

10.2.8 Town of Deerpark

This section presents the Jurisdictional Annex for the Town of Deerpark.

10.2.8.1 Contacts

Primary and secondary contacts regarding this plan are identified as follows:

- Gary Spears – Supervisor
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Huguenot, NY 12746
(845) 856-2210
- David Dean – Deputy Supervisor
(845) 856-2210
- Al Fusco – Town Engineer
Fusco Engineering & Land Survey
233 E Main St
Middletown, NY 10940
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10.2.8.2 Municipal Profile

Population

The 2010 U.S. Census reported a population of seven thousand, nine hundred one (7,901) for the Town of Deerpark. The population at the 2000 census was seven thousand, eight hundred fifty-eight (7,858). The population increased approximately 0.54% from 2000-2010. Within the Town there are seven (7) unincorporated hamlets where the residential populations are concentrated. These hamlets include: Sparrowbush, Huguenot, Cuddebackville, Westbrookville, Cahoonzie, Rio and Godeffroy.

Location

The Town of Deerpark is located in southeastern New York, in the western corner of Orange County. The Town is bordered to the north by Sullivan County and to the southwest by the Delaware River, which separates it from the State of Pennsylvania. The City of Port Jervis is also located southwest from the Town. Other municipalities bordering the Town include Mount Hope to the northeast and Greenville to the east. The Town of Deerpark has a total area of approximately 67.9 square miles, including approximately 66.4 square miles of land and 1.5 square miles of water. The Town of Deerpark is the second largest township in Orange County.

Brief History

The Lenni Lenape Indians were the first inhabitants of the lands along the east of the Neversink River. In 1690, the first European settler built a blacksmith shop and so began the establishment which would become Deerpark. The population of Deerpark expanded as many families traveled Old Mine Road, America's oldest 100-mile road, to settle and farm the fertile lands. In 1798, Deerpark was officially formed from the Town of Mamakating in Sullivan County.

The Town of Deerpark experienced economic booms with the routing of the D&H (Delaware and Hudson) Canal and the Monticello/Port Jervis Railroad through the Town. Today, Deerpark is a popular tourist destination where people enjoy the natural beauty and mountainous scenery the Town has to offer.

Governing Body

The Town of Deerpark is served by a Town Board which consists of a Supervisor, a Deputy Supervisor, and three (3) Councilpersons. Other elected officials include a Town Clerk, Highway Superintendent, and Tax Collector.

Future Growth

The presence of passenger stations in Otisville and Port Jervis will be major factors in the future growth of the Town and give it an increasingly suburban character. The completion of the Secaucus connection to midtown Manhattan is also expected to lead to increases in population for the Town of Deerpark. This route allows for quicker commuting into the business districts of New York City. Income levels and housing prices are expected to increase as a result of migrants coming from higher income metropolitan areas. The Orange County Water Master Plan from 2010 indicates the projected population for 2020 in the Town of Deerpark will be nine thousand, three hundred fifty-three (9,353). This is based on the average annual growth rate for the Town over the first decade of the 2000s.

10.2.8.3 Natural and Technological Hazards Identified by the Municipality

Numerous natural and technological hazards were identified to have the potential to impact the Town. The hazards identified in this section were selected as a result of local history of hazard events or the possibility of such occurrence based on a local predisposition to any one hazard. For more information on hazards to which Orange County has deemed lands within the County to be vulnerable, refer to Section 5.0 of this Plan.

Natural Hazards

The Town of Deerpark identified thirteen (13) natural hazards as having the potential to impact the municipality, they are:

- Drought
- Floods
- Severe Winter Storm
- Landslide
- Tornado
- Earthquake
- Ice Storm
- Severe Thunderstorm
- Extreme Temperatures
- Hurricane
- Infestation
- Wildfire
- Coastal Storm

Technological and Human-caused Hazards

Technological and human-caused hazards are events which can be attributed to humans in one way or another. Technological and human-caused hazards may often occur as a cascading hazard; that is, occurring directly as a result of a natural hazard event. The Town of Deerpark identified six (6) technological hazards which could impact the Town. These technological hazards are identified and described in Section 10.2.8.6 of this jurisdictional annex. The technological hazards which the Town of Deerpark identified are:

- Dam Failure
- Utility Failure
- Structural Collapse
- Water Supply Contamination
- Hazardous Materials (Fixed Site)
- Transportation Accident

10.2.8.4 Hazard Vulnerabilities

Critical Facilities

A list of community critical facilities was generated to aid in mitigation planning. Table 10.2.8a provides an inventory of critical facilities which were identified in the Town of Deerpark. A figure showing critical infrastructure locations and hazard vulnerable areas in the Town of Deerpark is provided in Attachment I. Multiple information databases were reviewed and queried to obtain the information depicted by this figure. In addition, an Asset Identification Checklist was completed by the Town of Deerpark.

The Town of Deerpark has eighteen (18) critical facilities within the 500-year floodplain or the high hazard Landslide Rating¹ area. Four (4) of these facilities are located in both. The following table identifies the structures and hazard issues.

Table 10.2.8a: Town of Deerpark Critical Facilities and Infrastructure in Hazard Areas			
Critical Infrastructure	500-Yr Flood	Landslide Rating Area	Associated Mitigation Action
Cuddebackville Fire Department	Y	N	DP-3
Cuddebackville Post Office	Y	N	DP-3
Deerpark Town Hall	Y	N	DP-3
Fire Training Center	Y	N	DP-3
Huguenot Fire Department	Y	N	DP-3
Huguenot Post Office	Y	N	DP-3
Anna S. Kuhl Elementary School*	Y	N	DP-3
Port Jervis High School*	Y	N	DP-3
Alpert Pond Dam	N	Y	DP-7
Bashakill Wildlife Management Area Dam	Y	Y	DP-3, DP-7
Cubbebackville Dam	Y	N	DP-3
Martin Lake Dam (left)	Y	N	DP-3
Port Jervis Reservoir #1 Dam	Y	N	DP-3
Port Jervis Reservoir #3 Dam	Y	N	DP-3
Cherry Island State Park	Y	N	DP-3
D&H Canal Park	Y	Y	DP-3, DP-7
Delaware and Hudson Canal County Park	Y	Y	DP-3, DP-7
Upper Delaware Scenic & Recreational River	Y	Y	DP-3, DP-7

* It is important to note that Anna S. Kuhl Elementary School and Port Jervis High School are located within the same facility.

As indicated in Section 2.8, participating municipalities did not wish to disclose the locations of public water systems facilities due to security concerns. However, they acknowledge the criticality of such facilities. While it is assumed that most municipal water systems facilities are not located within the floodplain, these jurisdictions will explore hardening/relocation opportunities for those that are located within the floodplain should such actions become necessary due to the incidence of flooding impacts.

By necessity, critical wastewater facilities are located within the 500-year floodplain due to discharge requirements and gravity-fed systems optimization. While relocation is neither desired nor feasible, participating municipalities will seek to harden these facilities where feasibly and fiscally possible.

¹ Areas with a landslide rating in of greater than 37 are considered hazardous. The data was derived from HAZUS software analysis.

Table 2.8a – Orange County NPDES Data lists all wastewater facilities in the County, including the Town of Deerpark, with a NPDES (National Pollutant Discharge Elimination System) permit. In the case of New York State, NPDES permit listing match State Pollutant Discharge Elimination System (SPDES) permit listings.

10.2.8.4 Hazard Vulnerability Ranking

After the hazards of concern were identified for the Town of Deerpark, these hazards were ranked to describe their probability of occurrence and their impact on population, property (general building stock including critical facilities) and the local economy. To rank the hazards of concern for the Town of Deerpark, identified factors such as municipal vulnerability, probability of future occurrences, historical damages, and potential future damages were reviewed. This risk ranking value helps to systematically identify which hazards are of the most concern for each jurisdiction. Hazards which have been deemed to be a mitigation priority are further reviewed within this Jurisdictional Annex.

Table 10.2.8b summarizes the FEMA Presidential Disaster (DR) or Emergency (EM) Declarations for hazard events in Orange County, which encompasses the Town of Deerpark. Many of these federal disasters were the remnants of severe storms or tropical or extra tropical disturbances (hurricanes, tropical storms, Nor’easters) either passing over or located within proximity to Orange County.

Type of Event	Date	Declaration Number	Cost of Losses (Approximate)
Severe Storms and Flooding	April 2005	DR-1589	Total rainfall amounts of 3-7" of rain were experienced in less than 5 days, this led to severe flooding in portions of western Orange County including the Town of Deerpark. The Delaware and Neversink rivers flooded out entire neighborhoods and left parts of the town and city under several feet of water. NCDC, SHEL DUS and DRBC indicated that Orange County experienced between \$17 M and \$40 M in flood damages, primarily in Deerpark. In Deerpark and Port Jervis, floodwaters from the Neversink River caused extensive property damage, flooded the high-school bus garage, and encroached upon the rear entrance of Bon Secours Community Hospital. Nearly 1,000 people were displaced in the Town of Deerpark as a result of flooding from this event. The Delaware River at Port Jervis had a water discharge of 166,000 cfs. The river crested at 20.53 feet nearly three feet above flood stage (18'). The Orange County office of Emergency Management reported 100 basements flooded in Port Jervis and 160 houses damaged in Deerpark resulting in 16M in damages. The Town of Deerpark was placed under a State of Emergency due to flooding conditions.
Severe Storms and Inland and Coastal Flood (also identified as a Nor'Easter)	April 2007	DR-1692	Rainfall in Orange County ranged from 4-8" across the County. FEMA gave out more than \$61 million in assistance to affected counties within the State. Disaster assistance to Orange County totaled \$2.4 M as of July 17, 2007. The Delaware River at Port Jervis had a water discharge of 53,000 cfs. Evacuations and road closures occurred in the Towns of Woodbury, Tuxedo, Deerpark, Washingtonville, and Walkill.

Type of Event	Date	Declaration Number	Cost of Losses (Approximate)
Remnants of Hurricane Sandy and Flooding	October 2012	DR-4085	Much of the worst impacts during this storm were felt along the eastern portion of the County, and downstate. The Delaware River at Port Jervis had a peak water discharge of 11,300 cfs on October 31, 2012. FEMA provided more than 13.6 B in total federal assistance as a result of this storm event. The Sparrowbush Engine Company indicated that numerous calls were received for calls for trees down, impacting home and local utilities. Power was not restored for up to a week in portions of the Town.
Snowstorm	February 2003	EM-3184	Multiple counties throughout New York State experienced an impact from this regional event. Orange County received between 10 and 30 inches of snow from this event. Snowfall totals in Town of Deerpark were estimated at 14 inches. All New York counties affected experienced over \$20 M in damages. Orange County experienced approximately \$1.8 M in property damages.

Table 10.2.8c shows natural and technological/human-caused hazards which were selected by Town representatives during the completion of the Hazard Analysis Worksheet (Attachment III), which was administered during the planning stages for the Orange County Multi-Jurisdictional Multi-Hazard Mitigation Plan Update. This Jurisdictional Annex focuses on natural and technological/human-caused hazards which could impact the Town of Deerpark.

Hazard	Vulnerability Level	Damage Potential	Future Probability	Mitigation Priority?
Drought	Moderate	Moderate	Moderate	Yes
Earthquake	Low	Moderate	Low	No
Flood (Precipitation Driven)	High	High	High	Yes
Coastal storm	Low	Low	Low	No
Hurricane	Moderate	Moderate	Moderate	Yes
Infestation	Moderate	Moderate	Low	No
Landslide	Moderate	Low	Moderate	No
Severe winter storm	High	Moderate	High	Yes
Severe thunderstorm	High	Moderate	High	Yes
Wildfire	Moderate	Moderate	Moderate	Yes
Extreme temperatures	Moderate	Low	Moderate	No
Tornado	Moderate	Moderate	Moderate	Yes
Air contamination	Low	Low	Low	No
Dam failure	Moderate	High	Moderate	Yes
Explosion	Low	Low	Low	No
Fire	Moderate	Low	Moderate	Yes
Fuel shortage	Low	Low	Low	No
Hazardous materials – fixed site	Low	Moderate	Low	No

Hazard	Vulnerability Level	Damage Potential	Future Probability	Mitigation Priority?
Hazardous materials – in-transit	Moderate	Low	Low	Yes
Oil spill	Low	Moderate	Low	No
Radiological – fixed site	Low	Moderate	Low	No
Radiological – in-transit	Low	High	Low	No
Structural collapse	Moderate	Low	Low	No
Transportation accident	High	Low	High	No
Utility failure	Moderate	Moderate	Moderate	No
Water supply contamination	Moderate	Moderate	Low	No

10.2.8.5 Natural Hazard Profiles

The probability of climate-related hazard events is generally expected to increase in the future within the Town of Deerpark. This anticipated increase results from the expected increase in weather volatility associated with climate change. Delaware River communities will also experience increased threat of flooding due to sea level rise. Upstream tributaries such as the Wallkill River, Moodna Creek, and Ramapo River will also experience increased flooding occurrences to a lesser extent.

Past occurrences of hazard events are indicated in their respective profiles below. Some hazards may not have locally available documentation of past occurrence, but are nonetheless profiled in this annex to instill future mitigation planning consideration.

Flood

As indicated in the Municipal Profile (Section 10.2.8.2), the Town of Deerpark is located within the southwestern section of Orange County. Orange County's communities, including the Town of Deerpark, experience flooding events during all seasons. The Town of Deerpark lies in a valley formed by the Delaware River, as it joins the Neversink River within the upper Delaware River Basin. The Delaware River extends along the western side of the Town, while the Neversink River is located to the east. The unique geographic position of being at the confluence of two (2) major rivers and downstream from major rivers and reservoirs within the upper Delaware River Basin has resulted in numerous flood events for the Town of Deerpark. Flooding is a frequent event in the Town with historic floods occurring in 1948, 1955, 1971, 1981, 1984, 1996, 2004, 2005, 2006, 2007, 2011, and 2012. As a result of the flooding that has historically occurred within Orange County, the County is ranked as the 5th most flood vulnerable county in New York State, based on potential flood exposure and vulnerability to loss. Table 10.2.8d indicates that approximately nine (9) percent of the land in the Town is within high flood risk areas (Zones A, AE, AH, AO) and approximately one (1) percent of the land in the Town is mapped as moderate flood risk areas (Zone X500).

Municipality	Approx. Total Land Area (Acres)	High Flood Risk (Acres)	Moderate Flood Risk (Acres)	Low Flood Risk (Acres)	Land in High Flood Risk (%)	Land in Moderate Flood Risk (%)
		A, AE, AH, AO	X500	X	A, AE, AH, AO	X500
Deerpark, Town of	43,505	3,711	412	39,323	9%	1%

Specific areas of flooding concern within the Town of Deerpark are the Neversink River corridor, the Delaware River Valley, Myer's Grove portion of Godeffroy, Anna S. Kuhl School, Peenpack Trail, and Route 42 in Cahoonzie. The Town of Deerpark completed an analysis of numbers of structures and value of structures that are located in areas which are vulnerable to flooding events; this information is summarized in Table 10.2.8e.

Below is a table that illustrates the value of property in the Town of Deerpark that is located within the 500-year floodplain and is categorized by land use type. This table was derived from FEMA floodplain mapping and parcel data from the Orange County Property Assessor.

Type of Structure	# Structures in Hazard Area	Value of Structures (in millions)
Residential	256	\$36.0
Commercial	2	\$0.5
Industrial	0	\$0
Agricultural	0	\$0
Religious/Non-profit	1	\$1.7
Government	6	\$3.0
Education	1	\$2.0
Utilities	0	\$0
Dams	2	Unknown
Parks	3	Unknown
Total	271	\$43.2

National Flood Insurance Program (NFIP) Summary

The Town of Deerpark has been a participant in the NFIP since 1974. Administration is provided through the Town Board. The Town has a floodplain development permit which is administered by the Town's building inspector who is an appointed official. This individual is responsible for reviewing Floodplain Development Permit Applications, granting permits, maintaining construction compliance, and reviewing post construction impacts. Details of NFIP policies within the Town of Deerpark are provided in Table 10.2.8f. The Town of Deerpark has

sixteen (16) repetitive flood loss properties, four (4) of which qualify as severe repetitive flood loss properties. There have been one hundred eighty-three (183) incidents of losses, with a total payout of \$3,747,900.82. Continued compliance with NFIP requirements is expected for the Town of Deerpark. The Town has been maintaining NFIP participation by performing the duties and actions that were listed in the local laws that their municipal boards adopted (Local Law #1 of 2009). The Town Floodplain Administrator has been provided a NFIP best practices incorporation guidance document and will be using it to improve local participation in NFIP standards going forward. This package of documents was provided by NYSDHSES and can be found in Appendix F - NFIP Floodplain Administrator Guidance Package.

Table 10.2.8f: NFIP Statistics for the Town of Deerpark (FEMA)				
NFIP Loss Statistics as of January 31, 2018				
Total Losses	Closed Losses	Open Losses	CWOP Losses	Total Payments
183	159	0	24	\$3,747,900.82
NFIP Policy Statistics As of January 31, 2018				
Policies in-force		Insurance in-force		Written Premium in-force
116		\$24,582,600		138,291
CWOP= Losses that have been closed without payment				

Historical Occurrences:

Descriptions of significant flood events which have impacted the Town of Deerpark over the last twenty (20) years (supplementary information to the disaster declarations listed in Table 10.2.8b which may have resulted in flooding impacts):

- March 2011 – Unusually heavy regional rainfall and snowmelt contributed to this spring flood event. During this flood event portions of Hobson Road collapsed due to flooding. Flooding occurred throughout the town resulting in numerous road closures, and even forced a mandatory evacuation of the riverfront community of Meyers Grove. Repairs due to flood damage were in excess of one hundred thousand dollars (\$100,000). The Sparrowbush Fire Department was deployed to the Myers Grove section of the Town of Deerpark to assist in evacuation of low lying areas. The Town Supervisor called for a state of emergency and issued a mandatory evacuation for some along the Neversink River.
- September 2012 – Torrential rainfall over a short period of time lead to flash flooding in portions of western Orange County, including the area of Deerpark and Port Jervis. Water ponded (2' depth) in the streets of the 4th ward of Port Jervis, which caused basement flooding in several homes. The department of public works reported 3.25" of rainfall in one (1) hour (NCDC Storm Events Database, 2016).

Hurricane and Tropical Systems

Due to the inland location of the Town of Deerpark, the majority of hurricanes that reach the area are classified as tropical storms and risk of true hurricanes is relatively low. However, due to the

severe nature of these storms, costly damages can occur due to high winds, tornadoes, rainfall, and lightning. Flooding is the main concern of tropical systems impacting the Town of Deerpark. Additional details of historic hurricanes which impacted Orange County can also be found in Section 5.0 of this plan.

Previous Occurrences and Losses:

Many sources provided historical information regarding previous occurrences and losses associated with tropical storm systems throughout New York State and Orange County. Some of the sources which were reviewed for storm damages included: National Climatic Data Center (NCDC), FEMA Disaster Declarations, National Oceanic and Atmospheric Administration (NOAA) weather data, and National Hurricane Center (NHS). Table 10.2.8b, above shows presidential disasters associated with tropical systems that impacted the Town of Deerpark.

Additional Historical Occurrences:

In the past ten (10) years there is no record of Hurricanes that have explicitly impacted the Town of Deerpark, however, there have been a number of recorded occurrences within Orange County. The information can be found in the main body of the document.

Severe Winter Storms

For a description of this hazard, please see section 5.8.

Historical Occurrences:

In the past ten (10) years there is no record of Severe Winter Storms that have explicitly impacted the Town of Deerpark, however, there have been a number of recorded occurrences within Orange County. The information can be found in the main body of the document.

Severe Thunderstorms

For a description of this hazard, please see section 5.2.

Previous Occurrences and Losses

In the past ten (10) years there is no record of Severe Thunderstorms that have explicitly impacted the Town of Deerpark, however, there have been a number of recorded occurrences within Orange County. The information can be found in the main body of the document.

Drought

For a description of this hazard, please see section 5.5.

Historical Occurrences:

In the past ten (10) years there is no record of Droughts that have explicitly impacted the Town of Deerpark, however, there have been a number of recorded occurrences within Orange County. The information can be found in the main body of the document.

Wildfire

For a description of this hazard, please see section 5.9.

Previous Occurrences and Losses

Between 1950 and 2009 no major wildfires were reported for Orange County according to the NCDC database. However, numerous smaller wildfires often go unreported in the national databases. Review of the Sparrowbush Fire Department call logs indicates units have been sent to numerous brush fires; these small brush fires were promptly extinguished. The steep valley wall slopes that bound the Basher Kill/Neversink Valley have the potential to contribute to the rapid spread of wildfires that originate in the lowland areas. As such, this hazard was assigned a medium to low probability for the occurrence of wildfire events. The existence of fuel (ground vegetation, brush, and tree canopies), as well as the region’s topography and prevailing air masses are the main factors that impact the potential for wildfire. Besides lightning, human activities such as smoking, campfires, equipment use, and arson can ignite a wildfire. Table 10.2.8g provides details regarding wildfire risk within the Town of Deerpark.

Table 10.2.8g: Exposure to Wildfire Risk in the Town of Deerpark								
Municipality	Urban-Wildland Interface (feet)	Wildfire Risk Area – No Improved Property (Acres)	Wildfire Risk Area – With Improved Property (Acres)	Total Municipal Area (Acres)	Total Area Within Wildfire Risk Zones %	Total Value of Improvements in Municipal Areas	Improved Value Within Wildfire Risk Zones	Improved Value Within Wildfire Risk Zones %
Deerpark, Town of	62,614	17,126	19,784	43,505	85%	\$609,901,376	\$308,142,196	51%

Tornado

For a description of this hazard, please see section 5.2.

Previous Occurrences and Losses:

In the past ten (10) years there is no record of Tornados that have explicitly impacted the Town of Deerpark, however, there have been a number of recorded occurrences within Orange County. The information can be found in the main body of the document.

Dam Failure

Dam failure is identified as dam structural deterioration, either gradual or sudden, that results in the inability to control impounded water as designed. This deterioration poses a danger to people and/or property in the potential inundation area. Dam failure can occur with little warning.

Intense storms may produce a flood in a few hours or even minutes for upstream locations. Dams may be either man-made or exist because of natural phenomena, such as beaver dams. The majority of dams are man-made structures normally constructed of earth or concrete.

Dams can fail for one or a combination of the following reasons:

- Overtopping caused by floods that exceed the capacity of the dam.
- Structural failure of materials used in dam construction.
- Movement and/or failure of the foundation supporting the dam.
- Settlement and cracking of concrete or embankment dams.
- Piping and internal erosion of soil in embankment dams.
- Inadequate maintenance and upkeep.
- Deliberate acts of sabotage.

The New York State Department of Environmental Conservation (NYSDEC) maintains a database to classify dams based on the event of a failure. Explanations of dam classifications are noted in the following table.

Table 10.2.8h: Dam Hazard Potential Classification	
NYSDEC Classification	Description
Class "C" or "High Hazard"	A dam failure may result in widespread or serious damage to home (s); damage to main highways, industrial or commercial buildings, railroads, and/or important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; or substantial environmental damage; such as the loss of human life or widespread substantial economic loss is likely.
Class "B" or "Moderate Hazard"	A dam failure may result in damage to isolated homes, main highways, and minor railroads; may result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; and/or is otherwise likely to pose the threat of personal injury and/or substantial economic loss or substantial environmental damage. Loss of human life is not expected.
Class "A" or "Low Hazard"	A dam failure is unlikely to result in damage to anything more than isolated or unoccupied buildings, undeveloped lands, minor roads such as town or country roads; is unlikely to result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; and/or is otherwise unlikely to pose the threat of personal injuring, substantial economic loss or substantial environmental damage.
Class "D" or "Negligible or No Hazard"	A dam that has been breached or removed, or has failed or otherwise no longer materially impounds waters, or a dam that was planned but never constructed. Class "D" dams are considered to be defunct dams posing negligible or no hazard. The department may retain pertinent records regarding such dams.

There are no known historic failures of dams in the Town but the probability of future failure is a significant concern. Uses for dams in the region vary as do the construction of each dam. In maintaining the inventory of existing dams, NYSDEC provides online access through a Google Earth KML file to provide an interactive mechanism for locating dams across the State.

There are twenty-six (26) dams, five (5) of which are high hazard dams (Class B), registered with the NYSDEC in the Town of Deerpark, including five (5) dams that are categorized as high hazard dams (Table 10.2.8i). Four (4) of the five (5) “high hazard” dams are owned by the City of Port Jervis; the remaining “high hazard” dam is the Rio Reservoir, owned by Alliance Energy.

Name	State ID	Construction Type	Owner	Build Date	Last Inspection
Port Jervis Reservoir #1 Dam	146-0022	Earth	City of Port Jervis	1869	7/11/06
Port Jervis Reservoir #2 Dam	164-0048	Earth	City of Port Jervis	1880	7/11/06
Port Jervis Reservoir #3 Dam	164-0038	Earth	City of Port Jervis	1910	7/11/06
Port Jervis Reservoir #3 Dike	164-0039	Earth	City of Port Jervis	1912	7/11/06
Rio Dam	149-0086	Earth	Alliance Energy	1927	10/22/1991

The Rio Reservoir is the lowermost of three (3) reservoirs on the Mongaup River. The reservoir provides three thousand, six hundred fifty (3,650) ac-ft of storage capacity that is used by Alliance Energy as an immediate source of water for hydro-electric power production through two generating units. Water flows into the Rio Reservoir primarily via two (2) separate inputs, namely the Mongaup River and Black Brook. Outflows from the Rio Reservoir are primarily through the tailrace of the power generation units when they are in service, with a small amount released through a regulated outflow point directly into the bypass reach to protect the ecosystem (Alliance Energy, 2010). Dams upstream of the Rio Reservoir include the Swinging Bridge Reservoir (which is fed by two (2) smaller reservoirs, known as the Toronto and Cliff Lake Reservoirs), and the Mongaup Falls Reservoir. All of the reservoirs in the Mongaup River System are owned and operated by Alliance Energy, principally for hydroelectric production.

In addition to the dams located within the Town of Deerpark, the Town is also located downstream of the Neversink Reservoir, which is operated by the New York City Department of Environmental Protection (NYCDEP). Located in Sullivan County, approximately five (5) miles northeast of the Village of Liberty and more than seventy-five (75) miles from New York City, the Neversink Reservoir holds 34.9 billion gallons at full capacity. The reservoir was placed into service in 1954. A potential failure of the Neversink Reservoir would cause significant flooding within portions of the Town of Deerpark, including the Neversink River valley Hamlets of Cuddebackville, Godeffroy, and Huguenot. Flooding associated with a failure of the Neversink Reservoir would exceed 500-year flood elevations, potentially leading to catastrophic loss of life and property. While the damage from such a failure would be significant, there would likely be at least several hours warning before the arrival of flood waters within the Town of Deerpark.

The Neversink is one (1) of four (4) reservoirs in the NYCDEP’s Delaware Water Supply System, with the Cannonsville and Pepacton Reservoirs also being located in the Delaware River watershed. The fourth reservoir considered a part of the Delaware Water Supply

System is the Rondout Reservoir located in Sullivan and Ulster Counties. Although classified by NYCDEP as part of the Delaware River Water Supply System, this reservoir actually drains to the Hudson River via Rondout Creek in Ulster County.

Portions of the Town of Deerpark could be impacted by dam failures in the Mongaup System, the Cannonsville and Pepacton Reservoirs operated by NYCDEP, and Lake Wallenpaupack, located in Pike County, Pennsylvania. Failures in these systems would principally impact low-lying areas along the Delaware River; however, backwater flooding along the lower reaches of the Neversink River could also occur. Backwater effects on the Neversink River due to a failure of the Lake Wallenpaupack reservoir could extend as far upstream as the Hamlet of Huguenot (PPL Generation, LLC, 2002). Flood arrival times along the Delaware at Port Jervis are on the order of three (3) hours for a failure of the Lake Wallenpaupack dam (PPL Generation, LLC, 2002). Flood arrival times for the Mongaup River system reservoirs could be less than one (1) hour (TetraTech, 2009).

Because of the placement throughout the Town, in the instance where there was a dam failure, several individual locations could be affected. In each affected area there could be cascading effects, including flooding, landslides and structural failures.

10.2.8.7 Capability Assessment

A series of worksheets were provided to the community to identify local mitigation capabilities which are already in place within the Town of Deerpark. These policies, programs and resources can reduce hazard impacts and can be used to implement hazard mitigation activities. A summary of these are shown in Table 10.2.8j, below.

Table 10.2.8j: Capabilities and Planning Mechanisms for the Town of Deerpark		
Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
Codes/ Ordinances	Town of Deerpark Local Law includes Building Code Laws (NYSB/2010), Site Plan Review, includes zoning, subdivision ordinance, floodplain, and natural hazard specific ordinances.	<ul style="list-style-type: none"> • Town of Deerpark Zoning Laws • Building Department • Planning and Zoning Boards
	Codes of New York State , includes provisions for development and activities within floodplain areas	NYSDEC
Plans, Manuals, and/or Guidelines	<ul style="list-style-type: none"> • Town of Deerpark Comprehensive Plan 2003 • Local Emergency Operations Plan • Continuity of Operations Plan • Stormwater Management Plan • Community Wildfire Protection Plan • Flood Insurance Rate Maps 	Town of Deerpark Planning Board
Studies	Town of Deerpark Flood Insurance Study	FEMA
Staff/Personnel Resources	Planner(s) or engineer(s) with knowledge of land development and land management practices	Town Engineer –Fusco Engineering
	Engineer(s) or professional(s) trained in construction practices related to buildings and /or infrastructure	Town Engineer –Fusco Engineering, Building Inspector

Table 10.2.8j: Capabilities and Planning Mechanisms for the Town of Deerpark

Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
	Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	Town Engineer –Fusco Engineering/Emergency Management Committee, Town of Deerpark Planning Commission
Emergency Management	Floodplain Manager	Building Inspector is the appointed manager
	Mitigation Planning Committee	Supervisor, Emergency Manager, Town Engineer
	Surveyors	
	Staff with education or expertise to assess the community's vulnerability to hazards	Emergency Management Committee
	Personnel skilled in GIS and/or HAZUS; AutoCad-Civil 3D; ArcViewGIS	Part Time GIS Coordinator
	Emergency manager	Emergency Management Committee
	Grant writer(s)	Town Engineer
Financial Resources	Community Development Block Grants (CDBG)	
	Authority to levy taxes for specific purposes	Various
	Incur debt through general obligation bonds	Various
	Community Development Block Grant	Various
	State funding programs	Various
	Other federal funding programs	Various

Hazard Mitigation: Existing and Planning Mechanisms

Emergency Communications, Routes, and Shelters:

Orange County utilizes the CodeRED Emergency Communications System. The Town of Deerpark’s website does not indicate an alternative emergency communications system.

The Town follows emergency route rules set by Orange County. The Town has identified one (1) current shelter at Hamilton Bi-centennial Elementary (HBE) School (929 U.S. Route 209, Cuddlebackville, NY 12729) and one (1) future emergency shelter locations: Town of Deerpark Senior Citizens and Youth Center. More information on these sites can be found in Attachment III.

Comprehensive Plan:

The Town of Deerpark has a Comprehensive Plan from 2003 and an updated zoning law from 2013. The Town Zoning Code and Planning Board have adopted regulations which allow for specific regulations regarding Flood Damage Prevention. The Comprehensive Plan and Town

Zoning Code will be informed by this document and provide guidance on actions moving forward during future updates.

Planning Mechanisms:

While this annex has provided a summary and description of existing plans, policies, and regulatory mechanisms that support hazard mitigation, the 2018 Orange County Hazard Mitigation Plan Update is intended to allow for the integration of its recommendations and data into local plans. Listed below are several planning and policy mechanisms that lend themselves to the integration of materials and objectives from this hazard mitigation plan. Columns to the right indicate whether the municipality has utilized hazard mitigation planning elements in the past (as in the aftermath of a previous local hazard mitigation plan) and whether they intend to be utilized in the future (which most, if not all, do).

Table 10.2.8k: Incorporation of Hazard Mitigation Planning into Existing and Future Planning Mechanisms		
Planning Mechanism	Has been Utilized	May be Utilized
Capital Improvement Budget: Hazard Mitigation Actions to be considered during the development of annual capital improvement plans. Compliance with Hazard Mitigation goals and objectives as well as the hazard vulnerability of site will be a consideration during the evaluation of infrastructure and facilities projects.	X	X
Operating Budget: Hazard Mitigation Actions to be considered within day-to-day operating budgets as funding permits.	X	X
Building & Zoning Ordinances: Review of the hazard mitigation plan and hazard analyses are part of the evaluation of land use, zoning, and development review ordinances and permitted processes.	X	X
Comprehensive Land Use Plan: Elements such as hazard vulnerability and hazard area extents will be considered during the development of future land use maps and other elements of comprehensive planning.	X	X
Human Resource Manual: Employee job descriptions may contain elements related to hazard mitigation planning and associated recommendations.		X
Grant Applications: Support for funding requests in the form of data, maps, and priority recommendations will be drawn from the hazard mitigation plan.	X	X
Fire Plan: Fire Plans for the municipality and local fire departments can utilize data and mapping in the hazard mitigation plan.	X	X
Local School Service Projects: Municipal officials and staff can explore the possibility of collaboration with local school districts to provide avenues for student community service projects as well as educational opportunities.		X
Economic Development: Local chambers of commerce and other economic development agencies can utilize the hazard mitigation plan to better inform new/expanding businesses in finding a location.		X

Summary

This Plan will be used to inform the Town's Comprehensive Plan, Town Codes, and provide guidance on actions moving forward.

10.2.8.8 Mitigation Strategy and Prioritization

This section identifies past mitigation strategies as well as proposed mitigation actions moving forward. The proposed mitigation actions are also evaluated and prioritized in this section.

Past, Completed, and On-Going Initiatives

Some of the actions recommended in Town's previous hazard mitigation plan were addressed and completed while others were addressed and are on-going. Due to lack of available funding, most of the recommendations of the previous plan were not addressed and are thus carried forward as proposed actions under this plan.

A number of the proposed actions from the Town's previous plan involved culvert improvements and stream bank stabilization. Those that remain incomplete were consolidated into a single proposed action in this plan for stormwater system improvements.

10.2.8.9 Prioritization of Mitigation Actions

Proposed Actions

These mitigation actions were created to satisfy five (5) specific goals:

- Protect life and property.
- Increase community education and disaster preparedness.
- Enhance disaster preparedness, response and recovery.
- Protect the environment, private property, and community facilities.
- Provide for public health and safety.

After identifying the above Mitigation Actions, the Town developed a priorities list that would link the mitigation actions with the stated goals and objectives. These priorities were evaluated on the established cost scale and compared to the potential benefits if implemented and provided in Table 10.2.8l.

In addition to identifying potential costs and benefits provided in Table 10.2.8l, STAPLEE forms were completed for each of these actions. A table with these evaluations can be found in Attachment II.

“STAPLEE” refers to the following lenses of evaluation: social, technological, administrative, political, legal, economic, and environmental.

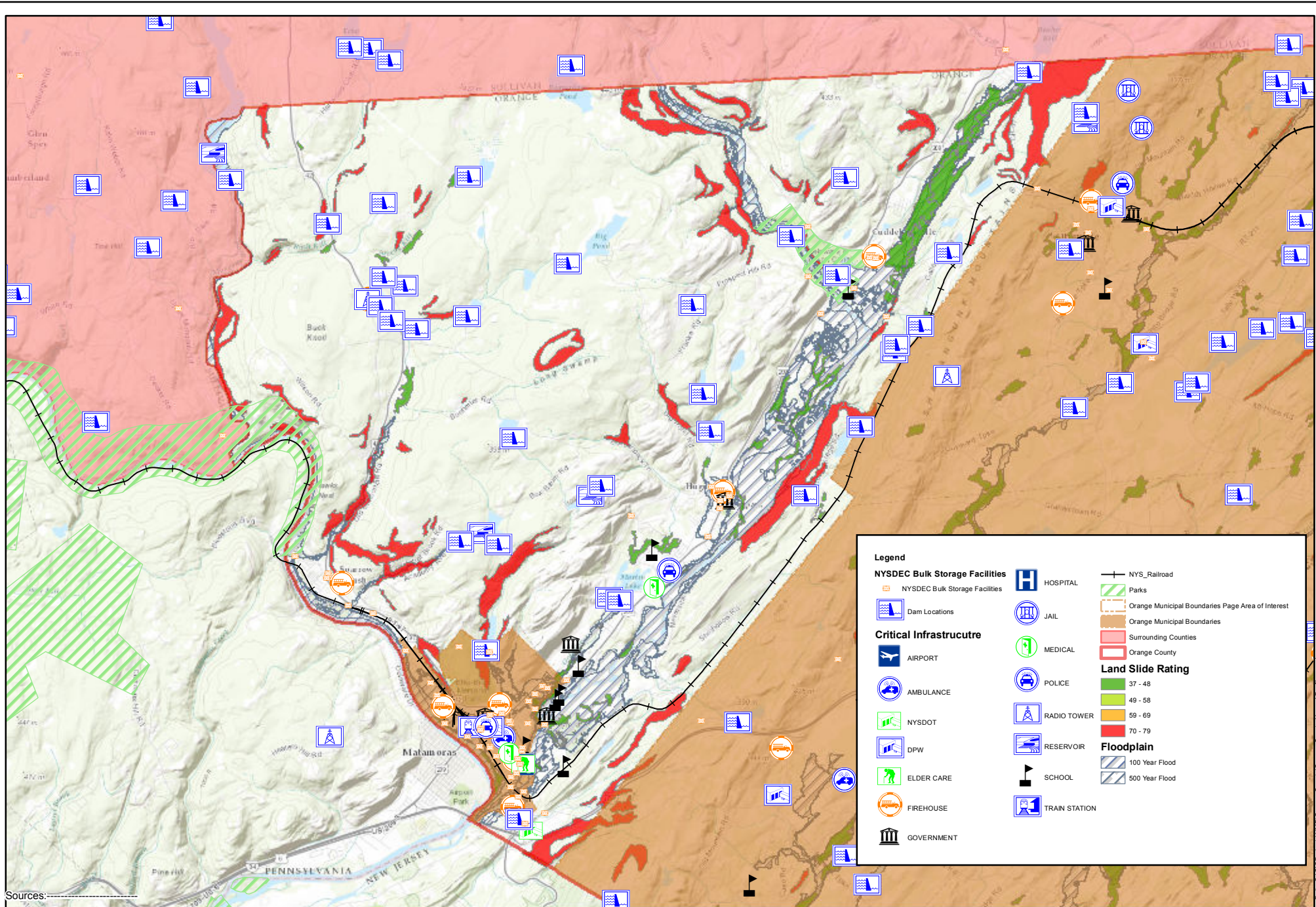
Section 201.6 of 44 CFR requires an action plan describing how the actions identified will be prioritized. The Town has developed a prioritization methodology to organize mitigation actions that can be reviewed in the STAPLEE forms of Attachment II.

Table 10.2.8I: Mitigation Actions/Projects Identified				
Action	Description	Hazard Mitigated	Involved Agency(ies)	Funding Source(s)
DP-1	Conservation energy agreements with neighboring municipalities and well development	Drought	Town Engineer, Town Board, Town Planning Board	Town Funds, FEMA HMGP, FEMA PDM
DP-2	Code Enforcement Education, Trailing and Travel regarding the structural impacts of seismic activity for municipal staff	Earthquake, Structural Collapse	Town Engineer, Town, Town Planning Board	FEMA HMGP, Town Funds, FEMA PDM
DP-3	Town-wide replacement of bottlenecks in stormwater system and raising backs along streams	Flood, Severe Storm, Hurricane	Town Engineer, Town Highway Department, Town Board	FEMA HMGP, FEMA PDM, NYSDEC, Town Funds
DP-4	Removal of dead and dying trees along town roads and streams	Severe Storm, Hurricane, Flood	Town Engineer, Town Highway Dept., Town Board, Town Planning, NYSDOT, OCDPW, Orange & Rockland Util.	Town Funds, FEMA HMGP, FEMA PDM
DP-5	New salt storage for material at Town Highway Garage	Winter Storm Severe	Town Engineer, Town Highway Department, Town Board, Town Planning	Town Funds, FEMA HMGP, FEMA PDM
DP-6	Enforcement of infestation rules by NYSDEC and NYSDOH. Work to be completed by a contractor to remove contaminated wood and spray	Infestation	Town Engineer, Town Board	Town Funds, FEMA HMGP, FEMA PDM
DP-7	Prepare retaining walls at locations of potential landslides Town-wide	Landslide, Severe Storm, Flood	Town Engineer, Town Board, Town Planning, Town Highway Dept.	Town Funds, FEMA HMGP, FEMA PDM
DP-8	Improve the capacity of the combined sewer system	Severe Storm, Flood, Hurricane	Town Engineer, Town Board, Town Planning, Town Highway Dept.	Town Funds, FEMA HMGP, FEMA PDM
DP-9	Develop cleared fire lanes Town-wide	Wildfire	Town Engineer, Town Board, Town Planning, US Parks Service, NYSDEC, NYCDEP, Delaware River Basin Commission, BAS	Town Funds, FEMA HMGP, FEMA PDM, US Parks Service, NYSDEC, NYCDEP
DP-10	Generator with fuel tanks at Town's Highway Dept./Senior Center at 410 Rte 409, Huguenot, NY	Extreme Temperatures	Town Engineer, Town Board, Town Highway Dept.	FEMA HMGP, FEMA PDM, NYSGOSR, NY Rising, CDBG, NYS Legis. Member item, Town Funds
DP-11	Provide equipment to neutralize the material and prepare evacuation plan at the Algonquin Plant on the Millennium Pipeline	Hazardous Materials – Fixed-site	Town Engineer, Town Board, Town Fire Dept., Town Police Dept., Pipeline Owners	Town Funds, FEMA HMGP, FEMA PDM, Pipeline Owners
DP-12	Acquisition and Demolition of residential buildings as a result of previously declared disasters Town-wide	Structural Collapse, Flood	Town Engineer, Town Board, NYSDEC	Town Funds, FEMA HMGP, FEMA PDM

Table 10.2.8I: Mitigation Actions/Projects Identified				
Action	Description	Hazard Mitigated	Involved Agency(ies)	Funding Source(s)
DP-13	Traffic light at Rte 209 and Peenpack Trail	Transportation Accident	Town Engineer, Town Board, Town Highway Dept., NYSDOT	FEMA HMGP, Town Funds, CDBG, FHWA, NYS Legis. Member Item

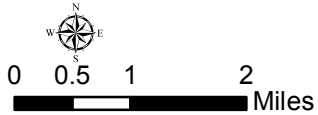
Attachment I

**Hazard Area Extent and Location Map -
Town of Deerpark**



Legend

NYSDEC Bulk Storage Facilities	HOSPITAL	NYS_Railroad
Dam Locations	JAIL	Parks
AIRPORT	MEDICAL	Orange Municipal Boundaries Page Area of Interest
AMBULANCE	POLICE	Orange Municipal Boundaries
NYS DOT	RADIO TOWER	Surrounding Counties
DPW	RESERVOIR	Orange County
ELDER CARE	SCHOOL	Land Slide Rating
FIREHOUSE	TRAIN STATION	37 - 48
GOVERNMENT		49 - 58
		59 - 69
		70 - 79
		Floodplain
		100 Year Flood
		500 Year Flood



Path: C:\GIS\Projects\HMP\Orange County\Orange County Hazard Profiles.mxd

Attachment II

STAPLEE Mitigation Action Cost/Benefit Analysis - Town of Deerpark

STAPLEE Criteria Consideration Tables
Mitigation Action Prioritization and Comparison

Jurisdiction:

Town of Deerpark

Action ID	Action	S	T	A	P	L	E	E	Can action be easily implemented?	Does action achieve multiple plan objectives?	Can action be quickly implemented?	Level of action benefits	Level of action overall costs	Priority ranking
		+ = benefit (favorable), - = cost (unfavorable), 0 = neutral or N/A											Levels = high, medium, or low	
DP-1	Conservation energy agreements with neighboring municipalities and well development	+	+	-	+	0	0	+	+	0	0	Medium	Medium	Low
DP-2	Code Enforcement Education, Trailing and Travel regarding the structural impacts of seismic activity for municipal staff	+	+	+	+	+	+	+	+	+	+	Medium	Low	Low
DP-3	Town-wide replacement of bottlenecks in stormwater system and raising backs along streams	+	+	+	0	0	0	-	0	+	0	High	High	High
DP-4	Removal of dead and dying trees along town roads and streams	+	+	+	+	0	+	0	+	+	0	Medium	Medium	High
DP-5	New salt storage for material at Town Highway Garage	+	+	+	0	+	0	-	0	0	0	Medium	High	Medium
DP-6	Enforcement of infestation rules by NYSDEC and NYSDOH. Work to be completed by a contractor to remove contaminated wood and spray	+	0	+	+	+	0	+	+	0	+	Medium	High	Low
DP-7	Prepare retaining walls at locations of potential landslides Town-wide	+	0	+	+	0	-	0	-	+	-	High	High	Medium
DP-8	Improve the capacity of the combined sewer system	+	0	0	0	0	-	-	-	+	-	High	High	Medium
DP-9	Develop cleared fire lanes Town-wide	+	+	+	+	0	0	0	+	0	0	Medium	High	Medium
DP-10	Generator with fuel tanks at Town's Highway Dept./Senior Center at 410 Rte 409, Huguenot, NY	+	0	+	+	+	0	0	+	0	0	High	Low	Medium
DP-11	Provide equipment to neutralize the material and prepare evacuation plan at the Algonquin Plant on the Millennium Pipeline	0	0	+	+	+	0	+	+	+	0	Medium	Medium	Low
DP-12	Acquisition and demolition of residential buildings as a result of previously declared disasters Town-wide	+	+	+	0	+	-	+	0	+	+	High	High	Medium
DP-13	Traffic light at Rte 209 and Peenpack Trail	+	+	+	+	+	0	0	0	0	+	High	Medium	Medium

Attachment III

**Hazard Mitigation Worksheets -
Town of Deerpark**

Mitigation Actions and Strategy Detail Worksheet

Action Worksheet	
Name of Jurisdiction	Town of Deerpark
Name of Hazard Mitigation Plan	Orange County Multi-Jurisdiction Hazard Mitigation Plan
Potential Actions/Projects (not being implemented at this time)	
Action/Project Number	Winter Storm Sever DP – 5
Name of Action/Project	New salt storage for material at Town Highway Garage.
Summary of Evaluation: Benefits (losses avoided), estimated costs, and other factors considered	\$2,000,000
Plan for Implementation	
Responsible Organization	Town Engineer, Town Highway Department, Town Board, Town Planning
Action/Project Priority	High
Potential Funding Sources	Town Funds, FEMA HMGP, FEMA PDM
Other assisting organizations, entities, etc.	N/A
Local planning mechanisms to be used in project/action implementation, if any	The administration of this activity will be added to the Town’s annual work schedule.
Progress Report	
Date of status report	
Report of progress	
Evaluation of effectiveness	

Mitigation Actions and Strategy Detail Worksheet

Action Worksheet	
Name of Jurisdiction	Town of Deepark
Name of Hazard Mitigation Plan	Orange County Multi-Jurisdictional Hazard Mitigation Plan
Potential Actions/Projects (not being implemented at this time)	
Action/Project Number	Acquisition & demolition of structures in danger of collapse.
Name of Action/Project	Acquisition & demolition of residential buildings as a result of previously declared disasters town-wide.
Summary of Evaluation: Benefits (losses avoided), estimated costs, and other factors considered	\$1 million (10-30 structures) for purchase or relocation of structures located in hazard prone areas to protect structures from future damage, esp. repetitive & severe repetitive loss properties.
Plan for Implementation	
Responsible Organization	Town Engineer, Town Board, NYSDEC
Action/Project Priority	Structural Collapse Tier 3
Potential Funding Sources	FEMA HMGP, FEMA PDM, Town Funds
Other assisting organizations, entities, etc.	N/A
Local planning mechanisms to be used in project/action implementation, if any	The administration of this activity will be added to the Town's annual work schedule.
Progress Report	
Date of status report	
Report of progress	
Evaluation of effectiveness	

Orange County
Multi-Jurisdictional All Natural Hazard Mitigation Plan
Emergency Shelter Questionnaire

Name of Your Municipality:	<u>Town of Deerpark</u>
Common Name of Your Emergency Shelter:	Current: <u>Hamilton Bi-centennial Elementary school</u>
	Future: <u>Town of Deerpark Senior Citizens & Youth Center</u>
Street Address of Your Emergency Shelter:	Current: <u>929 U.S. Route 209, Cuddebackville, NY 12729</u>
	Future: <u>418 U.S. Route 209, Huguenot, NY 12746</u>
Name of the Owner of Your Emergency Shelter:	Current: <u>City of Port Jervis Consolidated School District</u>
	Future: <u>Town of Deerpark</u>
Name of the Regular Occupant of Your Emergency Shelter:	Current: <u>HBE School</u>
	Future: <u>Town of Deerpark Seniors, Youth & Recreation Center</u>

Name of Jurisdiction: _____

**RESOLUTION
TO AUTHORIZE THE ACCEPTANCE AND ADOPTION OF THE
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR
ORANGE COUNTY, NEW YORK**

WHEREAS, the Orange County Department of Emergency Services, with the assistance from Barton & Loguidice, D.P.C., has gathered information and prepared the Multi-Jurisdictional Hazard Mitigation Plan Update for Orange County, New York; and

WHEREAS, the Multi-Jurisdictional Hazard Mitigation Plan Update for Orange County, New York has been prepared in accordance with the Disaster Mitigation Act of 2000 and Title 44 Code of Federal Regulations (CFR), Part 201; and

WHEREAS, Title 44 CFR, Chapter 1, Part 201.6(c)(5) requires each local government participating in the preparation of a Multi-Jurisdictional Mitigation Plan or Plan Update to accept and adopt such plan; and

WHEREAS, the Town of Deerpark, has reviewed the 2016 Multi-Jurisdictional Hazard Mitigation Plan Update for Orange County, has found the document to be acceptable, and as a local unit of government, has afforded its citizens an opportunity to comment and provide input regarding the Plan Update and the actions included in the Plan;

WHEREAS, the Town of Deerpark, will consider the Multi-Jurisdictional Hazard Mitigation Plan Update for Orange County during the implementation and updating of local planning mechanisms, and will incorporate the hazard assessment data, hazard vulnerabilities, and mitigation actions in these mechanisms, where applicable;

NOW THEREFORE, BE IT RESOLVED, that the Town of Deerpark, as a participating jurisdiction, adopts the Multi-Jurisdictional Hazard Mitigation Plan Update for Orange County, New York, dated May 2016.

This resolution was thereupon declared duly adopted on _____.

(Supervisor)

(Clerk)