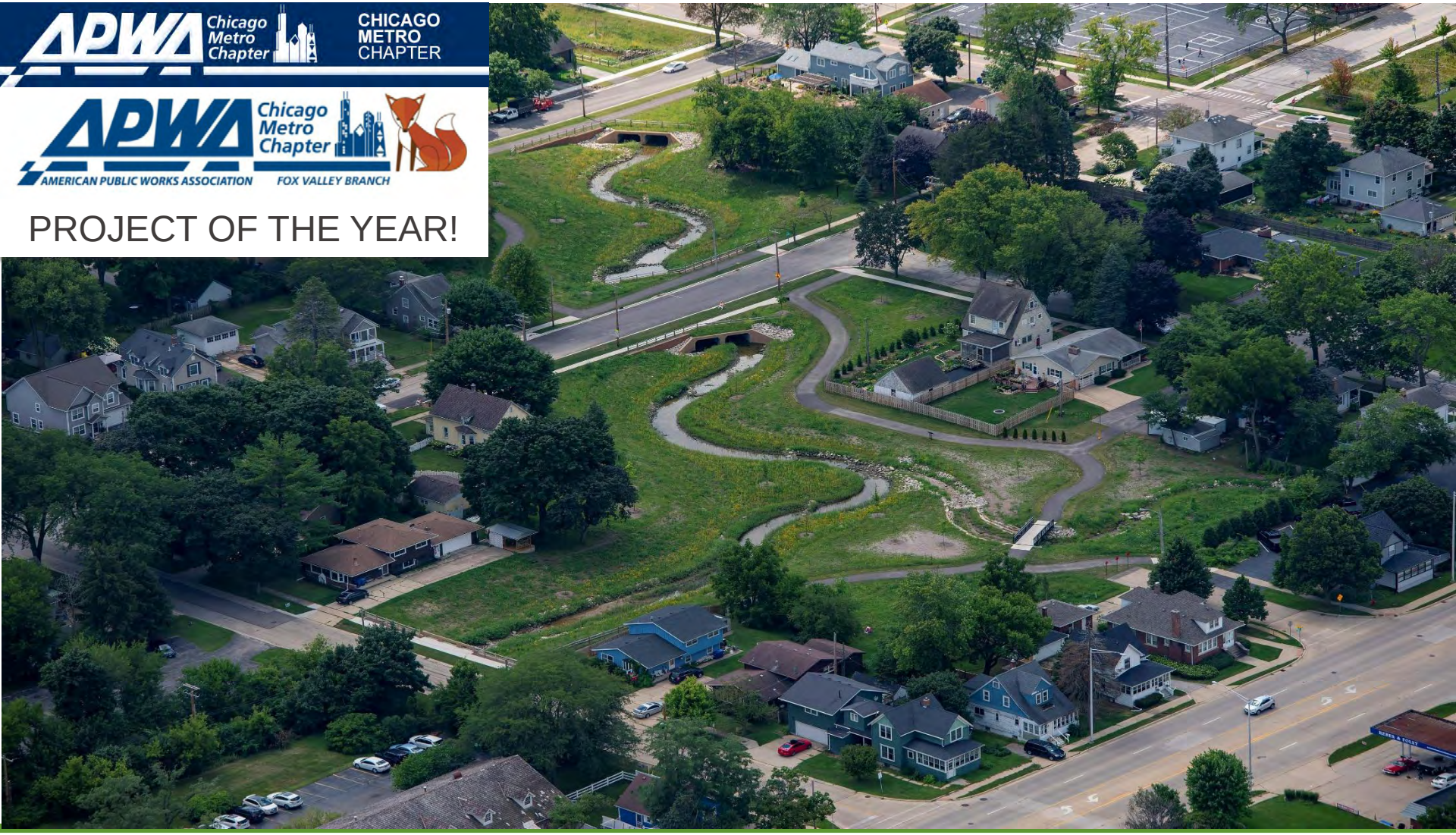
HRGreen

PROJECT COMPLETION – 2021

APWA Chicago Metro Chapter CHICAGO METRO CHAPTER

APWA Chicago Metro Chapter AMERICAN PUBLIC WORKS ASSOCIATION FOX VALLEY BRANCH

PROJECT OF THE YEAR!



7th Avenue Creek | St. Charles, IL

Fox River Ecosystem Partnership

St. Charles Since 1834

HRGreen

QUESTIONS FROM THE AUDIENCE

Logan Gilbertsen, P.E., CFM
Project Manager – Water Resources
lgilbertsen@hrgreen.com
815-759-8370

HRGreen