VILLAGE OF WILMETTE NEIGHBORHOOD STORAGE PROJECT

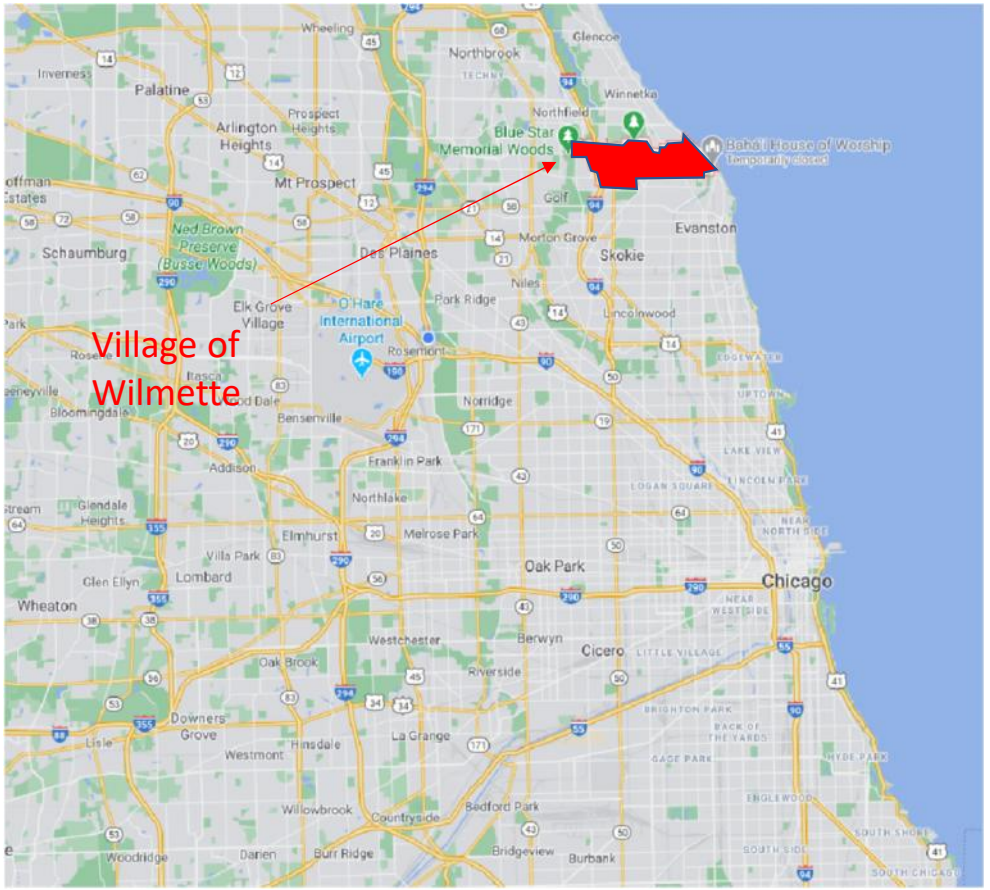
November 6, 2020

VILLAGE OF WILMETTE STORMWATER ACTION PLAN

Presentation Outline

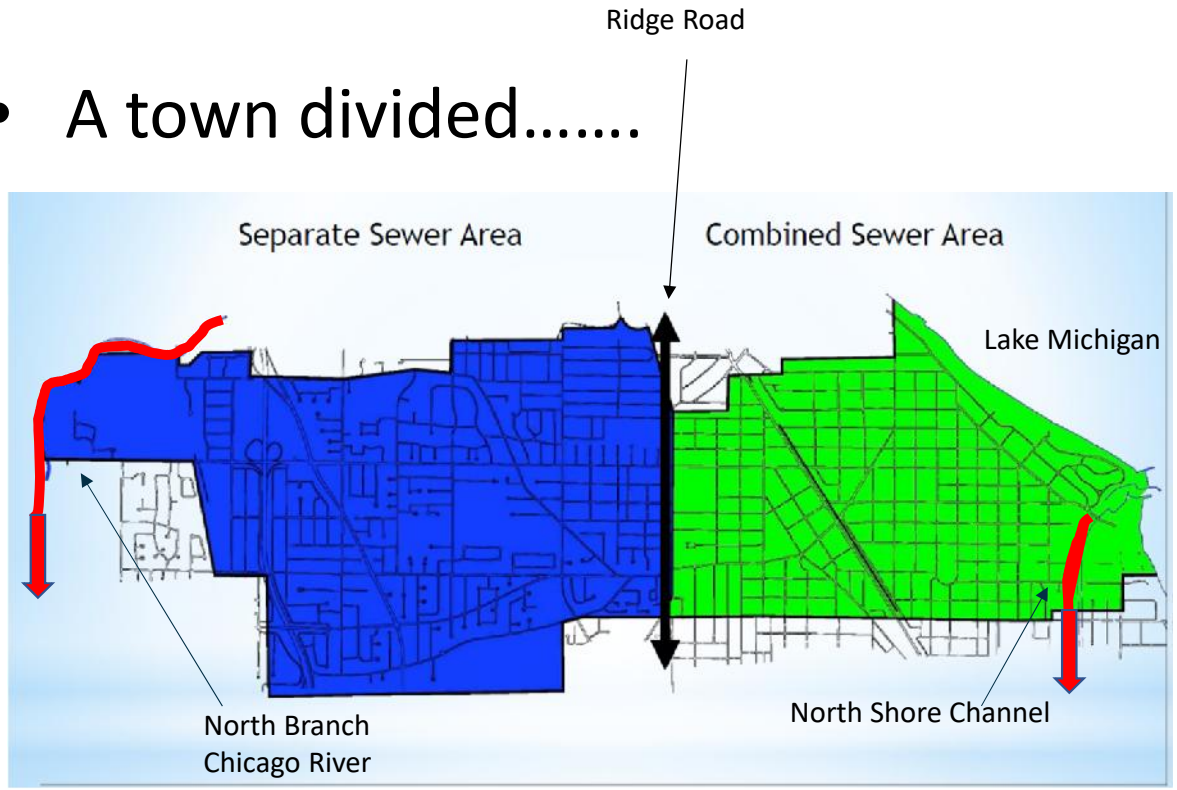
- History of Flooding in West Wilmette
- Stormwater Management Plan (2013-2016)
- Village Decision on Preferred Alternative (2017-2018)
- Plan Refinement and Optimization (2019)
- Park District and School District Coordination (2019-2020)
- Underground Vault Configurations (2019)
- Execution of Phase 1 (2019-2020)

The Village of Wilmette



- Located 14 miles north of Chicago
- Established in 1872
- Population = 27,000
- Land Area = 5.4 mi^2

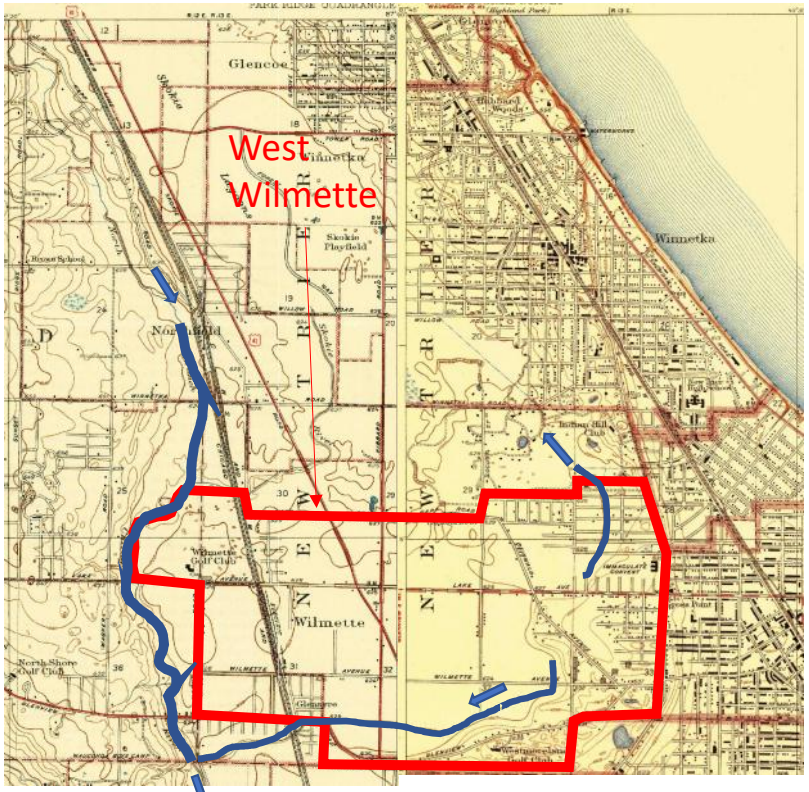
- A town divided…….



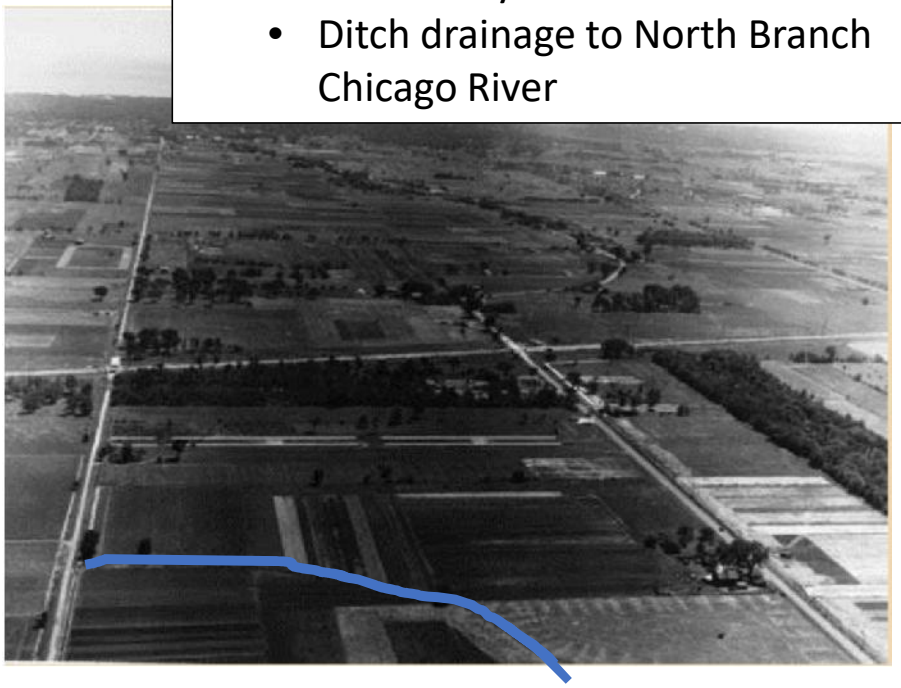
- Separate Sewer Area
  - West of Ridge Rd
  - Service Area = 2.8 mi^2
  - Built-out 1930-1950
    - Prior to modern stormwater practices

Historic Drainage in West Wilmette

- West Ridge Road
  - Flat topography
  - Historically wet area
  - Ditch drainage to North Branch Chicago River



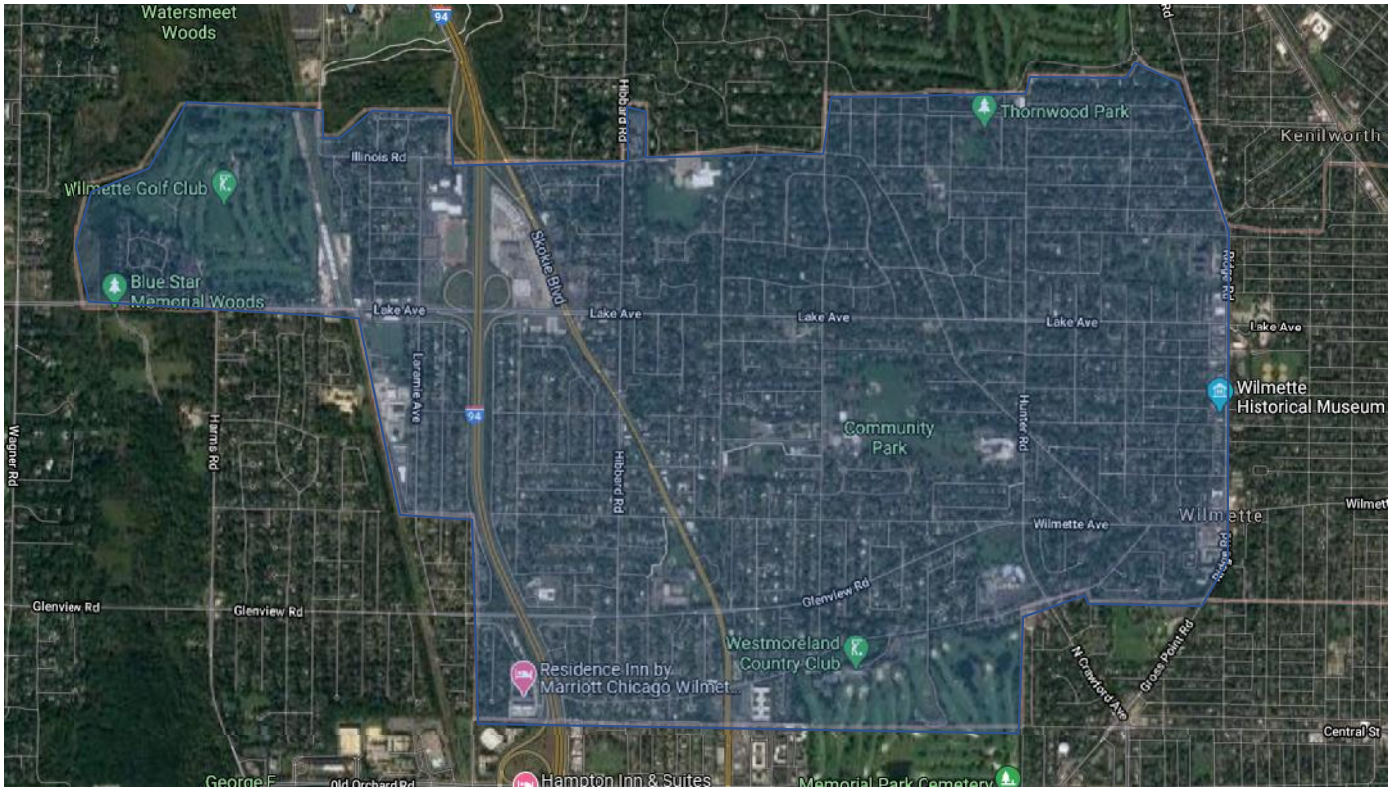
1929 USGS Quadrangle Maps



1926 Historical Aerial Map – Looking West

Current Landuse with Legacy Stormwater

- 1950s Stormwater
  - Undersized storm sewers
  - Little stormwater detention
  - No safe overland flow paths



Aerial Photograph of West Wilmette

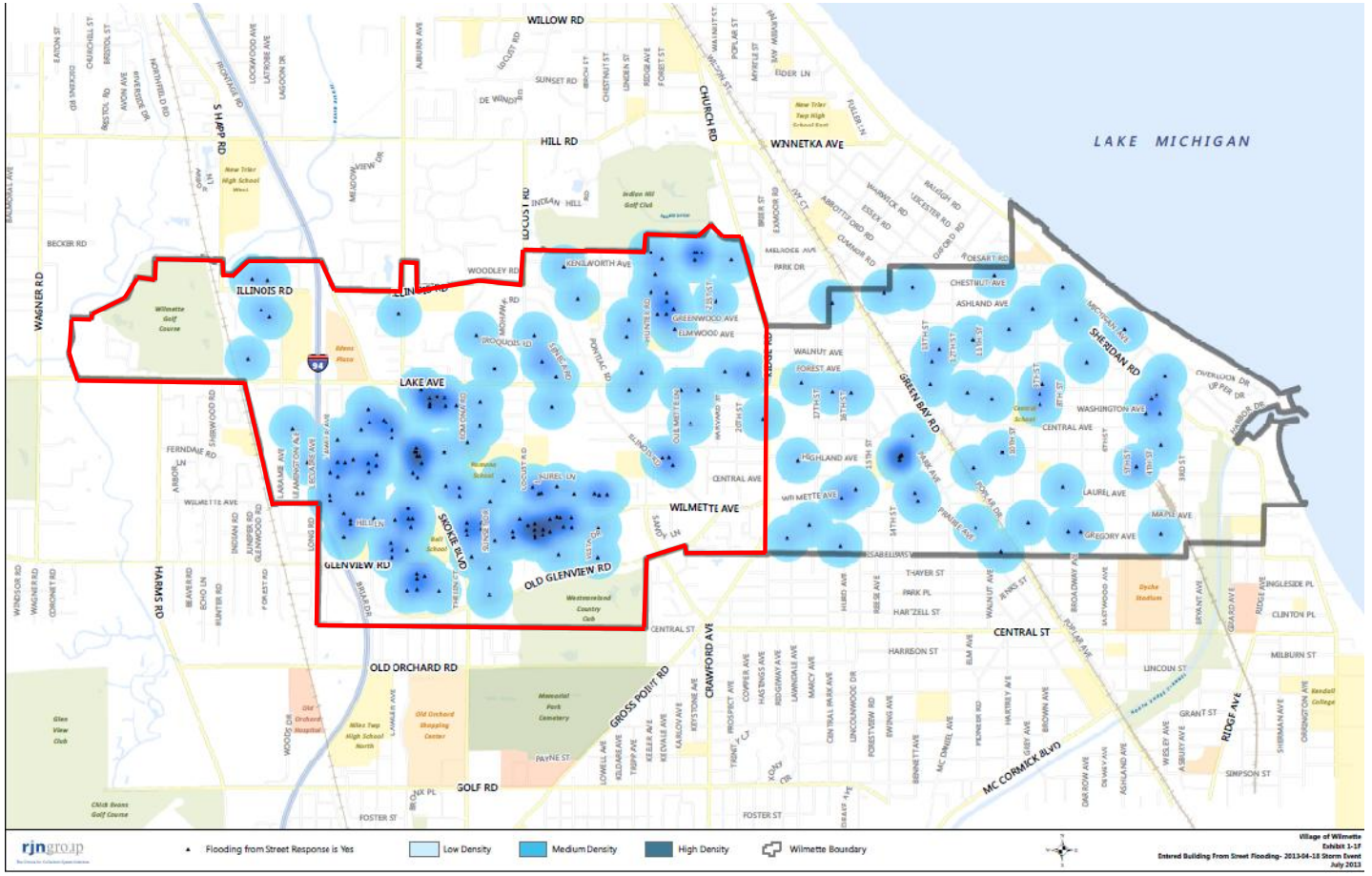
When 21st century rainfall interacts with stormwater infrastructure from the 1950's…..

Development of the Separate Storm Sewer Stormwater Management Plan 2013-2016

2013-2016 Stormwater Management Plan

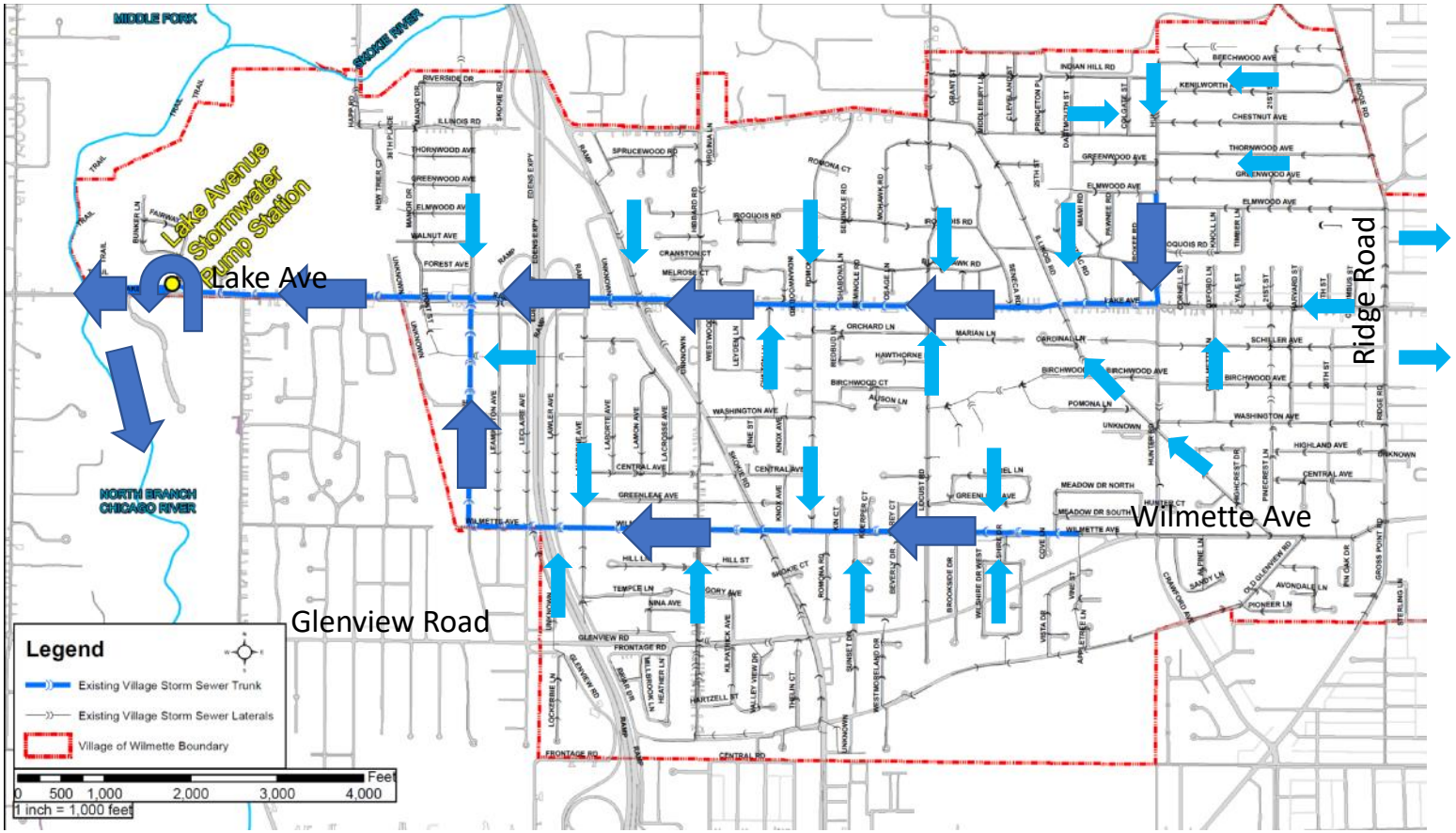
- April 2013 was Village storm of record for west side separate storm sewer system
- Sanitary system undergoing upgrade, inflow and infiltration tied to surcharged storm sewer system
- Village engaged CBBEL in December 2013 to develop plan
  - Extensive public outreach
  - Complete survey of storm sewer system and flow monitoring (RJN)
  - Analyze existing system and identify capacity/bottlenecks
  - Develop proposed drainage improvements and costs

Heat Map from April 2013 Flood Event

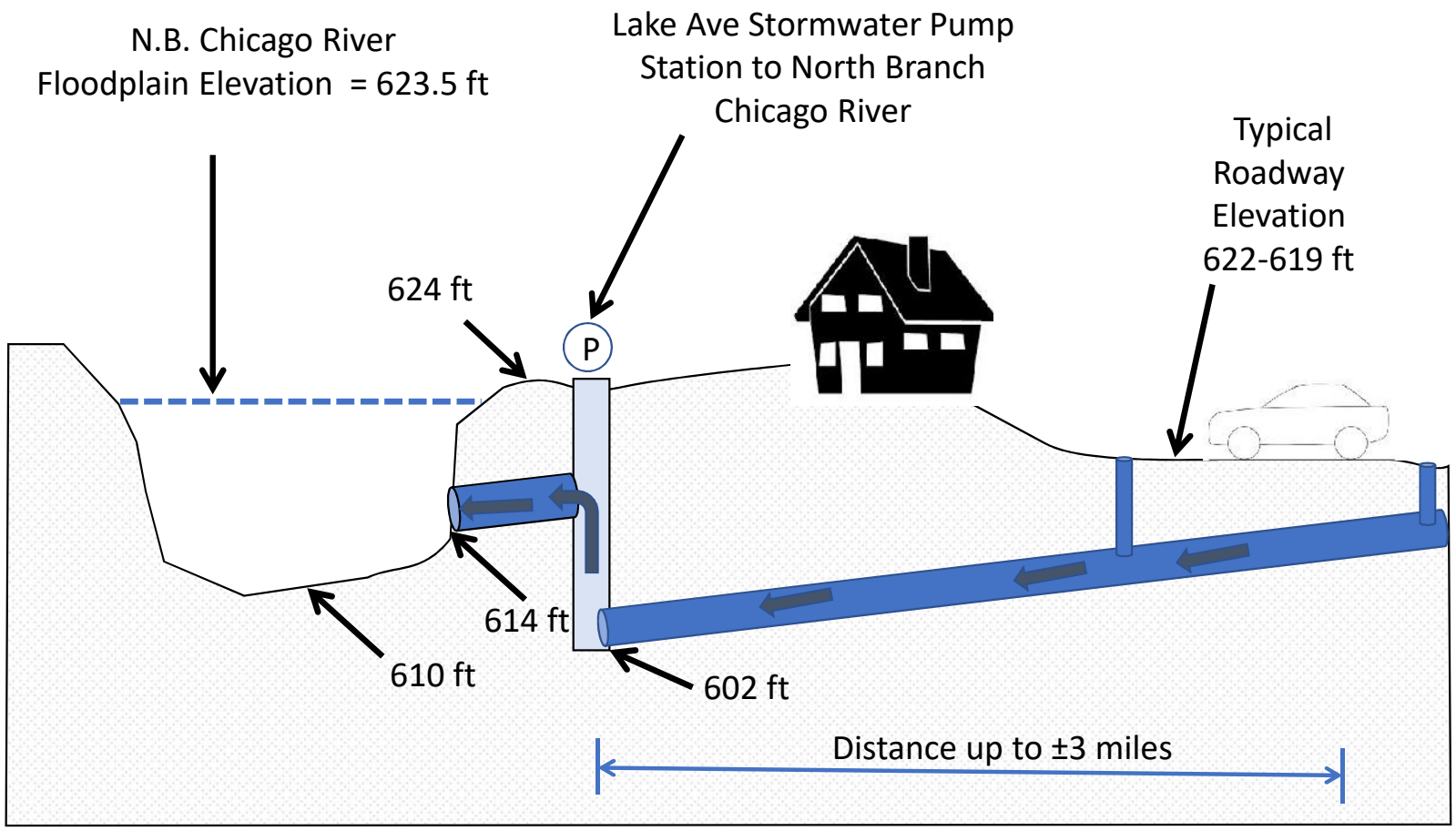


April 2013 - Flooding from street response is “Yes”

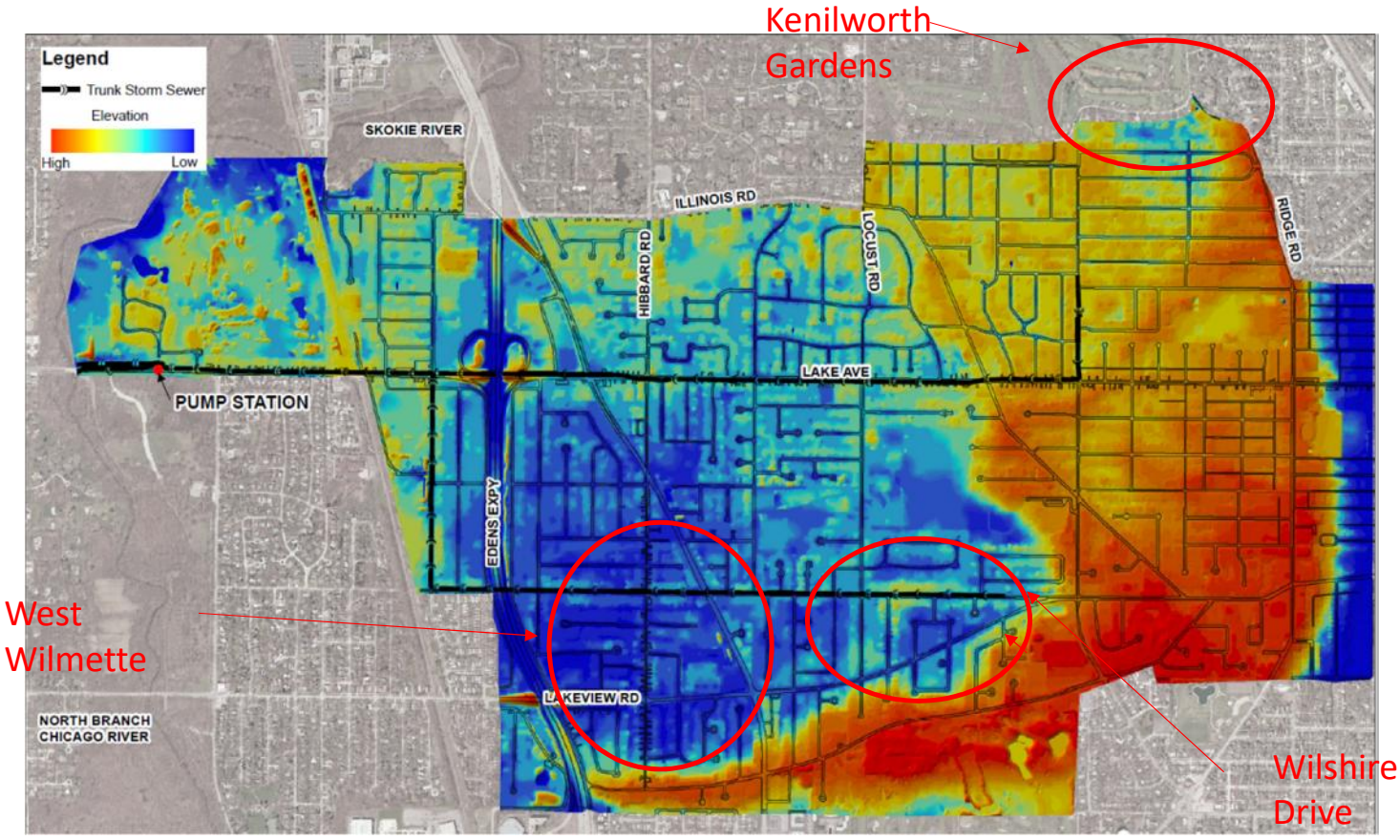
Function of Existing Storm Sewer System



Limitations of Existing Storm Sewer System



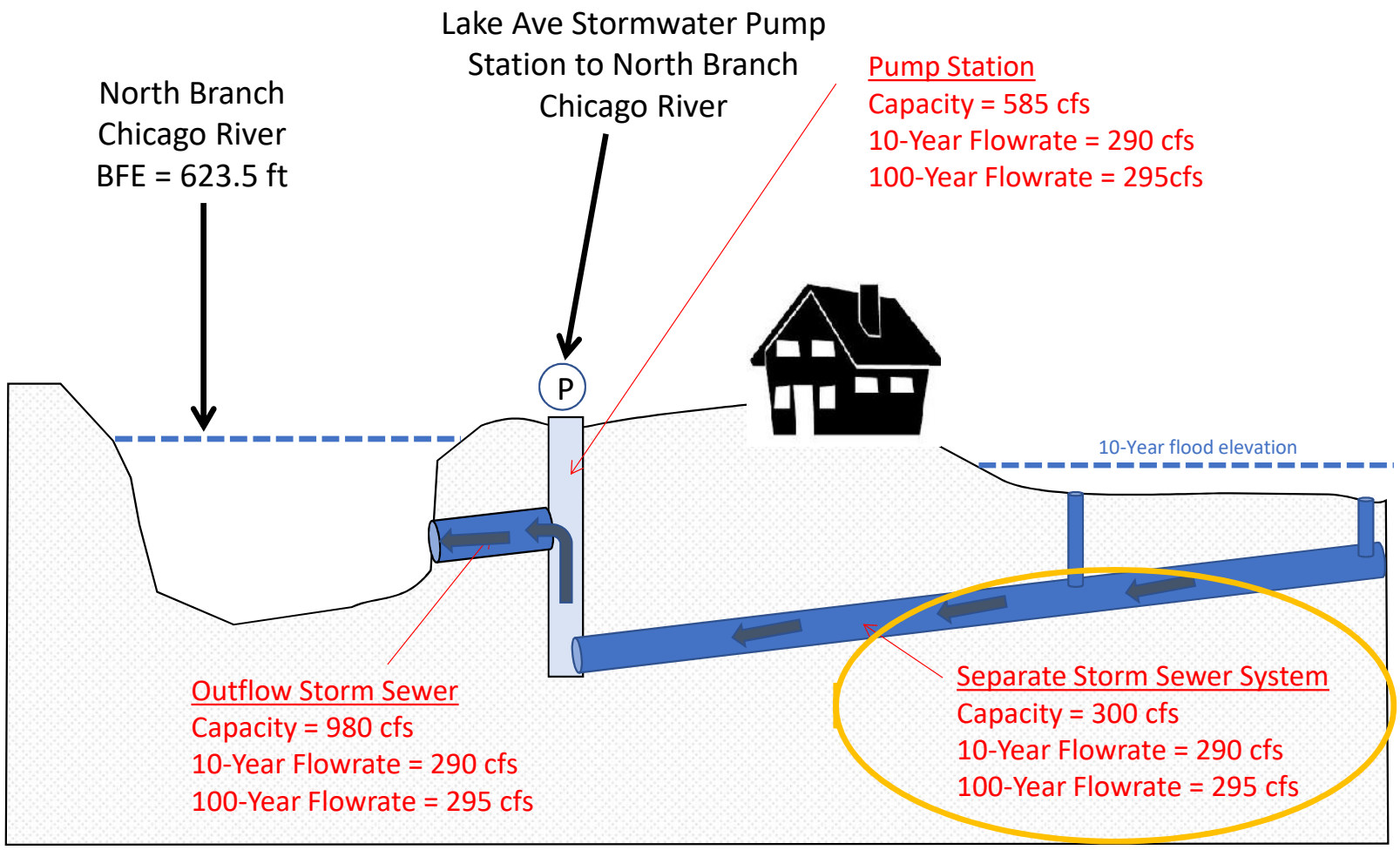
Topographic Limitations of Existing System



Topographic Map of West Wilmette with Trunk Storm Sewers

- Calibration of models to High Water Marks

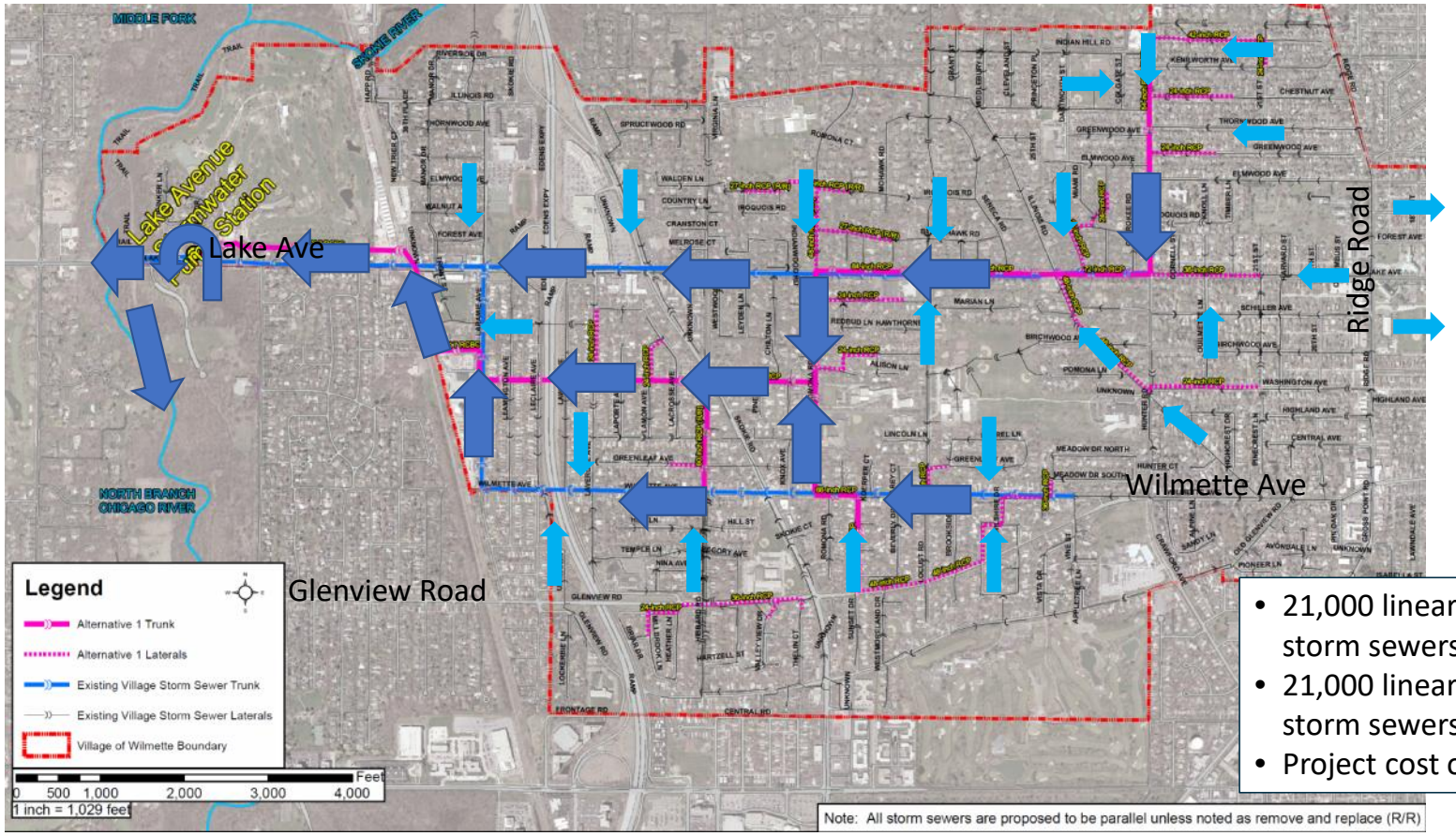
Hydrologic and Hydraulic Modeling



- Results of Existing Conditions Analysis
  - Storm sewer system has 2-year capacity
  - 10-Year storm event
    - Street flooding over 2 feet in depth – 310 Structures Impacted
  - 100-year storm event
    - Street flooding up to 3 feet in depth
  - April 2013 storm event
    - Equivalent to a 25-year storm event
    - Street flooding over 2.5 feet in depth
  - June 2014 storm event
    - Equivalent to a 5-year storm event
    - Street flooding reported

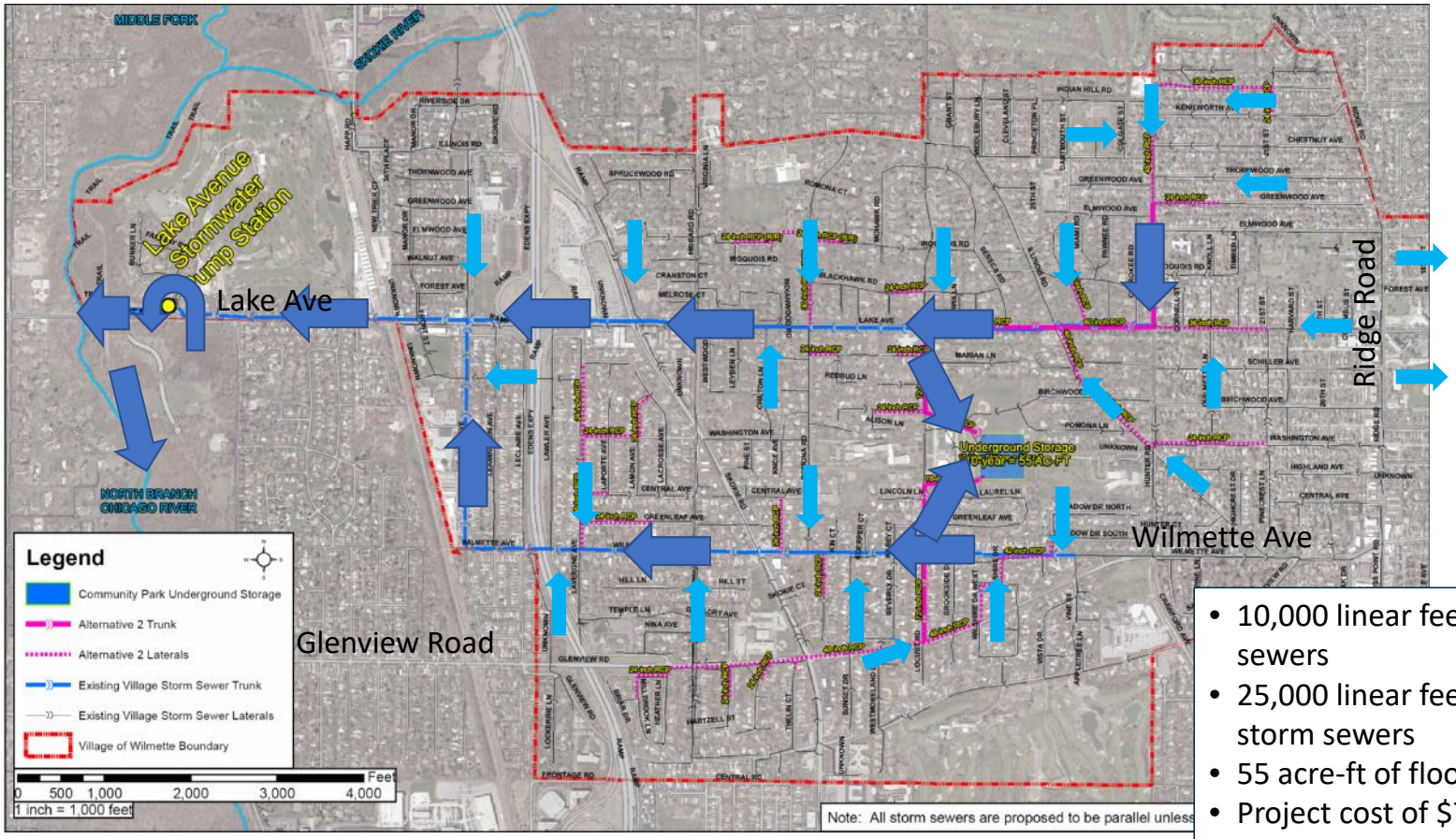
Village goal was for "dry streets" in 10-year storm event

- # Alternative 1 – New Trunk Storm Sewers



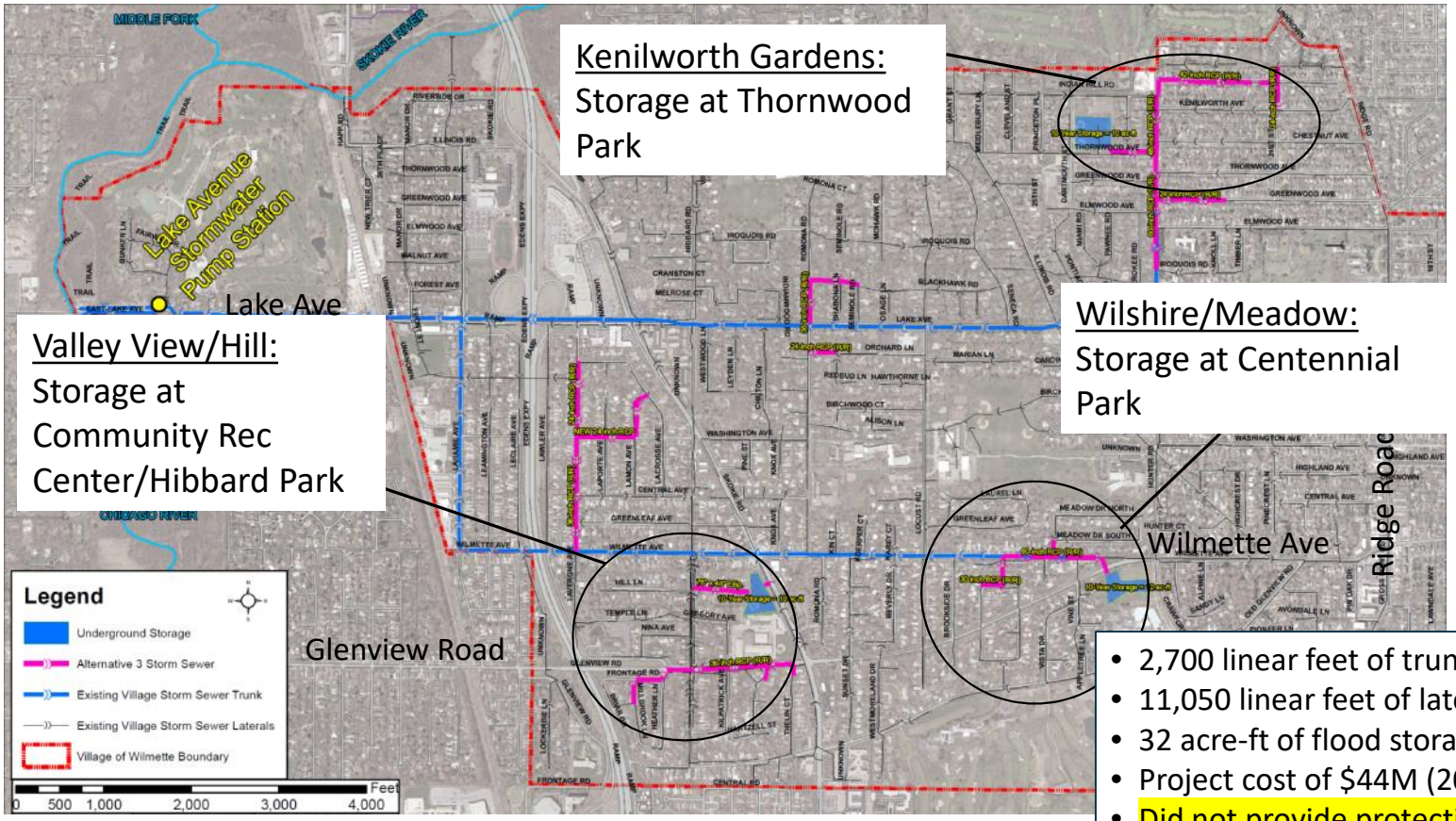
- 21,000 linear feet of trunk storm sewers
- 21,000 linear feet of lateral storm sewers
- Project cost of $75M (2014)

- # Alternative 2 – Centralized Stormwater Storage



- 10,000 linear feet of trunk storm sewers
- 25,000 linear feet of lateral storm sewers
- 55 acre-ft of flood storage
- Project cost of $70M (2014)

- # Alternative 3 – Neighborhood Stormwater Storage



- 2,700 linear feet of trunk storm sewers
- 11,050 linear feet of lateral storm sewers
- 32 acre-ft of flood storage
- Project cost of $44M (2014)
- Did not provide protection for all 310 structures or all roadways

Summary of Stormwater Management Plan

- Short Term Projects
  - Residential flood-proofing
  - High capacity inlets
- Green Infrastructure
  - Village owned property
  - Privately owned property
  - Ordinance requirements
- Long Term Capital Projects
  - Alternative 1 – Relief Sewer System ($75M)
  - Alternative 2 – Centralized Storage at Community Playfield ($70M)
  - Alternative 3 – Neighborhood Stormwater Storage ($44M)*

*did not provide 10-year flood protection to all residential structures

Village Decision on Preferred Alternative 2017-2018

Village Project Decision and Steps Forward

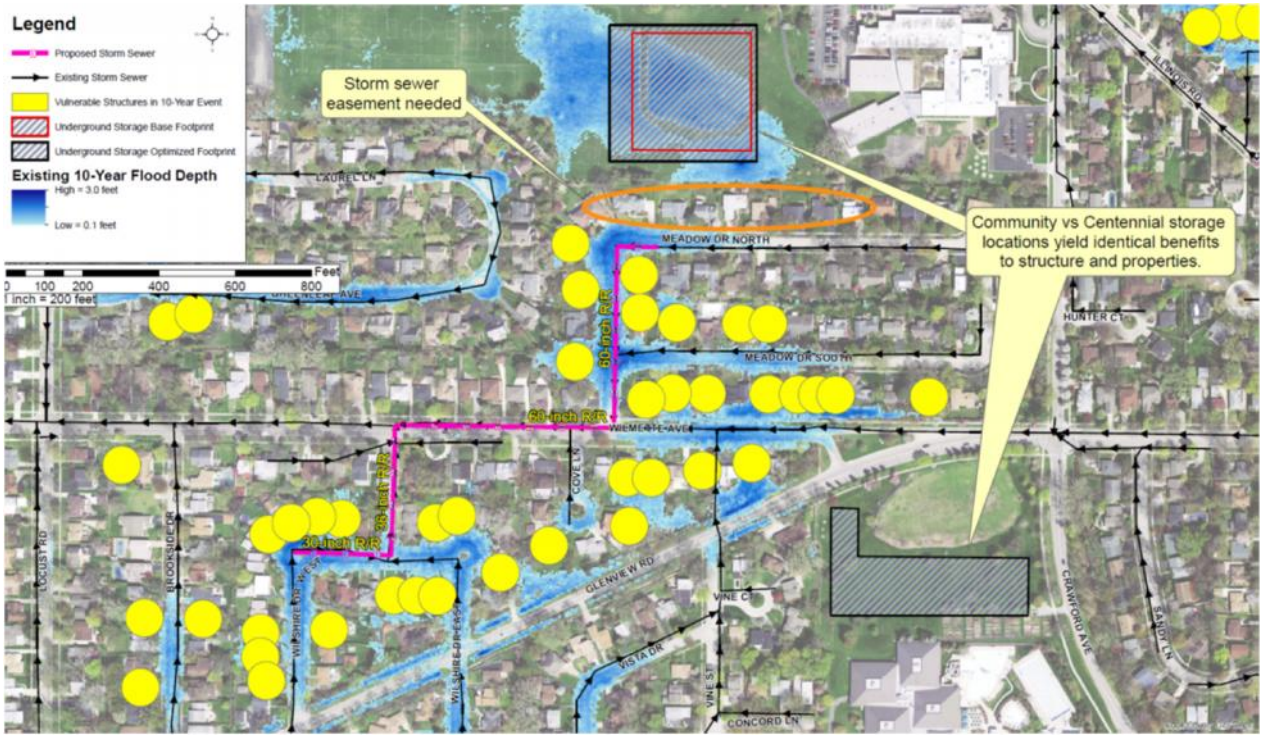
- Extensive Value Engineering Study
  - Completed by Stantec
  - Validation of projects and costs
  - Project costs range from $48M-$95M (2017 Dollars)
- Extensive Public Outreach
- April 2018- Village Board Approves Neighborhood Storage Project (Alt 3)
  - Anticipated Project Cost of $48M-$53M (2017 Dollars)
  - Request to optimize project to improve benefits
- August 2018 – Design Contract Award
  - CBBEL/B&W Team
  - Optimization of Neighborhood Storage Project
  - Preliminary and Final Design of First Project Phases

Project Components:
PH 1A – Early Storm Sewer
PH 1 – Centennial Storage
PH 2 – Hibbard Storage
PH 3 – Thornwood Storage

Plan Refinement and Optimization 2018-2019

- Phase 1 – Stormwater Storage at Centennial Park vs. Community Playfields?

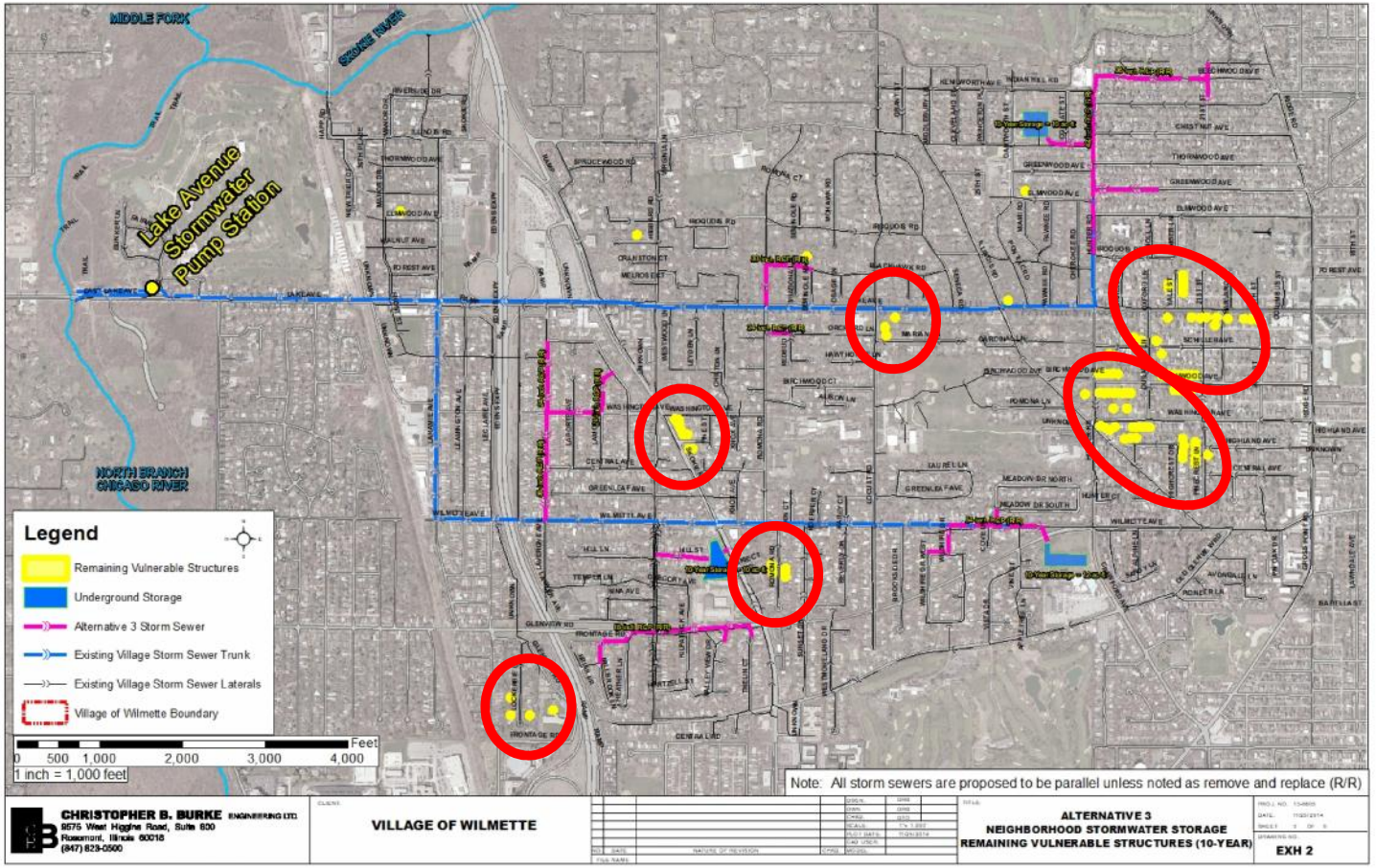
- Community Playfields
  - Pros
    - Project Cost
    - Access
    - Permitting
    - Overburden
    - Site Constraints
  - Cons
    - Adjacent Schools
    - Construction timing



Optimization

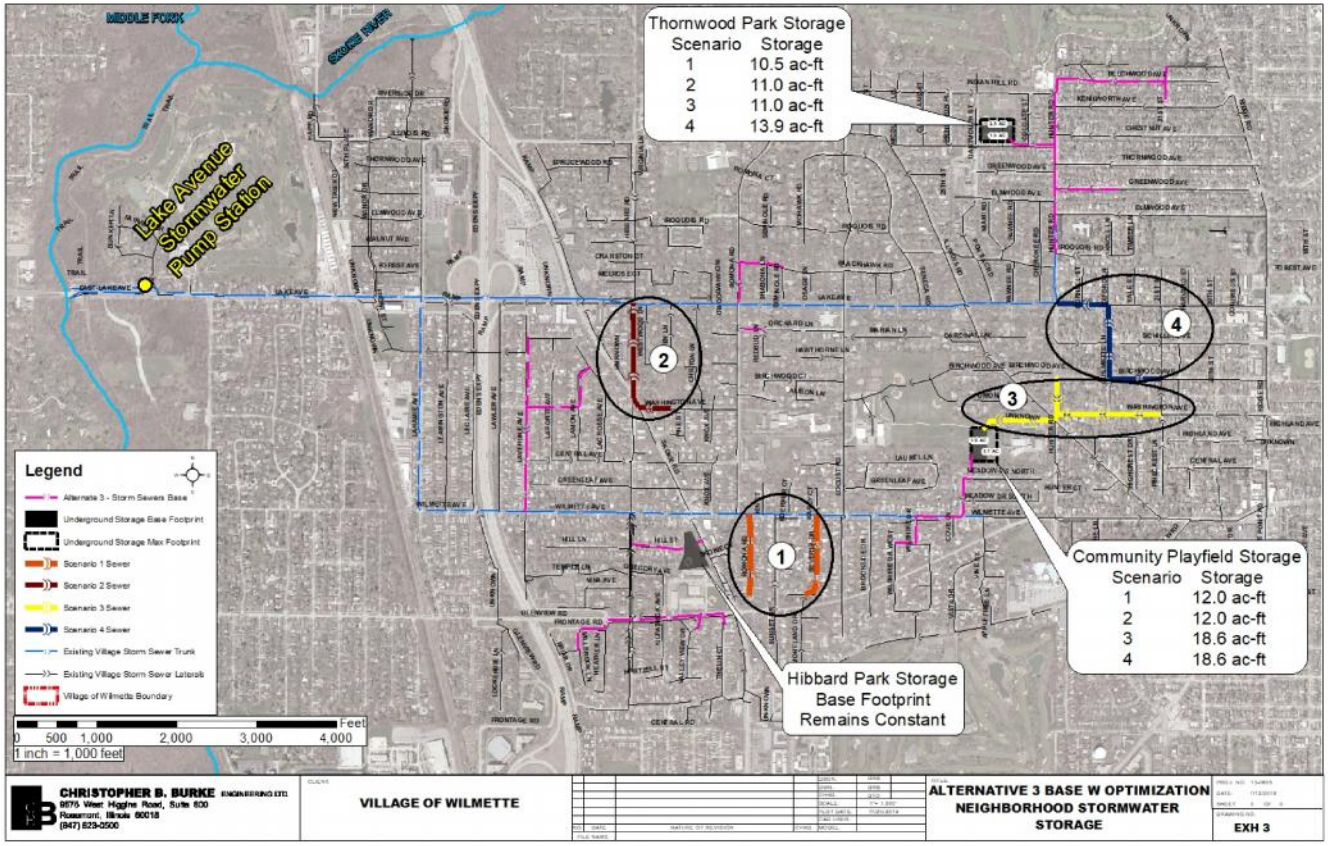
"What is the most cost-effective way to implement this project to help the most number of residents, now and into the future?"

Approximately 90 "Vulnerable Structures" remain for the 10-year event after implementation of Base Project



Results of Optimization

- Additional Stormwater Storage at 2 Parks
- Additional Lateral Storm Sewers
- 85 of the 90 “vulnerable structures” would be benefitted



Optimization Summary

Project	Cost ($ Millions)	Vulnerable Structures Protected[2]	Cost Per Structure Removed	Storage Required (ac-ft)
Base Project[1]	$52.4	220	$238K	32.5
Scenario 1	$1.2	6	$200K	0
Scenario 2	$2.3	7	$329K	0.5
Scenario 3	$7.8	47	$166K	6.6
Scenario 4	$4.5	25	$180K	2.9
Total	$68.2	305	$224K	42.5

[1]Assumes Phase 1 Storage at Community Playfields
[2]Base structures removed is based on the 2017 Stantec vulnerable for the 10-year event (310)

- Additional Project Costs May Include:
  - Easement requirement for Community Playfield storm sewer connection
  - Park District site amenities

Comparison to Previous Alternatives

Project	[1]Cost ($ Millions)	[2]Vulnerable Structures Protected	Reduction in Vulnerable Structures
[3]CBBEL Alternative 1 - Relief Sewer (Stantec Estimate)	82.5 - 98.0	295	95%
[3]Stantec Alternative 2 - Reduced Relief Sewer + Thornwood (Stantec Estimate)	72.2 - 82.5	253	81%
[4]CBBEL Alternative 3 - Base	52.4	220	71%
[4]CBBEL Alternative 3 - Optimized	68.2	305	98%

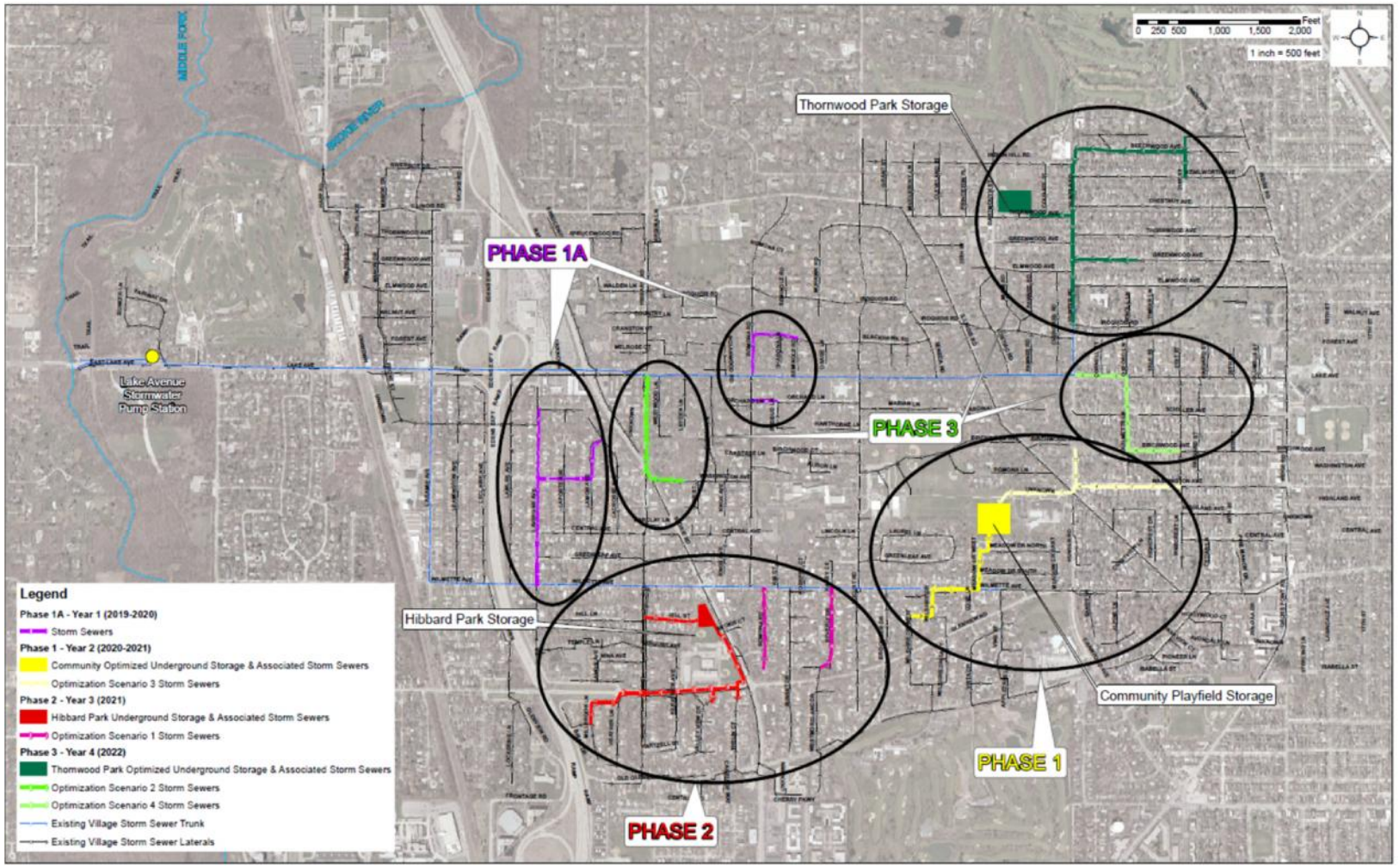
[1] Cost estimates are based on 2018 dollars.

[2] Structures protected is based on the 2017 Stantec vulnerable structures for **10-year storm event (311).**

[3] Stantec estimates have been escalated from 2017 dollars to 2018 dollars using **3.2%** for inflation for comparison.

[4] Cost estimates for Alternative 3 assume underground storage is located at Community Playfield.

Final Optimized Plan



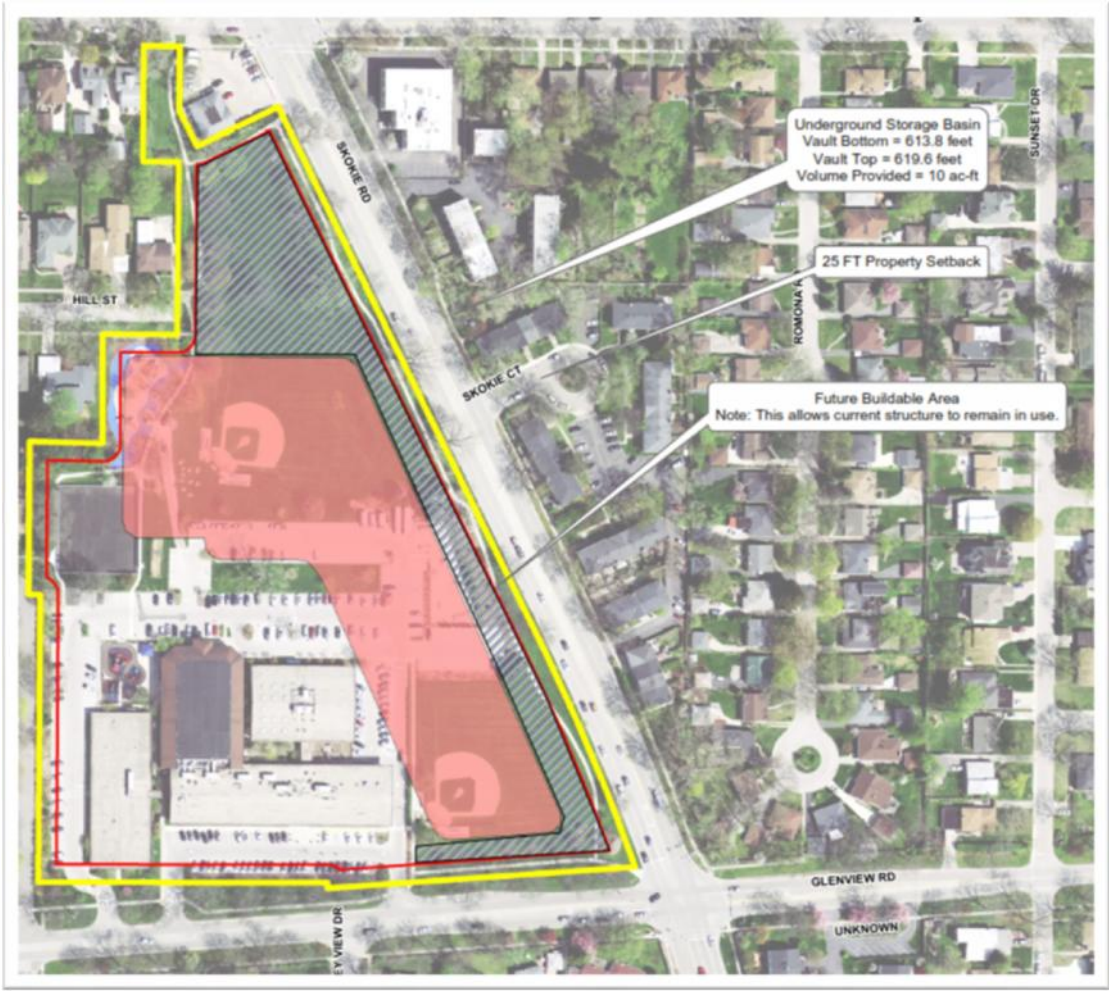
Park District and School District Coordination

2019-2020

Community Playfield

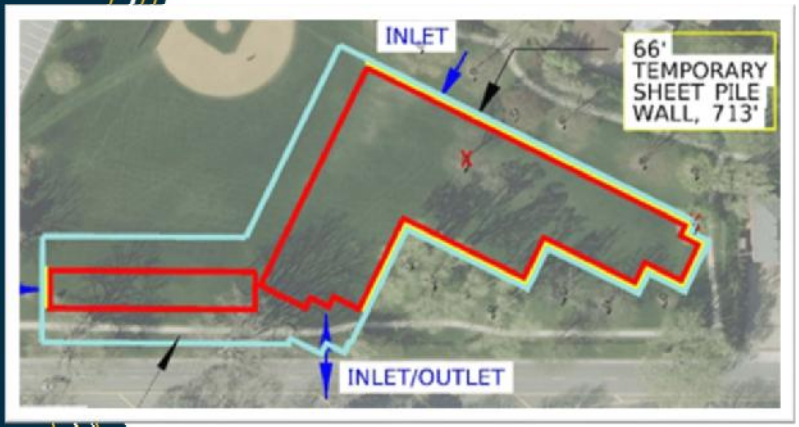
Original Configuration	Alt. Configuration 1	Alt. Configuration 2	Alt. Configuration 3
$7,430,000	$6,280,000 ($1,150,000↓)	$6,340,000 ($1,090,000↓)	$7,180,000 ($250,000↓)
Gravity Outlet	Gravity & Pumped Outlet	Gravity & Pumped Outlet	Gravity & Pumped Outlet
2.0 Acre footprint	1.0 Acre footprint	1.0 Acre footprint	0.8 Acre footprint
6 feet Tall (underground)	11’-4” Tall (underground)	11’-4” Tall (underground)	15 feet Tall (underground)
Removal of 36 trees	Removal of 8 trees on east side	Removal of 8 trees on west side	Removal of 2 trees on west side
Temp. disrupts 2 baseball fields	Temp. disrupts 1 baseball field	Temp. disrupts 1 baseball field	Temp. disrupts 1 baseball field

Hibbard Park



Worked with Park District Architect to determine future build-out potential

Hibbard Park



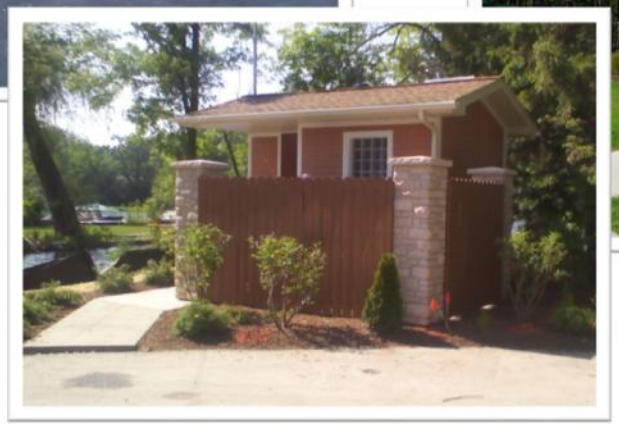
STORAGE VOLUME: 10.0 AC-FT
DEPTH: 15'
EXCAVATION FOOTPRINT: 0.82 AC
PUMP STATION REQUIRED

Original Configuration	Alt. Configuration 1	Alt. Configuration 2	Alt. Configuration 3
$7,430,000	$6,280,000 ($1,150,000↓)	$6,340,000 ($1,090,000↓)	$7,180,000 ($250,000↓)
Gravity Outlet	Gravity & Pumped Outlet	Gravity & Pumped Outlet	Gravity & Pumped Outlet
2.0 Acre footprint	1.0 Acre footprint	1.0 Acre footprint	0.8 Acre footprint
6 feet Tall (underground)	11’-4” Tall (underground)	11’-4” Tall (underground)	15 feet Tall (underground)
Removal of 36 trees	Removal of 8 trees on east side	Removal of 8 trees on west side	Removal of 2 trees on west side
Temp. disrupts 2 baseball fields	Temp. disrupts 1 baseball field	Temp. disrupts 1 baseball field	Temp. disrupts 1 baseball field

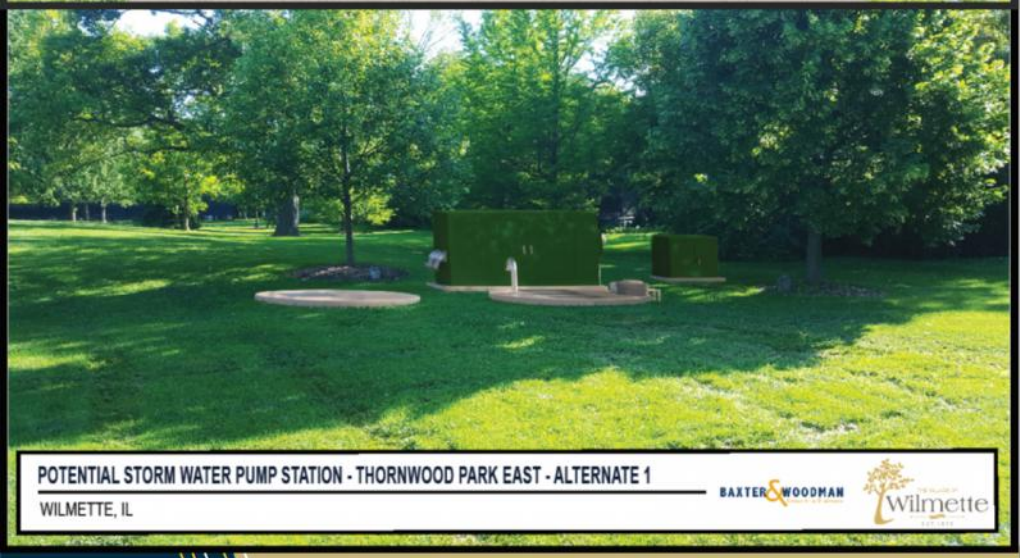
Thornwood Park

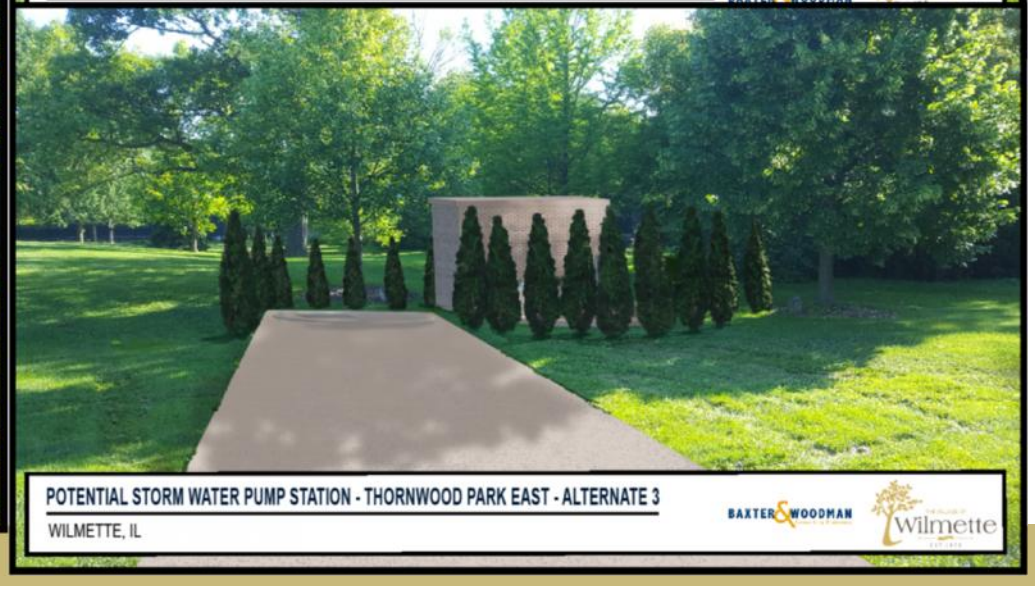
Original Configuration	Alt. Configuration 1	Alt. Configuration 2
$8,610,000	$8,810,000 ($200,000)	$7,060,000 ($1,550,000↓)
Gravity Outlet	Gravity Outlet	Gravity & Pumped Outlet
3.0 Acre footprint	3.0 Acre footprint	1.4 Acre footprint
6 feet Tall (underground)	6 feet Tall (underground)	11’-4” Tall (underground)
Removal of 53 trees	Removal of 60 trees	Removal of 3 trees
Impacts Oak grove	Preserves Oak grove	Preserves Oak grove
Temp impact of 2 baseball fields	Temp impact of 2 baseball fields	Temp impact of 2 baseball fields

Pumping Stations

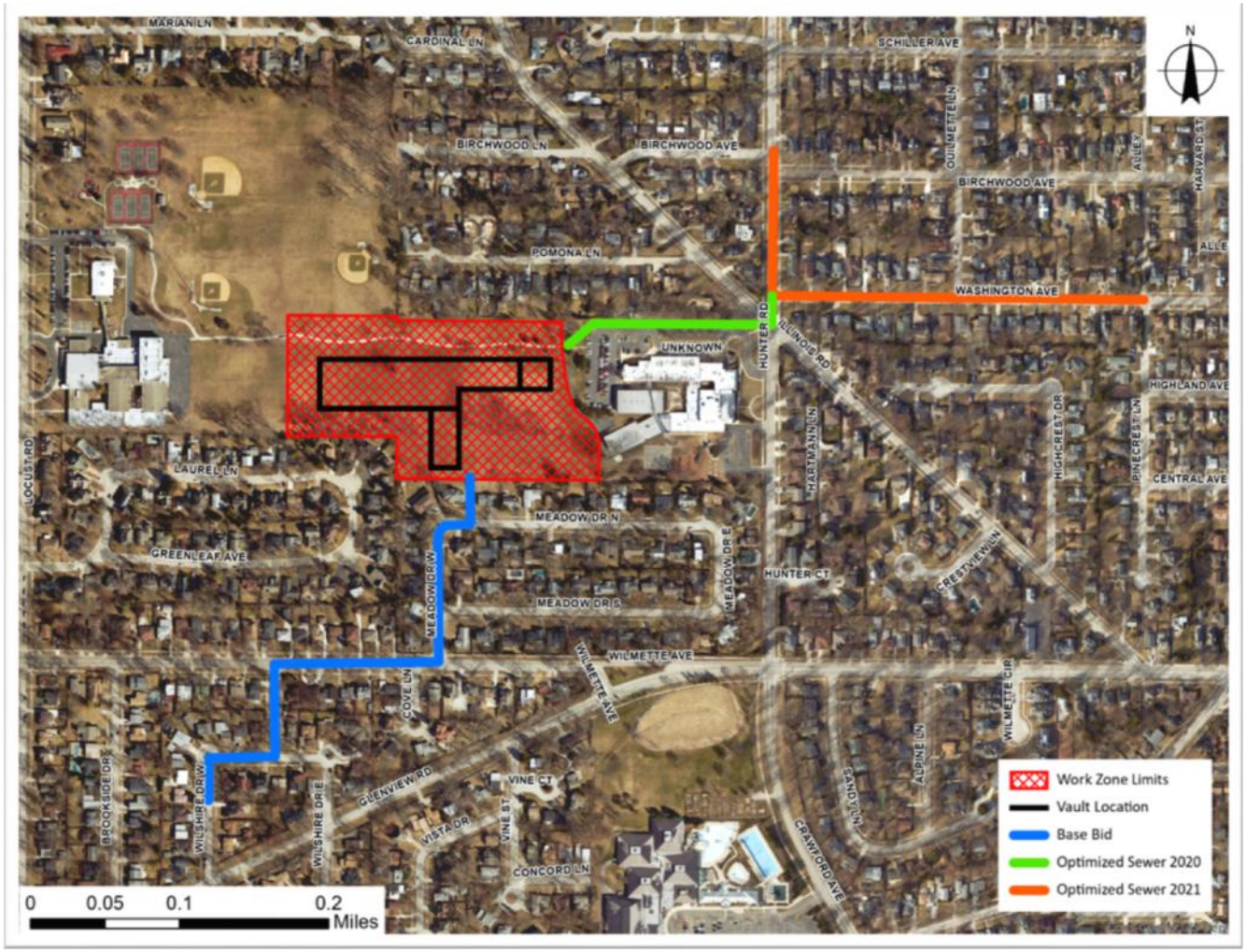


Pumping Station – Thornwood Park Renderings





Phase 1 – Community Playfields

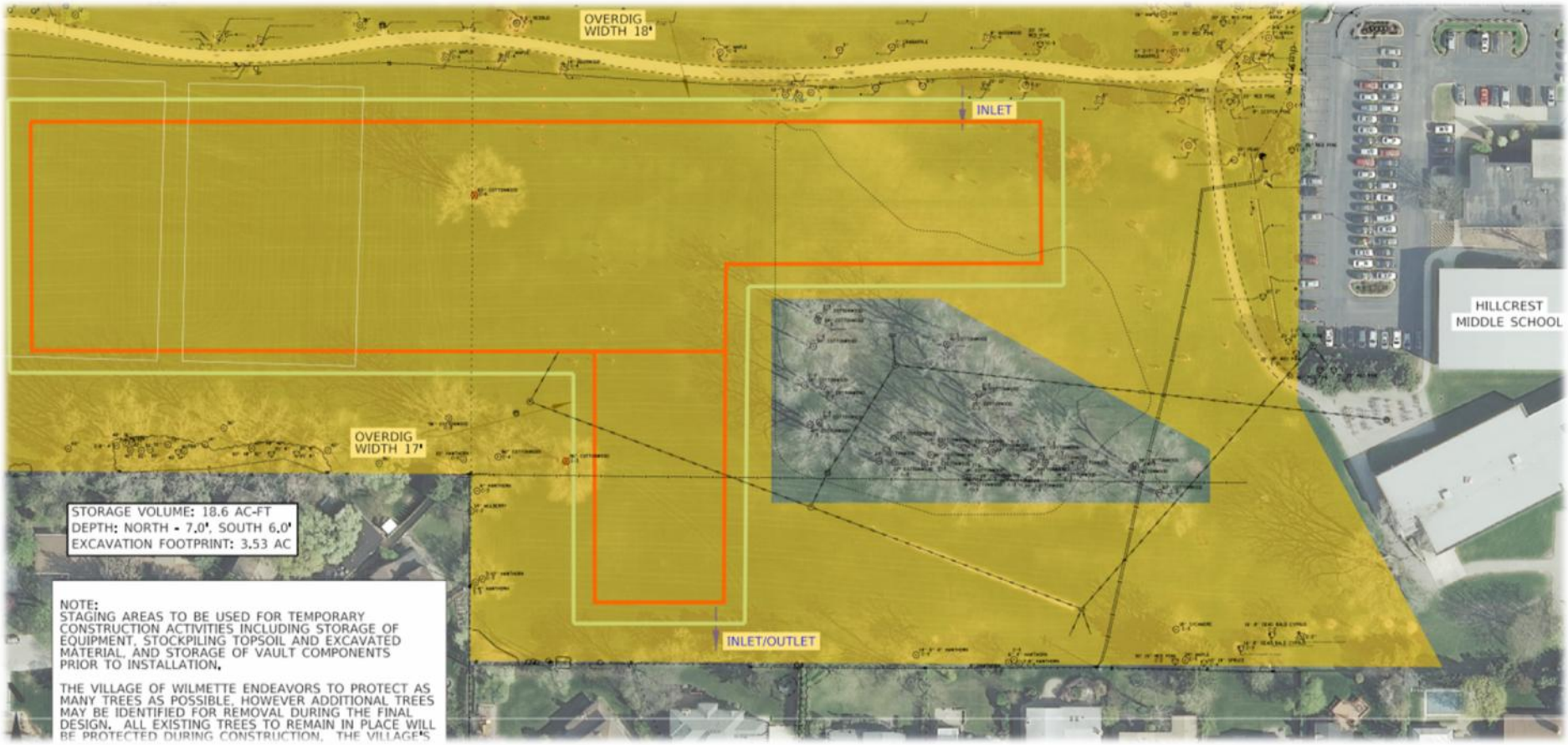


Phase 1 Community Playfield

Phase 1 Community Playfield

Photo credit: The Wilmette Beacon, Todd Marver

Phase 1 Community Playfield



Phase 1 Community Playfield

School District IGA

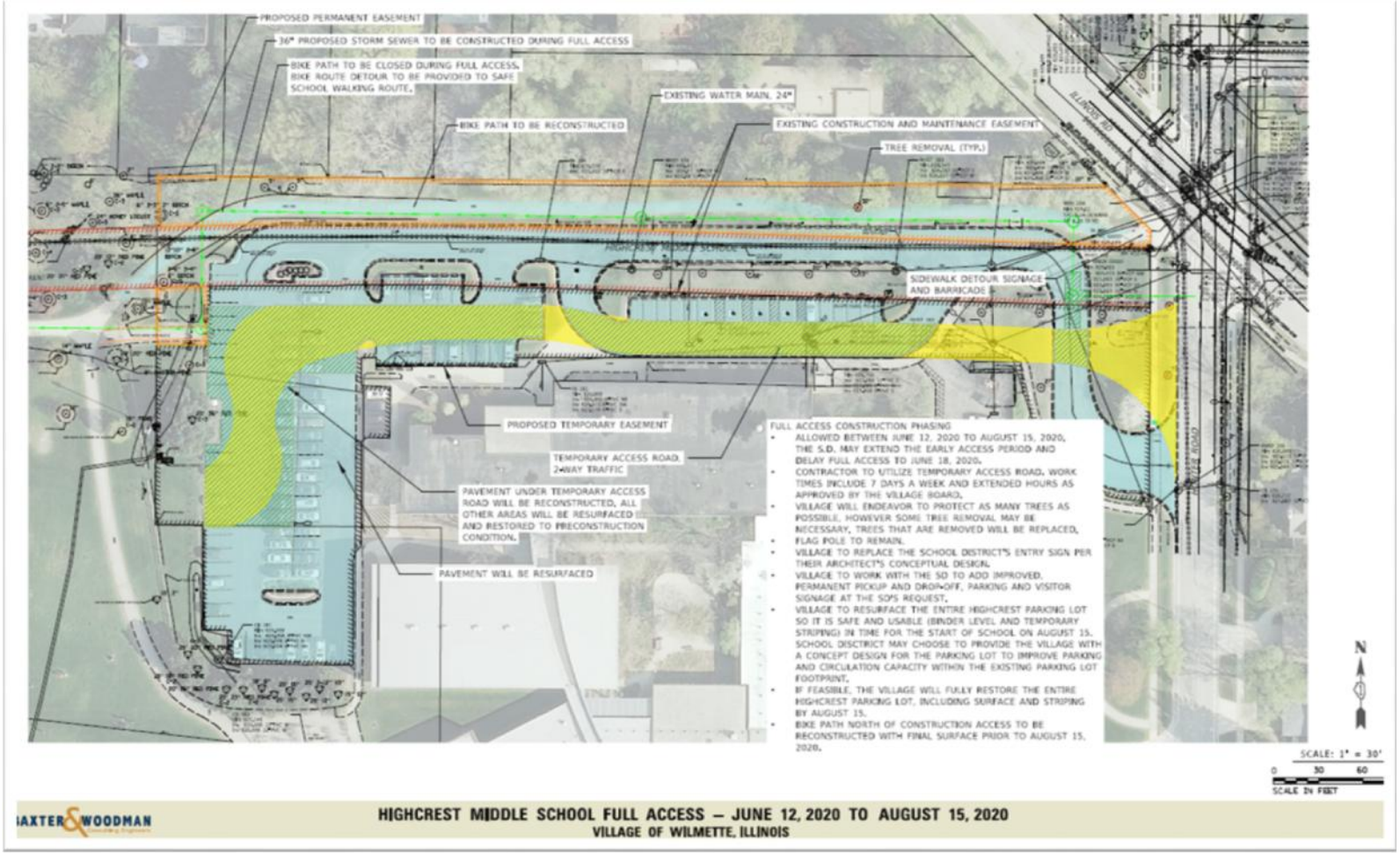
- Parking Lot Improvements
- New School Sign
- Temporary A/C
- Point-to-Point WiFi
- Intersection Pedestrian Improvements
- Restricted Construction Access

Park District IGA

- Set Dollar Value
  - Drainage Improvements
  - Irrigation
  - Restroom
  - Other Improvements

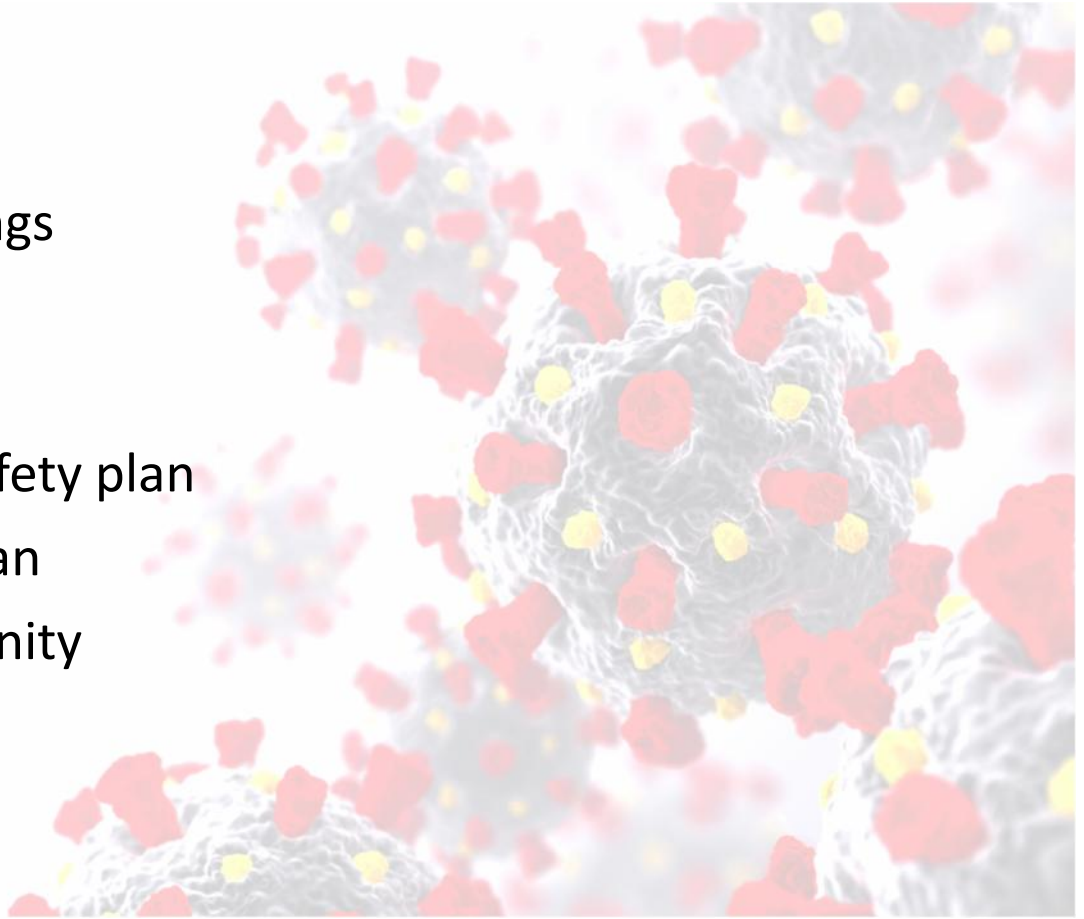
Private Property Easement

Limited Site Access



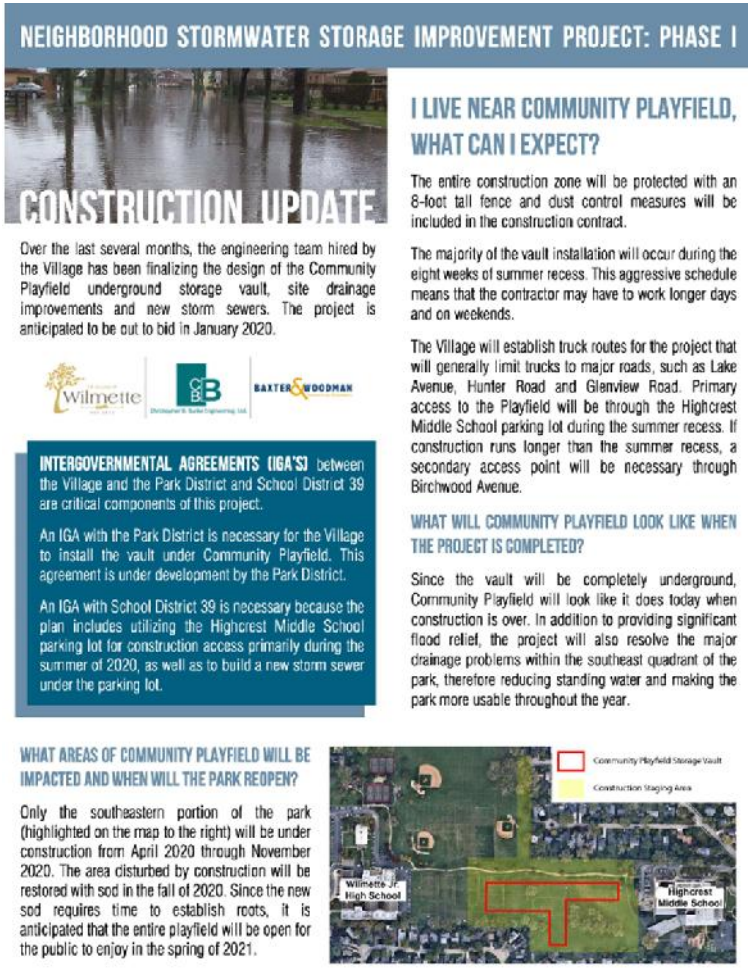
COVID-19!

- Virtual Construction meetings
- Virtual Public Meetings
- Produced Project Videos
- Construction Health and Safety plan
- Construction Production plan
- Early Full Access to Community Playfield (silver lining)



Stakeholder Communication

- Public Open House
- Pre-construction mailing with detailed information
- Door hangers handed out by Resident Engineer
- Residents will have cell phone number of onsite **Stakeholder Liaison**
- Project website updated regularly
- Monthly paper newsletter
- Hand-delivered notices as needed
- Video Public Service Announcements
- Streaming Progress Videos
- Drone flyovers to document progress



NEIGHBORHOOD STORMWATER STORAGE IMPROVEMENT PROJECT: PHASE I

CONSTRUCTION UPDATE

Over the last several months, the engineering team hired by the Village has been finalizing the design of the Community Playfield underground storage vault, site drainage improvements and new storm sewers. The project is anticipated to be out to bid in January 2020.

Wilmette | CBB | BAXTER & WOODMAN

INTERGOVERNMENTAL AGREEMENTS (IGA'S) between the Village and the Park District and School District 39 are critical components of this project.

An IGA with the Park District is necessary for the Village to install the vault under Community Playfield. This agreement is under development by the Park District.

An IGA with School District 39 is necessary because the plan includes utilizing the Highcrest Middle School parking lot for construction access primarily during the summer of 2020, as well as to build a new storm sewer under the parking lot.

I LIVE NEAR COMMUNITY PLAYFIELD, WHAT CAN I EXPECT?

The entire construction zone will be protected with an 8-foot tall fence and dust control measures will be included in the construction contract.

The majority of the vault installation will occur during the eight weeks of summer recess. This aggressive schedule means that the contractor may have to work longer days and on weekends.

The Village will establish truck routes for the project that will generally limit trucks to major roads, such as Lake Avenue, Hunter Road and Glenview Road. Primary access to the Playfield will be through the Highcrest Middle School parking lot during the summer recess. If construction runs longer than the summer recess, a secondary access point will be necessary through Birchwood Avenue.

WHAT WILL COMMUNITY PLAYFIELD LOOK LIKE WHEN THE PROJECT IS COMPLETED?

Since the vault will be completely underground, Community Playfield will look like it does today when construction is over. In addition to providing significant flood relief, the project will also resolve the major drainage problems within the southeast quadrant of the park, therefore reducing standing water and making the park more usable throughout the year.

WHAT AREAS OF COMMUNITY PLAYFIELD WILL BE IMPACTED AND WHEN WILL THE PARK REOPEN?

Only the southeastern portion of the park (highlighted on the map to the right) will be under construction from April 2020 through November 2020. The area disturbed by construction will be restored with sod in the fall of 2020. Since the new sod requires time to establish roots, it is anticipated that the entire playfield will be open for the public to enjoy in the spring of 2021.

Vault Construction

STRIPPING OF TOPSOIL IN PREPARATION FOR EXCAVATION

EXCAVATION FOR DETENTION VAULT

PREPARING BASE FOR DETENTION VAULT

PREPARING BASE FOR DETENTION VAULT

Vault Construction

INSTALLING DETENTION VAULT SECTIONS

INSTALLING DETENTION VAULT SECTIONS

INSTALLING DETENTION VAULT SECTIONS

INSTALLED DETENTION VAULT SECTIONS

Project Statistics

Excavation:

- 1,630,000 CF
- ~6,000 truck loads
- 200+ trucks/day

StormTrap:

- 25+ trucks/day
- Second largest vault by volume in IL
- Vault with most pieces ever
- 20.2 ACFT -> 6.5M Gal -> 10 Olympic Swimming Pools

StormTrap Pre-order = ~$5M

Berger Excavating = ~$12M

TOTAL = ~$17M