Village of Glenview:
Community-wide Flood Risk Reduction Program (FRRP)

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Presentation Outline

- Intro to the FRRP
- Causes of Flooding
- Modeling
- Solutions to Flooding
- Project Examples
- FRRP Today

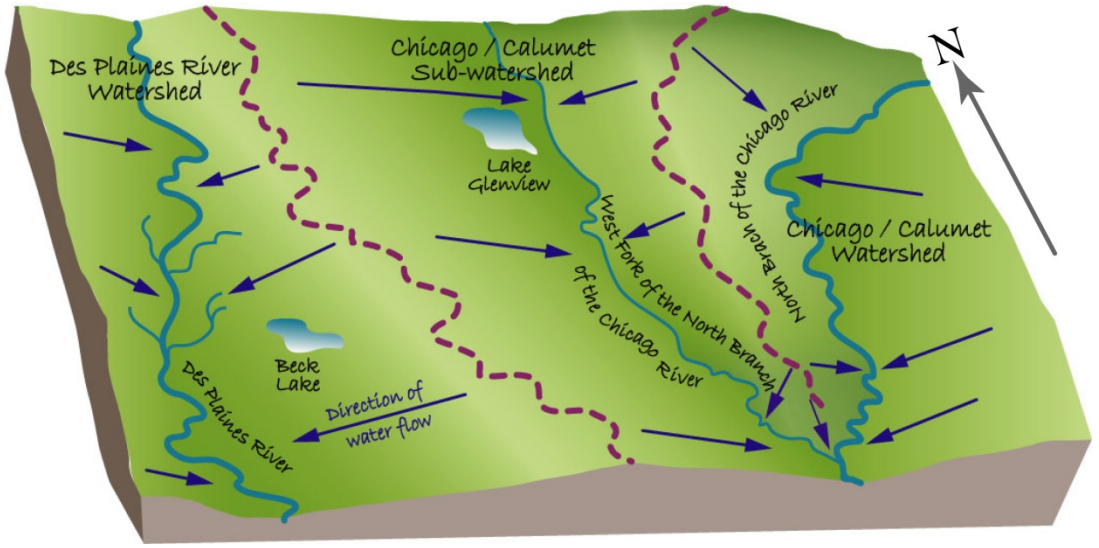
Gloria Court
June 26, 2013
50 year storm event

Northfield Woods Subdivision
August 23, 2015
Flooding in this subdivision
starts at a 2 year event

Glenview Background

- Three primary watersheds
- 48 sub-watersheds
- 60% of Village built to old standards
  - No stormwater detention
  - No overland flow paths
  - Limited conveyance
- Clayey soils
- Flat terrain
- Historic flooding

Glenview: Late 1800's



2007 & 2008 Flooding Events

- August 2007: ***Microburst***
  - 10-year flood event (monthly total > 11 inches)
  - Downed trees and leaves blocking inlets
  - Mass power outages (up to four days)

- September 2008: ***Flood of record***
  - Six inches of rain in four hours (13% > 100-year)
  - 9.5 inches total
  - All local systems beyond capacity
  - Results include all types of private property flooding
  - *Residents: demand for quick, local* ***action***

2008 Flooding Event

Stormwater Task Force

- 16 area residents
  - Village-wide representation
- Hosted 14 public meetings
  - Including two ½ day open houses
  - Over 500 attendees
- 355 responses to SWTF survey
- *Very public and active **engagement***

Outreach tools used:
- Public meetings
- Brochures
- Email blasts
- E-glenview
- Village newsletter
- Glenview TV
- Survey monkey
- Staff roadshow

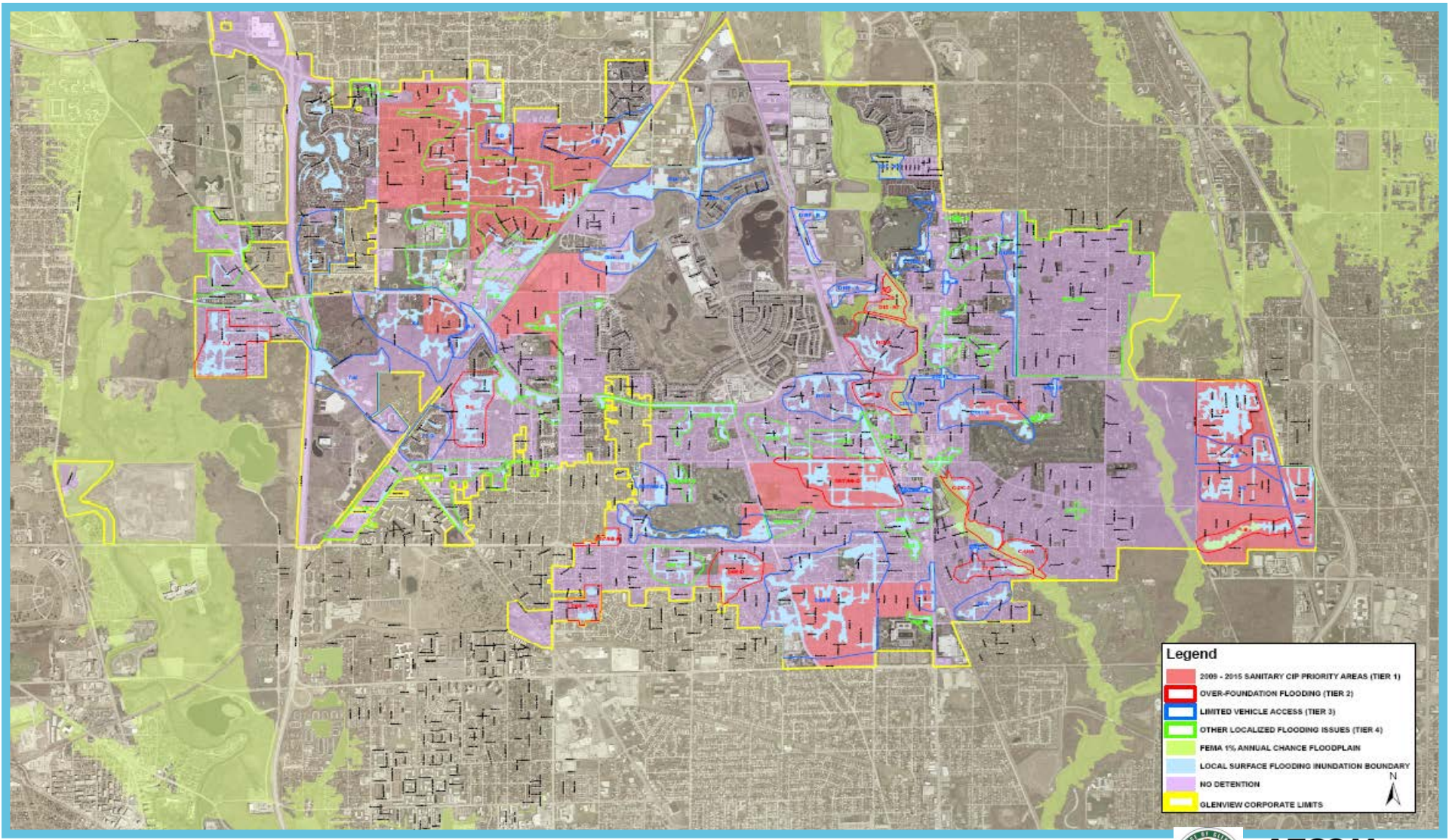
Stormwater Task Force Process

1. Gather and organize flood impact data
2. Complete a comprehensive evaluation of flooding issues
3. Develop a prioritized list of problem areas
4. Establish general flood mitigation principles
5. Identify flood mitigation options and partners
6. Draft program with feasible elements and specific action plan
7. Build consensus for action to achieve real, visible benefits

Prioritizing Flooding with Tiers

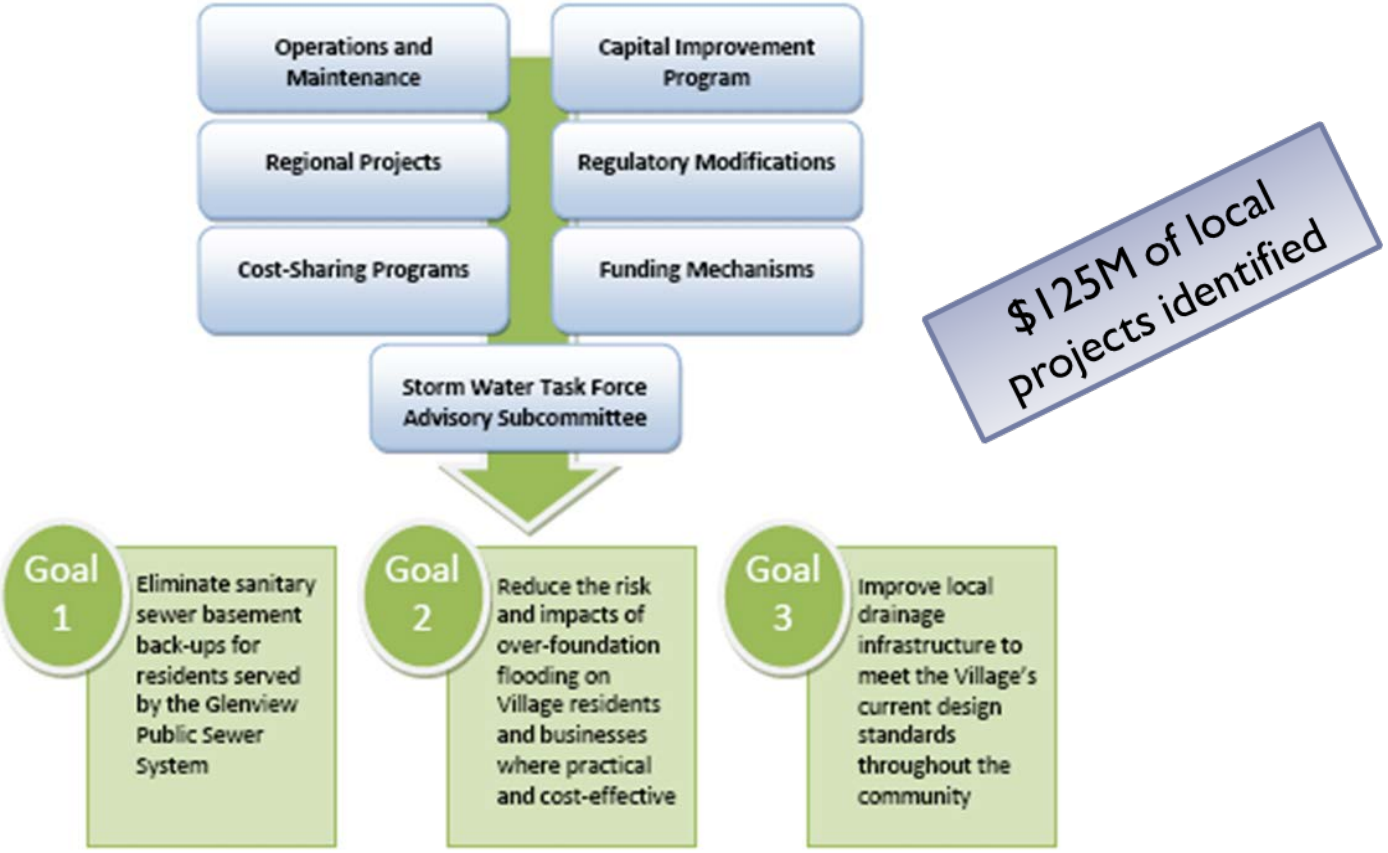
Sanitary Sewer Basement Flooding	Tier #1 – Sanitary sewer backup into homes with direct impacts on public health and structures
Property Damage Flooding of Structures	Tier #2 - Over-foundation flooding that can result from overbank flooding from rivers or surface flooding
Surface Flooding that Impacts Vehicle Access	Tier #3 – Surface flooding of streets to depths of that impair vehicle access
Other Localized Flooding	Tier #4 – Other areas impacted by street or property flooding

Flood Tier Mapping



Master Plan Approved

- Flood Risk Reduction Program
  - Approved August 3, 2010

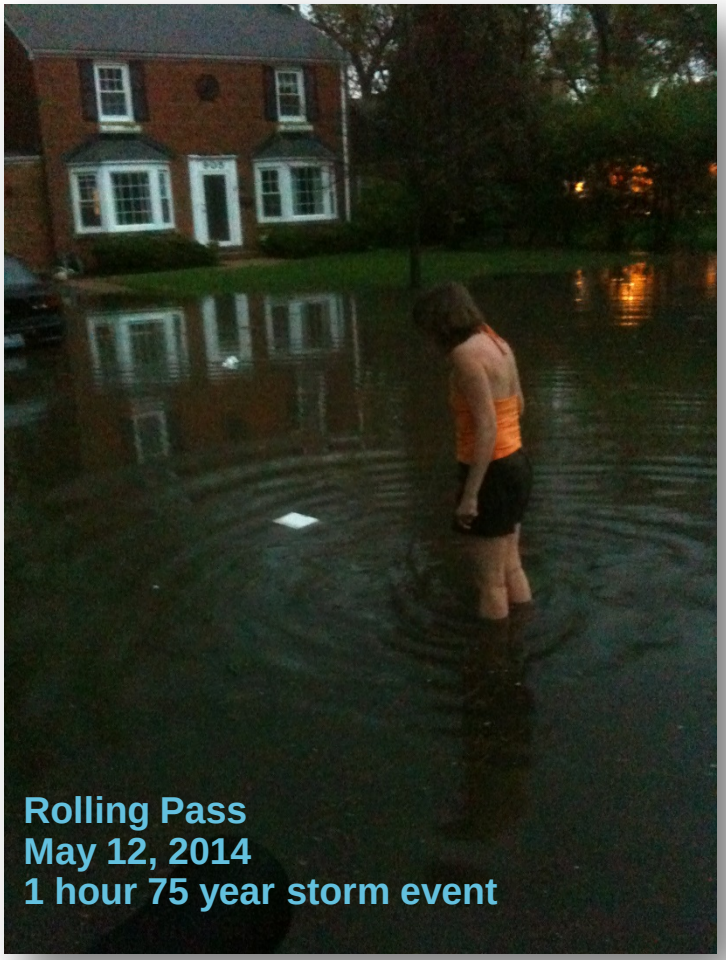


Results To-Date

- Implementation underway
  - Benefitting parcels from construction projects:
    - Completed – 2,310
    - Remaining Five-year plan – 1,685
  - Outside funding (partnerships/grants):
    - Secured – Over $21.7 Million

What is causing the flooding?

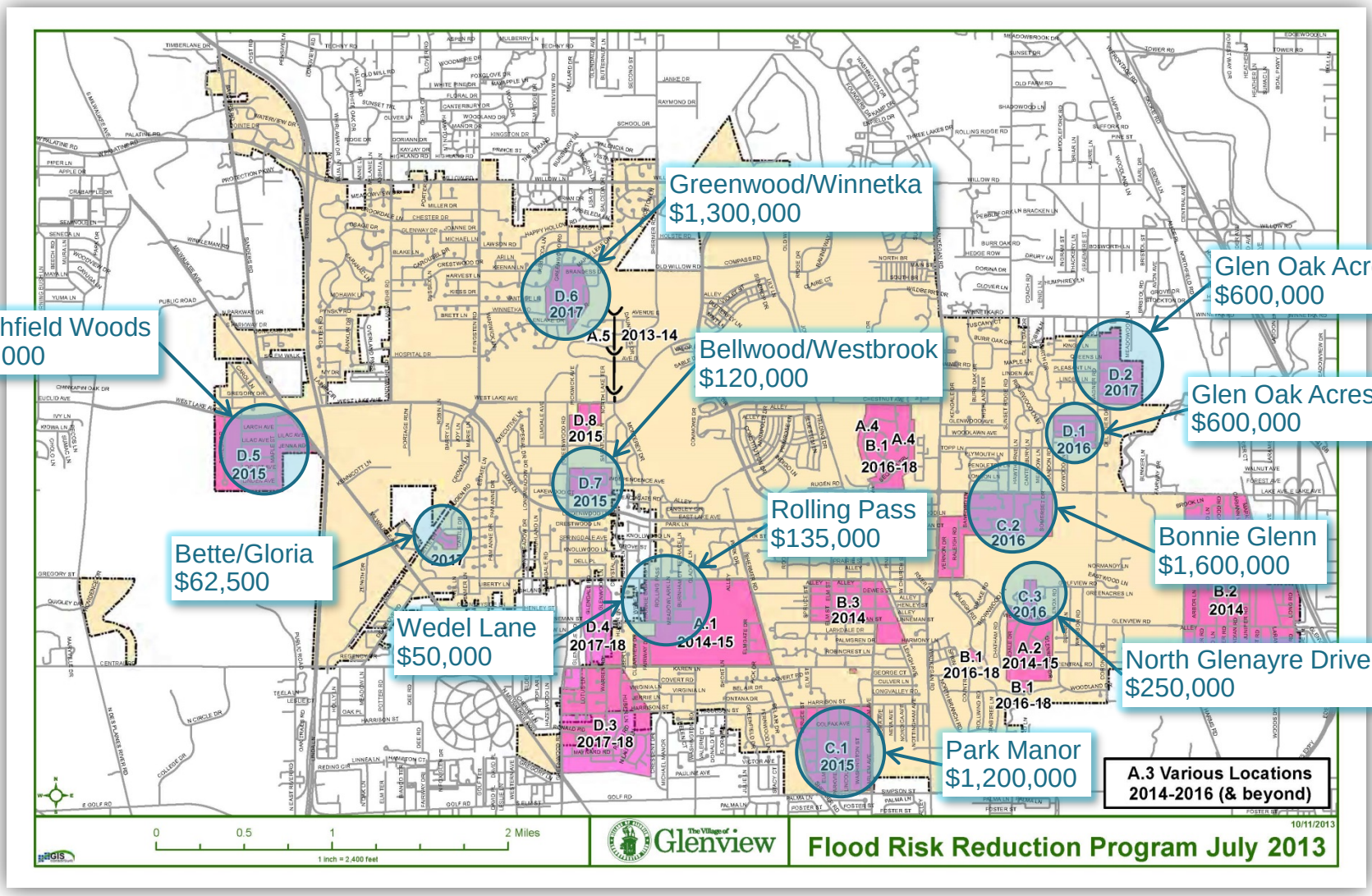
- Old developments.
- Grading for new developments cut off overland flow paths.
- Inlet capacity
- Increased urbanization overloading trunk sewer



Options to Reduce Flooding

- Options based on:
  - Village budget
  - Impact to private property
  - Level of flood reduction that is achievable.

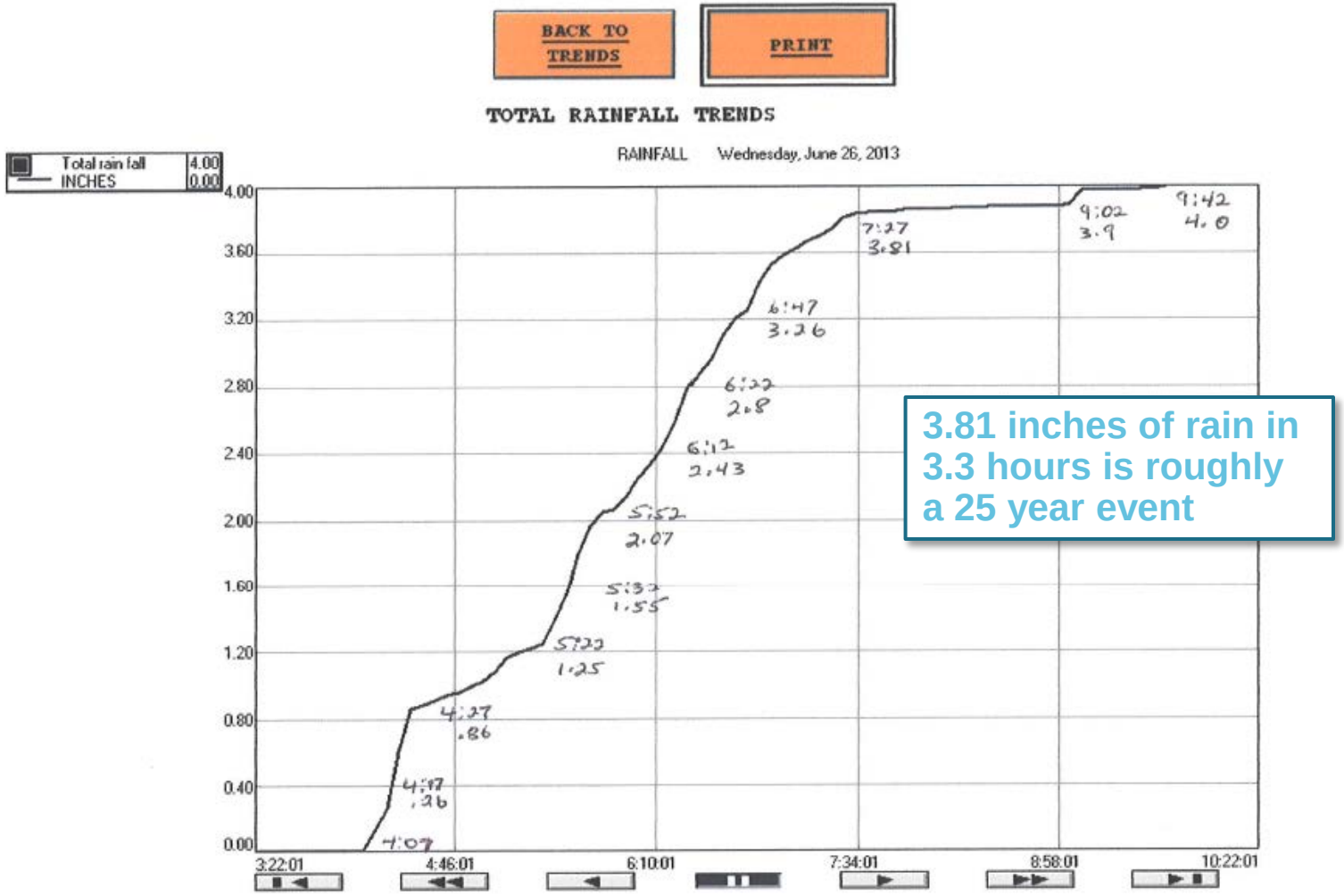
Village FRRP Planned Capital Budget Per Project



Flooding at Greenwood and Winnetka

Greenwood/Winnetka
June 26, 2013
25 year storm event

Flooding at Greenwood and Winnetka
June 26, 2013 Hydrograph

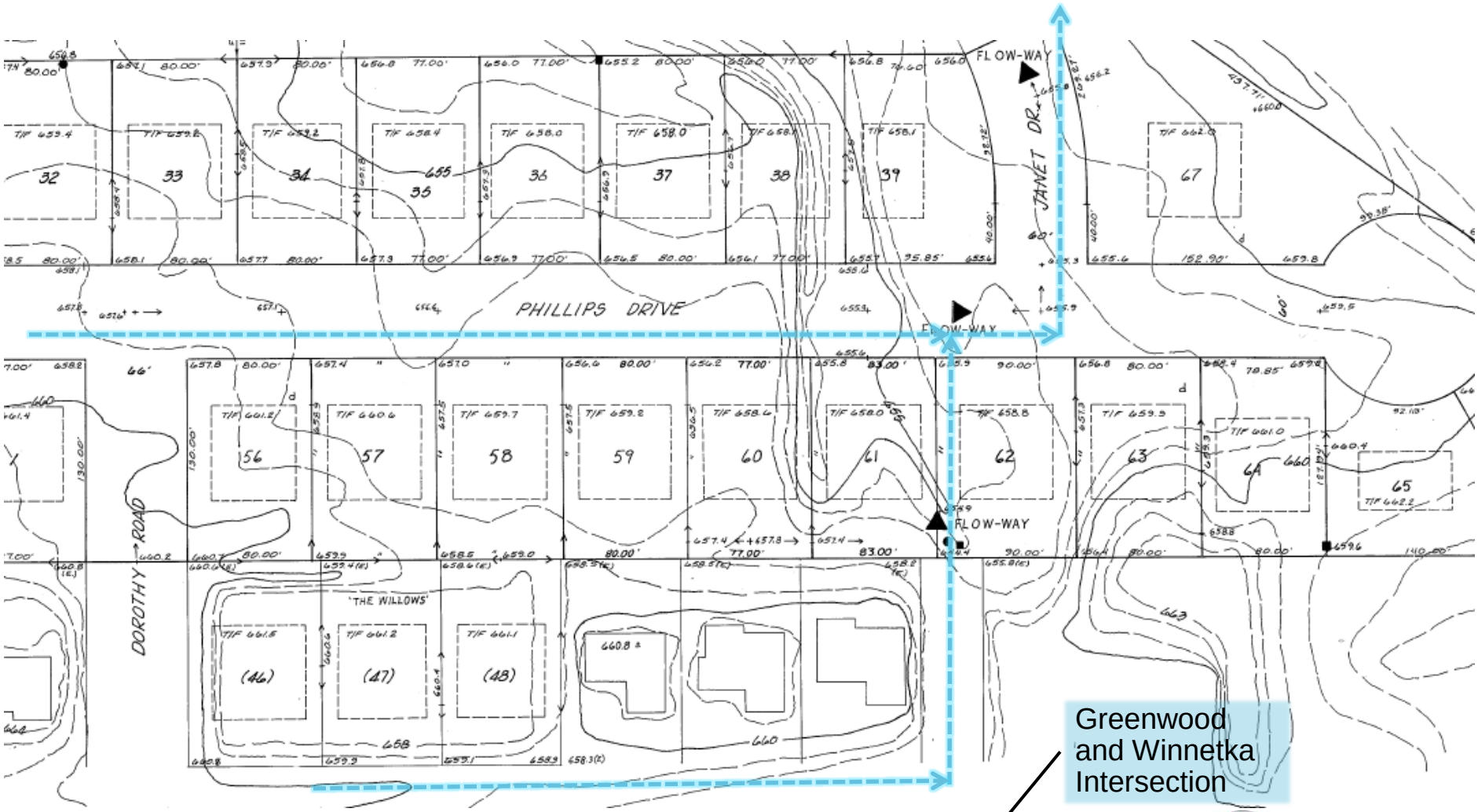


3.81 inches of rain in 3.3 hours is roughly a 25 year event

Modeling the Flooding

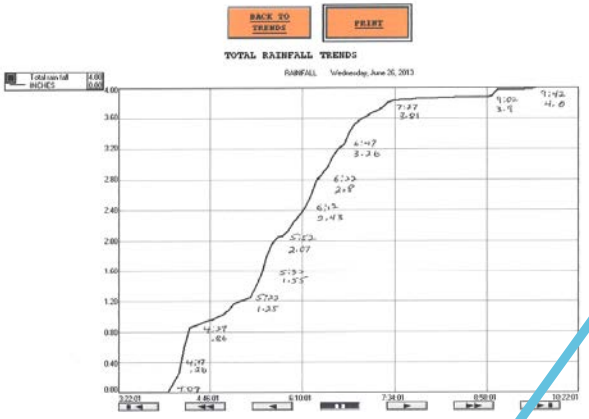
- Information Gathered
  - 1 foot contour map
  - Additional survey points
  - Notes and pictures
- One dimensional XPSWMM
  - Overland flow paths
  - Incorporated below ground storage

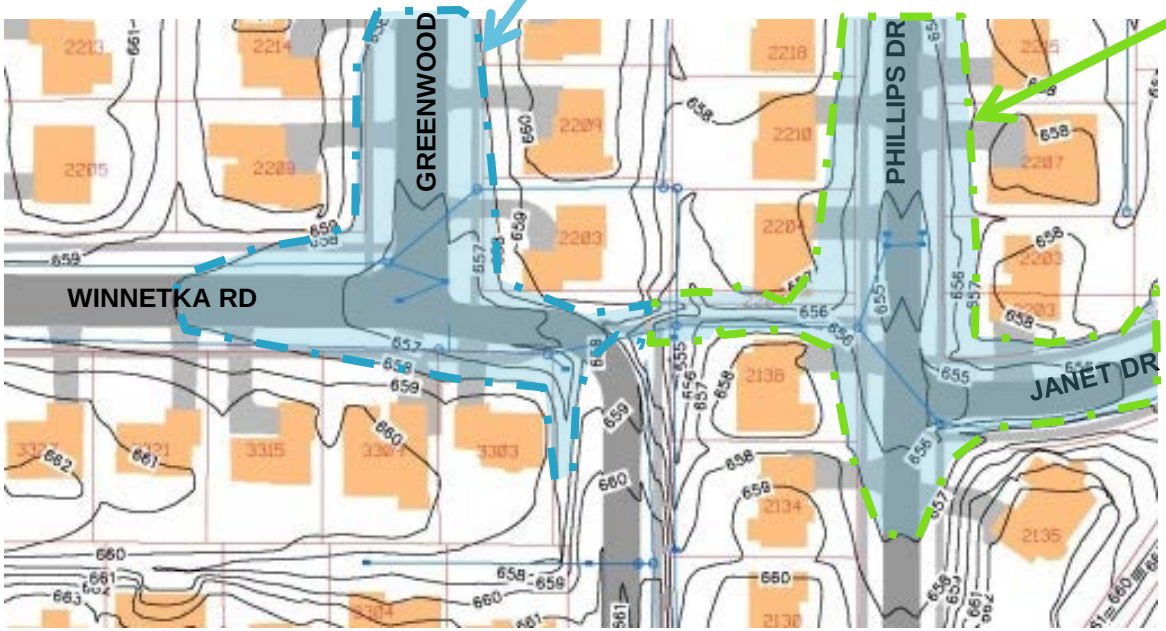
Flooding at Greenwood and Winnetka
Pre-Development Conditions



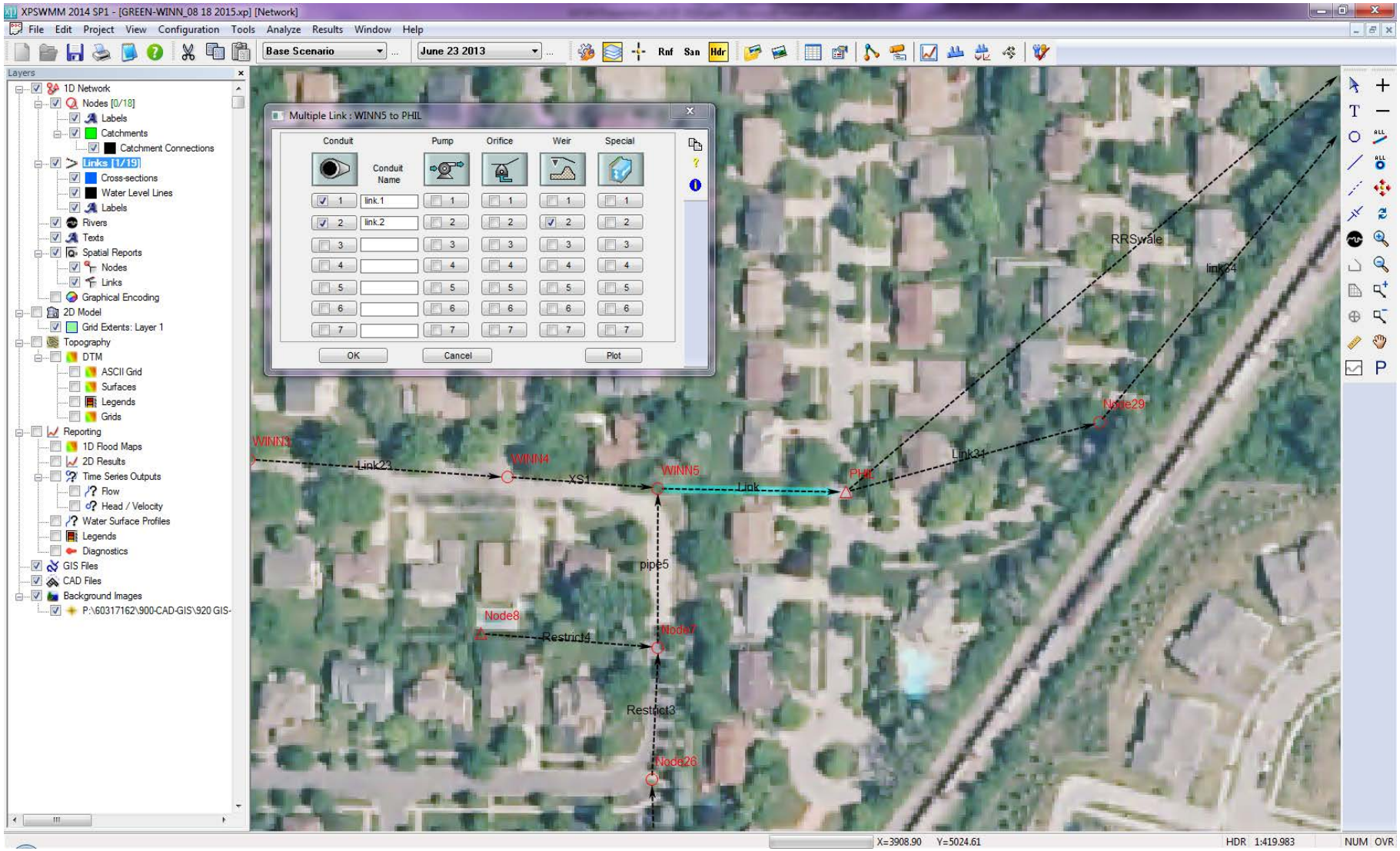
Flooding at Greenwood and Winnetka
Flow Path Today

Flooding at Greenwood and Winnetka
Putting the available information together





Flooding at Greenwood and Winnetka
XPSWMM Model



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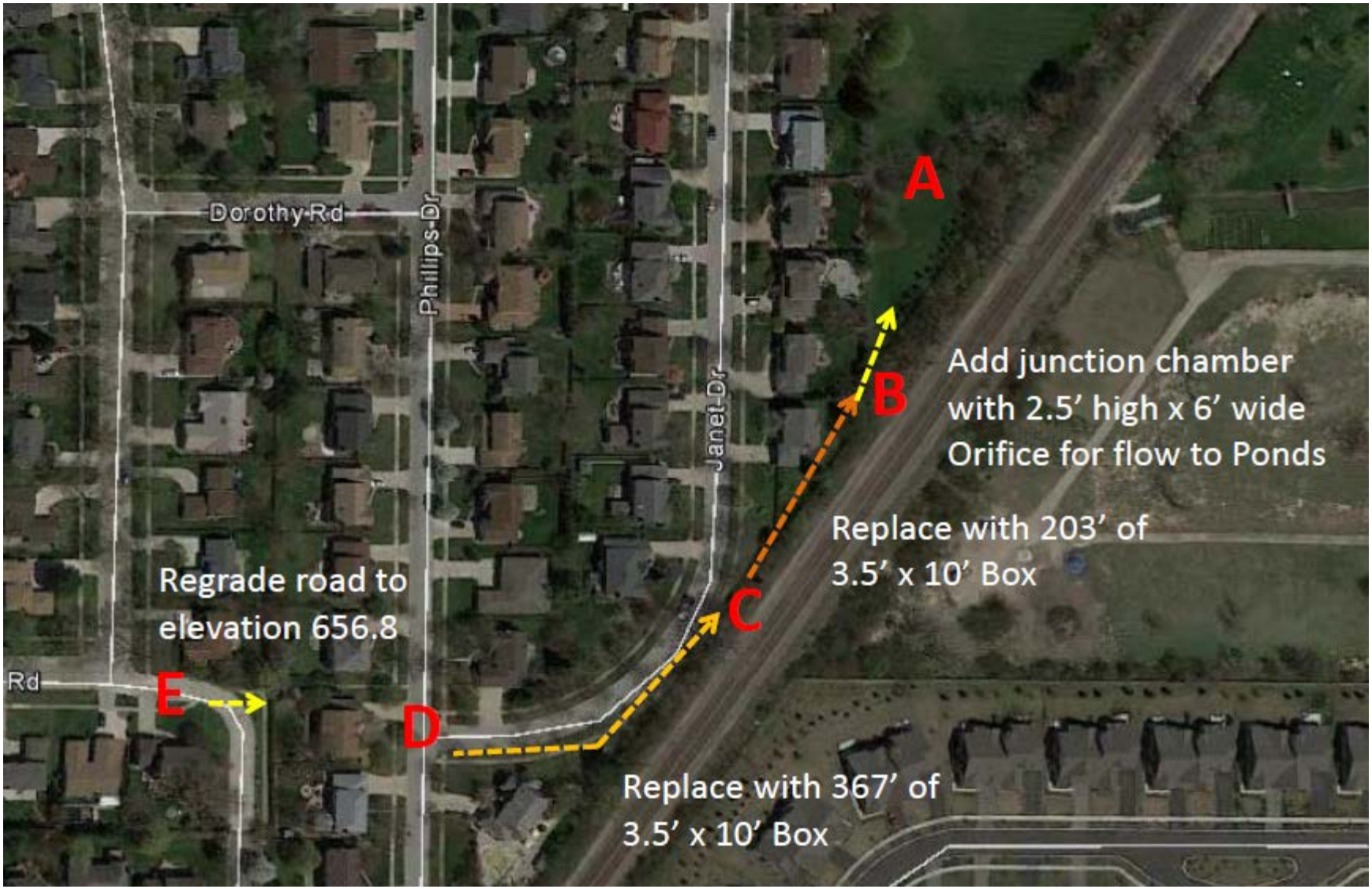
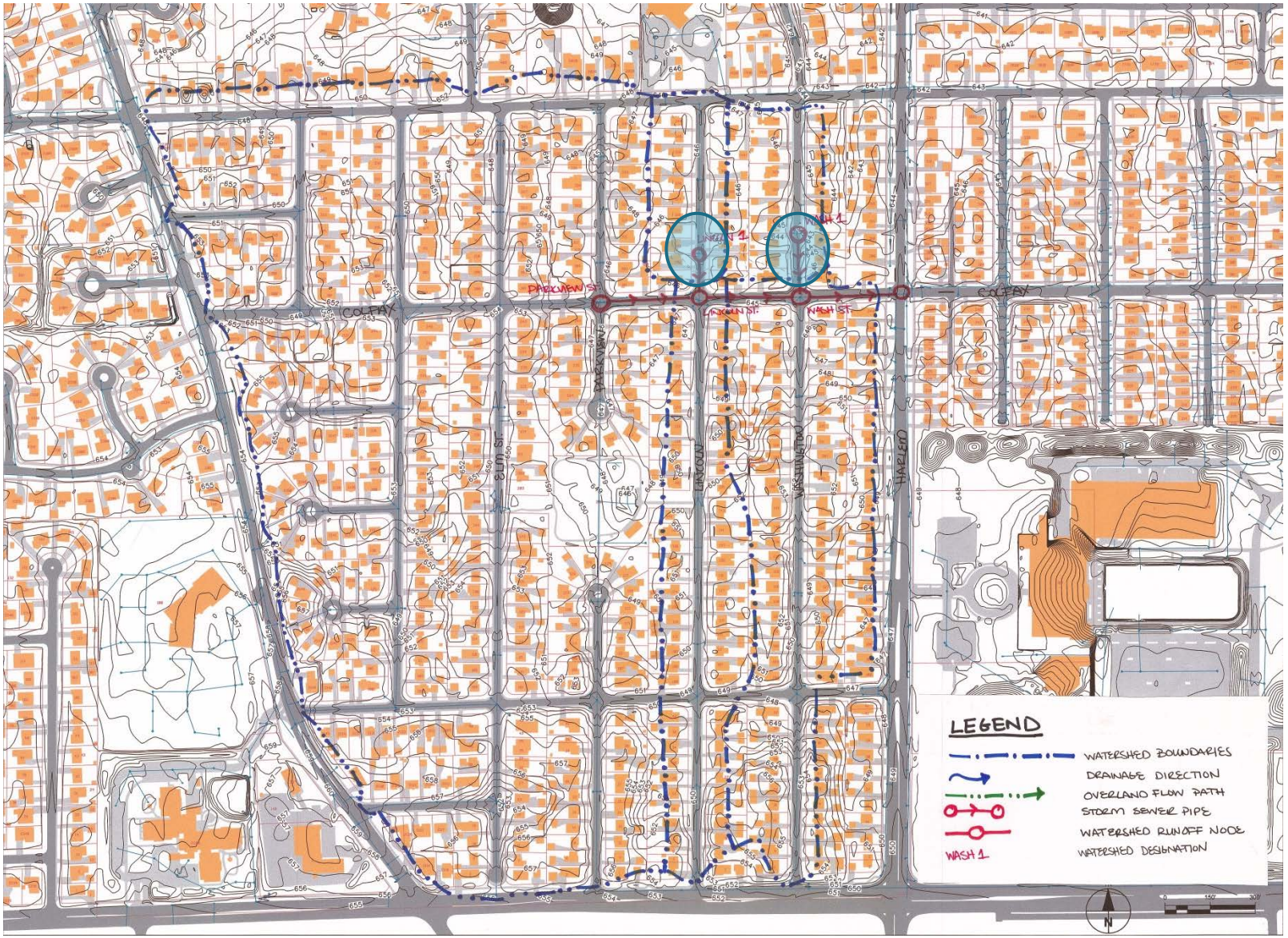
Flooding at Park Manor

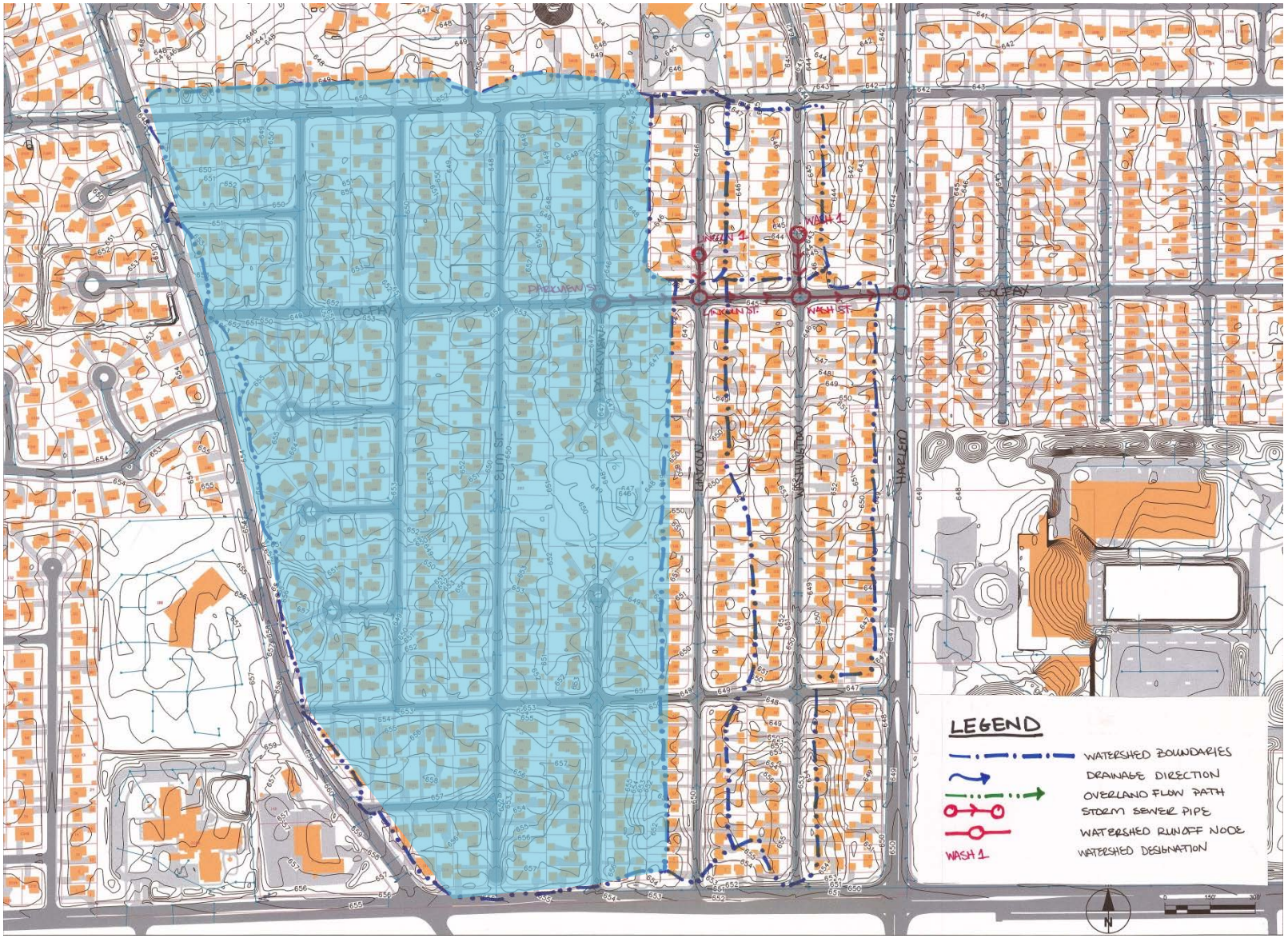


Flooding at Park Manor

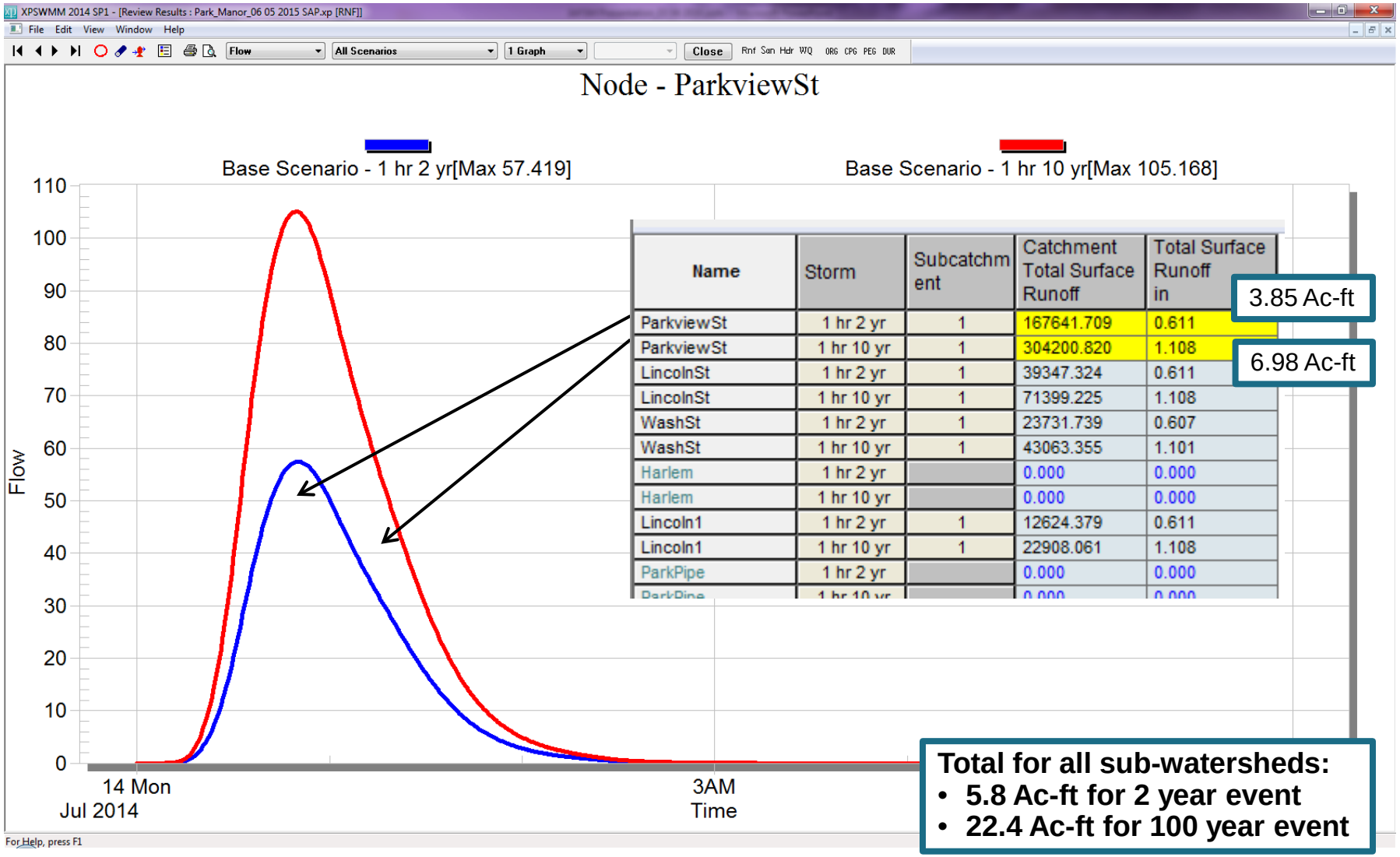
Park Manor Watershed



Park Manor Watershed



Park Manor Watershed Hydrograph



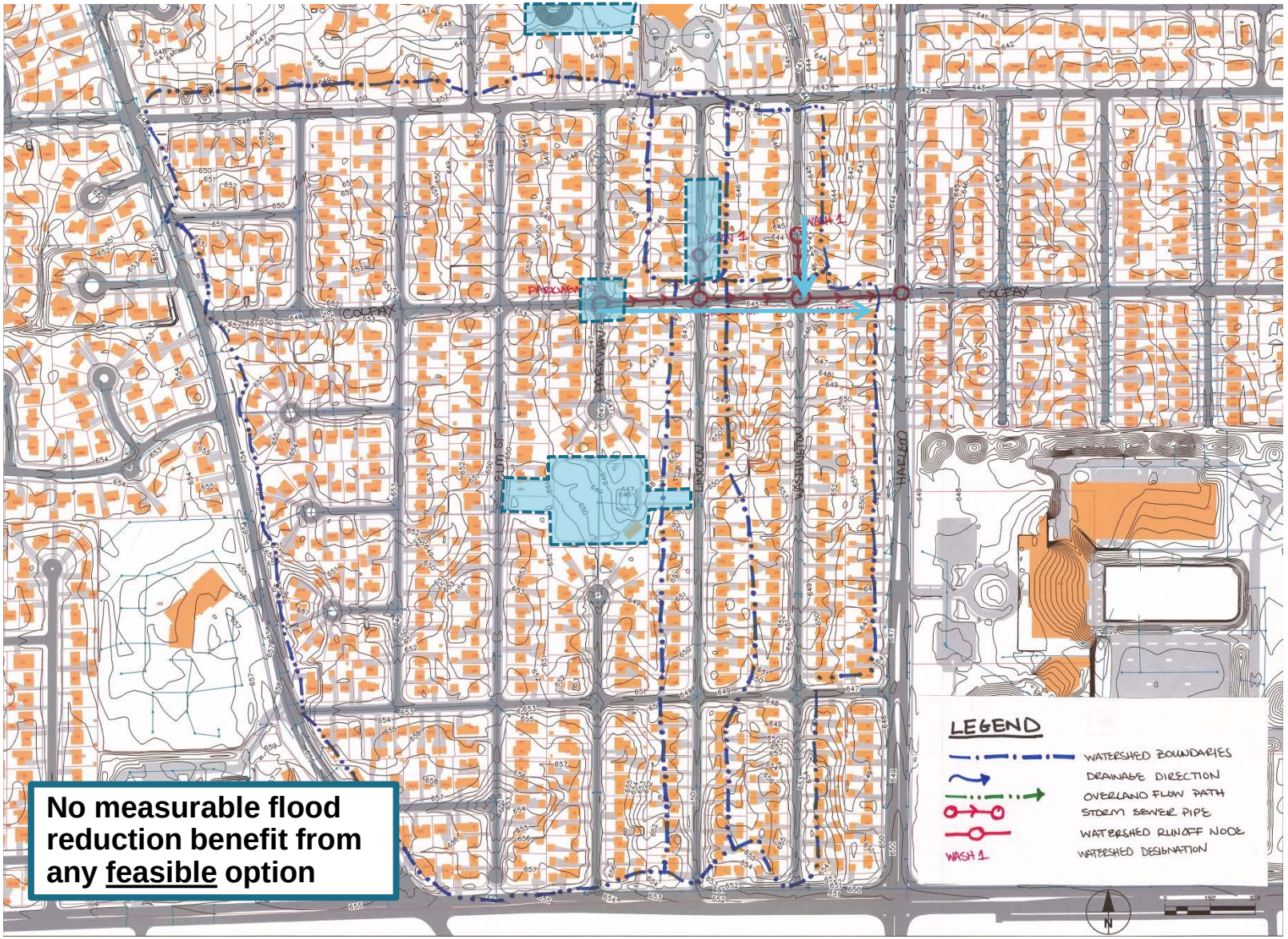
Name	Storm	Subcatchment	Catchment Total Surface Runoff	Total Surface Runoff in
ParkviewSt	1 hr 2 yr	1	167641.709	0.611
ParkviewSt	1 hr 10 yr	1	304200.820	1.108
LincolnSt	1 hr 2 yr	1	39347.324	0.611
LincolnSt	1 hr 10 yr	1	71399.225	1.108
WashSt	1 hr 2 yr	1	23731.739	0.607
WashSt	1 hr 10 yr	1	43063.355	1.101
Harlem	1 hr 2 yr		0.000	0.000
Harlem	1 hr 10 yr		0.000	0.000
Lincoln1	1 hr 2 yr	1	12624.379	0.611
Lincoln1	1 hr 10 yr	1	22908.061	1.108
ParkPipe	1 hr 2 yr		0.000	0.000

3.85 Ac-ft

6.98 Ac-ft

Total for all sub-watersheds:
- **5.8 Ac-ft for 2 year event**
- **22.4 Ac-ft for 100 year event**

Park Manor Watershed Possible Storage Locations



No measurable flood reduction benefit from any <u>feasible</u> option

Before and After: Bellwood-Westbrook

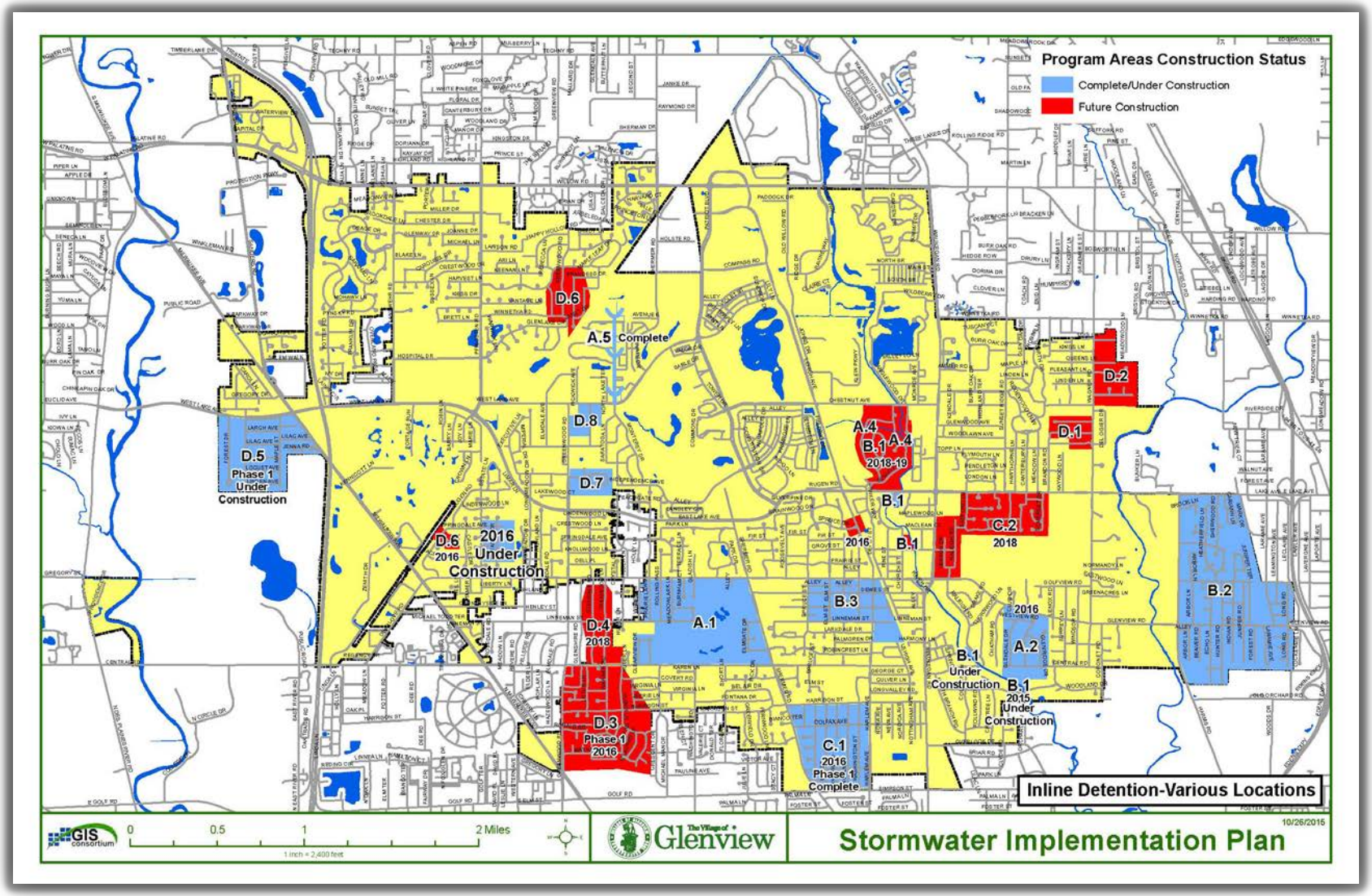
Before and After: Bellwood-Westbrook

Before Photos

Before and After: Bellwood-Westbrook

After Photos

FRRP Map Today



Thank You

For More information on the Village of Glenview Flood Risk Reduction Program:

http://glenview.il.us/Pages/Stormwater-Task-Force.aspx

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