MEETING OUTLINE

- Study Overview and Background
- Alternatives Evaluated
- Recommended Plan / Tentatively Selected Plan
- Study Schedule
- Contact Information
- **Objective**: Manage the risk of damages from fluvial flooding from the Byram River
- **Authority**: House study resolution adopted 2 May 2007
- **Non-Federal Sponsor**: Town of Greenwich
- **Key Partner**: New York State Department of Environmental Conservation
- **Public Coordination Meetings**: Jan 2013, March 2014, May 2015, November 2017
FLOOD RISK MANAGEMENT

- No flood risk management project can eliminate the risk of flooding.
- Flood risk management reduces the frequency and/or severity of flooding and provides additional time to respond.
- Communication of accurate and timely information about the risk of living in a flood prone area is critical and best implemented at the local level.
- **Flood risk reduction is a shared responsibility** and **a collaborative approach is required** to effectively manage the risk of flooding and save lives (USACE, FEMA, State, County, Local Gov., Emergency Personnel, Residents).
  - Physical features
  - Insurance
  - Zoning
  - Emergency Action Plan (EAP)
  - Communication

Source: http://beyondplm.com/2017/03/01/cost-vs-benefits-plm-collaboration/
Management measures are the building blocks of plans.

Measures were screened for:
- Ability to meet objectives
- Ability to avoid constraints
- Engineering feasibility
- Economic feasibility

Plans are screened for:
- Completeness, effectiveness, efficiency, and acceptability.
- Benefits
- Costs
- Environmental impacts

Benefits ÷ Costs = Benefit Cost Ratio

- Tentatively Selected Plan (TSP): Recommended by Study Team to move forward
- National Economic Development Plan (NED Plan): Reasonably maximizes net benefits
- Usually the TSP and the NED are the same plan.
STUDY BACKGROUND

1977
Streams in Westchester County, Mamaroneck and Sheldrake Rivers Basin and Byram River Basin report recommended levees, floodwalls, and channel work.

2008
Completion of a Reconnaissance Report recommending a feasibility study to develop flood risk management alternatives.

2012
Feasibility Cost Share Agreement executed between USACE and Town of Greenwich, CT as the non-federal sponsor.

2014
Screened alternatives and developed preliminary costs. Alternatives Milestones meeting with USACE HQ.

2015
Presented the nonstructural alternatives to the public as the plan most likely to move forward.

2016
Based on public feedback, Route 1 Bridges alternatives (standalone and with nonstructural) were added as potential alternatives.
THE ECONOMIC ANALYSIS OF THE FINAL ARRAY OF ALTERNATIVES REVEALED THAT ALTERNATIVE 5 IS THE TENTATIVELY SELECTED PLAN.

INITIAL ARRAY OF ALTERNATIVES
1: No Action
2: Nonstructural treatments
3: Levees, floodwalls, & channel modifications (update of 1977 plan)
4: Smaller floodwalls & levees with channel widening and removal/replacement of Route 1 Bridges

INITIAL ECONOMIC ANALYSIS

PUBLIC INPUT

FINAL ARRAY OF ALTERNATIVES
1: No Action
2: Nonstructural treatments
3: Levees, floodwalls, & channel modifications (update of 1977 plan)
4: Smaller floodwalls & levees with channel widening and removal/replacement of Route 1 Bridges
5: Route 1 bridge removals and replacements
5a-d: With nonstructural treatments

REFINED ECONOMIC ANALYSIS

ALTERNATIVES CARRIED FORWARD TO FINAL ARRAY
2: Nonstructural treatments

ECONOMICALLY VIABLE ALTERNATIVE
5: Route 1 bridge removals and replacements
U.S. Route 1 (eastbound)
Route 1 (westbound)
ALTERNATIVE 5 – REMOVAL AND REPLACEMENT
U.S. ROUTE 1 BRIDGES

Features

- Removal and replacement of Route 1 bridges lowers the water surface elevation
- Minor channel improvement
EXAMPLES OF RECENTLY RECONSTRUCTED BRIDGES IN GREENWICH, CT

John Street, between Riversville Road and Round Hill Road

Riversville Road, south of Merritt Parkway
THE PROPOSED PROJECT REDUCES FLOODING FOR ABOUT 0.9 MILE UPSTREAM OF THE ROUTE 1 BRIDGES BY 1 - 4 FEET DURING A 1-PERCENT FLOOD EVENT.

EXISTING VS PROPOSED WATER SURFACE ELEVATIONS
THE TENTATIVELY SELECTED PLAN WOULD REDUCE THE ECONOMIC RISK IN THE STUDY AREA BY 50%.

<table>
<thead>
<tr>
<th>Average Annual Damages</th>
<th></th>
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<tbody>
<tr>
<td>Damages Without Project</td>
<td>$2,143,000</td>
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<tr>
<td>Damages With Project</td>
<td>$1,375,000</td>
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</tbody>
</table>

BLUE = INUNDATION WITHOUT PROJECT
YELLOW HATCHED = INUNDATION WITH PROJECT
### TENTATIVELY SELECTED PLAN:
#### U.S. ROUTE 1 BRIDGES REMOVAL REPLACEMENT

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<tr>
<th>Description</th>
<th>Value</th>
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<tr>
<td>Project First Cost</td>
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<tr>
<td>Total Average Annual Cost</td>
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<tr>
<td>Annualized Benefits</td>
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<tr>
<td>Benefit Cost Ratio</td>
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<tr>
<td>Annual Net Benefits</td>
<td>$122,000</td>
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NON-FEDERAL SPONSOR’S POSITION

- Town of Greenwich fully supports the Tentatively Selected Plan as described in this presentation.

- Further Town of Greenwich, local stakeholder, and public feedback will be provided with review of the draft report.

- The bridges are located within New York State.
  - Coordination with NYSDEC and NYSDOT is ongoing.
KEY ENVIRONMENTAL EFFECTS

- Route 1 Bridges determined eligible for the National Register of Historic Places.
  - Removal and replacement determined to have an adverse effect to historic properties.
  - Ongoing coordination with New York and Connecticut State Historic Preservation Office and other stakeholders.
- Partial closure of both bridges during construction (2 yrs) is proposed.
  - Traffic delays through the Byram Circle will occur during construction due to one lane restrictions.
- New bridges will support the same traffic volume and maintain the same flow pattern as existing bridges.
<table>
<thead>
<tr>
<th>MILESTONE</th>
<th>DATE</th>
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<tbody>
<tr>
<td>Draft Report Released</td>
<td>28 June 2018</td>
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<tr>
<td>Public Comment Period Ends</td>
<td>20 August 2018</td>
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<tr>
<td>Final Report</td>
<td>Summer 2019</td>
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<td>Chief's Report</td>
<td>Spring 2020</td>
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</tbody>
</table>
STUDY CONTACT AND COMMENT

Study Contacts

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U.S. Army Corps of Engineer, New York District  
917 - 790 - 8215  
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Deputy Commissioner of Public Works  
Town of Greenwich, CT  
203 - 622 - 7767  
James.Michel@greenwichct.org

Draft Integrated Report Comments
Send any questions and/or comments to  
byram.river@usace.army.mil

45 Day Comment Period:  
06 July – 20 August

Project Webpage  
www.nan.usace.army.mil/Byram