Public Scoping Meeting for Watershed Project Plan and Environmental Assessment

Wood Pawcatuck Rivers Watershed Flood Protection project

January 26, 2023

TODAY'S OBJECTIVES

- Review National Watershed Operations Program
- Review Information on the Wood-Pawcatuck River Watershed
- Determine "Scope" of the Project
- **Encourage Input and Contributions By Others During Planning Process**

INTRODUCTIONS

Local Sponsors Welcome:

- **Southern Rhode Island Conservation District**
  - **Gina Fuller**
- **Sponsoring Communities**
  - **Westerly, RI**
  - **Richmond, RI**
  - **Hopkinton, RI**
  - **Charlestown, RI**
  - **South Kingstown, RI**
  - **Stonington, CT**
  - **North Stonington, CT**
  - **Voluntown, CT**

INTRODUCTIONS

- **Phou Vongkhamdy, NRCS State Conservationist**
- **Darrell Moore, PE, NRCS State Conservation Engineer (RI)**
- **Michael Viola, NRCS Civil Engineer**
- **Michael Wilkinson, PE, NRCS Civil Engineer**
- **Jane Hopkins, NRCS Area Engineer**

- **Consultant Team:** Pare Corporation & TetraTech

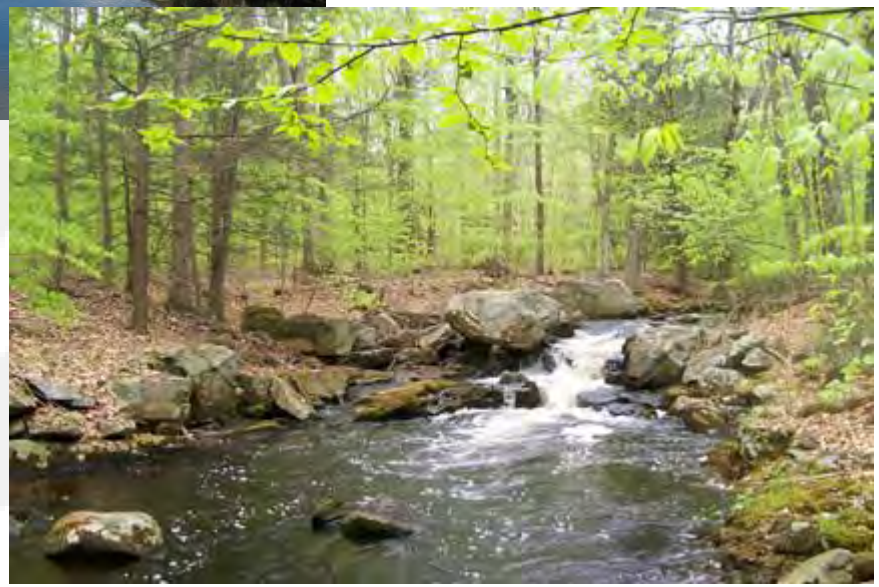
J. Matthew Bellisle, P.E., COO, Pare Corporation
Matthew Dunn, PE, CFPM, Sr. Project Engineer, Pare Corporation

Rob Jacoby, Cultural Resources Manager, TetraTech

PRESENTATION OVERVIEW

- Planning Team Roles
- Project Background
- Outline of Planning Process
- Open Discussion

The Wood River, Richmond, RI



ROLE OF LOCAL SPONSORS

- Responsible for permits
- Land rights acquisition and utilities
- Long term operation and maintenance

- The Watershed Protection and Flood Prevention Program helps units of state, local and federally recognized tribal governments (project sponsors) protect and restore watersheds.

ROLE OF NRCS

Natural Resources Conservation Service (NRCS)

- Primary Administrator of Project
- Conducts Final Review of Project Documents
- Coordinates with Public, Tribes, and Government Agencies

NRCS applies sound engineering tools and principles to plan, design, and implement conservation practices and systems through delegated approval authority.

ROLE OF ENGINEERING CONSULTANT

Pare Corporation and TetraTech

- Conducts Field Reconnaissance and Gathers Background Data
- Completes Engineering Analyses to Characterize Watershed
- Develops and Evaluates Potential Flood Prevention Strategies
- Prepares Final Project Documents

WHY ARE WE HERE?

- Brief History of the Watershed
- Why the new project?
- How does the process work?

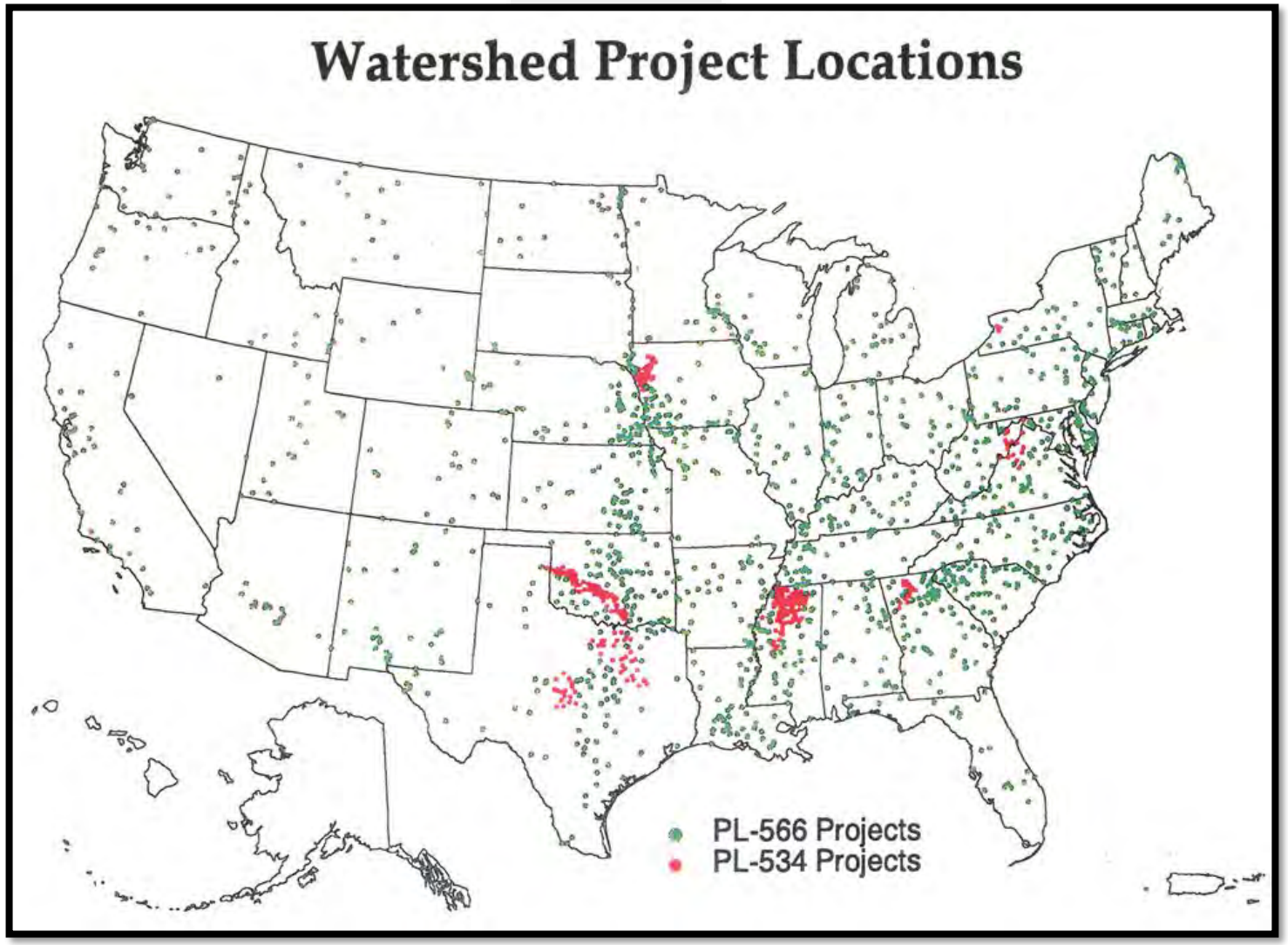
Shannock Road, Charlestown RI – March 2010

The Wood-Pawcatuck Watershed has historically been flooded…

Route 91 near Chapman Pond in Westerly, 2010.

Along Pawcatuck River, Hopkinton, 2010.

PL83-566 Watershed Protection and Flood Prevention Act (Public Law 83-566) of 1954



PL83-566 Watershed Protection and Flood Prevention Act (Public Law 83-566) of 1954

Provides technical and financial assistance to States, local governments and Tribal organizations to help plan and implement authorized watershed projects for the purpose of:

- Flood Prevention
- Watershed Protection
- Public Recreation
- Public Fish and Wildlife
- Agricultural Water Management
- Municipal and Industrial Water Supply
- Water Quality Management

Project History

- Decades of Notable Flooding Events:
  - ***November 1927***: Flooding due to tropical storm
  - ***March 1968***: Record flooding due to heavy rainfall on snowmelt
  - ***June 1982***: Flooding due to 8-inch rainstorm
  - ***March 2010***: Flood of Record
  - ***October 2012***: Flooding due to Hurricane Sandy

Project History

- ***2014***: Wood Pawcatuck Watershed Association receives grant for watershed wide management plan for flood resiliency
- ***2017***: *Wood-Pawcatuck Watershed Flood Resiliency Management Plan,* prepared and presented by Fuss &O'Neill
- ***2020***: NRCS solicits proposals for development of a *Watershed Plan and Environmental Assessment for the Wood-Pawcatuck Rivers Watershed*
- **2021***:* Study area increased through support from additional communities

Why the New Project?

- Flooding occurs in Westerly, Richmond, Hopkinton, Hope Valley, Charlestown, Exeter, Stonington, North Stonington, Voluntown
- Additional funding to the Watershed & Flood Prevention Operations Program in 2019.

Watershed Project Plan

- Feasibility Study
- Considers several project alternatives
- Evaluates project alternatives against environmental, economic, and public concerns.
- Determines if project should be funded.

WATERSHED PLANNING PROCESS

- Rough Timeline
- Purpose and Need
- Planning Process Outline and Activities (NEPA Process)
- Human and Environmental Resources
- Overview of Project Area
- Flood Prevention and Damage Reduction Potential Solutions

Planning
- 2 Years

Design
- 2 Years

Construction
- 2 Years

The Watershed & Flood Prevention Operations Process

Input and Contributions from Sponsors and the Public

We encourage the Input and Contributions by our Sponsors and the Public during this Planning Process.

- Your input assures the success of the program and a project that is beneficial to the community.

How to contact us?

CONTACTS

Any questions or comments please feel free to contact:

Darrell Moore
State Conservation Engineer
Natural Resources Conservation Service
Darrell.moore@usda.gov
O - (401)822-8821

For Project Specific Comments, Questions, and Concerns, please email:

Wood-Pawc@parecorp.com

Purpose and Need

- The project purpose is to reduce the risk of flood damages to homes and other occupied non-residential buildings along the Wood and Pawcatuck Rivers in Washington County, RI and New London County, CT resulting from floodwater in the Wood-Pawcatuck Watershed; and to reduce the risk of flood damages to structures, roads, bridges, and utilities.
- The need for the project results from recurring excessive flooding of numerous buildings (Commercial and residential) and numerous roads, bridges, and utilities. The flooding causes regular flood damages to buildings, public infrastructure, and utilities.
- The project needs include a combination of structural and non-structural measures to avoid future damages.

Planning Process and NEPA Overview

- National Environmental Policy Act
  (NEPA Regulations: 40 CFR 1500-1508)

- Required for all federal actions - including federally assisted ($) and federally licensed/permitted actions.

- *Planning and NEPA Review Process -- intended to help public officials make decisions, after exploration of a range of alternatives to meet a purpose/need, and understanding the environmental consequences of actions.*

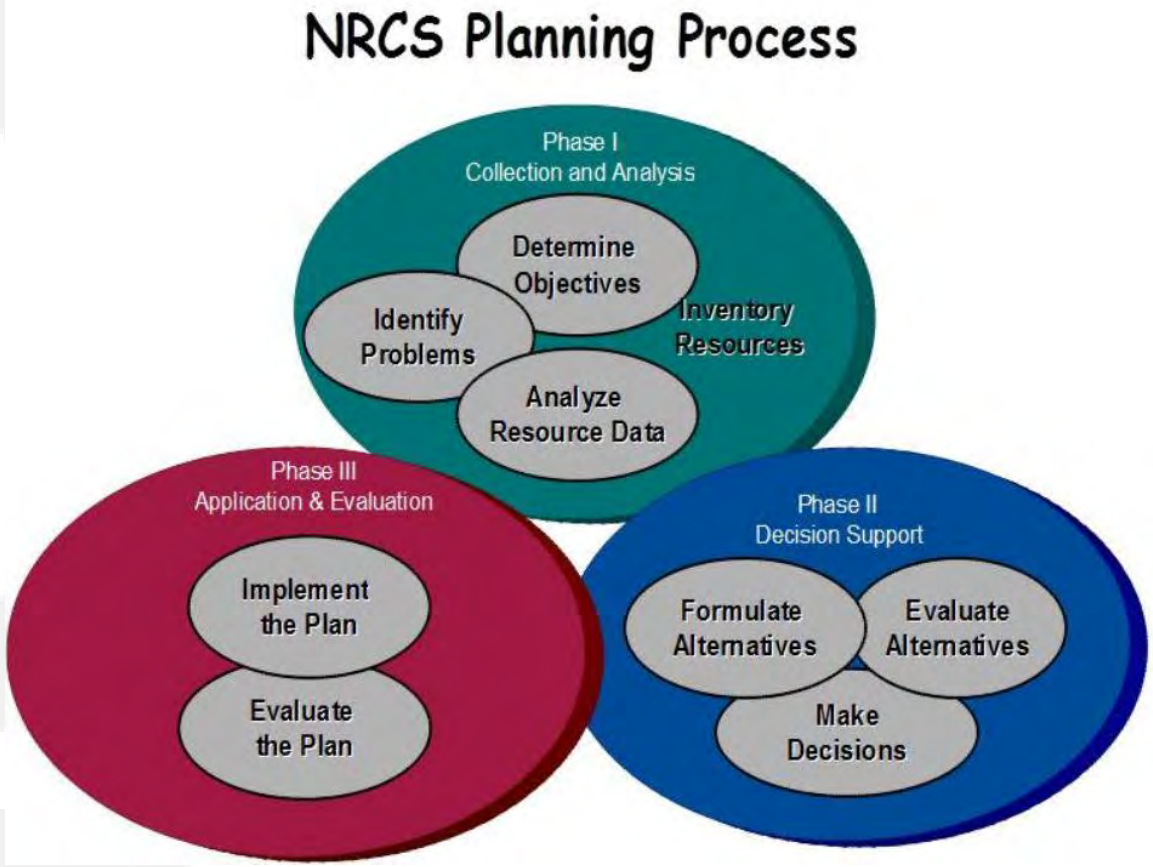
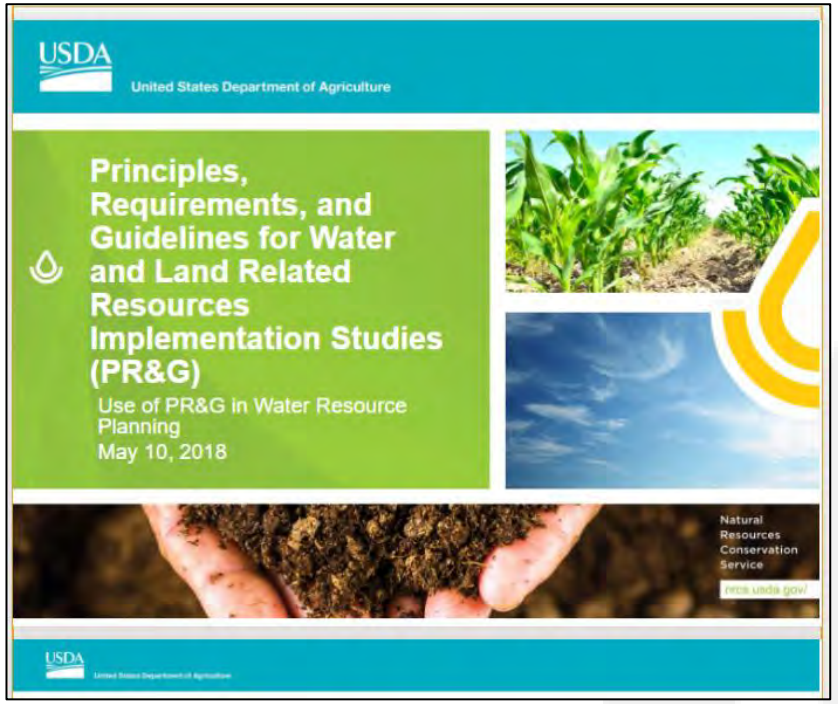
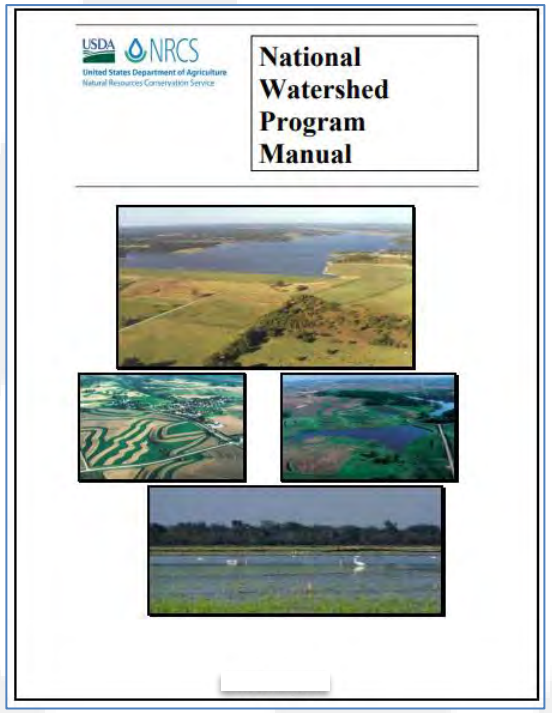
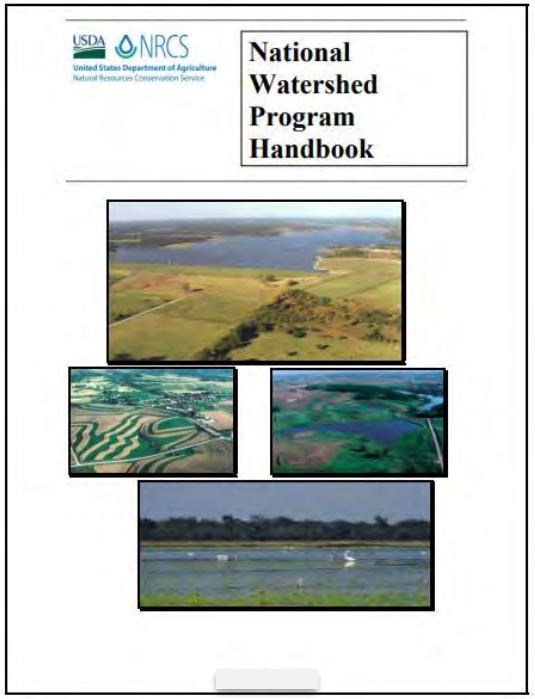


Figure courtesy of www.nrcs.usda.gov

In addition to NEPA–Other Planning Processes







- U.S Dept. of Agriculture -- *Guidance for Conducting Analyses Under the Principles, Requirements, and Guidelines (PR&G) for Water and Land Related Resources Implementation Studies and Federal Water Resource Investments,* May 2018
- *National Watershed Program Manual*, NRCS January 2015
- *National Watershed Management Handbook*, NRCS April 2014
- National Economic Efficiency (NEE) framework

NEPA and Planning Process Overview

What the Planning Process and NEPA Does:

- Identifies what **Need(s)** must be addressed
- Explores different **Alternatives**
- Analyzes and compares **Environmental Impacts**
- Considers **Economic Benefits and Costs**
- Informs the **decision of which Alternative(s) to pursue**
- Provides opportunity for **Public Participation and Comments**

The NEPA Process – Public Participation

Public Scoping of Issues of Concern (30 days)	Prepare Draft Environmental Assessment (EA) Document	Public Review of Draft EA Document (30 days)	Finalize EA Document	Finding of No Significant Impact (FONSI) or Prepare EIS/Record of Decision
• Notify Public and Agencies of Intent to conduct Project • Conduct Public and Agency Meetings • Collect Scoping Comments	• Analyze comments • Develop and Evaluate Alternatives • Collect Data • Analyze Impacts • Prepare EA, including measures to mitigate impacts	• Inform public of EA Availability • 30-day Public/Agency Review and Comment Period) • Collect Comments	• Address Public/ Agency Comments • Finalize measures to mitigate impacts • Recommend Action	• Decision document • Process complete

The NEPA Process

- Conduct public scoping meeting
- Conduct resource inventories and watershed assessment
- Conduct social assessment
- Conduct economic assessment
- Formulate alternatives
- Evaluate alternatives
- Hold Public Meeting

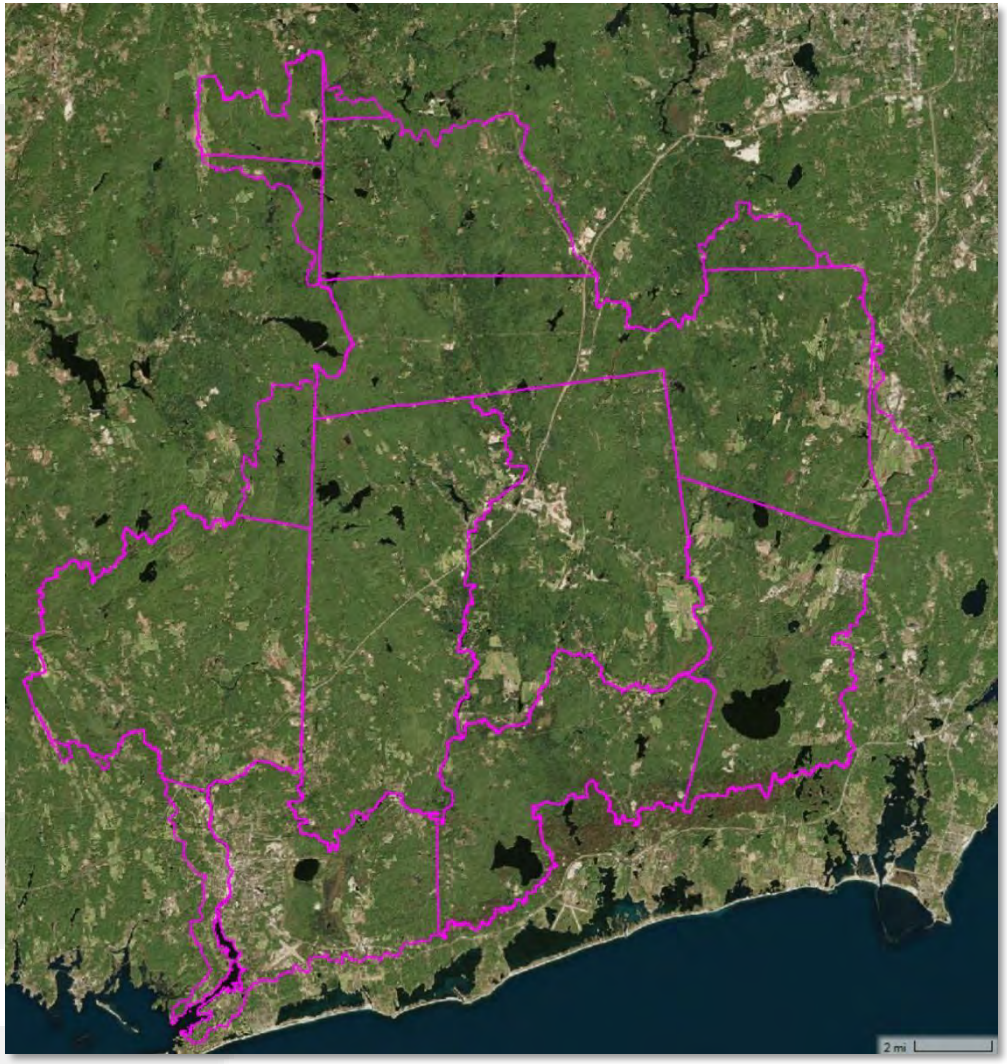
Resources Considered by NEPA

- Geology and Soils
- Water Resources
- Air Quality
- Vegetation
- Fish and Wildlife
- Socioeconomics (including Environmental Justice)
- Land Use
- Transportation
- Public Health and Safety (including Infrastructure and Utilities)
- Cultural Resources (including Tribal Consultation)
- Visual Character / Aesthetics

Watershed Overview

The Wood Pawcatuck Watershed At a Glance:

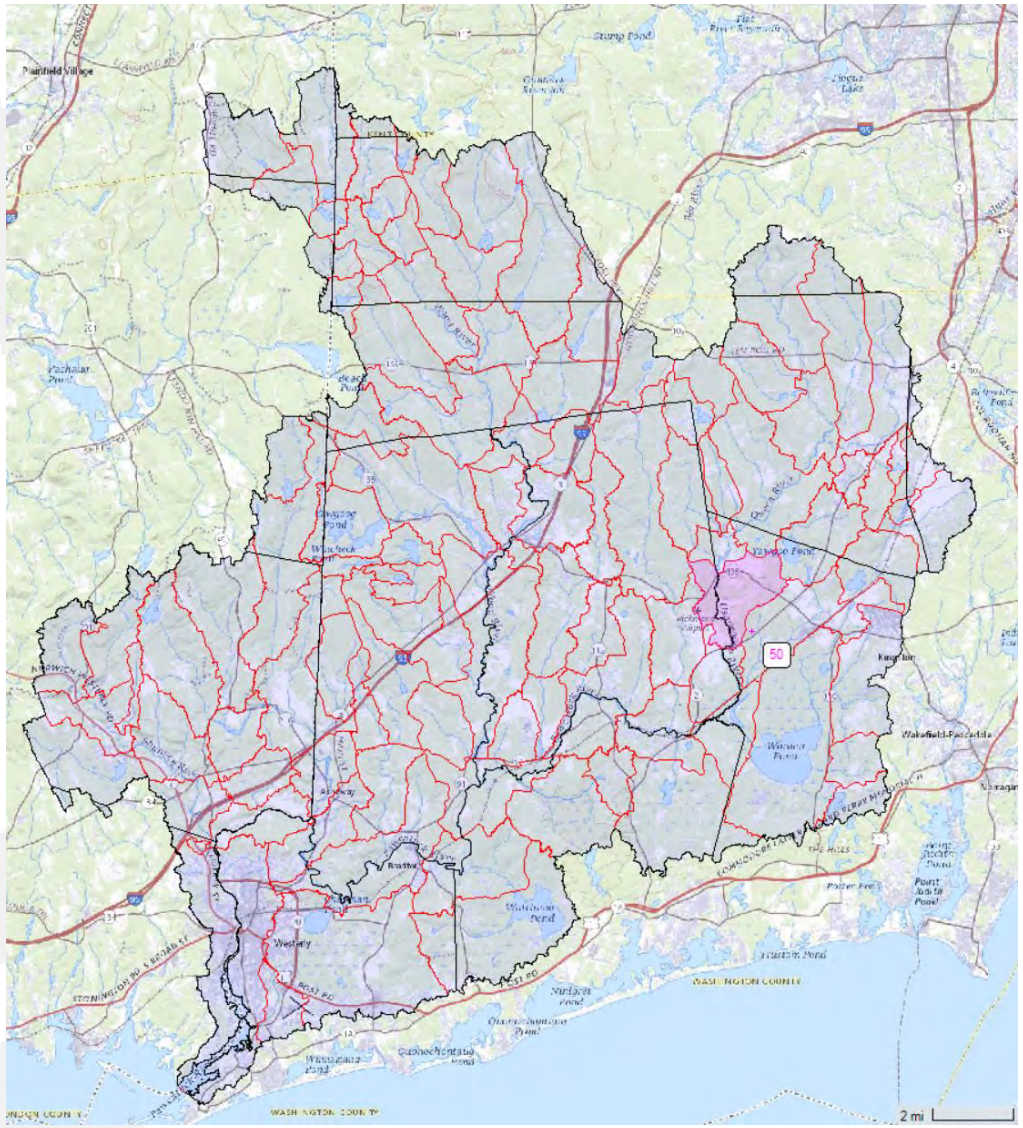
- 303 square miles
- Spans 15 towns across 2 States
- 20+ named rivers and streams
- 500+ miles of river
- 160+ documented dams
- 600+ roadway-river crossings
- 160+ identified flooding locations



Hydrologic Model

Produces the Runoff Hydrographs for the Hydraulic Model

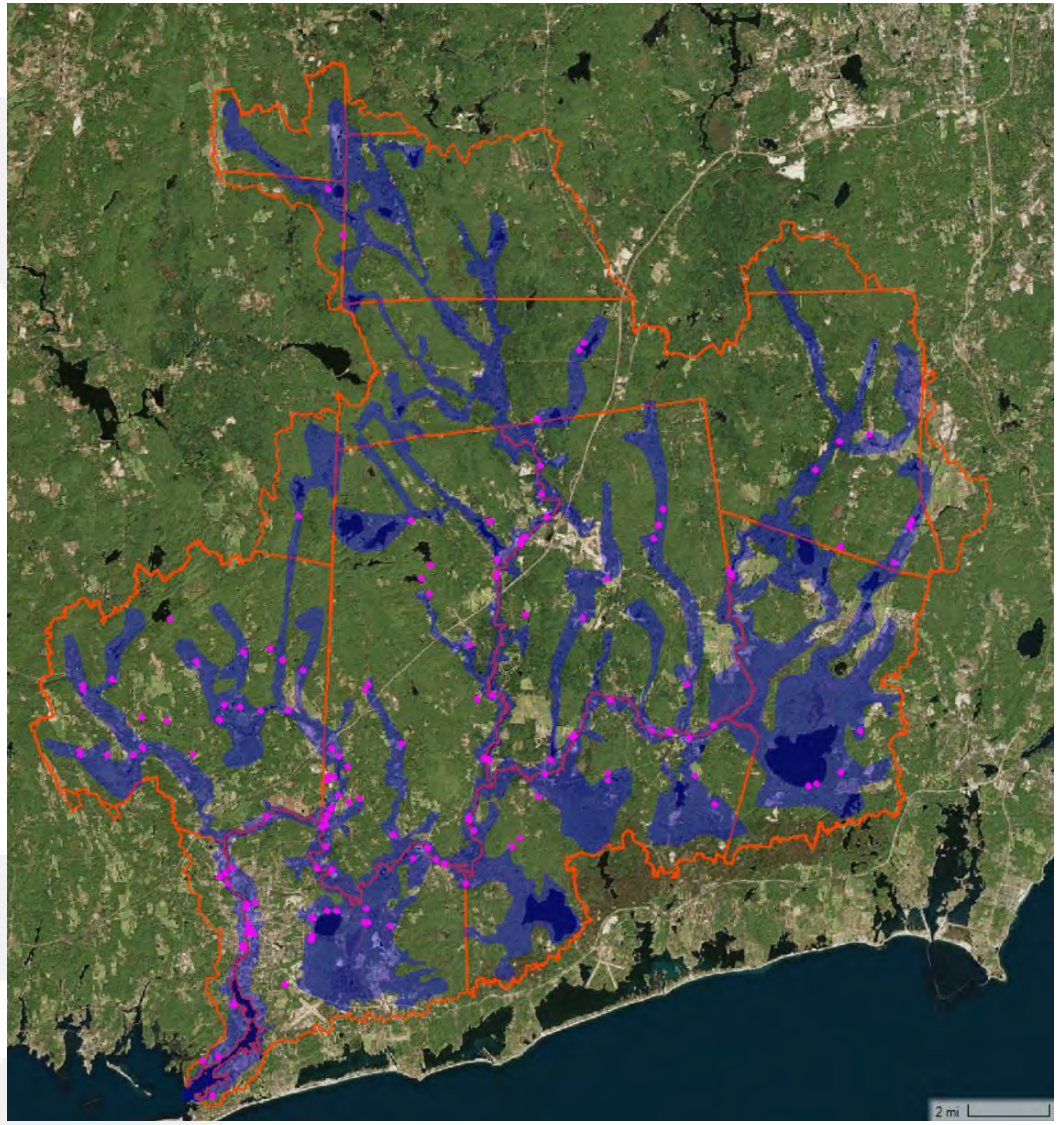
- HydroCAD and HEC-HMS Software
- Rainfall Data: NOAA Atlas 14
- Land Cover + Soil Group = Curve Number
- Time of Concentration
- Runoff Hydrograph
- Drainage Area Subdivision (120 each)
- Storage Areas / Hydraulic Structures
- Model Calibration
- Final Runoff Hydrographs for Hydraulic Model



Hydraulic Model

Determines the Hydraulic Conditions within the Model Limits

- HEC-RAS 2D Software
- Terrain, Roughness, Mesh, Hydraulic Structures, Boundary Conditions
- Run all ten recurrent storm events under existing conditions
- Results used to determine and monetize model-wide damages
- Results used to identify potential alternatives
- Base model used to also model, assess, and refine alternatives



FLOOD MITIGATION STRATEGIES

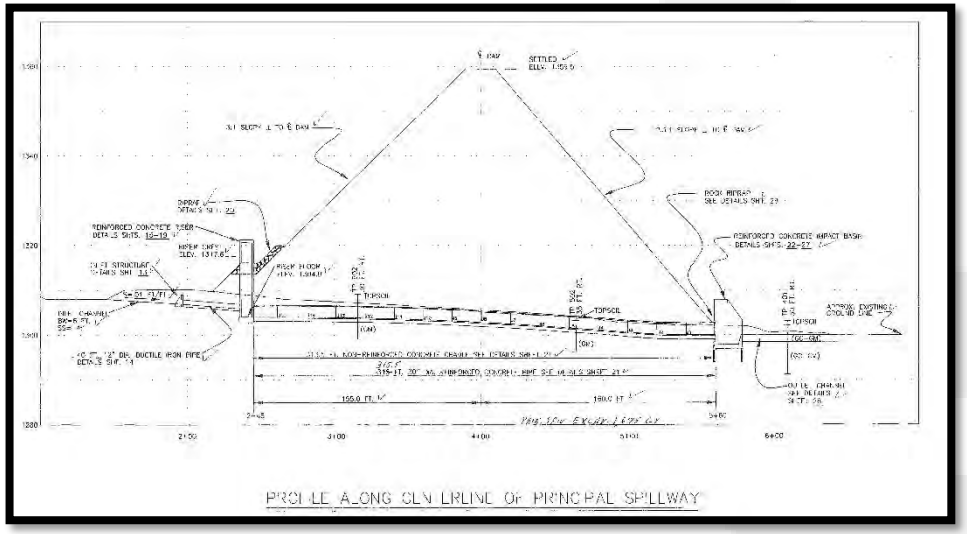
- **Flood Volume and Rate Reduction**
- **Avoidance**
- **Floodproofing**
- **Barriers**
- **Drainage Improvements**
- **Nature Based Solutions**

FLOOD VOLUME AND RATE REDUCTION

Detention Structures

Temporarily Store Water Reducing Downstream Impacts During Storm Events, Could Include Dams or Floodplain Areas

NY-5A Dam – Photo courtesy of Google Earth 2020



NRCS As-Built Plans – Floodwater Retarding Dam NY-5A

FLOOD VOLUME AND RATE REDUCTION

Infiltration Structures

Infiltrate Rainfall or Snowmelt, Reducing Volume of Water Conveyed Downstream

Photo courtesy of PADEP Stormwater Manual 2006

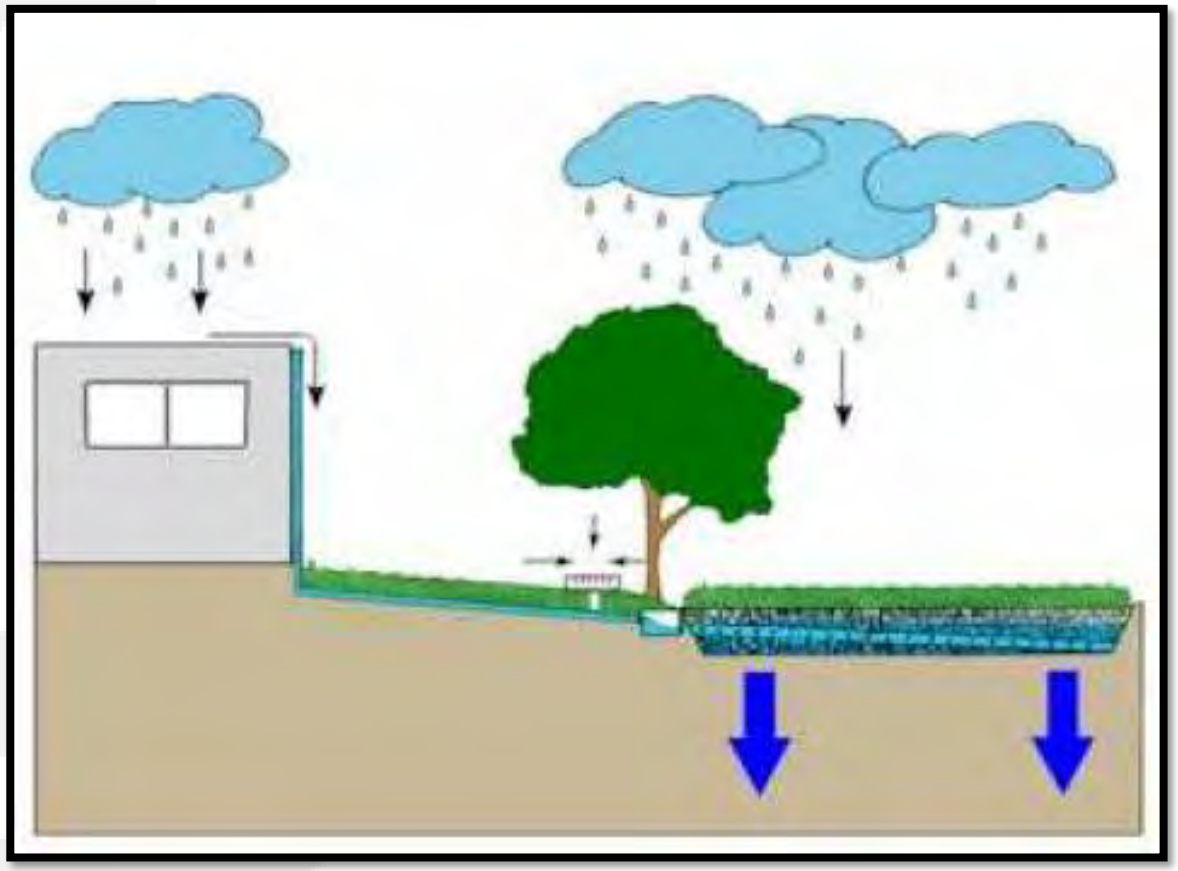


Photo courtesy of PADEP Stormwater Manual 2006

FLOOD VOLUME AND RATE REDUCTION

Land Use Changes

Establish Forests or Grassy Vegetation Over Larger Watershed Areas to Promote Infiltration and Reduce the Rate of Storm Flows

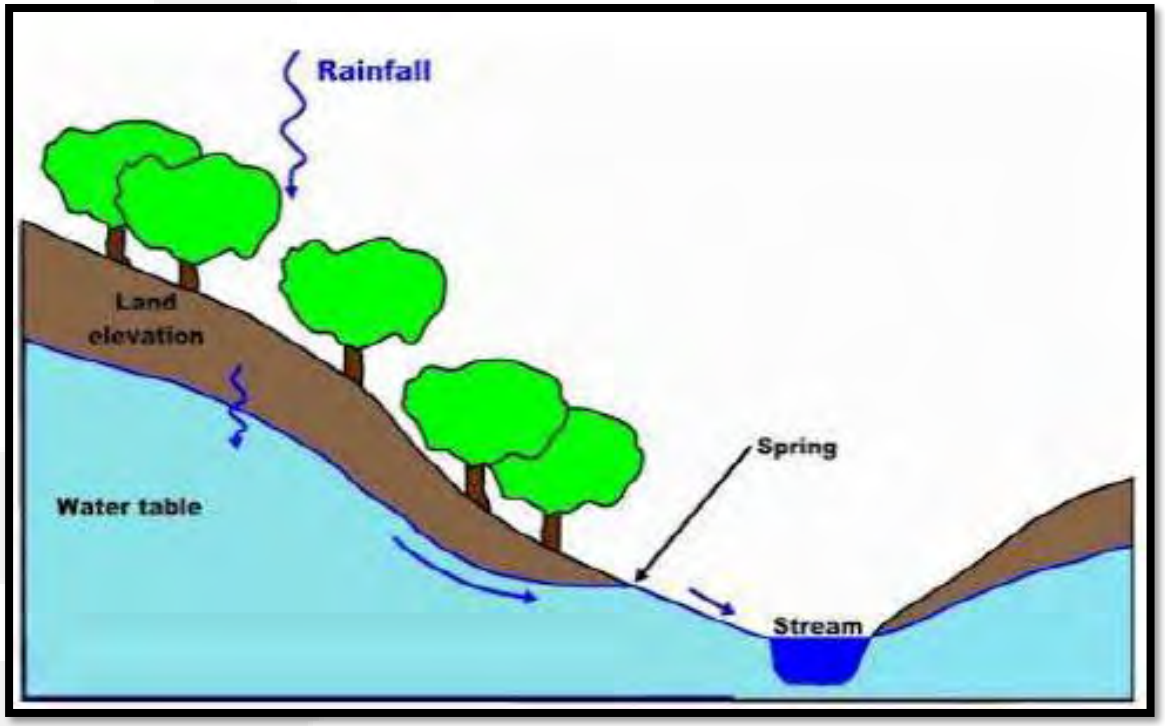


Photo courtesy of PADEP Stormwater Manual 2006

AVOIDANCE

Residence or Business Buyouts/Relocation

Purchase Properties in Flooding Areas at Fair Market Value and Convert the Property to Green Space

Photo courtesy of NRCS

Photo courtesy of NRCS

Photo courtesy of NRCS

AVOIDANCE

Elevating Structures or Abandoning Lower Floor

Raise Structures Above Predicted Flood Levels

Photo courtesy of NRCS

Photo courtesy of NRCS

Photo courtesy of NRCS

FLOODPROOFING

Dry Floodproofing

Structure is Retrofitted to Prevent Floodwater From Entering

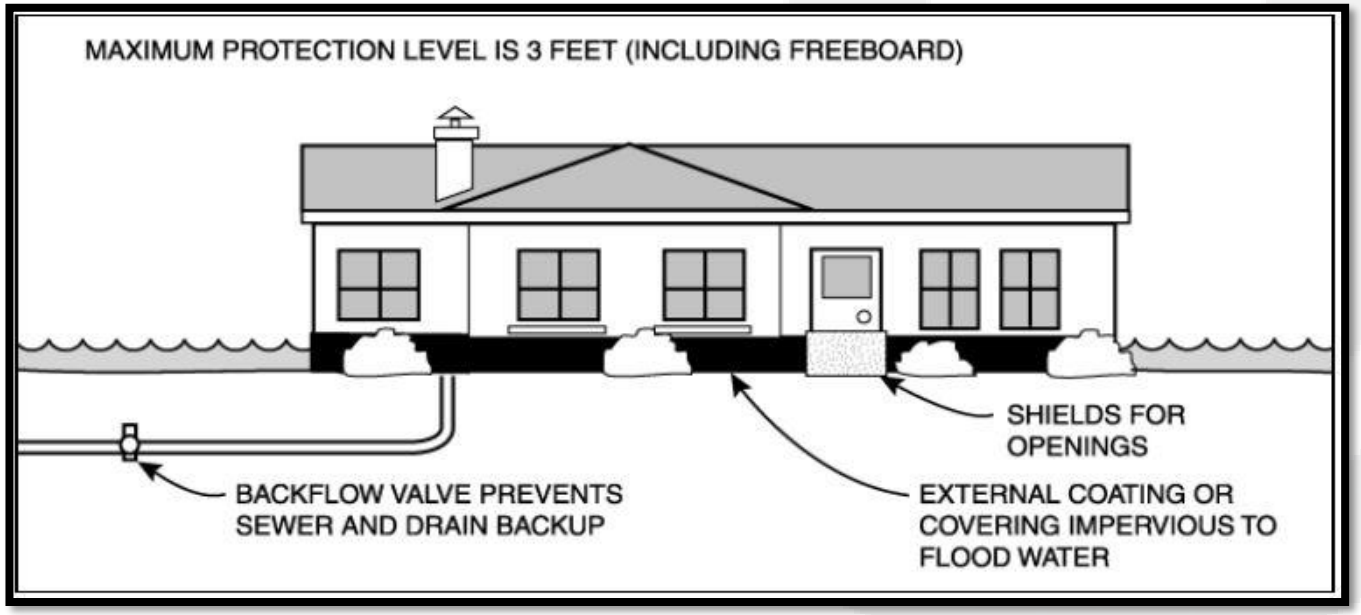


Photo courtesy of FEMA P-551: Selecting Appropriate Mitigation Measures for Floodprone Structures

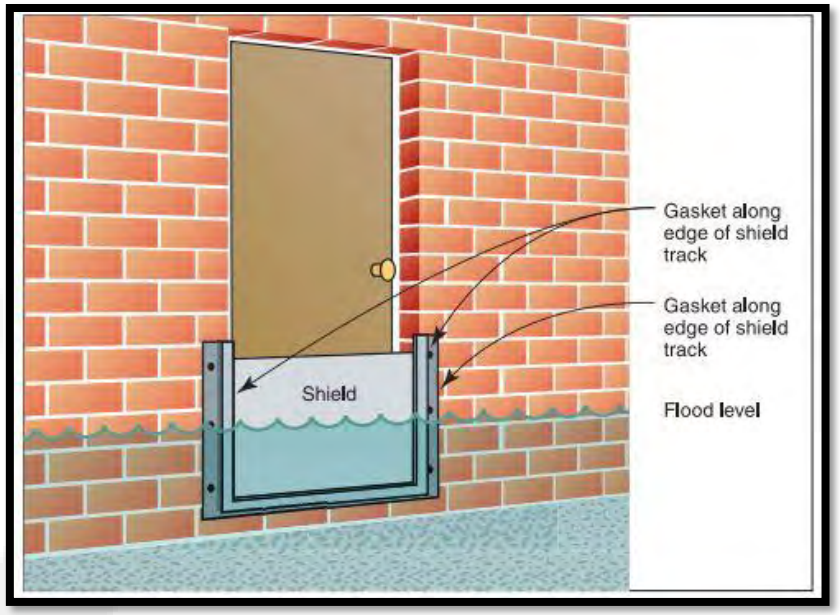
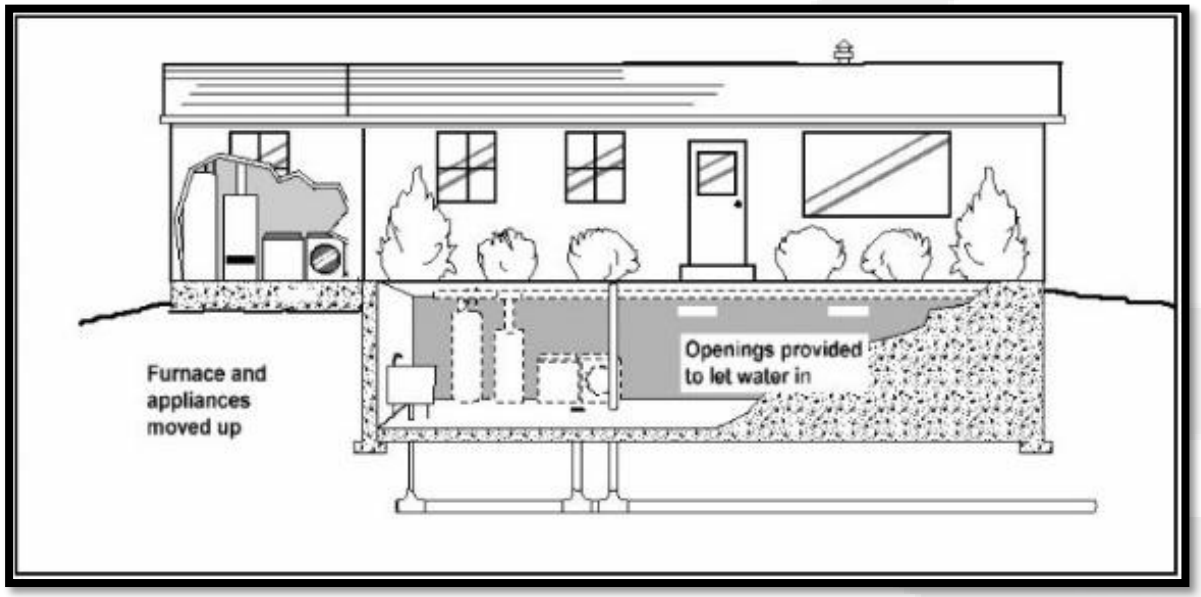


Photo courtesy of FEMA P-312: Homeowner's Guide to Retrofitting

FLOODPROOFING

Wet Floodproofing

Structure is Retrofitted to Prevent Damage From Flooding



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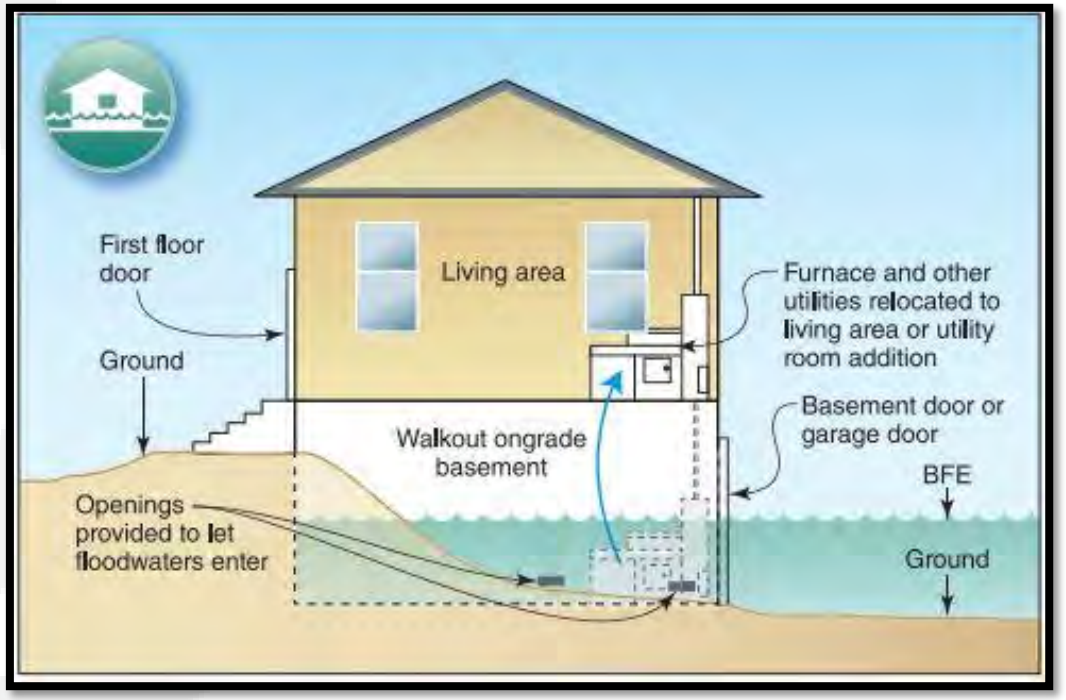
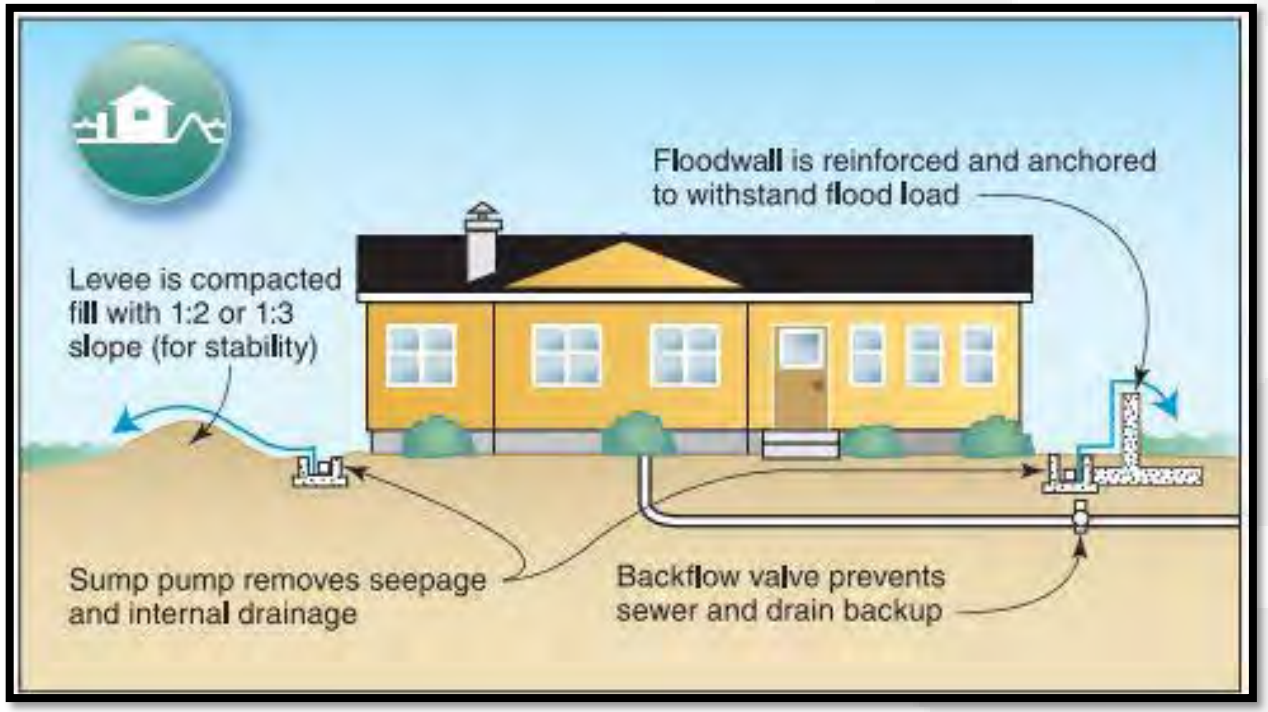


Photo courtesy of FEMA P-312: Homeowner's Guide to Retrofitting

BARRIERS

Floodwalls and Levees

Floodwaters are Diverted Around Sensitive Structures



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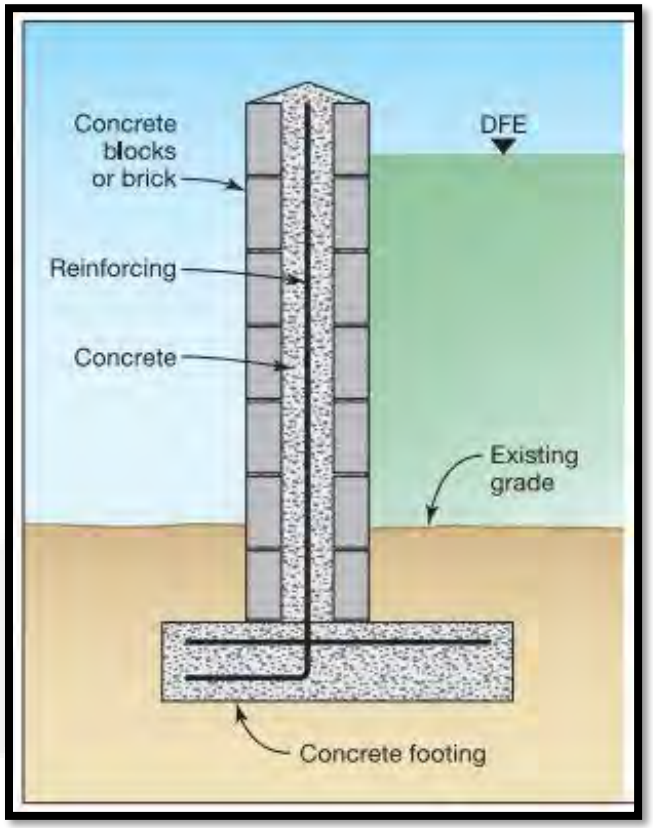


Photo courtesy of FEMA P-259: Engineering Principles and Practices for Retrofitting Flood-Prone Residential Structures

DAM REHABILITATION/REMOVAL

Repair or Remove Dams

Increase storage capacity or decrease water surface elevations

DRAINAGE IMPROVEMENTS

Enlarge Culverts or Storm Sewers

Increase Capacity of Drainage Structures to Lower Flood Levels

Photo courtesy of FHWA Hydraulic Design of Highway Culverts

DRAINAGE IMPROVEMENTS

Raise Bridge Decks

Raise Bridge Deck to Enlarge Opening and Increase Flow Capacity

DRAINAGE IMPROVEMENTS

Widen and Enlarge Stream Channels

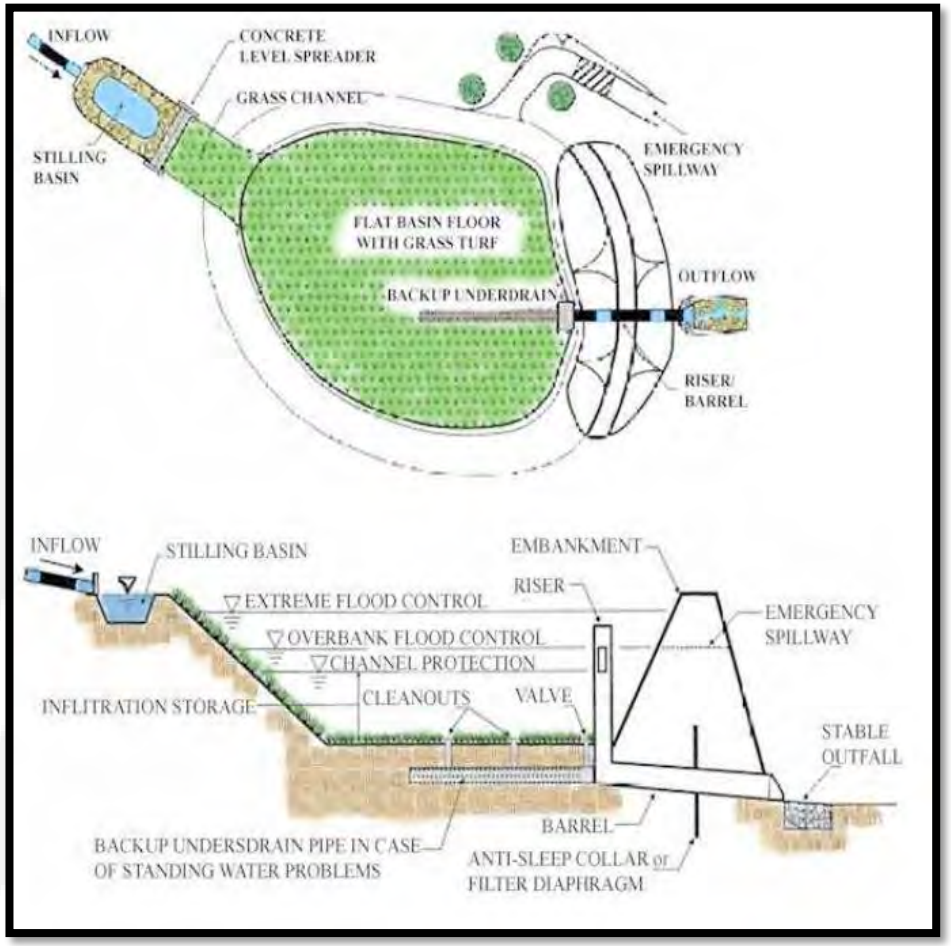
Increase Capacity of Stream Channels to Lower Flood Levels

WATER QUALITY/GREEN INFRASTRUCTURE

Flood Mitigation Can Improve Water Quality and Provide Green Infrastructure

- Stream Channel Stabilization
- Riparian Corridor Establishment
- Stormwater Controls
  - Water Treatment
  - Stormwater Infiltration
- Landuse Changes
  - Reduce Soil Erosion
  - Provide Buffers
  - Reduce Runoff

Vegetated Infiltration Area - Photo courtesy of PADEP Stormwater Manual 2006



Infiltration Basin - Photo courtesy of PADEP Stormwater Manual 2006

NEXT STEPS

- Document and Assess Findings of this Meeting
- Complete Field Studies and Investigations
- Identify and Evaluate Alternatives
- Coordinate with Various Governing Agencies
- Finalize Watershed Plan and Environmental Assessment Document

NEXT STEPS

- Project Status Updates

SRICD website:
www.sricd.org
NRCS website:
www.nrcs.usda.gov/conservation-basics/conservation-by-state/rhode-island

- 2nd Public Meeting Date: Fall 2023
- Draft Plan-EA /Date: Early 2024

CONTACTS

Any questions or comments please feel free to contact:

Darrell Moore
State Conservation Engineer
Natural Resources Conservation Service
Darrell.moore@usda.gov
O - (401)822-8821

For Project Specific Comments, Questions, and Concerns, please email:

Wood-Pawc@parecorp.com

OPEN DISCUSSION / INPUT

- Questions or Comments from Attendees
- What has your flooding experience been?
  - Photographs of flooding?
  - High water indications
  - Damages?
- What would a successful project look like for you?

Wood-Pawc@parecorp.com