9.1 DUTCHESS COUNTY

This section presents the jurisdictional annex for Dutchess County.

9.1.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan's primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
William H. Beale; Asst. Emergency Response Coordinator 392 Creek Road, Poughkeepsie, NY (845) 486-2082 wbeale@dutchessny.gov	Dana Smith; Emergency Response Coordinator 392 Creek Road, Poughkeepsie, NY (845) 486-2080 dsmith@dutchessny.gov

9.1.2 County Profile

Please refer to Section 4, Volume I of this Plan for details on Dutchess County's population, location, climate, history, growth and development.

9.1.3 Natural Hazard Event History Specific to Dutchess County

Dutchess County has a history of natural hazard events as detailed in Volume I, Section 5.0 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities.

9.1.4 Natural Hazard Risk/Vulnerability Risk Ranking

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant's vulnerability to the identified hazards. The risk ranking methodology is presented in Section 5.3. However, the County had the opportunity to adjust the final ranking based on feedback. The following summarizes the hazard vulnerabilities and their ranking in Dutchess County. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

Table 9.1-1. Hazard Risk/Vulnerability Risk Ranking

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard [a, c]	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking [b]
Coastal Storm	100-year MRP: $56,701,424.00 500-year MRP: 374746634 Annualized: $4,488,919.00	Frequent	48	High
Drought	Damage estimate not available	Frequent	42	High
Earthquake	100-Year GBS: $1,076,173 500-Year GBS: $34,628,712 2,500-Year GBS: $396,456,675	Occasional	28	Medium
Extreme Temperature	Damage estimate not available	Frequent	30	Medium
Flood	1% Annual Chance: $3,012,411,942	Frequent	36	High
Severe Storm	100-Year MRP: $56,701,424 500-year MRP: $374,746,634	Frequent	48	High

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard [a, c]		Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking [b]
	Annualized:	$4,488,919			
Winter Storm	1% GBS: 5% GBS:	$605,136,035 $3,025,680,175	Frequent	51	High
Wildfire	Estimated Value in the WUI:	$59,069,363,667	Frequent	48	High

Notes:
GBS = General building stock; MRP = Mean return period.

a. *The general building stock valuation is based on the custom inventory generated for the municipality and based on improved value.*
b. *High = Total hazard priority risk ranking score of 31 and above*
Medium = Total hazard priority risk ranking of 20-30+
Low = Total hazard risk ranking below 20
c. *Loss estimates for the severe storm and severe winter storm hazards are structural values only and do not include the estimated value of contents. The earthquake and hurricane wind hazards were evaluated by Census tract. The Census tracts do not exactly align with municipal boundaries; therefore, a total is reported for each Town inclusive of the Villages. Loss estimates for the flood and earthquake hazards represent both structure and contents. Potential flood loss estimates were generated using Hazus-MH 2.2 and the 2011 FEMA DFIRM for the 1-percent annual chance event. For the wildfire hazard, the improved value and estimated contents of buildings located within the identified hazard zones is provided.*

9.1.5 Capability Assessment

This section summarizes the following capabilities of the County. Refer to Section 6 (Mitigation Strategy – Capability Assessment) for additional details on County programs and capabilities.

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Education/Outreach and community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

Planning and Regulatory Capability

The table below summarizes the planning and regulatory tools that are available to Dutchess County.

Table 9.1-2. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Enforcement Authority	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Planning Capability		
General Plan or Comprehensive Plan	County and Local	County Plan available – no current plans to update
Capital Improvements Plan	County and Local	County maintains a 5-year plan
Habitat Conservation Plan	County and Local	"Greenway Connections"
Economic Development Plan	Local	
Emergency Response Plan	County and Local	County Comprehensive Emergency Management Plan (CEMP) updated every 5 years, last updated in 2015
Shoreline Management Plan	Federal, State, County and Local	Several municipalities have Local Waterfront Revitalization Plans (LWRP)
Post Disaster Recovery Plan	County	Included in 2015 CEMP
Growth Management	County and Local	Dutchess County (DC) Partnership for Manageable Growth
Floodplain Management/ Basin Plan	County and Local	2011 County HMP and this 2015 Countywide HMP Update

Tool / Program (code, ordinance, plan)	Enforcement Authority	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Storm Water Management Plan / Ordinance	Local	Through County and Municipal MS4 plans
Regulatory Capability		
Building Code	Local	Regulated at local and state levels.
Zoning Ordinance	Local	Municipal Code; Municipal Planning Boards and Zoning Boards of Appeal
Subdivision Ordinance	Local	Municipal Code; Municipal Planning Boards and Zoning Boards of Appeal
Site Plan Review Requirements	Local	Municipal Code; Municipal Planning Boards and Zoning Boards of Appeal County gets certain referrals through the 239 L&M Review process
Post Disaster Recovery Ordinance	Local	
Real Estate Disclosure req.	State and local	State mandated, locally enforced
General Comment		The Constitution of the State of New York is written in a fashion which provides local jurisdictions with home rule powers

Administrative and Technical Capabilities

The table below summarizes potential staff and personnel resources available to Dutchess County.

Table 9.1-3. Administrative and Technical Capabilities

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Department of Planning and Development (DCDPD)
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	DC Department of Public Works (DCDPW); DC Health Department (DCHD); DC Water and Wastewater Authority (DCWWA)
Planners or engineers with an understanding of natural hazards	Y	DCSWCD; DCDER; DCDPW
NFIP Floodplain Administrator	N	Per NYS Coordinator of NFIP Floodplain Mgr not applicable on County level as requirement and jurisdiction is with Towns and Villages
Surveyor(s)	Y	Contracted
Personnel skilled or trained in "GIS" applications	Y	DCDPD; DC Office of Central and Information Services (DC OCIS); DC Real Property Tax Service Agency (DC RPT), DCDER
Scientist familiar with natural hazards in the municipality.	Y	DCH; DCSWCD
Emergency Manager	Y	DCDER
Grant Writer(s)	Y	DCSWCD; DCDER
Staff with expertise or training in benefit/cost analysis	Y	DCDPW; DCDER

Fiscal Capability

Mitigation projects and initiatives are largely or entirely dependent on available funding. The table below summarizes financial resources available to Dutchess County.

Table 9.1-4. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community Development Block Grants (CDBG)	Yes; eligible but have not applied
Capital Improvements Project Funding	Yes; Bonding, County Capital Program, CHIPs
Authority to Levy Taxes for specific purposes	
User fees for water, sewer, gas or electric service	Yes – Through DCWWA
Impact Fees for homebuyers or developers of new development/homes	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Possible through DC Industrial Development Corporation (DC IDA)
Withhold public expenditures in hazard-prone areas	CDBG funds cannot fund projects in floodprone areas
Mitigation grant programs	Yes, the County has historically applied for mitigation grant funding (e.g. generators)
Other	

Education/Outreach and Community Classifications

The table below summarizes education/outreach programs the community participates in and the classifications for community program available to Dutchess County.

Table 9.1-5. Education/Outreach and Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	N/A	N/A	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	N/A	N/A	N/A
Public Protection (ISO Fire Protection Classes 1 to 10)	N/A	N/A	N/A
Storm Ready	NP – County continues to consider participation in the NOAA StormReady program	N/A	NP
Firewise	NP	N/A	NP
Disaster/Safety Programs in/for Schools	Yes	N/A	County participates in the Safe Schools program
Organizations with Mitigation Focus (advocacy group, non-government)	Yes	N/A	DC SWCD; MS4 Coordinating Committee; Wappingers Intermunicipal Council
Public Education Program/Outreach (through website, social media)	Yes	N/A	Such programs identified throughout this annex and plan
Public-Private Partnerships	Yes	N/A	Red Cross; Salvation Army; Resilience Committee

The classifications listed above relate to the community's ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community's

capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at http://www.isomitigation.com/ppc/0000/ppc0001.html
- The National Weather Service Storm Ready website at http://www.weather.gov/stormready/howto.htm
- The National Firewise Communities website at http://firewise.org/

Self-Assessment of Capability

The table below provides an approximate measure of the County's capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.1-6. Education/Outreach and Community Classifications

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability			X
Fiscal Capability		X	
Community Political Capability			X
Community Resiliency Capability		X	
Capability to Integrate Mitigation into County Processes and Activities.			X

Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

It is the intention of the County to incorporate hazard mitigation planning and natural hazard risk reduction as an integral component of the County's administrative, regulatory and operational framework. Such efforts which are now an ongoing part of County operations are identified in the Capability Assessment of Section 6, as well as in the completed mitigation initiatives identified in the following Section 9.1.6. In addition, the County identified specific integration activities that will be incorporated into procedures and are included in their updated mitigation strategy.

9.1.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

Past Mitigation Initiative Status

For the 2015 plan update, all previous county actions and their status are listed in the table below. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
Action 1. Public Education: Almost every single hazard can be mitigated with the education of the public. The New York State Emergency Management Office has available brochures on many of the natural hazards such as fire, hurricane, tornado and others. The more information the public has prior to an event, the better the response during and after the disaster for the responders. Dutchess County allocated funds for public education in the 2007 budget. This included television, radio and newspaper advertisements in preparing for disasters. There were also other public education items being planned for that year. The education of the public involves Emergency Management, Law Enforcement, Fire Departments, local utilities, American Red Cross, other county agencies and additional private companies that work with the public on a regular basis.					
See above.	County Emergency Management	In Progress	This is an ongoing program that is supported by a number of County departments and formats.	Include in 2015 HMP	A modified version of this initiative is being carried forward, combining the various public education and outreach initiatives in the 2010 strategy, and identify specific activities that will be undertaken to enhance the mitigation education and outreach program. Particularly this effort has been expanded through social media, and shall continue to be.
Action 2. There are numerous projects that need to be considered in order to prevent road closures and flooding issues. The projects that should be completed include stream maintenance, replacing culverts, and bank stabilization.	County Department of Public Works, County Planning Department, Dutchess Country Soil and Water Conservation District	In Progress	Examples of projects and programs completed or ongoing to date include: • Turkey Hill Culvert Replacement	Discontinue	This "generic" initiative is being replaced in the updated strategy with specific projects, *including those that are identified in the County capital plans.*
Action 3. Dutchess County operates radio systems from many different tower sites in different locations. There are incidents related to commercial power supply failures due to trees taking down elevated power lines. The project would involve clearing the trees and debris leading to the towers from the roadways in order for the utility lines to be less prone to damage.	County Emergency Management	No Progress	County does not own these towers, however the County could undertake tree management if funding were to be secured.	Discontinue	This initiative shall be replaced with an initiative to seek grant funding to support a tree management program addressing critical facilities and infrastructure with overhead power vulnerability in the County.

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
Action 4. Severe Storms: There are numerous county buildings that should be retrofitted with shatterproof, efficient windows and brought up to the most current building codes. They need to be constructed to latest New York State Building Codes, with emphasis on fire protection, fire retardant materials, and security enhancements. For new buildings to be constructed by the county, emphasis on higher levels of protection, security, and the use of disaster resistant materials will be stressed.	DPW Buildings Division	In Progress	Specific examples of progress to mitigate natural hazard risk to County critical facilities include: • County OEM – hazard-resistant glazing • Highway Department Building on 626 (new) was elevated above the Fallkill Creek floodplain.	Discontinue	This initiative is being discontinued in lieu of specific projects in the updated strategy to address hazard vulnerabilities at County-owned critical facilities.
Action 5. Improve security measures to new and existing buildings, including extra measures taken for certain buildings owned by the county such as barriers to reduce access to the buildings and other security measures.	County Sheriff's Office	In Progress	Examples of progress include: • County OEM – hazard-resistant glazing, access control, cameras, fencing • Sherriff's Office - hazard-resistant glazing, access control • D.A.'s Office	Include in 2015 HMP	A modified version of this initiative shall be included, identifying specific facilities and projects, to include: • Health and Transit • Family Court
Action 6. Promote Disaster-Resistant Development: Join the National Flood Insurance Program (for non-participating or suspended communities).	County Building Department, Planning Department, Emergency Management	No Progress	NFIP participation is a local function, not a County function. However the County can support local NFIP capability building.	Discontinue	This initiative shall be replaced with specific County-level initiatives to help build local floodplain management capabilities.
Action 7. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques by requiring a courtesy- review of draft plans by the County	Generally a municipal function, supported by County	In Progress	The Department of Planning (not Emergency Management) continues to provide an advisory role as local communities update their comprehensive land use plans, and will encourage these plans to include consideration of natural hazard risk and risk management.	Discontinue	The County's advisory function has been identified as an ongoing mitigation capability.

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
Emergency Management Agency.	Department of Planning				
Action 8. Explore the need for hazard zoning, high-risk hazard land use ordinances, subdivision regulations, and development density controls.	Generally a municipal function, supported by County Department of Planning	In Progress	This is an ongoing advisory function of the Department of Planning, however land use regulation is in the municipal purview.	Discontinue	The County's advisory function has been identified as an ongoing mitigation capability.
Action 9. Organize an annual event / fair for homeowners, builders and county and local jurisdictions that includes sale of NOAA weather radios, dissemination of information brochures about disasters and building retrofits, demonstration of "defensible-space" concept and fire resistant construction materials (for roofs/exterior finishes and inflammable coverings for openings like chimneys and attics) etc.	DC DES	In Progress	The County has continued to enhance and expand their emergency management related public outreach and education programs, including leveraging social media.	Discontinue	This initiative shall be replaced with a specific County-level public education and outreach initiative(s) that address multiple hazards.
Action 10. Develop a storm water management plan that includes subdivision regulations to control run-off; both for flood reduction and to minimize saturated soils on steep slopes that can cause landslides.	Not County Level	No Progress	No progress. This is performed at the municipal level; however DC SWCD does provide related support services to local municipalities.	Discontinue	
Action 11. Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters (Capacity Building): Expand	County GIS department	Complete	Complete, and ongoing. This is an ongoing capability of the County GIS department.	Discontinue	

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
and disseminate GIS and other hazard information on the internet.					
Action 12. Develop a plan and seek funding for backup electric and telecommunications systems in local government-owned critical facilities.	Local facility owners	In Progress	County continues to work with local municipalities to support backup power projects for critical facilities.	Discontinue	This is an ongoing capability and function within the County.
Action 13. Support and fund Community Emergency Response Team (CERT) programs that also include a mitigation component.	DC DER	In Progress	County continues to support CERT programs.	Discontinue	This is an ongoing capability and function within the County.
Action 14. Create a Hazard Information Center - a virtual and physical library that contains all technical studies, particularly natural resources.	Various	In Progress	Various departments compile and maintain relevant resource; for example, the DC OES library of Dam Emergency Action Plans.	Discontinue	This is an ongoing capability and function within the County.
Action 15. Implement public awareness, education, and outreach programs for all or targeted hazards.	Various	In Progress	The County has continued to enhance and expand their emergency management related public outreach and education programs, including leveraging social media.	Discontinue	This initiative shall be replaced with a specific County-level public education and outreach initiative(s) that address multiple hazards.
Action 16. Expand GIS to collect and develop more sophisticated hazard mapping. Use information to update plan. Ensure information will be available to the public and to relevant communities and agencies.	County GIS department	Complete	Complete, and ongoing. This is an ongoing capability of the County GIS department.	Discontinue	Specific initiatives to enhance risk-related datasets may be included in the updated strategy.
Action 17. Provide training for inspection and enforcement of adopted codes and ordinances.	SWCD; DC DES	In Progress	Ongoing. The County continues to support and facilitate training programs for subjects within their purview, however inspection and enforcement is outside of the County authority and purview.	Discontinue	The County has included an initiative to facilitate training sessions and workshops related to hazard mitigation, and recently held an NFIP and CRS workshop for plan participants.

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
Action 18. Reduce the possibility of damage and losses due to drought (Drought): Encourage citizens to implement water conservation measures by distributing water saving kits which include replacement shower heads, flow restrictors, and educational pamphlets which describe water saving techniques. Also encourage conservation by offering rebates for ultra-low-flow toilets.	Various	In Progress	In progress. While this is not considered a mitigation initiative, the County includes such information as part of their ongoing public education and outreach programs.	Discontinue	This initiative shall be replaced with a specific County-level public education and outreach initiative(s) that address multiple hazards.
Action 19. Drought: Modify rate structure to influence consumer water use including: increasing rates during summer months and imposing excess use charges during times of water shortage.		No Progress	No progress. This is not mitigation, and may have legal issues that will not be addressed at this time.	Discontinue	
Action 20. Drought: Reduce water use for landscaping by imposing mandatory water-use restrictions during times of water shortage. Also, develop a demonstration garden to exhibit water conservation techniques.		No Progress	No progress. This is not mitigation, and may have legal issues that will not be addressed at this time.	Discontinue	
Action 21. Drought: Publish and distribute pamphlets on water conservation techniques and drought management strategies.		In Progress	In progress. While this is not considered a mitigation initiative, the County includes such information as part of their ongoing public education and outreach programs.	Discontinue	This initiative shall be replaced with a specific County-level public education and outreach initiative(s) that address multiple hazards.
Action 22. Drought: Develop and adopt an emergency water allocation strategy to be		No Progress	No progress. This is not mitigation, and may have legal issues that will not be addressed at this time.	Discontinue	

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
implemented during severe drought.					
Action 23. Drought: Implement water metering and leak detection programs followed by water main repair/replacement to reduce losses.		In Progress	Ongoing.	Discontinue	The County continues to monitor and repair, replace or upgrade public water supply as needed.
Action 24. Drought: Encourage beneficial reuse of treated wastewater effluent through cooperative projects with dischargers, agriculture and other major water users to distribute or provide this alternative source of water.		No Progress	No progress. Such activities may be considered in times of extreme need, but this is not considered worth pursuing at this time.	Discontinue	
Action 25. Reduce the possibility of damage and losses due to flooding caused by floods, hurricanes, and nor casters (Floods, Hurricanes, Nor Easters): Join the National Flood Insurance Program (NFIP). As a participant, floodplains within the participating community will be identified and mapped. In return, the participating community will become eligible for flood insurance as long as the local governing body adopts and enforces a floodplain ordinance.		Complete	All municipalities participate in the NFIP.	Discontinue	
Action 26. Floods, Hurricanes, Nor Easters: Join the NFIP Community Rating System (CRS), under which		In Progress	County held an NFIP and CRS workshop in June for all plan participants, and will continue to promote participation in CRS.	Include in 2015 HMP	A modified version of this initiative will be included in the updated County strategy, focusing on education, outreach and capability

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
communities implementing actions that go beyond the specified NFIP minimum arc eligible for discounted flood insurance premiums.					building with respect to floodplain management.
Action 27. Floods, Hurricanes, Nor Easters: Obtain specialist training and certification (e.g. Certified Floodplain Manager) for local staff tasked with enforcement of relevant codes and flood-related ordinances.		In Progress	County held an NFIP and CRS workshop in June for all plan participants, and will continue to promote training and certification to support enhanced local floodplain management.	Include in 2015 HMP	A modified version of this initiative will be included in the updated County strategy, focusing on education, outreach and capability building with respect to floodplain management.
Action 28. Floods, Hurricanes, Nor Easters: Limit uses in floodways to those tolerant of occasional flooding, including but not limited to agriculture, outdoor recreation, and natural resource areas.		No Progress	The county has limited or no authority to regulate land use in other than County-owned land.	Discontinue	
Action 29. Floods, Hurricanes, Nor Easters: Develop a Countywide gauging and warning system for flash and riverine flooding.		In Progress	The County has no funding for such programs, and in fact has petitioned the Federal government to continue or reinstate funding for existing gauging stations.	Discontinue	
Action 30. Floods, Hurricanes, Nor Easters: Continue to implement best management practices for floodplain areas.		In Progress	This is an ongoing capability for the County.	Include in 2015 HMP	Modified version of this initiative will be included in the updated County strategy.
Action 31. Floods, Hurricanes, Nor Easters: Identify and document repetitively flooded properties. Explore mitigation opportunities for repetitively flooded properties, and if necessary, carry out acquisition, relocation, elevation, and flood-proofing		In Progress	This is performed at the municipal level, and most communities have included a similar initiative. The County will support such efforts as appropriate, and within their legal authority.	Discontinue	

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
measures to protect these properties.					
Action 32. Floods, Hurricanes, Nor Easters: Identify locations/structures suitable for construction of floodwalls and other barriers such as raised roads.		In Progress	Ongoing.	Discontinue	This generic initiative has been replaced with specific projects that address these objectives.
Action 33. Floods, Hurricanes, Nor Easters: Conduct a routine stream maintenance program (for currently non-participating communities) and seek financial assistance to clean out stream segments with heavy sediment deposits.		In Progress	Ongoing.	Discontinue	DC SWCD continues to support local stream maintenance and channel rehabilitation programs.
Action 34. Floods, Hurricanes, Nor Easters: Develop specific mitigation solutions for flood-prone roadways and intersections. This can include, but is not limited to, actions such as culvert upgrades, drainage improvements, road raisings, etc.) Develop a work plan for when sites will be surveyed and what role can the local government play in selection and implementation of mitigation activities (e.g. any monetary or contextual support through the local capital improvement plan),		In Progress	Ongoing.	Discontinue	This generic initiative has been replaced with specific projects that address these objectives.
Action 35. Floods, Hurricanes, Nor Easters: Implement wetlands development		In Progress	The County continues to enforce related regulations within their authority, and encourage local enforcement of such regulations.	Discontinue	

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
regulations and restoration programs.					
Action 36. Floods, Hurricanes, Nor Easters: Implement identified stormwater recharge, rate or volume projects identified in Regional Stormwater Management Plans to decrease "flash" in streams during/after storm events.		In Progress	The County continues to incorporate stormwater Best Management Practices in relevant County projects.	Discontinue	
Action 37. Floods, Hurricanes, Nor Easters: Implement and enforce open space preservation programs.		In Progress	The County continues support open space preservation programs and objectives as applicable, and when opportunities are available.	Discontinue	
Action 38. Floods, Hurricanes, Nor Easters: Implement specific actions to enhance/improve participation in/compliance with National Flood Insurance Program (NFIP).		In Progress	County held an NFIP and CRS workshop in June for all plan participants, and will continue to promote participation in CRS.	Include in 2015 HMP	A modified version of this initiative will be included in the updated County strategy, focusing on education, outreach and capability building with respect to floodplain management.
Action 39. Reduce the possibility of damage and losses due to earthquakes (Earthquakes): Retrofit/Reconstruct old critical facilities.		In Progress	The County continues to upgrade or replace sub-standard critical facilities, however seismic risk has not been one of the deciding criteria for retrofit or replacement.	Discontinue	A modified version of this initiative has been included as part of a GIS-based critical facility inventory and risk assessment program that will need outside funding to implement.
Action 40. Earthquakes: Acquire dilapidated vulnerable structures.		Complete		Discontinue	
Action 41. Earthquakes: Public awareness through video/brochures about simple steps homeowners can take to mitigate damage.		In Progress	The County has continued to enhance and expand their emergency management related public outreach and education programs, including leveraging social media.	Discontinue	This initiative shall be replaced with a specific County-level public education and outreach initiative(s) that address multiple hazards.

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
Action 42. Earthquakes: Examine provisions for earthquake resistant retrofits for existing structures and infrastructure, paying particular attention to unreinforced masonry structures built prior to the adoption of building codes requiring earthquake resistant design for new construction.		In Progress	The County has continued to enhance and expand their emergency management related public outreach and education programs, including leveraging social media.	Discontinue	This initiative shall be replaced with a specific County-level public education and outreach initiative(s) that address multiple hazards.
Action 43. Earthquakes: Implement hillside and steep slope development regulations.	Municipal authority	No Progress	County has no authority.	Discontinue	
Action 44. Reduce the possibility of damage and losses due to lightning strikes (Lightning): Carry out inventory of compliance with existing local codes/standards, especially for critical facilities.	Critical facility owners	Complete	The County has implemented lightning protection measures on County critical facilities as determined necessary and/or supported by standard BMPs. NYS Building Code is used to regulate construction practices in Dutchess County.	Discontinue	
Action 45. Lightning: Adopt building safety codes such as National Fire Protection Association (NFPA) -780 Standard for the Installation of Lightning Protection Systems (1997).	Critical facility owners	Complete	The County has implemented lightning protection measures on County critical facilities as determined necessary and/or supported by standard BMPs. NYS Building Code is used to regulate construction practices in Dutchess County.	Discontinue	
Action 46. Lightning: Public awareness/outreach regarding use of ground outlets and surge protectors in homes and businesses.		In Progress	The County has continued to enhance and expand their emergency management related public outreach and education programs, including leveraging social media.	Discontinue	This initiative shall be replaced with a specific County-level public education and outreach initiative(s) that address multiple hazards.
Action 47. Reduce the possibility of damage and losses due to ice jams (Ice Jams): Implement monitoring		Complete	The County and municipalities are aware of critical areas vulnerable to ice-jamming, and monitor and attend as necessary.	Discontinue	This is an ongoing capability in the county.

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
and early warning measures at key locations					
Action 48. Ice Jams: Investment in ice-clearing/breaking equipment and appropriate training for county personnel.		Complete	The County has sufficient resources to address ice-jam risk throughout the county.	Discontinue	
Action 49. Ice Jams: Construction of ice control structures such as booms, tension weirs and sloped-block barriers.		No Progress	No need for such permanent, physical measures has been identified as appropriate throughout the County.	Discontinue	
Action 50. Reduce the possibility of damage and losses due to dam failures (Dam Failure): Enforce participation in/compliance with National and NYSDEC / NYSEMO Dam Safety Programs.	DC DER; SWCD; municipalities	Complete	The County and municipalities continue to comply with Federal and State dam safety programs, and have identified on-going or proposed projects to manage dam failure risk.	Discontinue	Updated County and municipal mitigation strategies includes actions related to managing dam failure risk.
Action 51. Dam Failure: Investigate sources of funding to assist private dam owners to complete required repairs/maintenance. Investigate low interest loans to owners and/or jurisdiction acting as guarantor of private owners' loans.	DC DER; SWCD; municipalities	Complete	The County and municipalities continue to comply with Federal and State dam safety programs, and have identified on-going or proposed projects to manage dam failure risk.	Discontinue	Updated County and municipal mitigation strategies includes actions related to managing dam failure risk.
Action 52. Dam Failure: Notify owners of property in dam break inundation areas of risks, implement restrictions for new development in these areas.	Municipal authority	In Progress	Notification is part of existing regulations; land-use restrictions are under municipal authority	Discontinue	

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
Action 53. Reduce the possibility of damage and losses due to wildfires (Wildfire): Wildfire: In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, develop detailed mapping of wildland/urban interface areas.	County GIS	Complete	This has also been performed within this plan update.	Discontinue	
Action 54. Wildfire: Develop inventory of addresses for route alerting during wildfire emergencies that require public warning and information.	DC DER; County GIS	Complete		Discontinue	This is an ongoing capability.
Action 55. Wildfire: In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, review local EOPs for possible wildfire components regarding Fire-Rescue, Alert Warning Communications, and Evacuation.	DC DER; SWCD	Complete		Discontinue	This is an ongoing capability.
Action 56. Wildfire: Implement and enforce open space preservation programs.		Complete	The State and County have ongoing open space preservation programs.	Discontinue	This is an ongoing capability.
Action 57. Wildfire: Prescribed burning for hazard reduction.		No Progress	Prescribed burning is outside of the County's capabilities and authority.	Discontinue	
Action 58. Wildfire: Initiate a public outreach program for homeowners.		In Progress	The County has continued to enhance and expand their emergency management related public outreach and education programs, including leveraging social media.	Discontinue	This initiative shall be replaced with a specific County-level public education and outreach initiative(s) that address multiple hazards.

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
Action 59. Wildfire: Retrofit buildings with fire resistant materials, especially roofing.	Critical facility owners	Complete	Critical facilities, as most structures within the County, have fire-resistant roofing.	Discontinue	
Action 60. Wildfire: Relocate structures (in particular critical facilities) out of hazard areas	Critical facility owners	No Progress	The County has no critical facilities sufficiently vulnerable to wildfire risk that would make this action cost-effective or necessary.	Discontinue	
Action 610. Wildfire: Community brush and debris removal and hazard fuels reduction.	Municipal authority	No Progress	Hazardous fuels reduction programs are not within County authority, and are not likely to be financially or legally viable.	Discontinue	
Action 62. Wildfire: Firewise landscaping in higher risk areas.		No Progress	County performs routine tree and vegetation management.	Discontinue	
Action 63. Wildfire: Mitigation for streets, highways, and roads that provide key fire access and fuel breaks.		In Progress	County performs routine tree and vegetation management.	Discontinue	This is an ongoing capability.
Action 64. Wildfire: Implement hillside and steep slope development regulations.	Municipal authority	No Progress	Not within County authority.	Discontinue	
Action 65. Reduce the possibility of damage and losses due to winter storms (Winter Storm): Promote (or purchase, for critical facilities) NOAA weather radios.		Complete	Emergency communication systems for County critical facilities and operations has been addressed, and is an ongoing process as technologies improve.	Discontinue	
Action 66. Winter Storm: Educate residents about driving in winter storms and handling winter-related health effects		In Progress	The County has continued to enhance and expand their emergency management related public outreach and education programs, including leveraging social media.	Discontinue	This initiative shall be replaced with a specific County-level public education and outreach initiative(s) that address multiple hazards.
Action 67. Winter Storm: Planting ice and windstorm-resistant trees and implementing landscaping		Complete	County public education and outreach programs provide links to appropriate technical assistance materials.	Discontinue	

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
practices to reduce tree-related hazards, public education to encourage these practices					
Action 68. Winter Storm: Bury or otherwise protect utility lines to avoid power outage due to winter storms (if risk is very high then only this action might be cost-effective)		In Progress	Undergrounding utilities occurs variously throughout the County when determined to be appropriate.	Discontinue	
Action 69. Reduce the possibility of damage and losses due to extreme temperatures (Extreme Temperatures): Develop and distribute outreach tools for homeowners and building permit applicants on protection of structures against cold weather damage and proper maintenance of heating/cooling systems.		Complete	County public education and outreach programs provide links to appropriate technical assistance materials.	Discontinue	
Action 70. Extreme Temperatures: Review existing emergency response plans for enhancement opportunities: work with social support agencies, homeowners associations and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities.	DC DER	Complete	The County has existing emergency management plans, working with various social services agencies and groups, to address this risk with a focus on vulnerable populations.	Discontinue	
Action 71. Reduce the possibility of damage and losses due to tornadoes and high winds caused by windstorms. hurricanes and	Municipal Authority	No Progress	County will not fund or subsidize this effort. Federal grants for funding safe rooms in this region is unlikely as it is not considered cost-effective. The County sheltering program addresses this risk.	Discontinue	

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
nor'easters (Tornadoes, High Winds): Adopt an ordinance to require safe rooms in mobile home parks					
Action 72. Tornadoes, High Winds: Provide low interest loans (or other form of financial assistance) for building safe rooms.		No Progress	County will not fund or subsidize this effort. Federal grants for funding safe rooms in this region is unlikely as it is not considered cost-effective. The County sheltering program addresses this risk.	Discontinue	
Action 73. Tornadoes, High Winds: Provide technical assistance for building safe rooms.		Complete	County public education and outreach programs provide links to appropriate technical assistance materials.	Discontinue	
Action 74. Tornadoes, High Winds: Adopt an ordinance to require hurricane clips on new construction.	Municipal Authority	No Progress	NYS Building Code is used to regulate construction practices in Dutchess County.	Discontinue	
Action 75. Tornadoes, High Winds: Install hurricane clips and wind shutters on existing development-particularly emergency facilities and shelters built before existing codes were adopted to offer some degree of wind protection.	Engineering	Complete	Hurricane clip and/or shutter retrofits not found to be cost-effective. Wind-resistant glazing has been specified and installed at certain critical facilities where it was found to be cost-effective.	Discontinue	
Action 76. Reduce the possibility of damages to emergency facilities from flooding, wind damage and wildfire damage: Conduct a study to determine the year-built and level of protection (flood, wind) for each emergency facility. On completion of the study, seek funding for mitigation projects for emergency facilities not	Owners of critical facilities	In Progress	Critical facility owners throughout the County assess their facilities vulnerability on a routine basis, including as through the hazard mitigation planning process. Vulnerable facilities have been identified previously and in this plan update.	Discontinue	The intent of this initiative has been meet through County and municipal mitigation projects to address vulnerable critical facilities.

Table 9.1-7. Past Mitigation Initiative Status

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step
currently designed for protection from flooding, high wind, or wildfire damage.					

Proposed Hazard Mitigation Initiatives for the Plan Update

The County participated in a mitigation action workshop in May 2015 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 'Selecting Appropriate Mitigation Measures for Floodprone Structures' (March 2007) and FEMA 'Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards' (January 2013).

Table 9.1-8 summarizes the comprehensive-range of specific mitigation initiatives the County would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as 'High', 'Medium', or 'Low.' The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.1-9 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.

Table 9.1-8. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
DPW-1	Fallkill Dam Safety Assessment and Upgrade/Rehabilitation Project: Complete structural and operational assessment of the Fallkill Dam (Class B) located adjacent to County Route 100 (Creek Road) in the Town of Poughkeepsie. Implement assessment recommendations as funding is secured. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year flood level or "worst case scenario". See Action Worksheet.											
	See above.	Existing	Flood, Severe Storm	1, 2	DCDPW	Reduced risk of dam failure with attended public and private property damage; potential life safety	$25K for assessment; rehabilitation and upgrading costs TBD based on assessment	Local budget for assessment; grants as available to implement assessment recommendations	Engineering consultant contract awarded; assessment to be done by Spring 2016	High – In progress	SIP	SP
DPW-2	CR 41 (Crum Elbow Road) Flooding mitigation – this section of county highway in Hyde Park is the main east/west artery in the Town of Hyde Park and is adjacent to the town's new public safety facility. Approximately 1500' of the road needs to be reconstructed and elevated out of the floodway. Flooding cuts this road off to the Public Safety building many times each year. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical transportation infrastructure to the 500-year flood level or "worst case scenario".											
	See above.	Existing	Flood, Severe Storm	1, 2, 5	DCDPW	High – Reduced road damage, loss of transportation services; potential life safety	High – $4.5MM	Local	Project is already designed and construction contract executed. Construction to start April 2016; finish est. in Oct. 2016	High – In progress	SIP	PP, ES
DPW-3	Back-Up Power for County Critical Facilities: Install backup power at the following County-owned critical facilities: • Dutchess County Office Building • Dutchess County Community and Family Services • Dutchess County Sheriff's Office • Dutchess County Mental Hygiene • Dutchess County Office of Central and Information Services • Dutchess County Farm and Home Center Emergency Shelter (See also DER-5) See Action Worksheet.											

Table 9.1-8. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	See above.	Existing	All Hazards resulting in loss of electricity	2, 6	DCDPW	High – Maintain critical facilities and services	High – Site Specific (all combined was several million)	FEMA grants (HMGP); County budgets for local match	Long term DOF – LOIs submitted to State/FEMA	Medium - DOF	SIP	PP, ES
DPW-4	County-Wide Stream Debris Removal and Channel Improvement Projects: Address repeated flooding problems at up to 12 locations throughout Dutchess County. County to identify project sites, and may identify specific projects for short-term implementation. 8 or 9 locations have been completed. See Action Worksheet.											
	See above.	N/A	Flood, Severe Storm	2, 4	DCDPW and SWCD; working with NYSDEC and municipalities	Reduced risk of overbank flooding, impacting property, structures and infrastructure	Medium (project specific)	Completed work has been funded locally. Grant funding was expected to support, but has not been provided to date.	Ongoing – 2016 for remaining identified sites	Medium	NSP	NR
DPW-5	Scour-Critical Bridge Improvements: Improve up to 8 bridges identified by NYSDOT as being scour-critical. This effort would involve installing scour countermeasures to reduce likelihood of bridge failure during extreme storm events. Implementation of these projects, from securing funding through project completion, shall be conducted to provide protection to this critical infrastructure to the 500-year flood level or "worst case scenario". These efforts will support the protection of emergency evacuation routes throughout the County.											
	See above.	Existing	Flood, Severe Storm	2	DCDPW	Reduced risk of damage to critical transportation infrastructure	High	Local, grants as available	Short – Next 3-4 years as funding is secured	Low	SIP	PP, SP
DER-1	Work with all municipalities to develop Memorandums of Understanding (MOU) or Memorandums of Agreement (MOA) for code enforcement personnel to be utilized County-wide (e.g. outside of their jurisdiction) post-disaster, to address such issues such as damage assessment, issuance of emergency building permits, inspections, and substantial damage determinations. This initiative is supported by DER-2 (below), designed to promote risk management and post-disaster recovery capabilities throughout the County.											
	See above.	N/A	All hazards	2, 3, 5, 7	DCDER, supported by all municipalities	High – Improved regional disaster recovery capabilities	Low	County Budget	Short – Funding not yet secured	Medium-High	LPR, EAP, EM*	PR, ES
DER-2	Build Local Floodplain Management and Disaster Recovery Capabilities: Facilitate Workshops and Seminars to build County and local capabilities in floodplain management, mitigation and disaster recovery: • NFIP, NFIP Reform and NFIP Community Rating System (CRS) – A workshop was held for all plan participants in July 2015 • Benefit-Cost Analysis (BCA) • Substantial Damage Estimating (SDE) – this will support County initiative DER-1 • NFIP Elevation Certificates (EC) • Certified Floodplain Manager (CFM) Training and Certification											

Table 9.1-8. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	See above.	Both	All hazards including climate change	1, 2, 3, 5	DCDER, as supported by NYS DHSES, FEMA and ISO; with participation of all municipalities and other County department and agencies	High – Improved county and local floodplain management, mitigation and recovery capabilities	Medium	County and local Budgets (generally limited to staff time)	Short	Medium - High	EAP	PR, ES
DER-3	County-Wide Housing Location/Relocation Planning Initiative for Disaster Displaced Residents and Structures: A County-wide effort to identify potential sites for placement of temporary housing for residents displaced by disasters, as well as the identification of sites suitable for the relocation of houses out of the floodplain (acquisition, relocation). DCDER in conjunction with other DC Departments will lead a countywide effort, including all municipalities, to identify potential sites for the placement of temporary housing units to house residents displaced by disaster; sites within the community suitable for relocation houses out of the floodplain, or building new houses once properties in the floodplain are razed. To build on ongoing County and local efforts in this regard, all communities will be surveyed to identify potential sites, including any pre-disaster actions that may be required to make them viable for these purposes. In the case of municipalities that are fully built-out, or otherwise cannot identify suitable areas, that shall be noted and considerations shall be made regarding suitable areas in neighboring communities, or otherwise throughout the County. Planning for temporary housing sites will shorten schedules and reduce costs of both short and long term housing needs that are used in emergencies and are obtained in a slow and complicated process at premium prices.											
	See above.	N/A	Flood, Severe Storm, Severe Winter Storm, Earthquake, Climate Change	1, 2, 3, 6, 7	DCDER, with support of all municipalities	Medium – see above narrative	Medium	County and local Budgets	To be initiated in year 1, and completed prior to next HMP update	High	LPR, SIP	PR, PP
DER-4	Debris Management Plan - Develop a workable plan to handle large volumes of debris from a natural or man-made disaster. This plan will identify staging areas, debris transportation, debris disposal, worker health protection, and logistical needs for debris management.											
	See above.	N/A	Flood, Severe Storm, Severe Winter Storm; Non-natural hazards	5, 6, 7	DCDER; working with DCDPW	Improved debris management capabilities, resulting in improved disaster recovery	Medium - High	HSSP Grant	18 months	Medium - High	LPR, EM*	PR, ES

Table 9.1-8. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
DER-5	Upgrades to Farm and Home Center (2715 Route 44, Millbrook, NY 12545) as a Designated County Emergency Facility; supporting county sheltering needs. See also DPW-3. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year event level or "worst case scenario". See Action Worksheet.											
	See above.	Existing	All hazards requiring sheltering and expanded emergency management facilities	1, 5	DCDER	Improved emergency management capabilities (sheltering)	High	Grant funding as available, Sandy HMGP LOI submitted	Long-term DOF	High	SIP, EAP, EM*	PP, ES
DER - 6	Improve security measures to new and existing buildings, including extra measures taken for certain buildings owned by the county such as barriers to reduce access to the buildings and other security measures. Specifically identified is the Health and Transit facility, and Family Court.											
	See above.	Existing	Non-natural hazards	1, 2	County Sheriff's Office	Improved security at public buildings	High	County Budget; Federal Homeland Security Grant funding as available	Long-term DOF	Medium - High	EM*	ES
SWCD-1	Continue to support the local municipalities with Green Infrastructure / Stormwater improvements within their jurisdictions • Local implementation at public facilities • Training to help improve reviews by local municipalities and foster these Green Infrastructure projects											
	See above.	N/A	Flood; Severe Storm	2, 3, 4, 6, 7	DC SWCD working with municipalities	Improved stormwater management; reduced localized flooding	Low - Medium	SWCD and municipal budgets	Ongoing	High (ongoing)	NSP	PI, NR
SWCD-2	Continue to provide assistance to MS4 Communities with implementation of stormwater management goals.											
	See above.	N/A	Flood; Severe Storm	2, 3, 4, 7	DC SWCD working with municipalities	Improved stormwater management; reduced localized flooding	Low - Medium	SWCD and municipal budgets	Ongoing	High (ongoing)	NSP	NR
SWCD-3	Conduct barrier (culvert) inventories, assessments, prioritized management plans, design assistance, and upgrades to local municipalities using biological and/or hydrologic criteria. Current work is ongoing on Cold Springs Brook in Pine Plains and Stanford; the Landsmankill in Red Hook and Rhinebeck; the Sawkill in Red Hook and Milan; the Shekomeko Creek in Pine Plains and Northeast; and the Ten Mile River in Dover.											

Table 9.1-8. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	See above.	N/A	Flood; Severe Storm	2, 3, 4, 7	DC SWCD working with municipalities	Improved stormwater management; reduced localized flooding	Medium - High	SWCD and municipal budgets	Ongoing	High (ongoing)	NSP	NR
SWCD-4	Continue to support municipalities with slope stabilization and erosion control projects. Through state funding assistance, the SWCD has a hydro-seeder available to municipalities at low cost.											
	See above.	N/A	Flood; Severe Storm; Land Failure	2, 4	DC SWCD working with municipalities	Reduced risk of slope and streambank failure	Medium - High	SWCD and municipal budgets	Ongoing	High (ongoing)	SIP, NSP	NR
SWCD-5	Continue to implement the debris management program for local streams through assistance to municipalities and landowners (assessment, design assistance, permitting, and removal).											
	See above.	N/A	Flood; Severe Storm	2, 4	DC SWCD working with municipalities	Reduced risk of overbank flooding	Medium - High	SWCD and municipal budgets; grant funding as available (e.g. NRCS)	Ongoing	High (ongoing)	SIP, NSP	NR
SWCD-6	Floodway management (promote the benefits of proper uses within the regulated floodplain as well as the floodway).											
	See above.	N/A	Flood; Severe Storm	1, 2, 3, 5	DCSWCD working with municipalities	Improved local floodplain management capabilities	Low	SWCD budget	Ongoing	High (ongoing)	LRP	PR, PI
SWCD-7	Dutchess Enhanced Flood Warning System: The Soil & Water District is partnering with DCDER, the Village of Fishkill and the City of Poughkeepsie to install stream guages and rain guages on the Fishkill & Fallkill creeks. This system will allow Dutchess County Emergency Management and municipal officials to provide to residents & businesses advanced warning of a potential flood event thus, allowing time for residents to prepare their property which should reduce losses during that event. This initiative supports Countywide evacuation planning. See Action Worksheet											

Table 9.1-8. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	See above.	N/A	Flood, Severe Storm	1, 2, 3, 5, 7	DCSWCD working with DCDER, municipalities	Improved recognition and warning of pending flood conditions; improved knowledge base of stream hydrology to support mitigation projects	Medium - High	Grant funding as available; Sandy HMGP LOI submitted	Long term DOF	Medium	NSP, EAP, EM*	PI, NR, ES
SWCD-8	Dutchess Enhanced Rain Weather Detection System: The Dutchess County Soil & Water Conservation District has partnered with the Dutchess County Department of Emergency Response, Dutchess County Department of Public Works and the Cary Institute of Ecosystem Studies purpose to enhance our rain gauge monitoring system within the county. These efforts support countywide emergency management (response) capabilities, including early warning to facilitate evacuations and the identification of suitable evacuation routes. See Action Worksheet											
	See above.	N/A	Flood, Severe Storm; Coastal Hazards	1, 2, 3, 5, 7	DCSWCD working with DCDER, Cary Institute of Ecosystem Studies	Improved recognition and warning of pending flood conditions; improved knowledge base of stream hydrology to support mitigation projects	Medium - High	Grant funding as available; Sandy HMGP LOI submitted	Long term DOF	Medium	NSP, EAP, EM*	PI, NR, ES
CCE-1	Hudson Estuary Watershed Resiliency Project: The Cornell Cooperative Extension (CCE) Hudson Estuary Watershed Resiliency Project will contribute to flood mitigation and prevention regionally by educating municipal officials, businesses, and streamside landowners about stream science, flood planning and flood prevention strategies. An increased understanding will allow communities to move to the planning and implementation phase of flood mitigation, which in turn will reduce future costs and damages related to flooding in these communities. The project will also identify and connect audiences with technical assistance to address ongoing issues with streams and other flood-prone areas. See Action Worksheet											

Table 9.1-8. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	See above.	Both	Flood, Severe Storm	All	Cornell Cooperative Extension of Dutchess County	Reduced risk of flood damage throughout county through all types of mitigation activity types	Medium-High (depending on various elements of program)	Grant funding as available; Sandy HMGP LOI submitted	Long term DOF	High	LPR, NSP, EAP	PR, PI, NR
DCWWA - 1	Central Dutchess Water Transmission System Water Storage Tank: The proposal is to construct a one (1) million gallon elevated storage tank connected to the CDWTS that would provide water supply to residences and businesses that would otherwise be without water supply in the event of damage to, or a power outage affecting, the Poughkeepsie Joint Water Treatment Plant. See Action Worksheet											
	See above	N/A	Flood, Severe Storm, Severe Winter Storm, Power Outage	2, 3	Dutchess County Water and Wastewater Authority (DCWWA)	Provide redundancy for vital critical resource (potable water); public health	High	Grant funding as available; Sandy HMGP LOI submitted	Long term DOF	Medium	SIP	PP
DCWWA - 2	Hyde Park Water Treatment Facility Improvements; The site is small and constrained by abutting wetlands and existing drainage features. This makes the installation of an earth berm impractical. A concrete wall would be required to protect the site. Additionally, a pump would be required to remove precipitation from inside the protected area during events that would not allow the protected area to drain by gravity. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year flood level or "worst case scenario". See Action Worksheet											
	See above	Existing	Flood, Severe Storm	2, 6	DCWWA	Reduced flood vulnerability of critical facility; environmental protection	High	Grant funding as available; Sandy HMGP LOI submitted	Long term DOF	Medium	SIP	PP
DCWWA - 3	Portable Generator Procurement: Procurement of a large, trailer mounted diesel generator set with multiple electrical characteristics to be utilized as a back up to provide emergency power in the event of a power outage and damage to existing on-site generators. The portable generator could also be made available to other water and sewer systems around the County to help maintain critical services. See Action Worksheet											

Table 9.1-8. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	See above.	Existing	All Hazards resulting in loss of electricity	2, 6	DCWWA	High – Maintain critical facilities and services; public health	High	FEMA grants (HMGP); DCWWA budget for local match	Long term DOF – LOI submitted to State/FEMA	High	SIP	PP, ES
DCWWA - 4	Dalton Farms Water System Improvements: Construction of access roads with elevation above the 500-year flood elevation to allow access to well heads in the event of high water levels and flooding. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year flood level or "worst case scenario". See Action Worksheet											
	See above	Existing	Flood, Severe Storm	2, 6	DCWWA	Reduced flood vulnerability of critical facility; environmental protection	High	Grant funding as available; Sandy HMGP LOI submitted	Long term DOF	Medium	SIP	PP
DCWWA - 5	Dalton Farms Sewer System Improvements: Construction of a berm around the wastewater treatment plant to mitigate the potential risk of inundation due to flooding. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year flood level or "worst case scenario". See Action Worksheet											
	See above	Existing	Flood, Severe Storm	2, 6	DCWWA	Reduced flood vulnerability of critical facility; environmental protection	High	Grant funding as available; Sandy HMGP LOI submitted	Long term DOF	Medium	SIP	PP
DCWWA - 6	Valley Dale Sewer System Improvements: Construction of a berm around the wastewater treatment plant to mitigate the potential risk of inundation due to flooding and construction. Reconstruct access driveway to provide vehicular access during all weather conditions. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year flood level or "worst case scenario". See Action Worksheet											
	See above	Existing	Flood, Severe Storm	2, 4, 6	DCWWA	Reduced flood vulnerability of critical facility; environmental protection	High	Grant funding as available; Sandy HMGP LOI submitted	Long term DOF	Medium	SIP	PP
	Emergency Response Equipment Procurement: Purchase and install pumps and light plants to use in emergencies											

Table 9.1-8. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
DCWWA - 7	See above.	N/A	All Hazards	2, 6	DCWWA	High – Maintain critical facility; public health	High	FEMA grants (HMGP); County budgets for local match	Long term DOF – LOI submitted to State/FEMA	High	SIP. EM*	PP, ES
DCWWA - 8	Fairways Water System Back Up Generator: Installation of a permanent on-site generator to provide back up power during electrical outages.											
	See above.	Existing	All Hazards resulting in loss of electricity	2, 6	DCWWA	High – Maintain critical facility; public health	High	FEMA grants (HMGP); County budgets for local match	Long term DOF – LOI submitted to State/FEMA	High	SIP	PP, ES
DCWWA - 9	Central Dutchess Water System Storage Facility: Construction of a one (1) million gallon elevated storage tank that would provide a back-up water source and some pressurization of water distribution networks to allow the continuation of water service during an emergency event.											
	See above	N/A	Flood, Severe Storm, Severe Winter Storm, Power Outage	2, 3	Dutchess County Water and Wastewater Authority (DCWWA)	Provide redundancy for vital critical resource (potable water); public health	High	Grant funding as available; Sandy HMGP LOI submitted	Long term DOF	Medium	SIP	PP

Notes:
Not all acronyms and abbreviations defined below are included in the table.
**Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.*

Acronyms and Abbreviations:
CAV Community Assistance Visit
CRS Community Rating System
DPW Department of Public Works
FEMA Federal Emergency Management Agency
HMA Hazard Mitigation Assistance
N/A Not applicable
NFIP National Flood Insurance Program
OEM Office of Emergency Management

Costs:
Where actual project costs have been reasonably estimated:
Low < $10,000
Medium $10,000 to $100,000
High > $100,000

Where actual project costs cannot reasonably be established at this time:

Potential FEMA HMA Funding Sources:
FMA Flood Mitigation Assistance Grant Program
HMGP Hazard Mitigation Grant Program
PDM Pre-Disaster Mitigation Grant Program

Timeline:
Short 1 to 5 years
Long Term 5 years or greater
OG On-going program
DOF Depending on funding

Benefits:
Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:
Low= < $10,000
Medium $10,000 to $100,000
High > $100,000

Costs:

Low	*Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.*
Medium	*Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.*
High	*Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.*

Benefits:

Where numerical project benefits cannot reasonably be established at this time:

Low	*Long-term benefits of the project are difficult to quantify in the short term.*
Medium	*Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.*
High	*Project will have an immediate impact on the reduction of risk exposure to life and property.*

Mitigation Category:

- *Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.*
- *Structure and Infrastructure Project (SIP)- These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.*
- *Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.*
- *Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities*
- *Emergency Management (EM*) – Non-mitigation*

CRS Category:

- *Preventative Measures (PR) - 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 (PP) - 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.*
- *Public Information (PI) - 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.*
- *Natural Resource Protection (NR) - 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.*
- *Structural Flood Control Projects (SP) - 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 (ES) - 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*

Table 9.1-9. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
DPW-1	Fallkill Dam Safety Assessment and Upgrade/Rehabilitation Project	1	1	1	1	1	1	0	0	1	1	1	1	1	1	12	High – In progress
DPW-2	CR 41 (Crum Elbow Road) Flooding mitigation																High – In progress
DPW-3	Back-Up Power for County Critical Facilities	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	Medium - DOF
DPW-4	County-Wide Stream Debris Removal and Channel Improvement Projects	0	1	0	1	1	-1	0	-1	1	1	1	1	1	1	7	Medium
DPW-5	Scour-Critical Bridge Improvements																Low
DER-1	Work with all municipalities to develop Memorandums of Understanding (MOU) or Memorandums of Agreement (MOA) for code enforcement personnel to be utilized County-wide (e.g. outside of their jurisdiction) post-disaster, to address such issues such as damage assessment, issuance of emergency building permits, inspections, and substantial damage determinations. This initiative is supported by DER-2 (below), designed to promote risk management and post-disaster recovery capabilities throughout the County.																Medium-High
DER-2	Build Local Floodplain Management and Disaster Recovery Capabilities: Facilitate Workshops and Seminars to build County and local capabilities in floodplain																Medium - High

Table 9.1-9. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
	management, mitigation and disaster recovery:																
DER-3	County-Wide Housing Location/Relocation Planning Initiative for Disaster Displaced Residents and Structures																High
DER-4	Debris Management Plan - Develop a workable plan to handle large volumes of debris from a natural or man-made disaster.																Medium - High
DER-5	Upgrades to Farm and Home Center (2715 Route 44, Millbrook, NY 12545) as a Designated County Emergency Facility; supporting county sheltering needs. See also DPW-3. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year event level or "worst case scenario".	1	1	0	1	1	1	0	1	1	1	1	0	1	1	11	High
DER - 6	Improve security measures to new and existing buildings, including extra measures taken for certain buildings owned by the county such as barriers to reduce access to the buildings and other security measures. Specifically identified is the Health and Transit facility, and Family Court.																Medium - High
SWCD-1	Continue to support the local municipalities with Green Infrastructure / Stormwater																High (ongoing)

Table 9.1-9. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
	improvements within their jurisdictions																
SWCD-2	Continue to provide assistance to MS4 Communities with implementation of stormwater management goals.																High (ongoing)
SWCD-3	Conduct barrier (culvert) inventories, assessments, prioritized management plans, design assistance, and upgrades to local municipalities using biological and/or hydrologic criteria.																High (ongoing)
SWCD-4	Continue to support municipalities with slope stabilization and erosion control projects. Through state funding assistance, the SWCD has a hydro-seeder available to municipalities at low cost.																High (ongoing)
SWCD-5	Continue to implement the debris management program for local streams through assistance to municipalities and landowners (assessment, design assistance, permitting, and removal).																High (ongoing)
SWCD-6	Floodway management (promote the benefits of proper uses within the regulated floodplain as well as the floodway).																High (ongoing)
SWCD-7	Dutchess Enhanced Flood Warning System	1	1	1	1	1	1	-1	1	1	1	1	0	1	1	11	Medium
SWCD-8	Dutchess Enhanced Rain Weather Detection System	1	1	1	1	1	1	-1	1	1	1	1	0	1	1	11	Medium
CCE-1	Hudson Estuary Watershed Resiliency Project	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	High

Table 9.1-9. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
DCWWA - 1	Central Dutchess Water Transmission System Water Storage Tank																Medium
DCWWA - 2	Hyde Park Water Treatment Facility Improvements																Medium
DCWWA - 3	Portable Generator Procurement: Procurement of a large, trailer mounted diesel generator set with multiple electrical characteristics																High
DCWWA - 4	Dalton Farms Water System Improvements																Medium
DCWWA - 5	Dalton Farms Sewer System Improvements																Medium
DCWWA - 6	Valley Dale Sewer System Improvements																Medium
DCWWA - 7	Emergency Response Equipment Procurement																High
DCWWA - 8	Fairways Water System Back Up Generator																High
DCWWA - 9	Central Dutchess Water System Storage Facility																Medium

Note: Refer to Section 6 which contains the guidance on conducting the prioritization of mitigation actions.

9.1.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

9.1.8 Hazard Area Extent and Location

Hazard area extent and location maps have been generated for Dutchess County that illustrate the probable areas impacted within the County. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which Dutchess County has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this Plan.

9.1.9 Additional Comments

None at this time.

Action Number: DPW-1

Action Name: Fallkill Dam Safety Assessment and Upgrade/Rehabilitation Project

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	The Fallkill Dam is located east of Creek Road at Fallkill Park in the Town of Poughkeepsie, Dutchess County and is owned by the County of Dutchess. The Fallkill Dam is a regulated Class B (Intermediate Hazard) dam. Structural failure may damage isolated homes, impact main highways and/or minor railroads, interrupt the use of relatively important public utilities, cause substantial economic loss or cause substantial environmental damage. The dam was purportedly constructed in 1892 so there is very limited design or construction information available.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	A comprehensive engineering assessment of the dam is the only way to understand required and recommended mitigation actions. Once the assessment is complete, forward actions will be understood and evaluated for implementation.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Complete a structural and operational assessment of the Fallkill Dam in accordance with New York State Department of Environmental Conservation (NYSDEC) – Division of Dam Safety requirements, specifically pursuant to NYSDEC DOW TOGS 3.1.4 Guidance for Dam Engineering Assessment Reports. Implement recommended upgrades and rehabilitation actions as funding is secured. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year flood level or "worst case scenario".
Mitigation Action/Project Type	SIP
Goals Met	1, 2
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Reduced risk of dam failure with attended public and private property damage; potential life safety
Estimated Cost	$25K for assessment; rehabilitation and upgrading costs TBD based on assessment
Priority*	High
Plan for Implementation	
Responsible Organization	Dutchess County Department of Public Works
Local Planning Mechanism	Dam EAP; CEMP; County Capital Plan
Potential Funding Sources	Local budget for assessment; grants as available to implement assessment recommendations
Timeline for Completion	Engineering consultant contract awarded; assessment to be done by Spring 2016
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DPW-1

Action Name: Fallkill Dam Safety Assessment and Upgrade/Rehabilitation Project

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Significant life safety concerns.
Property Protection	1	Significant risk to public and private property.
Cost-Effectiveness	1	Costs to assess well outweigh risks. Cost-effective of upgrade/rehab projects to be determined after assessment.
Technical	1	County along with contract engineering have sufficient technical capabilities.
Political	1	Supported by County administration.
Legal	1	County-owned property.
Fiscal	0	Assessment is funded. Funding for upgrade/rehab projects not identified.
Environmental	0	No environmental issues.
Social	1	Benefits all populations equally.
Administrative	1	County has sufficient administrative resources to implement the overall project.
Multi-Hazard	1	
Timeline	1	Assessment scheduled for Spring 2016
Agency Champion	1	Public Works
Other Community Objectives	1	Health and Safety
Total	12	
Priority (High/Med/Low)	High	

Action Number: DPW-3

Action Name: Back-Up Power for County Critical Facilities

Assessing the Risk	
Hazard(s) addressed:	All Hazards resulting in loss of electricity
Specific problem being mitigated:	A number of County-Owned critical facilities lack back-up power. In the event of an extended power loss , the County cannot meet the emergency needs of the community and the government when it is needed most. These include the following: County Office Building: Critical government functions are maintained in this facility including: finance, legal, payroll, accounts receivable/payable, DMV, Public Defender, Legislature, and County Executive and Budget. Dutchess County Community and Family Services: Critical government functions are in this facility including: All of the function of traditional Social Services, including Temporary Assistance, and Youth Services. Dutchess County Sheriff's Office: Critical government functions are in this facility including: All Operations of the Dutchess County Sheriff's Office to include dispatch, administration, patrol and civil divisions Dutchess County Mental Hygiene: Critical government functions are in this facility including: Clinical Services, Psychiatric Services, HELPLINE, Chemical Dependency, Community Consultation and Education Dutchess County Office of Central and Information Services: Critical government functions are in this facility including: All Operations of the Dutchess County Central and Information Services which maintains the County's information technology infrastructure which includes our entire computer network, 911 and law Enforcement CAD, Back up EOC CAD and the entire VOIP phone system for county government. Dutchess County Farm and Home Center Emergency Shelter: This factility also provides space for the operations of the Cornell Cooperative Extension of Dutchess County. While there are numerous sites in the county that an serve as a shelter very few have emergency power. This measure will ensure that there will be sheltering capability during major power outages either throughout the county or in several individual areas. The building is county owned and has served as a shelter in the past. Additionally, the site is geographically centered in the county and easily accessed by state and county highways. The site meets ADA requirements and has functional, well equipped kitchen facilities for meal service. Without emergency power we are forced to use powered buildings elsewhere that are perhaps miles from the impacted populations.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. The purchase, design, and installation of Auxiliary Power Generators 2. Do nothing – current problem continues 3. No other feasible options were identified
Action/Project Intended for Implementation	
Description of Selected Action/Project	Design, purchase and install backup generators at county-owned critical facilities as follows: • County Office Building - 510 KW

	• Dutchess County Community and Family Services - 300 KW • Dutchess County Sheriff's Office - 300 KW • Dutchess County Mental Hygiene - 300 KW • Dutchess County Office of Central and Information Services - 100 KW • Dutchess County Farm and Home Center Emergency Shelter - 300 KW
Mitigation Action/Project Type	SIP
Goals Met	2, 6
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Maintain critical facilities and services during extended power outages; potential life safety
Estimated Cost	High – Site Specific (all combined was several million)
Priority*	Medium
Plan for Implementation	
Responsible Organization	Dutchess County Department of Public Works
Local Planning Mechanism	Comprehensive Emergency Management Plans, Sheltering Plans, Capital Budgets
Potential Funding Sources	FEMA grants (HMGP); County budgets for local match
Timeline for Completion	Long-term DOF – LOIs submitted to State/FEMA
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DPW-3

Action Name: Back-Up Power for County Critical Facilities

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will allow County critical facilities that support human health and public safety to remain operational during power outages.
Property Protection	1	May protect sensitive property, such as evidence, medical supplies, etc.
Cost-Effectiveness	1	These projects are inherently cost-effective
Technical	1	There are no technical issues associated with these project. With routine maintenance will provide long term protection against power interruptions.
Political	1	These projects is supported both publically and politically.
Legal	1	The County has full legal authority to implement these projects.
Fiscal	0	The County can fund the local match as grants are awarded.
Environmental	1	There are no environmental constraints associated with these projects.
Social	1	These projects benefits all sectors of the community equally.
Administrative	1	The County has all administrative and technical resources necessary to implement these projects
Multi-Hazard	1	These projects provides protection against multiple hazards.
Timeline	1	These projects can be implemented within one year once funding is secured.
Agency Champion	1	County DPW is the lead for these projects.
Other Community Objectives	1	This project supports the County's commitment to provide uninterrupted critical services to their constituents, particularly in times of natural disasters and other emergencies.
Total	13	
Priority (High/Med/Low)	High	

Action Number: DPW-4

Action Name: County-Wide Stream Debris Removal and Channel Improvement Projects

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Proper flow within stream channels throughout the County continue to be degraded by fallen trees and other natural and man-made debris, as well as long term siltation and deposition. This has resulted in localized problems with streambank erosion and overbank flooding.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	No action will result in the risk remaining unabated. Large-scale stream channel dredging is not generally permissible, cost-effective, or often legally possible due to access issues. The most available approach is to work with DC SWCD, NYS DEC and other stakeholders to develop and implement channel clean-up and rehabilitation projects for specific stream segments/reaches.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Conduct stream channel debris removal and channel rehabilitation and various locations throughout the County. Address repeated flooding problems at up to 12 locations throughout Dutchess County. County to identify project sites, and may identify specific projects for short-term implementation. 8 or 9 locations have been completed.
Mitigation Action/Project Type	NSP
Goals Met	2, 4
Applies to existing structures/infrastructure, future, or not applicable	N/A
Benefits (losses avoided)	Reduced risk of overbank flooding, impacting property, structures and infrastructure; preserve natural function of floodway
Estimated Cost	Medium (project specific)
Priority*	Medium
Plan for Implementation	
Responsible Organization	Dutchess County Department of Public Works; working with DC SWCD, NYS DEC and local communities
Local Planning Mechanism	Regional Stream Management Programs; Floodplain Management Plans; Local and Capital Budgets
Potential Funding Sources	Completed work has been funded locally. Grant funding was expected to support, but has not been provided to date.
Timeline for Completion	Ongoing – 2016 for remaining identified sites depending on permitting, access and availability of funding
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DPW-4

Action Name: County-Wide Stream Debris Removal and Channel Improvement Projects

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	No life safety issues
Property Protection	1	May protect private property and infrastructure
Cost-Effectiveness	0	Cost-effectiveness not yet determined
Technical	1	Technical resources available
Political	1	Supported politically
Legal	-1	Permitting and site access are challenges
Fiscal	0	Funding not budget or secured
Environmental	-1	Environmental permitting is a challenge
Social	1	Benefits all populations
Administrative	1	Town has the administrative resources to implement
Multi-Hazard	1	
Timeline	1	Ongoing
Agency Champion	1	DC DPW and SWCD
Other Community Objectives	1	Long-term risk reduction/management and sustainability
Total	7	
Priority (High/Med/Low)	Medium	

Action Number: DER-5

Action Name: Upgrades to Farm and Home Center (2715 Route 44, Millbrook, NY 12545) as a Designated County Emergency Facility

Assessing the Risk	
Hazard(s) addressed:	All hazards requiring sheltering and expanded emergency management facilities
Specific problem being mitigated:	Dutchess County has established the Farm and Home Center (2715 Route 44, Millbrook, NY 12545) as a Designated County Emergency Facility under its Hazard Mitigation Plan. In order to maintain the continuity of critical services in the event of extreme weather events such as occurred with Hurricanes/Storms Lee, Irene and Sandy, the County seeks to significantly upgrade the Center. The facility is centrally located in the County, close to the Taconic State Parkway, Rt. 44, and Rt. 82, and located near a NYS Police Headquarters. It is a handicap accessible building, with two large meeting rooms that can handle emergency sheltering. However, the building was constructed in the 1960s, has inadequate heating, ventilation and emergency backup utilities, is poorly insulated, and has a leaky roof.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	Due to the critical nature of this facility, no action is not a viable option. The selected actions (below) represent a comprehensive assessment of available options to upgrade and mitigate this facility.
Action/Project Intended for Implementation	
Description of Selected Action/Project	To provide adequate sheltering of emergency populations, and to ensure continuity of critical services in light of electricity outages and flooding, the building requires the following upgrades: • Repair or replace the roof to ensure a dry interior space with good indoor air quality and reduction in damage to equipment; • Conduct a complete energy assessment through NYSERDA, and depending on the findings install or implement the following: • Implement recommended energy-saving measures; • Install solar panels for electricity generation; • Upgrade the HVAC heating and ventilation system; • Evaluate "green infrastructures" to better handle stormwater at the facility, such as rain gardens, a water collection cistern, or a green roof; • Install showers and bathrooms with handicap access; and, • Incorporate a public education and outreach program about the energy-saving and replicable resiliency features of the building, combined with enhanced communication to the public regarding situational awareness and the availability of County emergency sheltering services at the Farm and Home Center. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year event level or "worst case scenario".
Mitigation Action/Project Type	SIP, EAP, EM*

Goals Met	1, 5
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Improved emergency management capabilities (sheltering)
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	DCDER
Local Planning Mechanism	CEMP; Sheltering Plans
Potential Funding Sources	Grant funding as available, Sandy HMGP LOI submitted
Timeline for Completion	Long-term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DER-5

Action Name: Upgrades to Farm and Home Center (2715 Route 44, Millbrook, NY 12545) as a Designated County Emergency Facility

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Significant life safety benefits.
Property Protection	1	Will mitigate flood and environmental risks at property.
Cost-Effectiveness	0	Cost-effectiveness not yet determined
Technical	1	Technical resources available to implement
Political	1	Supported politically
Legal	1	County owned facility
Fiscal	0	Funding not budget or secured
Environmental	1	No environmental constraints
Social	1	Benefits all populations
Administrative	1	County has the administrative resources to implement
Multi-Hazard	1	
Timeline	0	Dependent on funding availability
Agency Champion	1	DC DER
Other Community Objectives	1	Improved emergency management (sheltering) capabilities
Total	11	
Priority (High/Med/Low)	High	

Action Number: SWCD-7

Action Name: Dutchess Enhanced Flood Warning System

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	The Fishkill and Fallkill watersheds encompass approximately 1/3rd of the county's land area and contains 104,265 residents or 35% of the county's population, as well as, the largest portion of the county's commercial businesses. Currently, neither watershed have stream gauging to allow us to monitor during extreme precipitation events. Thus, we cannot provide these communities with early warnings for flood events. Currently the energy operation team dispatch Sheriff and State Police patrols to pre-selected locations to monitor water levels and report back to the operation center. This is inefficient at best. Those patrolling should be responding to emergencies only. The Fishkill Creek is unique, in of itself, that it does not crest at the same times or close to either of our gauged streams in general it crests 12-13 hours later. This makes it extremely difficult to provide warning information to our residents. Since 2005 these watersheds have experienced 5 flood events. Soil & Water nor Dutchess County Emergency Management have been able to provide the municipal officials and residents with sufficient information in a timely manner to prepare for these flood events.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	No viable alternatives to provide early flood detection and warning have been identified. Such systems are widely recognized for their flood protection benefits, however Federal and State funding issues have depleted financial resources to maintain, let alone expand even as clearly necessary.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Soil & Water District is partnering with Dutchess County Emergency Management, the Village of Fishkill and the City of Poughkeepsie to install stream gauges and rain gauges on the Fishkill & Fallkill creeks. The District will install gauges at predetermined locations on Fishkill Creek in The Village of Fishkill. The Village will supply a housing structure and electric that will power the unit and protect the transmission equipment. The Fallkill site is located in the City of Poughkeepsie adjacent to the city DPW facility at which the transmission equipment will be located. The gauging units will transmit via wireless network to a county computer server that will host a web access site for Dutchess County Emergency Management. The gauge access site will be shared with, but not limited to municipalities, National Weather Service, NYS DHSES to integrate the information into their early warning system. This equipment will allow Dutchess County Emergency Management & town officials to provide to residents & businesses advanced warning of a potential flood event thus, allowing time for residents to prepare their property which should reduce losses during that event. These efforts support countywide emergency management (response) capabilities, including early warning to facilitate evacuations and the identification of suitable evacuation routes.
Mitigation Action/Project Type	NSP, EAP
Goals Met	1, 2, 3, 5, 7
Applies to existing structures/infrastructure, future, or not applicable	N/A
Benefits (losses avoided)	Improved recognition and warning for pending flood conditions; improved knowledge base of stream hydrology to support mitigation projects
Estimated Cost	Medium - High
Priority*	Medium
Plan for Implementation	
Responsible Organization	DCSWCD working with DCDER, municipalities

Local Planning Mechanism	CEMPs; Floodplain Management Plans
Potential Funding Sources	Grant funding as available; Sandy HMGP LOI submitted
Timeline for Completion	Long term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: SWCD-7

Action Name: Dutchess Enhanced Flood Warning System

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will provide early flood warnings
Property Protection	1	Will provide immediate (warning) and long term property mitigation benefits
Cost-Effectiveness	1	Public safety benefits believed to outweigh costs
Technical	1	County has technical resources to implement
Political	1	Approved politically
Legal	1	No legal impediments
Fiscal	-1	County does not have funding for these projects
Environmental	1	No environmental constraints to implementation
Social	1	Benefits all populations
Administrative	1	County has administrative resources to implement
Multi-Hazard	1	
Timeline	0	Long term DOF
Agency Champion	1	DCSWCD and DCDER
Other Community Objectives	1	Improved emergency management; evacuation planning
Total	11	
Priority (High/Med/Low)	High	

Action Number: SWCD-8

Action Name: Enhanced Rain Weather Detection System

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm, Coastal Hazards
Specific problem being mitigated:	Due to the increase frequency of high intensity rain events and the change in storms directionality forcasters are unable to identify communities or areas of the county that are being inpacted by these storms. Thus, the one rain gauge at the county airport on the west side of the county, does not reflect amounts received in other parts of the county. This creates a problems for emergency managers and highway departments to notify or direct response to areas affected by these intense rain events. The lack of real time data does not allow for public notification that could be used to warn residents of potential flash flood events thus, placing the public in danger. This summer has brought 3 such events in which the only online rain gauge received only .20" of rain. Where as 4 areas of the county received 3"+ of rain resulting in flash flooding that required emergency response, highway closures and property and infrastructure damage. Two of these incidents received no notification of the potential impacts.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	No viable alternatives to provide early flood detection and warning have been identified. Such systems are widely recognized for their flood protection benefits, however Federal and State funding issues have depleted financial resources to maintain, let alone expand even as clearly necessary.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Dutchess County Soil & Water Conservation District has partnered with the Dutchess County Department of Emergency Response, Dutchess County Deptartment of Public Works and the Cary Institute of Ecosystem Studies purpose to enhance our rain gauge monitoring system within the county. The partnership will develop 2 additional rain gauges with real time transmit capabilities and equip a 3rd site with transmitting capability. The rain gauges will be strategically located so that we will have coverage throughout the county and within our major watersheds. The precipitation data gathered will be transmitted through a wireless network system to a server and site that will be utilized by the Dutchess County Department of Emergency Response and the Soil & Water Distrrict for enhanced advanced warning of potential or flooding and flash flooding. This real to data site will be shaped with the National Weather Service, NYS DHSES and the Northeast Regional Climate Center and others who also assist with advanced warning to the public. These stations will also help municipal officials and public water supply companies assisting them with water conservation measures during drought conditions. These enhance monitoring sites will position the county to address the climate change issues we are currently dealing with and future impacts that may impact the public. These efforts support countywide emergency management (response) capabilities, including early warning to facilitate evacuations and the identification of suitable evacuation routes.
Mitigation Action/Project Type	SIP
Goals Met	1, 2, 3, 5, 7
Applies to existing structures/infrastructure, future, or not applicable	N/A
Benefits (losses avoided)	Improved recognition and warning for pending flood conditions; improved knowledge base of stream hydrology to support mitigation projects
Estimated Cost	Medium - High
Priority*	Medium
Plan for Implementation	
Responsible Organization	DCSWCD working with DCDER, Cary Institute of Ecosystem Studies

Local Planning Mechanism	CEMPs; Floodplain Management Plans
Potential Funding Sources	Grant funding as available; Sandy HMGP LOI submitted
Timeline for Completion	Long term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: SWCD-8

Action Name: Enhanced Rain Weather Detection System

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Will provide early flood warnings
Property Protection	1	Will provide immediate (warning) and long term property mitigation benefits
Cost-Effectiveness	1	Public safety benefits believed to outweigh costs
Technical	1	County has technical resources to implement
Political	1	Approved politically
Legal	1	No legal impediments
Fiscal	-1	County does not have funding for these projects
Environmental	1	No environmental constraints to implementation
Social	1	Benefits all populations
Administrative	1	County has administrative resources to implement
Multi-Hazard	1	
Timeline	0	Long term DOF
Agency Champion	1	DCSWCD and DCDER
Other Community Objectives	1	Improved emergency management; evacuation planning
Total	11	
Priority (High/Med/Low)	High	

Action Number: CCE-1

Action Name: Hudson Estuary Watershed Resiliency Project

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	While flooding has been an issue in the Hudson Valley since the 1800's, the frequency and severity of floods are increasing with the onset of climate change. According to the Northeast Regional Climate Center at Cornell University, in 1961 the maximum rainfall from a hundred year storm in the Catskill region of New York was 8 inches in a 24-hour period. By 2003, this rainfall amount had increased to 13 inches. Similar trends have been found throughout the Hudson Valley. Hudson Valley counties have faced repeated damages to municipal buildings, roads, bridges, homes, businesses and other infrastructure repeatedly in recent years in flooding from Tropical Storms Irene and Lee, Superstorm Sandy, and other localized flood events. An estimate of the cost of FEMA flood damage claims in the Hudson Valley counties of Albany, Rensselaer, Columbia, Dutchess, Orange, Rockland, and the portions of Greene, Ulster and Putnam counties that are located outside of the NYC reservoir watershed from February 2013-July 2013 alone is $3,866,058 (FEMA NFIP Policy and Claims Reports). This time period does not include a majority of the claims these Counties have submitted for damages sustained during these 3 major storm events. Dutchess County alone experienced over $1.2 million dollars of damage due to Hurricane Irene. Therefore, this regional project will help to mitigate potentially significant future damages. Several Cornell Cooperative Extension associations have been implementing the Hudson Estuary Watershed Resiliency Project in 2013 in collaboration with the NYS Water Resources Institute, Cornell University and the NYS DEC Hudson River Estuary Program. During the first half of 2013, researchers from Cornell University conducted a needs assessment study of municipal officials in partnership with Cornell Cooperative Extension to determine the barriers municipalities face in addressing flooding and floodplain management. Needs assessment interviews were conducted with 36 municipal officials from Hudson Valley towns and counties during the spring of 2013. Preliminary results from the needs assessment indicate that municipal officials in this region recognize the increasing threat of flooding to their communities, and the importance of flood preparedness and response. Over 60% of officials indicated that their lack of knowledge and understanding of issues related to flooding was a barrier to preparing and planning for floods and extreme weather events. Over 60% identified improved planning and zoning as actions that they would like to enact, but felt unable to pursue. The Hudson Estuary Watershed Resiliency Project is designed to meet the needs of communities by providing education and assistance on flood prevention, floodplain management, stream dynamics and other issues related to flooding. Educational resources and technical assistance is key to helping communities become more resilient in this era of a changing climate. An understanding of stream and floodplain dynamics along with proactive management and planning tools can provide communities the opportunity to mitigate and minimize flooding risks while conserving limited financial resources.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	This project will address the problem of increased frequency and severity of damaging floods in the Hudson Valley and the need for outreach and education on stream science, flood planning and flood prevention for municipal officials, businesses and residents. Through this project, CCE staff will educate multiple audiences on these important topics to allow them to properly plan for and mitigate future costs related to extreme flood events.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The Cornell Cooperative Extension (CCE) Hudson Estuary Watershed Resiliency Project will contribute to flood mitigation and prevention regionally by educating municipal officials, businesses, and streamside landowners about stream science, flood

planning and flood prevention strategies. An increased understanding will allow communities to move to the planning and implementation phase of flood mitigation, which in turn will reduce future costs and damages related to flooding in these communities. The project will also identify and connect audiences with technical assistance to address ongoing issues with streams and other flood-prone areas.

During 2013, staff members from Cornell Cooperative Extension associations in Columbia, Dutchess, Greene, Orange and Putnam counties are working under contract with the New York Water Resources Institute and in partnership with the NYS Department of Environmental Conservation's Hudson River Estuary Program to implement a new educational initiative focused on flood resiliency in the Hudson Estuary watershed. Funding for the Hudson Estuary Watershed Resiliency Project is only secured through the end of 2013, and CCE is therefore requesting Hazard Mitigation Grant Program (HMGP) funds to continue this important project in 2014 and 2015.

The goal of the Hudson Estuary Watershed Resiliency Project is to develop capacity in Hudson Valley municipal officials, highway personnel, and riparian landowners to implement watershed resiliency strategies to minimize future flooding impacts, while also properly responding to storm damage to streams and adjacent and associated infrastructure.

The audiences for the Hudson Estuary Watershed Resiliency Project are municipal officials, highway personnel and streamside landowners. Learning objectives include increasing understanding amongst audiences of climate change and flooding; floodplain zoning; stream dynamics; stream stewardship; proper action in post flood stream intervention; the role of natural systems in flood mitigation; special hazard areas/FIRM maps in planning; green infrastructure programs; climate change projections; and the National Flood Insurance Program and Community Rating System.

Project deliverables for the 2013 effort have included GIS maps of target watersheds, a project website, educational materials, municipal presentations, trainings, conferences and seminars, needs assessments of municipal officials and riparian landowners. Trainings have included Post Flood Stream Intervention training for highway personnel and flood policy trainings for municipal officials.

The Hudson Estuary Watershed Resiliency Project has been extremely well-received by target audiences. While the results of the municipal needs assessment are still being analyzed, anecdotal responses from county and town audiences indicate that there is both a need and demand for continued education and resources on flood response and preparedness.

CCE has devoted significant resources to the development of outreach materials and educational programs. Delivery of educational programs is currently underway, but a one-year time frame is insufficient time to ensure that all audiences have been reached. The continued implementation of the program, beyond 2013, will assure comprehensive delivery of the developed materials to communities in the Hudson Valley and position them to better prepare for and respond to extreme weather events.

This project can also help respond to the increasing need for a well-trained corps of staff with expertise on flood prevention and response who can serve as a resource to the Hudson River Estuary Program, NYS DEC Office of Floodplain Management, as well as county and local governments. It is projected this need will grow as our communities continue to be influenced by extreme precipitation events due to climate change.

	The scope of work for this project in 2014-15 includes the following efforts in Albany, Columbia, Dutchess, Greene, Orange, Putnam, Rensselaer, Rockland and Ulster counties: 1.) Host two major stakeholder meetings (invitees to include NYS DEC, NYC DEP, Lower Hudson Coalition of Conservation Districts (LHCCD), NYS Soil & Water Conservation Committee, Cornell University, SUNY Environmental Science & Forestry , FEMA, county planning, highway and emergency management departments) to assure agreement on flood preparedness and response messages. 2.) Municipal outreach and delivery of developed educational materials in target sub-watersheds. a. Delivery of Stream Science 101 (2-hour presentation) to planning board & highway audiences. b. Development of seminars and conferences on flood-related topics. 3.) Target county Emergency Management officers and Town Floodplain administrators for outreach and collaboration in 2014. Outreach and preliminary activities to lay the foundation for expansion of the Hudson Estuary Watershed Resiliency Project into additional sub-watersheds in 2015. 4.) Implement landowner outreach based on needs assessment. Focus on innovative approaches to increasing awareness of riparian landowners of stream morphology, stream stewardship and infrastructure issues. 5.) Expand the Hudson Estuary Watershed Resiliency website to serve not only as an online presence for the project, but a regional focus of information on flood resiliency and climate change for the Mid-Hudson valley. 6.) Work with other Cornell-affiliated statewide groups, such as NY EDEN (Extension Disaster Education Network http://emergencypreparedness.cce.cornell.edu) and the Cornell Climate Change Program Work Team to provide researched-based resources to communities and inform existing networks of community needs. 7.) Work with LHCCD to develop and deliver Post Flood Stream Intervention trainings. 8.) Connect municipal leaders to financial and technical resources to implement effective flood mitigation, including guidance and training on participating in the Community Rating System. 9.) Create a strategic plan for continuation of the Hudson Estuary Watershed Resiliency Project in subsequent years. Issues to be considered include: a. Expansion of the program into sub-watersheds not yet reached, including specific communities in Rockland, Schoharie, Ulster, Albany and Rensselaer Counties. b. Development of projects in coordination with HRE/NYS Climate Change adaptation initiatives. c. Development of a wide-scope Hudson Valley Flood Response Plan that includes detailed content on which agencies will provide trained support to communities on emergency stream work, etc. d. Development of regional training centers for highway personnel on stream restoration work in collaboration with LHCCD's "Stream Team." e. Investigate additional funding mechanisms for long-term support of the project.
Mitigation Action/Project Type	LPR, NSP, EAP
Goals Met	All

Applies to existing structures/infrastructure, future, or not applicable	New and Existing
Benefits (losses avoided)	Reduced risk of flood damage throughout county through all types of mitigation activity types
Estimated Cost	Medium- High (depending on various elements of program)
Priority*	High
Plan for Implementation	
Responsible Organization	Cornell Cooperative Extension Dutchess County
Local Planning Mechanism	Regional Stream Management Programs; Floodplain Management Plans; Local and Capital Budgets
Potential Funding Sources	Grant funding as available; Sandy HMGP LOI submitted
Timeline for Completion	Long term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: CCE-1

Action Name: Hudson Estuary Watershed Resiliency Project

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Enhanced long term life safety
Property Protection	1	Will result in direct protection to private property and infrastructure
Cost-Effectiveness	1	Inherently cost-effective
Technical	1	Technical resources available
Political	1	Supported politically
Legal	1	
Fiscal	0	Funding not budget or secured
Environmental	1	No environmental constraints
Social	1	Benefits all populations
Administrative	1	CCE has the administrative resources to implement
Multi-Hazard	1	
Timeline	1	Long term DOF
Agency Champion	1	DC CCE
Other Community Objectives	1	Long-term risk reduction/management and sustainability
Total	13	
Priority (High/Med/Low)	High	

Action Number: DCWWA -1

Action Name: Central Dutchess Water Transmission System Water Storage Tank

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm, Severe Winter Storm, Power Outage
Specific problem being mitigated:	The Poughkeepsie Joint Water Treatment Plant (19.3 MGD capacity) provides water to the Central Dutchess Water Transmission System (CDWTS), a 13 mile, 30" water transmission line with a total capacity of 10 MGD that extends 13 miles through 4 municipalities. The CDWTS provides 2 MGD of water for domestic and industrial purposes to the IBM Hudson Valley Research Park located in the Town of East Fishkill. In the event of flooding, storm surge or electrical power outage impacting the Poughkeepsie Joint Water Treatment Plant, water service would be lost to residential and commercial water customers, causing negative public health impacts and economic loss.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	
Action/Project Intended for Implementation	
Description of Selected Action/Project	The proposal is to construct a one (1) million gallon elevated storage tank connected to the CDWTS that would provide water supply to residences and businesses that would otherwise be without water supply in the event of damage to, or a power outage affecting, the Poughkeepsie Joint Water Treatment Plant.
Mitigation Action/Project Type	SIP
Goals Met	2, 3
Applies to existing structures/infrastructure, future, or not applicable	N/A
Benefits (losses avoided)	Provide redundancy for vital critical resource (potable water); public health
Estimated Cost	High
Priority*	Medium
Plan for Implementation	
Responsible Organization	Dutchess County Water and Wastewater Authority
Local Planning Mechanism	Capital Plans and Budgets
Potential Funding Sources	Grant funding as available; Sandy HMGP LOI submitted
Timeline for Completion	Long term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DCWWA -1

Action Name: Central Dutchess Water Transmission System Water Storage Tank

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)	Medium	

Action Number: DCWWA -2

Action Name: Hyde Park Water Treatment Facility Improvements

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	The Hyde Park Water Treatment Plant Raw Water Pump Station is located adjacent to the Hudson River. The current flood zone elevation adjacent to the Pump Station is 15'. The finished floor elevation of the Pump Station is also at 15'. During periods of heavy rainfall the building has experienced flooding, which has required sandbagging of the doors to prevent water from entering the building. Based upon recently predicted storm surge projections of 4' on this section of the Hudson River coupled with 100 year flood plain elevation of 15', the building, exterior stand by generator and electrical substation should be protected to at least elevation 20', allowing for 1' of freeboard above the 19' elevation.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	
Action/Project Intended for Implementation	
Description of Selected Action/Project	The site is small and constrained by abutting wetlands and existing drainage features. This makes the installation of an earth berm impractical. A concrete wall would be required to protect the site. Additionally, a pump would be required to remove precipitation from inside the protected area during events that would not allow the protected area to drain by gravity. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year flood level or "worst case scenario".
Mitigation Action/Project Type	SIP
Goals Met	2, 6
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Reduced flood vulnerability of critical facility; environmental protection
Estimated Cost	Medium
Priority*	Long term DOF
Plan for Implementation	
Responsible Organization	Dutchess County Water and Wastewater Authority, Poughkeepsie
Local Planning Mechanism	Capital Plans and Budgets
Potential Funding Sources	Grant funding as available; Sandy HMGP LOI submitted
Timeline for Completion	Long term DOF
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DCWWA -2

Action Name: Hyde Park Water Treatment Facility Improvements

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)	Medium	

Action Number: DCWWA -3
Action Name: Portable Generator Procurement

Assessing the Risk	
Hazard(s) addressed:	All Hazards resulting in loss of electricity
Specific problem being mitigated:	The DCWWA has 25 separate locations associated with the production, treatment, storage, pumping and control of treated potable water, or with the pumping and treatment of sewage. Nine of these locations are without permanent standby generators to provide power during electrical outages. The remaining 16 locations are served by fixed standby generators which could incur damage as a result of the storm, flooding or other hazard event triggering the power outage. In the event of a widespread and/or prolonged emergency event, resources of emergency response organizations and private vendors may be over-stressed and portable back-up generators unavailable.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	
Action/Project Intended for Implementation	
Description of Selected Action/Project	Procurement of a large, trailer mounted diesel generator set with multiple electrical characteristics to be utilized as a back up to provide emergency power in the event of a power outage and damage to existing on-site generators. The portable generator could also be made available to other water and sewer systems around the County to help maintain critical services.
Mitigation Action/Project Type	SIP
Goals Met	2, 6
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	High – Maintain critical facilities and services; public health
Estimated Cost	High
Priority*	Medium - DOF
Plan for Implementation	
Responsible Organization	Dutchess County Water and Wastewater Authority, Poughkeepsie
Local Planning Mechanism	Capital Plan and Budget
Potential Funding Sources	FEMA grants (HMGP); DCWWA budget for local match
Timeline for Completion	Long term DOF – LOI submitted to State/FEMA
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DCWWA -3

Action Name: Portable Generator Procurement

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)	High	

Action Number: DCWWA - 4
Action Name: Dalton Farms Water System Improvements

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	The well field for the Dalton Farms Water System is adjacent to and within the 100 year flood plain for the Whaley Lake Brook. Flood waters create a risk of contamination of the water supply and damage to equipment, and create a barrier to access the well heads to make necessary inspections and repairs during flood events. In its current condition the well field does not allow for vehicular access to the well heads during wet weather periods.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Construct access roads above the 100-year flood
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Construction of access roads with elevation above the 500-year flood elevation to allow access to well heads in the event of high water levels and flooding. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year flood level or "worst case scenario".
Mitigation Action/Project Type	SIP
Goals Met	2, 6
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Reduced flood vulnerability of critical facility; environmental protection
Estimated Cost	High
Priority*	Medium
Plan for Implementation	
Responsible Organization	Dutchess County Water and Wastewater Authority, Poughkeepsie
Local Planning Mechanism	Capital Plan and Budget
Potential Funding Sources	FEMA grants (HMGP); DCWWA budget for local match
Timeline for Completion	Long term DOF – LOI submitted to State/FEMA
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DCWWA - 4

Action Name: Dalton Farms Water System Improvements

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)	Medium	

Action Number: DCWWA - 5
Action Name: Dalton Farms Sewer System Improvements

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	The edge of the 100 year flood plain comes within approximately 5' of the southwest corner of the Wastewater Treatment Plant (WWTP), covers the influent sewer manhole and comes within 14' of the north side of the building. Inundation of the WWTP during a flood event could cause the release of untreated sewage and of treatment chemicals stored on-site into flood waters and the stream bed, causing a public health and environmental hazard. Flood waters could damage treatment plant components, particularly the biologically active treatment components and electrical controls.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Construct a berm around the wastewater treatment plan
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Construction of a berm around the wastewater treatment plant to mitigate the potential risk of inundation due to flooding. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year flood level or "worst case scenario".
Mitigation Action/Project Type	SIP
Goals Met	2, 6
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Reduced flood vulnerability of critical facility; environmental protection
Estimated Cost	High
Priority*	Medium
Plan for Implementation	
Responsible Organization	Dutchess County Water and Wastewater Authority
Local Planning Mechanism	Capital Plan and Budget
Potential Funding Sources	FEMA grants (HMGP); DCWWA budget for local match
Timeline for Completion	Long term DOF – LOI submitted to State/FEMA
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DCWWA - 5

Action Name: Dalton Farms Sewer System Improvements

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)	Medium	

Action Number: DCWWA - 6
Action Name: Valley Dale Sewer System Improvements

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm
Specific problem being mitigated:	Because the Wastewater Treatment Plant (WWTP) property is located near the head of the drainage stream in a developed subdivision, experience shows that the stream can overflow its banks during significant rainfall events. Also, because the property is essentially flat, water is slow to run off. Inundation of the WWTP during a flood event could cause the release of untreated sewage and of treatment chemicals stored on-site into flood waters and the stream bed, causing a public health and environmental hazard. Flood waters could damage treatment plant components particularly the biologically active treatment components and electrical controls. The current condition of the access drive does not allow vehicular access during wet weather periods.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Construct berm around the WWTP
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Construction of a berm around the wastewater treatment plant to mitigate the potential risk of inundation due to flooding and construction. Reconstruct access driveway to provide vehicular access during all weather conditions. Implementation of this project, from securing funding through project completion, shall be conducted to provide protection to this critical facility to the 500-year flood level or "worst case scenario".
Mitigation Action/Project Type	SIP
Goals Met	2, 4, 6
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	Reduced flood vulnerability of critical facility; environmental protection
Estimated Cost	High
Priority*	Medium
Plan for Implementation	
Responsible Organization	Dutchess County Water and Wastewater Authority
Local Planning Mechanism	Capital Plan and Budget
Potential Funding Sources	FEMA grants (HMGP); DCWWA budget for local match
Timeline for Completion	Long term DOF – LOI submitted to State/FEMA
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DCWWA - 6

Action Name: Valley Dale Sewer System Improvements

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)	Medium	

Action Number: DCWWA - 7

Action Name: Emergency Response Equipment Procurement

Assessing the Risk	
Hazard(s) addressed:	All Hazards
Specific problem being mitigated:	The DCWWA has 25 separate locations associated with the production, treatment, storage, pumping and control of treated potable water, or with the pumping and treatment of sewage, which could be susceptible to flooding and other damages in the event of a significant storm event. In the event of a widespread and/or prolonged emergency event, resources of emergency response organizations and private vendors may be over-stressed and unavailable to assist the Authority in protecting critical infrastructure and making necessary repairs.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Purchase and install pumps and light plants to use in emergencies
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Procurement of 5 gasoline powered pumps with suction and discharge hoses to remove storm water from flooded facilities (meter vaults, lift stations, etc.) and between berms and operating facilities. Purchase of 2-portable light plants to be used during natural disasters to support repair efforts. Having such equipment on hand would improve the DCWWA's capacity to avoid raw sewage releases to the environment, to provide continued water service during an emergency event, and to provide assistance to other water and sewer systems around the County.
Mitigation Action/Project Type	SIP
Goals Met	2, 6
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	High – Maintain critical facility; public health
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Dutchess County Water and Wastewater Authority
Local Planning Mechanism	Capital Plan and Budget
Potential Funding Sources	FEMA grants (HMGP); DCWWA budget for local match
Timeline for Completion	Long term DOF – LOI submitted to State/FEMA
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DCWWA - 7

Action Name: Emergency Response Equipment Procurement

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)	High	

Action Number: DCWWA - 8

Action Name: Fairways Water System Back Up Generator

Assessing the Risk	
Hazard(s) addressed:	All Hazards resulting in loss of electricity
Specific problem being mitigated:	The water system does not have back up power and is therefore unable to provide water service to customers during electrical outages. With the wells off line, low water pressure in the distribution system can allow for the infiltration of surface and ground water, and the possible introduction of bacteria or other contaminants, into the water distribution system.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Install generator at the Fairways Water System
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Installation of a permanent on-site generator to provide back up power during electrical outages.
Mitigation Action/Project Type	SIP
Goals Met	2, 6
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	High – Maintain critical facility; public health
Estimated Cost	High
Priority*	High
Plan for Implementation	
Responsible Organization	Dutchess County Water and Wastewater Authority
Local Planning Mechanism	Capital Plan and Budget
Potential Funding Sources	FEMA grants (HMGP); DCWWA budget for local match
Timeline for Completion	Long term DOF – LOI submitted to State/FEMA
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DCWWA - 8

Action Name: Fairways Water System Back Up Generator

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)	High	

Action Number: DCWWA - 9

Action Name: Central Dutchess Water System Storage Facility

Assessing the Risk	
Hazard(s) addressed:	All Hazards
Specific problem being mitigated:	The DCWWA's Central Dutchess Water Transmission System is a 13 mile, 24" diameter water transmission line with a capacity of ten million gallons per day (10 MGD) and the capability to convey water from the Hudson River to four Dutchess County municipalities. Provision of water to the CDWTL is dependent on the functioning of the Poughkeepsie Joint Water Board's Hudson River Water Filtration Plant, and multiple pumping and storage facilities. In the event of flood damage to the Water Filtration Plant or pumping facilities, or in the event of a prolonged power outage, water service through the Central Dutchess Water Transmission System could not be maintained.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. Construct a 1 million gallon elevated storage tank to provide backup water
	2.
	3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Construction of a one (1) million gallon elevated storage tank that would provide a back-up water source and some pressurization of water distribution networks to allow the continuation of water service during an emergency event. Construction of a storage facility will also provide increased fire fighting capability to current and future CDWTL customers, and to the region in general through the three local fire districts (LaGrange, East Fishkill, and New Hackensack) all of whom have access to fire hydrants located at each major road crossing along the route of the CDWTL.
Mitigation Action/Project Type	SIP
Goals Met	2, 3
Applies to existing structures/infrastructure, future, or not applicable	N/A
Benefits (losses avoided)	Provide redundancy for vital critical resource (potable water); public health
Estimated Cost	High
Priority*	Medium
Plan for Implementation	
Responsible Organization	Dutchess County Water and Wastewater Authority
Local Planning Mechanism	Capital Plan and Budget
Potential Funding Sources	FEMA grants (HMGP); DCWWA budget for local match
Timeline for Completion	Long term DOF – LOI submitted to State/FEMA
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

*** Refer to results of Prioritization (see next page)**

Action Number: DCWWA - 9

Action Name: Central Dutchess Water System Storage Facility

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
Total		
Priority (High/Med/Low)	Medium	