



March 14, 2023

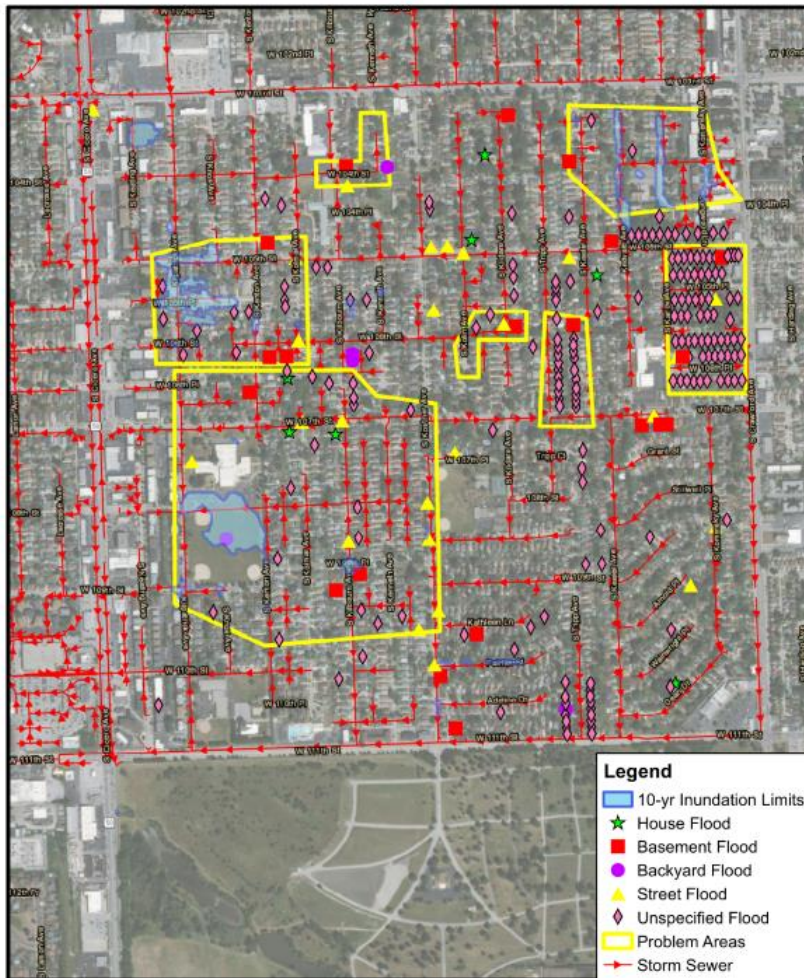
# REDUCING URBAN FLOODING IN OAK LAWN

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- Location Setting
- Flooding Issues
- Existing Conditions
- H & H Modeling
- Geotech Investigation
- Permitting & environmental considerations
- Cost considerations
- Stakeholder involvement



- [illegible]



- Long history of riverine and urban flooding during moderate and severe storm events
- Village flood records indicate basement, backyard, and street flooding
- June 9, 2011 and April 17, 2013 are two historic flooding events with wide-spread flooding and property damages (143 homes impacted)



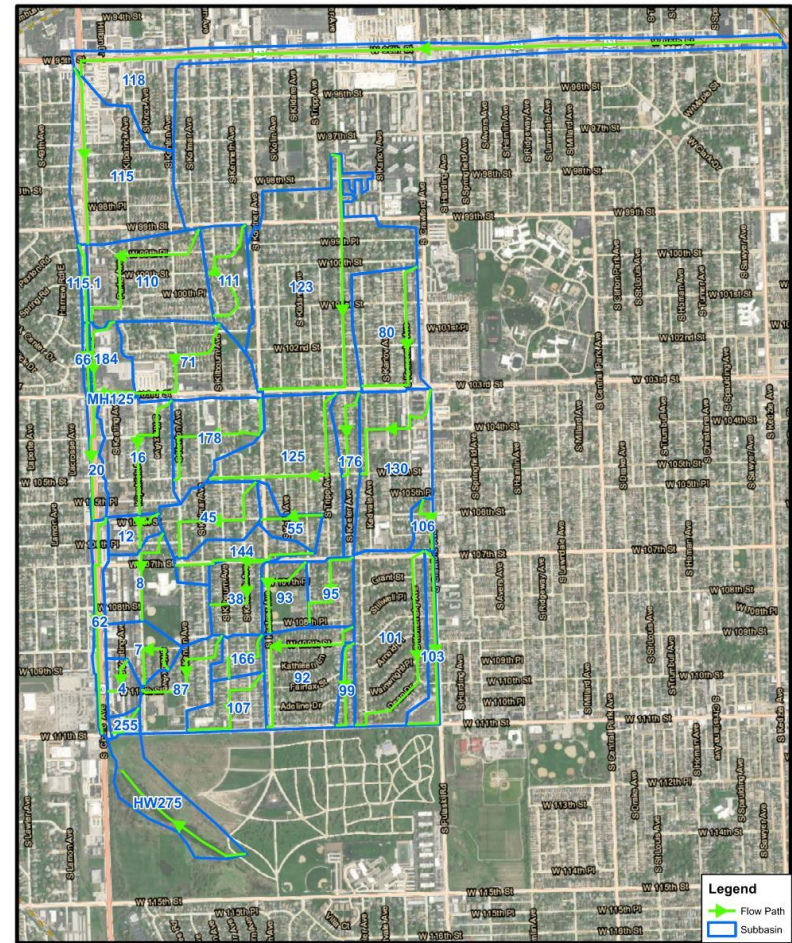


- Existing sewer system drains southwest to Stony Creek west of Cicero
- Sewer system becomes surcharged resulting in street ponding
  - 2-year event, sewers begin reaching capacity
  - 100-year event, widespread flooding throughout area
- Modelling results confirmed overlap with the locations of reported flooding

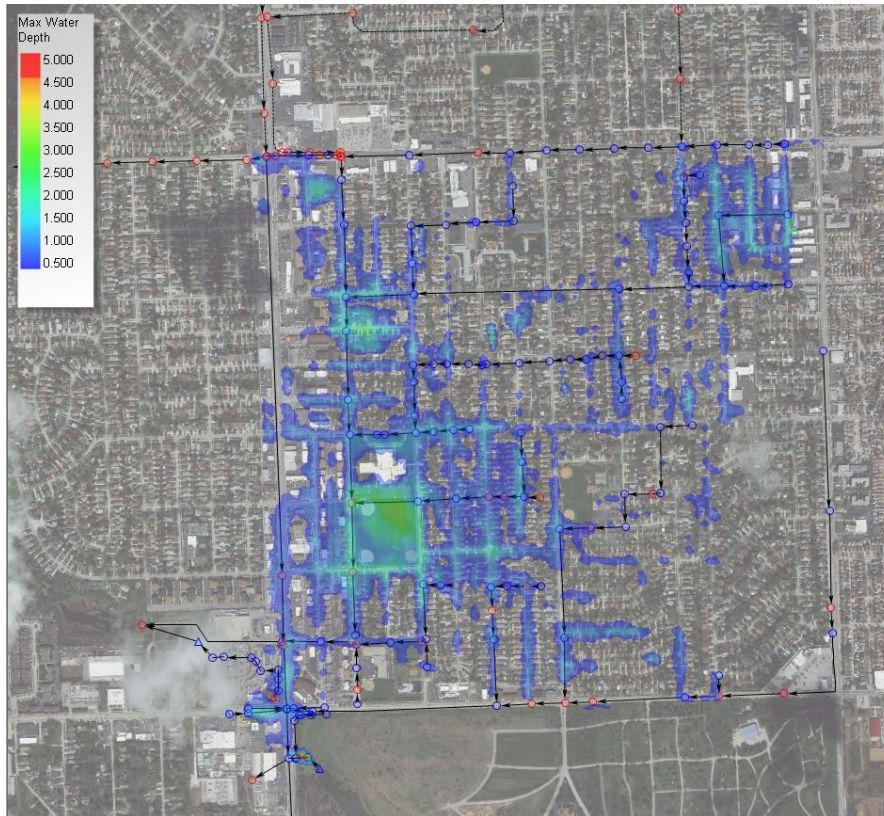


July 23, 2022 Storm  
Event Photos

- Hydraulic modeling in XP-SWMM 2D
- DTM ground surface
- Grid linked to inlet structures
- GIS Interoperability - drainage areas, land use data, existing stormwater infrastructure, building footprints
- Rating curves from HEC-RAS output implemented at outlets to account for backwater and time-variant flow
- Flows calculated in HEC-HMS





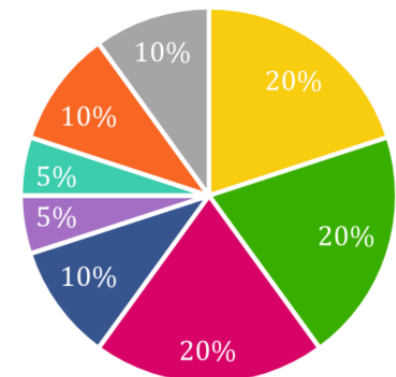
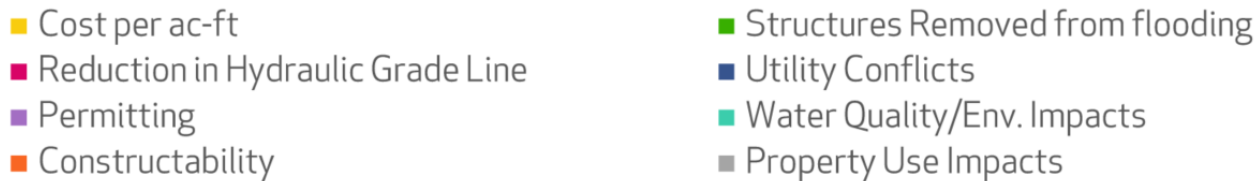


Stony Creek Existing 100-yr Inundation Map

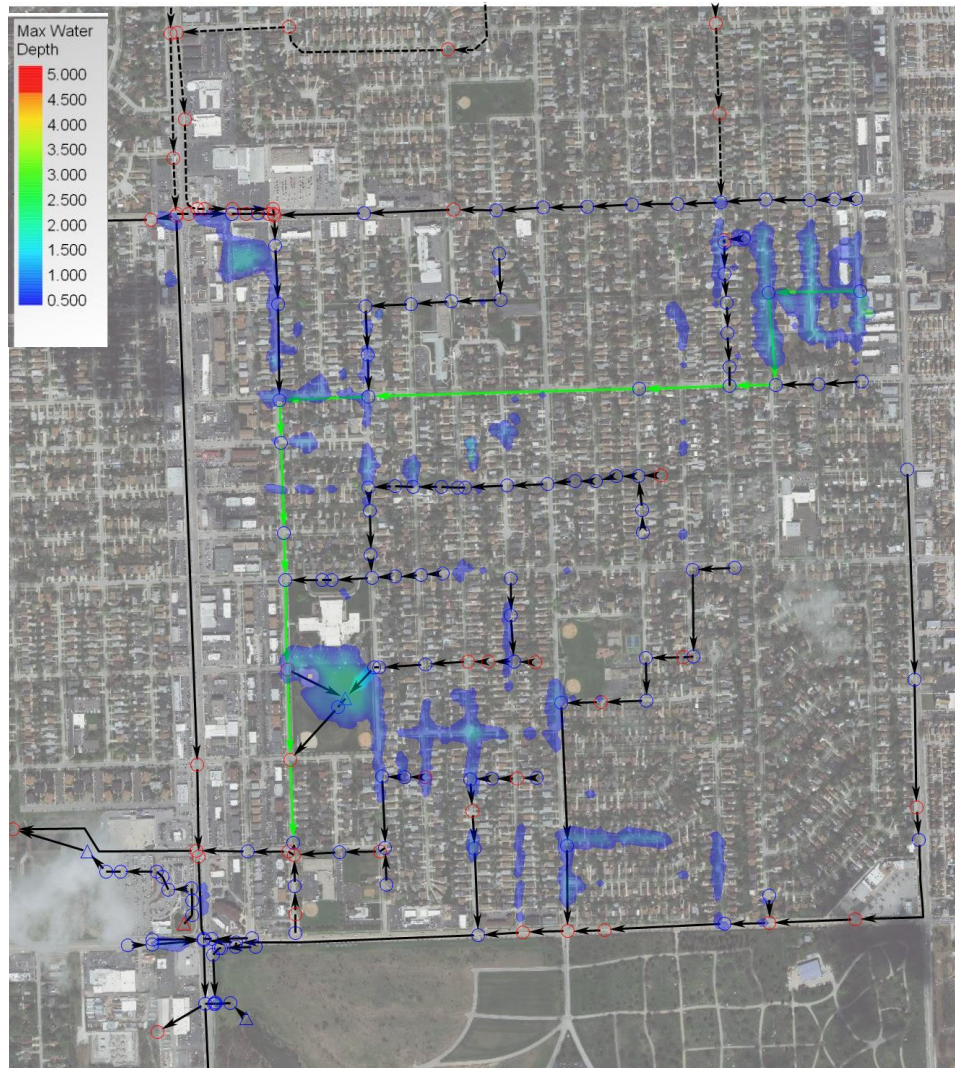
- Highly urbanized area with multiple outlets and backwater
- Undersized stormwater infrastructure
- Calculated # of structures impacted by flooding boundary
- Hot restart removed instabilities
- Calibrated model to reported flood problems
- Inundation maps in GIS correlate to flood problems areas



- Six alternatives analyzed to address urban flooding
- Green infrastructure, conveyance, and detention storage solutions evaluated
- H&H model and cost estimate for each alternative
- Weighted scoring matrix to evaluate benefits and disadvantages of all alternatives





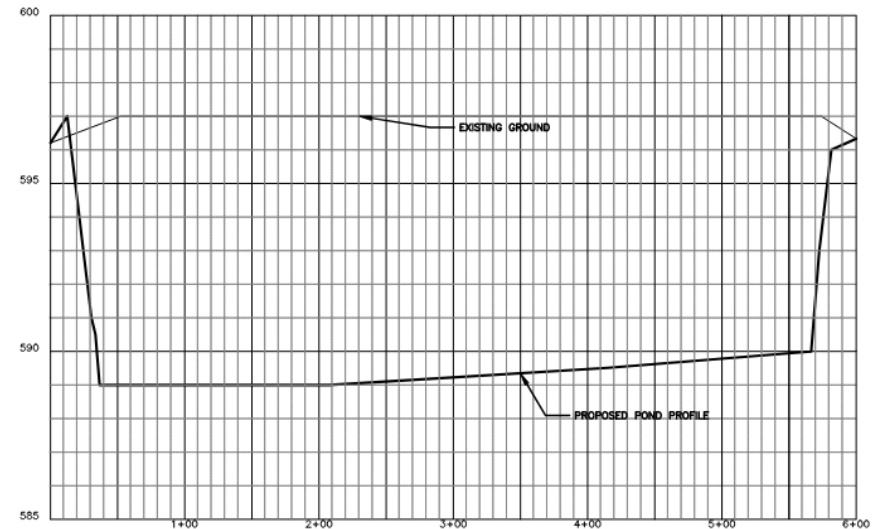


- Combination of detention basin and storm sewer improvements
- Provide 27.5 ac-ft of storage
- Reduction in structure impacts
- Reduction in hydraulic grade line

Storm Event	Structures Impacted Existing Conditions	Structures Impacted Proposed Conditions
10-yr storm	190	117
100-yr storm	591	496







POLARIS POND PROFILE  
SCALE: 1" = 50' HORIZ., 1" = 2' VERT.

- No wetlands within the project area
- Potentially impacted species: Northern long-eared Bat
- No potentially hazardous waste sites
- Anticipated permits: IEPA - NPDES, MWRD – WMO, Village of Oakland ROW permit





- Earth excavation and trench backfill
- Storm sewer removal and replacement
- Road reconstruction
- Natural turf vs. topsoil and seeding
- Backflow preventers
- Underdrains

ITEM DESCRIPTION	TOTAL COST
POLARIS SURFACE DETENTION	\$ 2,911,762
STORM SEWER IMPROVEMENTS	\$ 3,873,476
SUBTOTAL PROJECT IMPROVEMENTS	\$ 6,785,238
MOBILIZATION (5%)	\$ 339,262
ENGINEERING DESIGN (10%)	\$ 678,524
CONSTRUCTION MANAGEMENT (5%)	\$ 339,262
Sub-Total	\$ 8,142,286
CONTINGENCY (15%)	\$ 1,221,343
Total	\$ 9,364,000

## Village of Oak Lawn

- Provided Preliminary Alternatives August 2021
- Alternative Selection Sept 2021
- Review of Polaris Park Details May 2022



## School District 218

- Presentation of Polaris Park Option Sept 2021
- Easement Presentation to School Board March 2023

## Oak Lawn Park District

## Metropolitan Water District of Greater Chicago (MWRD)





# QUESTIONS?