SESSION 2:

INFRASTRUCTURE PLANNING FOR THE FUTURE CONSIDERING CLIMATE CHANGE: THE IMPORTANCE OF STRATEGIC THINKING AND FINDING FUNDING TO ASSIST

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PANELISTS

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LEARNING OBJECTIVE: DEVELOP A STRATEGY FOR NEIGHBORHOOD STORMWATER STORAGE IN A BUILT-OUT COMMUNITY

PRESENTATION OVERVIEW

- Overview of Wilmette's Sewer Systems
- Identifying the Problem
- Evaluating the Options
- Public process to Build Trust and Consensus
- Project Execution and Partnerships



Village of Wilmette Neighborhood Storage Project

> Overall Project Update December 2022







OVERVIEW OF WILMETTE'S SEWER SYSTEM



EAST OF RIDGE ROAD

- Developed late 1800's to 1940's
- Storm and sanitary flows in the same pipes (Combined Sewer System)
- Storm and Sanitary flows to MWRD for treatment
- Developed 1930s and later
- Storm and sanitary flows in separate pipes
- Sanitary System flows to MWRD for treatment
- Stormwater conveyed by gravity to the Stormwater Pump Station
- Two discharge pipes to the North Branch of the Chicago River

WEST OF RIDGE ROAD

VILLAGE OF WILMETTE'S SEWER SYSTEMS



Ridge Road Divides the Combined Sewer Area and the Separate Sewer Area

WEST OF RIDGE ROAD

SEPARATE SYSTEMS FOR STORM AND SANITARY WATER





DEFINITIONS

10-YEAR STORM Storm with a 10-percent chance of being equaled or exceeded in any given year

This is approx. 2.1" inches of rain in 1 hour

100-YEAR STORM Storm with a 1-percent chance of being equaled or exceeded in any given year

This is approx. 3.5" inches of rain in 1 hour



5 Storms Exceeding 10-Year Event over 10-year period

AND A LOOK INTO THE FUTURE IS TROUBLING....

Observed Number of Extreme Precipitation Events



5-year Period

RESULT: WIDESPREAD FLOODING DURING RAIN EVENTS







Property damage



Anxiety and stress for homeowners



As long as 17 hours of standing water



Inaccessible streets









APRIL 2013 HEAT MAP – HOME FLOODING





VILLAGE-WIDE SEWER INFRASTRUCTURE IMPROVEMENTS

Total investment since 1990 **\$78 MILLION**

COMBINED SEWERAREA

• Relief Sewers, Inlet Restrictors and Drainage Berms in the street to create temporary "street detention"

SEPARATE SEWERAREA

- Sanitary Relief Sewers
- Second Stormwater Outfall
- Backup Generator at Stormwater Pump Station

VILLAGE-WIDE MAINTENANCE

Sewer Cleaning/Televising/Lining

WHY HOMES FLOOD

Sanitary Backups

Foundation Seepage

Overland Flooding

Window wells, basement doors, depressed garages

Sump Pump Failure

It is critically important to understand why a home floods so that the appropriate flood protection measures can be installed.

IDENTIFYING THE PROBLEM



- Highly developed land
- Designed without stormwater management practices
- Limited open space
- No defined overflow routes



IDENTIFYING THE OPTIONS



SEPT 2013

The Village Board approved a contract with CBBEL for the Separate Storm Sewer Study.

The Village reviewed a number of potential projects which were deemed not cost effective or did not provide adequate flood relief including:

- Purchase of homes impacted by flooding
 Too costly and not effective
- Green infrastructure as the primary solution
 Green improvements can be complimentary to any project but are not sufficient as a stand-alone improvement to provide flood relief
- Nine different variations of conveyance and storage projects

EXISTING CONDITIONS – 10-YR STORM





Figure A1 - 10-Year Existing Condition Flood Extents Storm Sewer Study Reduced Cost Analysis Village of Wilmette

550 1,100 2,200 Feet



The blue shaded areas represent flooding

EXISTING CONDITIONS – 100-YR STORM



The blue shaded areas represent flooding

VILLAGE OF WILMETTE

STORMWATER ACTION PLAN

Figure A2 - 100-Year Existing Condition Flood Extents Storm Sewer Study Reduced Cost Analysis Village of Wilmette







THE RESULT: STRUCTURES AND PARCELS IMPACTED



Storm Event	Structures Impacted ¹	Parcels Flooded ²
10-year	311	1,268
100-year	1305	2,779

- 1. Flood water to within 1-foot of highest lot elevation
- 2. Flood water reaches private property
 - 5,444 total parcels west of Ridge



SEPT 2013	The Village Board approved a contract with CBBEL for the Separate Storm Sewer Study.
JAN 2017	The Village Board approved a contract with Stantec to conduct a technical and alternatives review.
DEC 2017	The Village Board narrowed the Options to three for final consideration.

THE OPTIONS





SEWER EXPANSION

• 8.3 miles of new storm sewer

2

SEWER EXPANSION & NEIGHBORHOOD STORAGE HYBRID

 5.4 miles of new storm sewer and detention storage at Thornwood Park



NEIGHBORHOOD STORAGE

 3.3 miles of new storm sewer and detention storage at Thornwood Park, Centennial Park and Hibbard Park





Given the magnitude of the capital investment under consideration, the Village undertook an extensive public education campaign over a 4-month period:

- Sent three mailers to all Wilmette addresses (11,000+ addresses)
- Held two open houses with more than 100 residents attending
- 6,000 visitors reviewed the website dedicated to stormwater improvements
- Engaged the community through an online community portal
- Produced a public education video
- Received more than 300 email communications



Village launches Stormwater Action Plan public education push

Open houses, new website key efforts to gather feedback on proposed stormwater improvement options

FOR IMMEDIATE RELEASE

January 9, 2018

WILMETTE, IL. – Wilmette village officials today announced that it is embarking on a public education and listening initiative to inform residents about its Stormwater Action Plan and solicit feedback about the potential infrastructure improvements currently under consideration.

The storm sewer system west of Ridge Road was built nearly 70 years ago and no longer has the capacity to properly manage stormwater following rainstorms, resulting in pervasive overland and structural flooding that impacts up to 1,300 homes. The Village has invested nearly \$50 million to upgrade the sewer system west of Ridge Road over the last two decades. Given that the frequency and intensity of storms has increased in recent years, further improvements to the storm sewer system may be necessary.

In 2013 the Village began studying potential infrastructure investments to improve the storm sewer system so it can deliver relief to residents effectively and affordably. Now, the Village is seeking input, ideas and participation from residents as it prepares to make



When it Rains, Wilmette Floods Seeking Solutions to the Village's Stormwater Management Challenges



Wilmette homeowners west of Ridge Road face significant challenges when rain storms overwhelm our community. When sewers reach full capacity, stormwater floods streets, parks, yards, and homes.

The Village has been working with engineering firms since 2013 to identify the best solutions that:

- Deliver meaningful relief from overland flooding to neighborhoods in west Wilmette;
- Significantly reduce both the depth and duration of flooding; and
- Improve the efficiency and performance of the entire system.

Now, we need your input, ideas and participation as we prepare to make a final decision on a path forward.

Learn More About the Improvements Under Consideration

The Village is considering three projects ranging in costs from \$48 million - \$95 million (2017 dollars) to provide flood relief to west Wilmette.

To learn more about the projects and associated costs, residents can visit the Village's stormwater website at www.wilmettestormwater.com.

Open Houses

The Village held an open house in early February for residents to interact with Village Staff and project engineers. The next open house is scheduled for:

March 13th from 4:00pm - 7:00pm at Village Hall

Online Community Engagement Platform

The Village has unveiled an online community forum for transparent, meaningful and productive interactions between residents and Village Staff regarding the proposed improvements. Visit the site and participate at: wilmette.mindmixer.com

Anticipated Decision Date – April 17th

The Village Board anticipates that it will make a final decision regarding stormwater improvements at its April 17th meeting scheduled for 7:00pm at Village Hall. The Board intends to give residents ample opportunity to learn more about the issue and provide input about stormwater improvements in the months prior to that meeting.













SEPT 2013	The Village Board approved a contract with CBBEL for the Separate Storm Sewer Study.
JAN 2017	The Village Board approved a contract with Stantec to conduct a technical and alternatives review.
DEC 2017	The Village Board narrowed the Options to three for final consideration.
APR 2018	The Village Board approved the Neighborhood Storage Project
The Villag	e held over 50 public meetings over 10 years



NEW Stormwater Utility Fee

What is a Stormwater Utility fee?

 A fee based on a property's impervious surface area that will be used to cover the required debt repayments. Impervious area includes the building footprints, driveways, patios, and the like. Grass, planting beds and swimming pools are not considered impervious area.

Stormwater fee has two primary benefits:

- It is a dependable and stable revenue source
- It more accurately reflects a property's impact on the storm sewer system



NEW Stormwater Utility Fee

3 Tier rate structure for residential properties

- Tier 1: Less than 3,000 SF of impervious surface area
- Tier 2: 3,000 to 4,300 SF of impervious surface area
- Tier 3: More than 4,300 SF of impervious surface area

Multi-family and commercial properties charged a fixed fee and fixed rate based on square feet of impervious area

Residential property owners are eligible for stormwater incentives.

Commercial properties are eligible for stormwater detention credits.



Residential Stormwater Incentive Program Overview

- Established to encourage Wilmette property owners to implement improvements that sustainably manage stormwater runoff on their property.
- Incentives are one-time disbursements for 50% (up to a maximum value) of the construction cost for eligible stormwater management improvements.
- Group A 50% up to \$1,300 for green infrastructure improvements, underground infiltration systems or porous pavement systems
- Group B 50% up to \$5,000 for clean water disconnection from Village sewers (foundation drains, sump pumps, downspouts, etc)









PROJECT DESIGN & CONSTRUCTION EXECUTION (2018 – 2022)



FEB 2019

The final optimized plan for Option 3 is approved

- 18 Million Gallons of Stormwater Storage in 3 Village Parks (22 Olympic Swimming Pools)
- 5 miles of storm sewer
- Cost Estimate = \$68M
- 98% protection level for 10-year event (305/311)
- Timeframe = 4 years
- Phases 1A 3







Internal Team









External Team & Partners





Village Residents

PARTNERSHIPS – THE WILMETTE PARK DISTRICT



The fundamental concept of the Neighborhood Storage Project was to store excess runoff in locations near where it fell. It was determined that 3 parks within the Village (and owned by the Wilmette Park District) were suitable:

- Community Playfield (Phase 1 Construction 2020)
 - Largest park within the Village and region
 - Heavily used for athletics (soccer, baseball, others)
 - Located between Highcrest Middle School and Wilmette Junior High
- Hibbard Park (Phase 2 Construction 2021)
 - Located immediately adjacent to Community Recreation Center
 - Future expansion potential for building expansion
 - Baseball and soccer uses
- Thornwood Park (Phase 3 Construction 2022)
 - Dedicated little league baseball organization and neighborhood group
 - Located across the street from Harper Elementary School



Stormtrap Underground Vault System

PARK DISTRICT MEETINGS



NOV 2018	First Park District Board meeting on Storage Project			
SPRING 2019	Series of 6 Public Park Meetings (2 at each Park)			

Hibbard Park

- One "field" meeting at each park
- One Park District Board meeting for each park
- Hot Topics:
 - Trees
 - Drainage
 - Park amenities
 - Safety
 - Timing
 - Restoration



CRITICAL PARK DISTRICT ISSUE -TREE REMOVAL



SUMMER 2019

Project design iterations at Parks to save trees

- Park District critical issue reduce tree removal
 - Driven by Park District Board and resident input
 - Tree type (Cottonwood) that is non-native did not impact desire for preservation
- Village critical issue project timing to construct Phase 1 (Community Playfield) in Summer 2020 while school is out (School District coordination coming next!)



Community Playfield (Phase 1): Multiple design iterations showing options that would preserve varying amounts of trees. Note the Cottonwood Grove shown in Orange

PARK DISTRICT MOU AND IGA/EASEMENT AGREEMENT



AUG 2019	Park District approved Memorandum of Understanding (MOU)	
MAR 2020	Final IGA/Easements between Village and PD Executed	

- IGA covered Phases 1-3 and included:
 - Tree preservation plans with vault layouts incorporated into IGA and Easements
 - Specific drainage improvements at Community Playfield
 - Drainage improvements outside of work zone (all 3 parks)
 - Comprehensive Landscaping Plan (all 3 parks)
 - Irrigation (2 parks*)
 - Public Restrooms (2 parks*)
 - Recreational Path with Lighting (1 park)

*Note irrigation and restrooms were only installed at Community Playfield



PARK DISTRICT COOPERATION ALLOWED PROJECT TO PROCEED AND DROVE A BETTER DESIGN





Phase 1 – Community Playfield 2020 Construction 2 trees removed

Park District coordination during detailed design and construction of Phases 1-3 continued smoothly following the IGA in March 2020



Phase 2 – Hibbard Park 2021 Construction 7 trees removed

Pump Station required to reduce footprint



Phase 3 – Thornwood Park
2022 Construction
2 trees removed
Pump station required to reduce footprint

PARTNERSHIPS – SCHOOL DISTRICT 39



- Phase 1 Flood Storage at Community Playfield
- Location is landlocked between two schools and residential properties
- Small portion of vault and storm sewer on school property



Access route through Highcrest Middle School Parking Lot

SCHOOL DISTRICT 39 MEETINGS



OCT 2019	Initial SD39 Board Meeting
DEC 2019	Second SD39 Board Meeting

- Issues of Concern to the School District:
 - Safety of Children
 - Truck traffic
 - Bike Path
 - Construction Schedule
 - Summer Construction Necessary
 - Site Access
 - Dust Control
 - Fiber Line connecting schools
 - Visual Screening



This was the largest Stormtrap vault in Illinoi by number of pieces (2,300)



An estimated 50,000 cubic yards of soil needed to be removed, requiring 200 trucks/day

CRITICAL ISSUE – SCHEDULE AND ACCESS



- Truck access route through Highcrest Middle School Parking lot
- Heaving hauling could not occur while school was in session
 - Early Access (April 6 June 18) No hauling allowed, only site prep
 - Full Access (June 12 August 15) Full hauling in and out through Highcrest School Parking Lot
 - Late Access (August 16 November 28) Alternative hauling route if necessary





Late Access from North

Full Access through Parking Lot

SCHOOL DISTRICT MOU AND EASEMENT/IGA



DEC 2019	Memorandum of Understanding
FEB 2020	School District Easement

• Components of IGA included:

- Access Plan
- Fencing and dust control during construction
- Existing stormwater detention on school property was put underground as part of new vault
- Driveway improvements
- Temporary air conditioning at Highcrest School for dust prevention
- New entry sign for school
- New wireless communication system between schools
- Vibration monitoring along haul route



WITH SD AND PD IGA'S, IT WAS A GREEN LIGHT FOR PHASE 1 UNITL.....



JAN 2020	Phase 1 project out to bid
FEB 2020	Bids Opened
MAR 2020	Emergency Covid-19 Declaration

- Benefits:
 - Schools closed full access can begin in April 2020
 - Less pedestrian/motor traffic allows for greater construction flexibility
- Drawbacks
 - Supply chain issues
 - Construction and Engineering team health and availability
 - Danger of partially constructing Phase 1 project and being unable to complete by August

- Preparedness Memo March 2020
- Communication
- Engineering Staff
- Construction Staff
- Supply Chain
- Shutdown

PARTNERSHIPS - RESIDENTS



MAR 2020

Phase 1 Project Construction Approaching

- Previous meetings focused on:
 - Need for the project Village Board
 - Cost of the project Village Board
 - Park Impacts Park Board
 - School Impacts School District
- A shift in focus was required to inform residents about:
 - Walking and driving inconveniences (roadway and sidewalk closures)
 - Children safety getting to and from schools
 - Tree removal, vibration, haul routes
 - Schedule
 - Communication strategy
- An evolving process....



AN EVOLVING STRATEGY FOR RESIDENT ENGAGEMENT.....



- Phase 1 Community Playfields (construction 2020)
 - Coming off multiple Park District and School District meetings
 - March 2020 resident meeting:
 - Parkway trees
 - Work hours and weekend work
 - Water table
 - Maintenance of traffic plans and detours
 - Property access while street is under construction
 - Decibel level of noise
 - Vibration monitoring
 - Other issues similar to School District and Park District
- Phase 2 Hibbard Park (construction 2021)
 - Resident coordination begins during preliminary engineering in parallel with Park District detailed coordination
 - On site resident meeting at Hibbard Park July 2020
 - Letters to residents August 2020
 - Virtual Resident Open House September 2020



BY PHASE 3 WE WERE FULLY IMMERSED IN THE RESIDENTS



- Phase 3 Thornwood Park (construction 2022)
 - Largest project and most active resident group saved for last we had practice!

TENTATIVE SCHEDULE					
TASK	COMPLETION DATE				
Award Final Design Contract	01/12/2021				
30% Plan Review Meeting	01/29/2021				
Initial Park District Staff Coordination	02/15/2021				
Initial Public and School Coordination	03/22/2021				
65% Plans, Specs and Estimate	04/30/2021				
Permit Submittals (IDOT, MWRD, CCHD, IEPA)	05/10/2021				
65% Plan Park District Coordination	05/10/2021				
65% Plan Public and School Coordination	06/07/2021				
90% Plans. Specs and Estimate	07/30/2021				
90% Plans Park District Coordination	08/09/2021				
90% Plans Public and School Coordination	08/25/2021				
100% Design Submittal to Park District and Village	09/30/2021				
100% Plans Public and School Coordination	10/25/2021				
100% Plans Park District Coordination	11/08/2021				
Stormtrap Contract Approval	11/09/2021				
Plans out to Bid	11/22/2021				
Bid Opening	12/17/2021				
Village Board Project Award	01/11/2022				
Park District Meeting and Approval	02/08/2022				
Pre-Construction Open House	02/10/2022				
Construction Start Roadway Storm Sewers	03/01/2022				
Thornwood Park Start	05/31/2022				
Thornwood Park Completion	10/15/2022				
Roadway Storm Completion	11/30/2022				

PHASE 3







Landscape renderings showing details of pump station and backup generator

CRITICAL ISSUE - DETAILED STAGING PLAN REQUIRED FOR PHASE 3



Safety was primary driving factor since Thornwood Park was adjacent to a school and this project reconstructed adjacent roadways – the School Walking Route Map was used as the base map to develop the five (5) stages of construction

- Summer construction:
 - Thornwood Park
 - Hunter Road main school walking route
 - Critical intersection Hunter and Lake
- Heavy hauling routes
- Contractor capacity issues
- Detailed MOT and walking routes for each stage
- Start of each stage depended on successful completion of previous stage
- A well choreographed ballet



PHASE 3 – SUMMER CONSTRUCTION FOR SCHOOL SAFETY



2022											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
		Stage Highland Ave. Washington A	1A: and ve.								
		Stage Hunter Ave/B	1B: eechwood Ave/2	1st St							
				Stage 2 Hunter Rd/Schi	2 Il ir Ave						
					Stage	3:					
					Stag Hunter Rd	e 4: /Greenwood Ave					
					Stag	e 5: d Ave					

School out of session

EXAMPLE STAGING PLAN





BACK TO SCHOOL FOR PHASE 3...



While an easement was not required for this project, multiple meetings were held with Harper Elementary School during design development to coordinate construction activities with the School and PTO

- How kids walk/ride bikes to school
- Construction flaggers at entrances to Thornwood Park
- Flaggers and temporary pavement at crosswalks along school walking routes
- Specifics for teacher parking on adjacent streets
- No large trucks on adjacent streets during school pick-up and drop off times

STREETS AROUND HARPER SCHOOL

TIMEFRAME DARTMOUTH PICK-UP AND DROP-OFF LANE		THORNWOOD EAST OF DARTMOUTH	THORNWOOD WEST OF DARTMOUTH	
Start of School in August to November	 ✓ 	X	\checkmark	

PARKING AROUND HARPER SCHOOL

TIMEFRAME	DARTMOUTH NORTH OF CONSTRUCTION ENTRANCE	DARTMOUTH SOUTH OF CONSTRUCTION ENTRANCE*	THORNWOOD EAST OF DARTMOUTH	THORNWOOD WEST OF DARTMOUTH
Start of School in August to November	\checkmark	✓*	X	√ **

Southern 12 apots of diagonal parking on Dartmouth expected to be restored by the end of September

Thornwood Avenue from Dartmouth Street to Illinois Road: On-street parking (south side of street only) will be available, except for the first few apots closest to the Dartmouth Street intersection

RESIDENT COORDINATION EVOLVED INTO A TRUE PARTNERSHIP





AN OVERVIEW SNAPSHOT OF THE COMMUNICATION STRATEGY



COMMUNITY RELATIONS

PUBLIC OUTREACH

This project had a robust communication plan that attempted to reach as many residents as possible. Some of the strategies that were used throughout the project included:

PUBLIC MEETINGS THROUGHOUT DESIGN DEVELOPMENT

- School District
 - School District Board
 - Highcrest Middle School
 - Harper Elementary School
 - PTO
- Park District
 - On-site meetings to discuss construction impacts
 - Multiple PD Board meetings to provide updates
- On-site Meetings with Residents at Hibbard and Thornwood

DOOR TO DOOR INTRODUCTIONS

- These occurred during preconstruction (1-2 months before the start of each Phase)
- · The Public Liaison and Resident Engineer described the project and inconveniences that could be expected

PROJECT WEBSITE

- A view of the continuous streaming video of the park was presented for each Phase
- · All public exhibits and maps were available for each Phase
- Weekly Updates with photos were posted every Friday
- Vibration Reports were posted every 2 weeks
- Progress Videos were presented at milestones
- FAQs allowed residents to answer simple questions without a phone call

WEEKLY EMAIL BLAST

The Village of Wilmette's e-news mailing list sent project updates each Friday stating the previous weeks activities, upcoming weeks activities, and any potential traffic or pedestrian impacts

PROJECT FLYERS

Distributed prior to major events, these reached residents that did not sign up for the weekly email blast or visit the website







'The best part of this legacy project is knowing that Wilmette residents will no longer

MARKAN MANAGAR

Building a project of this magnitude in fully developed neighborhoods is loaded with challenges, but our construction team received high marks. Some resident comments:

'Very professionally done! You all get an A+!'

'Amazingly well-done project. Efficient and polite workers. Thank you all!!'

'Everyone I spoke with during the six+ months went above what I expected when I had concerns. The entire "crew" should be commended. Thank you!!'

'The entire project from planning to execution makes me proud to be a Wilmette resident. Thank you.

'I cannot say enough about the staff, consultants, and heavy-lifters who were unfailingly courteous. respectful and helpful.'

OVERCOMING ENGINEERING CHALLENGES AND LESSONS LEARNED



- Project Contracting
 - Village pre-purchase of Stormtrap allowed for better control of schedule and avoid contractor markup
 - Minimum qualification of bidders ensures contractor capabilites
 - Including project schedule in bid documents
 - Struggled in Phase 2 with too much storm sewer construction occurring simultaneously and not getting completed
 - Phase 3 Schedule laid out detailed pedestrian movement plan
 - Got buy-in from School District, Park District, Residents
- Project Stakeholder Liaison Resident Engineer
 - The face of the project in the field
 - All calls from residents, Park Districts, Schools go to this person
- Pro-Active Utility Coordination
 - Tight roadway corridor with trees and utilities
 - Phase 3 Village pot-holing of utilities to avoid delays during construction
- Pro-Active Vibration Monitoring



THIS WAS THE LARGEST CAPITAL PROJECT IN WILMETTE'S HISTORY THAT INCLUDED:

PHASE 1 – COMMUNITY PLAYFIELDS

- Second Largest in Illinois by volume
- · 2307 pieces most pieces in Illinois
- 20.2 acre-ft of stormwater storage
 6.5 Million Gallons

10 Olympic Size swimming pools

HIBBARD PARK

- First 15-foot-tall vault in Illinois
- 10 acre-ft of stormwater storage

3.2 million gallons

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5 Olympic size swimming pools

THORNWOOD PARK

13.6 acre-ft of stormwater storage
 4.4 Million gallons

6.75 Olympic size swimming pools

5 MILES OF STORM SEWER INSTALLED OVER 50 PUBLIC MEETINGS THE TOTAL PROJECT COST WAS \$64M

