Clark Dietz

Engineering Quality of Life®

Champaign's 20-Year Stormwater Journey

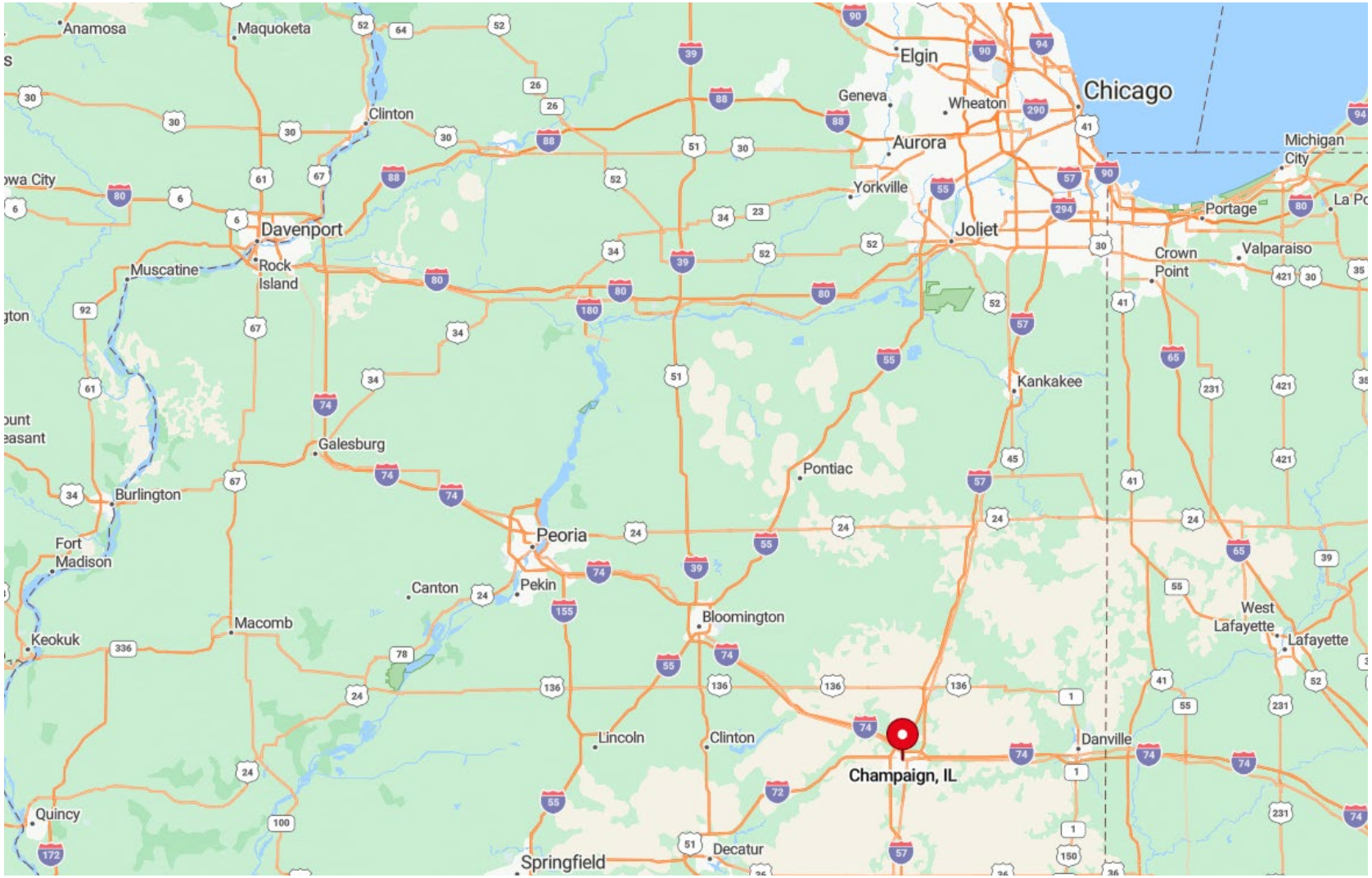
Copper Slough Watershed Master Plan to Garden Hills and Beyond

March 12, 2024 | Christopher Gutkowski, PE, CFM

SECTION 1

Beginning of 20-Year Stormwater Journey

Champaign, IL



Stormwater Journey

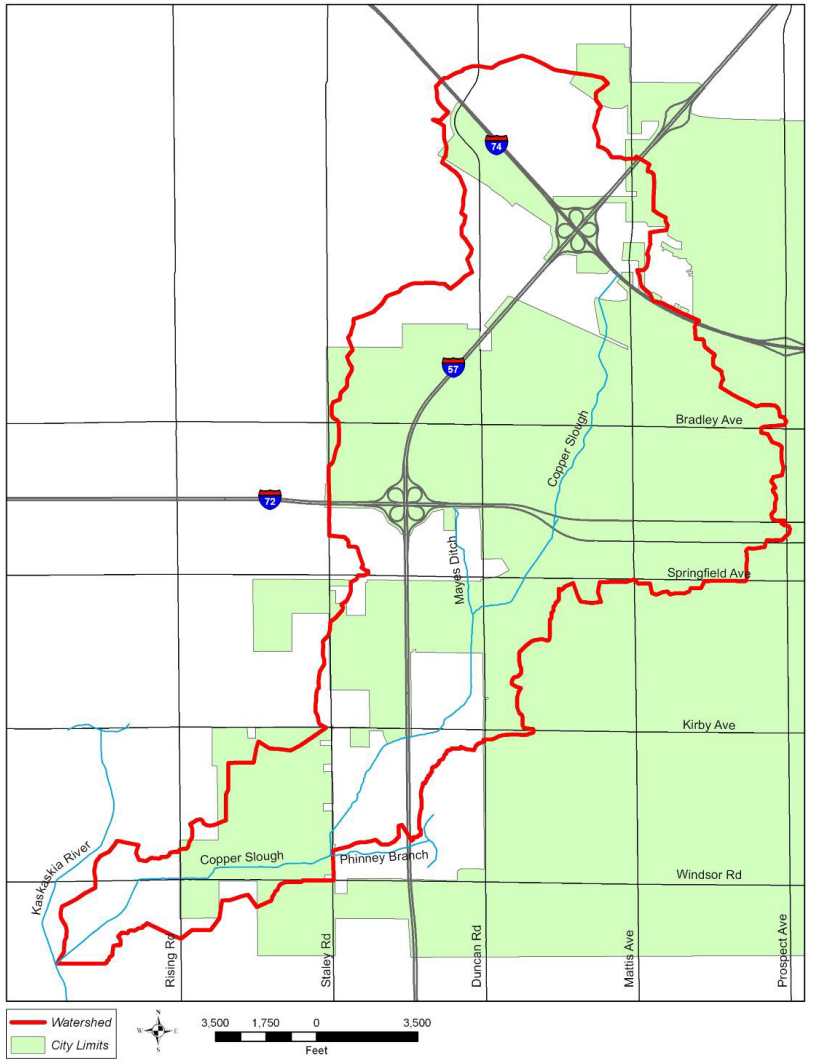
- Pre 1990s
  - Channelization
  - Encroachment of Waterways
  - Limited Funds for Stormwater
  - Development Focused
- Late 1990s
  - Current Stormwater Ordinance
  - Rapid Development and Redevelopment
  - Stormwater Solutions
- Periodic Stormwater Master Plan Updates
  - 20-30 Year Cycle
  - Stormwater Management

SECTION 2

Copper Slough Watershed Master Plan

Copper Slough Watershed

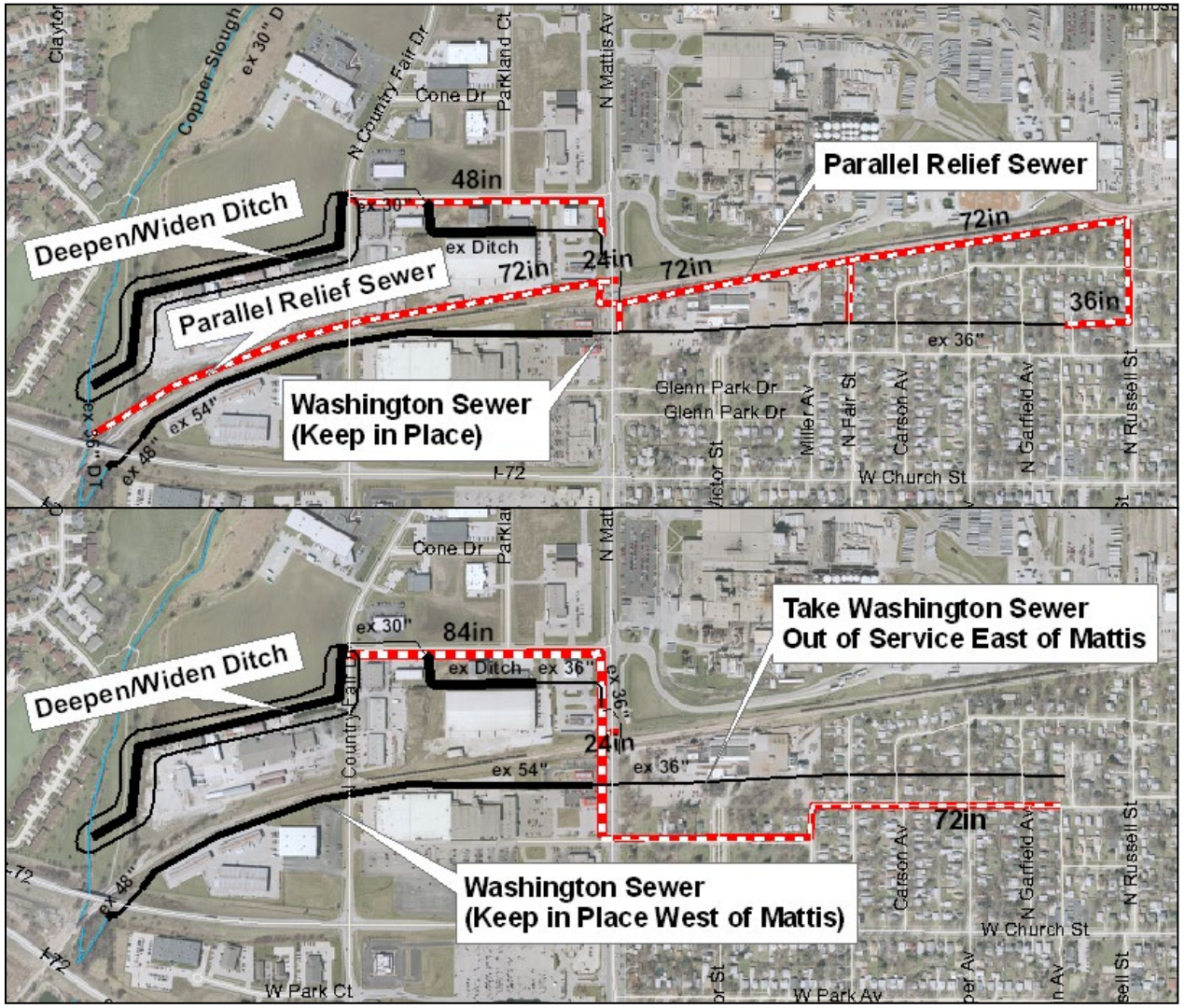
- Largest Watershed in the City of Champaign
- 16.2 Square Miles (including Phinney Branch)
- Key Watershed Issues
  - Rapidly-Developing
  - Older Neighborhoods
  - Commercial/Industrial
  - Future Development Controls



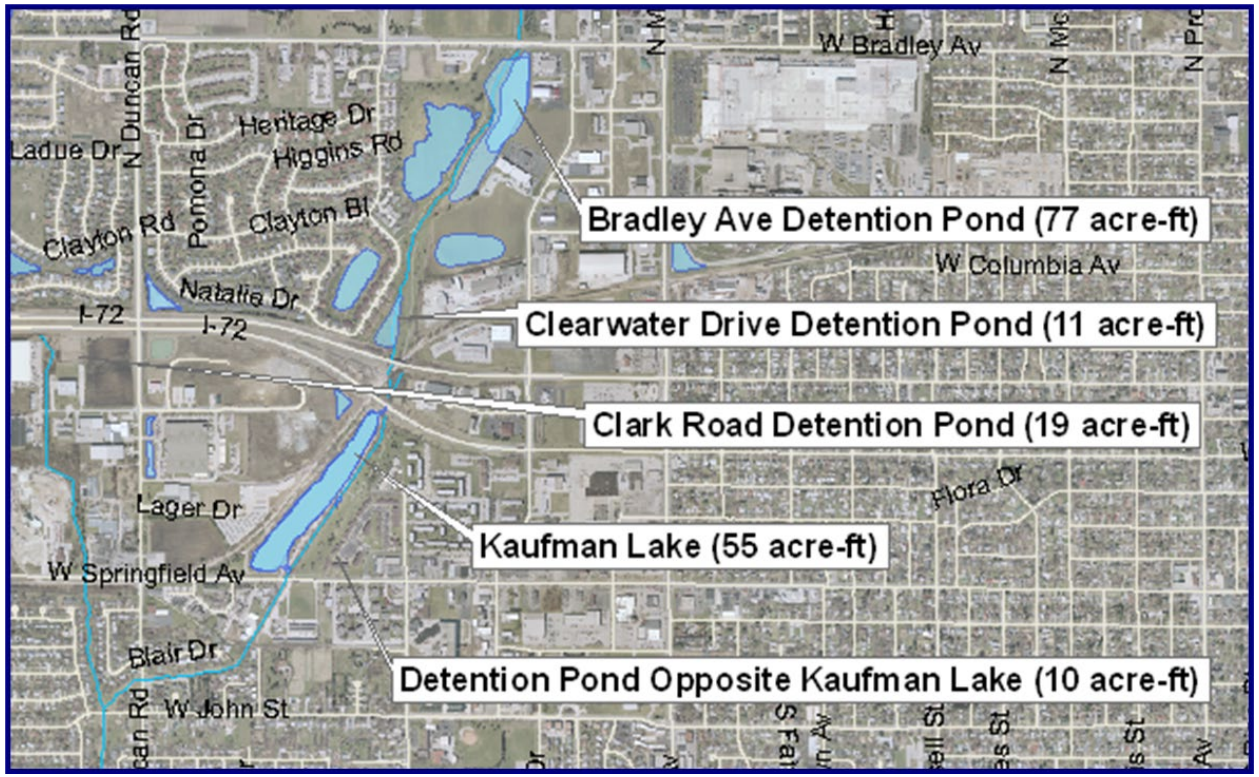
Study Findings - Conveyance

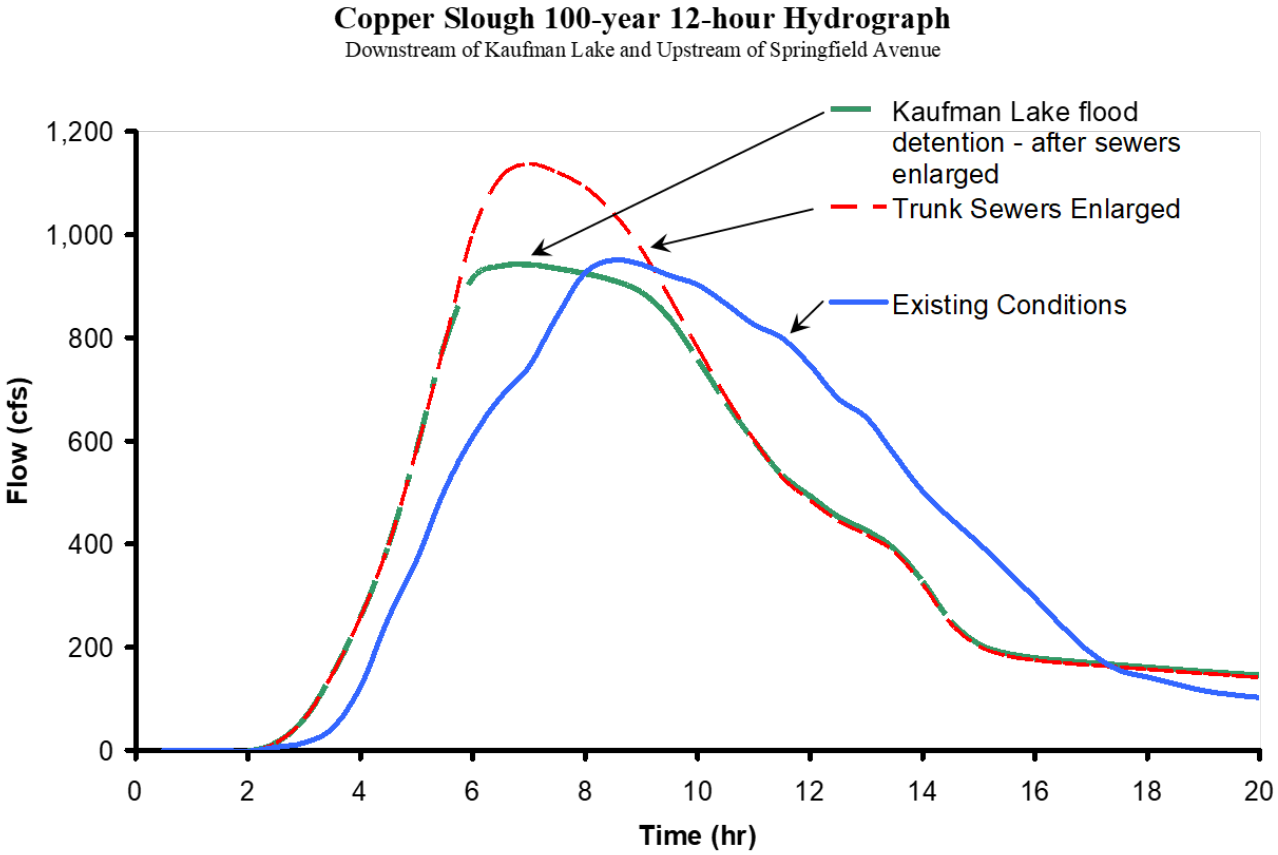
- Proposed Trunk Sewer Projects
  - Deliver Higher Peak Flow Rates to Channel
  - Reduces Flood Storage in Current Flood-Prone Areas
  - Detention Storage Needed to Mitigate Impacts of Sewer Projects

Study Findings - Conveyance



Study Findings - Detention



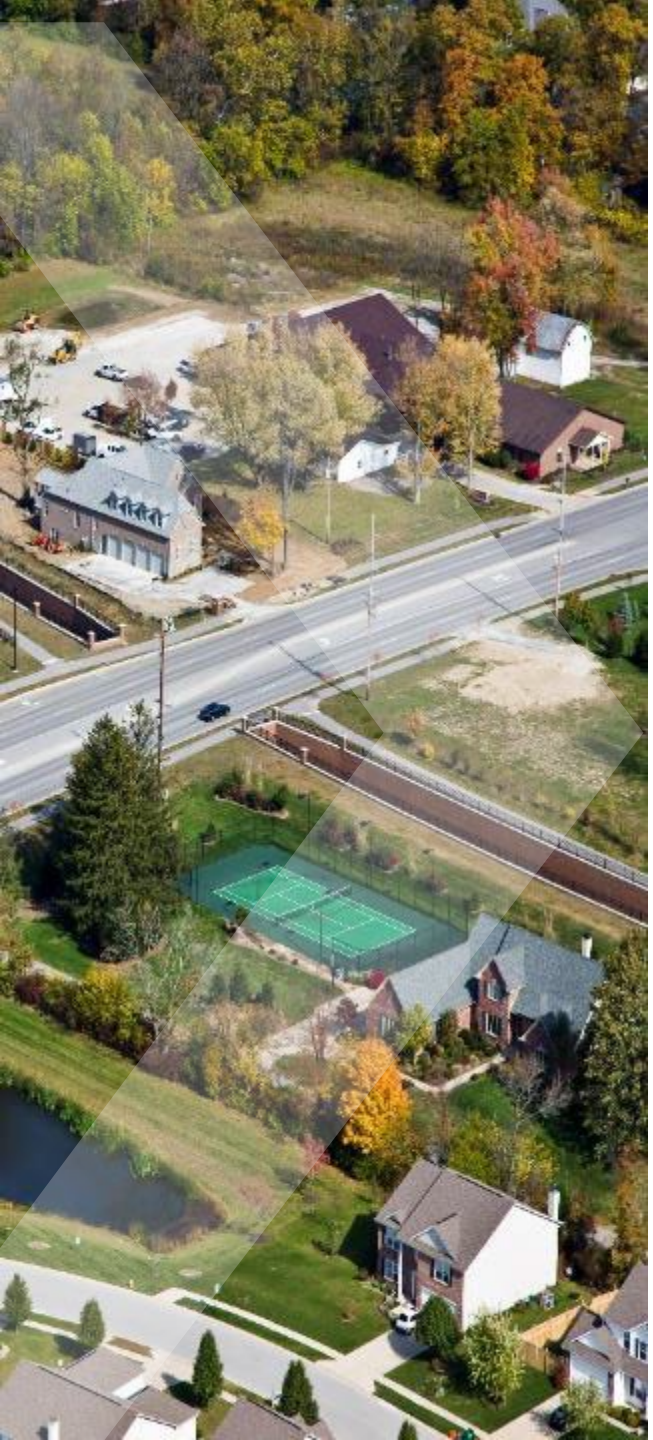


Copper Slough Watershed

- High Level Evaluation of Existing Infrastructure in Local Watersheds
- Recommended Improvements for West Washington = $15M (2007 dollars):
  - Larger Storm Sewers (72” and 84”)
  - Regional Detention Pond
  - Channel Improvements along the Copper Slough

SECTION 3

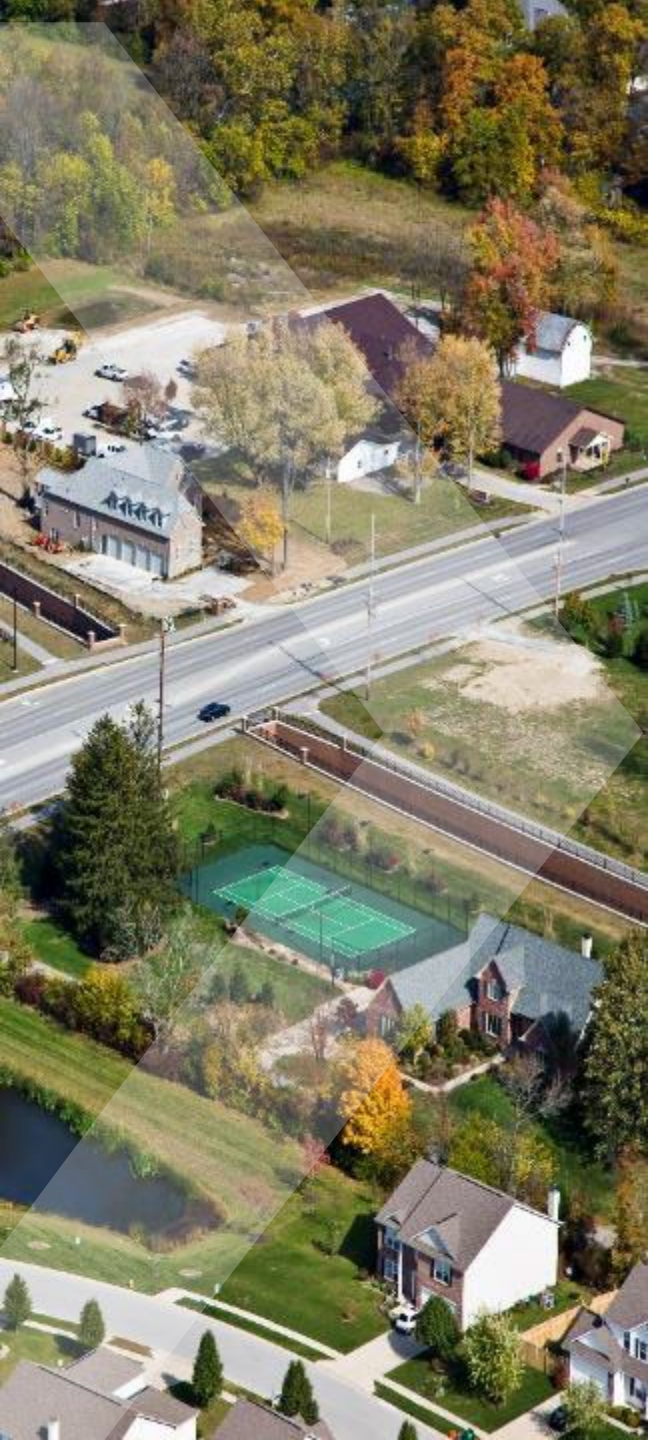
City of Champaign's Evolution of Infrastructure Design



Battle of the Basins

- Healey St Basin versus Second St Basin

- 2015 Storm
- Public Perception?

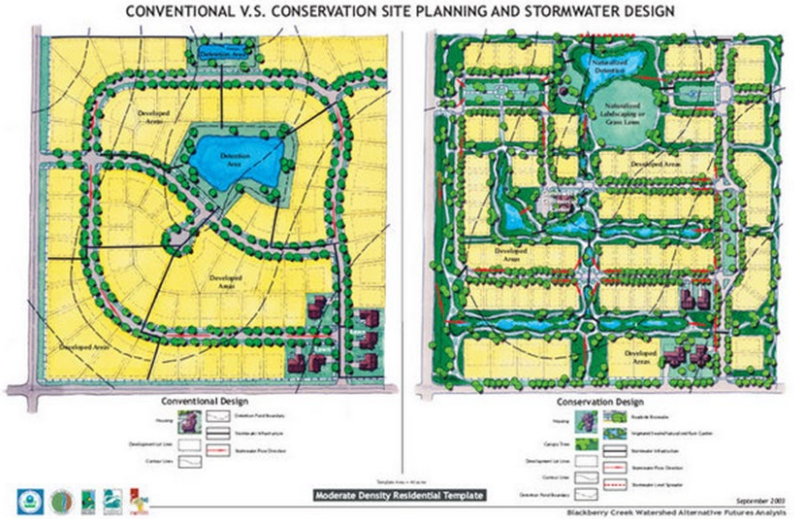


Battle of the Basins

- Healey St Basin versus Second St Basin

The Value of Infrastructure

- Technical Outcome versus Social, Aesthetic, and Economic Implications
- Engage and Educate the Public
  - Where is the money being spent?
  - Why is the money being spent?
- Extract Additional Value from Public Engagement

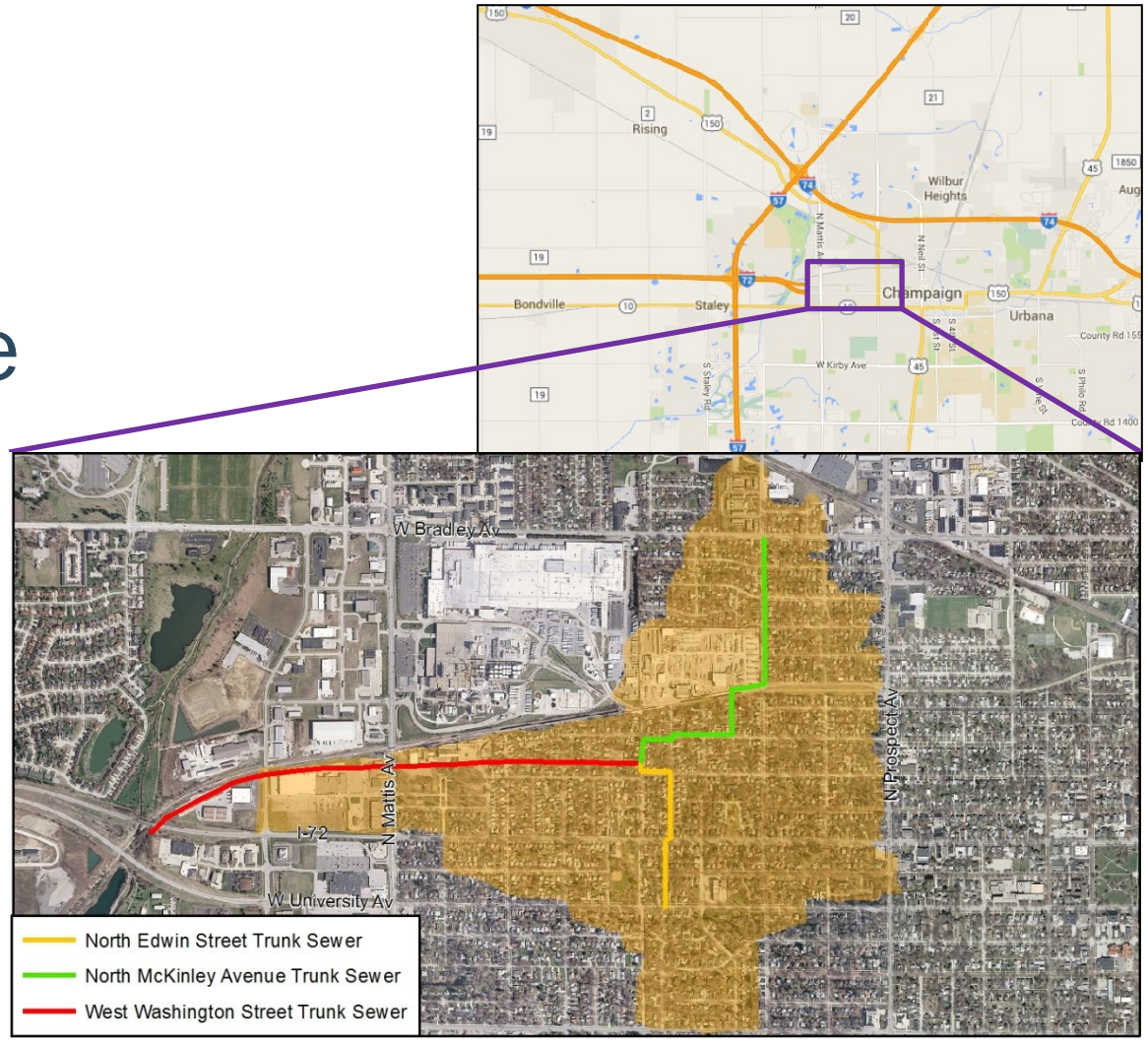


SECTION 4

West Washington Street Drainage Study and Project

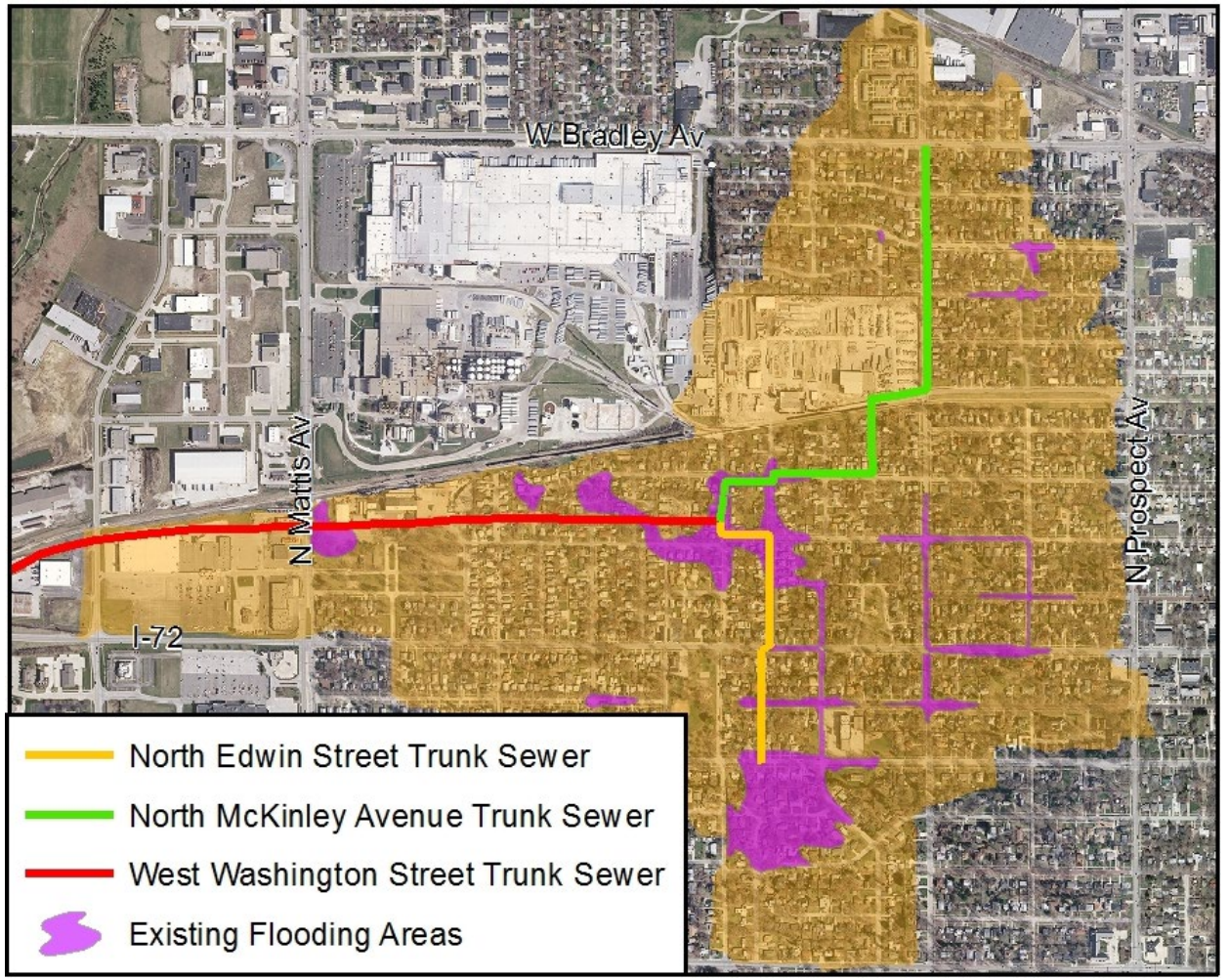
Project Area

- Area = 408 ac
- 36” Drain Tile
- Rural Drainage



Project Area

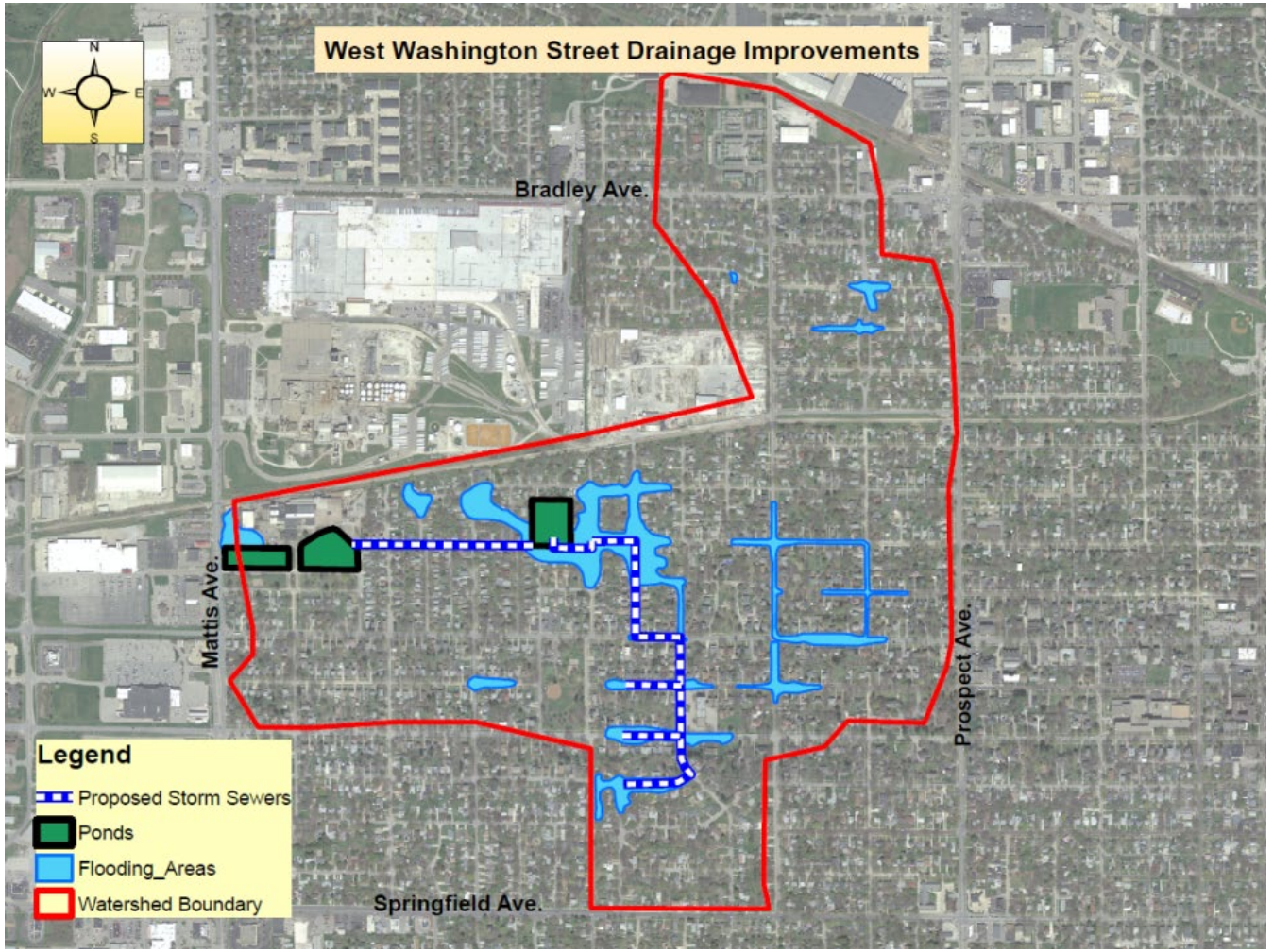
- West Washington Street Watershed Drainage Issues (2009)
  - Limited Sewer Capacity in Trunk Storm Sewers
  - No Detention Ponds
  - No Defined Overland Flow Path
  - Pipe Slope Issues
  - Inlet Capacity Issues
  - Inlet Connectivity Issues
  - Surface Ponding Allows Inflow into Sanitary Sewers



Scope of the Problem

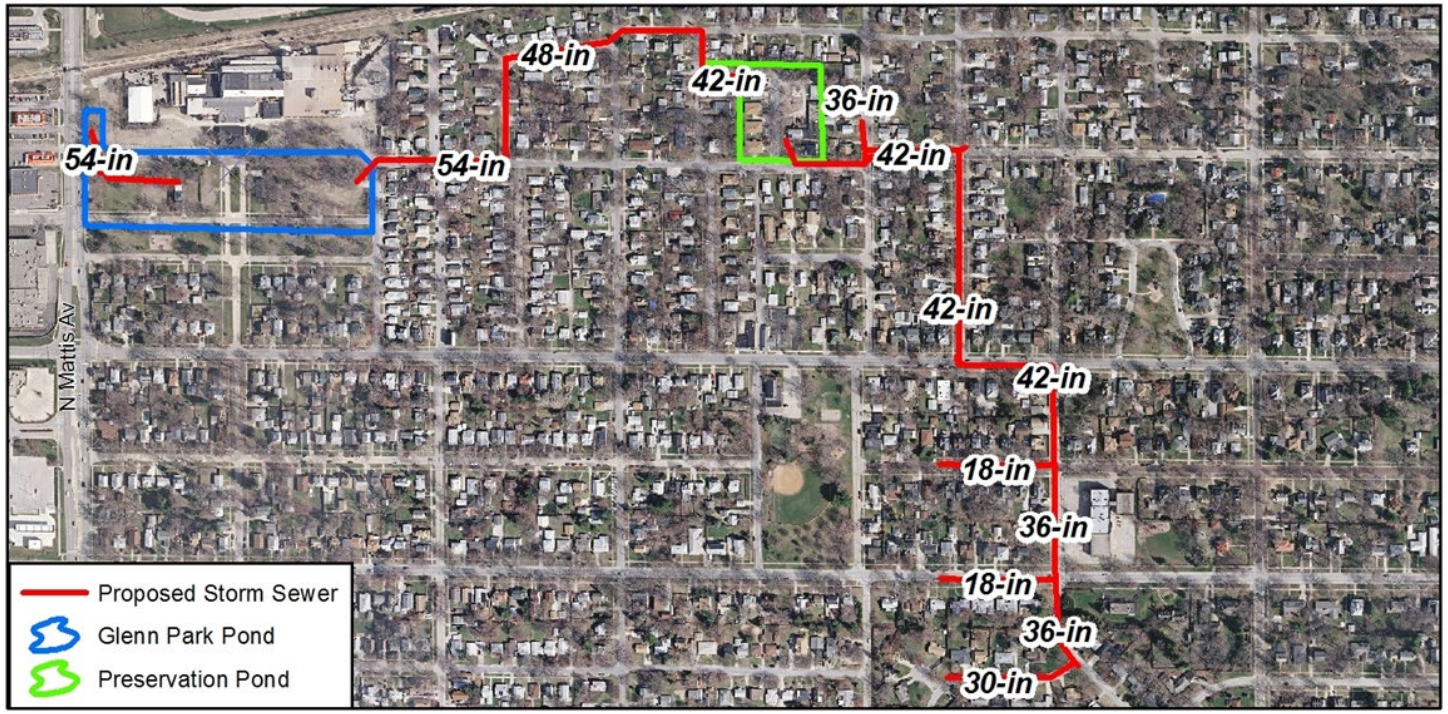
West Washington Street Study

- Goals:
  - Identify Problem Areas
  - Develop a List of Alternatives
  - Analyze Alternatives
  - Determine Implementation Strategies
  - Identify Levels of Protection
- Collaboration With:
  - Steering Committee
  - Council Members
  - City Staff
  - Residents



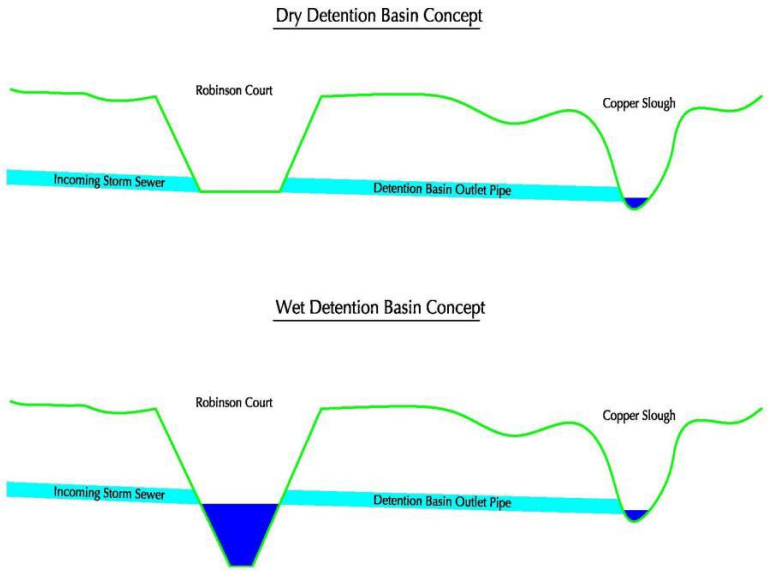
Study Findings

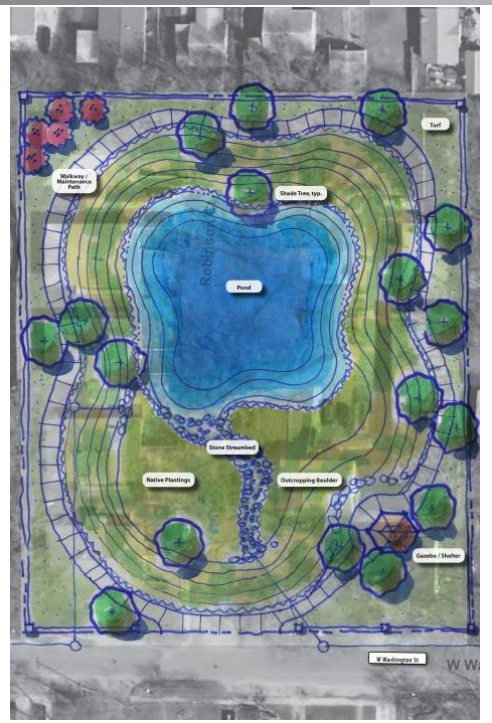
- Proposed Improvements
  - At Least 40 ac-ft Needed
    - Place Near Problem Areas
    - Connect Ponds
  - Replace Edwin St Trunk Storm Sewer
  - Extend Trunk Sewer
    - Flora Court Neighborhood



Preservation Pond Summary

- Goal: Improve Flood Protection Levels
- 11 ac-ft Detention Basin at Robinson Court (Preservation Pond)
- Street Reconstruction
- Green Infrastructure/Landscaping
- Cost = $2M (plus Land Acquisition)
- Built in 2014/15





Preservation Pond Challenges

- Aesthetics versus Volume
- Land Acquisition
- First Project Constructed
- Located at Worst Flooding Area
- Setting Expectations
- Needed to Work with Future Projects

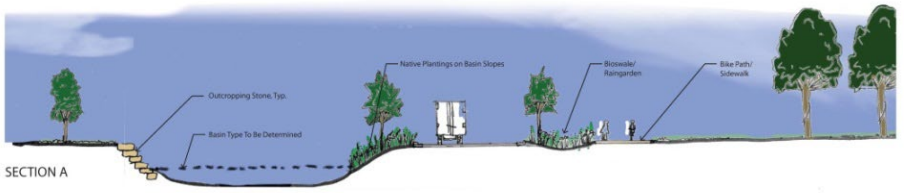
Preservation Pond Results

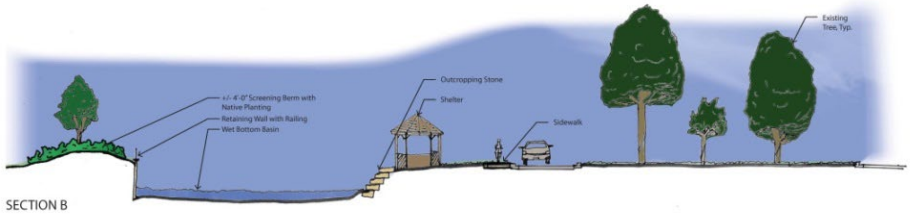
Preservation Pond Results

Preservation Pond Results

Glenn Park Summary

- Goal: Improve Flood Protection Levels
- Detention Basins at Glenn Park (17 ac-ft)
- Landscaping
- Construction Cost = $7M
- Built in 2017/18





Glenn Park Pond Challenges

- Aesthetics versus Volume
- Land Acquisition
- Stakeholder Coordination
  - Modified Entrance/ Intersection
- Integrate into Existing Park
- Utility Coordination
- Maintaining Expectations
- Unique Features

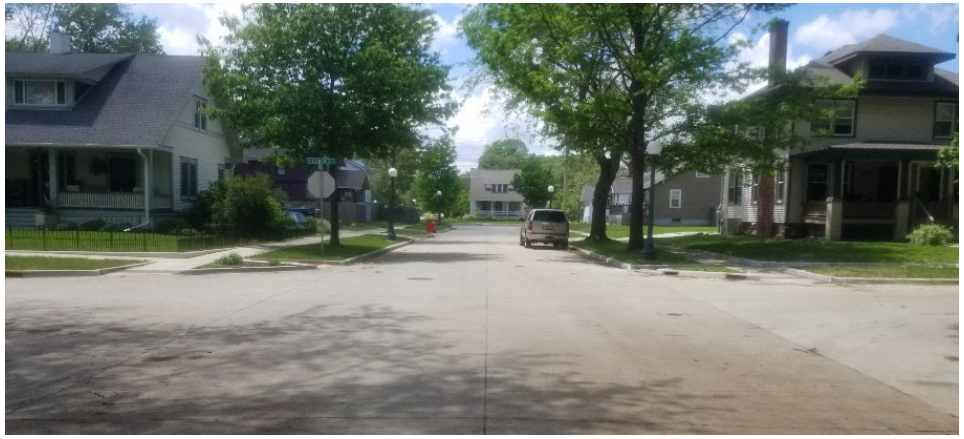
Glenn Park Pond Results

Glenn Park Pond Results

Glenn Park Pond Results

West Washington Phase 3

- Goal: Connect Constructed Ponds
- Storm Sewer and Water Main
- Complete Streets Approach
- Rain Gardens
- Construction Cost = $12M
- Built in 2017/18 and 2019/20

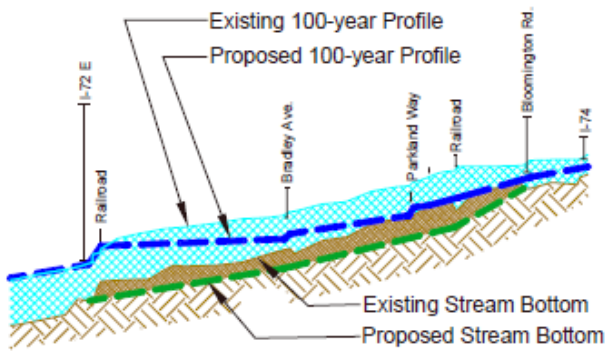


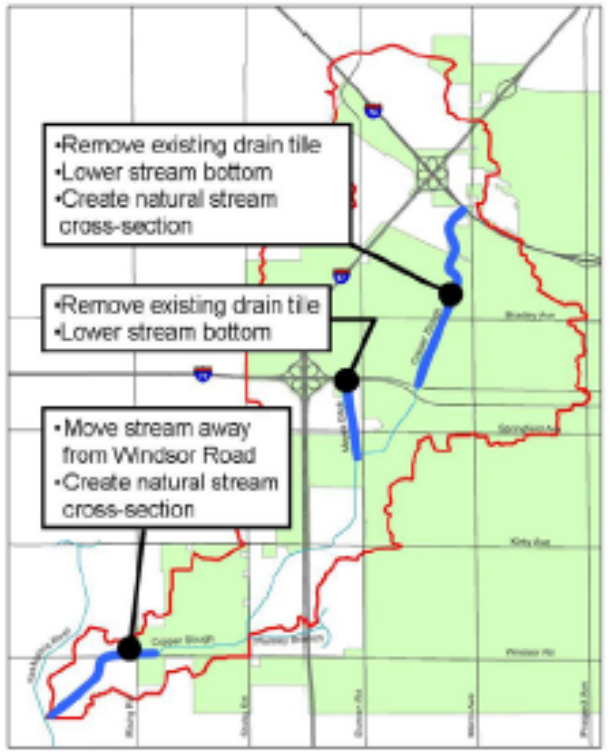
SECTION 5

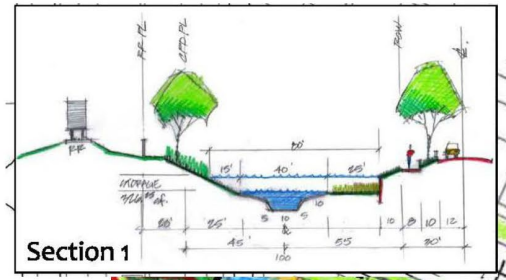
Garden Hills Neighborhood Drainage Study and Project

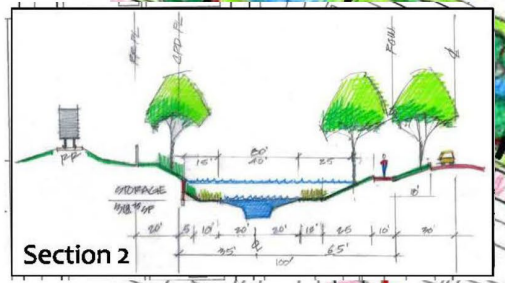
Garden Hills Project Area

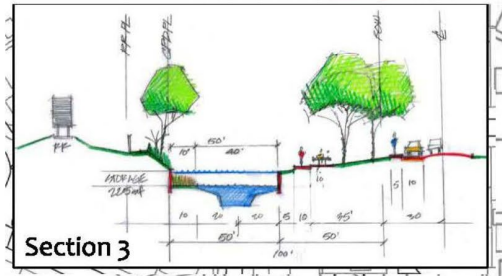
Garden Hills Project Evolution

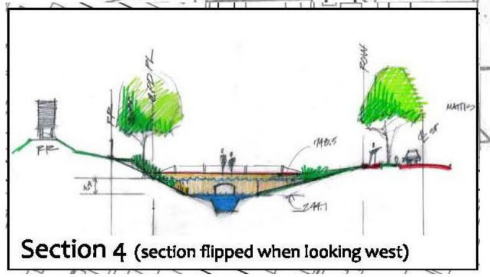












Garden Hills Project Challenges

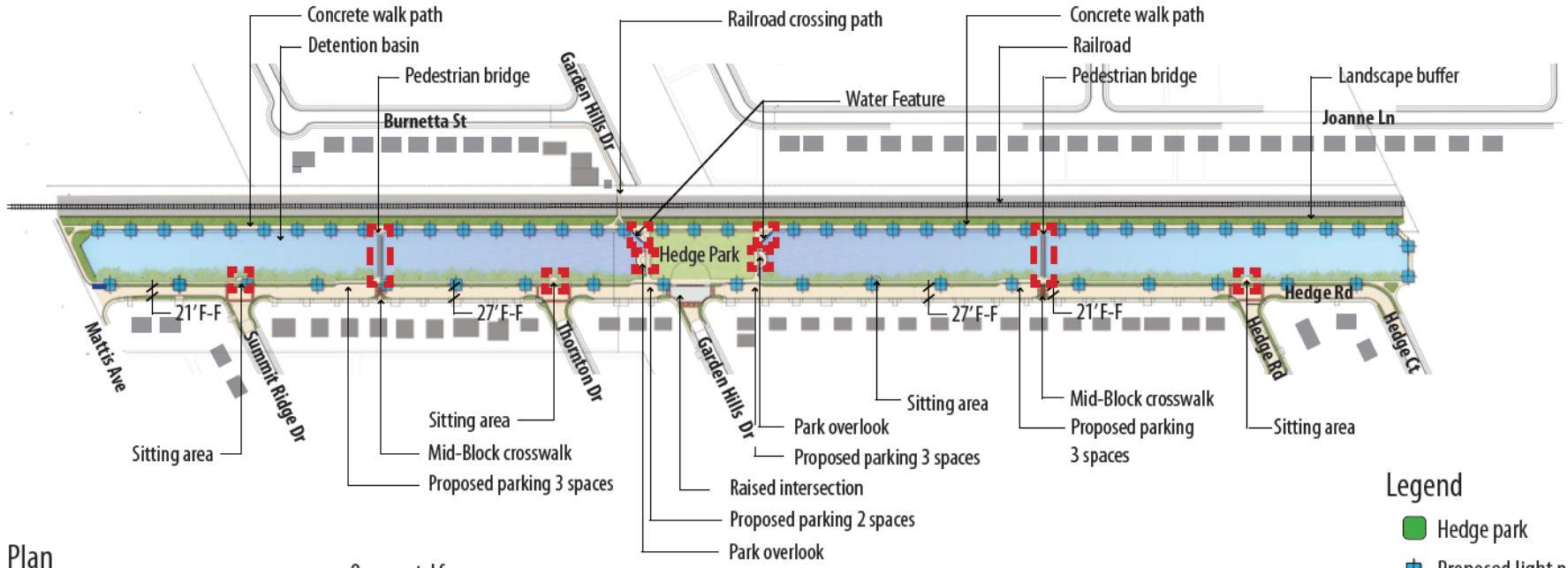
- Aesthetics versus Volume
- Bulletin 75 Rainfall
- Railroad Coordination
- Maintaining Expectations
- Site Constraints
- Unique Features

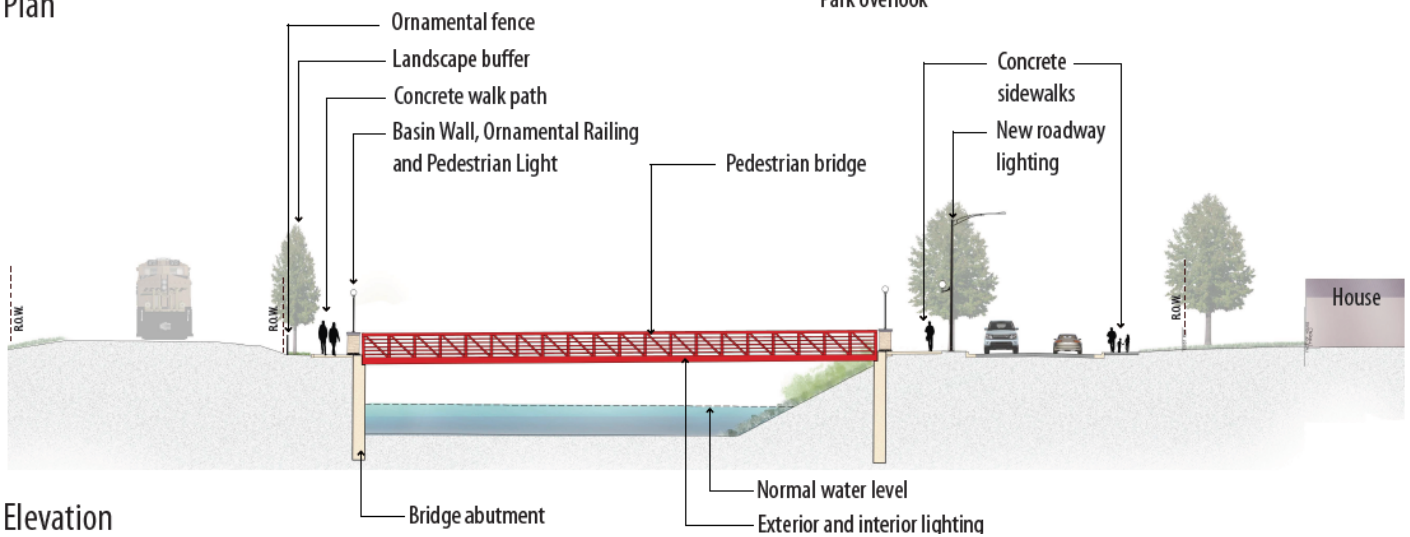
Neighborhood children at the flooded playground at Garden Hills Park on July 7, 1992.

Photographer:
John Dixon

Garden Hills Project Area

Garden Hills Project Concept





Legend

- Hedge park
- Proposed light pole
- Homes
- Enlargement areas

Garden Hills Project Concept

Concept Art Created by Hitchcock Design Group

SECTION 6

Next Steps in City's Stormwater Journey

Garden Hills Project Challenges

- Continue Periodic Stormwater Master Plan Updates
  - 20-30 Year Cycle
  - Stormwater Amenities
- Greenspace Preservation and Neighborhood Enhancements
  - Stormwater Utility Fee
  - Multifaceted Focused
- Future
  - Continue Garden Hills Neighborhood Enhancement
  - Look for Additional Decentralized Opportunities
  - Target Downstream Neighborhoods

Questions?