



Stormwater Management and Natural Hazard Mitigation Leveraging Complementary Programs



**15th Annual Southeast New York
Stormwater and Trade Show**

October 14, 2015

Introduction

- Whether we are a stormwater manager, building code official, planner, engineer, DPW superintendent, supervisor or administrator – we wear many hats
- We must satisfy many regulatory programs and mandates, and serve many needs and interests
- Is it critical that we recognize the similarities and common ground with these many programs and requirements to be effective and efficient
- Our efforts need to be:
 - Programmatic
 - Integrated



Hazard Mitigation Planning - Overview

“Mitigation” - Sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event

Mitigation breaks the cycle of loss-repair-loss

Every \$ spent on mitigation planning and associated projects reduces losses many-fold



“A Local Mitigation Plan demonstrates the jurisdiction’s commitment to reducing risk and serves as a guide for decision makers as they commit resources to minimize the effects of natural hazards. (FEMA)

Hazard Mitigation Planning - Benefits

- Helps municipalities prepare for and mitigate the effects of disasters.
- Builds more resilient communities.
- Continues to allow the county and participating partners to be eligible for pre- and post-disaster recovery and mitigation funding.
 - Pre-Disaster Mitigation Grant Funding (404 Mitigation)
 - HMGP – Disaster Driven, available to all eligible jurisdictions in the State, according to the State priorities.
 - PDM and FMA – Annual programs, open about June. Funded by Congress. Nationally competitive.
 - Post-Disaster Mitigation for Damaged Structures/Infrastructure (406 Mitigation)
- Supports National Flood Insurance Program (NFIP) compliance
- Earns additional Community Rating System (CRS) credit for participating communities

Hazard Mitigation Planning – Funding

Key Considerations –

- You must be covered under an approved and adopted HMP
- Projects must be identified in your HMP specifically, and be cost-effective
- Projects must be Cost-Effective as demonstrated through a formal FEMA Benefit-Cost Analysis
- Funding generally requires a minimum local cost share of 25%
- Securing funding is a long-term process – needs to really be part of your long-term planning – Capital Planning, Engineering, Permitting and Regulatory Compliance

ELIGIBLE ACTIVITIES

Mitigation Activities	HMGP	PDM	FMA
Property Acquisition and Structure Demolition or Relocation	✓	✓	✓
Structure Elevation	✓	✓	✓
Mitigation Reconstruction			✓
Dry Floodproofing of Historic Residential Structures	✓	✓	✓
Dry Floodproofing of Non-Residential Structures	✓	✓	✓
Minor Localized Flood Reduction Projects	✓	✓	✓
Structural Retrofitting of Existing Buildings	✓	✓	
Non-Structural Retrofitting of Existing Buildings and Facilities	✓	✓	✓
Safe Room Construction	✓	✓	
Wind Retrofits	✓	✓	
Infrastructure Retrofit	✓	✓	
Soil Stabilization	✓	✓	
Wildfire Mitigation	✓	✓	
Post-Disaster Code Enforcement	✓		
Generators	✓	✓	
Advance Assistance	✓		
5% Initiatives	✓		
Hazard Mitigation Planning	✓	✓	✓
Management Costs	✓	✓	✓

✓ = Mitigation activity is eligible for program funding

Hazard Mitigation Planning – Not a Heavy Lift!



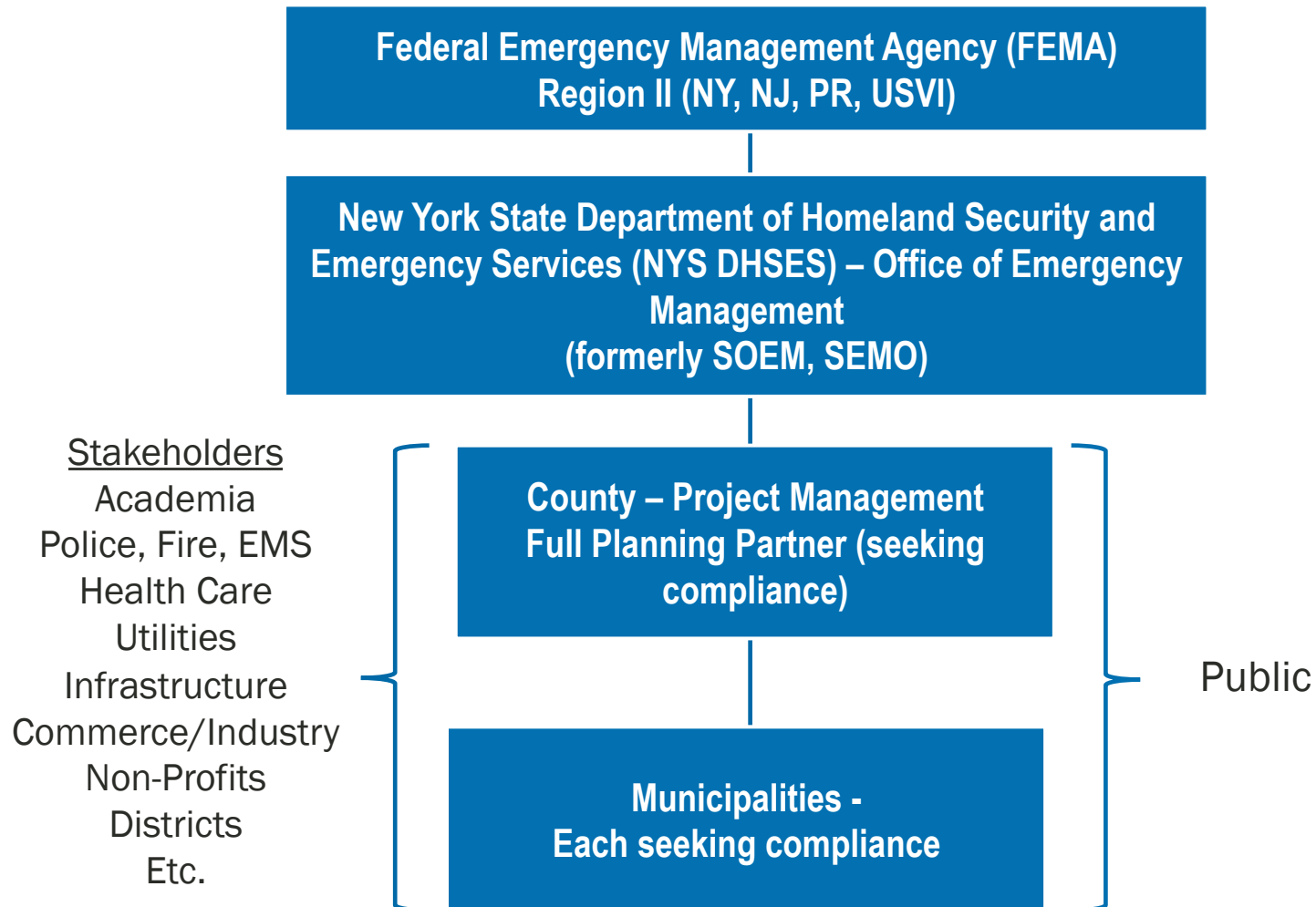
For the most part, this process is not meant to create new data or information.

This is largely an effort of documenting and augmenting existing information and plans to:

- Meet this requirement
- Support other related requirements.



Hazard Mitigation Planning – Organize the Resources



Hazard Mitigation Planning – Organize the Resources

Multi-Jurisdictional Plan Organization - Pros

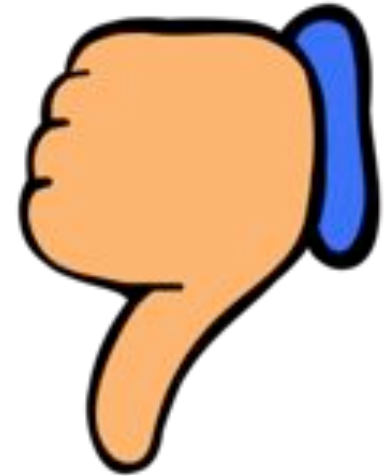
- Leverages Resources
 - Planning project administration
 - Consultant support
 - Data and Information Collection
 - Public and Stakeholder Outreach
 - Long-term plan maintenance and updates
- Promotes Holistic Approaches to Natural Hazard Risk Reduction
 - County-level programs to support local needs
 - Inter-municipal cooperation to address regional issues
 - Builds Local Mitigation Capabilities



Hazard Mitigation Planning – Organize the Resources

Multi-Jurisdictional Plan Organization - Cons

- While the planning process is managed and facilitated at the County level, each municipality is seeking FEMA regulatory compliance individually.
 - No, the County is NOT writing your plan
 - No, the Consultant is NOT writing your plan
- Each municipality is building a plan that addresses their risks, and meets their needs and interests...it is just being done in a collaborative environment that promotes:
 - Local HMP Integration
 - Leveraging of Resources
 - Building a Local Plan that becomes Programmatic



Hazard Mitigation Planning – Organize Your Resources

Your Local Hazard Mitigation Planning team should consider including:

- Supervisor/Mayor
- Administrator
- Stormwater Manager
- NFIP Floodplain Administrator
- Building Code Official
- Municipal Engineer
- Land Use Planner
- Municipal CFO/Fiscal Rep
- Public Works Director
- Police and Fire Officials
- Representatives from other local committees, commissions
- Interested Public, particularly flood vulnerable citizens
- “Many hands make light work...”
- Everyone has a unique perspective on the problems and possible solutions
- A long-term, sustainable plan must be integrated through all facets of the community

Hazard Mitigation Planning – Assess the Risk

- What Natural Hazards cause significant impact?
- What is at risk?
- What have been our losses? – Historical
- What can we expect our losses to be? – Future, Vulnerability Assessment

Typically in these plans the greatest natural hazard risk is to flooding:

- Riverine (overbank)
 - Hurricane Floyd (DR-1296)– 1999
 - Repeated Severe Storm and Flooding Events – 2005-2006
 - Hurricane Irene and Tropical Storm Lee – 2011
- Coastal Flooding
 - Hurricane Sandy (DR-4085) – 2012
 - Numerous Nor'Easters
- Urban flooding – Stormwater Management Flooding

This is being exacerbated by Climate Change and Sea Level Rise (SLR):

- Frequency and Severity of Events
- Low-lying coastal areas, SLR is increasing the risk and challenges of coastal flooding and stormwater management

Hazard Mitigation Planning – Updating Mitigation Strategies

Updated Mitigation Strategies are developed from:

- Progress on Prior Mitigation Strategy
- New Mitigation Actions identified by the municipality
- Mitigation Actions and Initiatives identified through other plans and programs
- New Mitigation Actions identified as a result of the updated Risk Assessment (recent events, new development, improved understanding of risk)

Mitigation strategies should be realistic, well-defined, and implementable.

Success of a plan is not measured on the number of actions, rather the long term ability of the plan to help communities manage natural hazard risk and reduce losses.

Hazard Mitigation Planning – Updating Mitigation Strategies

- **Preventative Measures** - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- **Property Protection** - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- **Natural Resource Protection** - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.



Hazard Mitigation Planning – Updating Mitigation Strategies

- **Public Information** - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- **Structural Flood Control Projects** - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- **Emergency Services** - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities



Hazard Mitigation Planning - Status in Region

County Name	Expires	Planning Grant Date	Current Grant End Date	Status
Albany County	February 3, 2015	August 4, 2014	January 24, 2017	Not Yet Submitted
New York City	April 17, 2019	August 25, 2014	August 25, 2016	Not Yet Submitted
Columbia County	September 16, 2013	September 19, 2012	September 19, 2015	Returned for Revisions (June 22, 2015)
Dutchess County	September 24, 2013	September 19, 2012	December 18, 2015	Under NYS DHSES Review
Greene County	February 24, 2016	July 24, 2014	July 21, 2016	Not Yet Submitted
Nassau County	June 20, 2019			Approved
Orange County	March 21, 2016	August 15, 2014	August 12, 2018	Not Yet Submitted
Putnam County	July 13, 2020			Approved
Rockland County	March 22, 2016	August 10, 2015	September 30, 2016	Not Yet Submitted
Suffolk County	June 4, 2019			Approved
Ulster County	June 23, 2014	September 19, 2012	March 19, 2016	Not Yet Submitted
Westchester County	June 19, 2012	September 19, 2012	September 19, 2015	Under NYS DHSES Review



Stormwater Management

“When proper controls are not in place, research studies show a clear link between urbanization and increased flooding and pollutant export. The goal of stormwater management is to ensure that the quantity and quality of stormwater runoff from a site that is undergoing construction or development should not be substantially altered from its pre-development conditions.” (NYSDEC, 2014).

While the metrics evaluating the success of MS4 programs are primarily related to water quality (e.g. phosphorus, sediment), many of the headaches stormwater managers and other municipal representatives have to suffer on a daily basis are related to quantity.

- Residential complaints are generally flood-related – even when a project is conforming to the New York State Stormwater Management Design Manual and the SPDES General Construction Permit
- Proposed projects in flood vulnerable areas before the Planning Board – the majority of public comments are related to flooding

Stormwater Management – Common Approaches

What Is the Phase II Program Approach?

The Phase II program, based on the use of federally enforceable NPDES permits:

- ☐ Encourages the use of general permits;
 - ☐ Provides flexibility for regulated operators to determine the most appropriate stormwater controls;
 - ☐ Allows for the recognition and inclusion of existing NPDES and non-NPDES stormwater programs in Phase II permits;
 - ☐ Includes public education and participation efforts as primary elements of the small MS4 program;
 - ☐ Attempts to facilitate and promote watershed planning and to implement the stormwater program on a watershed basis; and
 - ☐ Works toward a unified and comprehensive NPDES stormwater program with Phase I of the program.
- Projects and initiatives identified in other related programs can be incorporated
 - Integration with other plans and programs is encouraged
 - Public education is common to several related programs
 - Promotes a holistic approach to watershed management, involving all stakeholders

Stormwater Management – Common Program Elements

The six MS4 program elements, termed “minimum control measures,” are outlined below. For more information on each of these required control measures, see Fact Sheets 2.3 – 2.8.

① *Public Education and Outreach*

Distributing educational materials and performing outreach to inform citizens about the impacts polluted stormwater runoff discharges can have on water quality.

② *Public Participation/Involvement*

Providing opportunities for citizens to participate in program development and implementation, including effectively publicizing public hearings and/or encouraging citizen representatives on a stormwater management panel.

③ *Illicit Discharge Detection and Elimination*

Developing and implementing a plan to detect and eliminate illicit discharges to the storm sewer system (includes developing a system map and informing the community about hazards associated with illegal discharges and improper disposal of waste).

④ *Construction Site Runoff Control*

Developing, implementing, and enforcing an erosion and sediment control program for construction activities that disturb 1 or more acres of land (controls could include silt fences and temporary stormwater detention ponds).

⑤ *Post-Construction Runoff Control*

Developing, implementing, and enforcing a program to address discharges of post-construction stormwater runoff from new development and redevelopment areas. Applicable controls could include preventative actions such as protecting sensitive areas (e.g., wetlands) or the use of structural BMPs such as grassed swales or porous pavement.

⑥ *Pollution Prevention/Good Housekeeping*

Developing and implementing a program with the goal of preventing or reducing pollutant runoff from municipal operations. The program must include municipal staff training on pollution prevention measures and techniques (e.g., regular street sweeping, reduction in the use of pesticides or street salt, or frequent catch-basin cleaning).

Halcyon Park Stormwater Mitigation

New Rochelle, NY

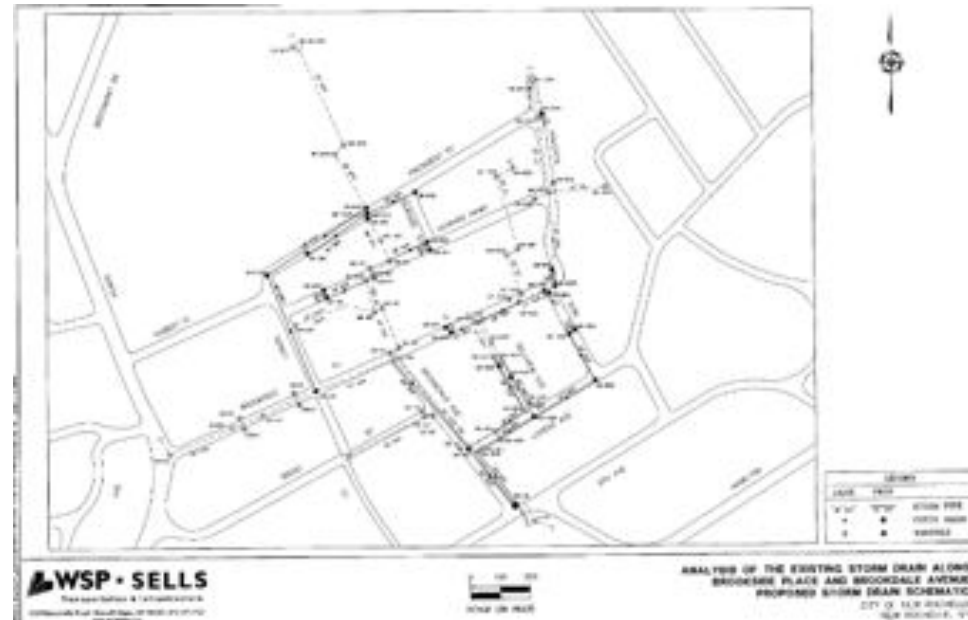
Problem: The Halcyon Park area experiences flooding on a regular basis due to an outdated and poorly designed drainage system. The system consists of a patchwork of improperly-sized structures and a complicated routing pattern that prevents a smooth flow of storm runoff through the various structures.



Halcyon Park Stormwater Mitigation

New Rochelle, NY

- Working with a broad based mitigation planning team, City of New Rochelle Hazard Mitigation Plan (approved 2011) identified the following stormwater mitigation project:
Removal of existing drainage structures and installation of a new 6' x 8' box culvert, increasing pipe capacities and upgrading structures to improve hydraulics of the system, new manholes, catch basins, relocation of existing water and gas mains, relocation and replacement of sanitary sewer pipes, concrete curbs and sidewalks
- City Engineering had completed conceptual engineering, but funding was not available.
- The City submitted grant applications under 2010 PDM, and subsequently under HMGP DR-1899 (March 2010, Severe Storms and Flooding), and was awarded \$1.8 Million Federal Share to implement the project.
- Timeline: June 2015 – Early 2016



Horton Avenue Flood and Stormwater Mitigation Riverhead, Suffolk County

Problem: The project area has a long history of flooding as summarized in a 1979 Stormwater Management Plan. In the past 7 years (March 2003 to March 2010), there have been 5 significant flooding events that have caused damages to homes and the Town to respond (road closures, evacuation, response, etc.).



Porter Treat, 70, Resident of 167 Horton Avenue for over 50 years.



Horton Avenue Flood and Stormwater Mitigation Riverhead, Suffolk County

Project: The goal of the project is to mitigate the flood hazard in the Horton Avenue area, thereby reducing or eliminating the potential for future damages, including physical damage, loss of function and emergency management costs. The project has two key objectives:

Acquisition and Demolition: Acquire nine (9) properties containing 12 single family homes

Stormwater Management: The Town proposes a two phase stormwater management project that will reduce stormwater runoff and improve stormwater quality by reducing volume and sediment.

- **Phase I** - consists of upland improvements. A series of constructed swales will be installed in the farmland area north of Reeve's Avenue to improve on-site infiltration and reduce overland flow of sediment-filled runoff.
- **Phase II** - the Town will develop constructed wetlands on the sites of the demolished homes. The constructed wetlands will be positively connected to the adjacent natural wetlands to control flood elevation, and be positively connected to the exiting stormwater pond. These constructed wetlands will serve as retention areas and will filter sediment from runoff prior to flow of water to downstream natural wetlands.

FEMA set to approve \$3.6M grant to aid Riverhead flood victims, officials say

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WRITERS: DENNIS O'NEILL

6/26/17 (JMP)



New York Rising Community Reconstruction Plans

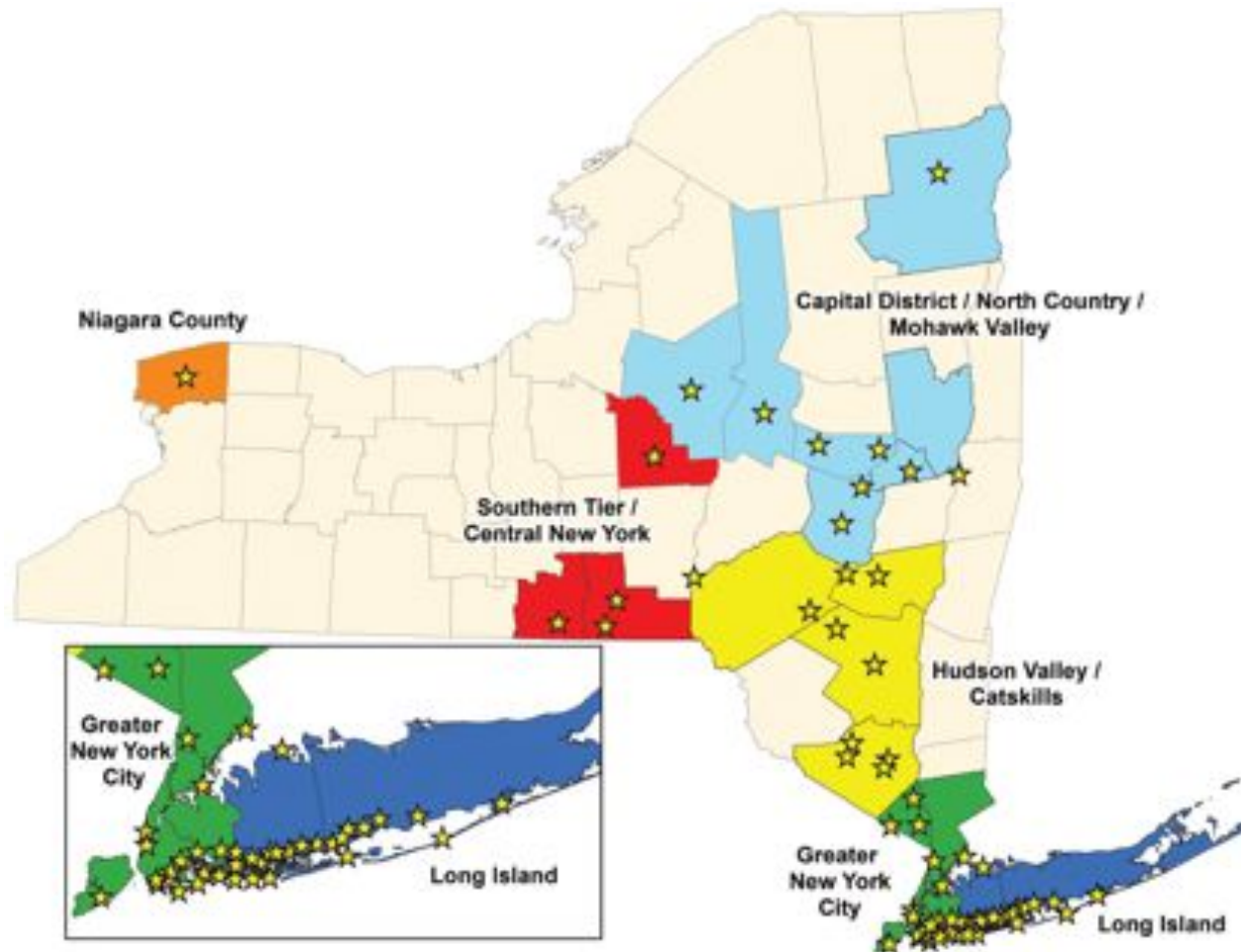
- Goal: Distribute Housing and Urban Development (HUD) CDBG-DR funding for Hurricane Irene, Tropical Storm Lee, and Hurricane Sandy
- State created a new office – Governor’s Office of Storm Recovery (GOSR) – to provide planning services, combined with bottom-up community participation
- Identified projects that replace or protect critical infrastructure, mitigate flood risk, and improve community resilience

“To foster the rebuilding of more resilient neighborhoods and communities, HUD strongly encourages grantees to consider sustainable rebuilding scenarios such as the use of different development patterns, infill development and its reuse, alternative neighborhood designs, and the use of green infrastructure.”



www.sustainablecommunities.gov

New York Rising Community Reconstruction Plans (CDBG-DR)



<http://stormrecovery.ny.gov/community-reconstruction-program>

New York Rising Community Reconstruction Plans Town of Blooming Grove, Orange County

The Town of Blooming Grove, with participation from the Village of South Blooming Grove, formed a 40.3 square mile planning area focused on identifying flood mitigation and community resiliency activities. The Town of Blooming Grove NYRCR Plan identifies the most critical needs and impacts from recent major storms, and highlights potential solutions to bolster future resiliency, increase safety and quality of life, and inject incentives for economic growth.



New York Rising Community Reconstruction Plans

Town of Blooming Grove, Orange County

The Committee identified five strategies in its NYRCR Plan, around which potential projects and resiliency actions would center. The following strategies resulted in Proposed and Featured Projects, along with Additional Resiliency Recommendations. These collectively remediate, mitigate, rebuild, and promote a resilient Town of Blooming Grove.

- STRATEGY 1: Reduce the impact of riverine flooding on the built environment, including critical facilities, infrastructure, businesses, and housing.
- STRATEGY 2: Improve stormwater management and drainage systems throughout the Town to decrease risk for homes, businesses, and residents.
- STRATEGY 3: Improve upon existing capabilities for emergency preparedness, response, sheltering, and communication.
- STRATEGY 4: Preserve, protect, and enhance the Town's natural, recreational, and cultural resources, and restore natural floodplain capabilities.
- STRATEGY 5: Assist Town residents, officials, and business owners in becoming better protected from future flood damages through education, programming, outreach, and policy initiatives.

TOWN OF BLOOMING GROVE NYRCR PLAN							
Town of Blooming Grove NYRCR Plan Projects By Strategy	Proposed Project	Featured Project	Strategy 1	Strategy 2	Strategy 3	Strategy 4	Strategy 5
Additional Hydrologic (Flood Routing), Hydraulic, and Stormwater Analysis	X		X	X	X	X	X
Detailed Inspection Program and Investment Prioritization Protocol	X		X	X			
Install Natural Gas or Solar Back-up Power for Critical Facilities and Infrastructure	X				X		
Mountain Lodge Drainage Improvements and Flood Damage Reduction	X		X	X	X	X	X
Strategic Critical Facility Flood Proofing and Structural Mitigation Program	X		X		X		
Update Local Codes and Ordinances	X		X	X		X	
Vulnerable Populations and Community Emergency Alert, Warning and Support	X				X		X
Barnes Road Levee		X	X				
Community Rating System Participation		X	X				X
Update the Comprehensive Emergency Management Plan and Develop Hazard and Operational Specific Annexes		X			X		X

New York Rising Community Reconstruction Plans

Town of Blooming Grove, Orange County

STRATEGY 2:

Improve stormwater management and drainage systems throughout the Town to decrease risk for homes, businesses, and residents.

Project Name	Short Project Description	Estimated Cost	Proposed or Featured Project
Additional Hydrologic (Flood Routing), Hydraulic, and Stormwater Analysis	Conduct a comprehensive study of all local waterways, lakes, and dams affecting flood conditions in the Plan Area. Complete additional riverine and overland (stormwater) hydraulic analyses to provide additional information and recommendations to serve as a resource in the planning and development of further actions to reduce the extent and severity of flooding throughout the Town.	\$500,000 for the study; \$1,000,000 for implementation	Proposed
Detailed Inspection Program and Investment Prioritization Protocol	This project seeks a holistic, sustainable approach to increase transportation system resiliency towards future storms and to address repetitive failures on vulnerable roadway segments throughout the Plan Area. After fully evaluating the components of the existing transportation network in the Town and by utilizing the findings of the Committee-proposed Additional Hydrologic (Flood Routing), Hydraulic, and Stormwater Analysis Project, the Committee recommended the funding and implementation of a detailed inspection program and investment prioritization protocol for Town-owned bridges and culverts.	\$500,000 to develop the protocol; \$1,000,000 for implementation	Proposed
Mountain Lodge Drainage Improvements and Flood Damage Reduction	This project will provide a series of standard plans and detailed drawings for repairing and/or upgrading existing degraded stormwater ditches. It will then provide funds to implement a revolving loan, grant, or cost-share program to help low-income residents of Mountain Lodge Park implement the improvements on a property-by-property basis. In addition to providing standard plans directly, this project would also provide outreach and education to homeowners through the Homeowners Association to assist in the implementation of the plans.	\$300,000	Proposed
Update Local Codes and Ordinances	This project would include a comprehensive review of the zoning and subdivision regulations to identify areas of improvement that would enhance the Community's ability to be more resilient to future storm events and would address the feasibility related to code changes.	\$80,000	Proposed

New York Rising Community Reconstruction Plans Town of Blooming Grove, Orange County

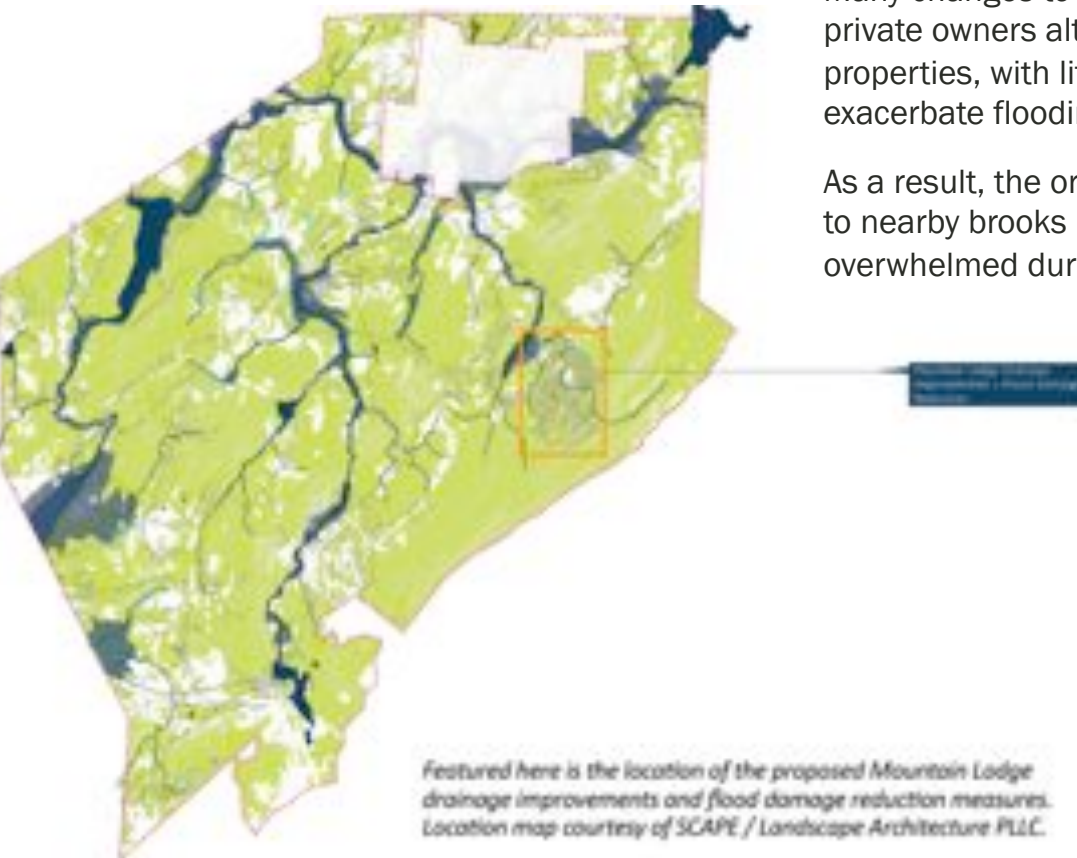
Mountain Lodge Drainage Improvements and Flood Damage Reduction

Project Background:

Mountain Lodge Park was originally built on the western slope of Schunemunk Mountain as summer home residences with natural drainage systems of mostly grass-lined swales and culverts. Approximately 800 homes exist in this area.

Many changes to the drainage patterns have occurred over the years as private owners altered culverts and open swales on individual properties, with little understanding of how these changes can exacerbate flooding.

As a result, the original open trenches built to divert stormwater runoff to nearby brooks have significantly reduced capacity and are often overwhelmed during storms.



Block and culvert used to divert runoff to nearby brook on Talmadge Trail North. Photo is courtesy of Tetra Tech, Inc.



The new drainage between properties on Talmadge Trail North. Photo is courtesy of Tetra Tech, Inc.

New York Rising Community Reconstruction Plans

Town of Blooming Grove, Orange County

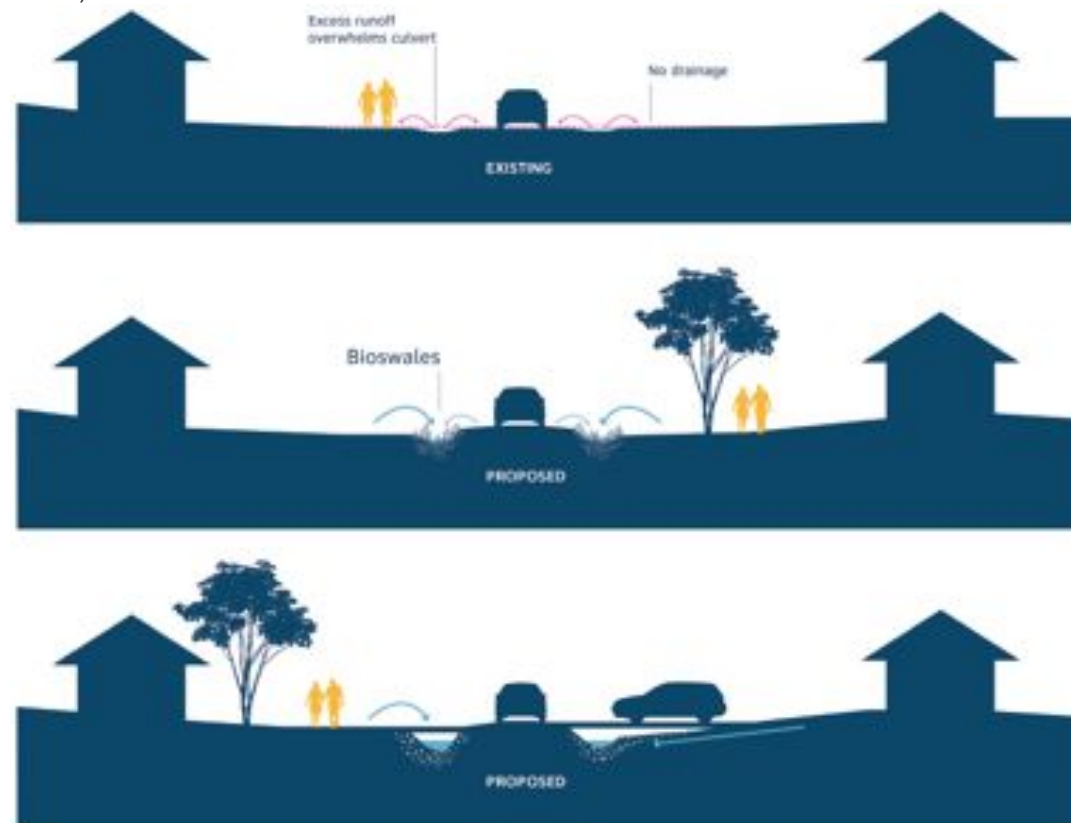
Mountain Lodge Drainage Improvements and Flood Damage Reduction

Proposed Project: To be implemented in two phases:

The first part would consist of providing a series of standard plans and detailed drawings for repairing and/or upgrading existing degraded stormwater ditches. This portion of the project could be implemented by the home owners directly or the Mountain Lodge Park Glenwood Hills Residential Association (Homeowners Association).

This section of the project also includes a set of standard plans designed for implementation by individual owners to replace the historic drainage swales and improve overland flow conditions. Plans would detail either the re-establishment of the existing vegetated swales or a piped alternative, if the current land use does not allow for an open swale. Additional standard plans would be made available to address road crossings over the major drainages within the Mountain Lodge Park and Glenwood Hills communities. The Community would use these standard plans proactively to improve flow routing and accessibility during large storm events.

The second portion of the project focuses on outreach and education to Mountain Lodge Park homeowners through the Homeowners Association to assist in the implementation of the plans. Part of the outreach could include the creation of a funding pool to implement a revolving loan, grant, or cost-share program to assist the low-income residents of Mountain Lodge Park with the costs of improvements.



Wallkill, NY – Stream Daylighting

- Extensive flooding within downtown area impacted travel along Route 211
- An open channel section between two culverts is constrained by an athletic field on one side and a commercial area on the other
- Daylighting sections of the stream on the floodplain in unused parking areas can improve



Wallkill, NY – Stream Daylighting

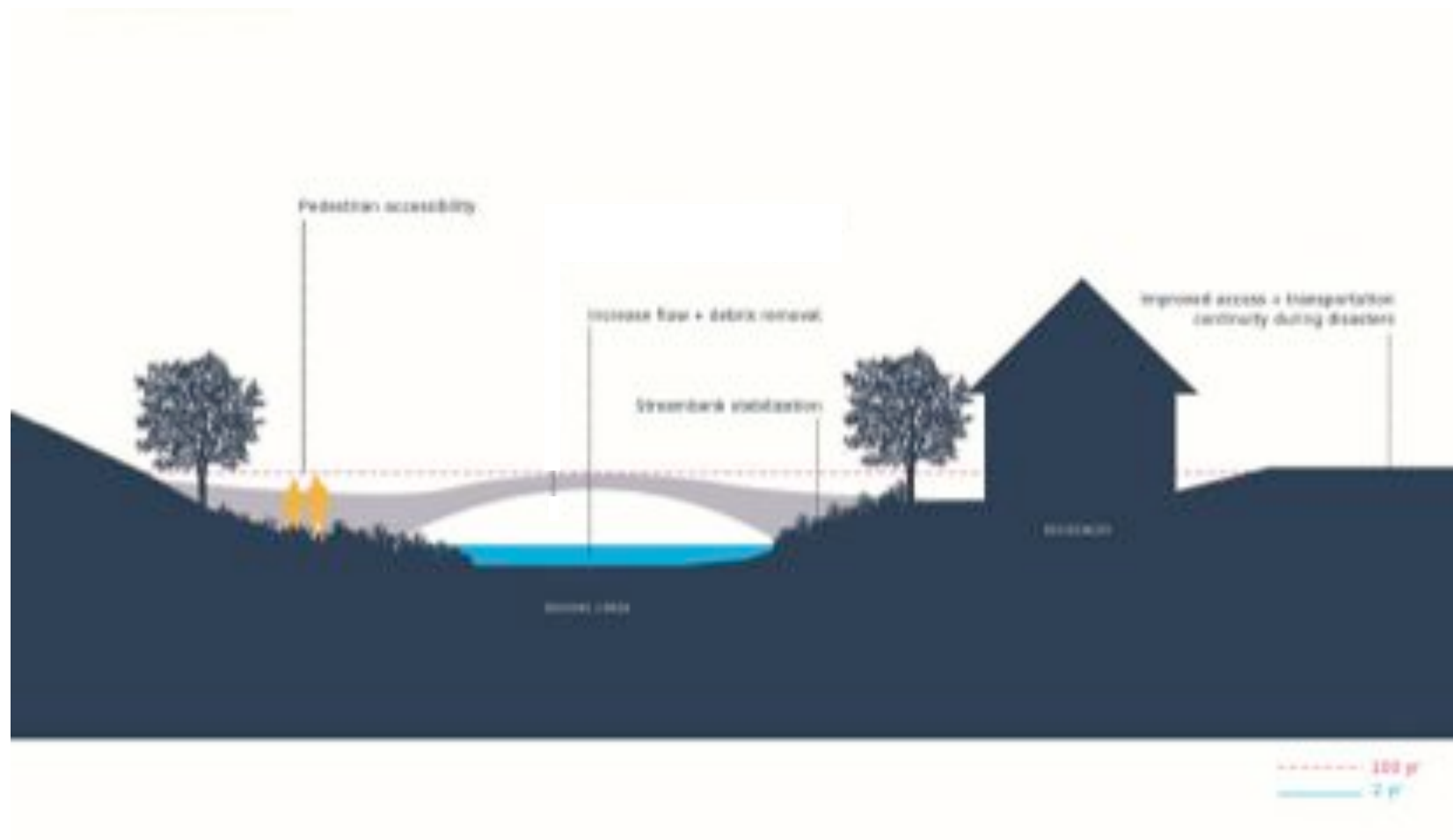


Wallkill, NY – Winding Brook Floodplain Improvements

- Pinched riparian areas and undersized culverts create localized flooding during storm events
- Expanding the floodplain and increasing culvert sizes at road crossings would improve storage and flow



Wallkill, NY – Winding Brook Floodplain Improvements

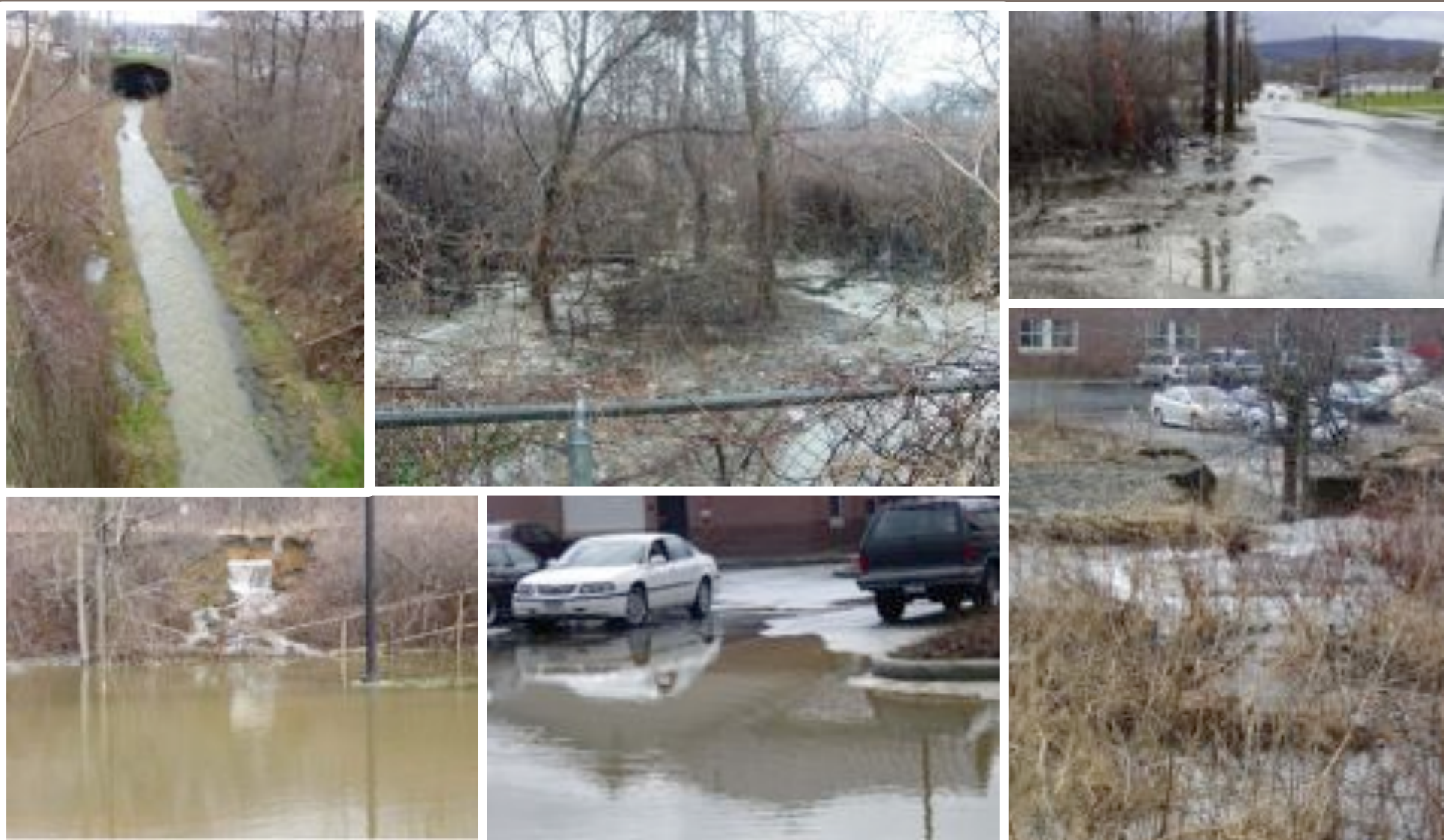


Wallkill, NY – Winding Brook Floodplain Improvements





Route 9 Corridor and Joint Water Pollution Control Plant - City and Town of Poughkeepsie, Dutchess County



Integration - Related Local Plans and Programs

- **Comprehensive/Master Planning:**
 - Should incorporate stormwater management and natural hazard risk reduction.
 - Town of Southold (Suffolk, NY): Updating its comprehensive plan and has included a draft Natural Hazards chapter developed through collaboration with NOAA Coastal Services Center, the Association of State Floodplain Managers (ASFPM) and the Nature Conservancy. Per NOAA's Digital Coast website:
 - "The result is strengthened connections between Southold's comprehensive plan and the town's hazards and climate resilience strategy. These connections and opportunities are being documented in a comprehensive plan that is focusing more attention on future, as well as present, hazard mitigation strategies."
- **Local Waterfront Redevelopment Plans (LWRPs)**
 - An approved LWRP reflects community consensus and provides a clear direction for appropriate future development. It establishes a long-term partnership among local government, community-based organizations, and the State.
 - Funding to advance preparation, refinement, or implementation of Local Waterfront Revitalization Programs is available under Title 11 of the New York State Environmental Protection Fund Local Waterfront Revitalization Program (EPF LWRP) among other sources.
- **Open-Space Plans:** Can include funding opportunities (e.g. Community Preservation Funds): Tax on real property transactions for the specific purpose of funding the acquisition and protection of open space. Can be used for:
 - Passive stormwater management, riparian buffers, etc.
 - Acquisitions of flood-vulnerable private property – providing the local match to Federal funds.
- Capital Plans
- Redevelopment Plans
- Post-Disaster Recovery Plans

Technical and Administrative Resources – Federal and State

New York State – Department of Environmental Conservation (NYS DEC):

- Hudson River Estuary Program - <http://www.dec.ny.gov/lands/4920.html>
 - Focuses on the tidal Hudson and its adjacent watershed to...ensure clean water...and adapt to climate change.
 - Developed through significant community participation...achieves real progress through extensive outreach, coordination with state and federal agencies and public-private partnerships. This collaborative approach includes:
 - Grants and restoration projects
 - Education, research and training
 - Natural resource conservation and protection
 - Community planning assistance
- Green Innovation Grants Program (GIGP): Administered through the DEC and the NYS Environmental Facilities Corporation (NYS EFC), to support green infrastructure projects that improve stormwater quality and demonstrate innovative design across the state.
- Water Quality Improvement Grant Program (WQIP): Through the Regional Economic Development Council (REDC) initiative, DEC has made up to \$35 million available to support water quality improvements through Round 12 of the Water Quality Improvement Project (WQIP) Grant Program. Funding is available for municipalities, soil and water conservation districts and non-profit organizations to address
 - Nonagricultural Nonpoint Source Abatement and Control (NPS)
 - Municipal Wastewater Treatment (WWT)
 - Aquatic Habitat Restoration (AHR)
 - Municipal Separate Storm Sewer Systems (MS4)

Technical and Administrative Resources – Federal and State

USDA Natural Resources Conservation Service (NRCS) – Emergency Watershed Protection (EWP) Program: In response to damages after natural disasters, the EWP is designed for installation of recovery measures. Activities include providing financial and technical assistance to:

- Remove debris from stream channels, road culverts, and bridges
- Reshape and protect eroded banks
- Correct damaged drainage facilities
- Establish cover on critically eroding lands

New York City – Department of Environmental Protection (NYC DEP):

- The New York City Watershed Regulations require stringent management of the effects of stormwater that go beyond federal or State requirements. Typical stormwater control projects include: improved collection and conveyance systems that deliver stormwater to a point of treatment; primary screening to remove trash and large solids, followed by inactive pool sedimentation; oil separation; biological treatment; and filtration systems.
- To assist businesses and communities with meeting New York City regulatory requirements that exceed State or federal standards, DEP provides funding to the Catskill Watershed Corporation (CWC) to administer and implement a number of stormwater management programs in the Catskill/Delaware (West of Hudson) Watershed.

Technical and Administrative Resources – County and Regional

County Planning Departments: In addition to fulfilling County-level planning and land-use requirements, typically offers local planning support and resources that extend and build local capabilities. Examples:

- Westchester County: Enacted a Stormwater Management Law in 2011 requiring the preparation of “reconnaissance” plans that assess current conditions and identify projects to address flooding and flood damage throughout Westchester. A funding assistance program was also established to support local mitigation projects to address flood vulnerabilities identified within the “reconnaissance” plans covering the six major drainage basins.
- Morris County (NJ): Funded through county-wide open space funding, the County works with communities to develop Floodplain Acquisition Plans to directly support the acquisition of flood vulnerable properties and return the land to natural and beneficial uses.

County Soil and Water Conservation Districts: “Conservation District focuses on natural resource problems and solutions. The District provides technical assistance as well as education on soil, water and related natural resources. Municipalities, farmers and landowners use this information in making proper land use decisions.” DCSWCD website

- Westchester County SWCD: Hosts workshops annually covering stormwater management issues, including measures to reduce stormwater volume and protect property. The workshops attract local municipal officials and staff as well as professional designers and engineers.

Cornell Cooperative Extensions:

- Cornell Cooperative Extension Dutchess County (CCEDC): The CCEDC Environment Program helps to build the long term capacity of watershed organizations by developing and implementing stakeholder initiatives, facilitating meetings, watershed surveys, cleanup projects, and stream assessments, providing GIS tools and maps, and working on education and outreach.

Technical and Administrative Resources – Regional

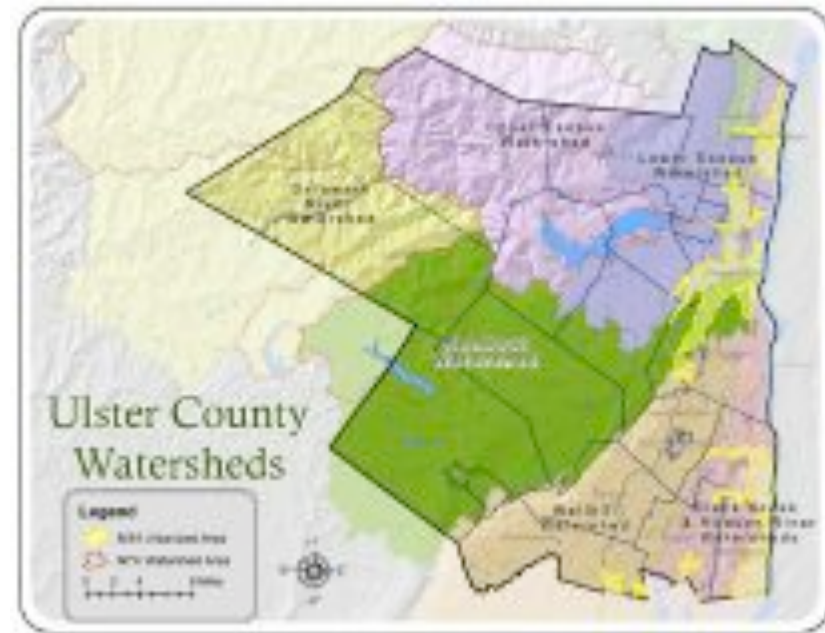
Wappinger Creek Watershed Intermunicipal Council (WIC) – Dutchess County:

- The mission of the WIC is to cooperatively address common issues that may affect the quality of the watershed. Representatives from the 13 communities in the watershed work collaboratively with the Cornell Cooperative Extension (CCEDC), DCSWCD and other organizations.
- Though the Housatonic Valley Association (HVA) - working towards setting up a similar organization as the WIC to support the Ten-Mile River Watershed.

Other Watershed Support Groups and Agencies:

- Rondout Creek Watershed Council
- Sparkill Creek Watershed Alliance
- New England Interstate Water Pollution
Control Commission (NEIWPCC)

Stormwater Districts: Prevalent in the upper mid-west,
not as common in the northeast.



National Flood Insurance Program – General

- Federal program that provides flood insurance to participating communities.
- Based on an agreement between local communities and the Federal Government that:
 - A community will adopt and enforce a floodplain management ordinance.
 - The Federal Government will make flood insurance available within the community as a financial protection against flood losses.
- Private insurers write the policies based on an agreement with the federal Government

National Flood Insurance Program – Local Roles and Responsibilities

The Community Role:

- Issuing or denying floodplain development/building permits.
- Inspecting all development to assure compliance with the local regulations.
- Maintaining records of floodplain development.
- Assisting in the preparation and revision of flood maps.
- Assisting residents in obtaining information on flood hazards, map data, flood insurance and proper construction measures.



National Flood Insurance Program – Regional Policy Statistics

County Name	Policies in Force	Insurance In-Force Whole \$	Written Premium In-Force
Albany County	992	\$214,716,000	\$1,158,092
New York City	56,939	\$14,896,232,600	\$55,979,466
Columbia County	318	\$77,687,800	\$348,072
Dutchess County	1,859	\$500,729,300	\$1,771,394
Greene County	600	\$123,022,000	\$625,907
Nassau County	51,179	\$14,435,433,800	\$57,022,897
Orange County	1,966	\$464,785,200	\$2,111,770
Putnam County	425	\$115,743,900	\$369,831
Rockland County	2,159	\$546,669,500	\$1,909,813
Suffolk County	38,986	\$11,369,181,600	\$46,582,943
Ulster County	1,350	\$317,537,200	\$1,659,544
Westchester County	7,864	\$2,261,981,200	\$9,906,358

Policy statistics as of July 31, 2015

National Flood Insurance Program – National Policy and Loss Statistics

NFIP Policies and Losses (1978 – 8/31/2014)

Rank	State	# of Policies	# of Claims
1	Florida	1,996,682	244,433
2	Texas	604,627	242,017
3	Louisiana	472,626	412,325
4	California	238,931	45,010
5	New Jersey	238,595	188,188
6	South Carolina	191,581	28,151
7	New York	190,206	164,397
8	North Carolina	135,829	75,563
9	Virginia	112,734	43,831
10	Georgia	93,348	16,222
11	Maryland	72,349	17,724

National Flood Insurance Program - Reform

The NFIP is over \$25 billion in debt to the U.S. Treasury, perhaps as a result of:

- Inaccurate consumer model used as the basis – Assumed that a higher level of lower-risk policies would subsidize the higher-risk policies
- Statistically “aberrant” flood events over the last decade (e.g. Hurricane Katrina, Hurricane Sandy, 2015 South Carolina flooding).

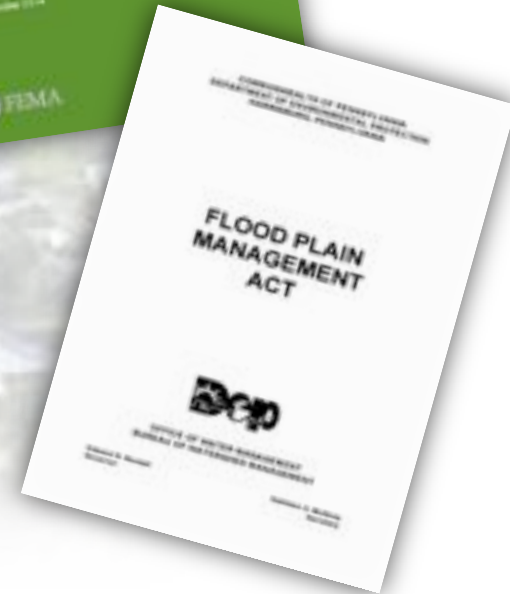
Congress needed to act:

- Biggert-Watters 2012 (BW-12) – Eliminates Subsidies and Grandfathering, starts the move to actuarial rates over time.
- Homeowner Flood Insurance Affordability Act – Generally phases the implementation of BW-12 over time.

Rate increases are happening now, and will continue to increase at about 18% annually, possibly until actuarial rates are realized.

NFIP - Community Rating System (CRS) - Basics

- Part of the National Flood Insurance Program (NFIP)
- Provides for reduced flood insurance premiums where there is better floodplain management.
- Promotes floodplain management practices above and beyond the minimum NFIP requirements.
- Administered by the Insurance Services Office (ISO) – Similar to BCEGS and Public Protection



NFIP - Community Rating System (CRS)

CRS Features

- 19 creditable activities in four categories
- Can get credit from 94 elements
- Flood insurance discounts ranging from 5-45%

CRS Class	Credit Points (cT)	Premium Reduction	
		In SFHA	Outside SFHA
1	4,500+	45%	10%
2	4,000 -4,499	40 %	10%
3	3,500 -3,999	35 %	10%
4	3,000 -3,499	30 %	10%
5	2,500 -2,999	25 %	10%
6	2,000 -2,499	20 %	10%
7	1,500 -1,999	15 %	5%
8	1,000 -1,499	10 %	5%
9	500 -999	5 %	5%
10	0-499	0	0

Series 300 Public Information	Series 400 Mapping and Regulations	Series 500 Flood Damage Reduction	Series 600 Flood Preparedness
Elevation Certificates Map Information Service Outreach Projects Hazard Disclosure Flood Protection Information Flood Protection Assistance Flood Insurance Promotion	Floodplain Mapping Open Space Preservation Higher Regulatory Standards Flood Data Maintenance Stormwater Management	Floodplain Mgt. Planning Acquisition and Relocation Flood Protection Drainage System Maintenance	Flood Warning Program Levee Safety Dam Safety

NFIP - Community Rating System (CRS)

The 300 Series

Public Information Activities

- This series credits programs that advise people about the flood hazard, encourage the purchase of flood insurance, and provide information about ways to reduce flood damage. These activities also generate data needed by insurance agents for accurate flood insurance rating. They generally serve all members of the community.
 - 7 Activities
 - 29 creditable elements

NFIP - Community Rating System (CRS)

Activity 330 - Outreach Projects

Maximum credit = 350 points

- The **OBJECTIVE** of this activity is to provide the public with information needed to increase flood hazard awareness and to motivate actions to reduce flood damage, encourage flood insurance coverage, and protect the natural functions of floodplains.
- To receive credit under this activity, a community may do one or more of the following types of projects:
 - Designing and carrying out public outreach projects.
 - Having a pre-flood plan for public information activities ready for the next flood. A pre-flood plan is a collection of outreach projects prepared in advance, but not delivered until a flood occurs.
 - Implementing an ongoing public information effort to design and transmit the messages that the community determines are most important to its flood safety and the protection of its floodplains' natural functions. This public information plan is reviewed and updated annually.
 - Having outreach projects that are conducted or endorsed by stakeholder organizations.

NFIP - Community Rating System (CRS)

Activity 420 - Open Space Preservation

Maximum credit = 2020 points

- The **OBJECTIVES** of this activity are to:
 - Prevent flood damage by keeping flood-prone lands free of development.
 - Protect and enhance the natural functions of floodplains.
 - Credit is based on impact adjustments based on the % of SFHA in an open space use
 - Credit can be increased by a growth rate adjustment
 - Can gain up to 1.5 times the credit points for mapping and regulating areas outside FEMA's SFHA
- Open space preservation (OSP): Up to 1,450 points
 - Deed restrictions (DR): Up to 50 points
 - Natural functions open space (NFOS): Up to 350 points
 - Special flood related hazards open space (SHOS): Up to 50 points
 - Open space incentives (OSI): Up to 250 points for local requirements
 - Low Density Zoning (LZ): up to 600 points
 - Natural shoreline protection (NSP): Up to 120 points

NFIP - Community Rating System (CRS)

Activity 450 - Stormwater Management

Maximum credit = 755 points

- The **OBJECTIVE** of this activity is to prevent future development from increasing flood hazards to existing development and to maintain and improve water quality.
- Activity includes 4 creditable elements:
 - Stormwater management regulations (SMR): Up to 380 points. SMR credit is the sum of four sub-elements:
 - Size of development regulated (SZ): Up to 110 points.
 - Design storms used in regulations (DS): Up to 225 points.
 - Low-impact development (LID): Up to 25 points.
 - Public maintenance of required facilities (PUB): Up to 20 points.
 - Watershed master plan (WMP): Up to 315 points
 - Erosion and sedimentation control regulations (ESC): Up to 40 points
 - Water quality regulations (WQ): 20 points
- Credit is impact adjust based on watershed
- Credit can be increased by a growth rate adjustment

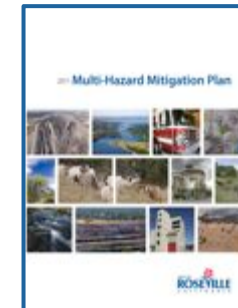
NFIP - Community Rating System (CRS)

Activity 510 - Floodplain Management Planning

Maximum Credit = 622 points

- The **OBJECTIVE** of this activity is to credit the production of an overall strategy of programs, projects, and measures that will reduce the adverse impact of the hazard on the community and help meet other community needs.
- Credit can be impact adjusted, if plan does not cover 100% of the floodplain.
- Requires annual progress reporting
- Must get some credit on each of the 10 steps to get any credit for this activity

- 3 creditable elements :
- Floodplain Management Planning (FMP)= 382 points
- Repetitive Loss Area Analysis (RLAA) = 140 Points
- Natural Functions Plan (NFP) = 100 Points



NFIP - Community Rating System

Activity 540 - *Drainage System Maintenance*

Maximum credit = 570
Points

- The **OBJECTIVE** of this activity is to ensure that the community keeps its channels and storage basins clear of debris so that their flood-carrying and storage capacity are maintained.
- Credit is Impact Adjusted

- Channel debris removal (CDR): Up to 200 points
- Problem site maintenance (PSM): Up to 50 points
- Capital improvement program (CIP): Up to 70 points
- Stream dumping regulations (SDR): Up to 30 points
- Storage basin maintenance (SBM): Up to 120 points
- Coastal erosion protection maintenance (EPM): Up to 100 points

NFIP - Community Rating System (CRS)



<http://crsresources.org/>

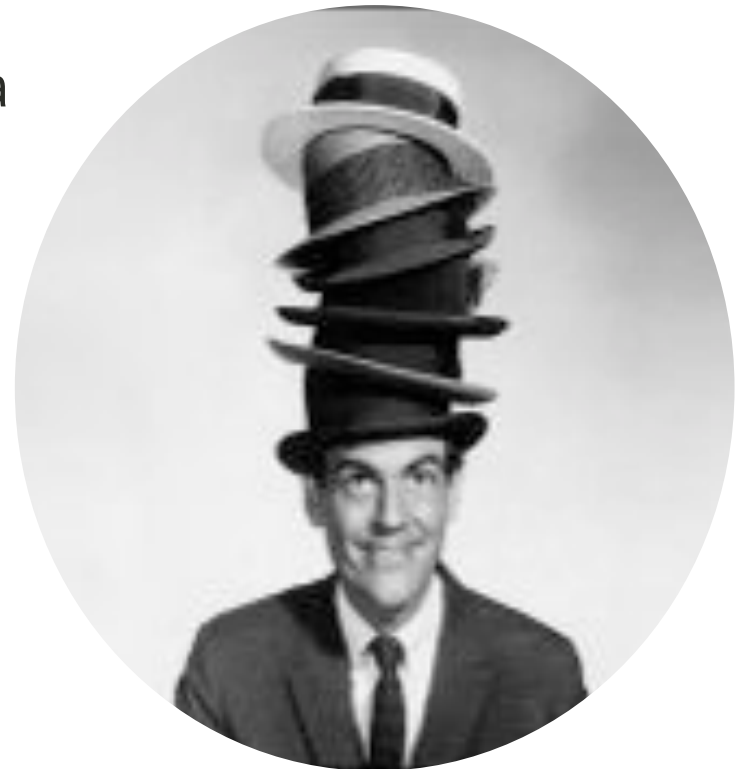
In Closing

The Silver Lining...

...by having to wear many hats we have a better understanding of how these burdens and responsibilities inter-relate, and how they can support each other.

Recognize the need to work collaboratively to solve problems and build programs that are efficient, effective, mutually-supportive and sustainable.

Leverage Resources!



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Jonathan Raser, CFM | Tetra Tech, Inc. | (973) 630-8042

jonathan.raser@tetrattech.com