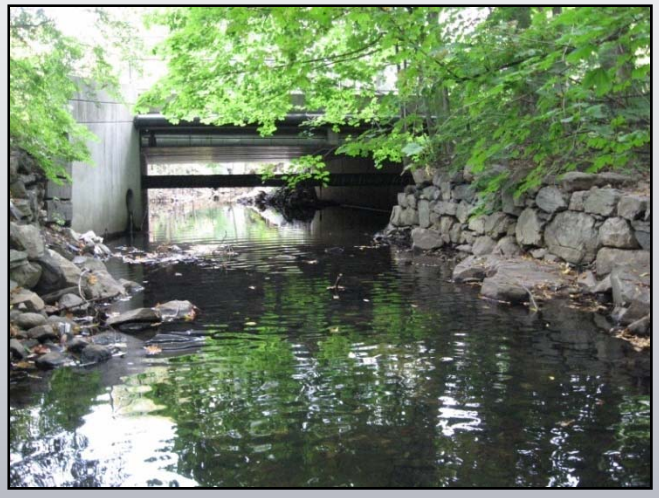
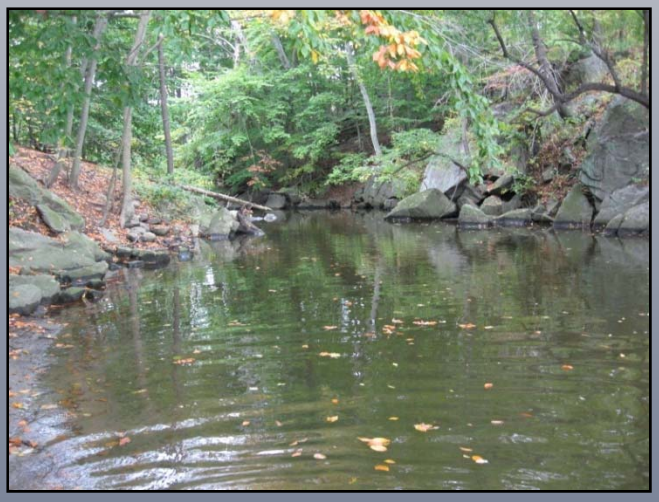
PRESENTATION OF RESULTS
PUBLIC INFORMATION MEETING

Stony Brook Drainage Improvement Project
Darien, Connecticut





Presented to:
Town of Darien
Darien, Connecticut

Presented by:
Milone & MacBroom, Inc.
Cheshire, Connecticut

March 31, 2009

Types of Flooding

- Upstream Storage Limits/Loss
- Upstream Increased Runoff
- Upstream Avulsions
- Downstream Constrictions & Backwater
- Downstream Conveyance Loss
- Lateral Encroachments
- Local Land Drainage
- Local Storm Drains
- Ice Jams, Debris Barriers, Sediment
- High Groundwater
- Tidal Influence

Geographic Scales

Watershed Scale

- Hydrology
- Sediment loads
- Water Quality

Corridor Scale

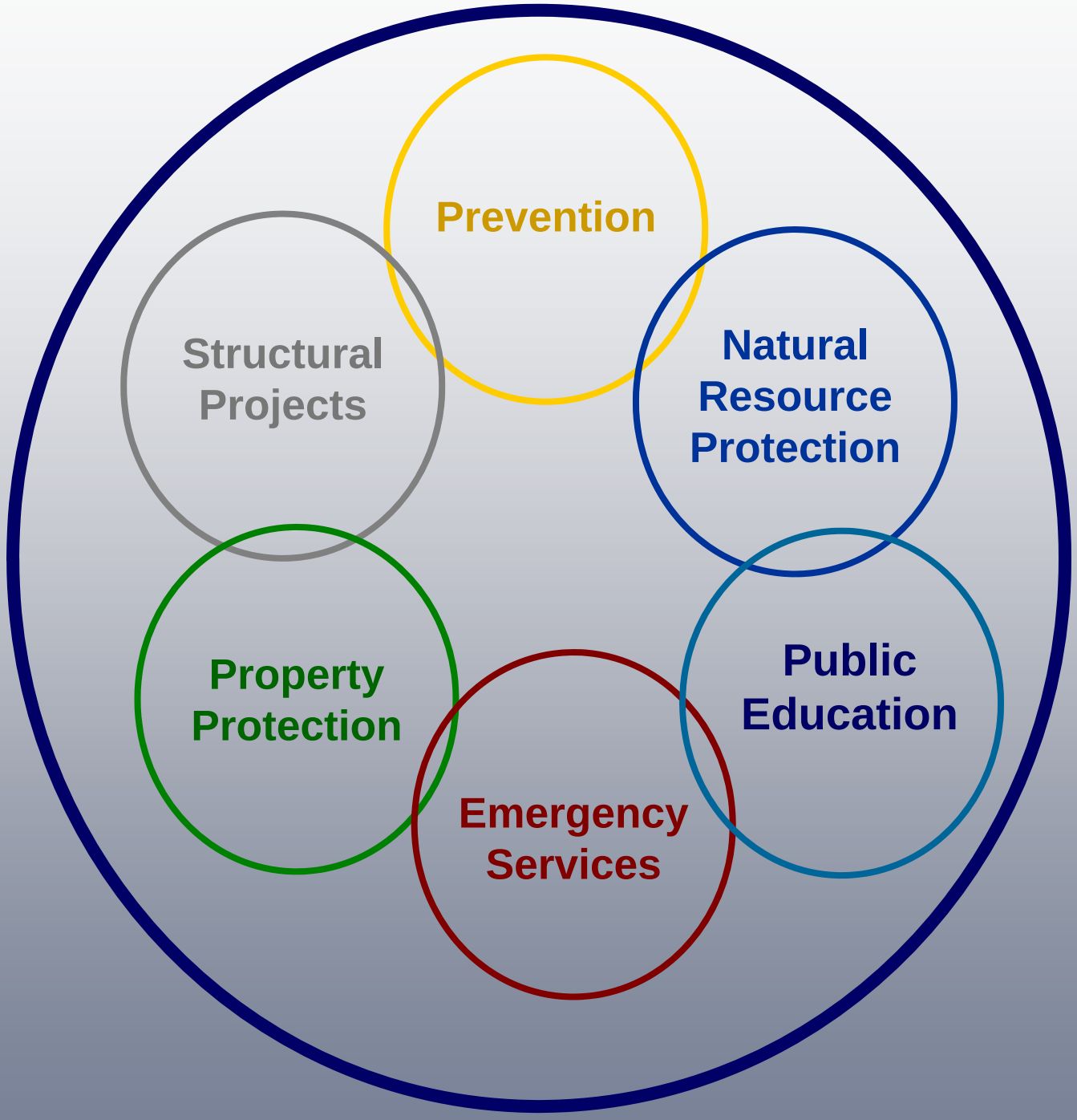
- Hydraulics
- Floodplains
- Wetlands
- Long Profile

Specific Site Scale

- Bridges, Culverts, Dams
- Encroachments
- Constrictions
- Flood Hazard Areas

Flood Mitigation Avenues

Stony Brook Drainage Improvement Project – Darien, Connecticut



March 31, 2009

Flood Mitigation Strategies

Flood Mitigation

Flood Control

Upstream Detention

Increase Wetland Storage

Create Floodways

Enlarge Channels

Replace Bridges, Culverts

Remove In-Stream Dams

Remove Obstructions

Install Levees

Reduce Flow Resistance

On-Site Damage Control

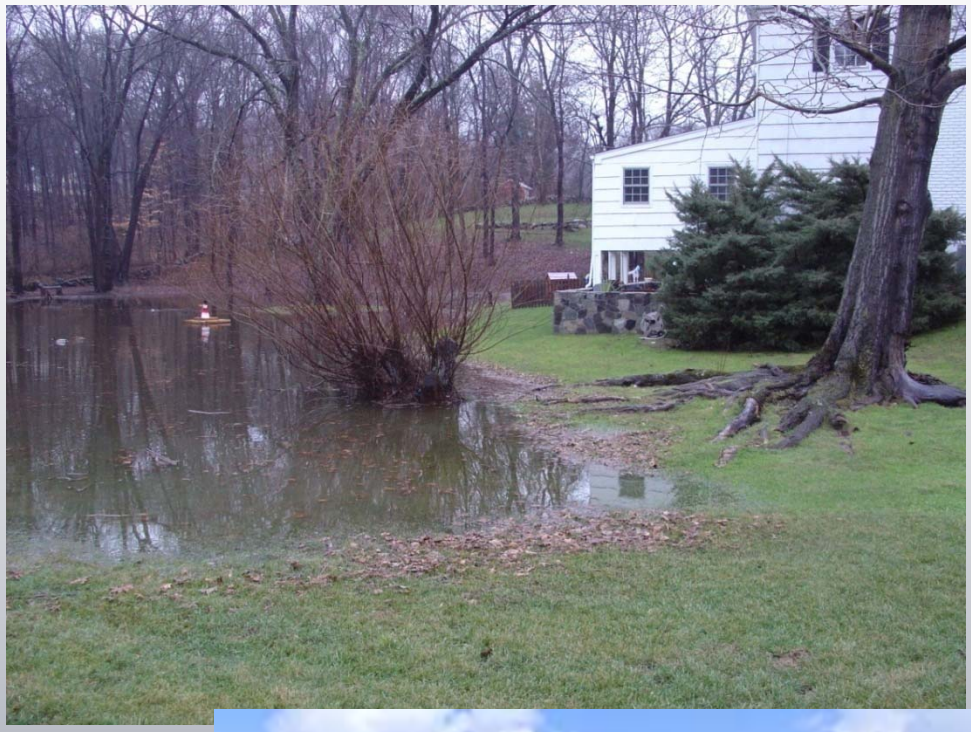
- Flood-proof (seal) Buildings
- Raise Existing Buildings
- Elevate New Buildings
- Relocate Buildings
- Raise Landscape Features
- Re-grade Properties
- Secure Utilities
- Remove Hazardous Materials
- Anchor Floatables

Risk Control

- Minimize Impervious Cover
- Floodplain Zoning
- Groundwater Recharge
- Preserve Wetlands Flood Warning Systems
- Open Space Acquisition
- Flood Insurance
- Emergency Shelters
- Evacuation Plans

On-Site Controls

Stony Brook Drainage Improvement Project – Darien, Connecticut



March 31, 2009

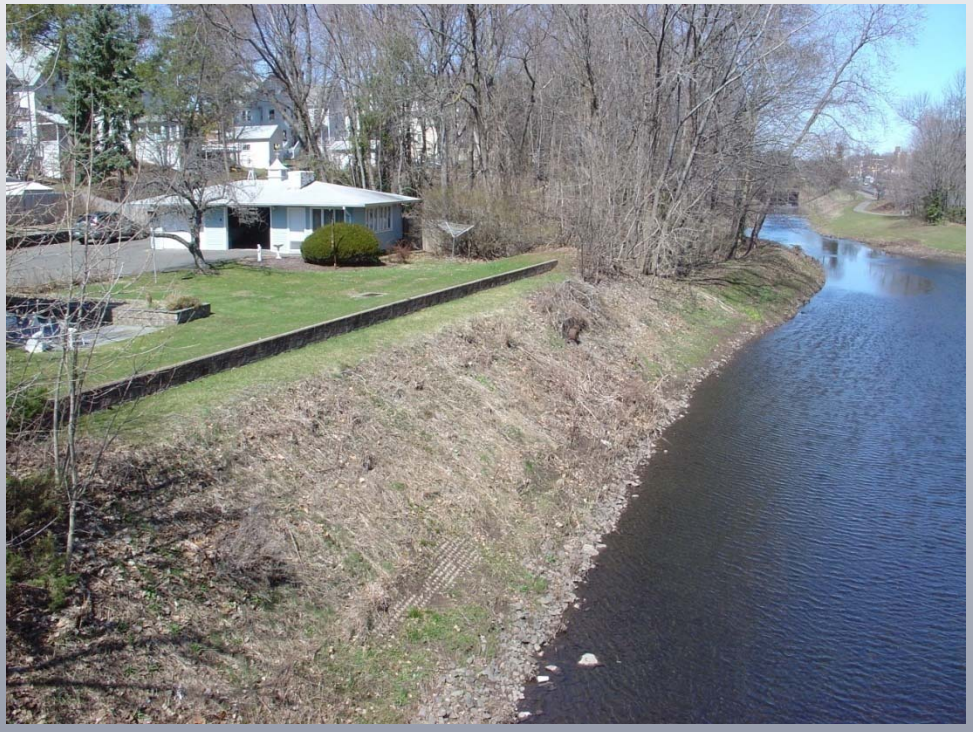
On-Site Controls

Stony Brook Drainage Improvement Project – Darien, Connecticut

March 31, 2009

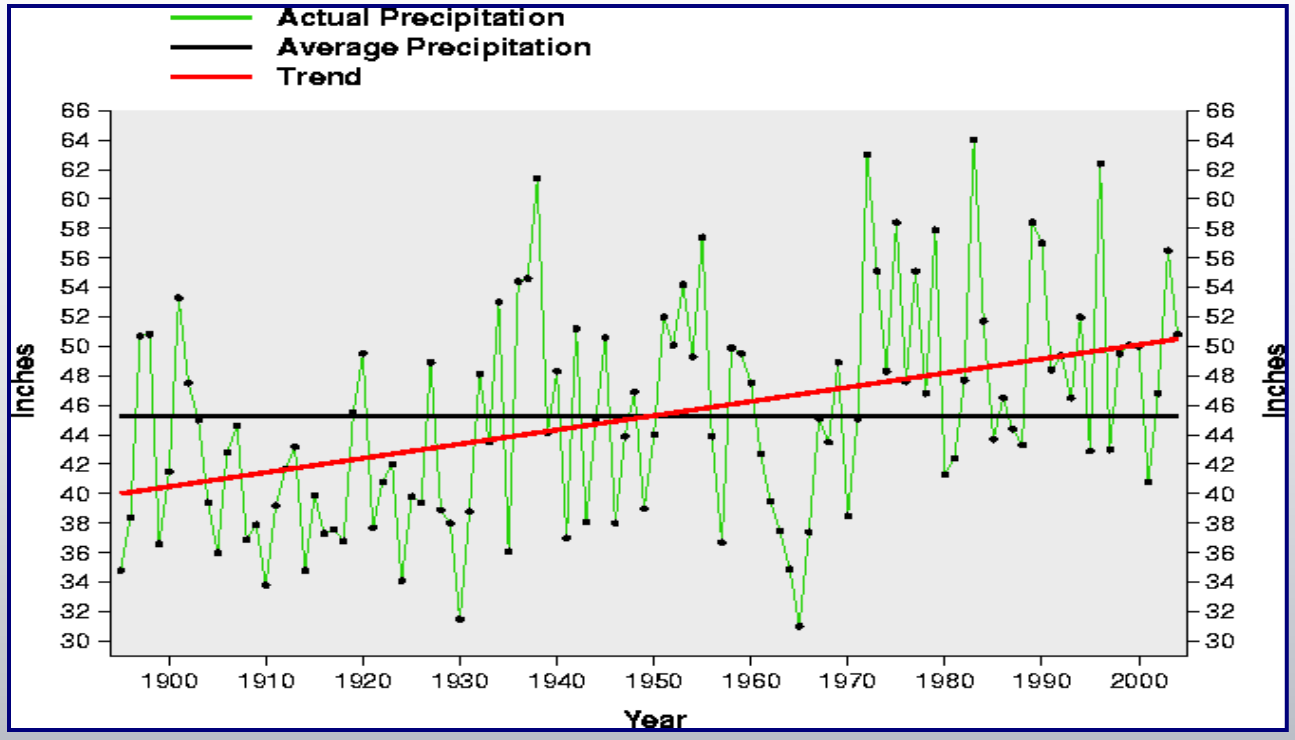
On-Site Controls

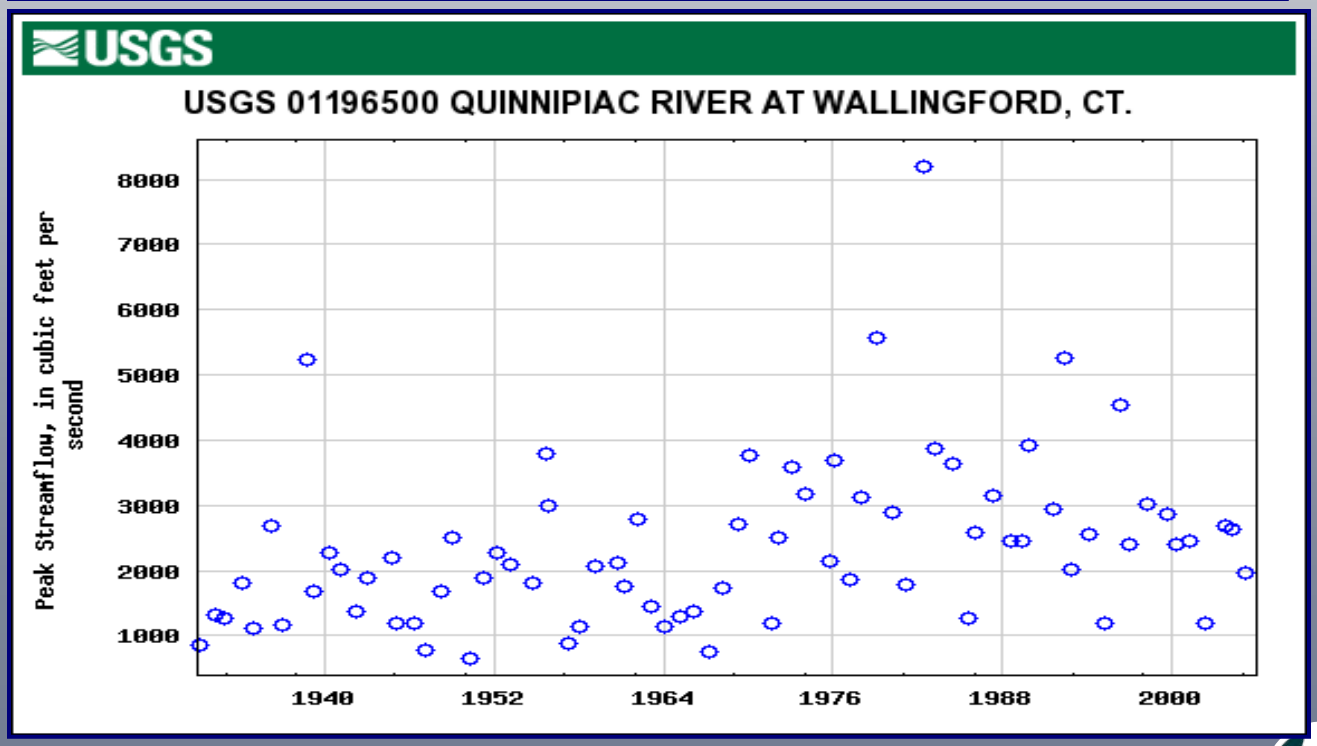
Stony Brook Drainage Improvement Project – Darien, Connecticut



March 31, 2009

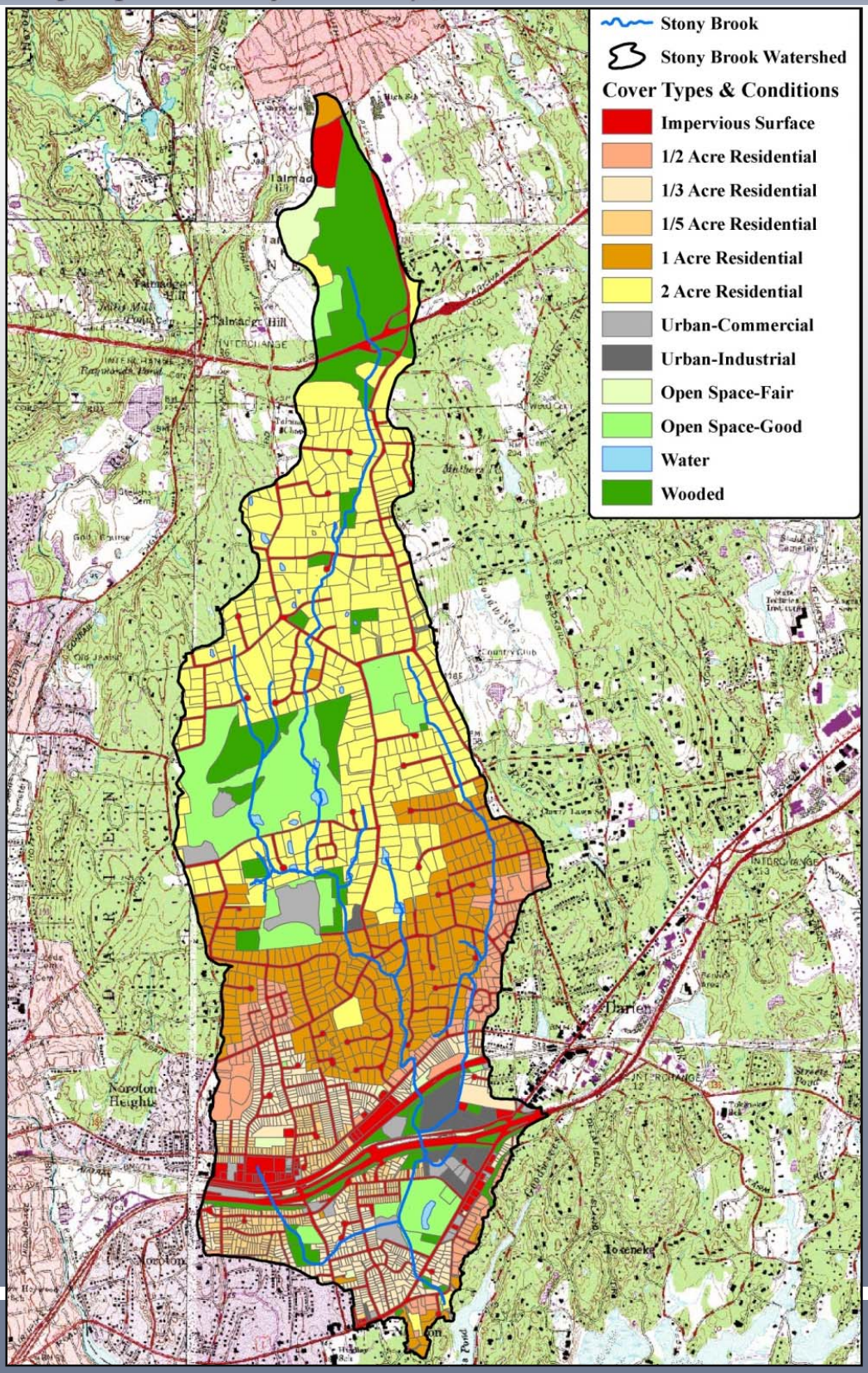
Precipitation Patterns





Land Cover

Stony Brook Drainage Improvement Project – Darien, Connecticut



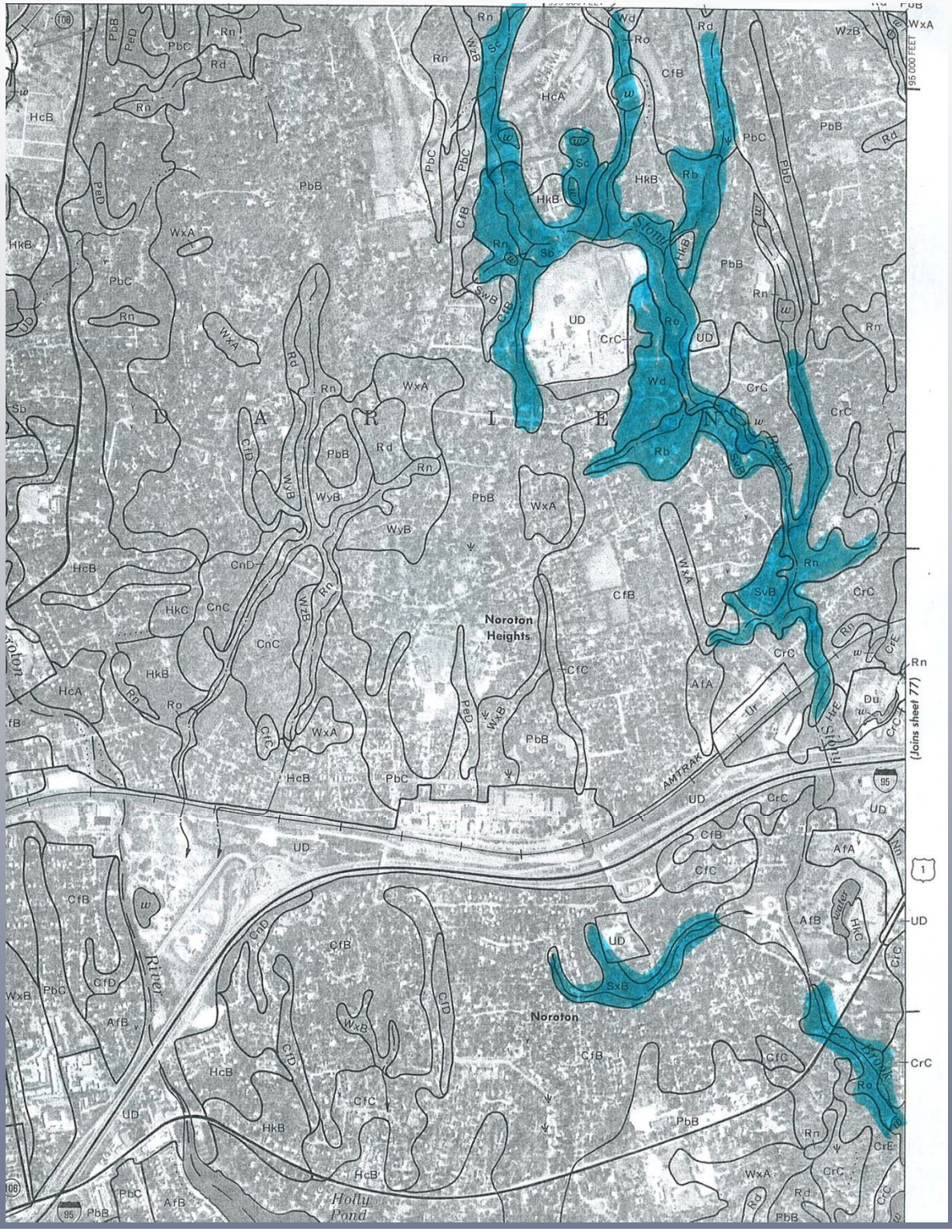
Hydrology Modeling

Stony Brook Drainage Improvement Project – Darien, Connecticut

Watershed Location	Darien High School Access Road	West Avenue	Renshaw Road	Confluence with Gorham's Pond
Watershed Area (sq. mi.)	1.8	2.5	3.8	4.1
Storm Frequency / Rainfall Source				
50%				
TP-40 (cfs)	310	570	679	669
UConn (cfs)	367	639	784	764
10%				
TP-40 (cfs)	713	1,243	1,462	1,450
UConn (cfs)	769	1,335	1,571	1,558
2%				
TP-40 (cfs)	1,115	1,930	2,248	2,238
UConn (cfs)	1,440	2,550	2,938	2,930
1%				
TP-40 (cfs)	1,350	2,380	2,741	2,737
UConn (cfs)	1,833	3,307	3,824	3,832

Soil Survey

Stony Brook Drainage Improvement Project – Darien, Connecticut



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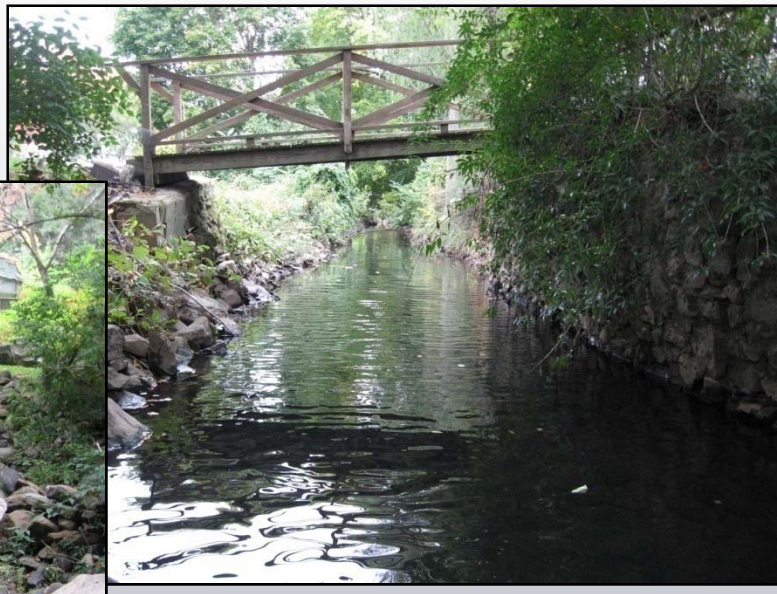
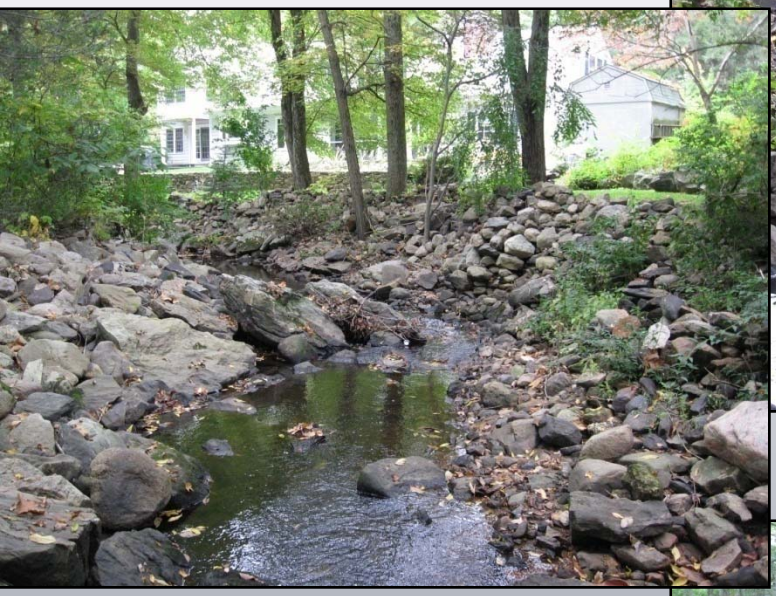
Impacted Channel and Floodplain

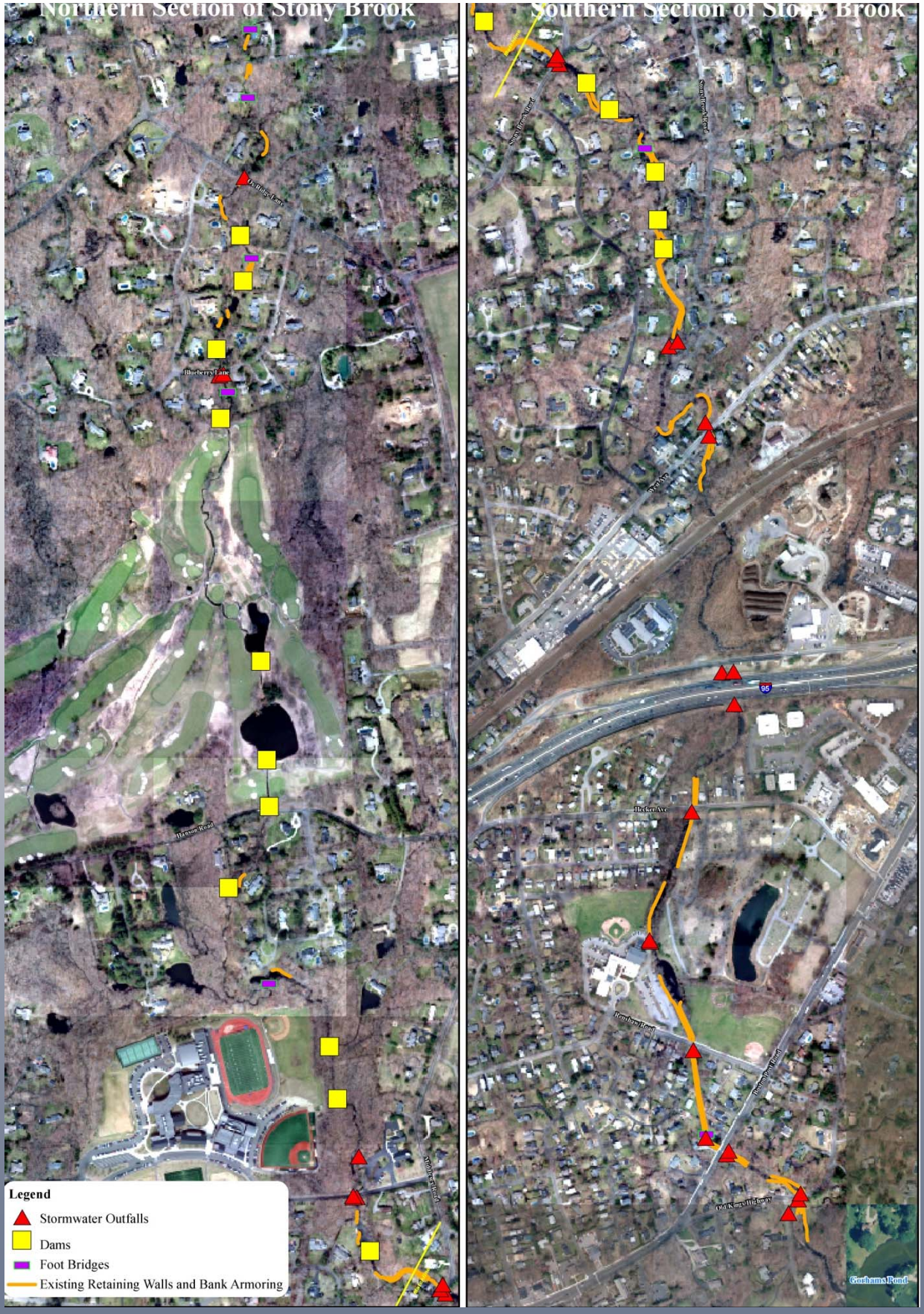
Stony Brook Drainage Improvement Project – Darien, Connecticut



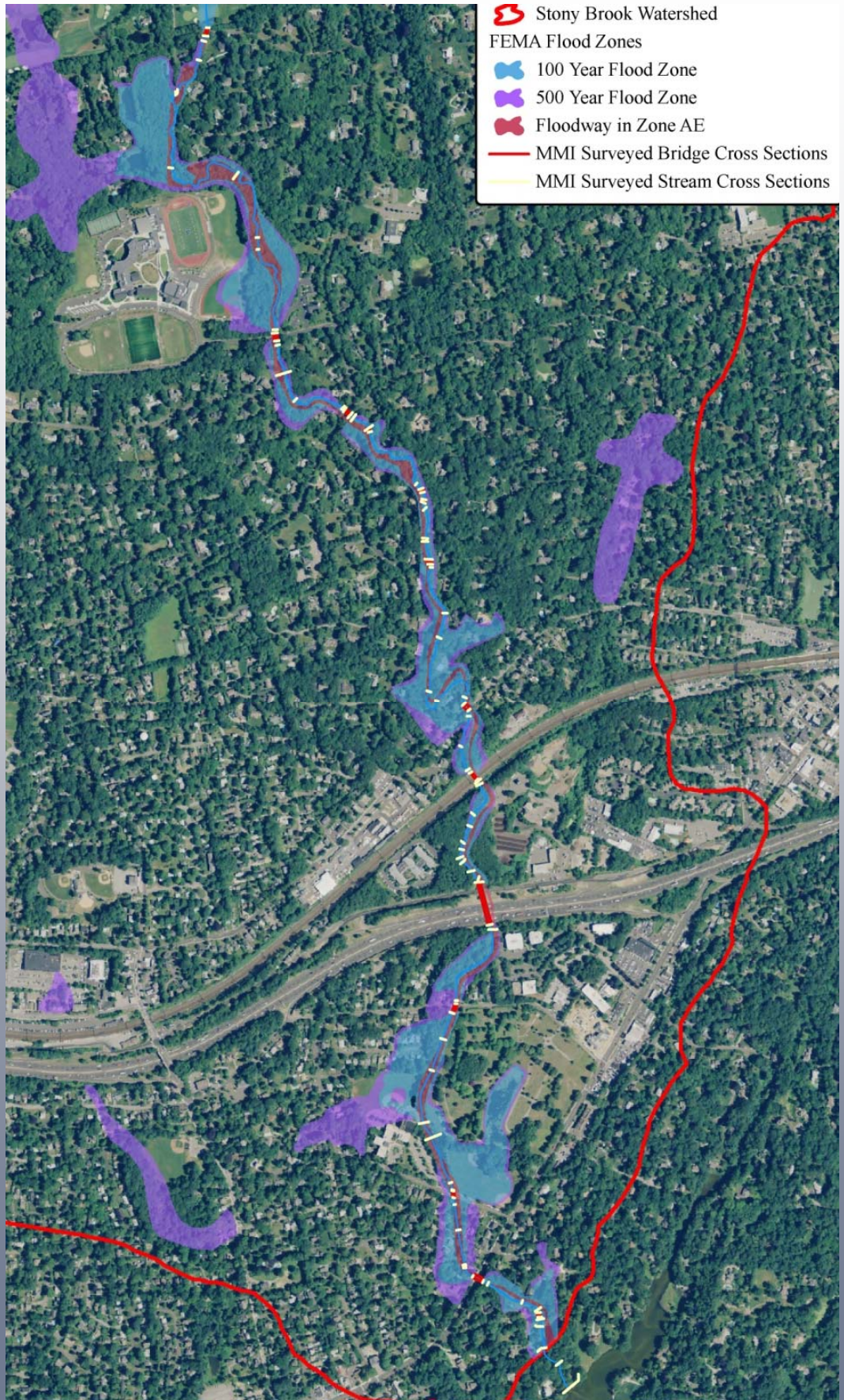


March 31, 2009

Channel Evaluation

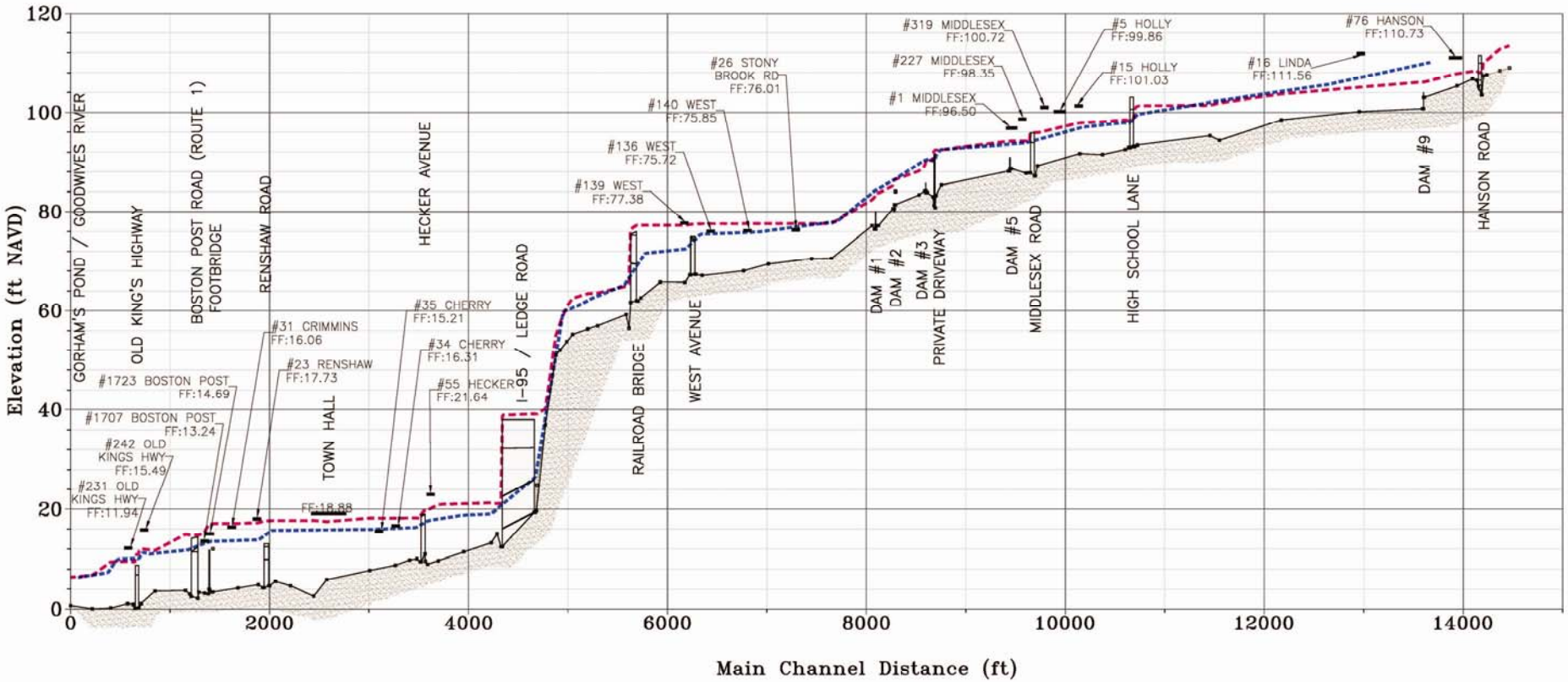


Field Survey

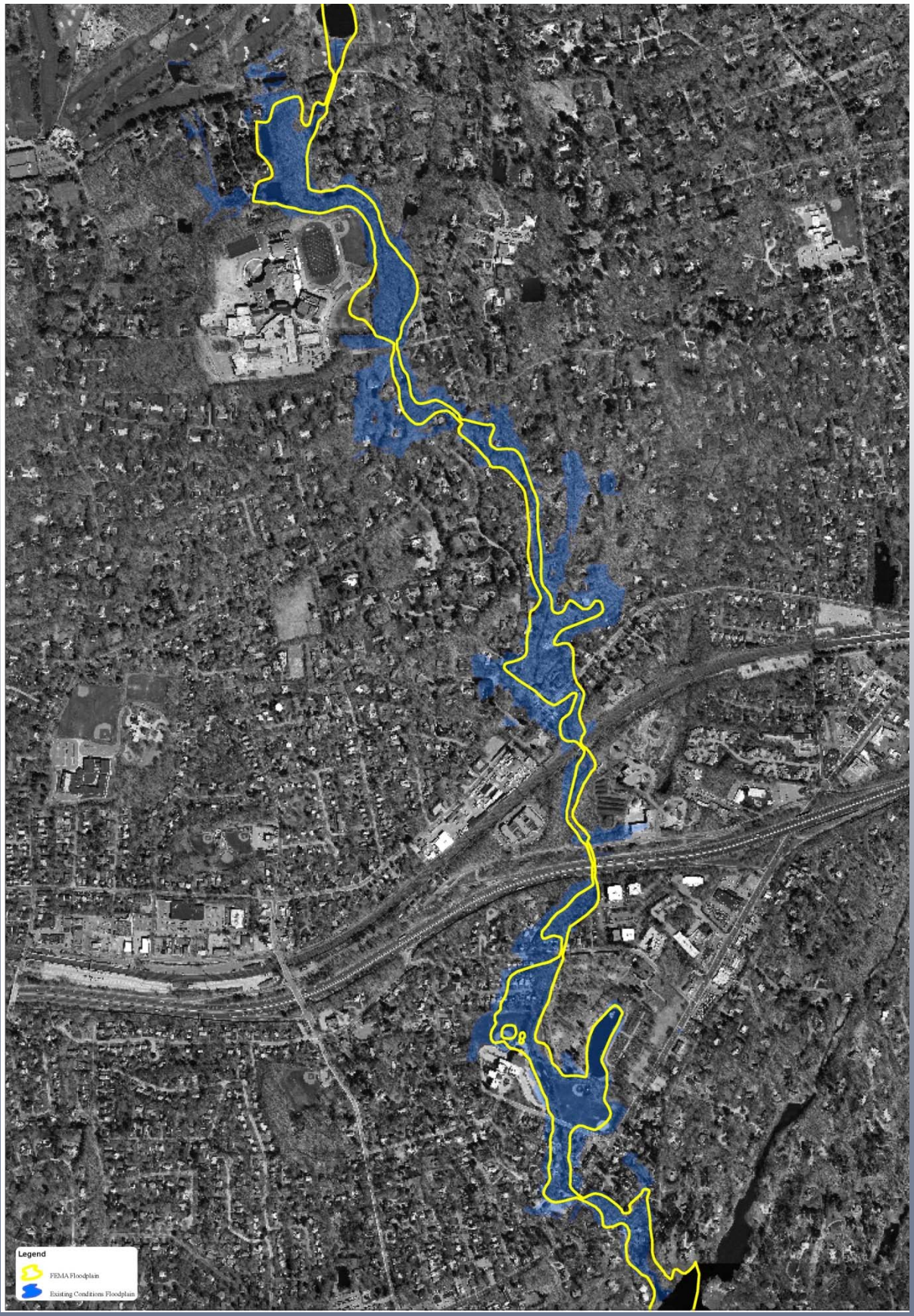


Hydraulic Modeling

Stony Brook Drainage Improvement Project – Darien, Connecticut

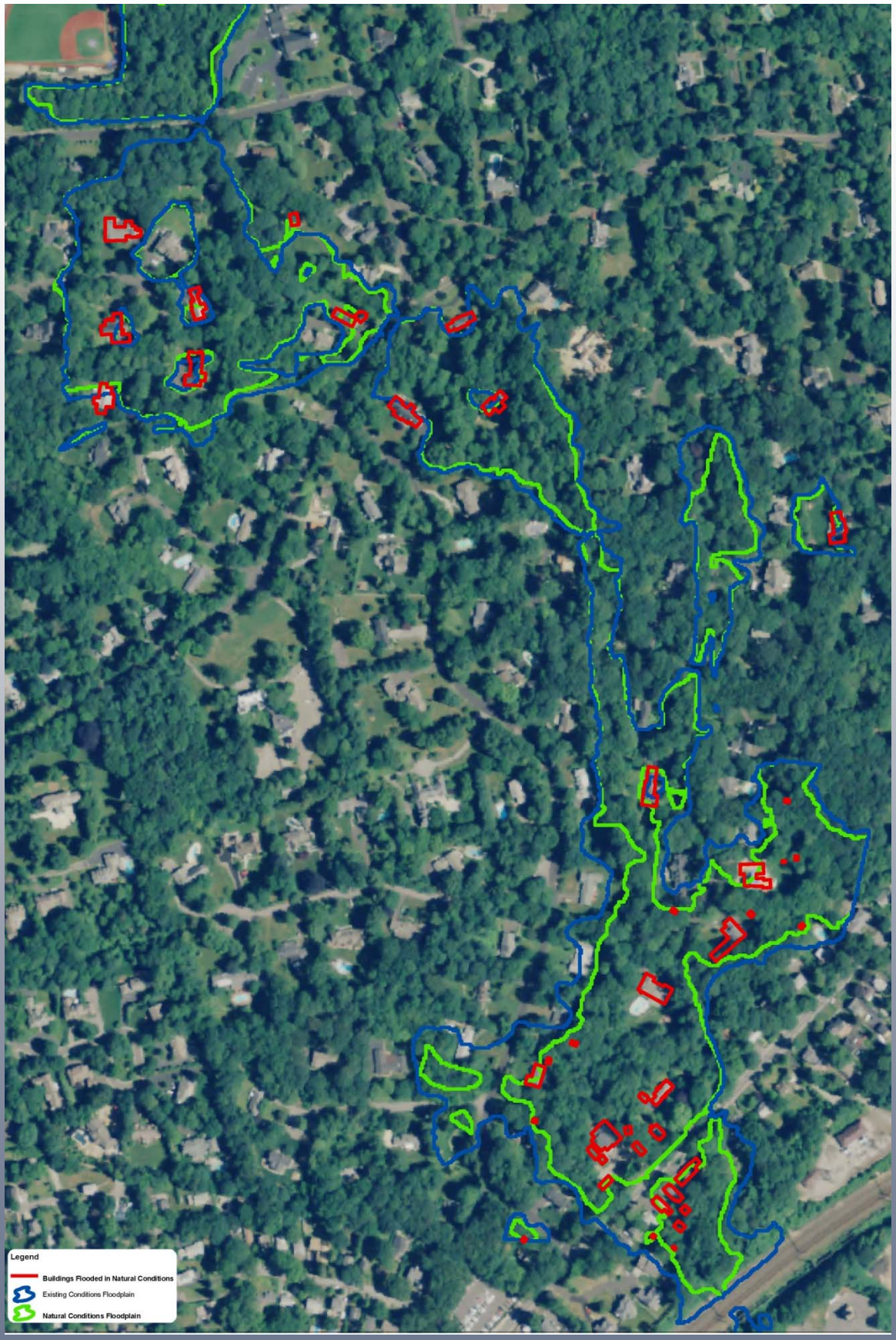


Floodplain Delineation

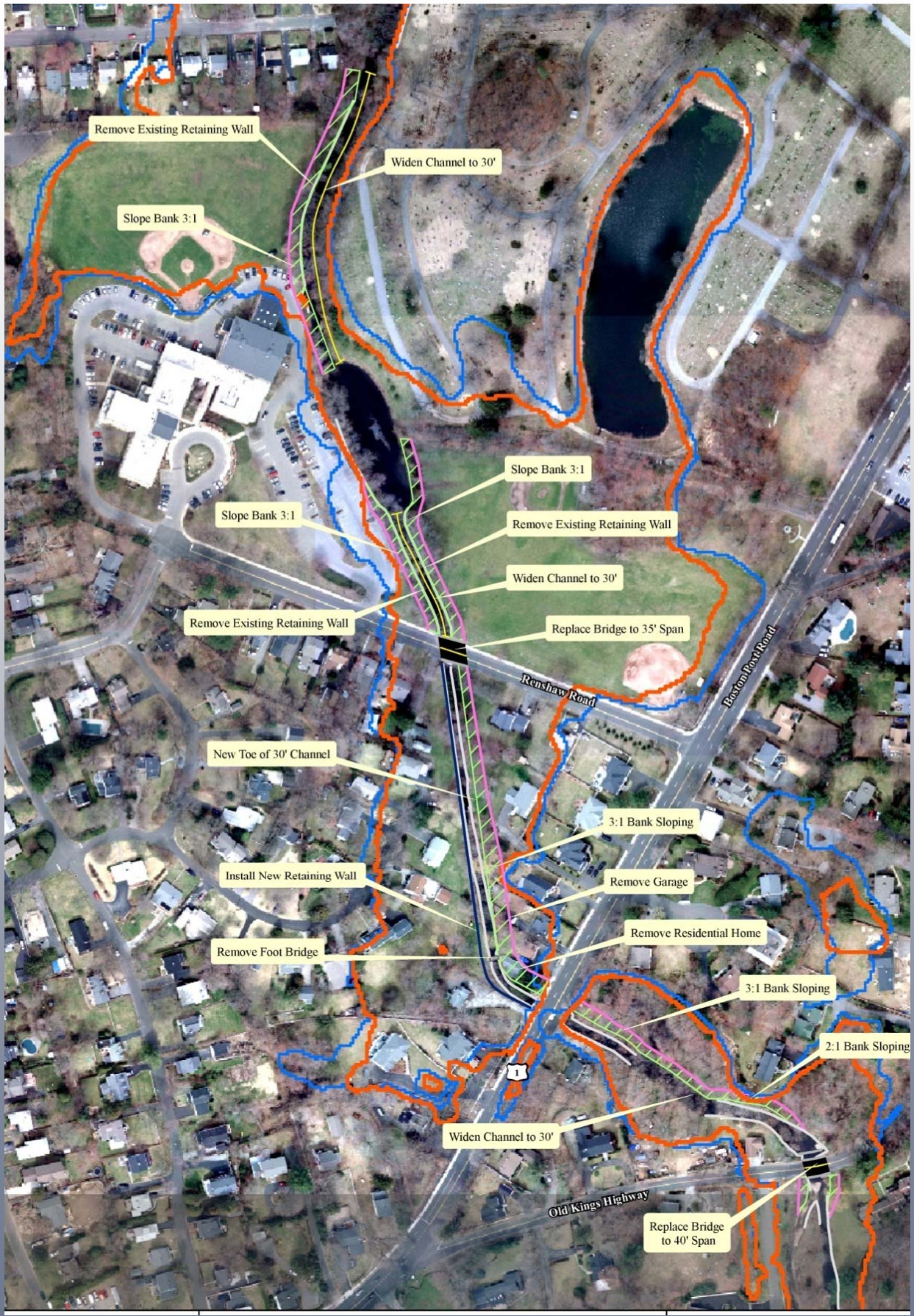


Natural Conditions - Lower

Natural Conditions - Middle

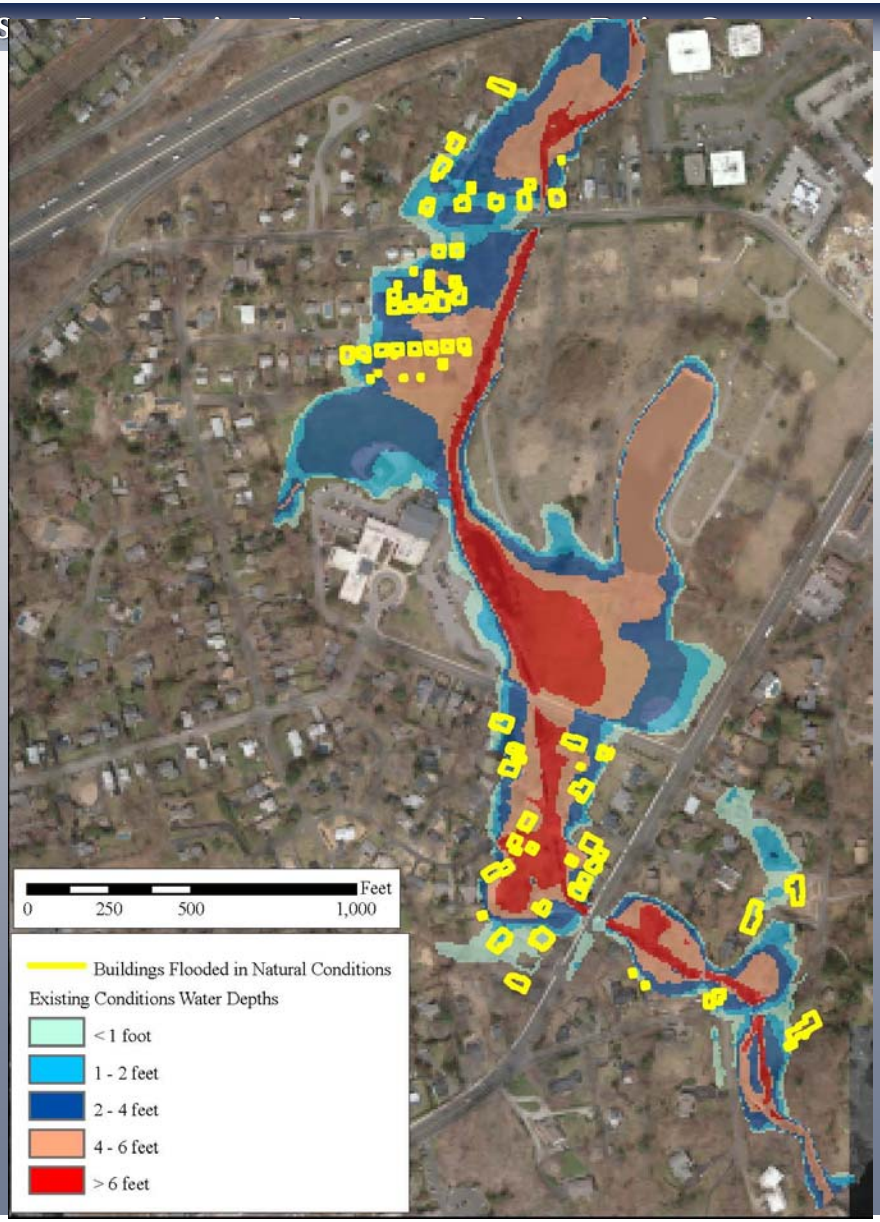


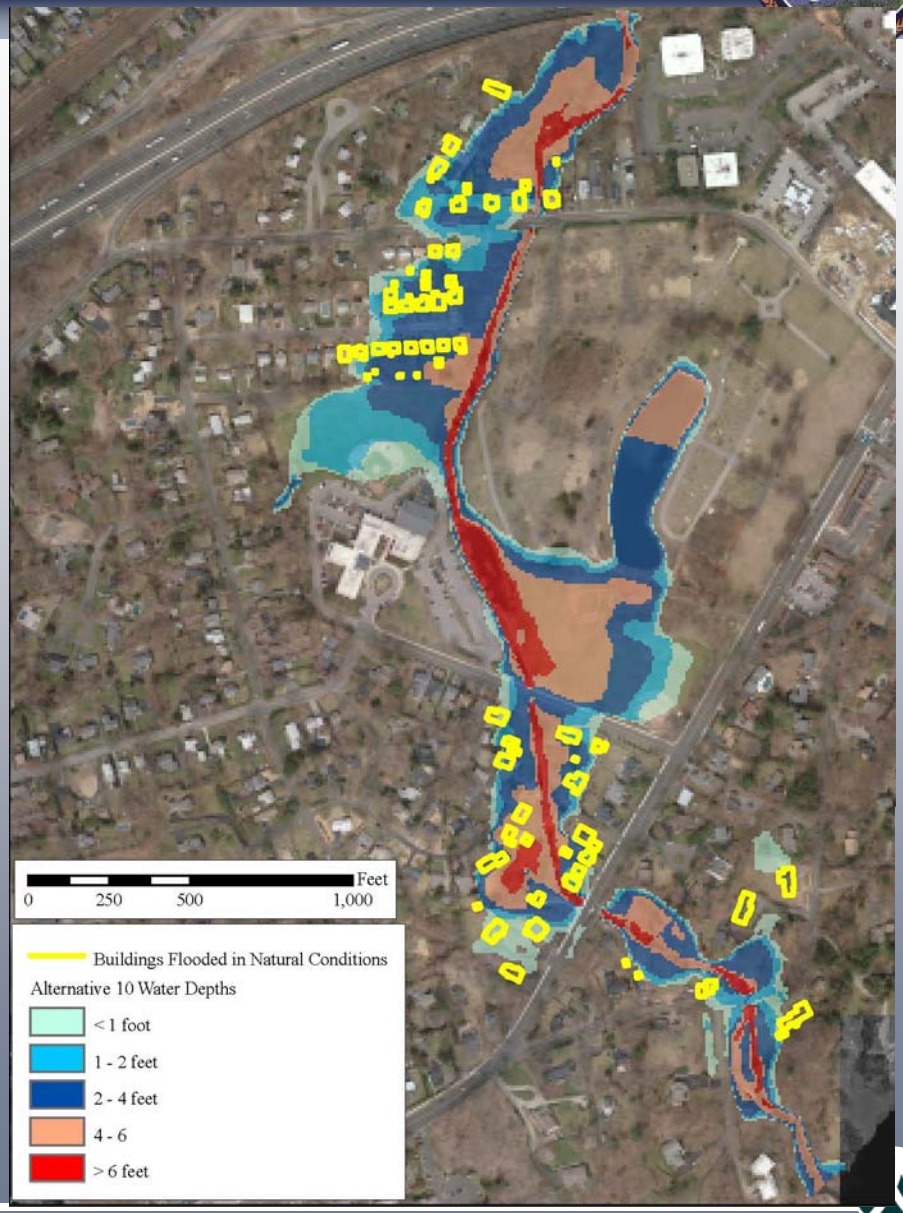
Lower Reach


Remove Existing Retaining Wall
Widen Channel to 30'
Slope Bank 3:1
Slope Bank 3:1
Slope Bank 3:1
Remove Existing Retaining Wall
Widen Channel to 30'
Remove Existing Retaining Wall
Replace Bridge to 35' Span
Renshaw Road
Boston Post Road
New Toe of 30' Channel
3:1 Bank Sloping
Install New Retaining Wall
Remove Garage
Remove Residential Home
Remove Foot Bridge
3:1 Bank Sloping
2:1 Bank Sloping
1
Widen Channel to 30'
Old Kings Highway
Replace Bridge
to 40' Span

Lower Reach – Hecker Avenue

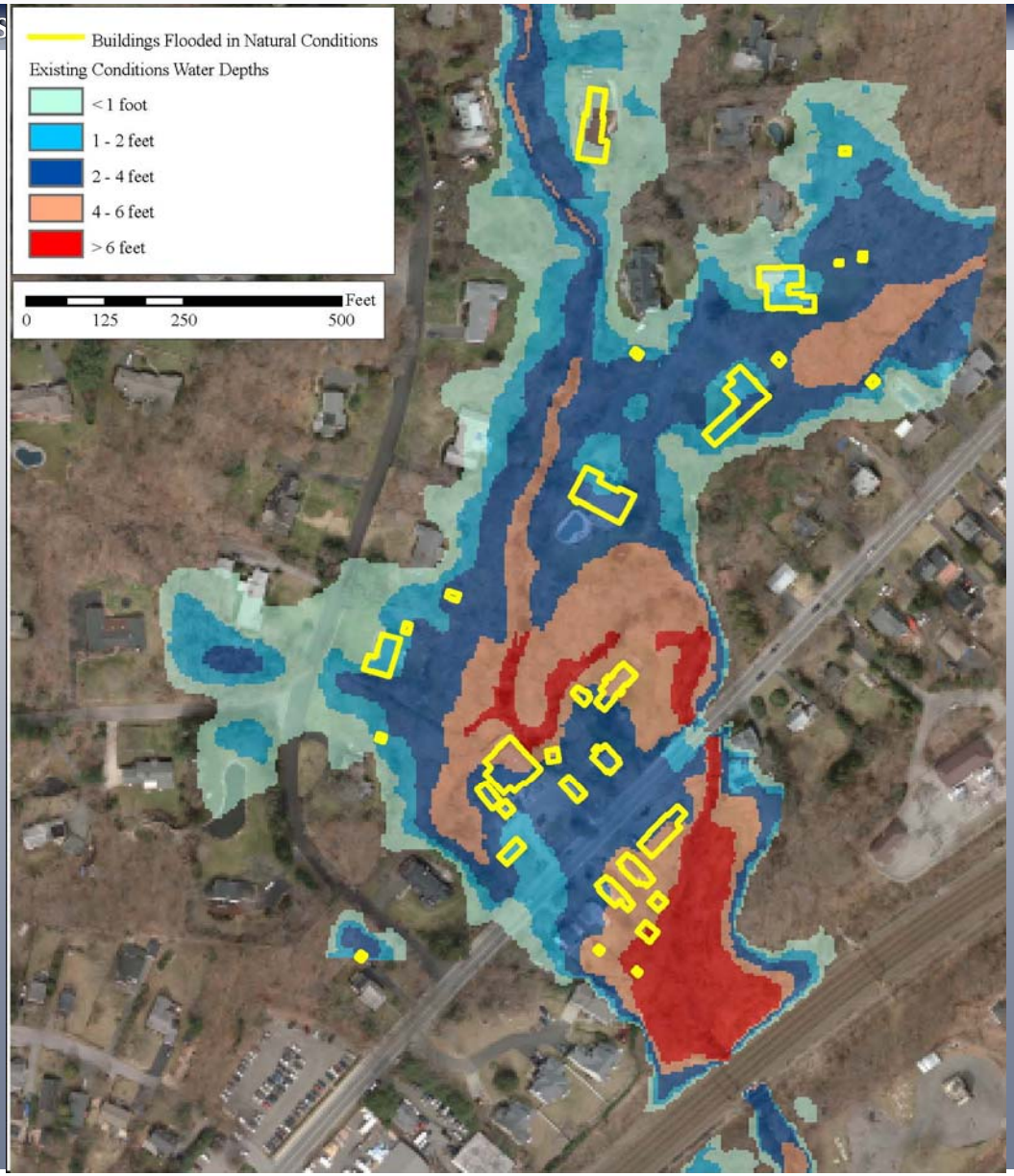
Lower Reach Flood Depths

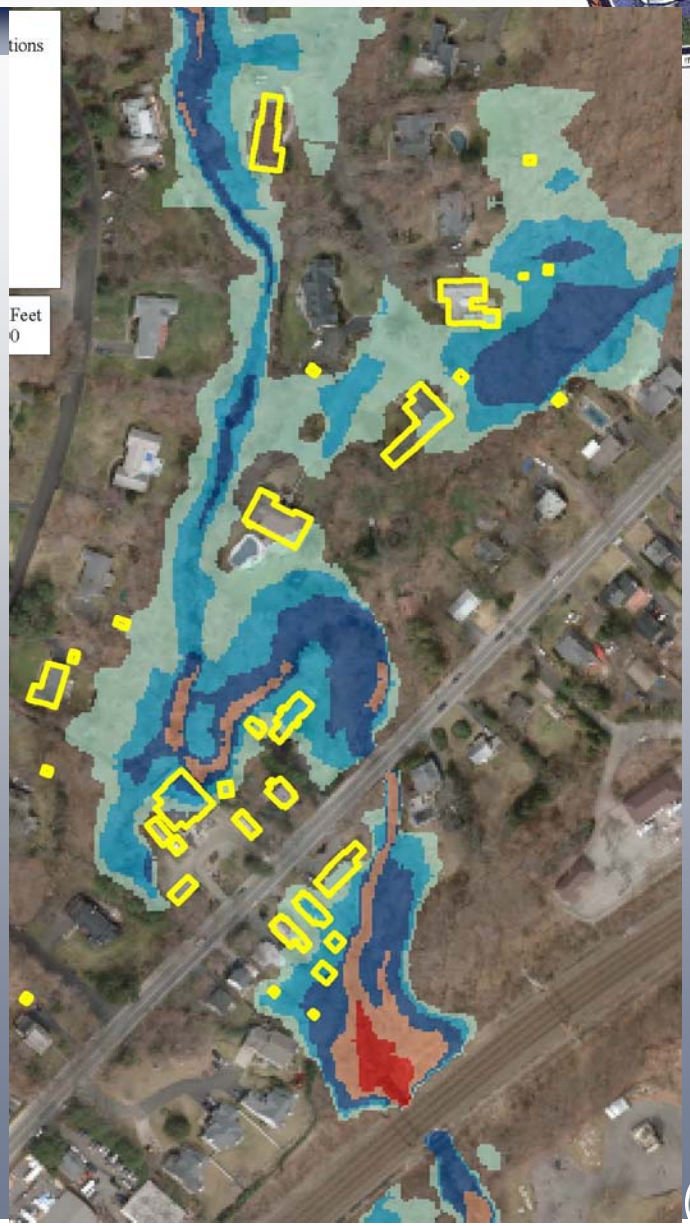




West Avenue Area

Middle Reach Flood Depths

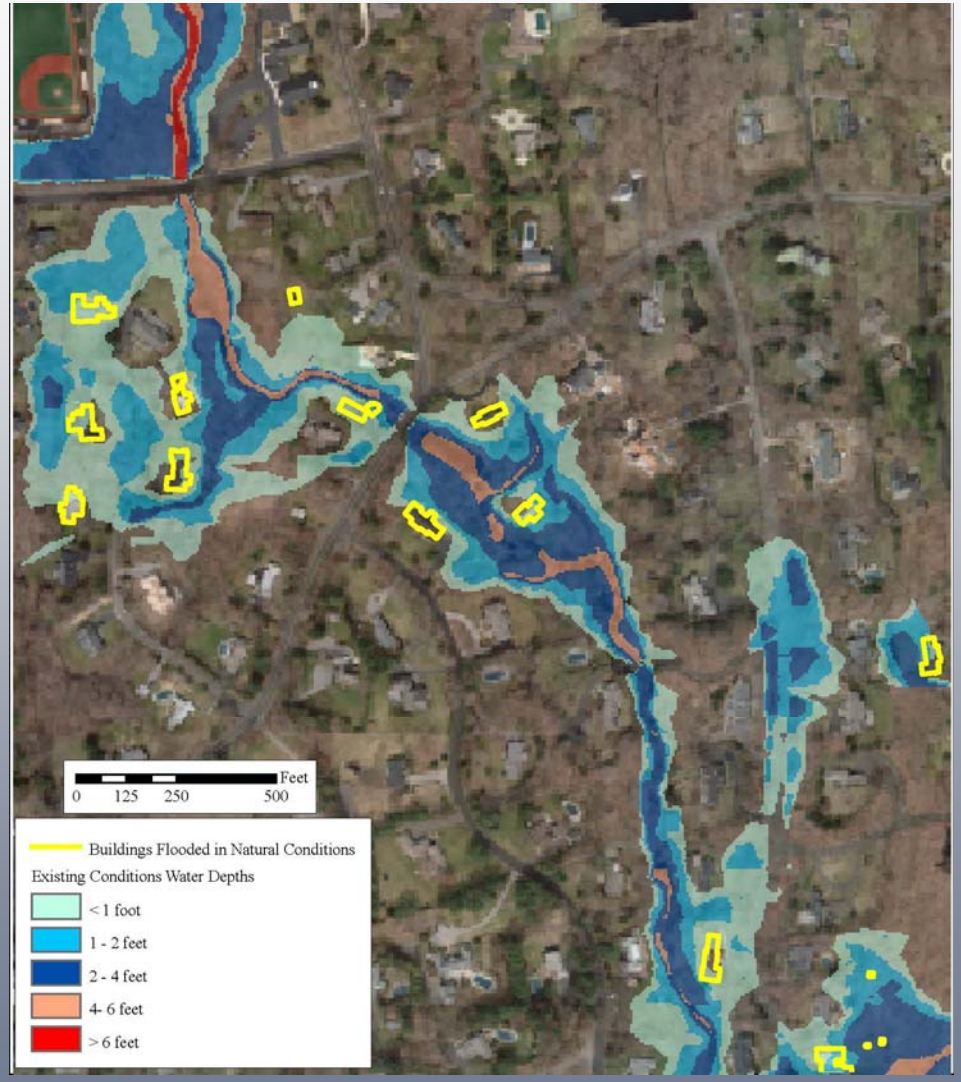


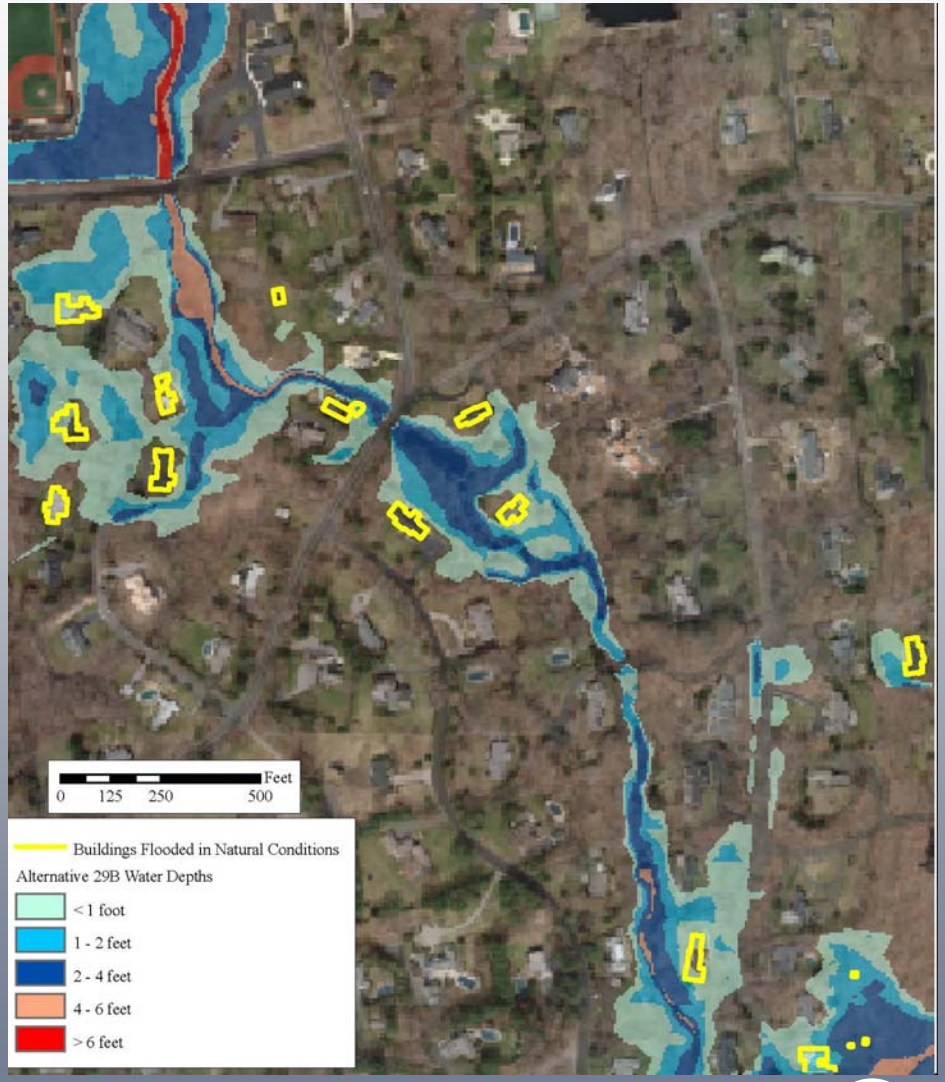


Middlesex Road Area

Upper Reach Flood Depths

Stony Brook Drainage Improvement Project – Darien, Connecticut





Conclusions

- Hydrology
  - Natural Increases in Precipitation
  - Fully Developed Watershed
  - Few Natural Wetlands
  - Potential for High Runoff
- Hydraulics
  - Generally Low Gradient
  - Tidal Influence
  - Small Bridges and Culverts
  - Floodplain Encroachments
- Flooding Issues
  - High Groundwater
  - Frequent Nuisance Ponding
  - Occasional Shallow Flooding
  - Potential for Moderate Flooding

Flood Control Alternatives

- Lower Impact Flood Control

Focus on Flow Barriers:

Undersized Bridges

Small Dams

Retaining Walls

Bedrock Contractions

Channel Encroachments

- Higher Impact Flood Control

Channel Modifications:

Channel Widening

Channel Deepening

Realignment / Straightening

Smooth Banks

Modify Slope