

RAHWAY RIVER BASIN (FLUVIAL), NEW JERSEY FLOOD RISK MANAGEMENT FEASIBILITY STUDY

U.S. Army Corps of Engineers, New York District
New Jersey Department of Environmental Protection

Meeting with Local Officials
December 18, 2025

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RAHWAY RIVER BASIN, NEW JERSEY AGENDA

- Bottom Line Up Front (BLUF)
- Study Area
- List of Alternatives
- Other USACE Authorities
- Potential for Future Implementation
- Next Steps



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RAHWAY RIVER BASIN, NEW JERSEY

BOTTOM LINE UPFRONT

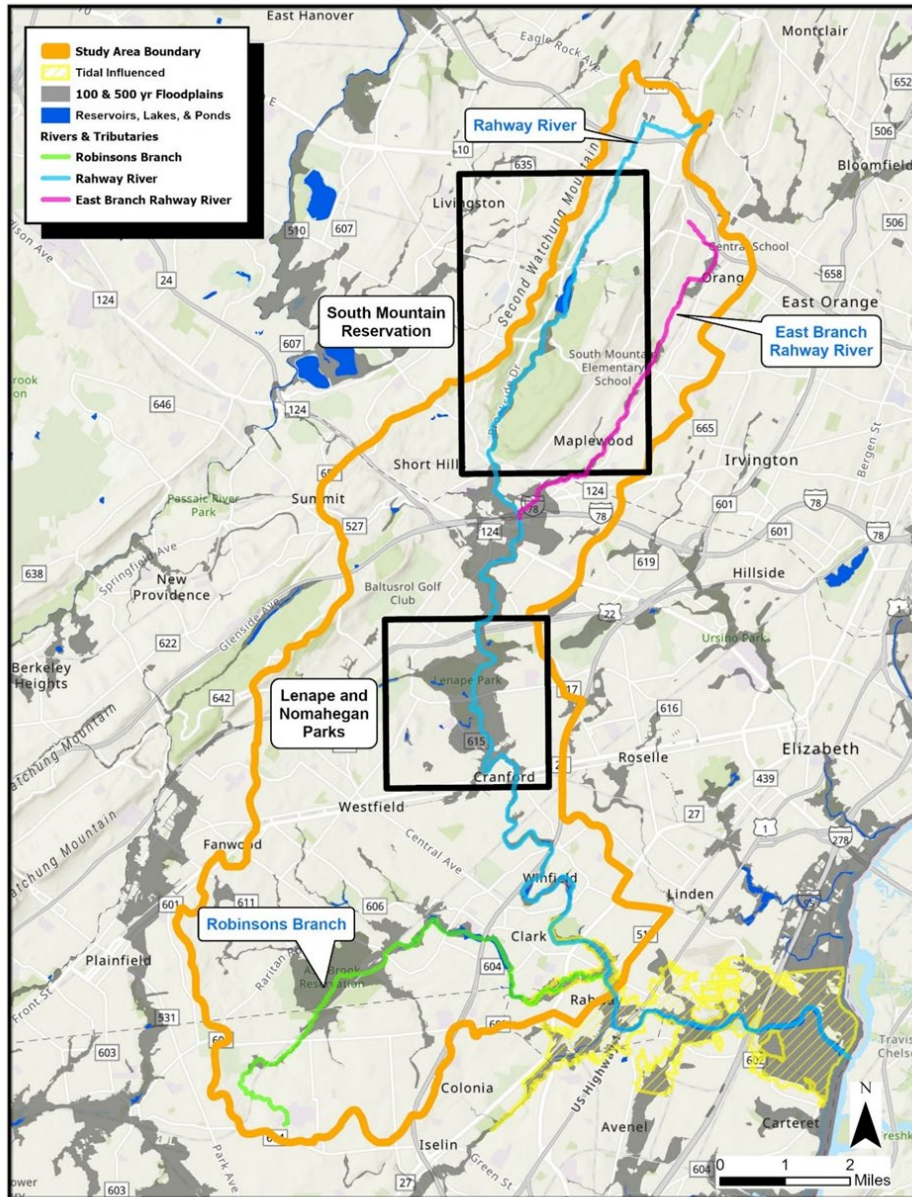
- Bottom Line Up Front: The Rahway River Feasibility Study is documented as a "Report of Findings" to conclude the Feasibility Study.
 - Presents the alternatives analyzed and includes results from Hydraulics & Hydrology and Economic models and future without project conditions
 - Identifies potential measures to address flood risk and entities/programs to implement those measures
- Recommends other USACE programs including:
 - Continuing Authority Program (CAP)
 - Section 219 Environmental Infrastructure
 - Planning Assistant to State (PAS) and Flood Plain Management Services (FPMS)
- **The “Report of Findings” does not recommend a project for authorization. However, it identifies potential solutions that could be implemented by other USACE authorities and/or Federal and State programs in the future.**



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RAHWAY RIVER BASIN, NEW JERSEY STUDY AREA



- Rahway River Basin is approx. 83 square miles in area.
- It consists of the mainstem of the Rahway River and four Branches: West Branch, East Branch, Robinson’s Branch and South Branch.
- West Branch, location of the South Mountain Reservation and the Orange Reservoir
- The lower basin is the area lying within the tidal floodplain in the Rahway River Basin.
- The tidal influence on the Rahway River extends roughly five miles from the Arthur Kill into the City of Rahway.
- A separate study was initiated to address the coastal flooding and has been completed and currently in design phase.



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RAHWAY RIVER BASIN, NJ – LIST OF ALTERNATIVES

We have evaluated an array of alternatives formulated from the Flood Risk Management measures. The table below is a short description of the Alternatives.

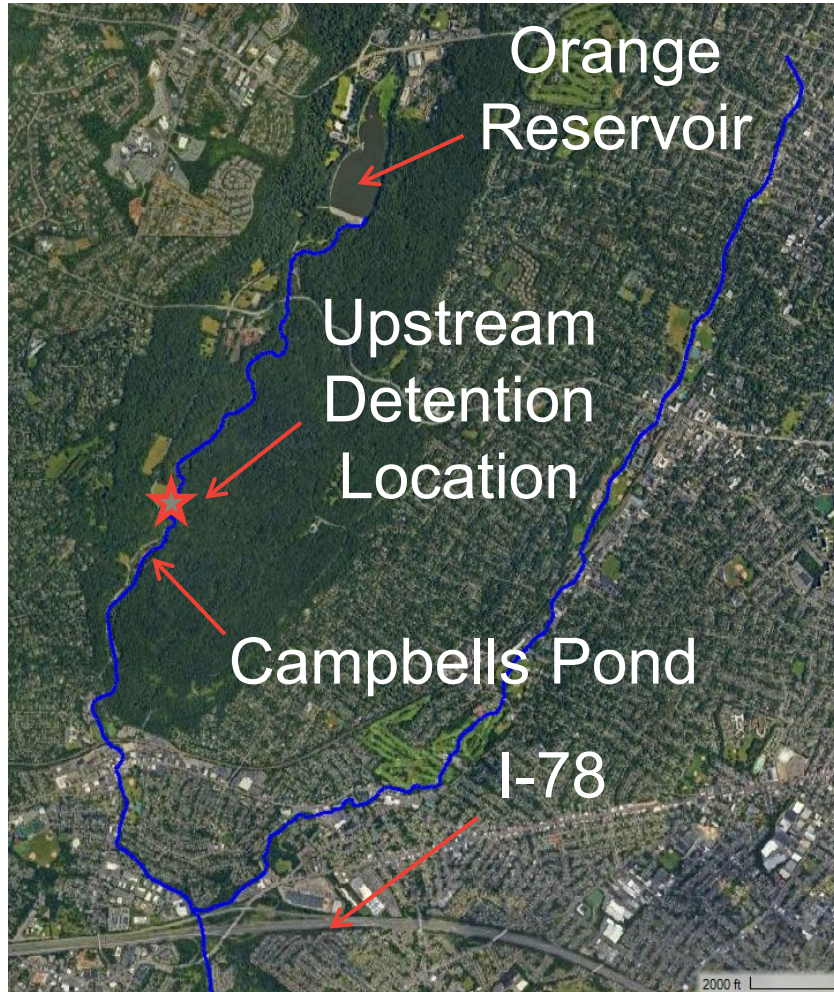
Alternative	Alternative Description	Additional Details
Alternative 1	No Action	
Alternative 2	Upstream Detention	3 variations considered and only dry detention carried forward; Realignment of Brookside Drive necessary
Alternative 3	Combination plan – targeted channelization, along with potential localized storage, and targeted levees and floodwalls	Bridge raising, improve channel capacities/conveyance, add offline storage, levees/floodwalls, remove/modify low head dams.
Alternative 4	Nonstructural Plan consisting of acquisition, relocation, elevation, and floodproofing	Basin wide plan – elevation, floodproofing
Alternative 5	Lenape Park Detention Basin & Channel Modifications (Asked to revisit, even though this alternative had a BCR of 0.6 in the 2016 report).	Updated costs and benefits to FY24 using CWCCIS and CPI Calculator Further scaled benefits up 10% and 20% to test sensitivity BCR still resulted in negative net benefits



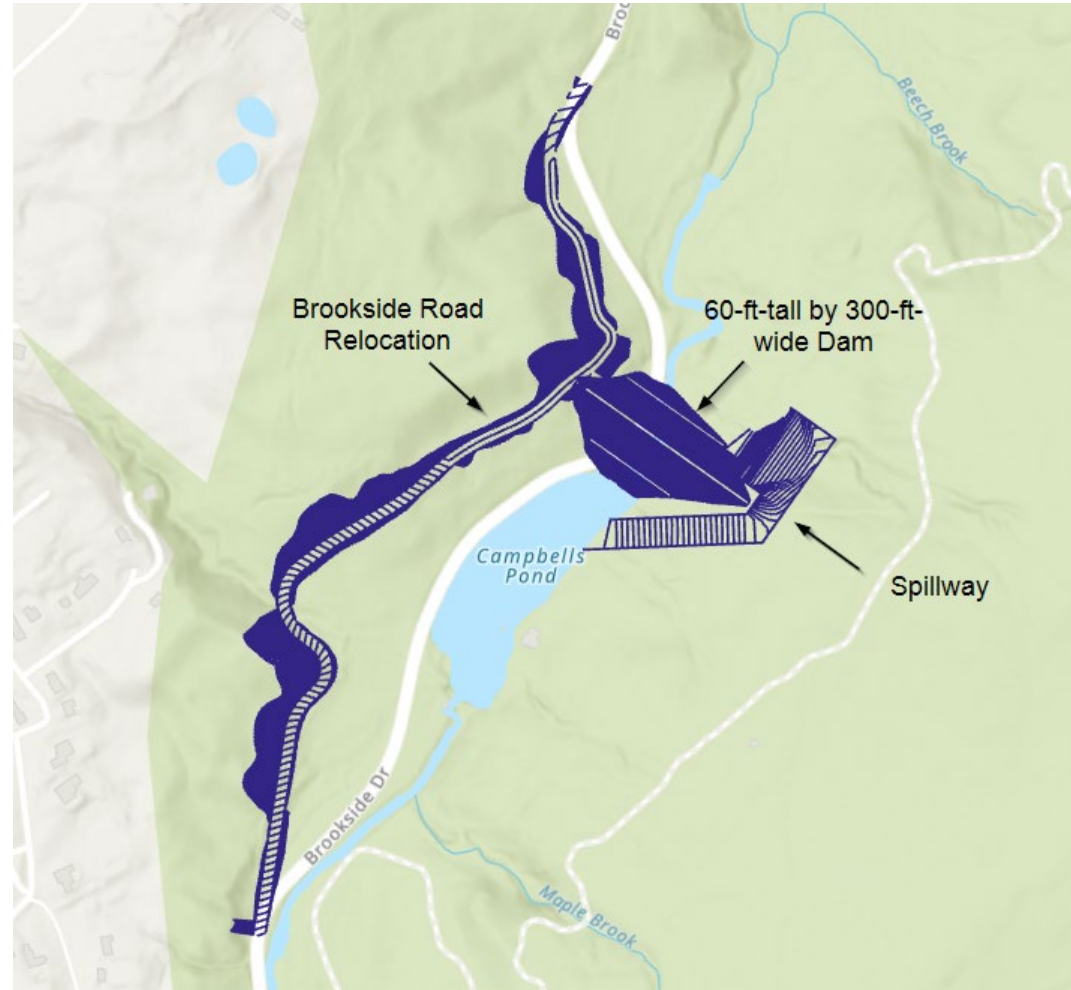
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ALTERNATIVE 2 – UPSTREAM DRY DETENTION



West Branch of Rahway River



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ALTERNATIVE 2 - DRY DETENTION BASIN DETAILED DESCRIPTION

- Designed to safely pass the Probable Maximum Flood (PMF)
- Height: 60 ft; Width: 300 ft; earthen dam
- 5' x 5' outlet
- Brookside Road realignment (Approx. 3,000 ft)
- Inundation Duration (from empty at WSE 210', to full at WSE 243', and back to empty at 210') is 28 hours
- Time from peak stage to drain (from WSE 243' to 210') is 23 hours

Preliminary Quantities

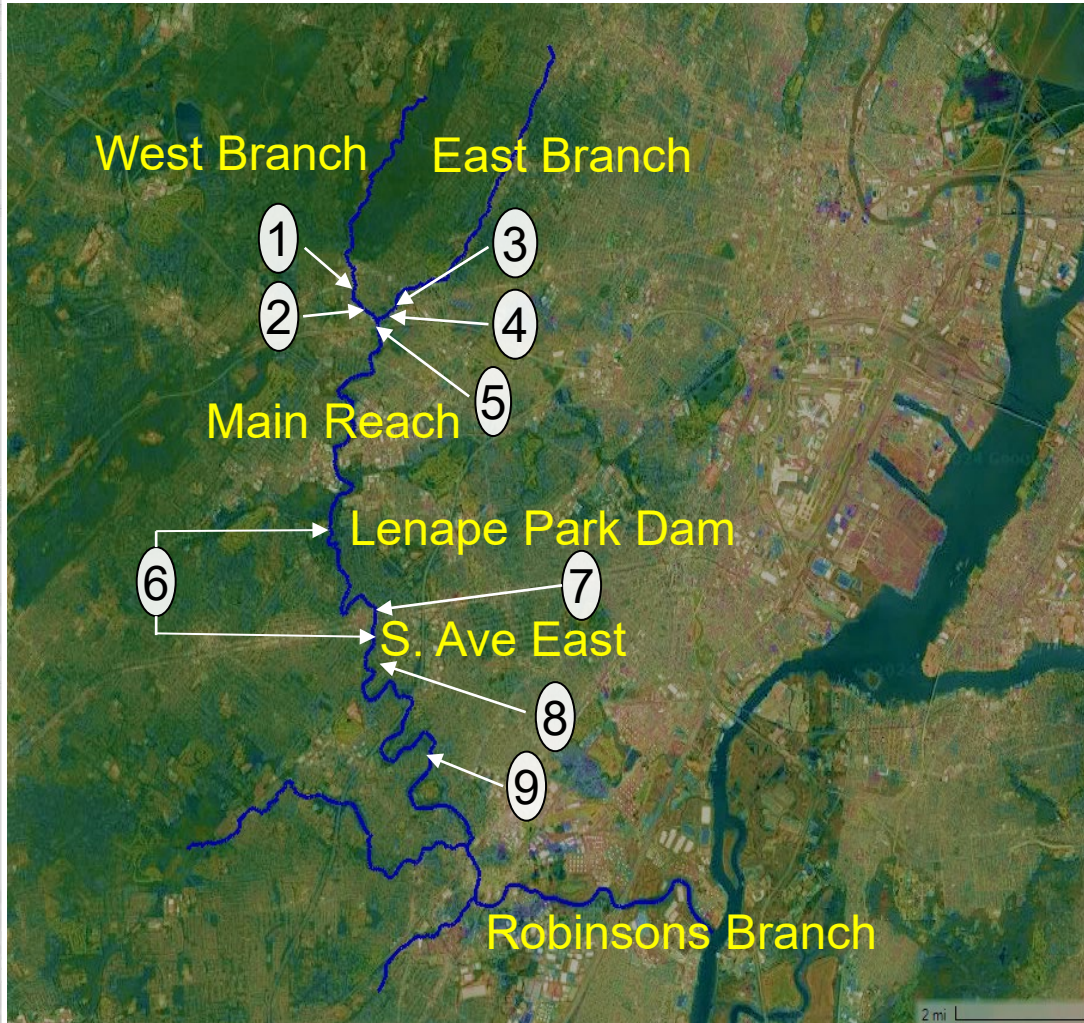
- Embankment Fill Required: 37,500 CY
- Spillway Area: 122,000 Sq ft
- Retaining Walls: 1,900 LF



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ALTERNATIVE 3 – COMBINATION PLAN



No.	Description
1	Raise Essex St Bridge by 1 ft
2	Replace 2,470 ft of concrete channel with natural river bed and deepen channel
3	Raise Oakland Road Bridge by 1 ft
4	Deepen ½ mile of channel
5	Add 30-acre-ft of Offline Storage between EB-WB I-78 embankment
6	-Add 4.5 miles of Levees/ Floodwalls -Add Pump Station for Interior Drainage
7	Remove/Modify Sperry Dam
8	Modify Droescher's Dam to a saw-tooth weir, maintain crest elevation
9	Remove/Modify Jackson Dam



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ALTERNATIVE 4 – NONSTRUCTURAL MEASURE NUMBER OF STRUCTURES BY PLANS AND MODEL AREA

10-year floodplain	East Branch	Robinsons Branch Compound	Cranford Upstream	Total by Model Area
Elevation	7	8	93	108
Ringwall	12	15	26	53
Total	19	23	119	161
Total Estimated Costs	\$27,086,000	\$39,117,000	\$172,102,000	\$238,305,000

100-year floodplain + damage >1%	East Branch	Robinsons Branch Compound	Cranford Upstream	Total by Model Area
Elevation	32	16	125	173
Ringwall	19	16	50	85
Total	51	32	175	258
Total Estimated Costs	\$77,480,000	\$55,375,000	\$271,496,000	\$404,351,000

East Branch: Includes Maplewood, South Orange, part of Millburn
 Cranford Upstream: Includes Millburn, Kenilworth, Union, Springfield, Cranford
 Robinson's Branch: City of Rahway



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RAHWAY RIVER BASIN, NEW JERSEY

SECTION 219 AUTHORITY

- Original Authority: Section 219, Water Resources Development Act (WRDA) 1992
- Since 1992, Congress has authorized and provided for U.S. Army Corps of Engineers (USACE) assistance with planning, design, and construction of environmental infrastructure projects in designated communities, counties, and states. This USACE assistance is broadly labeled Environmental Infrastructure (EI).
- EI authorities generally are referred to as either in one of two categories: Section 219 projects or EI programs (individually referenced by their authorizing section*). This assistance supports publicly owned and operated facilities, such as:
 - Water Distribution and Collection Works
 - Wastewater Systems Improvements
 - Drinking Water Systems Improvements
 - Surface Water Protection
 - Stormwater Collection Improvements

* For example, NYC Watershed (Section 552 WRDA 1996) & Lake Champlain (Section 542 WRDA 2000)



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SECTION 219 AUTHORITY

- All Environmental Infrastructure (EI) authorities come with different funding caps, coverages of geographic focus areas, types of assistance, requirements, etc.
- All EI authorities require a **cost share** – 75% Federal and 25% non-Federal.
- EI mission area within the Civil Works Program exists through yearly appropriations additions made by Congress (USACE Workplan, Congressionally Directed Funding).
- EI projects are not traditional water resource projects and are *not subject to the USACE planning process*; however, they are subject to federal laws, such as National Environmental Policy Act (**NEPA**).
- **Non-Federal Sponsor** is responsible for providing **all lands, easements, rights-of-way, and relocations (LERR)** required for the project and obtaining any necessary **permits**.
- The non-federal partner is the owner of the facility and is responsible for **100% of Operations and Maintenance (O&M)**.



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CONTINUING AUTHORITIES PROGRAM (CAP)

- Congressional authorization exists for projects that meet scope requirements and are of limited size, cost, and complexity (no more than \$23 million per project)

- Relevant Authorities:
 - Section 205 of the Flood Control Act of 1946 – Flood Risk Reduction
 - Section 14 of the Flood Control Act of 1946 – Emergency Streambank Stabilization
 - Section 206 of WRDA 1996 – Aquatic Ecosystem Restoration
 - Section 208 of the Flood Control Act of 1954 – Snagging and Clearing

- Schedule: up to 2 years for study and 3-5 years for design and construction

- Above authorities are cost shared 65% Federal 35% Nonfederal
 - Maximum Federal contribution is \$15 million
 - Maximum non-Federal match is \$8 million



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BEST PERFORMING MEASURES IN COMBINATION PLAN

- Despite overall lacking economic justification, certain measures of the combination plan were effective at reducing water surface elevations and could be candidates for future localized implementation
- Smaller measures would be ideally suited for CAP or Section 219 Authorities
- While benefits are presented for specific municipalities, the current study did not model them independently. Therefore, the presented damage reduction estimates are subject to uncertainty, as interactions between measures across the basin may influence actual outcomes.

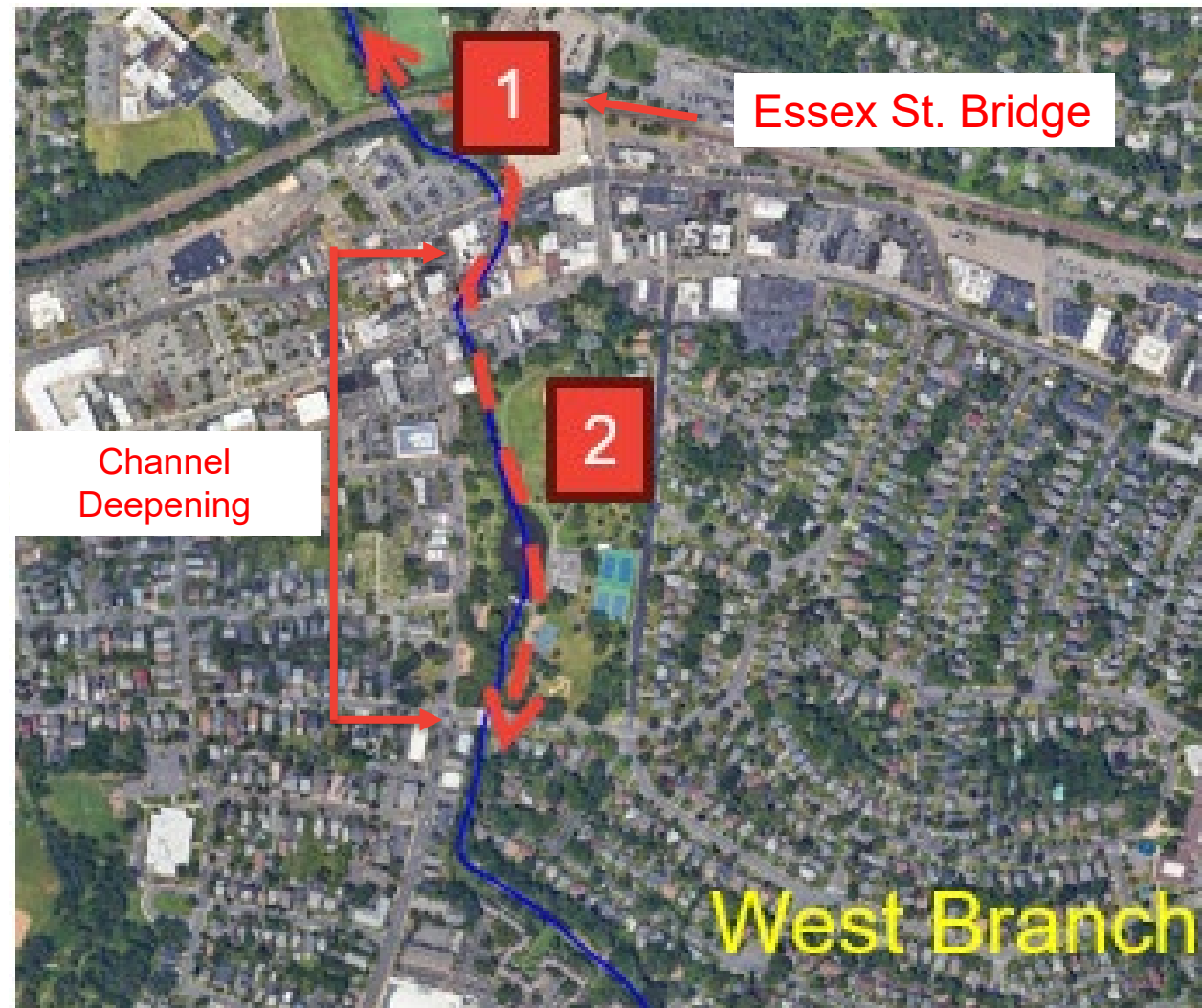


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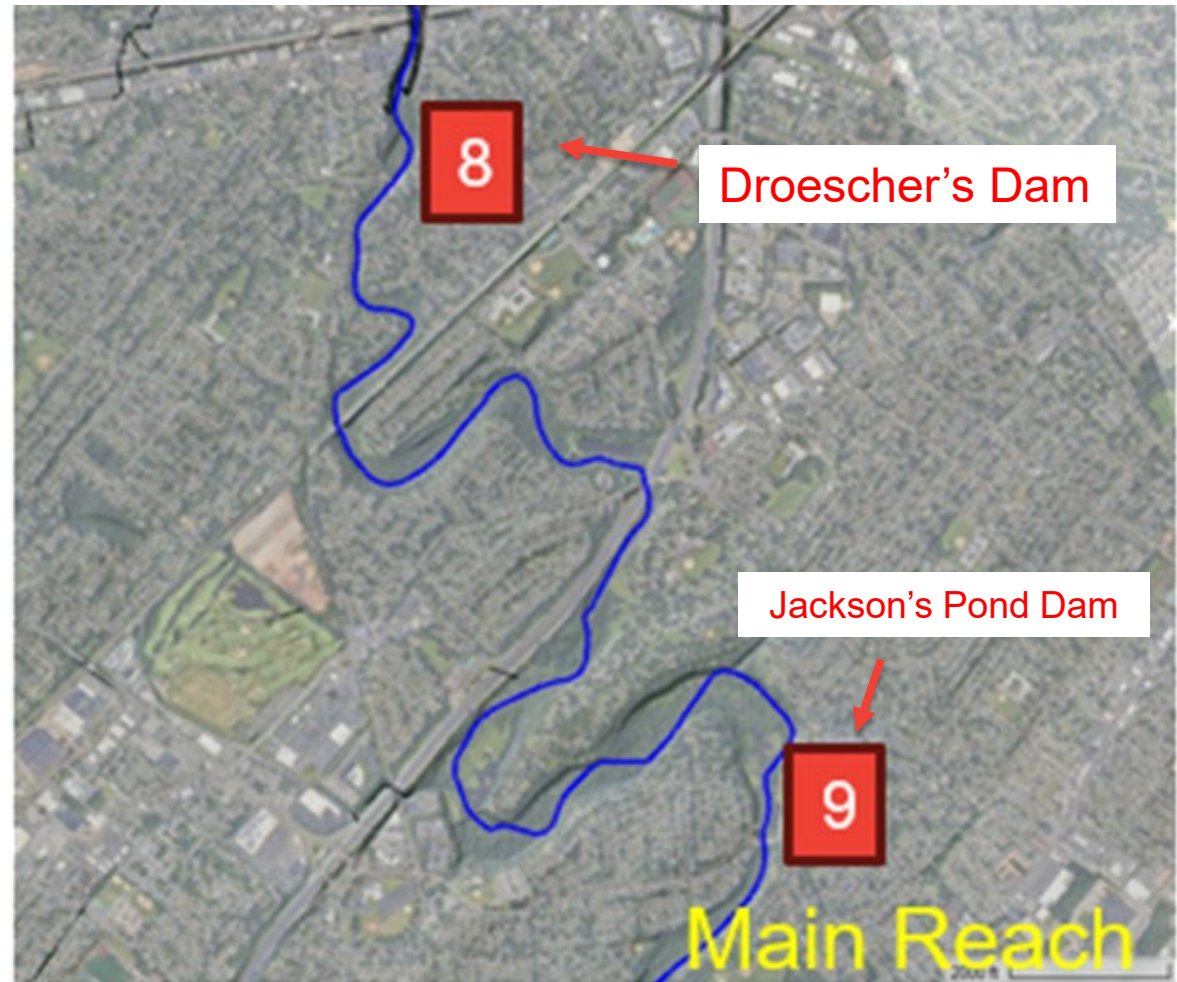
BEST PERFORMING MEASURES IN MILBURN TOWNSHIP

- Modify Essex St. Bridge
 - Raise Low Chord by 1ft
- Channel Modifications
 - Deepen Channel by 1ft
 - Restore Natural Riverbed



BEST PERFORMING MEASURES IN CRANFORD TOWNSHIP

- Modification to Droescher's Dam
 - Create a saw tooth weir
 - Maintain crest elevation of 55ft
- Modification to Jackson's Pond Dam
 - Create a saw tooth weir
 - Lowering the crest elevation by 0.6 feet.



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WATER SURFACE ELEVATION (WSE) REDUCTIONS IN CRANFORD – JACKSON'S POND DAM MODIFICATION

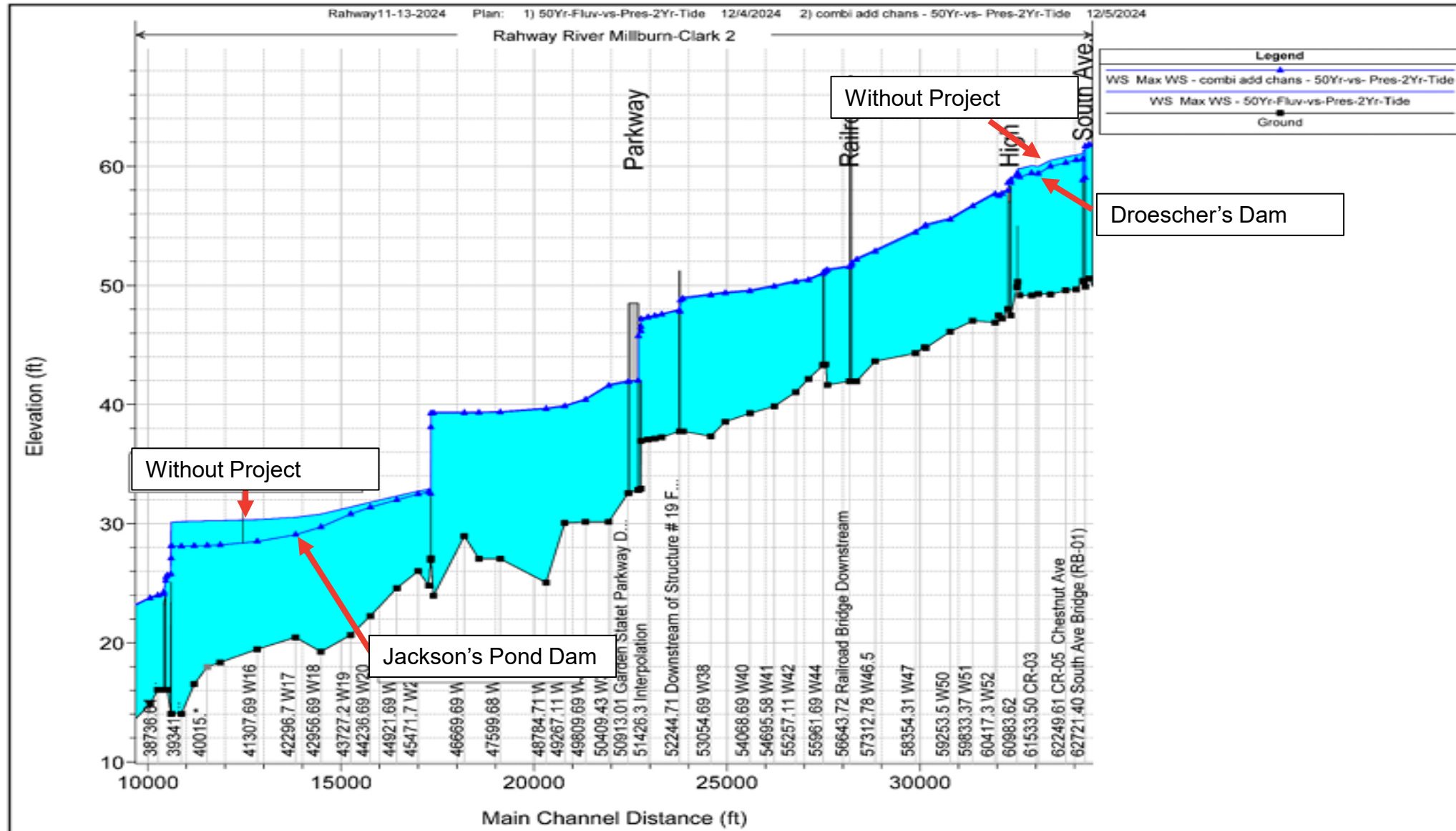


Figure 64. Computed water surface profile for Alternative #3: Rahway River in the Township of Cranford

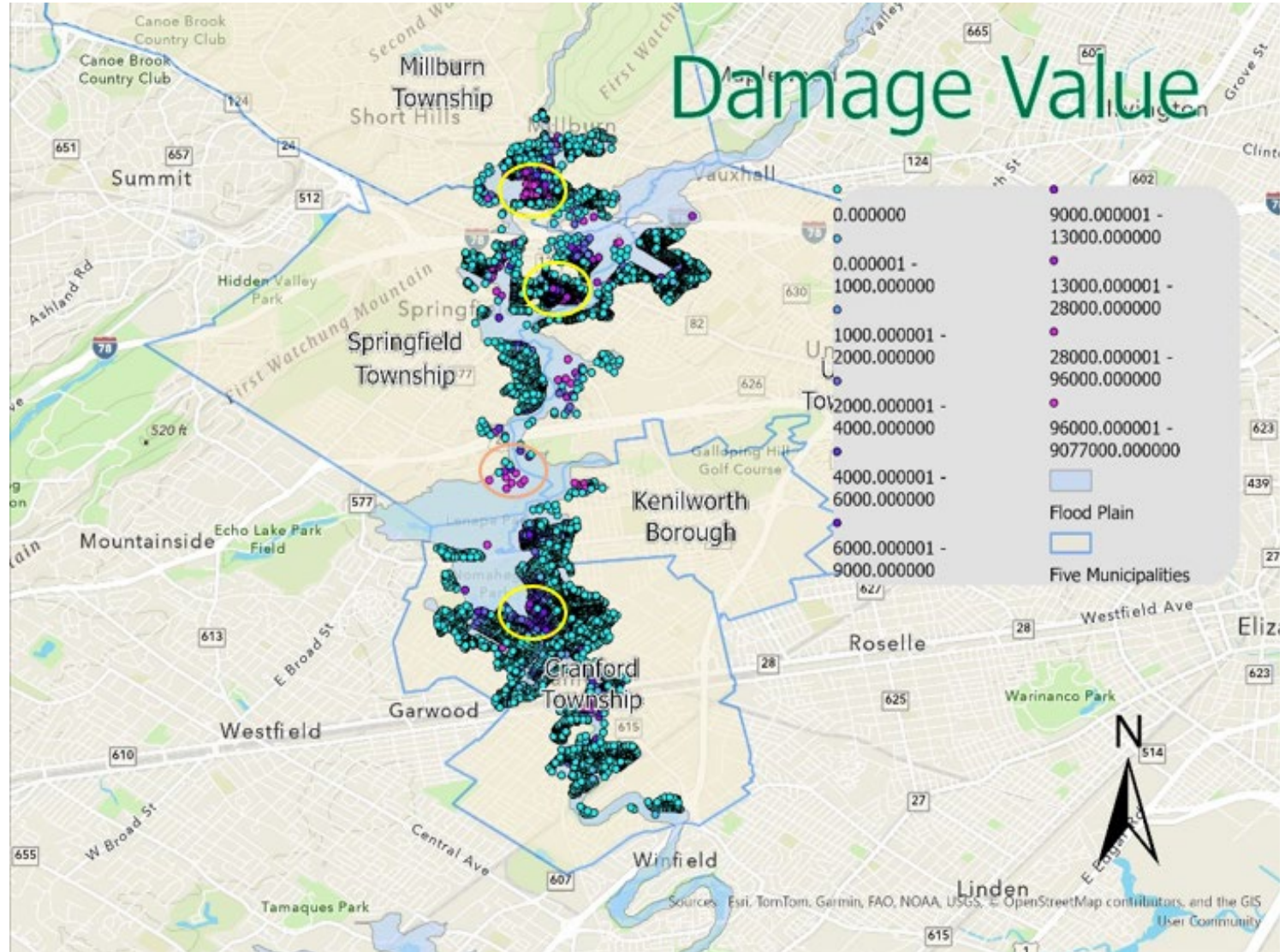
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BEST CANDIDATES FOR NONSTRUCTURAL (NS)

Spatial Distribution of Annual Damage

- Millburn and Cranford Townships - Best candidate areas for NS is circled in yellow with heavy damage
- Springfield - Circled in orange, industrial area with high damages
- Robinson's Branch - NS measures are being implemented by other federal, state or local entities



NONSTRUCTURAL COUNTS BY MUNICIPALITY

Grouping	Elevation		Ringwalls		Total Structures
	Residential	Non-Residential	Residential	Non-Residential	
East Branch	17	0	2	4	23
Maplewood (Essex)				3	3
Millburn (Essex)	14		1		15
Orange City (Essex)	1				1
Union (Union)	2			1	3
South Orange Village (Essex)			1		1
Robinson's Branch	6	1	5	7	19
Rahway City (Union)	6	1	5	7	19
Cranford	91	2	17	9	119
Cranford (Union)	13			1	14
Kenilworth (Union)	3				3
Millburn (Essex)	49	2	16	4	71
Springfield (Union)	26		1	4	31
Treatment Totals	114	3	24	20	161



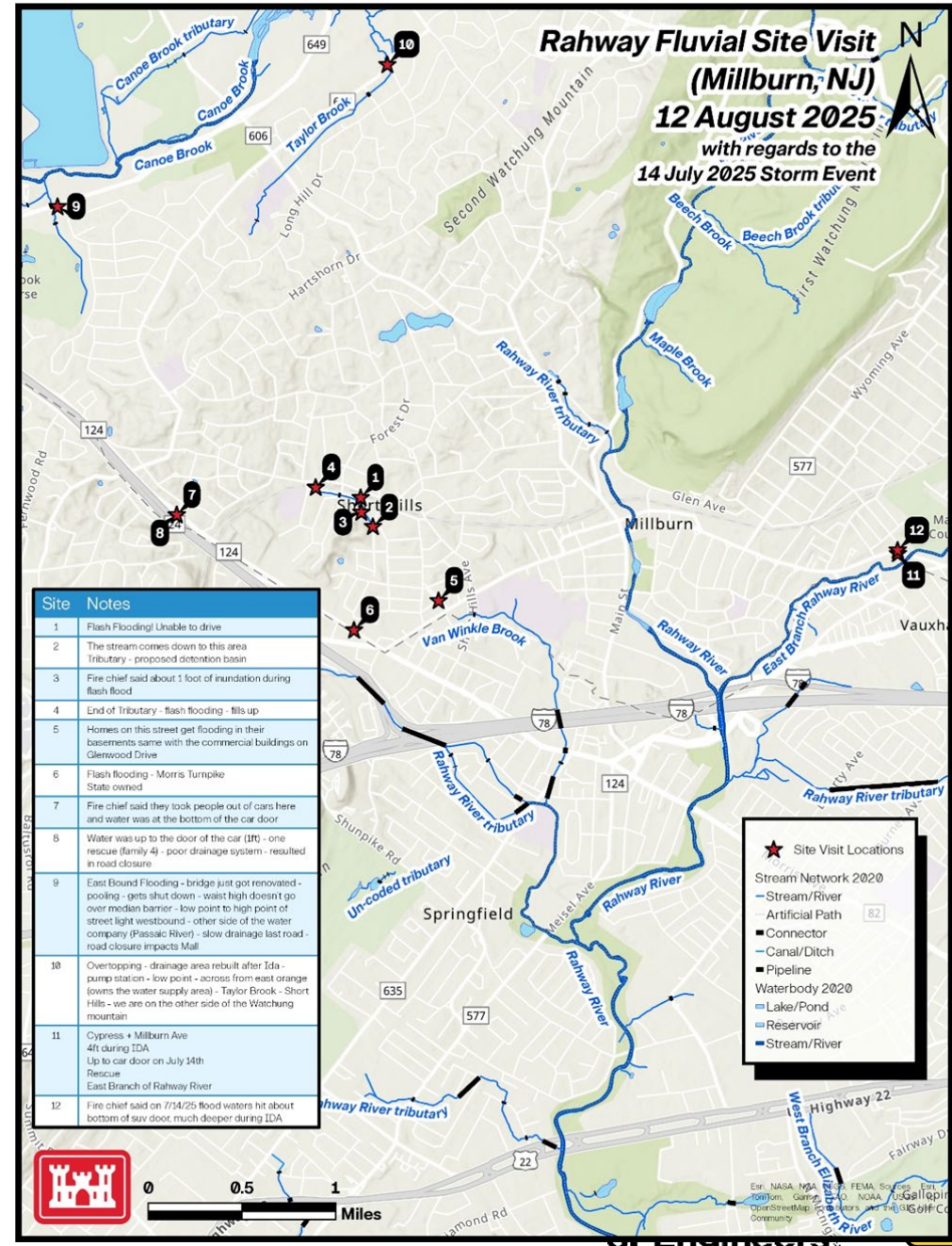
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AUGUST 12TH SITE VISIT – MILLBURN

Stormwater drainage improvements

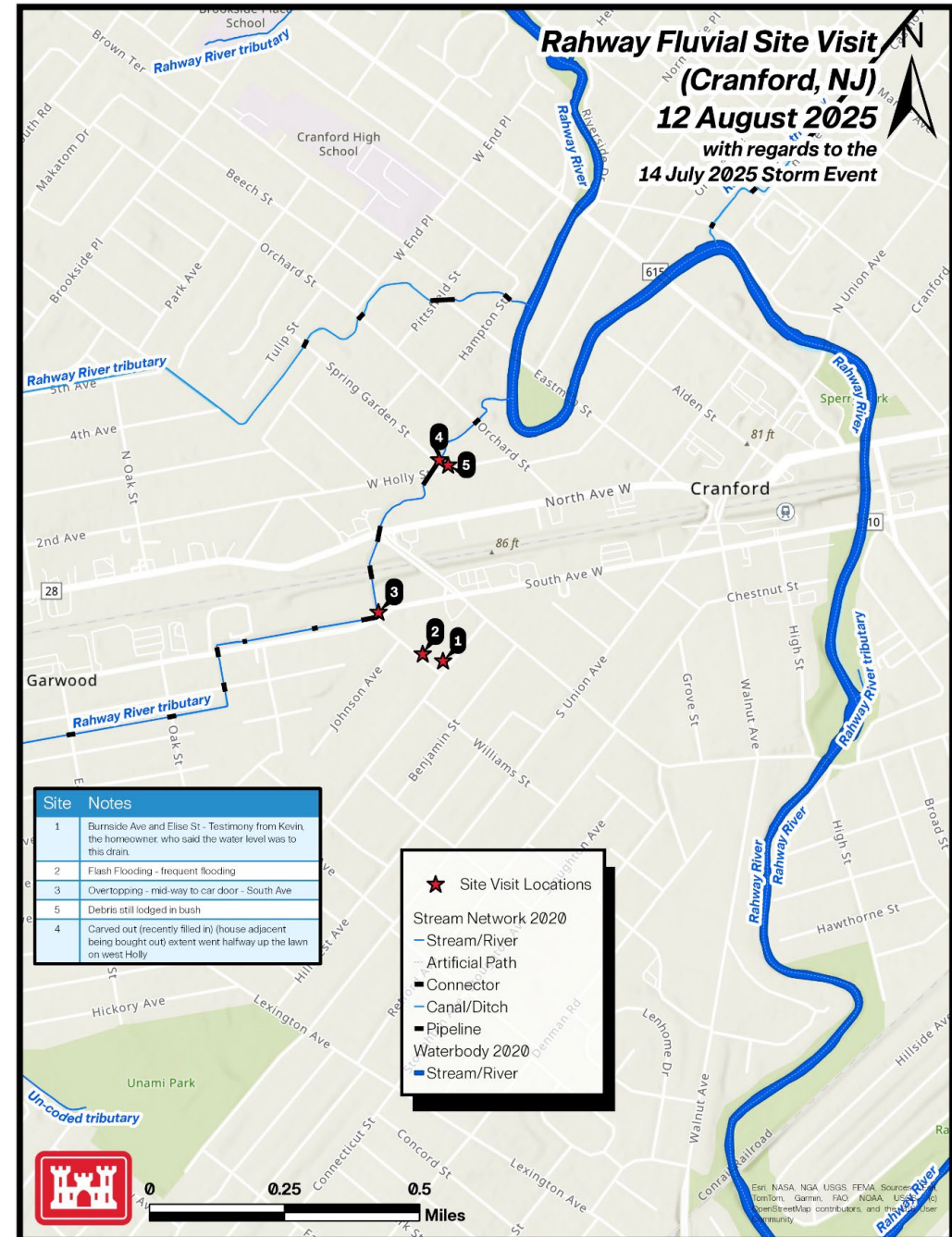
- Several Locations visited had experienced inundation due to poor drainage and could be candidates for **Section 219**
- Variety of causes including:
 - Low lying areas
 - Constriction points in culverts
 - Debris clogging
- List of locations is highlighted in trip report



AUGUST 12TH SITE VISIT - CRANFORD

Constriction point along Rahway Tributary

- Location 3 was identified as a constriction where tributary overtops and flooded homes near Burnside Ave and Elise St (locations 1 and 2)
- Candidate for CAP 205



NEXT STEPS

- Release Report to Public – NY District Website
- Public Information Session – if requested by the local officials and non-Federal sponsor
- Data Sharing – H&H and Economic data and modeling is available to share
- The NY District can assist in identifying potential future projects under CAP and/or Section 219



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