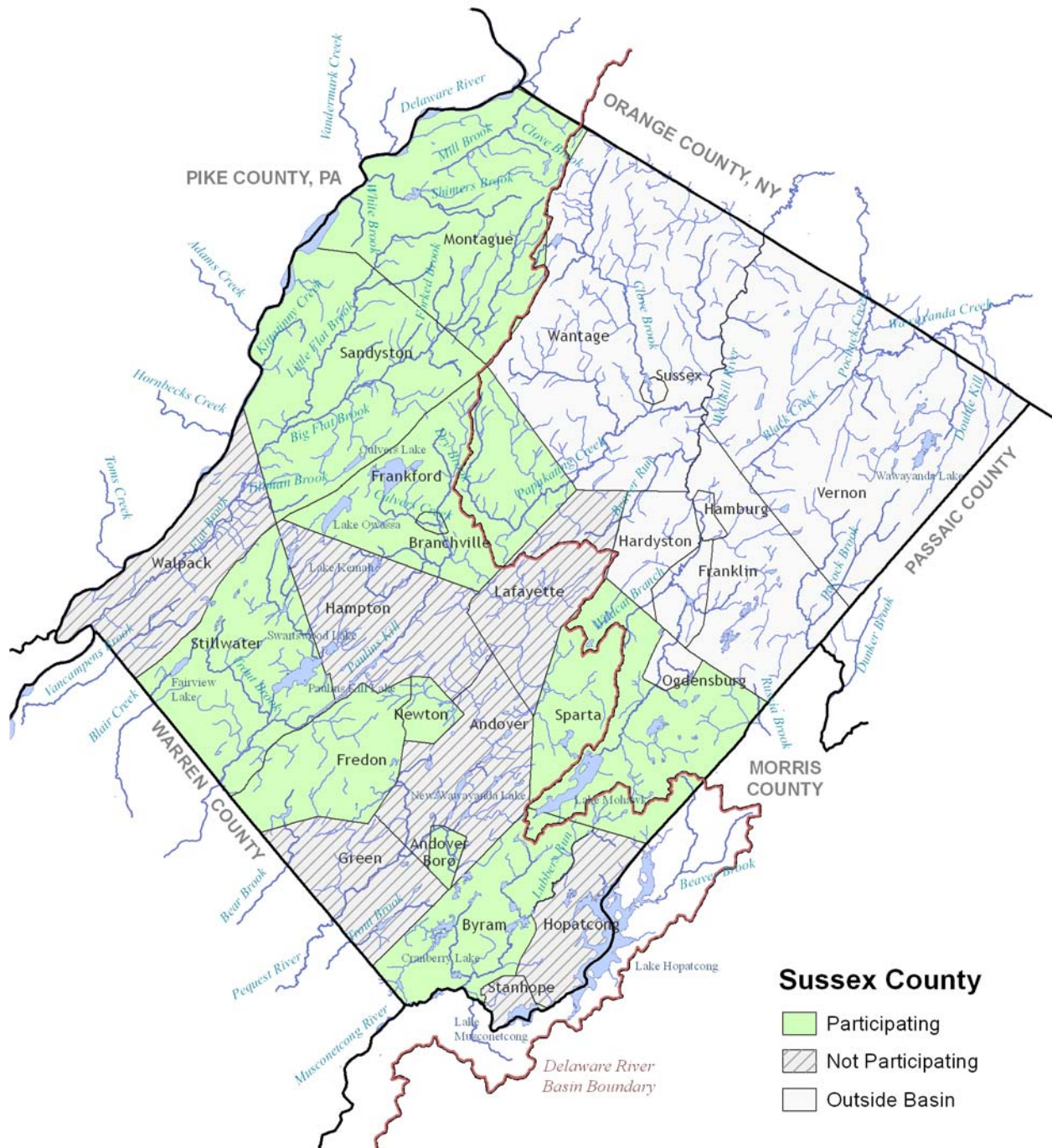


SUSSEX COUNTY:

Participating municipalities in Sussex County include Andover Borough, Branchville, Byram, Frankford, Fredon, Montague, Newton, Sandyston, Sparta and Stillwater.



The County of Sussex is the northernmost county in the State of New Jersey. Given Sussex County's location at the top of the state, it is bordered by counties in New Jersey as well as in neighboring New York and Pennsylvania. This region is often collectively known as the Tri-State Area.

According to the U.S. Census Bureau, the county has a total area of 536 square miles. As of the census of 2000, there were 144,166 people, 50,831 households, and 38,784 families residing in the county. The population density was 277 people per square mile.

High Point in this county is the highest elevation in the state at 1,803 feet above sea level. The county's lowest elevation is approximately 300 feet above sea level along the Delaware River near Flatbrookville. Much of the county is hilly, as the part of New Jersey most solidly within the Appalachian Mountains. However, the Great Valley of the Appalachians takes in a good deal of the eastern half of the county, allowing for land more amenable to agriculture.

Early industry and commerce chiefly centered around agriculture, iron mining, shifting during the late nineteenth and early twentieth centuries to focus on several factories and the mining of zinc. Today, Sussex County features a mix of rural farmland, forests and suburban development. Though agriculture (chiefly dairy farming) is on the decline and because the county hosts little industry, Sussex County is considered a "bedroom community" as most residents commute to neighboring counties (Bergen, Essex and Morris Counties) or to New York City for work.

County Mitigation Statement:

Sussex County pledges to support the mitigation goals and actions of their municipalities to the best of their ability.

Sussex County Flood Response:

County Mitigation Actions:

1. **ACTION: None specified.**
-

**Mitigation Action Plan
of Participating Jurisdictions
for Sussex County**

Jurisdiction	Page Number	Status
Sussex County	243	0 actions submitted
Andover Borough	249	3 actions submitted
Branchville Borough	251	3 actions submitted
Byram Township	253	2 actions submitted
Frankford Township	255	1 action submitted
Fredon Township	257	6 actions submitted
Montague Township	260	5 actions submitted
Town of Newton	263	6 actions submitted
Sandyston Township	267	1 action submitted
Sparta Township	269	4 action submitted
Stillwater Township	272	3 actions submitted

Sussex County: Municipal Mitigation Actions by Action Category

1. Prevention (Policy/Ordinances/Studies/Enforcement)

Municipality	Mitigation Action	Responsible Party	Estimated Cost	Priority
Fredon Township	Support new Master Plan with ordinances as detailed therein	Fredon Township	\$20,000	Low
Frankford Township	Mountain Snowmelt and Rain Runoff Analysis	State, County, Local	\$1M +	Medium to High
Fredon Township	Dam Analysis	Fredon Township	Staff time	Medium
Town of Newton	Dam Analysis	Town of Newton/ Private Property Owners	To be determined	High
Town of Newton	Enforce Municipal Ordinances and Town Master Plan	Town of Newton	N/A	Medium
Stillwater Township	Create County GIS Coverage for Dams and Inundation Areas	To be determined	To be determined	High
Sparta Township	Dam Analysis	Private Dam Owners	To be determined	High

2. Property Protection (Acquisition, Elevation or Flood proofing)

None Identified

3. Public Information and Awareness

Municipality	Mitigation Action	Responsible Party	Estimated Cost	Priority
Montague Township	Public Awareness	County OEM, township	\$1,000	Medium
Sandyston Township	Public awareness	County	To be determined	Medium

4. Emergency Services

Municipality	Mitigation Action	Responsible Party	Estimated Cost	Priority
Fredon Township	Provide power to shelter at Civic Center	Fredon Township	\$65,000	Low
Montague Township	Warning system installation along flood areas on River Road	Municipality	\$50,000	Low to Medium

5. Natural Resource Protection (Floodplain protection, Stream Corridor Restoration, Open space)

Municipality	Mitigation Action	Responsible Party	Estimated Cost	Priority
Andover Borough	Klymers Brook Mitigation	John Risko, Robert Smith, chair	\$10,000	Low
Branchville Borough	Cleanout brooks	Branchville Borough	\$50,000	High
Branchville Borough	Removal of old railroad culvert in brook	Branchville Borough	To be determined	High
Fredon Township	Protect Whittemore Pond from new development	Fredon Township	\$100,000	High

5. Natural Resource Protection (Floodplain protection, Stream Corridor Restoration, Open space) continued

Municipality	Mitigation Action	Responsible Party	Estimated Cost	Priority
Montague Township	Clean up existing debris in the Benekill River	Flood Mitigation Committee and USACE	\$500,000 - \$700,000	High
Town of Newton	Moore's Brook Stream Cleaning and Desnagging	Town of Newton	To be determined	High
Sparta Township	Stream Restoration - Sparta Glen Brook	County, township	To be determined	High
Sparta Township	Stream Restoration - Walkkill River @ Station Park	Sparta Township	To be determined	Medium
Stillwater Township	Bank and Slope Stabilization - Paulinskill River @ Kohlbocker Road	To be determined	To be determined	High
Stillwater Township	Channel Modification and Bank stabilization - Neldon's Brook Stream Cleaning	To be determined	To be determined	High
Town of Newton	Moore's Brook Stream Cleaning and Desnagging	Town of Newton	To be determined	High
Sparta Township	Stream Restoration - Sparta Glen Brook	County, township	To be determined	High
Sparta Township	Stream Restoration - Walkkill River @ Station Park	Sparta Township	To be determined	Medium
Stillwater Township	Bank and Slope Stabilization - Paulinskill River @ Kohlbocker Road	To be determined	To be determined	High
Stillwater Township	Neldon's Brook Stream Cleaning, Channel Modification and Bank Stabilization	To be determined	To be determined	High

6. Structural Projects

Municipality	Mitigation Action	Responsible Party	Estimated Cost	Priority
Andover Borough	Install catch basin on Washer Farm	Andover Borough Building and Grounds Department	\$65,000 (2006 dollars)	Medium
Andover Borough	Re-direct runoff from Route 206 near Whitehall Road to a catch basin	Andover Borough Streets and Roads Department	\$13,000	High
Branchville Borough	Repair Small Pond Dam	Branchville Borough	To be determined	High
Byram Township	Little Paint Drainage Improvements	Byram Township	\$75,000	High
Byram Township	Lackawanna Dam improvements	Byram Township, Lake Lackawanna Investment Corp.	To be determined	High
Fredon Township	Upgrade drain at intersection of Pond Place and Slate Ridge	Fredon Township	\$10,000	High
Fredon Township	Mitigate Runoff from Newton Memorial Hospital	Newton Township	Unknown	Medium
Montague Township	Ice Flow Channel correction in the Benekill River	USACE	\$500,000 - \$1,000,000	High
Montague Township	Elevate River Banks along the Delaware and Benekill Rivers	Flood Mitigation Committee	To be determined	Low

6. Structural Projects - continued

Municipality	Mitigation Action	Responsible Party	Estimated Cost	Priority
Town of Newton	Upgrade of Merriam Avenue School Stormwater Pump Facility	Town of Newton/ Board of Education	To be determined	High
Town of Newton	Stormwater Drainage Improvements in west end section of town	Town of Newton/ County of Sussex	To be determined	High
Town of Newton	Stormwater Drainage Improvements - Route 206 in the area of the Merriam Avenue Intersection	NJDOT	To be determined	High
Sparta Township	Re-direct stormwater in the area of Hopkins Corner Road and Valley Manor Drive	Sparta Township	To be determined	High

Andover Borough, Sussex County:

Location:

The Borough of Andover is a community of 658 people within 1.47 square miles in southern Sussex County. It is bordered by Andover Township to the north, east and west, Green Township to the southwest, and Byram Township to the southeast.



Geology:

The township lies in the Valley and Ridge Province and is composed of Paleozoic sedimentary rocks. The soil composition of the area is greatly influenced by the ice invasion during the Wisconsin Glaciation.

Hydrology:

Klymers Brook is located in the borough and is a tributary to the *Pequest River*.

Recent Flood History:

During flooding events, the community is affected by the Pequest River and its tributary, Klymers Brook. Impervious runoff also contributes to flooding.

Andover Borough was flooded by the June 2006, April 2005, September 2004, and September 1999 events. Creamery Road, Junction, Whitehall Road, and the Washer property were flooded. In each event, about 5 residential structures incurred basement damage. Roads were washed out, agricultural lands eroded, and crops were destroyed. There are no repetitive loss properties in Andover Borough.

Some citizens are interested in farmland acquisition, but are limited by the lack of funds available. The municipality is interested in the containment and alleviation of flood and runoff waters.

Unique Flood Risk to Municipality:

The township's water supply is near Klymers Brook. In this area, the water table is about 3 feet.

Local Flood Mitigation Planning Committee:

Arthur S Copcutt	Water Spvr./Council/Stormwater Management
Scott Danielson	Emergency Management
Shirlee Bollard	Planning and Zoning
Harold Pellow, P.E.	Town Engineer

Ordinances/Plans Reviewed: Historical maps and data

Outreach: None

First Public Meeting Date: 7/9/2007 and Nov 7, 2007

Date and Method of Advertisement for FMP: October 2007, Andover Borough Newsletter and New Jersey Herald

Questionnaire Distribution Method: Personally interviewed flood-prone residents

Public Response:

1. The farmer who is impacted by flooding is tired of having his fields flooded due to town runoff and the inability of streams to handle rainfall during a significant rain. The township has attempted to propose a catch basin on a small piece of the farm, but the farmer is concerned about liability.
2. The other flooding area is town property and is flooded by Klymers Brook, a stream that runs through the borough. Mitigation is opposed by Kittatinny State Park Manager.

Flood Mitigation Goals:

1. Provide for widening and cleaning of Klymers Brook at the junction
2. Provide some kind of additional water retention at Andover Park adjacent to the farm
3. Re-engineer the Route 206 run off flow from 206 off of Whitehall Road to a catch basin

Andover Borough Mitigation Actions:

1. ACTION: Install catch basin on Washer Farm

Description/Background: The Washer farm is impacted by flooding due to town runoff and the inability of streams to handle rainfall during a significant rain. The township has attempted to propose a catch basin on a small piece of the farm, but the farmer is concerned about liability. The township would like to provide some kind of additional water retention at Andover Park, which is adjacent to the farm.

Hazard: Field Flooding

Existing or new assets: New

Existing mechanism through which action will be implemented: Building and Grounds Department

Responsible Organization: Andover Borough Building and Grounds Department

Target Completion Date: 2012

Estimated Cost: \$65,000 in 2006 dollars

Potential Funding Sources: Grants and borough resources

Priority: Medium

2. ACTION: Klymers Brook Mitigation

Description/Background: Provide for widening and cleaning of Klymers Brook at the junction to increase flow capacity and mitigate flooding in residential yards. This will also help protect the borough's water supply from floodwaters since the normal water table there is 3 feet.

Hazard: Residential property flooding

Existing or new assets: Existing

Existing mechanism through which action will be implemented: Sussex County, Kittatinny State Park, Andover Borough Grounds

Responsible Organization: Andover Borough Building and Grounds Department

Target Completion Date: Unknown

Estimated Cost: \$10,000

Potential Funding Sources: Grants and borough resources

Priority: Low

3. ACTION: Re-direct runoff from Route 206 near Whitehall Road to a catch basin

Description/Background: Re-direct Route 206 runoff flow from 206 off of Whitehall Road to a catch basin.

Hazard: Road wash out, public property destruction

Existing or new assets: Existing

Existing mechanism through which action will be implemented: Streets and Roads Dept.

Responsible Organization: Andover Borough Streets and Roads Dept.

Target Completion Date: 2009

Estimated Cost: \$13,000

Potential Funding Sources: Grants, State Assistance, Borough resources

Priority: High

Branchville Borough, Sussex County:

Location:

Branchville is a small borough of 0.59 square miles located in north-central Sussex County. As of the United States 2000 Census, the borough population was 845. Branchville was incorporated as a borough by an Act of the New Jersey Legislature on March 9, 1898, from portions of Frankford Township. An additional portion of Frankford Township was annexed on March 1, 1951. The Borough is enveloped by Frankford Township.



Geology:

The township lies in the Valley and Ridge Province and composed of Paleozoic sedimentary rocks. The soil composition of the area is greatly influenced by the ice invasion during the Wisconsin Glaciation.

Hydrology:

The *Culver Brook* begins at Culver's Lake, in the western portion of Frankford Township and flows east through Branchville where it merges with the *Dry Brook* that originated in the northern portion of Frankford Township. Following their confluence, the Dry Brook flows south-east to its confluence with the Paulins Kill in Frankford Township.

Recent Flood History:

Poor drainage during heavy rainstorms causes flooding within the borough and, during Hurricane Ivan and Hurricane Floyd, Culver Brook and Dry Brook overtopped their banks and caused further flooding. Both residential and government lands near Mill Street, Recreation Drive, and Mattison Road were inundated with flood waters. One to two buildings sustained basement damage and up to two buildings sustained first floor damage during these flooding events.

Unique Flood Risk to Municipality:

Extreme runoff into brooks, merging of two brooks

Local Flood Mitigation Planning Committee:

Jeff Lewis	OEM Coordinator
Harold Pellow	Engineer
Gerald Van Gorden	Mayor
Frank Sutton	Panning Board
Sue Stark	Zoning Board
Wes Sheton	Property Owner

Ordinances/Plans Reviewed:**Outreach:**

First Public Meeting Date: 5/2/2007

Date and Method of Advertisement for FMP: 5/1/2007 NJ Herald and Borough Office

Questionnaire Distribution Method: Newsletter

Public Response:

1. Concerns over how quickly the brooks have been rising during recent storm events.

Flood Mitigation Goals:

1. Cleaning debris out of the brooks to lower the beds

Branchville Mitigation Actions:**1. ACTION: Clean out brooks**

Description/Background: This will increase the water carrying capacity of the brooks.

Hazard: High beds and debris

Existing or new assets: Existing

Existing mechanism through which action will be implemented: Branchville Borough

Responsible Organization: Branchville Borough

Target Completion Date: ASAP needs approvals

Estimated Cost: \$50,000

Potential Funding Sources: None

Priority: High

2. ACTION: Removal of old railroad culvert in brook

Description/Background: The railroad culvert has caused debris buildup and flooding in the past.

Hazard: Flooding

Existing or new assets: Existing/New

Existing mechanism through which action will be implemented: Branchville Borough

Responsible Organization: Branchville Borough

Target Completion Date: ASAP needs approvals

Estimated Cost: TBD

Potential Funding Sources: None

Priority: High

3. ACTION: Repair Small Pond Dam**Description/Background:** Location = N 41.14788, W 074.74737**Hazard:** Dam breach**Existing or new assets:** Existing**Existing mechanism through which action will be implemented:** Branchville Borough**Responsible Organization:** Branchville Borough**Target Completion Date:** ASAP needs approvals**Estimated Cost:** To be determined**Potential Funding Sources:** None**Priority:** High**Byram Township, Sussex County:****Location:**

Byram Township is located in southeastern Sussex County and is home to 8,254 people in an area of 22.18 square miles. It is bordered by Sparta and Andover Townships to the north, Allamuchy Township to the southwest, Mount Olive Township and the Borough of Stanhope to the south, and the Borough of Hopatcong to the east.

**Geology:**

The township lies in the Valley and Ridge Province and is composed of Paleozoic sedimentary rocks. The soil composition of the area is greatly influenced by the ice invasion during the Wisconsin Glaciation.

Hydrology:

The *Musconetcong River* is the main waterway in Byram Township. It originates at Lake Hopatcong, it then loops to the northwest after flowing through Lake Musconetcong. The river then flows southwest forming the border of Warren County until it gets to the Delaware River.

Lubbers Run is a tributary to the Musconetcong River. It is located in the southeastern part of the township. *Dragon Brook* is also located in Byram Township.

The headwaters of the Wallkill River originate in the northernmost part of the township.

There are 24 lakes in the township.

Recent Flood History:

During the April 2006 flooding event, Waterloo Village, Lake Lackawanna, Tamarack/Little Paint Way were flooded by Lubber's Run, Dragon Brook, and the Musconetcong River. Less than 10 residential homes sustained basement damage and less than 10 homes sustained first floor damage. Historic homes in Waterloo Village were flooded.

Between August 12 and 14, 2000, Lubber's Run and the Musconetcong flooded. Historic

Waterloo Village flooded, around 10 buildings sustained basement damage, and 10 structures sustained first floor damage. During the September 1999 event, Tomahawk Lake, Lake Lackawanna, and West Brookwood flooded. Less than 10 private residences sustained basement damage and less than 10 residences sustained first floor damage. No one is currently interested in elevation or acquisition.

Unique Flood Risk to Municipality: None

Local Flood Mitigation Planning Committee:

Christopher Hellwig	Planning Director
Adolf Steyh	Supt. Public Works
Eskil Danielson	Mayor
Ray Rafferty	Police Chief
Lt. Peter Zabita	Police Department

Ordinances/Plans Reviewed: Township of Byram Master Plan

Outreach:

First Public Meeting Date: 8/16/2007

Date and Method of Advertisement for FMP: 7/22/07 NJ Herald

Questionnaire Distribution Method: US mail

Public Response:

1. There is no flooding problem
2. Can the township conduct an updated flood elevation survey in order to remove people from the FEMA floodplain so they don't have to pay for insurance?

Flood Mitigation Goals:

1. Investigate mitigation options for three flood-prone areas:
 - Dragon Brook where it underflows Little Paint Way through a culvert
 - Lubber's Run below the Lake Lackawanna Dam
 - Musconetcong River that runs along River Road

Byram Mitigation Actions:

1. ACTION: Little Paint Drainage Improvements

Description/Background:

Hazard: Localized flooding

Existing or new assets: Existing

Existing mechanism through which action will be implemented: Capital

Responsible Organization: Byram Township

Target Completion Date: 2012

Estimated Cost: \$75,000

Potential Funding Sources: None

Priority: High

2. ACTION: Lackawanna Dam improvements

Description/Background:

Hazard: Localized flooding

Existing or new assets: Existing

Existing mechanism through which action will be implemented: Capital

Responsible Organization: Byram Township, Lake Lackawanna Investment Corp.

Target Completion Date: To be determined

Estimated Cost: To be determined

Potential Funding Sources: None

Priority: High

Frankford Township, Sussex County:

Location:

Frankford Township is located in north-central Sussex County and is home to 5,420 people within 35.43 square miles. It is bordered by Wantage Township to the northeast, Sandyston Township to the northwest, Hampton Township to the south, and Lafayette Township to the southeast. Only the western half of this township drains into the Delaware River.



Geology:

The township lies in the Valley and Ridge Province and composed of Paleozoic sedimentary rocks. The soil composition of the area is greatly influenced by the ice invasion during the Wisconsin Glaciation.

Hydrology:

The *Culver Creek* drains into two large lakes (Lake Owassa and Culvers Lake). There is also a large swamp connecting the two. Lake Owassa drains through a 2.5 foot wier. This creek has three dams near US Route 206, County Route 630, and just downstream of Longridge Road.

The *Dry Brook* is a small tributary to Paulins Kill and has a very steep slope as it drains off of Kittatinny Mountain. The *Paulins Kill* is a tributary to the Delaware River located in the central part of the township.

Outside the Delaware River Basin, the *Papakating Creek*, a tributary of the Wallkill River, originates in the northern portion of the township. It flows south and then turns to flow northeast prior to leaving the township boundry. The Wallkill eventually empties into the Hudson River.

Recent Flood History:

In September of 2004, heavy rains fell in Frankford, which caused basement damage in six residential structures on Spring Walk off of East Shore Lake Owassa Road. The municipality spent about \$6,300.00 to repair a section of road in the area. FEMA absorbed this cost.

Unique Flood Risk to Municipality:

Flooding is primarily caused by rain and/or snowmelt from the mountain, which is state

and/or federal property. The rain and/or snowmelt from the upper side of the mountain flows down to the county road. The county has installed drainage to reduce the hazards on the road, but the project has created a larger influx of water that runs down the properties on the north side of Culver Lake and causes flooding, erosion, and silting problems. At the bottom of the mountainside is one of Sussex County's most beautiful lakes. Culver Lake is a feeder to Culvers Creek which feeds into the Paulinskill. The flooding and runoff issue create a silting and sediment problem in the lake, which also affects the water quality of the Lake.

Mitigating this problem would be a very large and expensive project that the township could not undertake on its own. The township is trying to set up a meeting with the County Engineer and hopefully reach out for state and federal assistance.

Local Flood Mitigation Planning Committee:

R. Pumphrey	EMC, CPWM
R. McDowell	Elected Official
C. Kristensen	Mayor
B. Paterson	Fire Sub-Code Official
H. Pellow	HPA Engineering
L. Cular	Administrator
W. Hahn	Elected Official
S. Yarosz	Land Use Board
S. Taffaro	Secretary

Ordinances/Plans Reviewed: Land use ordinances dealing with construction in or around flood areas

Outreach: Branchville Borough EMC

First Public Meeting Date: 7/24/2007

Date and Method of Advertisement for FMP: 6/25/2007 NJ Herald

Questionnaire Distribution Method: Block ad in the newspaper, posted on the township's web site, questionnaire available at the municipal building and township garage

Public Response: None

Flood Mitigation Goals:

1. Prevent construction in any area that could be flood prone

Frankford Mitigation Actions:

1. ACTION: Mountain Snowmelt and Rain Runoff Analysis

Description/Background: The primary flooding problem in Frankford is the result of snowmelt and rain runoff from the nearby mountain. While the county has installed drainage measures to protect the county road, the properties below the road now receive more water than before the drainage measures were installed. The township would like a comprehensive analysis of the mountain snowmelt and/or rain run-off problem with suggested mitigation options. The township will reach out to county, state, and federal representatives to incorporate more stakeholders in the process and hopefully receive outside assistance.

Hazard: Flood

Existing or new assets: Existing/New

Existing mechanism through which action will be implemented: NJDEP Stormwater

Responsible Organization: State, County, Local

Target Completion Date: To be determined

Estimated Cost: \$1,000,000 +

Potential Funding Sources: To be determined

Priority: Medium to high

Fredon Township, Sussex County:

Location:

Fredon Township is located in the southwestern portion of Sussex County and is home to 2,860 people in 17.94 square miles. Hampton and Stillwater Townships border Fredon on the northwest. Newton and Andover Township border Fredon to the east and Green Township is to its south. Officially designated in 1904, Fredon Township was formed from parts of Andover, Green, Hampton and Stillwater Townships, making it the youngest township in Sussex County.



Geology:

The soils in the southern section of the town are mostly Hazen-Palmyra-Fredon association.

Hydrology:

Fredon hosts *Whittemore Pond*, considered to be headwaters of Paulinskill River.

Bear Brook, a tributary to the Pequest, has its headwaters in the southern portion of the township.

Recent Flood History:

The township was affected by Hurricane Ivan in September of 2004. Although no property owners reported flooding, Willows Road at the Whittingham Game Preserve and Slate Ridge Road at Westview Estates incurred flood damage. Road repair and cross drain repairs were required and funded by the municipal's annual operations budget. There is a New Jersey dam operating in Fredon. A joint town-county-land conservancy group acquisition is in process to help maintain open space within the community. The municipality has concerns how proposed new developments near the headwaters of the Paulinskill will impact flooding in the township. The proposed developments include an on-site sewer plant, which would discharge directly into the hillside overlooking Whittemore Pond. The stormwater and sewer runoff would then go directly into lower downtown Newton and threaten the commercial district.

Unique Flood Risk to Municipality:

Fredon hosts Whittemore pond, considered to be headwaters of Paulinskill River.

Local Flood Mitigation Planning Committee:

John Richardson Sr.	Mayor/OEM/Planning Board
Tom Knutelsky	Engineer
Hal Ennis	Zoning Board head
H. Pellow Assoc.	Municipal Engineer
Dave Simmons	Planning Board/Zoning Board

Existing Ordinances/Plans Reviewed: Master Plan, zoning ordinances, RSIS regulations, stormwater management plans, steep slopes, Planning Board application for 376 living units

Outreach: Newton Town

First Public Meeting Date: 10/31/2007

Date and Method of Advertisement for FMP: 10/29/2007

Questionnaire Distribution Method: Hand out at meeting

Public Response:

1. No citizen present reported flooding on their property, and one has lived in Fredon for 70 years
2. All citizens have concern about those properties towards which Fredon's runoff moves in every storm, and for flooding contribution downstream

Flood Mitigation Goals:

1. Preserve open space
2. Protect the headwaters of the Paulinskill River

Fredon Mitigation Actions:**1. ACTION: Upgrade drain at intersection of Pond Place and Slate Ridge**

Description/Background: This action will help mitigate localized flooding in the area and allow for emergency access during flooding events.

Hazard: Flooding

Existing or new assets: Existing

Existing mechanism through which action will be implemented:

Responsible Organization: Fredon Township

Target Completion Date: FY2008

Estimated Cost: \$10,000

Potential Funding Sources: Fredon Township

Priority: High

2. ACTION: Protect Whittemore Pond from new development

Description/Background: The municipality has concerns how proposed new developments near the headwaters of the Paulinskill will impact flooding in the township and downstream in Newton Town. The proposed developments include an on-site sewer plant, which would discharge directly into the hillside overlooking Whittemore Pond. The stormwater and sewer runoff would then go directly into lower downtown Newton and threaten the commercial district. The township will attempt to stop the project from being approved.

Hazard: Flooding

Existing or new assets: Existing

Existing mechanism through which action will be implemented:

Responsible Organization: Fredon Township
Target Completion Date: In process
Estimated Cost: \$100,000
Potential Funding Sources: Fredon Township
Priority: High

3. ACTION: Mitigate Runoff from Newton Memorial Hospital

Description/Background: Fredon would like to request the Town of Newton to mitigate runoff from the Newton Memorial Hospital property onto residential properties in Fredon.
Hazard: Property flooding
Existing or new assets: Existing
Existing mechanism through which action will be implemented:
Responsible Organization: Newton
Target Completion Date: Immediate
Estimated Cost: Unknown
Potential Funding Sources: Newton Town
Priority: Medium

4. ACTION: Dam Analysis

Description/Background: The township would like to determine the status of each dam in Fredon and determine the necessary corrective action if required.
Hazard: Lower dam risk
Existing or new assets: Existing
Existing mechanism through which action will be implemented:
Responsible Organization: Fredon Township
Target Completion Date: Immediate
Estimated Cost: Staff time
Potential Funding Sources: Fredon
Priority: Medium

5. ACTION: Finish infrastructure shelter at Civic Center

Description/Background: This will provide power for the shelter.
Hazard: Shelter not usable without power
Existing or new assets: New
Existing mechanism through which action will be implemented:
Responsible Organization: Fredon Township
Target Completion Date: FY2008
Estimated Cost: \$65,000
Potential Funding Sources: Grant
Priority: Low

6. ACTION: Support new Master Plan with ordinances as detailed therein

Description/Background: The township will implement the proposed changes in the Master Plan to help prevent flooding.
Hazard: Flooding
Existing or new assets: New

Existing mechanism through which action will be implemented:**Responsible Organization:** Fredon Township**Target Completion Date:** 2007/2008**Estimated Cost:** \$20,000**Potential Funding Sources:** Fredon Township**Priority:** Low**Montague Township, Sussex County:****Location:**

Montague Township is located in northern Sussex County along the Delaware River. As of the census of 2000, the township is home to 3,412 people within 45.34 square miles. Newton is bordered by Wantage to the east and Sandyston to the south.

**Geology:**

Montague Township contains both the northernmost point and highest elevation (1803 ft) in New Jersey. It is highly forested and has many rolling hills and valleys.

Hydrology:

There are numerous waterways through Montague and all ultimately drain to the Delaware River.

In the north, the *Mill Brook* and *Clove Brook* flow north to join the Neversink River in New York State prior its confluence with the Delaware River.

The *Bennekill*, which separates the larger Minisink Island from Everett's Island to the east.

Shimers Brook and *White Brook* both independently drain to the Delaware in the area of the Delaware Water Gap.

The *Delaware River* creates the western boundary for the township and flows south.

Both the *Little Flat Brook* and *Big Flat Brook* originate in Montague Township. The Little Flat Brook flows from the west and the Big Flat Brook from the east to a point in Sandyston Township where they join together to form the Flat Brook. The Flat Brook has its confluence with the Delaware River at Walpack Bend. The *Bierskill* is a tributary to the Little Flat Brook. Both *Forked Brook* and *Parker Brook* are tributaries to the Big Flat Brook.

Recent Flood History:

Recently, the Delaware River, the Bennekill, and the Bierskill have caused flooding. River Road and County Route 521 along the Delaware commonly flood during heavy rain events. About twelve homes have sustained basement damage and six homes sustained first floor damage. After events, branches, vegetation, and even trees are deposited on private property.

The municipality would like help cleaning up these properties.

Unique Flood Risk to Municipality:

The area affected in Montague is an island. The situation is unique because, prior to the cutting of the ice flow channel in 2000, Montague suffered significantly less damage. The township feels that they are now at a greater risk of flooding.

Local Flood Mitigation Planning Committee:

David Coss	OEM Coordinator
David Berhman	DPW Foreman
Jesse Brace Revak	Deputy OEM
Donald Stambaugh	Construction Official
Richard Inella	Land Use Board Chairman
Alicia Batko	Historian
Louanne Cular	Resident
Mark Utter	Mayor
Michael Okrepky	Engineer
Joseph Lashendock	Deputy Mayor
Diana Francisco	Clerk/Liaison

Ordinances/Plans Reviewed: Montague Township Municipal Code, Flood Damage Prevention

Outreach: DRBC, USACE, FEMA, SEP, Governor's Office, Senator Littell, State Assembly

First Public Meeting Date: 4/25/2007

Date and Method of Advertisement for FMP: 4/5/2007 New Jersey Herald

Questionnaire Distribution Method: US Mail to flood prone residential areas

Public Response:

1. The majority of responses came from long time residents of Montague Township living on River Road.
2. At least ten residents were impacted by the June 2006 storm. Nine of those impacted were also impacted by the April 2005 storm. Six of those residences were impacted by the September 2004 storm as well. One was impacted by the all the storms listed on the questionnaire including Floyd and April 7, 2007. The cost of damage ranged from \$300.00 to \$110,000. Six reported that they have flood insurance, four did not. Seven reported that they were impacted by the Delaware River and six were affected by the both the Delaware River and tributary known as the Bennekill.
3. Several residents suggested improving controlled releases of water from the reservoirs in New York State.
4. Many residents expressed concerns regarding the massive pile of debris from previous flooding of the Delaware River and the Bennekill where the ice channel was cut by the Army Corp of Engineers.

Flood Mitigation Goals:

1. To correct the ice flow channel to permit debris and ice to flow freely
2. The removal of existing debris
3. Better reservoir control
4. Elevate areas to prevent flooding by using berms

5. Investigate and correct condition of dams up river to prevent potential future flooding
6. Research possible moratorium of future development within flood prone areas

Montague Mitigation Actions:

1. ACTION: Ice Flow Channel correction in the Benekill River

Description/Background: In the mid-1990's, the Army Corps of Engineers came up with a plan to ease the ice jamming that was happening upstream. The plan was to cut a deeper channel between Mashipacong Island and County Route 521 (River RD). Now the channel has collected a massive amount of debris and silt that is filling up the channel. Along with the vegetation, rocks etc.

Hazard: Flooding, ice jamming, debris

Existing or new assets: Existing/New

Existing mechanism through which action will be implemented: Survey/study by Army Corps of Engineers and the Township Engineer

Responsible Organization: Army Corps of Engineers

Target Completion Date: 2008

Estimated Cost: \$500,000 to \$1,000,000

Potential Funding Sources: Grants, federal aid, Army Corps of Engineers

Priority: High

2. ACTION: Public Awareness

Description/Background: The township wants to increase public awareness about flooding and other hazards through radio, newspaper articles, and mailings and group meeting. By doing this the community will have a better understanding of what going on around them with any hazard before, during, and after. In addition, the township will also have a better understanding of the community so we may serve them better.

Hazard: All hazards

Existing or new assets: Existing/New

Existing mechanism through which action will be implemented:

Responsible Organization: County OEM, township

Target Completion Date: Ongoing

Estimated Cost: \$1,000

Potential Funding Sources: Municipality, grants

Priority: Medium

3. ACTION: Elevate River Banks along the Delaware and Benekill Rivers

Description/Background: Flood damage to some of the homes along County Rt 521 (River Rd) may be averted if the banks are raised. Currently, the ground level is flat to the river bank. When flood waters hit the top of bank it's a straight shot to the houses. There isn't much of a bank now and as the floods hit more of the bank washed away.

Hazard: Flooding

Existing or new assets: Existing/New

Existing mechanism through which action will be implemented: Construction Department, Township Engineer

Responsible Organization: Flood Mitigation Committee

Target Completion Date: 2008

Estimated Cost: To be determined

Potential Funding Sources: Grants, federal and state aid, capital funding

Priority: Low

4. ACTION: Clean up existing debris in the Benekill River

Description/Background: As in Action 1, the Benekill is in need of massive clean up outside the channel the Army Corps of Engineers constructed. The Benekill is a huge channel between County Rt 521(River Rd) and Mashipacong Island. The Army Corps of Engineers made another channel to the one side and now the whole channel has collected a massive amount of debris and garbage. As the flood waters come it collects more and more and acts like a dam.

Hazard: All hazards

Existing or new assets: Existing/New

Existing mechanism through which action will be implemented: Township Committee

Responsible Organization: Flood Mitigation Committee and the Army Corps of Engineers

Target Completion Date: 2008

Estimated Cost: \$500,000 to \$700,000

Potential Funding Sources: Army Corps of Engineers, federal and state aid

Priority: High

5. ACTION: Warning system installation along flood areas on River Road

Description/Background: The desired warning system is an audio type to warn people of any major emergency or Hazard in or around town. It would be most helpful to alert residents of imminent flooding. Currently, the emergency services personnel go door-to-door numerous times informing the people of forecasted flooding.

Hazard: All hazards

Existing or new assets: Existing/New

Existing mechanism through which action will be implemented: Flood Mitigation Committee, Engineer

Responsible Organization: Municipality

Target Completion Date: late 2008

Estimated Cost: \$50,000

Potential Funding Sources: Grants

Priority: Low to Medium

Town of Newton, Sussex County:

Location:

The Town of Newton is located in the southern portion of Sussex County, in the northwest corner of New Jersey. Newton is bordered by Hampton to the north; Andover Township to the east and Fredon to the west.



Geology:

The terrain of Newton carries from level ground in the eastern and southern sections to hilly in the northern and western sections. Elevation ranges from 560 feet on the eastern edge to 917 feet near the western edge.

The soils in the southern section of the town are mostly Hazen-Palmyra-Fredon association which is deep and varies from poorly drained in the southeast to well drained in the southwest. The eastern portion of the town consists mostly of the Carlisle association of organic and mineral soils. These soils are deep and very poorly drained. The soils in the remainder of Newton are mostly of the Nassau-Bath-Norwich association ranging from shallow to deep and from well drained to poorly drained. They consist of silt and shaly loam with a number of rock and gravel outcroppings.

Hydrology:

The *Moore's Brook* flows east through the northern section of Newton's commercial and residential areas. The *Mill Street Tributary* and *Don Bosco Tributary* flow south, emptying into Moore's Brook.

The *Gravel Run* flows through the eastern and most agricultural section of Newton.

Recent Flood History:

Most flood damage that occurs in Newton's residential and commercial areas is adjacent to Moore's Brook and the Mill Street Tributary in the northern section of town. There is a very extensive flood plain in the undeveloped northeastern section of Newton along Moore's Brook.

Flood protection measures within the Town of Newton include a number of U.S. Department of Agriculture Soil Conservation Service Dams and a series of concrete flumes in the downtown area. The dams control the runoff from the small watersheds and provide protection for the streams immediately downstream from the structures.

Unique Flood Risk to Municipality:

The Town of Newton is the County Seat for Sussex County and was incorporated in 1864. In being the County Seat, the Town has become mostly built out with little room for the construction of flood mitigation measures. This lack of useable area for flood mitigation, combined with the low nature of several locations within the town, results in flooding of residential and commercial areas, substantial property damage and difficulties in providing emergency access.

Local Flood Mitigation Planning Committee:

Kenneth Teets	OEM
Dan Finkle	OEM
Debra Millikin	Town Manager/Zoning Officer
Ken Jeakel	DPW Supervisor
Rick Straway	DPW Foreman
Cory Stoner	Engineer, Harold E. Pellow & Assoc.

Ordinances/Plans Reviewed: FEMA maps, Town of Newton Flood Damage Prevention

General Ordinance, Town of Newton Stormwater Control Ordinance, DRBC/NJOEM Guidance Material, ASFM NAI Toolkit, and Public Comment at February 12, 2008 meeting.

Outreach: Sussex County, New Jersey Department of Transportation

First Public Meeting Date: 2/12/2008

Date and Method of Advertisement for FMP: 1/28/2008 New Jersey Herald

Questionnaire Distribution Method: US Mail

Public Response:

Four responses were received. Residents along Swartswood Road, Mill Street and Clinton Street indicated that debris and sediment have collected in the stream that is running along Swartswood Road, Clinton Street and Mill Street. They also indicated that building in that same area is affecting the amount of stormwater flow.

Flood Mitigation Goals:

1. Address flooding in the Merriam Avenue/Sussex Court section of Town
2. Address flooding occurring in the West End Avenue (CR 519) section of Town
3. Address flooding occurring along Route 206 near the intersection with Merriam Avenue
4. Reduce flooding occurring along Moore's Brook and its tributaries
5. Review dams within the Town to ensure that they are in safe condition and ensure that the general public is aware of emergency actions measures that will be implemented in case of emergency
6. Enforce Town Ordinances regarding development and promote development within the Town that will not adversely impact stormwater runoff conditions on other properties
7. Maintain emergency access to all residents and essential facilities

Newton Mitigation Actions:

1. ACTION: Upgrade of Merriam Avenue School Stormwater Pump Facility

Description/Background: The Merriam Avenue/Paterson Avenue/Sussex Court section of Town is an area where a large section of Newton drains. There are existing low-lying properties adjacent to Paterson Avenue that do not properly drain due to topography, and have to periodically pump stormwater off of their properties to the Town's storm drainage system. An existing stormwater pumping station exists at the Merriam Avenue School to pump the collected stormwater into the Town's municipal drainage system, which in turn drains towards the wetlands area north of Newton-Sparta Road. There is no emergency generator at the pumping station to help ensure that the pumping station continues to operate in the event of a power loss, which could result in flooding of the area. Any increased development may also require the basin and associated pumping equipment to be upgraded.

Hazard: Flooding of school property, Paterson Avenue properties, and Sussex Court properties

Existing or new assets: Existing

Existing mechanism through which action will be implemented: To be determined

Responsible Organization: Town of Newton /Board of Education

Target Completion Date: To be determined (subject to funding)

Estimated Cost: To be determined

Potential Funding Sources: Unknown at this time

Priority: High

- 2. ACTION: Stormwater Drainage Improvements in West End Avenue Section of Town**
Description/Background: Numerous stormwater drainage issues exist in the West End Avenue section of the Town of Newton. The stormwater in this area is collected within the County drainage system along West End Avenue (CR 519) and discharges into the municipal drainage system or onto private properties in the area. A drainage study needs to be completed to determine how to mitigate the flooding occurring in this area.
Hazard: Flood / Property Damage
Existing or new assets: Existing
Existing mechanism through which action will be implemented: To be determined
Responsible Organization: Town of Newton & County of Sussex
Target Completion Date: To be determined (subject to funding)
Estimated Cost: To be determined
Potential Funding Sources: Unknown at this time
Priority: High
- 3. ACTION: Stormwater Drainage Improvements – Route 206 in the area of the Merriam Avenue Intersection**
Description/Background: There is essentially no existing storm drainage infrastructure along Route 206 on the southerly side of Newton near the Merriam Avenue Intersection. During heavy rains, there is localized flooding that sometimes requires shutting Route 206 down to traffic until the flooding recedes. The flooding has prevented the opening of the Route 206/Merriam Avenue intersection due to potential intersection icing in the winter, and shuts down one of the main arterial roadways leading to Newton, that is also used by emergency vehicles. Storm drainage infrastructure needs to be designed and constructed in this area.
Hazard: Flooding of Route 206
Existing or new assets: Existing
Existing mechanism through which action will be implemented: To be determined
Responsible Organization: New Jersey Department of Transportation
Target Completion Date: To be determined (subject to funding)
Estimated Cost: To be determined
Potential Funding Sources: Unknown at this time
Priority: High
- 4. ACTION: Moore’s Brook Stream Cleaning & Desnagging**
Description/Background: Moore’s Brook runs through the northern section of the town. In 1994, the stream was cleaned to remove debris and silt and increase the hydraulic capacity of the stream. This work was completed in order to decrease the flooding that occurs in low areas near Mill Street, Clinton Avenue, Moran Street and Memory Park. Since that time, the stream has been silted in again and is in need of cleaning and desnagging to increase the hydraulic capacity of the stream.
Hazard: Flood / Property Damage
Existing or new assets: Existing
Existing mechanism through which action will be implemented: To be determined
Responsible Organization: Town of Newton
Target Completion Date: To be determined (subject to funding)

Estimated Cost: To be determined
Potential Funding Sources: Unknown at this time
Priority: High

5. ACTION: Dam Analysis

Description/Background: The Town currently operates and maintains two dams within the Town borders and one dam just outside the Town line in Fredon Township. The Town has recently worked with the USDA on the preparation of an Inundation Study, Emergency Action Plan and a new Operations and Maintenance Manual for the dam located within Fredon Township (Dam Site #2). The remaining two dams within the Town and other dams that may exist on private properties need to be evaluated to determine if the dams are in good condition or if any corrective actions are needed.

Hazard: Flood / Property Damage

Existing or new assets: Existing

Existing mechanism through which action will be implemented: To be determined

Responsible Organization: Town of Newton / Private Property Owners

Target Completion Date: To be determined (subject to funding)

Estimated Cost: To be determined

Potential Funding Sources: Unknown at this time

Priority: High

6. ACTION: Enforce Municipal Ordinances and Town Master Plan

Description/Background: The Town will continue to enforce current ordinances related to stormwater control, flood control and land use. The Town will make changes to the Master Plan presently being prepared to include references regarding flood prevention.

Hazard: Flooding due to possible enforcement violations

Existing or new assets: Existing

Existing mechanism through which action will be implemented: Town Ordinances & Master Plan

Responsible Organization: Town of Newton

Target Completion Date: Master Plan – mid 2008. Enforcement will be a continued activity.

Estimated Cost: N/A

Potential Funding Sources: N/A

Priority: Medium

Sandyston Township, Sussex County:

Location:

Sandyston Township is located in the northwestern portion of Sussex County and is home to 1,825 people within 43.31 square miles. It is bordered by Frankford Township to the southeast, Walpack Township to the southwest, the Delaware River to the west, and Montague Township to the north.



Geology:

Sandyston Township is highly forested and has many rolling hills and valleys. The elevation ranges from 420 feet in the southwest corner to 1,650 feet in the northeastern section of the township. Soils in the township have been formed primarily from shale, and don't drain very well.

Hydrology:

The *Flat Brook*, a tributary to the Delaware River, runs through the entire township from northeast to southwest. The *Little Flat Brook* (to the west) and the *Big Flat Brook* (in the east) join together to form the Flat Brook in the southern portion of the township. The *Bierskill* is a tributary to the Little Flat Brook. Tributaries to the Big Flat Brook include the *Stony Brook* and the *Criss Brook*.

The *Delaware River* creates the western boundary for the township and flows south.

The *Kittatiny Creek* is a tributary to the Delaware River.

Recent Flood History:

During flooding events, Hague Road and Laurel Lane are flooded and washed out. About two structures sustain basement damage and one structure sustains first floor damage. These properties are surrounded by National Park Service lands. When the Delaware River overflows its banks, the water becomes trapped inland and floods Sandyston. The township is interested in a community telephone notification system.

Unique Flood Risk to Municipality:

Sandyston is unique in that over 70% of its land is National and State Parks and is owned by the State and Federal Government. In the past number of years, only two homes have been severely affected by the flooding. The Sandyston Township Fire Department has pumped some basement homes, but not on a regular basis.

Local Flood Mitigation Planning Committee:

Stan Dukus	OEM
John deJager	Construction Officer/Flood Manager
Keith Utter	Land Use Chairman
George Harper	Mayor/Road Supervisor
Alan Delea	Fire Chief/Road foreman
Betsy Cuneo	Municipal Clerk

Ordinances/Plans Reviewed: Flood Damage Prevention

Outreach: National Park Service, Sussex County Road Department, New Jersey Department of Transportation, New Jersey Department of Environmental Protection, residents in Forty Acres

First Public Meeting Date: 5/9/2007

Date and Method of Advertisement for FMP: 4/23/2007 New Jersey Herald

Questionnaire Distribution Method: Web site, newspaper, mailings, posted at post office

Public Response:

1. One resident mentioned that her home doesn't flood, but her property does. She stated that she recently purchased flood insurance. The Construction Official suggested placing her home on stilts and moving the electrical panel and water softener/furnace to a higher level.
2. One resident said her rental unit gets flooded.
3. Those in attendance suggested improving the release of water upstate when heavy rains are predicted.

Flood Mitigation Goals:

1. Suggest to the Army Corps of Engineers to review the release of water from the upstate dam

Sandyston Mitigation Actions:**1. ACTION: Public awareness****Description/Background:****Hazard:** All**Existing or new assets:** All**Existing mechanism through which action will be implemented:** To be determined**Responsible Organization:** County**Target Completion Date:** To be determined**Estimated Cost:** Unknown**Potential Funding Sources:** To be determined**Priority:** Medium**Sparta Township, Sussex County:****Location:**

Sparta Township is located in southeastern Sussex County and is home to 18,080 people in 39.22 square miles. It is bordered by Jefferson Township to the east, Borough of Hopatcong and Byram Township to the south, the Borough of Andover and Lafayette to the west, and the Boroughs of Franklin and Ogdensburg and Hardyston Township to the north.

**Geology:**

Sparta Township is hilly with two relatively flat river valleys that run in a northeast/southwest direction. Elevation ranges from 520 feet in the deepest river valley to 1360 feet in the mountains in the northern part of the township. Soils in the township are classified as alluvial land, which is very poorly drained fine sand or silty clay loam with the water table at or near the surface.

Hydrology:

The western part of the township drains to the Pequest River, a tributary to the Delaware.

The *Wallkill River* is located in the northern section of the township along with its tributary, the Wildcat Branch.

Recent Flood History:

During the August 2000 event, six structures sustained basement damage and six structures sustained first floor damage. The average assessed value of the buildings was \$300,000. The Sparta Police Department was affected and six bridges were damaged. In addition, the Eagles Nest Water Supply Facility, a 16 inch water main, the Seneca Dam, and the NYS&W Freight rail line were flooded. There were few injuries and emergency access was compromised. Wetlands in the area were permanently destroyed, stream channels were re-routed or silted up, and major forested areas were lost.

Unique Flood Risk to Municipality:

1. Hopkins Corner Road and Valley Manor Drive
2. Lake Grinnel at West Mountain Road (dam safety)
3. Highlands topography – steep slopes and soil types
4. CR 620 Slope Project uphill of Sparta Glen

Local Flood Mitigation Planning Committee:

David Troast	Director of Planning
Charles Ryan	Twp. Engineer
Eric Powell	Asst. Twp. Engineer
Tom Spring	Public Works Manager
David Manhardt	GIS Analyst

Ordinances/Plans Reviewed: Stormwater Management Plan, local ordinances, Master Plan – Land Use, Open Space Plan

Outreach: NRCS, Wallkill Watershed Management

First Public Meeting Date: expected December 27, 2007

Date and Method of Advertisement for FMP: 5/18/2007 Sparta web site; (typical meeting notice)

Questionnaire Distribution Method: No active flood prone residents

Public Response:

Flood Mitigation Goals:

1. Eliminate recurring localized flooding (e.g. Hopkins Corner Road and Valley Manor Drive)
2. Riparian buffer revegetation and stream bank stabilization (Station Park – Wallkill River)
3. Dam Safety
4. Maintain integrity of stormwater control facilities (i.e. catch basins, detention/retention ponds, etc.)

Sparta Mitigation Actions:

1. ACTION: Stream Restoration - Sparta Glen Brook

Description/Background: Sparta Glen is a passive recreation area located within Sparta

Township. In August of 2000, the Sparta Glen Brook experienced excessively high flows due to runoff from a 14" rain event. This caused major stream bank erosion and slope failure of County Route 620. The Township worked with NRCS to restore the stream bank and the channel to allow for better control of stream flows. Additional armoring of the stream bank and restoration of riparian vegetation is ongoing to protect against any future events as well as continued maintenance of the restored slopes of CR 620.

Hazard: Slope stability/stream bank

Existing or new assets: Existing

Existing mechanism through which action will be implemented: TBD

Responsible Organization: County/Township

Target Completion Date: Ongoing

Estimated Cost: TBD

Potential Funding Sources: Grants, capital, operating budgets

Priority: High

2. ACTION: Stream Restoration - Wallkill River @ Station Park

Description/Background: Station Park is an active recreation area consisting of baseball, soccer and softball fields. The Wallkill River dissects the park and creates a complimentary passive attraction to active areas. After the flood of August 2000, the stream corridor was severely compromised hydraulically as well as environmentally. Efforts were made and continue to be made to restore the stream corridor.

Hazard: Stream bank protection, riparian buffer

Existing or new assets: Existing

Existing mechanism through which action will be implemented: To be determined

Responsible Organization: Township

Target Completion Date: To be determined

Estimated Cost: To be determined

Potential Funding Sources: Grants, capital, operating budgets

Priority: Medium

3. ACTION: Re-direct stormwater in the area of Hopkins Corner Road and Valley Manor Drive

Description/Background: Valley Manor Drive is located in the northwest corner of Sparta Township. The development was constructed in the early 1990s and experiences excessive flooding during heavy rain events. Part of the flooding problem is due to an abandoned railroad bed, which sends runoff down to the retention basin. A long-term solution involves drainage work (piping, catch basins, etc) to redirect Stormwater flows away from the existing retention basin.

Hazard: Localized flooding

Existing or new assets: Existing

Existing mechanism through which action will be implemented: To be determined

Responsible Organization: Township

Target Completion Date: To be determined

Estimated Cost: To be determined

Potential Funding Sources: Capital, operating budgets

Priority: High

4. ACTION: Dam Analysis

Description/Background: There is major concern statewide with regards to overall dam safety and funding sources for repairs. Most dams are privately owned (individuals or homeowners associations). Following the flood event of August 2000, major emphasis was directed toward dams labeled as ‘high hazard’. Since that time, there has been limited funding available for individuals and/or associations to complete required repairs to bring these dams up to an acceptable level of safety.

Hazard: Property loss

Existing or new assets: Existing

Existing mechanism through which action will be implemented: To be determined

Responsible Organization: Private Dam Owners

Target Completion Date: To be determined

Estimated Cost: To be determined

Potential Funding Sources: Federal and/or state grants

Priority: High

Stillwater Township, Sussex County:**Location:**

Stillwater is located in the southwestern portion of Sussex County. There are 4,267 people living in 28.4 square miles. It is bordered by Walpak Township to the northwest, Sandyston Township to the north, Hampton Township to the northeast, Fredon Township to the southeast, Frelinghuysen Township to the south, and Hardwick Township to the southwest.

**Geology:**

The soils in Stillwater are mostly Hazen-Palmyra-Fredon association.

Hydrology:

Paulins Kill is a tributary to the Delaware River located in the central part of the township. There is a small dam located near West End Drive creating Paulins Kill Lake.

The *Trout Brook*, which rises on Kittatinny Mountain, flows into the Paulins Kill near Middletown in Stillwater Township. Swartswood Lake feeds the Trout Brook through Keen's Mill Brook. The Paulins Kill continues its course southwest, entering Warren County. In Blairstown, the Paulins Kill is joined by *Blair Creek*, a tributary that originated in Stillwater Township.

Recent Flood History:

The township was affected by the April 2007, June 2006, April 2005, September 2004, and September 1999 flood events. The April 2007 event was the most damaging for Stillwater. Thirty residences received basement flooding and five received first floor damage. Within the

Paulinskill Lake area, Cedar Drive, East Walnut Drive, Edgewood Drive, Maple Terrace, South Shore Drive, and West End Drive were flooded. In addition, Baldwin Gate, Dyke Drive, Kohlbocker Road, Five Points Lane, Mount Benevolence Road, Saddle Back Road, Stone Bridge Road, and Swartswood Road were also affected by flood waters. The Swartswood Fire Department Building was also inundated. During and after the event, there were concerns about drinking water quality, septic systems, oil tanks, road closures, and power outages. Runoff caused erosion and washed nutrients into waterways.

Earlier flooding events caused less damage. For instance, the June 2006 and September 2004 floods inundated 5 basements and the April 2005 flood inundated 15 basements. In all cases, the Swartswood Fire Department was affected.

In 1955, Paulins Kill suffered from a severe flood with a reoccurrence interval of approximately 400 years. This is because two hurricanes traversed northeastern New Jersey within a week. In addition, a timber crib utility dam on Culvers Creek in Branchville breached flooding Branchville and overwhelming Paulins Kill. This was on top of nearly 8 inches of rain falling in the Paulins Kill watershed.

Unique Flood Risk to Municipality:

Flood-exacerbating debris and snags within Category One (C1) waters exacerbates flooding in Stillwater.

Local Flood Mitigation Planning Committee:

Lt. John Schetting	Stillwater Police Dept./OEM
Robert Klein	OEM
Chief Anthony Kozlowski	PD/OEM
Keith Whitehead	DPW Supervisor
William Morrison	Committeeman
Michael Vreeland	Engineer/Stormwater Program Coordinator

Ordinances/Plans Reviewed: FEMA maps, Township of Stillwater Master Plan, Township of Stillwater Municipal Code: Flood Damage Prevention, Township of Stillwater Open Space and Recreation Plan, DRBC/NJOEM Guidance Material, ASFM NAI Toolkit, Public Comments at meeting

Outreach: Lake Associations

First Public Meeting Date: 9/5/2007

Date and Method of Advertisement for FMP: 9/2/2007 NJ Herald

Questionnaire Distribution Method: Mail

Public Response:

1. Residents along Swartswood Road indicated that debris and snags in the waterway flowing into Swartswood Lake appear to contribute to flooding problems.
2. They also expressed frustration with the likely environmental permitting that may be required to clear the stream.
3. Residents requested flood-exacerbating debris, specifically in the vicinity of their property, be addressed.

Flood Mitigation Goals:

1. Reduce flood damage along Swartswood Road and restore stream/water corridor
2. Prevent flood damage along Kolhbocker Road and protect stream embankments
3. Provide information and awareness regarding potential hazards due to dams within and outside the municipality
4. Maintain emergency access to all residents and essential facilities

Stillwater Mitigation Actions:**1. ACTION: Neldon's Brook Stream Cleaning, Channel Modification and Bank stabilization**

Description/Background: Neldon's Brook crosses under a bridge along Swartswood Road and flows into Swartswood Lake. During significant rainfall events, a segment of this waterway flows over its banks and inundates residential dwellings as well as the Swartswood Fire Department building located in the vicinity of Swartswood Road. Snags and debris that have accumulated in the waterway as well as bank erosion appear to be contributing to the problem. This waterway has been identified as Category One (C1) waters.

Hazard: Flooding

Existing or new assets: Existing

Existing mechanism through which action will be implemented: To be determined

Responsible Organization: To be determined

Target Completion Date: To be determined

Estimated Cost: To be determined

Potential Funding Sources: To be determined

Priority: High

2. ACTION: Paulinskill River – Kohlbocker Road Bank and Slope Stabilization

Description/Background: A segment of the Paulinskill River flows adjacent to Kohlbocker Road downstream of the Paulinskill Lake Dam, near the Stillwater Township municipal line. Cracks have developed in Kohlbocker Road in the vicinity of a segment of steep stream bank/roadway embankment. Stream bank erosion and slope instability appear to be contributing to the problem.

Hazard: Flooding and Land Slides

Existing or new assets: Existing

Existing mechanism through which action will be implemented: To be determined

Responsible Organization: To be determined

Target Completion Date: To be determined

Estimated Cost: To be determined

Potential Funding Sources: To be determined

Priority: High

3. ACTION: Create County GIS Coverage for Dams and Inundation Areas

Description/Background: Several dams are located either within or "upstream" of the township. Many dams are privately owned. The "downstream" public and emergency services may not be fully aware of location, condition, and potential hazards of these dams. NJDEP regulates dams and requires owners of high hazard dams to prepare Emergency

Action Plans and GIS inundation maps. The township would like dam location, condition, and inundation maps added to County GIS coverage, and have the updated maps and information disseminated to emergency services and property owners located within inundation areas.

Hazard: Flooding

Existing or new assets: Existing and New

Existing mechanism through which action will be implemented: To be determined

Responsible Organization: To be determined

Target Completion Date: To be determined

Estimated Cost: To be determined

Potential Funding Sources: To be determined

Priority: High
