



September 17, 1999 Flood at Main Street and Amwell Road/new Millstone Bypass Intersection

Flood Mitigation Plan

**Borough of Millstone
Somerset County, New Jersey**

December 2005

**Prepared with assistance from
USDA Natural Resources Conservation Service
220 Davidson Avenue, 4th Floor
Somerset, NJ 08873
732-537-6040**

Millstone Borough Flood Mitigation Plan
June 2005

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Table of Contents

Table of Contents	3
List of Tables	5
List of Figures	7
List of Photos	9
Acknowledgements	11
Preface	13
Setting	13
Section A - Community Organization	17
Section B - Public Involvement	18
Initial Public Meeting	18
Public Meeting on Draft Plan	18
Public Information Activities.....	18
Questionnaires	18
Solicitation of Comments	19
Planning Process, Planning Committee Meetings	19
Section C - Coordination with Other Agencies	19
Initial Contact with Agencies, Comments	19
Meetings with Agencies.....	20
Review of Community Needs, Goals, Plans for the Area.....	20
Agencies' Comments on Draft Action Plan.....	20
Section D – Assessing the Hazard.....	21
Background Information: Record of Past Floods	21
FEMA Flood Insurance Study	23
Flood Prone Areas	23
Description of Other Natural Hazards	28
Section E – Assessing the Problem	29
Repetitive Flood Losses.....	29
Affected Structures, Public Health and Safety	29
Description and Impact of Flooding	46
FEMA National Flood Insurance Program Damage Claims.....	46
Property Owner Survey Results	46
Flooding Impacts on Roads and River Crossings	47
Critical Facilities in Plan Area.....	47
Description of development, redevelopment, population trends, and possible future development and redevelopment in the floodplain, watershed, and natural resource areas.....	53
Beneficial Function Areas	54
Impact of Flooding.....	58
Existing Flood Protection Measures	58
Procedures for Warning and Evacuating Residents and Visitors	58
Section F – Set Goals.....	61
Section G – Review of Possible Activities.....	62
Section H – Implementation of An Action Plan.....	62
I. Public Safety.....	63
II. Public Participation	63

Millstone Borough Flood Mitigation Plan
June 2005

III. Incorporation of Flood Mitigation Planning into Local Ordinances, Emergency Management Plan and Master Planning 64

Section I – Plan Adoption..... 68

Section J – Plan Monitoring and Evaluation 68

Bibliography..... 69

Appendix..... 71

 Resolution Establishing the Millstone Borough Flood Mitigation Committee 73

 Flood Mitigation Planning Committee Meeting Minutes..... 77

 Letter to Neighboring Municipalities, State and County Agencies..... 99

 Property Owner Survey Questionnaire and Final Survey Results..... 103

 Preliminary Damage Assessment Report and Emergency Log for Hurricane Floyd in Millstone Borough..... 111

 FEMA Flood Insurance Rate Map Reference Marks 115

 Comments Received on Draft Plan..... 119

 Millstone Borough Flood Damage Prevention Ordinance 127

 Suggested Changes to Existing Flood Damage Prevention Ordinance 157

 Resolution for Adoption of Flood Mitigation Plan..... 163

 Community Rating System..... 166

 Flood Mitigation Funding Sources and Contact Information..... 173

 Flood Insurance Study and Flood Insurance Map 177

List of Tables

Table 1 – Peak Stream Flow for Millstone River at Blackwells Mills	22
Table 2 - Major Floods and Their Recurrence Interval	23
Table 3 – Flood Damage Costs in Millstone Borough	27
Table 4 – Flood Insurance Claims Frequency in Millstone Borough.....	27
Table 5 – Summary of Number of Flood Vulnerable Residential and Commercial Properties in Millstone Borough	30
Table 6 – Summary of Number and Type of Structures Affected by 100 Year Flood Event in Millstone Borough	30
Table 7 – Property Owner Survey Reported Flood Damages	48
Table 8 – FEMA National Flood Insurance Program Flood Claims	48
Table 9 – Critical Facilities in Millstone Borough	49
Table 10 – Significant Habitat Type.....	54
Table 11 – Action Plan Timetable	67

Millstone Borough Flood Mitigation Plan
June 2005

List of Figures

Figure 1 – Millstone Borough Location Map	15
Figure 2 – Millstone Borough Flood Prone and Repetitive Flood Loss Area Map.....	25
Figure 3 - First Floor Flood Vulnerability Map.....	31
Figure 4 – Millstone Borough Critical Facilities Map.....	51
Figure 5 – Significant Habitat Areas in Millstone Borough Map	57

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

List of Photos

Photo 1 – January 20, 1996 Flood at Hastings House at 34 North River Street..... 33
Photo 2 - September 17, 1999 Flood at 11 North River Street..... 34
Photo 3 - September 17, 1999 Flood at 20 North River Street (Millstone Sports Shop) 35
Photo 4 - September 17, 1999 Flood at Gas Station and Convenience Store on Route 514 36
Photo 5 - September 17, 1999 Flood at Millstone Liquor Store at northeast corner of Route 514
and Route 533 (Main Street)..... 37
Photo 6 – January 20, 1996 Flood at 7 and 13 South River Street 38
Photo 7 – October 20, 1996 Flood on Looking North on Main Street at Peace Brook. 39
Photo 8 – October 20, 1996 Flood at 1403 Main Street 40
Photo 9 – October 20, 1996 Flood at rear of 1417 Main Street..... 41
Photo 10 – October 20, 1996 Flood at 1423 Main Street 42
Photo 11 - September 17, 1999 Flood at 1429 Main Street..... 43
Photo 12 – September 17, 1999 Flood at 6 Amwell Road..... 44
Photo 13 – August 27, 2004 Flood at Route 533 (South Main Street) 45
Photo 14 – St. Joseph’s Church Stormwater Detention Basin..... 60

Millstone Borough Flood Mitigation Plan
June 2005

Acknowledgements

I would like to acknowledge members of the Millstone Borough Flood Mitigation Planning Committee, namely,

Joe Dempster, Borough Emergency Management Coordinator; Edward Brown, Planning Board Member; Bradford Holcombe, Resident and Sally Mravcak, Resident as well as Mayor Mary Patrick. I would like to acknowledge William Poch, Borough Council President, who lent me a copy of the Borough Master Plan, and Kathy Poch, Former Borough Emergency Management Coordinator who provided me with information on past flood damages. Also, I would like to acknowledge Alice Dorschner, former Mayor.

Also, I would like to acknowledge ShayMaria Silvestri, NRCS, who did the bulk of the map development for this Plan. In addition, Gary Casabona, NRCS, developed the Beneficial Functions Map.

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Also, I would like to thank Stephen M. Offen, Borough Attorney, who was able to locate the original Borough Flood Damage Prevention Ordinance. Also, I would like to acknowledge Clark Gilman of the New Jersey Department of Environmental Protection Flood Plain Management section for his recommendations for changes to the Township Flood Damage Prevention ordinance.

I would also like to thank Carl Andreassen, Somerset County Engineering, for his inputs and comments throughout the planning process and Tom Bittle, Somerset County Office of Emergency Management.

I would also like to acknowledge the thirteen residents who participated in the property owner survey.

Gregory J. Westfall
Water Resource Planner

Millstone Borough Flood Mitigation Plan
June 2005

Preface

Setting

The Borough of Millstone is located in the central part of Somerset County, near Somerville, in north-central New Jersey. The Borough is a small municipality with a land area of 0.6 square mile. The Borough has a Mayor and Council form of government. The Borough employs a part-time Borough Clerk. It is bordered by Franklin Township on the east and Hillsborough Township on the north, west and south (Figure 1). Historic and projected Borough population is shown below:

Year	1950	1960	1970	1980	1990	2000	2020
Population	289	409	630	530	450	410	442

Source: Somerset County Planning Board, US Bureau of Census of Population and Housing, 1950-1990(Actual Population)
Delaware Valley Regional Planning Commission (Projected Population)

Major commercial enterprises include a sport shop, delicatessen, gas station, computer shop and garden shop. The Borough is a designated National and State Historic District having numerous structures over 150 years old. The Borough is largely residential having approximately 172 housing units. Approximately half of these housing units were built before 1950 (Municipal Data Book, 2001).

Major routes include County Route 533 which runs in a north-south direction through the Township. County Route 514 runs in an east-west direction through the Borough.

The Millstone River forms the easterly boundary of the Borough. Peace Brook traverses the Borough from west to east and two unnamed tributaries located upstream of Peace Brook in the Yorktown Road and Van Doren Drive areas flow easterly to their outlets into the Millstone River. The entire Borough drains into the Millstone River watershed.

The topography of Millstone Borough varies from approximately 100 feet above sea level in the northern part of the Borough to approximately 35 feet along the Millstone River in the eastern part of the Borough. The Borough consists of generally hilly topography with flat floodplains (up to 1400 feet wide), along the Millstone River. The average annual precipitation in Millstone Borough is approximately 44 inches.

Soils include the Penn-Klinesville-Reaville association located on uplands where the landscape is undulating and rolling. This Association is 50 percent Penn soils, 20 percent Klinesville soils, 5 percent Reaville soils, and 25 percent minor soils. Penn soils are moderately deep, well-drained silt loams and shaly silt loams. Klinesville soils are shallow, well-drained shaly loams.

Millstone Borough Flood Mitigation Plan
June 2005

The Rowland-Birdsboro-Raritan Association soils are along the major streams. Soils that are subject to flooding are dominant in the association. These soils occupy the flood plains and terraces that are adjacent to the Millstone River. The Association contains 60 percent Rowland soils, 15 percent Birdsboro soils, 15 percent Raritan soils and 10 percent minor soils. Rowland soils are moderately well drained to somewhat poorly drained soils on flood plains. They have a seasonal high water table and are subject to frequent flooding. These soils are deep silt loams that formed in recent alluvium washed from uplands. Birdsboro soils are deep, well-drained silt loams. They are on the higher positions on the terraces, and only the lower areas are subject to infrequent stream flooding.

There are several areas of the Borough which lie in areas designated as flood plain. These areas are where repetitive flood losses have occurred (Figure 2). Repetitive flood losses are defined as those structures, which participate in the National Flood Insurance Program, that have made damage claims as a result of two or more flood events.

Millstone Borough Flood Mitigation Plan
June 2005

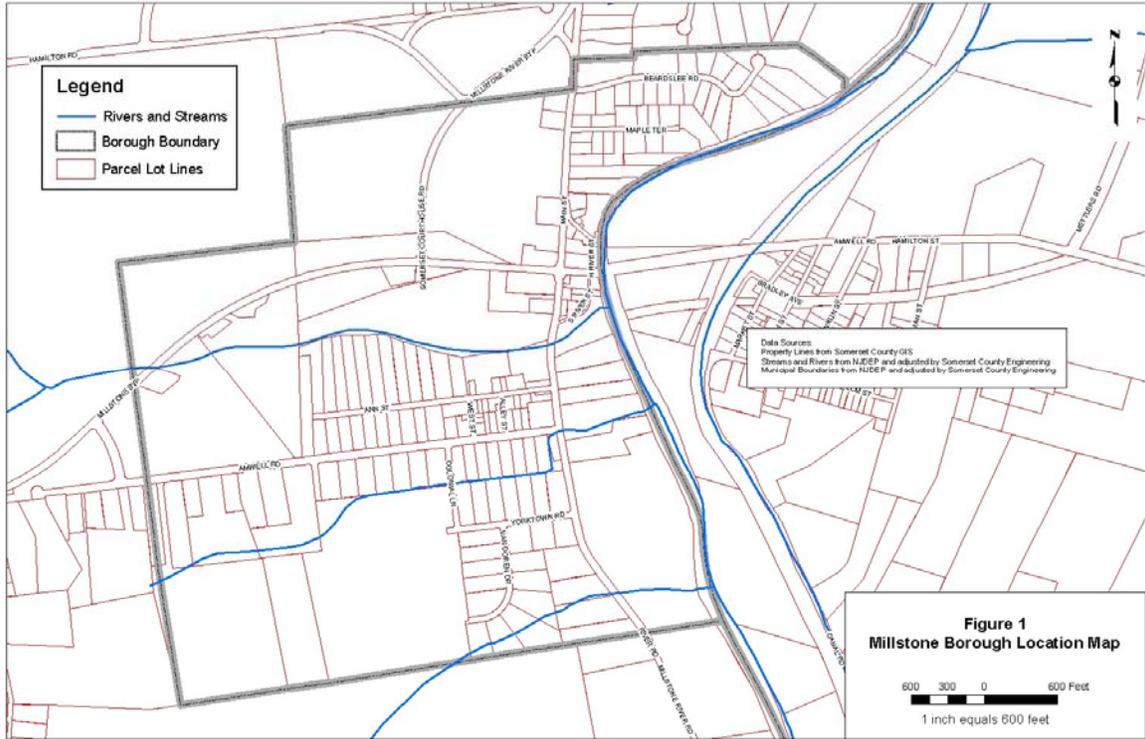


Figure 1 – Millstone Borough Location Map

Millstone Borough Flood Mitigation Plan
June 2005

Section A - Community Organization

The Flood Mitigation Planning Committee was organized by the Borough Council on September 28, 2004 and is the committee providing local input to the Flood Mitigation Plan.

The following people are members of the Millstone Borough Flood Mitigation Planning Committee:

Resident
Edward Brown
1429 Main Street
Millstone, NJ 08844

Millstone Borough OEM
Joe Dempster
17 Van Doren Drive
Millstone, NJ 08844

Environmental Commission Member
Rebecca Pongrazzi
6 Maple Terrace
Millstone, NJ 08844

Planning Board Member
Richard McDermott
20 Amwell Road
Millstone, NJ 08844

Resident
Sally Mravcak
1403 Main Street
Millstone, NJ 08844

Resident
Bradford Holcombe
11 North River Street
Millstone, NJ 08844

Code Enforcement Official/Flood Damage Prevention Ordinance Administrator
Dan DeVoti
4 West Street
Millstone, NJ 08844

This plan was prepared with the assistance of Gregory J. Westfall, Water Resource Planner, with the USDA Natural Resources Conservation Service.

Section B - Public Involvement

Initial Public Meeting

A public meeting was held on August 23, 2004 at the Millstone Borough Municipal Building. The purpose of this meeting was to notify the local residents of the intention to prepare a Flood Mitigation Plan and to seek public input for flood problems and possible solutions. A copy of the public meeting minutes appears in the Appendix.

Public Meeting on Draft Plan

A second public meeting was held on January 31, 2005 at the Millstone Borough Municipal Building. The purpose of this meeting was to discuss the draft Flood Mitigation Plan. Comments were received from the Borough Council and the public and were incorporated into the Plan.

Public Information Activities

Millstone Borough distributed in their newsletter a notice of their intent to prepare the Flood Mitigation Plan and a request for input from Township residents and property owners.

The Borough also notified the residents of both of the initial and draft plan public meetings to discuss flooding and the preparation of the Flood Mitigation Plan.

Questionnaires

In addition, the Borough distributed a questionnaire to Borough residents known to be in the flood prone areas of the Peace Brook and the Millstone River. A total of approximately 20 surveys were hand delivered to property owners in or adjacent to the floodplain. A total of thirteen (13) responses were received. Period of property ownership ranged from one to forty three (43) years with an average of approximately 20 years. A review of the responses indicated that all of the respondents have had flood damages with all thirteen respondents having flood damages during Hurricane Floyd and five during Hurricane Doria. Flood damages reported ranged from less than \$1500 to over \$225,000 for ten of the respondents yielding an average cost of damage of \$46,750 per structure. Five had flood insurance at the time of flooding while nine currently have flood insurance policies in place. A copy of the questionnaire and the summary of the results is in the Appendix.

Solicitation of Comments

As described above, comments were solicited from the general public at the Initial Public Meeting on August 23, 2004 and at the Draft Plan Public Meeting on January 31, 2005.

Planning Process, Planning Committee Meetings

The planning process was conducted through the Millstone Borough Flood Mitigation Committee which is composed of representatives of Emergency Management, Planning Board, Environmental Commission as well as representatives of the property owners who have had historic flooding. The Flood Mitigation Committee met on September 27, 2004, October 25, 2004, November 22, 2004, December 27, 2004 and January 31, 2005 to develop and review the Flood Mitigation Plan. A copy of the minutes for each of these meetings is in the Appendix.

Section C - Coordination with Other Agencies

Initial Contact with Agencies, Comments

Prior to the start of planning, the Borough was in contact with the State of New Jersey Office of Emergency Management and the New Jersey Department of Environmental Protection. At the start of the planning process, a letter (See Appendix) was sent to several municipalities and state and county agencies, notifying them of the Borough's intent to develop a flood mitigation plan. Contacted agencies were:

Delaware and Raritan Canal Commission
FEMA Region II
Franklin Township
Hillsborough Township
County of Somerset, Michael Amorosa , County Engineer
Somerset-Union Soil Conservation District
NJDEP, Flood Plain Management Section
NJDEP, Historic Preservation Office
NJ State Police, State Office of Emergency Management
NJ Water Supply Authority

There were no initial comments on the Plan.

Meetings with Agencies

In addition to the initial contacts described above, it is important to note that many of these municipalities, counties and state agencies are also members of the Millstone River Watershed Steering Committee. This Committee formed in February 2000 as a result of resolutions of support from five counties including Hunterdon, Mercer, Middlesex, Monmouth and Somerset Counties and 12 of the 26 watershed municipalities including Millstone Borough. The resolutions of support were approved for the development of a PL-566 (Watershed Protection and Flood Prevention) Plan. In June of 2000 the Committee identified seven goals and objectives for development of a watershed plan to address watershed concerns. Flood mitigation is the primary objective.

During the last several years, NRCS has been analyzing alternatives for reducing flood damages in the Millstone River watershed. One alternative was for flood water storage at one or more of approximately 26 sites. Another alternative was levees at four locations, one of which was Millstone Borough, where there were clusters of flood damages. Both alternatives were determined to not meet the benefit cost test required for these projects.

Many other organizations and agencies participate in Steering Committee activities including the New Jersey Department of Environmental Protection, New Jersey Water Supply Authority, Federal Emergency Management Agency, Corps of Engineers and USDA Natural Resources Conservation Service. As a result, Millstone Borough was also able to notify, correspond, and coordinate the Flood Mitigation Plan with these other entities through the Millstone River Watershed Steering Committee.

There were no comments from other agencies or the two neighboring municipalities at the beginning of the planning process. None of these groups attended either public hearing. A representative of the Somerset County Planning Department attended the January 31, 2005 public meeting.

Review of Community Needs, Goals, Plans for the Area

Millstone Borough is a designated State and National Historic District. Millstone Borough Master Plan goals are described under Section F Setting Goals.

Agencies' Comments on Draft Action Plan

Written comments, received from Franklin Township, New Jersey Water Supply Authority, New Jersey State Historic Preservation Office and the New Jersey Office of Emergency Management, are shown in the Appendix. Changes have been made to reflect these comments.

Section D – Assessing the Hazard

Background Information: Record of Past Floods

USGS hydrologic data indicate that major floods occurred in 1936, 1938, 1948, 1955, 1960, 1961, 1971, January 1996, October 1996, September 1999 for the lower Millstone River valley, from Princeton and South Brunswick Townships and Rocky Hill Borough through Franklin, Montgomery and Hillsborough Townships including Millstone and Manville Boroughs. The three largest floods on the Millstone River prior to 1921, when the Blackwell Mills gage station records begin, were 1810, 1882 and 1896 (Ross, 1969). Historical accounts (1896 State Geologist Annual Report) show that the flood of 1882 was the largest known flood to have occurred prior to 1962 (Thomas, 1962). The USGS stream gage station located at Blackwells Mills shows that the top ten recorded flows since 1921 have occurred in 1938, 1946, 1949, 1971, 1978, 1979, 1994, 1996, 1997, and 1999.

The storm of record occurred in 1999 (Hurricane Floyd) and was considered to be larger than a 100 year frequency flood event. Flood depths around houses and businesses in the lower Millstone River watershed were in excess of eight feet on the first floor during the event.

Table 1 identifies the peak annual flows at the Blackwells Mills USGS gaging station. This gaging station has been in operation since 1921.

Millstone Borough Flood Mitigation Plan
June 2005

Table 1 – Peak Stream Flow for Millstone River at Blackwells Mills

Water Year 1921 to 2003							
Water* Year	Date	Gage Height (feet)	Flow (cfs)	Water Year	Date	Gage Height (feet)	Flow (cfs)
1921	August 8, 1921	8.55	4,190	1962	March 13, 1962	10.34	6,770
1922	March 8, 1922	7.50	3,420	1963	March 7, 1963	8.38	4,190
1923	March 17, 1923	8.20	3,840	1964	January 10, 1964	8.05	3,850
1924	April 7, 1924	11.00	7,900	1965	February 9, 1965	8.09	3,890
1925	February 27, 1925	10.05	6,340	1966	February 14, 1966	11.21	8,330
1926	September 7, 1926	11.50	7,900	1967	March 7, 1967	12.24	9,820
1927	July 23, 1927	10.80	7,540	1968	May 30, 1968	10.26	6,290
1928	October 18, 1927	10.40	7,000	1969	July 29, 1969	10.43	6,540
1929	February 27, 1929	8.22	4,000	1970	April 3, 1970	11.23	7,860
1930	March 8, 1930	7.30	3,140	1971	August 28, 1971	18.68	22,200
1931	June 17, 1931	6.94	2,810	1972	June 23, 1972	10.40	4,790
1932	March 28, 1932	10.25	6,650	1973	February 3, 1973	13.09	8,860
1933	November 19, 1932	10.21	6,650	1974	December 21, 1973	13.21	9,080
1934	March 5, 1934	9.32	5,300	1975	July 15, 1975	16.84	17,100
1935	February 16, 1935	6.91	2,810	1976	January 28, 1976	10.35	4,810
1936	January 3, 1936	10.05	6,270	1977	March 23, 1977	11.62	6,350
1937	December 20, 1936	7.97	3,800	1978	January 27, 1978	14.02	10,700
1938	September 21, 1938	15.29	18,300	1979	January 22, 1979	13.84	10,300
1939	February 4, 1939	10.04	6,270	1980	March 22, 1980	11.15	5,600
1940	March 15, 1940	9.41	5,440	1981	May 12, 1981	7.75	2,820
1941	February 8, 1941	8.88	4,760	1982	January 5, 1982	11.87	6,740
1942	August 9, 1942	11.57	8,940	1983	April 17, 1983	12.46	7,730
1943	December 30, 1942	8.90	4,780	1984	May 30, 1984	12.87	8,460
1944	January 6, 1944	10.05	6,340	1985	September 28, 1985	8.31	3,140
1945	November 28, 1944	7.61	3,420	1986	April 17, 1986	12.41	7,650
1946	June 3, 1946	12.37	10,500	1987	April 5, 1987	11.02	5,460
1947	April 6, 1947	5.79	2,130	1988	July 22, 1988	7.46	2,670
1948	November 12, 1947	8.17	3,970	1989	September 21, 1989	14.42	11,400
1949	December 31, 1948	13.84	14,000	1990	October 21, 1989	9.61	4,950
1950	February 15, 1950	7.70	3,500	1991	March 4, 1991	8.26	3,700
1951	November 26, 1950	9.21	5,180	1992	June 6, 1992	9.19	4,530
1952	December 21, 1951	11.53	8,870	1993	December 12, 1992	12.97	9,160
1953	March 13, 1953	9.56	5,650	1994	January 29, 1994	13.88	10,500
1954	December 15, 1953	7.12	2,980	1995	March 9, 1995	7.28	2,910
1955	August 14, 1955	12.42	8,000	1996	January 20, 1996	15.09	12,600
1956	October 15, 1955	11.57	7,500	1997	October 20, 1996	15.53	13,400
1957	April 6, 1957	8.43	4,240	1998	January 24, 1998	9.83	5,180
1958	February 28, 1958	11.05	7,990	1999	September 17, 1999	21.01	26,200
1959	August 9, 1959	7.67	3,460	2000	March 17, 2000	6.02	2,110
1960	September 13, 1960	11.07	8,030	2001	March 31, 2001	9.71	5,050
1961	March 24, 1961	9.07	4,670	2002	May 19, 2002	7.42	3,020
				2003	June 5, 2003	10.98	5,950

Source: U.S. Geological Survey, West Trenton, NJ

* Water Year is the period October 1 through September 30

FEMA Flood Insurance Study

Table 2 - Major Floods and Their Recurrence Interval

Location	Date	Discharge (cfs)	Recurrence Interval (Years)
Millstone River at Blackwells Mills	September 21, 1938	18,300	50
	August 28, 1971	22,200	100
	July 15, 1975	17,100	40
	September 17, 1999*	26,200	100+

*Flood of record

Source: U.S. Geological Survey, Water Resources Division, West Trenton, NJ.

Table 3 and 4 show dollar value and frequency of flood damages within the Borough. Data for tables come the Federal Emergency Management Agency (FEMA) National Flood Insurance Program Flood Claims database.

Flood Prone Areas

The flood prone areas of Millstone Borough are shown in Figure 2.

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

Figure 2 – Millstone Borough Flood Prone and Repetitive Flood Loss Area Map

Figure available for download at
http://www.nj.nrcs.usda.gov/programs/watersheds/flood_mitigation_assistance.html

Data Sources: FEMA. June, 1977. Flood Insurance Study for Millstone Borough, N.J.
NJDEP. 2001. GIS Resource Data.

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

Table 3 – Flood Damage Costs in Millstone Borough

Flood Damage Costs (Dollars)	Number of Structures
7,000 – 13,000	1
30,000 – 59,999	3
60,000 – 99,999	3
100,000 – 199,999	1
200,000 – 299,999	1
>300,000	1
Total	10

Source: FEMA National Flood Insurance Program Flood Claims Database

Table 4 – Flood Insurance Claims Frequency in Millstone Borough

Number of Claims	Number of Structures
1	4
3	3
4	2
7	1
Total	10

Source: FEMA National Flood Insurance Program Flood Claims Database

Description of Other Natural Hazards

The major hazard that the Borough faces is chronic flooding from the Millstone River. Millstone Borough has a history of flood damages from Millstone River flooding. Approximately 20 structures are located in the historic flood plain of the Millstone River. Historic flood damages include those that have occurred during Hurricane Doria (1971), Hurricane Floyd (1999) and/or other significant floods. Damage in the Millstone River watershed from Hurricane Floyd (September 16, 1999) was concentrated in three areas, namely, Manville Borough, Zarephath in Franklin Township and Millstone Borough. Many residential and commercial properties in Millstone Borough were damaged.

Other minor flooding from tributaries to the Millstone River and within the Borough can cause traffic disruptions on County Route 533 (Main Street).

No other natural hazards have been described by local residents.

Section E – Assessing the Problem

Repetitive Flood Losses

Repetitive flood losses are those where two or more National Flood Insurance Program claims have been made for the same property during the 1977-2003 period. By this strict definition, there are six structures in the Borough that have been identified as having repetitive losses. The specific location of structures is private information and on file. There may be other structures which have had repeated flood losses but may not have had flood insurance and so are not recorded in the database of National Flood Insurance Program claims.

Affected Structures, Public Health and Safety

The Natural Resources Conservation Service surveyed the first floor, low opening and adjacent ground elevations for all residential and business properties in or near the flood zone in the Borough.

Table 5 presents a summary of the number and types of property that are vulnerable to flooding as defined by the 100, 50, and 10 year flood events under the flood depths as determined by the FEMA Flood Insurance Study (FEMA FIS, 1977). Figure 3 shows the flood vulnerability of the first floors of structures within the flood zone under various flood events.

Floods have a great impact on public health and safety. Millstone Borough residents rely on wells and septic systems. People on well water can be affected if flood waters rise over the top of well heads. It is possible for bacterial contamination to occur in wells. One possible source of this contaminant could be caused by flooded septic systems that are not designed to operate in a completely saturated state. The rescue of pets and other wildlife issues must also be addressed during a flood. Finally, flooding of homes can cause mold growth. Although rare, deadly mold can also grow in flooded homes. During a flood situation, the above items are just a few of the situations must be addressed.
(Dempster, 2005).

Table 5 – Summary of Number of Flood Vulnerable Residential and Commercial Properties in Millstone Borough

Flooding Location within Structure	10 Year (10%)	50 Year (2%)	100 Year (1%)
First Floor*	3	13	15
Low Opening/ Basement	6	18	20

Note: For example a 10 year flood occurs (statistically speaking) every ten years and has a 10% (one in ten) chance of occurring in any one year.

* Count includes residential and commercial structures only, not outbuildings

Data Sources: FEMA, 1977
 USDA NRCS Structure Elevation Survey

Table 6 – Summary of Number and Type of Structures Affected by 100 Year Flood Event in Millstone Borough

Type of Structure	Number of Structures
Residential	11
Commercial	4
Garage/barn/outbuilding	11

Source: USDA Natural Resource Conservation Service Structure Survey, 2001

Millstone Borough Flood Mitigation Plan
June 2005

Figure 3 - First Floor Flood Vulnerability Map

Figure available for download at
http://www.nj.nrcs.usda.gov/programs/watersheds/flood_mitigation_assistance.html

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005



Photo 1 – January 20, 1996 Flood at Hastings House at 34 North River Street

Millstone Borough Flood Mitigation Plan
June 2005



Photo 2 - September 17, 1999 Flood at 11 North River Street

Millstone Borough Flood Mitigation Plan
June 2005



Photo 3 - September 17, 1999 Flood at 20 North River Street (Millstone Sports Shop)

Millstone Borough Flood Mitigation Plan
June 2005



Photo 4 - September 17, 1999 Flood at Gas Station and Convenience Store on Route 514

Millstone Borough Flood Mitigation Plan
June 2005



Photo 5 - September 17, 1999 Flood at Millstone Liquor Store at northeast corner of Route 514 and Route 533 (Main Street)

Millstone Borough Flood Mitigation Plan
June 2005



Photo 6 – January 20, 1996 Flood at 7 and 13 South River Street

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June 2005



Photo 7 – October 20, 1996 Flood on Looking North on Main Street at Peace Brook.
This flood was the fourth highest flood in 80+ year of the Blackwell Mills Gage

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June 2005



Photo 8 – October 20, 1996 Flood at 1403 Main Street

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June 2005



Photo 9 – October 20, 1996 Flood at rear of 1417 Main Street

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June 2005



Photo 10 – October 20, 1996 Flood at 1423 Main Street

Millstone Borough Flood Mitigation Plan
June 2005



Photo 11 - September 17, 1999 Flood at 1429 Main Street

Millstone Borough Flood Mitigation Plan
June 2005



Photo 12 – September 17, 1999 Flood at 6 Amwell Road

Millstone Borough Flood Mitigation Plan
June 2005



Photo 13 – August 27, 2004 Flood at Route 533 (South Main Street)

Description and Impact of Flooding

FEMA National Flood Insurance Program Damage Claims

According to information from the New Jersey Department of Environmental Protection and the Federal Emergency Management Agency, all property owners in the State-designated Special Flood Hazard Area have flood insurance through the National Flood Insurance Program. As of 2004, Millstone Borough had 19 insurance policies in force, representing \$3,295,400 in coverage (Rizzo, 2004). Since 1978, there have been 29 paid losses totaling \$1,091,476 claims paid.

Millstone Borough has the second highest (Manville Borough is the highest) total dollar value of claims to the NFIP of the twenty-six municipalities in the Millstone River watershed. However, Millstone Borough has the highest per structure flood damage claims.

There are six (6) repetitive loss properties in Millstone Borough (Rizzo, 2004). These six structures account for nearly 85 percent of all paid flood losses for the 13 structures making claims in the Borough. Several structures have had significant flood damage claims on as many as four different flood events. In fact, the Borough ranks fourth of the twenty-six municipalities in the Millstone River watershed in terms of the number of repetitive loss structures.

Property Owner Survey Results

Table 6 gives an indication of the flood damages as voluntarily reported by property owners who participated in the Property Owner Survey conducted in September 2004. Table 7 shows the FEMA National Flood Insurance Program claims for Millstone Borough.

Flooding Impacts on Roads and River Crossings

Somerset County reports that Route 514 (Millstone Causeway) crossing of the Millstone River has been closed during Hurricanes Doria (1971) and Floyd (1999) (Andreassen, 2004). Route 514 has an average daily weekday traffic count of 7,958 vehicles per day (Somerset County Engineering Office, March, 2001).

South River Street and North River Street are closed several times per year. Also, Route 533 on the southern edge of Millstone Borough just north of the Hillsborough Township boundary is closed several times a year.

A gage at the Millstone Causeway was installed only a few years ago, so there is not a lot of historical data, other than flood marks. As a reference, however, the following stages were observed at the Blackwells Mills gage, where flood stage is approximately at 7:

9/17/99 (Floyd)	21.0
8/28/71 (Doria)	18.7
7/15/75	16.8
10/19/96	15.6

Critical Facilities in Plan Area

Critical facilities are those facilities that are essential for community functions. These include schools, nursing homes, fire stations, first aid, sewer and water treatment facilities, post office, church and other essential structures. The fire station and first aid squad servicing Millstone Borough are located across the Millstone River in East Millstone in Franklin Township. The first aid squad building is located in the 100 year flood zone. During flooding the Borough has a mutual aid agreement with Hillsborough for first aid service and with neighboring Franklin Township for fire service from others. There are several critical facilities within the Borough of Millstone, including the Borough Hall, Hillsborough Reformed Church and St. Joseph's Roman Catholic Church, however there are no critical facilities within the flood zone. Figure 4 shows the location of these critical facilities and Table 9 lists these facilities.

Millstone Borough Flood Mitigation Plan
June 2005

Table 7 – Property Owner Survey Reported Flood Damages

Watershed	Number of Properties Flooded	Dollars of Flood Damages		
		Range	Average	Total
Millstone River	13 (10 reported dollars of damage)	\$2,000 - \$225,000+	\$46,151	\$461,151+

Table 8 – FEMA National Flood Insurance Program Flood Claims

Watershed	Number of Properties Flooded	Dollars of Flood Damage Claims		
		Range	Average	Total
Millstone River	12	\$240 -\$213,137	\$44,118.	\$882,353.

Millstone Borough Flood Mitigation Plan
June 2005

Table 9 – Critical Facilities in Millstone Borough

Type of Facility	Name of Facility	Location
Government	Millstone Borough Hall	North Main Street
Religious	Hillsborough Reformed Church	Old Amwell Road and Millstone River Road (Main Street)
	St. Joseph's Roman Catholic Church	Yorktown Road

Source: Millstone Borough Flood Mitigation Committee

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

Figure 4 – Millstone Borough Critical Facilities Map

Figure available for download at
http://www.nj.nrcs.usda.gov/programs/watersheds/flood_mitigation_assistance.html

Millstone Borough Flood Mitigation Plan
June 2005

Description of development, redevelopment, population trends, and possible future development and redevelopment in the floodplain, watershed, and natural resource areas

Currently Millstone Borough is nearly “built-out” with a few remaining large tracts of land which are currently either close to or under application for development approval. Any future large scale development within the Borough is expected to be covered by the State Stormwater Management Rule which does not permit any increase in volume or rate of runoff from the pre-development condition due to development. The Stormwater Rule, however, does not cover single lot re-development. The major threat of increases in stormwater rates and volume, from within the borders of the Borough, is likely to come from re-development of existing single lot sites. The so-called “tear-down” phenomenon, which entails the removal of an existing residential structure and its replacement by a larger structure and its associated driveway and other impervious surfaces is occurring in other older watershed communities and could occur here.

The major source of the impact of development and re-development has come and is likely to continue to come from areas outside of Millstone Borough in the watersheds that drain toward the Borough, including the Millstone River watershed. Development which pre-dates the existing Stormwater Rule will continue to have an impact on the Borough.

Also, the removal of dams under the Dam Safety Act could reduce the current amount of floodwater storage in areas upstream of the Borough on the Millstone River. Due to a lack of funding for maintenance and rehabilitation of these dams by current dam owners, a number of structures are under review and could be breached where there is no desire or financial resources for their continued maintenance.

Beneficial Function Areas

Millstone Borough has many patches of natural areas which provide diverse ecological functions to the community, including recreation, habitat for wildlife, runoff reduction, and floodwater storage. Forested areas and wetlands in watersheds improve water quality by intercepting rain water and reducing runoff, storing floodwaters for slower release, storing and cycling nutrients, removing some pollutants, providing shade and more stable temperatures for aquatic organisms, and increasing biological diversity and organic food bases for downstream species communities.

Figure 4 displays Significant Habitat locations within Millstone Borough. The GIS data in Figure 4 were obtained from the NJ DEP "Landscape Project" Version 2 dataset. The data combine information on rare species occurrences with land use/land cover classification to provide a tool for planning habitat protection strategies. The Landscape Project comparatively ranks habitats from "1", lowest priority to "5", highest priority. Habitat patches ranked "1" have suitable habitat but do not have any known occurrences of rare species. Patches ranked "5" have at least one occurrence of a federally threatened or endangered species. For this report, all patches of habitat, ranked 1-5, are lumped into "Significant Habitat" and shown in Figure 4. Most of the important ecological functions tend to occur in the areas depicted on the map, although some smaller habitat patches may not have been captured because of the relatively large scale (1: 12,000) of the mapping process.

Table 10 below summarizes the approximate acreages in each of four habitat classes. Most areas classified as forested wetland wildlife habitat are also classified as forest wildlife habitat. Therefore, the combined total area for all types of significant habitat would be approximately 250 acres, or about 60 percent of the total land area within the borough. The Landscape Project data were compiled based upon landuse/landcover data derived from 1995 air photos. Some changes in the landscape may have occurred since that time.

Table 10 – Significant Habitat Type

Significant Habitat Type	Acres within Millstone Borough
Forest	160
Forested Wetland	96
Grassland	75
Emergent Wetland	14

There are large patches of critical forested wetland habitat adjacent or proximate to the Millstone River and Peace Brook. Forested wetlands comprise about 23 percent of the total land area in the borough. This is a significant percentage, especially within the highly urbanized landscape of central New Jersey. These areas are widely distributed within the borough, and the patches are large enough to provide significant benefits to

Millstone Borough Flood Mitigation Plan
June 2005

water quality, as well as providing breeding and foraging habitat for some declining populations of birds, amphibians, and reptiles.

Non-wetland forested areas within the borough also contribute valuable ecological services to the Millstone community. In addition to their wildlife and aesthetic value, forested areas provide greater potential for infiltration than any other type of landcover. This service reduces the amount of runoff within the borough during periods of high precipitation.

Grassland areas are a diminishing resource in New Jersey as many of our agricultural lands are being converted to residential areas. These areas contribute important ecological benefits, such as providing habitat for grassland-nesting birds, and also contribute far less runoff compared to developed areas. There are approximately 75 acres of habitat that are suitable for grassland dependent species within the borough.

Although there are only about 14 acres of critical emergent wetland habitat within Millstone Borough, these areas are uniquely valuable in terms of the species of plants and animals that they can support.

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005



Figure 5 – Significant Habitat Areas in Millstone Borough Map

Impact of Flooding

The economic impact of flooding in Millstone Borough has not been assessed previously. An economic assessment of Hurricane Floyd damages was done for New Jersey with specific references to Manville and Bound Brook (EDA/FEMA, 2000). A summary of the Preliminary Damage Assessment Report describing flood damages following Hurricane Floyd flooding is shown in the Appendix.

Existing Flood Protection Measures

In spite of its long history of flooding, there are no pre-existing flood protection measures in the Borough of Millstone.

There are, however, several stormwater detention facilities within the Borough including the St. Joseph's Roman Catholic Church detention facility on Yorktown Road (Photo 14) and several Somerset County-built detention basins along Route 514 and the Millstone Bypass.

Procedures for Warning and Evacuating Residents and Visitors

The Borough of Millstone tiers their flood warning system according to at-risk structures (Dempster, 2005):

Tier 1: Millstone Sports Shop

Tier 2: 7 and 13 South River Street, 1403 and 1423 Main Street

Tier 3: Hillsborough Reformed Church Parsonage at 1445 Main Street

Tier 4: All other houses and businesses in the flood plain (including Reformed Church and first two houses on south side of Amwell Road

All property owners have been advised to monitor the Blackwells Mills stream gage on the internet. This gage is capable of operating without utility power and landline communication links. The Blackwells Mills gage operates off of solar power and a satellite uplink:

<http://www.erh.noaa.gov/cgi-bin/ahps.cgi?phi&bkwn4>

All at-risk structures have been given flood gage levels which correspond to structure flood levels.

Millstone Borough Flood Mitigation Plan
June 2005

Proactive notification procedures:

The Somerset County Flood Information System (SCFIS) will forward via facsimile any flood update to any structure in the flood plain (one property owner currently requests regular updates).

The Borough OEM Coordinator and Deputy OEM Coordinator continuously monitor river conditions during high volume flood events. These individuals are in constant contact with property owners during this time.

The OEM team is also in constant contact with the Franklin Township Fire District #1, which responds to any flood emergency in the Borough.

At-risk structures can request assistance either directly to the on-site OEM team or via contact with Somerset County 911 Communication.

Millstone Borough Flood Mitigation Plan
June 2005



Photo 14 – St. Joseph's Church Stormwater Detention Basin

Section F – Set Goals

During the 1997 updating of the Millstone Borough Master Plan, the Planning Board conducted an exercise addressing the existing character of the community. The following were identified as the top five “likes” and “dislikes”:

“Likes”	“Dislikes”
Quiet serenity of the village	Lack of sidewalks
Tree-lined streets	Speed and volume of traffic
Historic ambiance	Overhead power lines
Open spaces	Number of signs
Millstone River	Drainage/flooding problems

The Millstone Borough Master Plan (1997) states, among other goals and objectives, the following under Prioritized Master Plan Goals and Objectives:

- To protect the Millstone Watershed and preserve the natural appearance of the Millstone River Corridor by:
 - Encouraging the preservation of natural vegetation and preventing the unnecessary cutting of trees along the Millstone River and along all stream corridors.
 - Reducing impervious cover due to over-intensive development and controlling the rate and quality of stormwater runoff and the discharge of pollutants to ground and surface waters.
 - Reducing potential disturbance within floodplain areas whenever possible.
 - Promoting the retention of open space throughout the community including the preservation of trees and natural vegetation.
 - Requiring appropriate setbacks from the Millstone River and from stream corridors.
 - Prohibiting any intrusion caused by any construction in the river that would inhibit the water flow, thereby causing harm to the river itself and its banks.
- To secure safety from fire, flood, panic and other natural and man-made disasters.

The Millstone Borough Flood Damage Prevention ordinance (see Appendix) has the following goals:

- (1) To protect human life and health;
- (2) To minimize expenditure of public money for costly flood control projects;
- (3) To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- (4) To minimize prolonged business interruptions;

Millstone Borough Flood Mitigation Plan
June 2005

- (5) To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in flood plains;
- (6) To help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner as to minimize future flood blight areas; and,
- (7) To insure that potential buyers are notified that property is in a flood area.

Section G – Review of Possible Activities

Previously, as part of the Millstone River Flood Damage and Mitigation Analysis study, in 2001 NRCS obtained first floor, low opening (basement windows or doors) and adjacent ground elevations of each structure in or near the flood zone. This information was used to determine the vulnerability of individual structures under various flood events. During the course of this survey it was determined that there was an error of eight (8) feet in the FEMA Flood Insurance Study reference marks used to develop elevation certificates for properties in the flood zone and to determine their individual flood insurance rates. Further information on this is in the Appendix.

Millstone Borough will be developing a municipal Stormwater Management Plan in accordance with the NJDEP's Stormwater Management Rules (NJAC 7:8) as required by its NJDEP Municipal General Stormwater Discharge Permit.

Activities previously considered under the Millstone River Watershed (PL83-566 NRCS project) included construction of floodwater storage structures at one or more of 26 different sites throughout the watershed. Also, levees were considered at four locations in the Millstone River watershed including Millstone Borough. Both of these structural flood damage reduction measures were found to not be cost-effective.

Section H – Implementation of an Action Plan

The Millstone Borough Flood Mitigation Planning Committee recommends that Millstone Borough implement the activities described below. A potential implementation schedule is shown in Table 10.

I. Public Safety

1. Continue cooperative relationship with Somerset County regarding maintenance of gage at Route 514 crossing of the Millstone River and early warning of low-lying residents.
2. Establish by Borough ordinance a form of egress (by foot and for emergency vehicles) to higher ground from private properties which are inaccessible by public roadways during a flood event.
3. Conduct a study of the effectiveness and capacity of existing Borough detention basins to operate as originally designed and to determine their capability for handling additional stormwater.
4. Millstone Borough will work with Hillsborough Township as well as private property owners in the Borough to assure that adequate stormwater detention and maintenance is performed to minimize flooding of Millstone River Road/Main Street (County Route 533) on the southern edge of the Borough.
5. The Borough will continue the “angel” program whereby individual property owners who live outside of the flood plain look after specific, individual property owners in the flood plain.
6. Millstone Borough will require that property owners in the flood plain will secure any hazardous material containers. Hazardous containers that individual property owners may have could contain gasoline, oil, pesticides or other toxic materials.

II. Public Participation

1. Public Information

The Borough should implement a web-site based program to inform their residents of the threats of flooding and the benefits of flood insurance as well as provide links for weather and flood information.

2. Community Rating System

The Borough, working through the Flood Mitigation Planning Committee in an ongoing manner, should implement measures to address one or more of the 18 activities in the Community Rating System (see Appendix) to reduce or minimize property owner flood insurance premiums. The Community Rating System offers an effective way to reduce/minimize flood damages and flood insurance premiums as well as many other benefits.

3. Elevation Certificates

During the 2001 NRCS structure survey, it was found that a benchmark shown on the Millstone Borough Flood Insurance Study map was in error by approximately eight feet lower than the actual elevation (See Appendix). The elevation had been used to develop Elevation Certificates for the National Flood Insurance Program rating for several structures there. As a result, a number of property owners may be paying more than necessary for their flood insurance. As a result of this finding, Borough officials will contact all NFIP policy holders to ascertain that their individual elevation certificates are correct. If not correct the elevation certificates will be amended accordingly and a commensurate adjustment in the flood insurance premium for those structures will take place.

4. Existing Easement Maintenance

Where existing easements call for maintenance of a channel or other water conveying infrastructure, the Borough will ensure that the easement will be properly maintained for public health, safety and welfare.

III. Incorporation of Flood Mitigation Planning into Local Ordinances, Emergency Management Plan and Master Planning

1. Revision of Flood Damage Prevention Ordinance

The Borough should revise its existing Flood Damage Prevention Ordinance to incorporate the suggested recommendations (see Appendix) from the State Flood Plain Management Program.

2. Incorporation of Flood Mitigation Planning in Master Plan

The Flood Mitigation Plan should be incorporated by reference into the Borough Master Plan.

3. Incorporate Flood Overlay Zone into Borough Zoning Ordinance

Identify and incorporate the FEMA Flood Insurance Study Flood Zone boundaries (and future amendments) as an overlay zone (using a similar approach to the current Historic zoning overlay) in the Borough Zoning ordinance. The Flood Zone overlay would add additional regulations to the underlying residential or commercial zoning.

4. Stormwater Management Ordinance for Land Development and Redevelopment in Residential and Commercial Areas

The Borough should require that stormwater detention be installed for all residential and commercial development and redevelopment. This would include single lot

Millstone Borough Flood Mitigation Plan
June 2005

development/redevelopment including so-called “tear-downs”. The Borough should require that development and redevelopment of land, defined as “major development” in the NJDEP Stormwater Management Rules (NNJAC7:8) have adequate stormwater measures to recharge all runoff generated by all planned impervious surfaces so that no increase in off-site runoff occurs. Further, the ordinance should identify the parties responsible and the source of funding for future operation, maintenance and replacement of the key components of any stormwater management facility.

5. Regional Cooperation and Coordination to Reduce Flooding Impacts

Millstone Borough will encourage Franklin Township and Hillsborough Township to consider and require performance standards to result in no net increase in runoff due to development upstream of Millstone Borough.

6. Prioritize Riparian Areas for Open Space Acquisition and Conservation

The Borough should make riparian areas a priority for open space acquisition and conservation easements.

7. Identification of Flood Emergency Technical and Financial Assistance Sources in Emergency Operations Plan

The Borough should include the NRCS Emergency Watershed Protection (EWP) Program in its Emergency Response Plan. The purpose of the EWP program is to undertake emergency measures to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood or any other natural occurrence is causing or has caused a sudden impairment of the watershed. These funds are provided for measures to restore channels to their pre-existing condition and to stabilize eroding streambanks. Measures to restore channels may include debris removal, streambank stabilization, revegetation, purchase of floodplain easements and repair of water control structures and public infrastructure.

IV. Private Property Flood Mitigation

1. Initiate Flood Mitigation Measures for Repetitive Loss Structures

The Borough and property owners will work together to create and implement flood mitigation measures, particularly those that will reduce or eliminate repetitive flood loss structures (those which have made two or more claims to the National Flood Insurance Program). Flood mitigation measures may include elevation, relocation or buyout of individual properties. Based on public input at Flood Mitigation Planning Committee meetings, there is public support for elevation of existing repetitive flood loss structures and, in some cases, an interest in relocation

Millstone Borough Flood Mitigation Plan
June 2005

of existing repetitive flood loss structures. Prior to implementation of this measure, consultation should be made with the State Historic Preservation Office.

2. Require Utility Relocation as Condition for Any Renovation/Building Permit

The Borough should require, where feasible, the raising of all incoming utilities (electric, phone, cable, etc.) above the 100 year flood elevation as a condition for approval of any permit for structure renovation, addition or other alteration. Input will be sought from the Franklin Township Fire District #1 with whom Millstone Borough has a contract for fire protection services.

3. Identify and Contact Funding Sources (See Appendix)

A. Applications to Agencies

The Borough should apply, when appropriate, for funding from the State Office of Emergency Management, Natural Resources Conservation Service and other agencies to implement applicable aspects of this Plan.

B. Implement Long Term Funding Mechanism

The Borough should consider investigating various means for the generation of the necessary funds for long-term implementation of needed stormwater management facilities and programs.

Millstone Borough Flood Mitigation Plan
June 2005

Table 11 – Action Plan Timetable

Activity	Who	2004	2005	2006	2007	2008
Road Flooding Safety						
Continue cooperative relationship with Somerset County regarding maintenance of gage at Route 514 crossing of the Millstone River	Emergency Management Coordinator	X	X	X	X	X
Conduct a study of the effectiveness and capacity of existing Borough detention basins	Emergency Management Coordinator		X			
Work with Hillsborough Township as well as private property owners in the Borough to assure adequate stormwater detention and maintenance	Emergency Management Coordinator	X	X	X	X	X
Public Participation						
Public Information	Emergency Management Coordinator	X	X	X	X	X
Community Rating System	Emergency Management Coordinator				X	X
Elevation Certificate	Borough Engineer		X	X		
Incorporation of Flood Mitigation Planning into Local Ordinances, Emergency Management Plan And Master Planning						
Revision of Flood Damage Prevention Ordinance	Chair, Borough Planning Board Attorney	X	X			
Incorporation of Disaster Mitigation Planning in Master Plan	Chair, Borough Planning Board			X		
Incorporate Flood Overlay Zone into Borough Zoning Ordinance	Chair, Borough Planning Board					
Stormwater Management Ordinance for Redeveloped Residential and Commercial Areas	Borough Council			X		
Regional Cooperation and Coordination to Reduce Flooding Impacts	Borough Council	X	X	X	X	X
Prioritize Riparian Areas for Open Space Acquisition and Conservation	Chair, Borough Planning Board		X			
Identification of Flood Emergency Technical and Financial Assistance Sources in Emergency Operations Plan	Emergency Management Coordinator		X			
Private Property Flood Mitigation						
Initiate Flood Mitigation Measures for Repetitive Loss Structures	Borough Council			X		
Identify and Contact Funding Sources	Borough Council				X	

Millstone Borough Flood Mitigation Plan
June 2005

The Borough Council and Mayor will implement the above recommendations as funding in the municipal budget is available over time and through the seeking of grants.

V. Post-Disaster Mitigation Policies and Procedures

The Borough critiques procedures carried out after all flood events and seeks out sources of funding through appropriate channels to recover from and mitigate future losses. The Borough does not have its own rescue or other equipment as other municipalities have, however, through interlocal agreements, has access to equipment and personnel from a neighboring municipality. The Borough has and will continue to make efforts to be considered for Hazard Mitigation Grant Program (HMGP) grants in furtherance of our commitment to mitigate destruction from future flooding events.

Section I – Plan Adoption

This Flood Mitigation Plan was formally adopted by the Millstone Borough Council at its meeting on June 20, 2005. (See Appendix) Formal certification by the Federal Emergency Management Agency occurred on November 14, 2005.

Section J – Plan Monitoring and Evaluation

The Millstone Borough Flood Mitigation Planning Committee shall meet later in 2005 following the acceptance and certification of this Flood Mitigation Plan by FEMA. The Committee will prepare an annual report identifying the Plan's successes and failures, the reasons for each, for implementation of this Plan as well as to determine how best to revise the strategy accordingly and fully implement the Plan. Furthermore, they shall monitor the implementation of the various recommendations including the Borough Council's pursuance of resolutions and preparation of public information documentation. Revisions to the Plan will be recommended based on actions which are successful.

In the future the Borough may make an application for a reduction in their community flood insurance rating. Therefore the Township will endeavor to accomplish as much as possible to obtain as favorable a rating as possible.

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Millstone Borough Flood Mitigation Plan
June 2005

Appendix

Millstone Borough Flood Mitigation Plan
June 2005

**Resolution Establishing the Millstone Borough Flood Mitigation
Committee**

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

SEPTEMBER 28, 2004

RESOLUTION - APPOINTMENTS - FLOOD MITIGATION PLANNING COMMITTEE

WHEREAS, Millstone Borough will be developing a flood mitigation plan with the help of the US Department of Agriculture Natural Resources Conservation Service (NCRS); and

WHEREAS, part of the required planning process is to establish a planning committee for participation in the plan;

NOW, THEREFORE BE IT RESOLVED by the Borough Council of Millstone Borough in the County of Somerset, State of New Jersey that the following persons be appointed to serve as the Borough's Flood Mitigation Planning Committee:

**Resident
Edward Brown
1429 Main Street
Millstone, NJ 08844**

**Millstone Borough OEM
Joe Dempster
17 Van Doren Drive
Millstone, NJ 08844**

**Environmental Commission Member
Rebecca Pongrazzi
6 Maple Terrace
Millstone, NJ 08844**

**Planning Board Member
Richard McDermott
20 Amwell Road
Millstone, NJ 08844**

**Resident
Sally Mravcak
1403 Main Street
Millstone, NJ 08844**

**Resident
Bradford Holcombe
11 North River Street
Millstone, NJ 08844**

**Code Enforcement Official/Flood Damage Prevention Ordinance Administrator
Dan DeVoti
4 West Street
Millstone, NJ 08844**

I HEREBY CERTIFY THAT THE FOREGOING IS A TRUE COPY OF A RESOLUTION ADOPTED BY THE BOROUGH OF MILLSTONE OF THE COUNTY OF SOMERSET AND STATE OF NEW JERSEY AT A REGULAR MEETING HELD ON SEPTEMBER 28, 2004.

GREGORY J. BONIN, BOROUGH CLERK

Millstone Borough Flood Mitigation Plan
June 2005

Flood Mitigation Planning Committee Meeting Minutes

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan Meeting
Minutes
August 23, 2004

Attendees

Joe Dempster, Borough OEM, 17 Van Doren Drive
Irene and Harvey McClure, 1803 Taylors Lane, Cinnaminson, 20 N. River Street
Bradford Holcombe, 11 North River Street
Edward Brown, 1429 Main Street
Mary Patrick, Mayor, 23 Amwell Road
Wendy Wagner 1403 Millstone River Road
Henry Wierzbowski, 1444 Main Street
Ralph Nalepka, 20 N. River Street
Sally Mravcak, 1403 Main Street
Carol Vizzini, 1490 Main Street
Bill Buczek, 1413 Main Street
Lawrence Tarantino, 1423 Main Street
Paul Leath, 1393 Main Street

Welcome and Introductions

Joe Dempster, Emergency Management Coordinator, opened the meeting.

Background of Flood Mitigation Planning Grant

Joe discussed the reasons why the Borough had applied for and been awarded a grant to develop a Flood Mitigation Plan. The grant funding is made available through the New Jersey Office of Emergency Management. The purpose of the grant is to develop a Flood Mitigation Plan to reduce the repetitive flood losses. Repetitive flood losses are defined as those where two or more claims have been made against the National Flood Insurance Program (NFIP). Millstone Borough has been identified as having the highest per structure flood claims under the NFIP of the 26 municipalities (including Manville) in the 184,300 acre Millstone River Watershed. The Borough also has at least six repetitive flood loss structures.

He noted that the Borough has hired the Natural Resources Conservation Service (NRCS) to assist the Borough in developing the Plan. Greg Westfall, Water Resource Planner with NRCS will be working with the Borough.

Flood Mitigation Plan

Greg noted that on June 30, 2004, President Bush had signed into law the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004. Greg noted that a small number (approximately 40,000) of the 4.4 million NFIP policyholders account for 40 percent of all the claims made against the NFIP. This has the impact of raising every

Millstone Borough Flood Mitigation Plan
June 2005

flood insurance premium as well as not resolving the severe, repetitive flood damage. The overall purposes of the Reform Act of 2004 are:

- To help people who have experienced serious and repetitive flood damage to solve their problems with financial assistance from the NFIP in partnership with communities and states;
- To end the abuses by those who misuse the program causing all policyholders to pay more for flood insurance; and
- To improve consumer understanding and rights of NFIP policyholders

Greg noted that some of the major changes in the law include creating a 5-year pilot program for mitigation of severe repetitive flood loss properties which will provide up to \$40 million per year nationwide to those properties that are in need of mitigation. The law also includes a provision which states that if the owner of a severe repetitive loss property refuses an offer made under the Pilot Program, holders of recorded interests in the property must be notified of such refusal and the flood insurance premium will be increased 150%, the premium will be increased another 150% subsequent to each future claim of more than \$1500; at no time can the premium be more than the actuarial rate for the property.

Greg Westfall discussed his experience in working with the Borough noting that NRCS, through its PL83-566 Program, had worked with a watershed-wide Steering Committee which identified two high priority flood damage areas in the watershed. These were the Millstone River valley from Princeton to Hillsborough and the Harrys Brook vicinity in Princeton Township. The Corps of Engineers and NRCS agreed that the Corps would focus on the Manville vicinity. In 2001-2002 NRCS completed a structure-by-structure survey of the first floor, low opening and adjacent ground elevations for nearly 200 structures. NRCS completed a preliminary analysis of various alternatives for reducing flood damages in the Millstone River valley. Alternatives considered included floodwater retention facilities (dams) at 26 different locations in the watershed, levees to protect four areas including Hillsborough Township, Millstone Borough, East Millstone in Franklin Township, and Griggstown in Franklin Township. NRCS also looked at nonstructural measures for Millstone Borough. All of these alternatives did not have sufficient benefits relative to the costs of installation of the alternatives.

He noted that the Flood Mitigation Assistance Program, under which the assistance for developing and implementing a Flood Mitigation Plan is made available, is using the repetitive flood loss criterion to determine eligibility for assistance. He explained that the measures commonly considered under this Program include elevation, relocation or buyout/removal of structures. He also noted that participation of individual property owners is voluntary.

He noted that Branchburg Township developed a Flood Mitigation Plan for North Branch Village in 1998 following two floods in January and October 1996. Following Hurricane Floyd in 1999 the Plan was implemented resulting in the buyout of three structures and the elevation of 11 structures. Many structures there were elevated almost a full story (8 feet or so). Most structures in Millstone Borough would need to be elevated

Millstone Borough Flood Mitigation Plan
June 2005

approximately 3-4 feet. Greg suggested that the group may want to discuss this further with Greg Bonin, Municipal Clerk, who is also the Township Administrator for Branchburg Township.

A copy of the Branchburg Township Flood Mitigation Plan for North Branch Village will be requested from Greg Bonin. Greg Westfall will be providing a copy of the Franklin Township Flood Mitigation Plan to Joe Dempster for circulating to the public.

Flood Mitigation Planning Steps

Greg Westfall reviewed a Power Point presentation covering the Flood Mitigation Planning steps. Briefly these steps are as follows:

1. Committee Organization
2. Public Involvement (throughout the entire process)
3. Coordination with Other Agencies
4. Assessing the Hazard
5. Evaluate the Problem
6. Set Goals
7. Review of Possible Activities
8. Draft Action Plan
9. Plan Adoption
10. Plan Monitoring and Evaluation

These steps are shown shown in greater detail at the end of these minutes.

There was considerable discussion regarding the various nonstructural flood mitigation measures. These measures include elevating, relocating or buyouts of structures. Joe Dempster noted that there were potential opportunities for being creative with the relocation option as the Borough has Green Acres property which is outside of the flood zone and that it may be possible to trade this for land within the flood zone.

It was noted that NRCS had previously provided some visually enhanced photos of selected properties in the Borough showing how the elevation alternative relative to the 100 year event would appear. A question was raised as to the storm frequency of the Hurricane Floyd event at Millstone Borough and that . Greg responded that he understood it to be over a 100 year event. Information provided by U.S. Geological Survey shows the following flows at the Blackwells Mills gage for the various storm frequencies based on the hydrologic record (since 1921) which includes Hurricane Floyd:

- 50 year – 19,900 cfs (cubic feet per second)
- 100 year – 24,100 cfs
- 500 year – 36,200 cfs

The Hurricane Floyd event was 26,200 cfs on 9/17/1999 at the Blackwells Mills gage.

Millstone Borough Flood Mitigation Plan
June 2005

One property owner noted that there had been filling occurring in the flood zone. Greg asked for a copy of the Borough Flood Damage Prevention Ordinance and asked who the Borough Flood Plain Administrator is. He noted that he works with Clark Gilman of NJDEP to review the municipal ordinances and that Clark gives recommendations on changes that can be made to individual ordinances to bring them up-to-date with the current model flood prevention ordinance. The ordinance and recommendations for changes are incorporated in the Plan.

There was a discussion regarding the critical facilities (fire and first aid, in particular) in the Borough and it was noted that in times of flooding these services are no longer just across the River. Joe noted that the Borough has mutual aid agreements with Hillsborough for first aid service and with neighboring municipalities for fire service.

Following a public meeting to receive public comments on the draft Plan, Greg reported that the State OEM reviews the draft Plan and makes comments, Greg incorporates the comments and then it goes to FEMA for their review, comment and final certification. Following certification the municipality can then apply for project funding through the Flood Mitigation Assistance Program to implement mitigation measures.

Survey of Affected Property Owners

Joe Dempster had previously distributed copies of a property owner survey. He asked those attending to provide him with their completed surveys. Greg noted that a summary of the survey results will be incorporated in the Plan.

Flood Mitigation Planning Committee Formation

Greg noted that the Flood Mitigation Planning Committee is generally made up of the local Emergency Management Coordinator, Borough Engineer, Planning Board, Environmental Commission and historic flood victims. The Committee is formed by resolution of the governing body with its members appointed by the same.

Next Meeting

It was agreed that future meetings would be held on the fourth Monday of each month. The next meeting will be on Monday, September 27th at 7 p.m. at Borough Hall.

NEW JERSEY OFFICE OF EMERGENCY MANAGEMENT FLOOD MITIGATION PLANNING CHECKLIST

In reviewing the following items, much of the requested information can be found in your municipal Emergency Operations Plan. This checklist was created based upon Section 511 of

Millstone Borough Flood Mitigation Plan
June 2005

the National Flood Insurance Program Community Rating System's guidelines for floodplain management planning. For review purposes, denote on which page(s) the requested information may be found.

Section

A. Committee Organization

1. Identify whether the planning process was accomplished under the direction of a "professional planner". May be a community employee, consultant, or an advisor from a state agency or regional planning agency, but not a building official, engineer or other non-planner acting alone as a professional planner.
2. Outline how the planning process was conducted through a committee composed of staff from the community departments.
3. Identify how the planning process and/or committee was formally created or recognized by action of the community's governing board.
4. The planning process should be conducted through a planning committee that includes members of the public. If this is the same planning committee credited under "A" 2 & 3, at least half of the members must be representatives of the public, preferably from flood prone areas. The planning committee must hold at least one meeting on each step for planning steps D-H. Discuss the results of these meetings and any issues raised/solutions to issues.

B. Public Involvement

1. One or more public meetings must be held in the affected area(s) at the beginning of the planning process to obtain public input on flood problems and possible solutions. Include a copy of the minutes from these meetings.
2. At least one meeting to obtain public input on the draft plan **must** be held at the end of the planning process. This should be at least two weeks before submittal of the recommended plan to the community's governing body. Include a copy of the minutes from these meetings.
3. Public information activities must be implemented to explain the planning process and encourage input to the planner or planning committee. Describe what activities have been implemented and the input that has been received.
4. Questionnaires should be distributed asking the public for information on their flooding problems and possible solutions. Questionnaires should be distributed to at least 90% of the floodplain residents. Provide details of responses received and note whether solutions were considered.

Millstone Borough Flood Mitigation Plan
June 2005

5. Written comments and recommendations should be solicited from neighborhood advisory groups, homeowners associations, parent-teacher organizations, the Chamber of Commerce, or similar organizations that represent the public in the affected area. Provide details on responses received.

C. Coordination With Other Agencies

Other agencies must be contacted to see if they are doing anything that may affect the community's program, and to see if they could support the community's efforts.

"Other agencies" include neighboring communities and local, regional, state and federal agencies that implement floodplain management activities.

1. Discuss contact with other agencies at the beginning of the planning process and input received. This may be by phone or letter.
2. Meetings should be held with representatives of agencies to review common problems, development policies, mitigation strategies, inconsistencies and conflicts in policies, plans, programs and regulations. Discuss the results of these meetings and steps taken to resolve outstanding issues.
3. Provide a description of the municipality, (not just the project area). Include geographic and topographic features, zoning uses, and a map of the municipality, highlighting the project area. Planning must include a review of the community's needs, goals and plans for the area. This may be found in the Situation Section of your Municipal Plan.
4. A draft action plan **must** be sent to other agencies, requesting them to comment by a certain date. Discuss comments received and whether this information may change the plan.

D. Assessing the Hazard

1. Include the following in the plan:
 - a. A map of the known flood hazards in the area. "Known Flood Hazards" means the floodplain shown on the Flood Insurance Rate Map (FIRM), repetitive loss areas, areas not mapped on the FIRM that have flooded in the past, and surface flooding identified existing studies.
 - b. A description of the known flooding hazards, including source of water, depth of flooding, velocities, warning time, and where such data are available.
 - c. A discussion of past floods, and where such data are available.
2. Provide a description and map of other natural hazards, such as erosion and hurricanes.

Millstone Borough Flood Mitigation Plan
June 2005

E. Assessing the Problem

1. Identify any repetitive loss structures as defined by the National Flood Insurance Program. It is the intent of the flood mitigation plan to eliminate these in the future.
2. Include the number and types of buildings subject to the hazards identified in the hazard assessment. This may be found in the municipality's construction records.
3. Provide a description of the impact that past or predicted floods has on buildings, infrastructure, public health and safety.
4. Provide a description of the need and procedures for warning and evacuating residents and visitors.
5. Identify critical facilities in the municipality such as: Fire stations, communications facilities, corporate headquarters, government buildings, military installations, power production facilities, sports facilities, transportation facilities, water supply facilities, institutions with vulnerable populations (colleges, corrections facilities, hospitals, nursing homes), churches, libraries, museums, and chemical storage companies. Show these facilities on a map or provide their street address.
6. Describe areas that provide natural and beneficial functions, such as wetlands, riparian areas, sensitive areas, and habitat for rare or endangered species.
7. Provide a description of any development, redevelopment, population trends, and a discussion of possible future development and redevelopment in the floodplain, watershed, and natural resource areas.
8. Include a summary of the impact of flooding on the community and its economy and tax base.

F. Set Goals

Include a statement of the goals of the community's floodplain management program.

G. Review of Possible Activities

The plan must describe those activities that were considered and note why they were or were not recommended. If an activity is currently being implemented, the plan must note whether it should be modified. Identify where in your municipal plans such as the stormwater management plan, open space inventory and the jurisdictions' Master Plan these items are addressed.

Millstone Borough Flood Mitigation Plan
June 2005

1. Identify where floodplain and stormwater management regulations and preservation of open space are addressed, and their current regulatory effectiveness.
2. Identify where protection activities such as retrofitting, acquisition, floodproofing and insurance are addressed.
3. Identify where activities to protect the natural and beneficial functions of the floodplain, such as wetlands protection are addressed, if applicable.
4. Identify where emergency services activities, such as flood warning and sandbagging are addressed.
5. Identify where structural projects, such as reservoirs and channel modifications are addressed, if applicable.
6. Identify where public information activities, such as outreach projects and environmental education programs are addressed.

H. Implementation of an Action Plan

The Action Plan specifies those activities appropriate to the community's resources, flood hazard, and vulnerable properties. For each recommendation, the Action Plan must identify who does what, when it will be done, and how it will be financed. Also address post-disaster mitigation policies and procedures. Provide details on these specifics.

I. Plan Adoption

The plan and later amendments must be officially adopted by the community's governing body. Provide proof of such adoption when received.

J. Plan Monitoring and Evaluation

The community should have procedures for monitoring implementation, reviewing progress, and recommending revisions to the plan in an annual evaluation report. The evaluation report should be prepared by the same planning committee that prepared the plan. The report must be submitted to the governing body, released to the media, and made available to the public. Identify where such procedures are discussed, and provide a copy to this office when available.

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan Meeting
Minutes
September 27, 2004

Attendees

Joe Dempster, Millstone Borough Emergency Management Coordinator
Sally Mravcak, 1403 Millstone River Road
Bradford Holcombe, 11 North River Street
Greg Westfall, USDA NRCS

Welcome and Introductions

Joe Dempster opened the meeting and noted that he should have sent out a reminder that we agreed to meet every 4th Monday of the month. He will do that in the future, 2 days before each meeting.

Flood Mitigation Committee Formation and Approval by Governing Body

Greg noted that governing body action is required to form and appoint a Flood Mitigation Committee for the Borough. The purpose of the Committee will be to give feedback on various drafts of the Flood Mitigation Plan as well as follow-up in future years to assure that the Plan is implemented. Greg will provide Joe with a copy of a sample resolution to be used for this purpose.

Status of the Letter to Neighboring Municipalities, Counties, D&R Commission and NJDEP

Joe Dempster will be sending a letter out to the neighboring municipalities (Franklin and Hillsborough Townships), Somerset County and others regarding the beginning of the Flood Mitigation planning process and will provide Greg with an electronic copy of the letter for documentation in the Flood Mitigation Plan.

Results of Public Survey on Flood Damages

Joe noted that he had provided Greg with copies of the 13 respondents (of approximately 20 surveys sent to Borough residents). Greg requested that any additional surveys be sent to him and that he will be summarizing the survey results so that they can be incorporated in a later draft of the Flood Mitigation Plan.

Flood Mitigation Plan Development Status

Greg distributed copies of a Preliminary Draft of the Plan for attendees to review and comment prior to the next meeting on Monday, October 25, 2004.

Millstone Borough Flood Mitigation Plan
June 2005

Open Discussion

Considerable discussion took place regarding the need to consider how local storm water runoff is impacting the Borough. Joe noted that this is something that will need to be addressed before any new development in the Borough is considered. He further noted we are not only impacted by a rising river, but by the way local development (both within and outside the Borough) impacts water flow through our flood prone properties.

Joe Dempster spoke of several stormwater-related issues in the Borough. They included the pending redevelopment of a six acre parcel from previously residential (low amount of impervious surface) to a religious building with greater impervious surface coverage. Greg noted that one of Princeton Township's Flood Mitigation Plan actions is to implement recommendations from a redevelopment study which is looking at the "tear-down" phenomena occurring in the Township. Ranch homes of 2000 square feet built in the 1950s or 60s are being torn down and replaced with mega-mansions of 6000 to 10,000 square feet. Currently the Township's stormwater management ordinance, approved in the early 1970s, is applicable only to developments of three (3) or more lots. The redevelopment study is looking at impact of these increases in imperviousness on local flooding and likely will recommend single lot redevelopment stormwater management measures including detention.

Joe noted that an existing large stormwater detention basin at St. Joseph's parish may be retrofittable to increase its holding capacity. Greg noted that he has heard from several citizens in neighboring communities that detention basins are often empty during high precipitation events such as Hurricane Floyd. Following the meeting, Greg spoke to Carl Andreassen of the Somerset County Engineer's Office. According to Carl, the basins may not be filling during high precipitation events for several reasons including topography which restricts the entry of the accumulated water into the basin and design considerations not have the basin full during and immediately after the peak of the precipitation event. Carl also noted that sometimes basins can be overdesigned. One flood mitigation plan recommendation may be to have the basins in the Borough studied to determine whether they are, in fact, operating as they were designed.

Joe also reported that that the drainage area directly to the Millstone River on Maple Terrace has been increased causing a severe erosion problem.

Joe also noted that flooding of River Road on the southern edge on the Borough at a minor stream crossing occurred due to an afternoon storm in late August. According to the County Engineer, River Road has flooded due to upland runoff on previous occasions. He stated that in this tributary's watershed a major 400+ home development is built or under construction in adjoining Hillsborough Township.

Next Meeting

The next meeting will be held on Monday, October 25, 2004 at the Borough Hall.

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Meeting
October 25, 2004

Attendees

Joe Dempster, Millstone Borough Emergency Management Coordinator
Carl Kestner, 13 South River Road
Honora Bertelsen, 34 North River Street
Lawrence Tarantino, 1423 River Road
Bradford Holcombe, 11 North River Street
Mike Greenwall, 6 Amwell Road
Edward Brown, 1429 River Road
Janet Henderson
Donna Lucash
Carol Vizzini, 1490 River Road
Mayor Mary Patrick
Greg Westfall, USDA NRCS

Welcome and Introductions

Joe Dempster opened the meeting and noted that he had provided flyers about this meeting to all affected parties in the flood zone. This Committee will continue to meet every 4th Monday of the month. He will do that in the future, 2 days before each meeting. He asked for attendees to sign in and include their e-mail address for future communication.

Flood Mitigation Committee Formation and Approval by Governing Body

Joe has provided Greg with a copy of the September 28th resolution and it has been placed in the Flood Mitigation Plan appendix.

Status of the Letter to Neighboring Municipalities, Counties, D&R Commission and NJDEP

Joe Dempster will be sending a letter out to the neighboring municipalities (Franklin and Hillsborough Townships), Somerset County and others regarding the beginning of the Flood Mitigation planning process and will provide Greg with an electronic copy of the letter for documentation in the Flood Mitigation Plan.

Open Discussion

Mike Greenwall reported that the existing drainage ditch/waterway behind his home at 6 Old Amwell Road has not been maintained in recent years causing flooding of his property. He noted that there is an existing easement for ditch cleaning that has apparently been in place following straightening of the stream channel at the time homes along the south side of Old Amwell Road were built some years ago.

Millstone Borough Flood Mitigation Plan
June 2005

Mrs. Bertelsen and Mr. Tarantino reported that large trees have fallen across the flow of the River creating the potential for debris (and thereby water) dams which could increase flood vulnerability to Borough properties. This could also increase the potential for stream bank erosion by force due to high water against the river bank. It was noted that the island located between Millstone Borough and East Millstone, apparently owned by the D&R Canal Commission, was formerly pasture and that it was less likely to restrict river flow. The County Highway Department keeps the debris from accumulating on the Millstone River bridge piers but no one has been taking care of this problem elsewhere. The question was raised as to who is responsible for this. Greg noted that County Mosquito Control Commissions have concerns when water is stagnant and 18 inches or less. Carl Kestner also noted that these dams tend to cause sediment to accumulate thereby raising the level of flood waters. Greg will followup with the County Engineering, County Mosquito Control Commission, NJ Water Supply Authority and D&R Canal Commission.

There was some discussion regarding the "dike" which connects East Millstone and the D&R Canal towpath berm with the eastern end of the Millstone River bridge crossing. It was noted that if this 200-300 section could be opened up to allow River flow the entire length of the distance between the western end of the bridge and the D&R Canal towpath berm there would likely be a reduction of the flood height.

There was considerable discussion regarding the impact of upstream development on stormwater runoff and consequent flooding. It was noted that there is likely to be considerable additional development in the Route 1 corridor and in the Route 33 corridor (between Hightstown and Freehold where a minor league baseball stadium is proposed) which are all in the 184,300 acre Millstone River watershed. It was noted that while much of the newer development will fall under the new State Stormwater regulations requiring full recharge of any runoff generated, much the watershed is covered by existing development with little or no stormwater management.

There was discussion of the recently approved Letter of Map Revision for the Flood Insurance Map for Franklin Township (Zarephath), approved by both FEMA and NJDEP, to permit a dike (built circa 1950) that existed prior to but was not included in the FEMA Flood Insurance Study for that vicinity.

The Country Classic development in Hillsborough Township adjacent to the southwestern portion of Millstone Borough was discussed. It was noted that the unnamed stream that runs from this development has been running with silt in recent weeks. Joe reported that a recent inspection of the development found no stormwater detention facilities in place. It was noted that the stormwater detention facilities are normally installed, stabilized and seeded before any impervious surfaces are installed.

Joe Dempster noted that any Flood Mitigation Plan will be out-of-date within 10-15 years if the rate of development continues on its present course.

Millstone Borough Flood Mitigation Plan
June 2005

Lawrence Tarantino circulated a hydrograph for the recent high water as determined at the Blackwells Mills gage. He obtained this information from the Somerset County Flood Information System at this website:

http://www.co.somerset.nj.us/ongoing/somerset_county_weather_informat.htm

The USGS website for the Blackwells Mills real time gage information is at:

http://waterdata.usgs.gov/nj/nwis/uv/?site_no=01402000&PARAMeter_cd=00065

Joe Dempster noted that there is an approximately 0.9 foot difference in elevation between the Blackwells Mills gage and elevations in the Borough of Millstone. Greg reminded attendees to take a look at their Individual Flood Information Sheets provided for each property owners (via Mayor Patrick in June). The Flood Information Sheets show a picture of each structure with information on what Blackwells Mills gage height would necessitate moving contents out or up and when to evacuate.

Critical Facilities

Greg had asked for a list of critical facilities within the flood zone. Joe responded that there are no critical facilities located in the flood zone in Millstone Borough.

Flood Photos

Members of the Committee and general public provided Greg with photos of historic flooding. Greg will scan and return these.

The group reviewed a Borough Hall poster showing flood photos from earlier floods which occurred on January 20 and October 20, 1996. The poster also showed the flowage easement obtained by NJ Water Supply Authority through Millstone Borough.

Flood Mitigation Plan Development Status

Greg distributed copies of a First Draft of the Plan for attendees to review and comment prior to the next meeting on Monday, November 22, 2004. Greg noted that this draft of the Plan incorporates the resolution establishing the Flood Mitigation Planning Committee, the minutes of Committee meetings, Property Owner Survey Questionnaire and Results, Preliminary Damage Assessment Report for the Hurricane Floyd event, documentation of the paper trail related to the error in the FEMA Flood Insurance Map reference mark error, Borough Flood Damage Prevention ordinance, and a section on the Community Rating System.

Greg reviewed Section F (Set Goals) and Section H (Implementation of An Action Plan). Under Section I – Road Flooding Safety, change this title to “Public Safety” and add a fourth item under this category as follows:

Millstone Borough Flood Mitigation Plan
June 2005

“Establish by Borough ordinance a form of egress (by foot and for emergency vehicles) to higher ground from private properties which are inaccessible by public roadways during a flood event.”

Under Section III – Incorporation of Flood Mitigation Planning in Local Ordinances, Emergency Management Plan and Master Planning, Greg noted that there will be recommendations for relatively minor revisions to the Borough Flood Damage Prevention ordinance to bring it in line with the model ordinance. He also discussed the need to incorporate the Flood Mitigation Plan by reference in the Master Plan as well as a Flood Overlay Zone (similar to the Borough’s current historic zoning overlay). The Flood Overlay Zone would be tied to the current and future Flood Insurance Study map. Congress has ordered FEMA to complete a Map Modernization project to digitize (for use in Geographic Information System analysis) all municipal Flood Insurance maps in five years. The purpose of this is to make it possible to more accurately locate where structures (existing and planned) are located relative to the flood zone. Many of the flood insurance maps are based on hydrology and hydraulics studies done many years ago. Conditions since that time such as development, weather patterns and others may have changed necessitating the need for an update. Greg reported that FEMA has funding to update these studies but a request would need to come from the Borough to:

Mr. Clark Gilman	Phone –609-292-1220
Flood Plain Management	609-292-2296-
New Jersey Department of Environmental Protection	Fax 609-984-1908
501 East State Street	e-mail - cgilman@dep.state.nj.us
P.O. Box 419	
Trenton	
New Jersey	08625-0419

Greg noted that under Action item 4, Princeton Township is now experiencing a “tear-down” phenomenon whereby 2000 square foot ranch style homes are being bought, torn down and replaced with 6-10,000 square foot homes. There is a concern regarding increased runoff and flooding. Princeton currently has stormwater management regulations (dating from the early 1970s) for 3 or more unit subdivisions but nothing for single lot redevelopment.

Under IV – Private Property Flood Mitigation, suggestions were made that the Environmental Trust Fund, Green Acres Program and other state sources of funding be added to possible sources under Item 3 – Identify and Contact Funding Sources. Brad Holcombe suggested that another source may be the National Historic Trust.

Lawrence Tarantino noted that conditions of flooding are, to some extent, beyond the control of the local citizens. He suggested that the answer was to do flood mitigation for each individual structure. Greg noted that there had previously been local interest in relocating some of the structures out of the flood zone to Borough-owned Green Acres property. Mr. Tarantino expressed his concern that this could result in the disintegration of the historic district. Greg stated that decisions as to what can be done are largely left

Millstone Borough Flood Mitigation Plan
June 2005

to each individual property owner. Some people may be interested in elevation of their structure, some in relocation of their structure and, perhaps, some in taking a buyout.

Next Meeting

There will be further discussion of several of the items discussed at this meeting. Also, there will be discussion of the flood mitigation alternatives for private structures. The next meeting will be held on Monday, November 22, 2004 at the Borough Hall.

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Planning Committee Meeting Minutes
November 22, 2004

Welcome and Introductions

Joe Dempster, Emergency Management Coordinator, welcomed the group and asked for individuals present to introduce themselves.

Individuals in attendance included Joe Dempster,, Mayor Patrick, Lawrence Tarantino, William Buczek, Gail Miller, Carol Vizzini, Brad Holcombe, Rebecca Pongrazzi, Blair DeRoner, , Deanna DeRoner, Christine Fung and Greg Westfall.

Status of Letter to Neighboring Municipalities, County, D&R Canal Commission and NJDEP

Joe indicated that this letter had not been sent. Greg will draft a letter for Joe and Mayor Patrick to review and send.

Flood Mitigation Plan Development Status

Bill Buczek asked Greg to check out the number of National Flood Insurance Program claims for his property. Greg has gotten back to Bill with this information.

Greg returned flood photos to their respective owners and thanked the contributors for their excellent photos. Many of these photos appear throughout the Plan. He indicated that this information will help improve the chances of Millstone Borough property owners receiving funding to implement the Plan.

Gail Miller expressed her concern regarding the cost to implement the Plan for individual property owners. Joe and Greg noted that the Federal government, through the Flood Mitigation Assistance Program, will cover up to 75 percent of the cost of implementation of such measures as elevating, relocating or buying out an individual structure. The remaining 25 percent can be covered by State, County, local government and/or an individual property owner. Greg discussed the North Branch village project in Branchburg Township noting that a Flood Mitigation Plan was developed in 1997-98 following flood events in January and October of 1996. North Branch is an historic village. Following Hurricane Floyd flooding in September 1999, the property owners implemented the Plan which included the buyout of 3 structures and the elevation of another 11 structures.

Comments received from attendees on the second draft of the Plan were as follows:

- Check on the number of FEMA NFIP Flood Claims and report back to the Committee.

Millstone Borough Flood Mitigation Plan
June 2005

- Table 4 (Property Owner Survey Reported Flood Damages) – add the FEMA Flood Claims. Concern expressed regarding market values being affected by any release of flood claims for a specific property. Individual properties will not be shown in the table.
- Table 1 (Peak Stream Flow for Millstone River at Blackwells Mills), Joe Dempster noted that three inches of rain in 1945 would not be the same as three inches of rain in 1999. The river behaves differently. He felt that the flood plain size is increasing. Greg noted that Technical Paper 40 (U.S. Weather Bureau) issued in 1960 for 24 hour rainfall frequency amounts has recently been updated. This update reflects a longer period of record and some changes in weather patterns. Joe noted that the worse thing would be to elevate someone's home and then find that it still floods. Carol Viccinni expressed her concern that any remediation be lasting. Greg noted that many of the Flood Insurance Studies are being updated to reflect these changes in the watershed condition, weather patterns, etc. Municipalities are making a request to the NJDEP to be put on the priority list for the flood insurance study update. Greg will draft a letter of request for Joe and Mayor Patrick to review and send.
- Joe noted that even when the Flood Mitigation Plan is completed this Committee should continue to be proactive to the State.
- Members noted that St. Joseph's large (3 acres) retention pond never fills up unless there is debris in the outlet structure.
- The group reviewed the recommendations under two of the four sections of Section H, namely, Public Safety and Private Property Flood Mitigation. Add a fifth recommendation under Public Safety in Section H to read as follows: "The Borough will continue the "angel program" whereby individual property owners who live outside of the flood plain look after specific, individual property owners in the flood plain." Kathy Poch, formerly Emergency Management Coordinator, had originally suggested this approach.
- Add a sixth recommendation under Public Safety in Section H (Recommendations) to read as follows:
"Millstone Borough will require that property owners in the flood plain will secure hazardous material containers."
- Amend the first recommendation under Private Property Flood Mitigation to read as follows: "The Borough and property owners should work together to create and implement flood mitigation measures, particularly those that will reduce or eliminate repetitive flood loss structures (those which have made two or more claims to the National Flood Insurance Program).
- Amend the second recommendation under Private Property Flood Mitigation

Millstone Borough Flood Mitigation Plan
June 2005

to read as follows: “The Borough should require, where feasible, the raising of all incoming utilities (electric, phone, cable, etc.) above the 100 year flood elevation as a condition for approval of any permit for structure renovation, addition or other alteration.

- Gail Miller suggested that the Millstone River Road designation be changed to “Main Street” on all the maps.
- It was agreed that no particular structure would be identified on a map as a repetitive flood loss structure but rather a repetitive flood loss area covering multiple structures would be designated on the map.
- Joe asked Greg to provide specific funding sources and contact information under item 3 under Private Property Flood Mitigation. He noted that it is essential that we get more specific here to aid in the implementation of this Plan.

Greg had provided attendees of a summary of the changes resulting from the 2004 National Flood Insurance Program Reform Act. There was considerable discussion of the changes which include increasing funding levels for the Flood Mitigation Assistance Program for planning and implementation of the plans as well as penalties (150 percent increases in individual flood insurance premiums following a flood event in which there is no mitigation) for property owners who make successive claims and have done nothing to reduce future flood damages.

90 Amwell Road Location

Greg noted that claims have been made for a “90 Amwell Road” location but that this location would be far from the flood zone. It was suggested that the address of property on Amwell Road (Route 514) near the Millstone River bridge may have had an address change. It was suggested that Greg speak to the gas station operator. It was also noted that the current renter of the Millstone Sport Shop had previously lived at the 90 Amwell Road address.

Next Meeting

The next scheduled meeting is for Monday, December 27th.

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Planning Committee Public Meeting Minutes
January 31, 2005

Welcome and Introductions

Meeting began at 7 p.m. Joe Dempster welcomed members of the public and Flood Mitigation Committee members. Attendees were:

Joe Dempster, Borough OEM, 17 Van Doren Drive
Bradford Holcombe, 11 North River Street
Edward Brown, 1429 Main Street
Henry Wierzbowski, 1444 Main Street
Carol Vizzini, 1490 Main Street
Bill Buczek, 1413 Main Street
Lawrence Tarantino, 1423 Main Street
William Buczek, 1413 Main Street
Gail Miller, 1389 Main Street
Anthony McCracken, Somerset County Planning;
Greg Westfall, USDA Natural Resources Conservation Service

Henry Wierzbowski, initiated a discussion regarding the muddy nature of the water flowing in tributaries to the Millstone River through the southern part of the Borough and crossing Main Street (Route 533). Joe Dempster noted that the Borough had had the County officials (County Engineering) at the site. County Engineering had proposed to NJDEP that the Amwell Road stream be realigned around 1444 Main Street. According to Ed Brown, NJDEP had rejected this option.

Review of Power Point Presentation

Greg Westfall began review of the Power Point presentation which was a starting point for further discussion. Joe Dempster noted that the Van Cleef hydrology and hydraulics engineering work was done approximately 20 years ago. Van Cleef had proposed increasing the impervious areas for the about-to-be-developed portion by approximately 10-15 percent. Ed Brown noted that the Borough Planning Board attorney has challenged this and stated that if this change is made it will require that the developer follow the latest State Stormwater management regulations which require 100 percent recharge.

Gail Miller noted that FEMA requires that a risk assessment should include a land use analysis. Greg Westfall noted that the 2001 Natural Resources Conservation Service structure survey of the first floor, basement low opening and nearby ground elevations was used in the risk assessment for the Plan. He noted that a land use analysis, if done right, would require a substantial amount of time and would require looking at the current and buildout land use in nearly twenty upstream municipalities. Joe asked Greg whether this had been done for any previous flood mitigation plan. Greg replied that it had not. Joe noted that the primary purpose of the plan was to reduce the flood damage at those repetitive flood loss structures in the Borough. Ed Brown noted that

Millstone Borough Flood Mitigation Plan
June 2005

the Borough has to complete a stormwater management plan by April 1, 2005 and that a land use analysis will be a part of that plan.

There was considerable discussion regarding several recommendations. Under the Public Participation category and "Existing Easement Maintenance", Henry Wierzbowski noted that the existing Amwell Road creek was cleaned out by PSEG approximately four years ago.

Greg reviewed the recommendations under Incorporation of Flood Mitigation Planning into Local Ordinances, Emergency Management Plan and Master Planning. "Revise Flood Damage Prevention Ordinance" would entail incorporating the suggested revisions shown in the appendix to bring the ordinance into line with the current model ordinance. "Incorporation of Disaster Mitigation Planning in the Master Plan" would entail incorporation of the Flood Mitigation Plan by reference in the Master Plan. "Stormwater Management Ordinance for Land Development and Redevelopment in Residential and Commercial Areas" is intended to minimize the contribution to runoff by redevelopment or development of existing lots. Greg noted that the "teardown" phenomenon, where an existing structure is torn down and replaced by a larger (in terms of impervious surfaces) structure, is becoming a major issue in neighboring municipalities such as Princeton Township and Montgomery Township. Since most municipal stormwater management ordinances address three or more lot subdivisions, there are proposals to require stormwater management on individual lots as a result of this phenomenon.

Under Private Property Flood Mitigation, there was a discussion regarding the recommendations to require utility relocation as a condition for any renovation, addition or other structure improvement project. Gail Miller raised a concern that this be a requirement. Lawrence Tarantino suggested that this recommendation be amended to add the phrase "where feasible." William Buczek asked why FEMA does not pay to have utilities moved up in elevation in non-flood times. Greg will follow-up with this question to Kathy Lear.

Greg reviewed the next steps which require that the Borough send out the Final Draft Plan to the County Planning, County Engineering, Somerset-Union Sol Conservation District, Franklin and Hillsborough Townships, NJ Department of Environmental Protection Flood Plain Management Section and State Historic Preservation Office, NJ Water Supply Authority, and the State Office of Emergency Management.

Joe noted that this Committee will be ongoing even after the Plan is certified so that followthrough of the Plan's recommendations takes place.

Meeting adjourned at 9 p.m.

Letter to Neighboring Municipalities, State and County Agencies

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

Borough of Millstone

SETTLED 1690
Office of the Mayor
23 Amwell Road
MILLSTONE, NEW JERSEY 08844

December 2, 2004

Mr. Kenneth W. Daly
Township Manager
Franklin Township
475 DeMott Lane
Somerset, NJ 08873

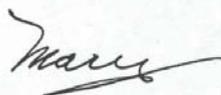
RE: Borough of Millstone
Flood Mitigation Plan Project

Dear Sir, *Ken*

This is to advise you that the Borough of Millstone is in the process of developing a Flood Mitigation Plan funded by the grant from the Federal Emergency Management Agency (FEMA) through the State Office of Emergency Management. We are providing this notification so as not to duplicate or interfere with other flood plain management activities nearby and ask that you advise us of any activity, either proposed or in place, which may impact on our Plan and its implementation.

Please reply to this request, to my attention, by no later than December 31, 2004.

Thank you for your anticipated cooperation.



Mary Patrick
Mayor

cc: Joe Dempster, Millstone Borough Emergency Management Coordinator
Greg Westfall, Water Resource Planner, USDA Natural Resources
Conservation Service

Millstone Borough Flood Mitigation Plan
June 2005

Property Owner Survey Questionnaire and Final Survey Results

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

August 15, 2004

Millstone Borough Property Owner:

Your property has been identified as one that has had or potentially could have flood damages. Historic flood damages include those which have occurred during Hurricane Doria (1971), Hurricane Floyd (1999) and/or other significant floods. Millstone Borough has a history of flood damages in the Millstone River watershed. Between 1978 and 2003, the National Flood Insurance Program, administered by the Federal Emergency Management Agency (FEMA), had claims for over \$1 million from property owners in the Borough due to flood damage.

As a result, the Borough has applied for and received a State Office of Emergency Management grant to fund the development of a Flood Mitigation Plan. The flood mitigation plan will improve the opportunities to receive Federal Emergency Management Agency funding to help property owners avoid or reduce future flood damages. The USDA Natural Resources Conservation Service will be assisting the Borough in the development of the Plan.

A public hearing will be held on Monday, August 23, 2004 at 7 p.m. at the Millstone Borough Municipal Building to receive your input for the development of the Flood Mitigation Plan. A Borough Flood Mitigation Committee, which will include representatives of the flooded property owners, Borough Engineering and Office of Emergency Management and others, will be formed to guide the Plan development. Please complete the attached brief questionnaire to assist the Flood Mitigation Committee to develop the Flood Mitigation Plan. We encourage you to bring the completed questionnaire with you and to share your concerns and ideas at this meeting.

If you cannot attend the meeting, please return this questionnaire by August 20, 2004 to Joe Dempster via FAX to 908-874-6771, or via US Mail to 17 Van Doren Drive, Millstone Borough, New Jersey 08844-5114. Thank you for your participation in this critical initiative.

Sincerely,

Mary Patrick
Mayor

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Property Owner Flood Mitigation Survey Questionnaire

Please Print
Name _____
Affiliation _____
Address _____
Telephone _____
Fax _____
e-mail _____

1. How long have you owned your property? _____

2. Have you sustained flood damage to your property? If so, please describe the extent of the damage.

When did the damage occur? _____

3. Did you have flood damages in Hurricane Floyd (1999)? YES NO

4. Did you have flood damages in Hurricane Doria (1971)? YES NO

5. What type of damage occurred?

7. How much did the damage cost you? \$ _____

8. A) Did you have flood insurance at the time YES NO

B) Did that help cover some of the costs? YES NO

9. Do you currently have flood insurance? YES NO

10. How long have you had flood insurance? _____

11. What suggestions do you have to reduce flood damages in the future*?

Millstone Borough Flood Mitigation Plan
June 2005

12. What financial or other incentives do you think that Millstone Borough, the Federal Emergency Management Agency and others should offer to reduce flood damages?*

13. Additional comments - *Please continue on back of this sheet if necessary.

If you cannot attend the August 23 meeting and deliver this questionnaire in person, please return this questionnaire by August 20, 2004 to Joe Dempster via FAX to 908-874-6771, or via US Mail to 17 Van Doren Drive, Millstone Borough, NJ 08844-5114.

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Survey Summary

Response Rate -Thirteen responses (of approximately 20 surveys distributed) were received from property owners in the flood zone.

Length of ownership - ranged from one year to 43 years with the average being approximately 20 years.

Number Sustaining Flooding - All thirteen respondents had had flooding of some type in their homes with all thirteen having experienced flooding during Hurricane Floyd (1999) and five having flooding during Hurricane Doria (1971).

Extent of Flooding - ranged from basement flooding to flooding at various levels on the first floor and, in one case, up to the second floor level.

Damage Type - ranged from damages to basement items including furnaces, hot water heaters, electrical panels, washer and dryers, power tools, carpet and furniture to loss of first floor items including carpeting and upholstered sofas and chairs. Damages to the structures included mold damage, floor, wall and woodwork damage.

Damage Costs - per structure ranged from \$1500 to over \$225,000 of the ten property owners responding resulting in an average damage cost per structure \$45,750. Two property owners did not respond and a third indicated that the cost was "too much, never fully calculated."

Flood Insurance at Time of Flooding - Five of the thirteen respondents had flood insurance at the time of the flooding. All five had flood insurance coverage for some of their costs.

Flood Insurance Coverage Now - Nine (9) of the respondents currently have flood insurance coverage. Flood insurance coverage ranges from one to 34 years with the average being 13 years.

Suggestions for Reducing Future Flood Damages

- I can't see that anything can be done to save _____ . A berm flood wall - let's discuss.
- Prevent the Millstone from overflowing
- Stop building out of the flood plain
- Allow more flow downstream - remove weir

Millstone Borough Flood Mitigation Plan
June 2005

- Raise structures
- Its probably too late but Greenbrook project for control will create more flooding for communities like B. Brook, Manville, Millstone, etc.
- Levee
- Detention.....Dredge channels in river/regional detention, DEP enforcement, remove river weirs and structures
- Raise house
- Raise flooded houses
- The region should slow the water draining into streams that flow into the Millstone and Raritan Rivers
- Maintaining easement between Amwell Road and Colonial Lane and restricting any additional water in the easement.

Financial Incentives that Millstone Borough, the Federal Emergency Management Agency and others should offer to reduce flood damages

- Pay to tear the buildings down?
- Compensation for mitigation work which reduces claims
- Pay or share cost of raising buildings in flood areas
- They should encourage agriculture in the area and reduce the area of impermeable surfaces.

**Preliminary Damage Assessment Report and Emergency Log for
Hurricane Floyd in Millstone Borough**

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

Hurricane Floyd Flooding Preliminary Damage Assessment

Sector	Number	Estimated Total Loss
Private Sector		
Single Family		
Destroyed		
Major Damage	12	
Minor Damage	3	
Estimated Cost		\$1,623,000
Apartment Units		
Destroyed		
Major Damage		
Minor Damage	1	\$1,000
Businesses		
Destroyed		
Major Damage	5	
Minor Damage		
Estimated Cost		\$558,000
Industrial Units		
Destroyed		
Major Damage		
Minor Damage		
Estimated Cost		
Unemployed	16	
Public Sector		
Debris & wreckage		\$2,000
Emer prot measures		
Road systems		
Water control fac.		
Public build. & equip.		
Pub. Owned utility		
Under construction		
Priv. Non-profit fac.		
Other		
TOTAL ESTIMATED LOSS		\$2,184,000

Source: Thomas A. Bittle, Somerset County Office of Emergency Management

Millstone Borough Flood Mitigation Plan
June 2005

FEMA Flood Insurance Rate Map Reference Marks

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

2/19/03

The USGS did the Borough of Millstone flood insurance study back in the late 1970s. We listed 4 benchmarks on the map. Two were US Coast & Geodetic Survey BMs and 2 were reference marks probably from our 1962 open-file report.

Bob

Robert D. Schopp
NJ District Surface-Water Specialist
U.S. Geological Survey
810 Bear Tavern Road, Suite 206
West Trenton, NJ 08628-1099
Voice: 609-771-3968
Fax: 609-771-3915

2/19/03

I checked the 1962 open-file report and it did not include that mark, so I would assume that it was run as part of the flood insurance study work. Unfortunately the party chief died about 9 years ago and the back-up material went to the FEMA archives.

I looked at the topographic map in Anderson & Nichols Millstone River Flood Hazard Report (Plate MI-3) and it shows a ground elevation of 44.0 ft in the road intersection. It would seem like the culvert wall would be a little higher than that. That would give you about a 8 foot difference.

I conclude that the 37 foot figure must be a typo. I am fairly certain this would not affect the profiles of the flood insurance study.

Bob

Robert D. Schopp
NJ District Surface-Water Specialist
U.S. Geological Survey
810 Bear Tavern Road, Suite 206
West Trenton, NJ 08628-1099
Voice: 609-771-3968
Fax: 609-771-3915

3/10/03

We have determined that the source of the error is an incorrect transfer of the elevation from the surveyor's notes to the FIRM panel. We are now drafting a reply to your letter, informing you of

Millstone Borough Flood Mitigation Plan
June 2005

our findings, and initiating a correction. From our research, it appears that no Letters of Map Amendment (LOMAs) have been issued by FEMA for the Borough of Millstone. We have received one elevation certificate from the community, but this seems to have been solely for the community's records. Without any further information from the community about LOMAs, we will assume that issuing the correction will suffice.

Thanks again for the information. Please contact me with any questions.

Thanks,
Mat Mampara

Mathew Mampara, CFM
Federal Programs Division
Dewberry
8401 Arlington Blvd.
Fairfax, VA 22031
703 849 0612
fax 703 206 0836

Comments Received on Draft Plan

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

Comments received from: Franklin Township Police Department
Professional Services Division
Office of Emergency Management

To: Captain Joseph Lumbardo

From: J. Gary Howarth
Emergency Management Coordinator

Date: February 27, 2005

Subject: Flood mitigation plan as proposed for the Borough of Millstone

As request, Franklin Township Office of Emergency Management (FTOEM) has reviewed the flood mitigation plan as proposed for the Borough of Millstone, Somerset County, New Jersey, and (February 2005). After studying the entire proposed plan, and comparing to the recently authored flood mitigation plan for Franklin Township, the following areas listed below are cited as concerns:

Section H – Implementation of An Action Plan

1. **I. Public Safety, sub-section 6-Millstone Borough will require that property owners in the flood plain will secure hazardous material containers.**

FTOEM is advising that since Millstone Borough contracts with Fire District #1, this issue should be forwarded for comment. Further FTOEM needs further language defining hazardous materials containers. It is important to realize that any hazardous materials released during a flood condition could be deposited on Township property.

2. **II. Public Participation; subsection 2 – Community Rating System:** According to the report, Millstone Borough would have been issued a class rating (CRS) of 10, which is the starting point for an initial application, as noted in the document. FTOEM has two areas of concerns:

A. **400-Mapping and Regulatory Activities: sub-section 450 – Storm Water Management:** The impact of surface drainage and run off may have an effect on East Millstone and the Township, Township Engineer should advise a course of action.

B. **500-Flood Damage Reduction Activities; sub-section 540 Drain System Maintenance.** This section deals with inspections and maintenance capabilities of channels and retention basins. The parcel of land between Millstone Borough and Franklin Township over the years has become littered with debris, in particular fallen trees. Yearly maintenance and cleaning would

Millstone Borough Flood Mitigation Plan
June 2005

assist floodwaters and improve the flow of receding floodwaters in a more efficient manner, benefiting both Millstone Borough and Franklin Township.

3. **III. Incorporation of Flood Mitigation Planning into Local Ordinances, Emergency Management Plan and Master Planning; sub-section 5-Regional Cooperation and Coordination to Reduce Flooding Impacts.** Although this section encourages a relationship with Hillsborough Township, there is no mention of fostering a relationship with Franklin Township.
4. **IV. Private Property Flood Mitigation; sub-section 2-Require Utility Relocation as Condition for Any Renovation/Building Permit.** This section addresses utilities and may effect fire protection services now being provided thru a contract with Fire District #1 and Millstone Borough. It would be prudent to seek input from the Fire District regarding to relocation utilities in the future.

In closing, Franklin Township Office of Emergency Management is recommending that a meeting between Millstone Borough, Hillsborough Township and Franklin Township be convened to verbalize concerns from all three entities. Instead of three individually flood mitigation plans, all parties should come together to discuss total operability regarding flooding in the effected areas.

Thank for the opportunity and allowing me to share my comments. Should you need any further information regarding this very important topic, please feel free to give me a call at Police Headquarters or my cell phone 732-261-3558.

Millstone Borough Flood Mitigation Plan
June 2005



State of New Jersey

Department of Environmental Protection
Natural and Historic Resources, Historic Preservation Office
PO Box 404, Trenton, NJ 08625-0404
TEL: (609) 292-2023 FAX: (609) 984-0578
www.state.nj.us/dep/hpo

Richard J. Codey
Acting Governor

Bradley M. Campbell
Commissioner

April 1, 2005
HPO-D2005-6
05-0393 & 05-0779

Gregory J. Westfall, Water Resource Planner
Natural Resources Conservation Service
220 Davidson Avenue
Somerset, New Jersey 08873

RE: Somerset County, Millstone Borough
Flood Mitigation Plan

Dear Mr. Westfall:

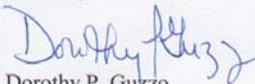
Thank you for forwarding a copy of the *Final Draft Millstone Borough Flood Mitigation Plan* for our review and comment. I think the most useful suggestion I can make is that the historic buildings in the flood area should be methodically documented with photographs, keyed to a map/plan. It would aid in post flooding insurance claims, and provide a document of the historic condition of the properties.

There are a number of documents that provide guidance on disaster preparation for historic buildings. I have attached copies of: "*Lord Willing n' the Creek Don't Rise*" *Flood Sustainability at Harpers Ferry National Historical Park*; *Thinking About the Unthinkable: A Disaster Plan For Historic Properties in Minnesota*; and finally *Treatment of Flood-Damaged Older and Historic Buildings* from the National Trust for Historic Preservation. I suspect, given the past flooding events, that experienced owners of property in Millstone already know how important it is to get property clean and dry after a flood.

The Draft Plan mentions the possibility of a Green Acres land swap. Because the Millstone Historic District is listed on the New Jersey Register of Historic Places, a swap of land would require prior authorization pursuant to the New Jersey Register of Historic Places Act. We would of course be open to a swap that would help preserved the buildings of the District, but we would need to be included early the planning process for any such project.

Should there be any questions, please contact Dan Saunders of my staff at (609) 633-2397.

Sincerely,



Dorothy P. Guzzo
Administrator

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Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough plan

Page 1 of 1

Westfall, Gregory - Somerset, NJ

From: Dan Van Abs [dvanabs@rارانbasin.org]
Sent: Friday, March 04, 2005 1:35 PM
To: Westfall, Gregory - Somerset, NJ
Subject: Millstone Borough plan

Greg, I've reviewed the draft plan and it looks thorough and useful. The action recommendations look viable. I do have a few thoughts and comments, as noted:

General -- an executive summary would be very useful -- probably 1 page would do
1.56 -- re: 8 foot error in FEMA reference marks -- in which direction? Implications?
1.59 -- #4 -- First two sentences need rewording for clarity. #7 -- last sentence unclear

Thanks,
Dan

Daniel J. Van Abs, PhD, PP/AICP
Manager, Watershed Protection Programs
NJ Water Supply Authority
14 East Main Street, Somerville, NJ 08876-2312
Phone: (908) 685-0315, Ext. 22 Fax: (908) 685-0195
Email: dvanabs@rارانbasin.org Web: www.rارانbasin.org

4/21/2005

Millstone Borough Flood Mitigation Plan
June 2005

New Jersey Office of Emergency Management Review of the Draft Flood Mitigation Plan for the Borough of Millstone, April 15, 2005:

1. Under Section A, Community Organization, provide the following information:
 - a. Revise the first paragraph to eliminate the blank spaces. This is not completely necessary.
 - b. Outline how the planning process was conducted through a committee composed of staff from the community departments.

2. Under Section C, Coordination with Other Agencies, provide the following information:
 - a. Discuss contact with other agencies at the beginning of the planning process and any input received (pages 19 and 20 in the plan).
 - b. Discuss any comments received by other agencies and whether this information may change the plan.

3. Under Section D, Assessing the Hazard, provide the following information:
 - a. A map of the known flood hazards in the area. "Known Flood Hazards" means the floodplain shown on the Flood Insurance Rate Map (FIRM), repetitive loss area, areas not mapped on the FIRM that have flooded in the past, and surface flooding identified in existing studies.
 - b. A discussion of past floods- dates, source of water, number of structures affected if any.

4. Under Section E, Assessing the Problem, provide the following information:
 - a. Identify any repetitive loss structures as defined by the National Flood Insurance Program.
 - b. Include the number and types of buildings subject to the hazards identified in the hazard assessment.
 - c. Provide a description of the impact that past or predicted floods has on buildings, infrastructure, public health and safety.

Millstone Borough Flood Mitigation Plan
June 2005

- d. Provide a description of the need and procedures for warning and evacuating residents and visitors.
 - e. The map of the critical facilities in Millstone Borough was not found. Please provide.
 - f. Provide a description of any development, redevelopment in the borough, as well as any possible future development and redevelopment in the floodplain, watershed or natural resource areas.
5. Under Section G, Review of Possible Activities, describe those activities that were considered and why they were or were not recommended.
6. The plan and later amendments must be officially adopted by the community's governing body. Provide proof of such adoption when received.

Millstone Borough Flood Damage Prevention Ordinance

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

AN ORDINANCE FOR THE PREVENTION OF FLOOD
DAMAGE WITHIN THE BOROUGH OF MILLSTONE,
COUNTY OF SOMERSET, STATE OF NEW JERSEY

BE IT ORDAINED by the Mayor and Council of the Borough of Millstone,
County of Somerset, State of New Jersey as follows:

SECTION 1

SHORT TITLE, FINDINGS OF FACT, PURPOSE AND OBJECTIVES

A. Short Title

This ordinance may be cited and referred to as the “Flood Damage
Prevention Ordinance.”

B. Findings of Fact

(1) The flood hazard areas of the Borough of Millstone are subject to
periodic inundation which results in loss of life, property, health and safety
hazards, disruption of commerce and governmental services, extraordinary
public expenditures for flood protection and relief, and impairment of the tax
base, all of which adversely affect the public health, safety and general welfare.

(2) These flood losses are caused by the cumulative effect of obstructions
in flood plains causing increases in flood heights and velocities, and by the
occupancy in flood hazard areas by uses vulnerable to floods or hazardous to
other lands which are inadequately elevated, floodproofed, or otherwise
protected from flood damages.

Millstone Borough Flood Mitigation Plan
June 2005

C. Statement of Purpose

It is the purpose of this ordinance to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

- (1) To protect human life and health;
- (2) To minimize expenditure of public money for costly flood control projects;
- (3) To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- (4) To minimize prolonged business interruptions;
- (5) To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in flood plains;
- (6) To help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner as to minimize future flood blight areas; and,
- (7) To insure that potential buyers are notified that property is in a flood area.

It is further the purpose of this ordinance to come in compliance with the regulations promulgated under the National

Millstone Borough Flood Mitigation Plan
June 2005

Flood Insurance Program of the Federal Insurance Administration, Department of Housing and Urban Development and to ensure the Borough of Millstone's continued eligibility for said program.

D. Methods of Reducing Flood Losses

In order to accomplish its purposes, this ordinance uses the following methods:

- (1) Restrict or prohibit uses which are dangerous to health, safety and property due to water or erosion or in flood heights or velocities.
- (2) Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.
- (3) Control the alteration of natural flood plains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters.
- (4) Control filling, grading, dredging and other development which may increase flood damage.
- (5) Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands.

SECTION 2

Millstone Borough Flood Mitigation Plan
June 2005

DEFINITIONS

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application.

“Area of special flood hazard” is land in the flood plain within a community subject to a one percent or greater chance of flooding in any given year. These lands are designated in “A” zones on the Flood Insurance Rate Map of the Borough of Millstone.

“Base flood” means the flood having a one percent chance of being equaled or exceeded in any given year.

“Development” means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations located within the area of special flood hazard.

“Flood or Flooding”: means a general and temporary condition of partial or completed inundation of normally dry land areas from:

- (1) The overflow of inland or tidal waters
- (2) The unusual and rapid accumulation on run-off of surface waters from any source.

“Flood Hazard Boundary Map” (FHBM) means the official map issued by the Federal Insurance Administration where the areas of special flood hazard have been designated Zone A.

Millstone Borough Flood Mitigation Plan
June 2005

“Flood Insurance Rate Map” (FIRM) means the official map on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

“Flood Insurance Study” means the official report in which the Federal Insurance Administration has provided flood profiles, as well as the Flood Hazard Boundary-Floodway Map and the water surface elevation of the base flood.

“Floodway” means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

“Habitable floor” means any floor usable for living purposes, which includes working, sleeping, eating, cooking or recreation, or a combination thereof,. A floor used only for storage purposes is not a “habitable floor.”

“Mobile home” means a structure, transportable in one or more sections, which is built on a permanent chassis and designed to be used with or without a permanent foundation when connected to the required utilities. It does not include recreational vehicles or travel trailers.

“Structure” means a walled and roofed building that is principally above ground, as well as a mobile home.

“Substantial improvement” means any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure either:

- (1) before the improvement or repair is started, or

Millstone Borough Flood Mitigation Plan
June 2005

- (2) if the structure has been damage and is being restored, before the damage occurred. For the purpose of this definition “substantial improvement” is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the of the structure. The term does not, however, include either:
- (3) any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specification which are solely necessary to assure safe living conditions, or
- (4) any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

“Variance” means a grant of relief to a person or entity for the requirements of this ordinance which permits construction in a manner otherwise prohibited by this ordinance where specific enforcement would result in unnecessary hardship.

SECTION 3

A. Lands to Which this Ordinance Applies

This ordinance shall apply to all areas of special flood hazards within the jurisdiction of the Borough of Millstone.

B. Basis for Establishing the Areas of Special Flood Hazard

Millstone Borough Flood Mitigation Plan
June 2005

The areas of special flood hazard identified by the Federal Insurance Administration through a scientific and engineering report entitled "The Flood Insurance Study for the Borough of Millstone:", with accompanying flood insurance rate maps and flood boundary maps with an effective date of April 3, 1978 and any revision thereto, are hereby adopted by reference and declared to be a part of this ordinance.

C. Compliance

No structure or land shall hereafter be located, extended, converted, or structurally altered without full compliance with the terms of this ordinance and other applicable regulations.

D. Abrogation and Greater Restrictions

This ordinance is not intended to repeal, abrogate, or impair any existing easements, covenants, deed restrictions. However, where this ordinance and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposed the more stringent restrictions shall prevail.

E. Interpretation

In the interpretation and application of this ordinance, all provisions shall be:

- (1) Considered as minimum requirements
- (2) Liberally construed in favor of the governing body.

Millstone Borough Flood Mitigation Plan
June 2005

(3) Deemed neither to limit nor repeal any other powers granted under state statutes.

F. Warning and Disclaimer of Liability

The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This ordinance does not imply land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This ordinance shall not create liability on the part of the Borough of Millstone or by any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made thereunder.

SECTION 4

ADMINISTRATION

A. Establishment of Development Permit

A Development Permit shall be required in conformance with the provisions of this ordinance. Application for a Development Permit shall be made to the Chief Official of the Millstone Building Department on forms furnished by him and may include, but not be limited to, the following plans to duplicate drawn to scale showing the nature, location, dimensions, and elevations of the area in question; existing or proposed structures, fill storage of materials; drainage facilities, and the location of the foregoing. Specifically, the following information is required:

(1) Elevation in relation to mean sea level, of the lowest floor (including

Millstone Borough Flood Mitigation Plan
June 2005

basement) of all structures.

- (2) Elevation in relation to mean sea level to which any non-residential structure has been floodproofed.
- (3) Certification by a registered professional engineer or architect that any non-residential floodproofed structure meets the floodproofing criteria in Section 5.B. (2).
- (4) Description of the extent to which any watercourse will be altered or relocated as a result of proposed development.

B. Designation of Administrator

The Chief Official of the Millstone Building Department is hereby appointed to administer and implement this ordinance by granting or denying Development Permit applications in accordance with the provisions.

C. Duties and Responsibilities of Administrator

Duties of the official administering and implementing this ordinance shall include, but not be limited to:

- (1) Permit Review
 - (a) Review all Development Permits to determine that the permit requirements of this ordinance have been satisfied.
 - (b) Review all Development Permits to require that all necessary permits have been obtained from those federal, state or local governmental agencies from which prior approval is required.
 - (c) Review all Development Permits to determine if such

Millstone Borough Flood Mitigation Plan
June 2005

proposed development is located within the floodway. If the proposed development is located in the floodway, a certification shall be obtained in accordance with Section 5.B.3 (a).

(2) Use of Other Base Flood Data

When base flood elevation data has not been provide in accordance with Section 3.B., Basis for Establishing the Areas of Special Flood Hazard, then the Chief Official of the Millstone Building Department shall obtain, review, and reasonably utilize any base flood elevation data available from a federal, state or other source, in order to administer Section 4.B., Specific Standards.

(3) Information to be Obtained and Maintained

- (a) Verify and record the actual elevation (in relation to mean sea level) of the lowest habitable floor (including basement) of all new or substantially improved structures.
- (b) For all new or substantially improved floodproofed structures
 - (i) verify and record the actual elevation (in relation to mean sea level) , and
 - (ii) maintain the floodproofing certifications required in Section 4.A. (3).
- (c) Maintain for public inspection all records pertaining to the provisions of this ordinance.

Millstone Borough Flood Mitigation Plan
June 2005

(4) Alteration of Watercourses

(a) Notify adjacent communities and the New Jersey Department of Environmental Protection and prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration.

(b) Require that maintenance is provided within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.

(5) Interpretation of FIRM Boundaries

Make interpretations where needed, as to the exact location of the boundaries of the areas of special flood hazards (for example, where there appears to be a conflict between a mapped boundary and actual field conditions). The person contesting the location of the boundary shall be given a reasonable opportunity to appeal the interpretation as provided in this article.

D. Variance Procedure

(1) Appeal Board

(a) The Millstone Board of Adjustment as established by the Borough of Millstone shall hear and decide appeals and requests for variances from the requirements of this ordinance.

(b) The Millstone Board of Adjustment shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the Chief Official of the Millstone

Millstone Borough Flood Mitigation Plan
June 2005

Building Department in the enforcement or administration of this ordinance. Such appeals shall be conducted pursuant to the procedures and time periods contained in the Municipal Land Use Law, with respect to proceedings before the Board of Adjustment.

- (c) Any person aggrieved by the decision of the Board of Adjustment or any taxpayer may appeal such decision to the Superior Court of New Jersey in the manner provided by New Jersey statutes and New Jersey Court rules.
- (b) In passing upon such applications, the Board of Adjustment shall consider all technical evaluations, all relevant factors, standards specified in other sections of this ordinance, and:
 - (i) the danger that materials may be swept onto other lands to the injury of others;
 - (ii) the danger to life and property due to flooding or erosion damage;
 - (iii) the susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;
 - (iv) the importance of the services by the proposed facility to the community;
 - (v) the necessity of the facility of a waterfront location, where applicable;

Millstone Borough Flood Mitigation Plan
June 2005

- (vi) the availability of alternative locations, not subject to flooding or erosion damage, for the proposed use;
 - (vii) the compatibility of the proposed use with existing and anticipated development;
 - (viii) the relationship of the proposed use to the comprehensive plan and flood plain management program for that area;
 - (ix) the safety of access to the property in times of flood for ordinary and emergency vehicles;
 - (x) the expected heights, velocity, duration, rate of rise and sediment transport of the flood water s and the effects of wave action, if applicable, expected at the site; and,
 - (xi) the cost of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, and streets and bridges.
- (ii) Generally, variances may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items (i-xi) have been fully considered. As the lot size increase beyond

Millstone Borough Flood Mitigation Plan
June 2005

the one-half acre, the technical justification required for issuing the variance increases.

- (e) Upon consideration of the factors listed above and the purposes of this ordinance, the Millstone Board of Adjustment may attach such conditions to the granting of variances as it deems necessary to further the purposes of this ordinance.
- (f) The Chief Official of the Millstone Building Department shall maintain the records of all appeal actions and report any variances to the Federal Insurance Administration upon request.

(2) Conditions for Variances

- (a) Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places, without regard to the procedures set forth in the remainder of this section.
- (b) Variances shall not be issued within any designated floodway if any increase of flood levels during the base flood discharge would result.
- (c) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- (d) Variances shall only be issued upon:
 - (i) a showing of good and sufficient cause;
 - (ii) a determination that failure to grant the variance would

Millstone Borough Flood Mitigation Plan
June 2005

result in exceptional hardship to the applicant, and
(iii) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public as identified in Section f.D. (1) (d), or conflict with local laws or ordinances.

Millstone Borough Flood Mitigation Plan
June 2005

- (e) Any applicant to who a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation in feet below the base flood elevation, and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

SECTION 5

PROVISIONS FOR FLOOD HAZARD REDUCTION

A. General Standards

In all areas of special flood hazards the following provisions are required:

(1) Anchoring

All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.

(2) Mobile Homes

All mobile homes are prohibited within areas of special flood hazards (A-Zones).

(3) Construction Materials and Methods

- (a) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

Millstone Borough Flood Mitigation Plan
June 2005

- (f) All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.

(4) Utilities

(a) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;

(b) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems discharges from the systems into flood waters; and,

(c) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

(5) Subdivision Proposals

(a) All subdivision proposals shall be consistent with the need to minimize flood damage.

(b) All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.

(c) All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.

(d) Base flood elevation data shall be provided for subdivision proposals and other proposed development which is greater than the lesser of 50 lots or 5 acres.

B. Specific Standards

In all areas of special flood hazards where base flood elevation data has been provided as set forth in Section 3.B., Basis for Establishing the Areas of Special Flood Hazard or Section 4.C. (2) Use of Other Base Flood Data, the following provisions are required:

(1) Residential Construction

New construction or substantial improvement of any residential structure shall have the lowest floor, including basement, elevated to or above base flood elevation.

(2) Nonresidential Construction

New construction or substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated to the level of the base flood elevation or, together with attendant utility and sanitary facilities, be floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification shall be provided to the official as set forth in Section 4.C. (3) (b).

Millstone Borough Flood Mitigation Plan
June 2005

(3) Floodways

Located within areas of special flood hazard established in Section 3.B. are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles and erosion potential, the following provisions apply:

(a) Prohibit encroachments, including fill, new construction, substantial improvements and other developments unless certification by a professional registered engineer or architect is provided demonstrating that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

(b) If Section 5.IB. (3) (a) is satisfied, all new construction and substantial improvements shall comply with all applicable flood hazard reduction provisions of Section 5.

SECTION 6

VALIDITY

If any paragraph, section, sentence, clause or phrase of this ordinance is held to be invalid, such determination shall not effect the validity of the remaining portions of the ordinance and they shall be deemed severable therefrom.

Millstone Borough Flood Mitigation Plan
June 2005

SECTION 7

EFFECTIVE DATE

This ordinance shall take effect immediately upon final passage and publication as required by law.

Millstone Borough Flood Mitigation Plan
June 2005

AN ORDINANCE AMENDING “AN ORDINANCE FOR THE
PREVENTION OF FLOOD DAMAGE WITHIN THE BOROUGH
OF MILLSTONE, COUNTY OF SOMERSET, STATE OF NEW JERSEY”

BE IT ORDAINED, by the Mayor and Council of the Borough of Millstone, County of Somerset, State of New Jersey as follows:

1. “AN ORDINANCE FOR THE PREVENTION OF FLOOD DAMAGE WITHIN THE BOROUGH OF MILLSTONE, COUNTY OF SOMERSET, STATE OF NEW JERSEY” be and is hereby amended as follows:

A. The definition “Mobile Home” in Section 2 be and be and is hereby deleted.

B. The following definition be and are hereby added to Section 2 “Definitions” in the proper alphabetical order:

“Basement”: means any area of the building have its floor subgrade (below ground level) on all sides.

“Breakaway Wall”: Means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces without causing damage to the elevated portion of the building or supporting foundation system.

Millstone Borough Flood Mitigation Plan
June 2005

“Elevated Building”: means a non-basement building

- (i) built in the case of a building in a Area of Special Flood Hazard to have the top of the elevated floor or in the case of a building in a Coastal High Hazard Area to have the bottom of the lowest horizontal structural member of the elevated floor elevated above the ground level by means of piling, columns (posts and piers), or shear walls parallel to the flow of the water and
- (ii) adequately anchored so as not to impair the structural integrity of the building during a flood of up to the magnitude of the base flood. In an Area of Special Flood Hazard “elevated building” also includes a building elevated by means of fill or solid foundation perimeter walls with openings sufficient to facilitate the unimpeded movement of flood waters. In Areas of Coastal High Hazard “elevated building” also includes a building otherwise meeting the definition of “elevated building” even though the lower area is enclosed by means of breakaway walls.

“Lowest Flood”: means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, useable solely for the parking or vehicles, building access or storage in an area other than a basement enclosure is not built so to render the structure in violation of other applicable non-elevation design requirements.

Millstone Borough Flood Mitigation Plan
June 2005

“Manufactured home”: means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for the use with or without a permanent foundation which connected to the required utilities. For flood plain management purposes the term “manufactured home” also includes park trailers, travel trailers and other similar vehicles placed on a site for greater than 180 consecutive days. For insurance purposes the term “manufactured home” does not include park trailers, travel trailers and other similar vehicles.

“Manufactured home park or manufactured home subdivision” : means a parcel (or continuous parcels) of land divided into two or more manufactured home lots for rent or sale.

“Start of Construction”: (for other than new construction or substantial improvements under the Coastal Barrier Resources Act (P.L. 97-348)) includes substantial improvement and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site such as the pouring of a slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of

Millstone Borough Flood Mitigation Plan
June 2005

excavation; or the placement of a manufactured home on a foundation.

Permanent construction does not include land preparation, such as clearing, grading and filling nor does it include the installation of streets and/or walkways; nor does it include excavation for basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure.

C. Subsection 4.C(2) "Use of Other Base Flood Data" be and is hereby deleted and in its place, the following subparagraph 4.C.2 is inserted:

"Use of Other Base Flood Data"

When base flood elevation and floodway data has not been provided in accordance with Section 3.B, Basis for Establishing the Areas of Special Flood Hazard, then the chief official of the Millstone Building Department shall obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State or other source, in order to administer Sections 5.B(1), Specific Standards, Residential Construction, and 5.B(2), Specific Standards, Nonresidential Construction."

Millstone Borough Flood Mitigation Plan
June 2005

D. Subsection 5.A (2), Mobile Homes, be and is hereby deleted and in its place, the following subsection 5.A(2) is added:

“Manufactured Homes”

All manufactured homes shall be anchored to resist flotation, collapse or lateral movement. Methods of anchoring may include, but are not to be limited to, use of the over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.”

E. Subsection 5.A(4)(d) is added as follows:

“d. Electrical, heating, ventilation, plumbing and air-conditioning equipment and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.”

F. Subsection 5.A(6) is added as follows:

“Enclosure Openings

For all new Construction and substantial improvements, fully enclosed areas below the lowest floor that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either

Millstone Borough Flood Mitigation Plan
June 2005

be certified by a registered professional engineer or architect or must meet or exceed the following minimum criteria: A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided. The bottom of all openings shall be no higher than one foot above grade. Opening may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of floodwaters.”

G. Subsection 5.B(2) be and is hereby amended by deleting the
last

two sentences of said subsection and replacing them with the following:

“...A registered professional engineer or architect shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting the applicable provisions of this subsection. Such certification shall be provided to the official as set forth in Section 4.A.”

H. A new subsection 5.B(4) entitled Manufactured Homes be and
Is hereby added as follows:

“Manufactured Homes

All manufactured homes to be placed or substantially improved within an area of special flood hazard shall be elevated on a permanent foundation such that the top of the lowest floor is at or above the base flood elevation.”

Millstone Borough Flood Mitigation Plan
June 2005

2. Any ordinance or part thereof which is inconsistent with this ordinance be and is hereby repealed to the extent of the inconsistency.

3. If any paragraph, section, sentence, clause or phrase of this ordinance is held to be invalid, such determination shall not effect the validity of the remaining portions of the ordinance and they shall be deemed severable therefrom.

4. This ordinance shall take effect immediately upon final passage and publication as required by law.

Suzanne Sendrakowski
Mayor

Attest:
Linda Bowers
Clerk

Introduced: March 4, 1987
Published: March 12, 1987
Adopted: April 1, 1987

I, Linda Bowers, Municipal Clerk of the Borough of Millstone, County of Somerset, do hereby certify the foregoing to be a true and correct copy of an ordinance adopted by the Council at a meeting of said Council held on April 1, 1987 and said ordinance was adopted by the majority of members of the Council.

Linda Bowers
Clerk

Millstone Borough Flood Mitigation Plan
June 2005

Suggested Changes to Existing Flood Damage Prevention Ordinance

Section 1 B(2) revised to:

These flood losses are caused by the cumulative effect of obstructions in areas of special flood hazard which increase flood heights and velocities, and when inadequately anchored, damage uses in other areas. Uses that are inadequately floodproofed, elevated or otherwise protected from flood damage also contribute to the flood loss.

Add Section 1C(8) as follows:

To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

The following changes under Section 2, Definitions:

Add:

“Appeal” means a request for a review of the local administrator interpretation of any provision of this ordinance or a request for a variance.

Revise:

“Development” means any man made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operation, or storage of equipment or materials located within the area of special flood hazard.

Delete:

“Flood Hazard Boundary Map” and its definition

Add:

“Flood Plain Management Regulations” means zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as a flood plain ordinance, grading ordinance and erosion control ordinance) and other applications of police power. The term describes such State or local regulations, in any combination thereof, which provide standards for the purpose of flood damage prevention and reduction.

Revise:

Millstone Borough Flood Mitigation Plan
June 2005

“Floodway” means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than 0.2 foot.

Add:

Historical Structure means any structure that is:

- (a) Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
- (b) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district preliminarily determined by the Secretary to qualify as registered historic district;
- (c) Individually listed on a State inventory of historic places in States with historic preservation programs which have been approved by the Secretary of the Interior, or
- (d) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
 - (1) By an approved State program as determined by the Secretary of the Interior; or
 - (2) Directly by the Secretary of the Interior in States without approved programs.

Delete:

“Habitable floor” means any floor usable for living purposes, which includes working, sleeping, eating, cooking or recreation, or a combination thereof. A flood used only for storage purposes is not a “habitable floor.”

“Mobile home” means a structure, transportable in one or more sections, which is built on a permanent chassis and designed to be use with or without a permanent foundation when connected to the required utilities. It does not include recreational vehicles or travel trailers.

Add:

“New Construction” means structures for which the start of construction commenced on or after the effective date of a floodplain regulation adopted by a community and includes any subsequent improvements to such structures.

“New manufactured home park or subdivision” means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of

Millstone Borough Flood Mitigation Plan
June 2005

concrete pads) is completed on or after the effective date of the flood plain management regulations adopted by the municipality.

“Recreational vehicle” means a vehicle which is (i) built on a single chassis; (ii) 400 square feet or less when measured at the longest horizontal projections; (iii) designed to be self-propelled or permanently towable by a light duty truck; and (iv) designed primarily not for use as permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

Revise:

“Start of Construction” (for other than new construction or substantial improvements under the Coastal Barrier Resources Act (P.L. No. 97-348) includes substantial improvements and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site such as the pouring of a slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation, or the placement of a manufactured home on a foundation. Permanent construction does not include the land preparation, such as clearing, grading and filling nor does it include the installation of streets and/or walkways, nor does it include excavation for a basement, footings or piers, or foundations or the erection of temporary forms, nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor or other structural part of a building, whether or not that alteration effects the external dimensions of the building.

“Structure” means a walled and roofed building, a manufactured home, or a gas or liquid storage tank, that is principally above ground.

Add:

“Substantial Damage” means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

Revise:

“Substantial Improvement” means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which exceeds 50 percent of the market value of the structure before the “start of construction” of the improvement. This term includes structures which have incurred “substantial damage”, regardless of the actual repair work performed. The term does not, however, include either:

Millstone Borough Flood Mitigation Plan
June 2005

- (1) Any project for improvement of a structure to correct existing violations of State or local health, sanitary or safety code specifications which have been identified by the local code enforcement officer and which are the minimum necessary to assure safe living conditions; or
- (2) Any alteration of a “historic structure”, provide that the alteration will not preclude the structure’s continued designation as a “historic structure.”

(2) Use of Other Base Flood Data

When base flood elevation data has not been provide in accordance with Section 3.B., Basis for Establishing the Areas of Special Flood Hazard, then the Chief Official of the Millstone Building Department shall obtain, review, and reasonably utilize any base flood elevation data available from a federal, state or other source, in order to administer Section 5B-1 Specific Standards – Residential Construction and Section 5.2-2 Specific Standards, Non-Residential Construction.

Revise:

Section 4D.2

Conditions for Variances

- (1) Generally, variances may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing items (i- xii) in Section 4D.1d have been fully considered. As the lot size increases beyond the one-half acre, the technical justification required for issuing the variance increases.
- (2) Variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure’s continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.
- (3) Variances shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.
- (4) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- (5) Variances shall only be issued upon:
 - (i) a showing of good and sufficient cause;
 - (ii) a determination that failure to grant the variance would result in exceptional hardship to the applicant; and,
 - (iii) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public as identified in Section 4D 1d, or conflict with existing local laws or ordinances.

Millstone Borough Flood Mitigation Plan
June 2005

- (6) Any applicant to whom a variance is granted shall be given written notice that the Structure will be permitted to be built with a lowest floor elevation below the base flood elevation and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

Revise:

Section 5 A. (2) Mobile Homes to:

Manufactured Homes

- (1) Manufactured homes shall be anchored in accordance with Section 5 A. 1.
- (2) All manufactured homes to be placed or substantially improved within an area of special flood hazard shall be elevated on a permanent foundation such that the top of the lowest floor is at or above the base flood elevation.

Add:

Section 5 B.3 (c)

In all areas of special flood hazard in which base flood elevation data has been provided and no floodway has been designated, the cumulative effect of any proposed development, when combined with all other existing and anticipated development, shall not increase the water surface elevation of the base flood more than two-tenths (0.2) of a foot at any point.

Millstone Borough Flood Mitigation Plan
June 2005

Resolution for Adoption of Flood Mitigation Plan

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

Borough of Millstone

1353 Main Street
Millstone, NJ 08844
908-281-6893

RESOLUTION

BE IT RESOLVED, by the Borough Council of the Borough of Millstone, that it hereby accepts and adopts the Borough of Millstone Flood Mitigation Plan, dated February 2005 and prepared with assistance from USDA Natural Resources Conservation Service.

I, Gregory J. Bonin, Borough Clerk of the Borough of Millstone, do hereby certify this to be a true copy of a Resolution adopted by the Borough Council at its regular meeting of June 20, 2005.



Gregory J. Bonin
Borough Clerk

Community Rating System

National Flood Insurance Program
Community Rating System

SUMMARY

Background: Since 1968 the National Flood Insurance Program (NFIP) has provided federally backed flood insurance to encourage communities to enact and enforce floodplain regulations. The program has been very successful in helping flood victims get back on their feet. There are over 2.2 million policies in force. Since 1978, 350,000 insurance losses have been paid out for a total of \$2.5 billion.

In order to be covered by a flood insurance policy, a property must be in a community that participates in the NFIP. To qualify, a community adopts and enforces a floodplain management ordinance to regulate proposed development in flood hazard areas. The objective of the ordinance is to ensure that such development will not aggravate existing flooding conditions and that new buildings will be protected from future flood damage. To date nearly 18,000 communities in the United States participate.

The NFIP has been successful in requiring new buildings to be protected from damage by the 100-year flood. However, the program had few incentives for communities to do more than enforce the minimum regulatory standards. Flood insurance rates had been the same in all participating communities, even though some do much more than regulate construction of new buildings to the national standards.

Until now the program did little to recognize or encourage community activities to reduce flood damages to existing buildings, to manage development in areas not mapped by the NFIP, to protect new buildings beyond the minimum NFIP protection level, to help insurance agents obtain flood data, or to help people obtain flood insurance. Because these activities can have a great impact on the insurance premium base, flood damages flood insurance claims, and federal disaster assistance payments, the Federal Insurance Administration (FIA) has implemented the Community Rating System (CRS).

The Concept: Experience since the turn of the century (1900) has shown that fire insurance public protection class given to a community has been a very strong incentive to local officials to maintain or improve their fire protection programs. Local governing boards ensure that their fire alarm communications, water supply and distribution, and overall fire department facilities, including staffing, equipment, training and other items meet or exceed the insurance industry's minimum criteria in order to maintain favorable fire insurance rate classes for their communities.

Millstone Borough Flood Mitigation Plan
June 2005

In March 1987, the Federal Insurance Administrator established a Community Rating Task Force with members from FIA, insurance companies, and state and local floodplain managers. The Task Force established three goals for the CRS:

“To encourage, by the use of flood insurance premium adjustments community and state activities beyond those required by the National Flood Insurance Program to:

- Reduce flood losses,
- Facilitate accurate insurance rating, and
- Promote the awareness of flood insurance.”

The Task Force worked with the Association of State Floodplain Managers (ASFPM) and ISO/Commercial Risk Services, Inc. (ISO) to develop a rating Schedule and administrative procedures. ISO is a non-profit corporation subscribed to by more than 1300 insurance companies. Among other services, ISO develops and provides advisory fire insurance classification of community fire protection programs.

The CRS is the product of three years of development, field testing, critiques and reviews with communities, public interest organizations and ASFPM's technical advisors. The work has been reviewed by 400 professional floodplain managers, 50 public interest organizations, and 41 communities. However, the CRS will always be subject to change and improvement as more experience is gained in administering it and as more is learned about effective floodplain management techniques.

Community Classification: Flood insurance premium credits are available in communities based on their CRS classification. There are ten classes with Class 1 having the greatest premium credit and Class 10 having no premium credit. A community's CRS class is based on the number of credit points calculated for the activities that are undertaken to reduce flood losses, facilitate accurate insurance rating, and promote the awareness of flood insurance.

A community is automatically in Class 10 unless it applies for CRS classification and it shows that the activities that it is implementing warrant a better class. The amount of premium credit for each class is published annually by FIA.

The CRS rewards those communities that are doing more than the minimum NFIP requirements to their residents prevent or reduce flood losses. The system should also provide an incentive for communities to initiate new flood protection activities.

Millstone Borough Flood Mitigation Plan
June 2005

COMMUNITY CLASSIFICATION POINTS

There are 10 community classes in the Community Rating System. Class 1 communities have the largest premium credit; residents of Class 10 communities receive no premium credit. Communities that do not apply for CRS classification are Class 10 communities.

The insurance premium credit is based on whether a property is in or out of the Special Flood Hazard Area (SFHA), i.e., the A and V Zones as shown on the community's Flood Insurance Rate Map (FIRM). The premium credit for properties in the SFHA increases according to the community's CRS class.

The credit for properties outside the SFHA is lower for Class 1–8 communities because premiums in these areas are already relatively low and can be lowered further through the Preferred Risk Policy. Also, most activities undertaken to qualify for those classes are implemented only in the floodplain. Because areas designated as A99 and AR Zones already receive an insurance premium reduction, these zones get the same premium reduction as non-SFHA areas.

A community's classification is based on the community total points (cT) as calculated on activity worksheet AW-720. The qualifying community total points, CRS classes, and flood insurance premium credits are shown below:

Credit Points (cT)
CRS Class
Premium Discount

4,500+
1
45%

4,000–4,499
2
40%

3,500–3,999
3
35%

3,000–3,499
4
30%

2,500–2,999
5
25%

2,000–2,499
6
20%

Millstone Borough Flood Mitigation Plan
June 2005

1,500–1,999

7

15%

1,000–1,499

8

10%

500–999

9

5%

0–499

10

0

SFHA (Zones A, AE, A1–A30, V, V1–V30, AO, and AH): Credit varies depending on class.

SFHA (Zones A99, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, and AR/AO): 10% credit for Classes 1–6; 5% credit for Classes 7–9.

Non-SFHA (Zones B, C, X, D): 10% credit for Classes 1–6; 5% credit for Classes 7–9.

Preferred Risk Policies are not eligible for CRS premium discounts.

The Preferred Risk Policy does not receive premium rate credits under the CRS because it already has a lower premium than other policies. Preferred Risk Policies are available only in B, C, and X Zones for properties that are shown to have a minimal risk of flood damage.

Premium reductions are subject to change.

Operation: Community application for CRS classification is voluntary. Any community in full compliance with the rules and regulations of the NFIP may apply for a CRS classification. The applicant community submits documentation that it is implementing one or more of the activities recognized in the CRS Schedule.

The Schedule identifies 18 creditable activities, organized under four categories in Sections 300-600: Public Information, Mapping and Regulations, Flood Damage Reduction, and Flood Preparedness. They are listed on the last page of this Summary. The Schedule assigns credit points based on how well an activity affects the three goals of the CRS. Communities are welcome to propose alternative approaches in their applications.

Millstone Borough Flood Mitigation Plan
June 2005

Some of the activities may be implemented by the state or a regional district rather than at the local level. For example, some states have disclosure laws that may meet the credit criteria of Activity 340 - Flood Hazard Disclosure. In such cases, any community in those states or districts could receive credit points if the community applies for a CRS classification and if the state or district program is, in fact, being implemented in the community.

The Regional Office of the Federal Emergency Management Agency (FEMA) and the State NFIP Coordinator review and comment on the application. FIA verifies the information and the community's implementation of the activities. FIA sets the credit to be granted and notifies the community, the state, the insurance companies, and other appropriate parties.

The community's activities and performance are reviewed periodically. If it is not properly or fully implementing the credited activities, its credit points and possibly, its CRS classification, will be revised. A community may add or drop creditable activities each year. Credit criteria for each activity may also change as more experience is gained in implementing, observing and measuring the activities.

Costs and Benefits: No fee is charged for a community to apply for classification or to participate in the CRS. Because there may be a cost to implement the creditable activities, some communities may be concerned whether the cost of initiating a new activity will be offset by the flood insurance premium credits.

It is important to note that reduction in flood insurance rates is only one of the rewards communities receive from undertaking the activities credited under the Community Rating System. Others include increased public safety, reduction of damages to property and public infrastructure, avoidance of economic disruption and losses, reduction of human suffering, and protection of the environment.

Communities should prepare and implement those activities that best deal with the local flood problem, not just those items that are listed in the Schedule. In considering whether to undertake a new activity, communities will want to consider all of the benefits the activity will provide (in addition to insurance premium credits) in order to determine whether it is cost effective.

Activities Credited Under the Community Rating System

(Sections 100 and 200 cover other topics in the CRS Schedule)

300 Public Information Activities

310 Elevation Certificate: Maintain FEMA's Elevation Certificate and make copies available to inquirers.

Millstone Borough Flood Mitigation Plan
June 2005

- 320 Map Determinations: Respond to inquiries for Flood Insurance Rate Map zone and flood data.
- 330 Outreach Projects: Advise residents about the flood hazard, flood insurance, and flood protection measures.
- 340 Hazard Disclosure: Advise potential purchasers of flood-prone property about the hazard.
- 350 Flood Protection Library: Maintain and publicize a library of references on flood insurance and flood protection.
- 360 Flood Protection Assistance: Provide direct advice to property owners desiring to protect themselves from flooding.

400 Mapping and Regulatory Activities

- 410 Additional Flood Data: Develop new flood elevations, floodway delineations, wave heights, or other regulatory flood hazard data.
- 420 Open Space Preservation: Credit is provided according to the amount of vacant floodplain that is kept free of buildings and filling.
- 430 Higher Regulatory Standards: Regulation that require new development to be protected to a level greater than the NFIP rules.
- 440 Flood Data Maintenance: Make the community's floodplain maps more current, useful, or accurate.
- 450 Stormwater Management: Regulate new developments throughout the watershed to minimize their impact on surface drainage and runoff.

500 Flood Damage Reduction Activities

- 510 Repetitive Loss Projects: Develop and implement a plan to mitigate losses in repeatedly flooded areas.
- 520 Acquisition and Relocation: Purchase or relocate buildings and convert flood-prone properties to open space.
- 530 Retrofitting: Credit is provided according to how buildings have been retrofitted to protect them from flood damages.
- 540 Drainage System Maintenance: Conduct periodic inspections and maintain the capacities of the channels and retention basins.

600 Flood Preparedness Activities

- 610 Flood Warning Program: Provide early flood warnings to the general public and special facilities.
- 620 Levee Safety: Maintain levees that are not credited with providing base flood protection and emergency response plans for them.
- 630 Dam Safety: All communities in a state with an approved dam safety program receive credit.

Flood Mitigation Funding Sources and Contact Information

Millstone Borough Flood Mitigation Plan
June 2005

Millstone Borough Flood Mitigation Plan
June 2005

Flood Mitigation Funding Sources and Contact Information

FEMA Flood Mitigation Assistance Program (FMA) – financial assistance to cover up to 75 percent of the cost of elevation, relocation or buyout of eligible structures.

Contact:

Kathy Lear
New Jersey Office of Emergency Management
New Jersey State Police
Box 7068
West Trenton, NJ 08628-0068

Phone: 609-538-6010
E-mail: lear.kathy@gw.njsp.org

Green Acres Program
<http://www.state.nj.us/dep/greenacres/>

Financial assistance to purchase property in environmental sensitive areas including flood plains. Green Acres protects environmentally sensitive open space, water resources and other significant natural and historic resources. Green Acres partners with, and provides grants and low interest loans to, qualifying county and municipal governments and nonprofit land conservancies that work to further these same goals.

Contact:

John Flynn, Administrator
Green Acres Program

Environmental Infrastructure Financing Program
<http://www.njeit.org/index2.html>

The NJ Environmental Infrastructure Financing Program (EIFP) is a partnership between NJDEP and the NJ Environmental Infrastructure Trust. The EIFP provides low-cost financing to municipal, county, and other local government units and water purveyors for the construction of wastewater, drinking water and stormwater/nonpoint source pollution management projects, including open space acquisition that provides a water quality benefit. Low interest loans that have a rate equal to ¼ the current market rate can be combined with Green Acres funding for land acquisition projects with a water quality benefit and used as a local match for Green Acres funding.

Contact:

Dennis Hart, Executive Director

Millstone Borough Flood Mitigation Plan
June 2005

County/Municipal Open Space Partnership of Somerset County

http://www.co.somerset.nj.us/_pdffiles/Policy%20and%20Procedures%20Manualcmb03.pdf

The purpose of this partnership is to assist municipalities in Somerset County in providing adequate supply of land and structures for public recreation and conservation.

A municipality may apply for funding for the acquisition of a structure, in conjunction with an eligible land acquisition when the improved property and structures are located within the 100 Year Flood Hazard Area as established by Federal Emergency Management Agency (FEMA) and are proposed for demolition to create or expand upon a public recreation opportunity and help advance a flood management initiative supported by FEMA funding or some other public funding source. The acquisition of such structures may be funded up to 50% of the cost of acquisition.

Contact:

Robert Bzik
Somerset County Planning Board
P.O. Box 3000
20 Grove Street
Somerville
New Jersey 08876

Phone 908-231-7021

Flood Insurance Study and Flood Insurance Map