Draft
Genesee & Wyoming Counties
Joint Flood Mitigation Plan

Town of Pembroke

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Genesee County Emergency Management Office

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1 – Introduction

Genesee County is located in western New York State (see Map 1.1). The communities along the Tonawanda and Oatka Creek in Genesee and Wyoming Counties have experienced several floods in the past, resulting in severe damage to residential, commercial, and public property as well as risks to the safety of residents and others. Beginning in 1999, meetings to discuss flooding problems and streambank erosion issues in the two counties along the two streams were held and attended by a number of local, county, and regional agencies.

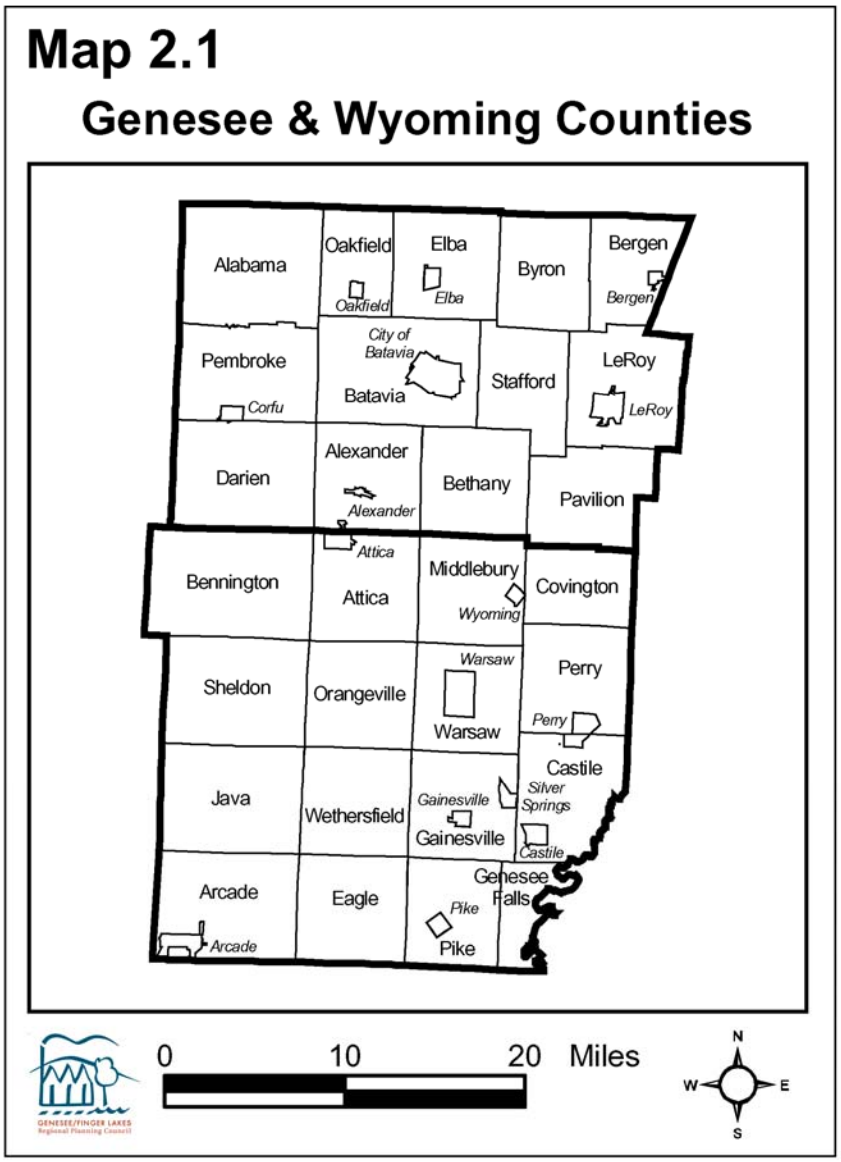
Genesee and Wyoming Counties Emergency Management Offices, as lead agencies on behalf of the counties and municipalities, applied for, and was awarded a Federal Emergency Management Agency Flood Mitigation Assistance - Planning Grant from the New York State Emergency Management Office.

Beginning in November 2002 the Joint Flood Mitigation Planning Committee was formed (hereafter referred to as the Committee). The Committee expanded its membership to review flood risks and hazards, encourage public involvement, develop mitigation activities, and recommend action steps to alleviate flood-related problems in the municipalities along the Tonawanda and Oatka Creek in Genesee and Wyoming counties. This plan describes and summarizes the Committee's process, findings, and recommendations.

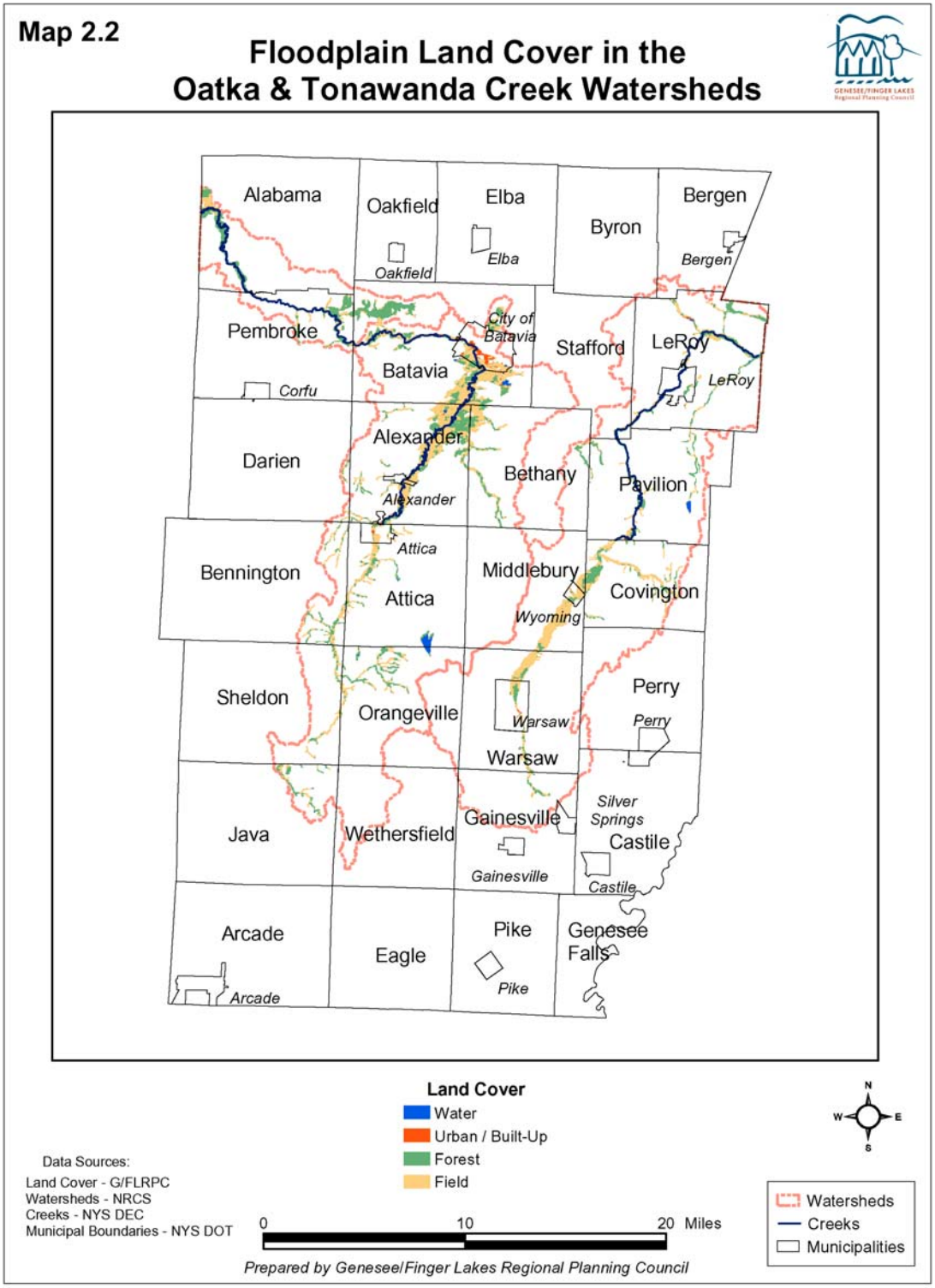
2 – Background

2.1 History and Land Use

The Town of Pembroke is in western Genesee County (see Map 2.1). Settled in 1804, the Town was formed from Batavia in 1812. Indian Falls was the birthplace of Ely S. Parker (1828–95), a Tonawanda Seneca who became the first Native American to serve as US Commissioner of Indian Affairs. Boulder Park (1949–70), an amusement park at Indian Falls, featured a fine carousel and a miniature steam train. Kutter's Cheese Factory (1947) sells its product throughout the northeast. A Pembroke exit of the Thruway (1970's) made commuting to Batavia and Buffalo practical. The Brick House Corners Fair held each September commemorates the Town's history, farms, and crafts.



Map 2.2 illustrates the land cover in the Tonawanda and Oatka Creek 100-Year Flood Zones. Land cover in the 100-Year Flood Zone is largely fields and forest with the exception of small urbanized areas in the villages and the large urbanized area surrounding the City of Batavia. The majority of the fields are agricultural.



Approximately 26% of Pembroke is in the Tonawanda Creek Watershed and 3% is in the floodzone (see Table 2.1). An analysis of land use in the flood zone is based on the real property parcel land use classification. In the Town of Pembroke there are a total of 206 real property parcels in the Tonawanda Creek flood zone in excess of 539 acres. The approximate percent of the main land uses are as follows: 31% agricultural, 33% residential, 24% vacant, and 3% commercial (see Map 2.3k).

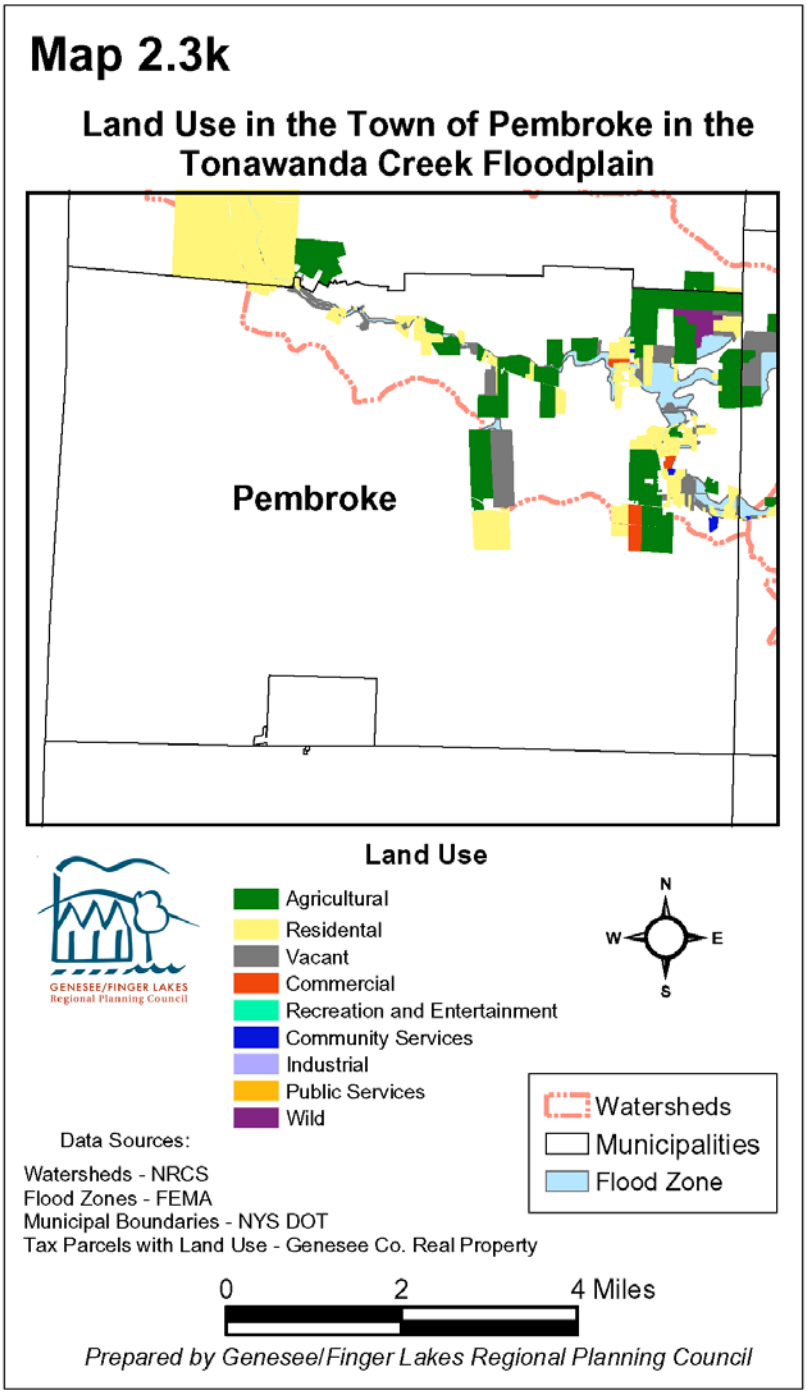


Table 2.1 - Land Area, Watershed Area, and Floodplain Area in Genesee County

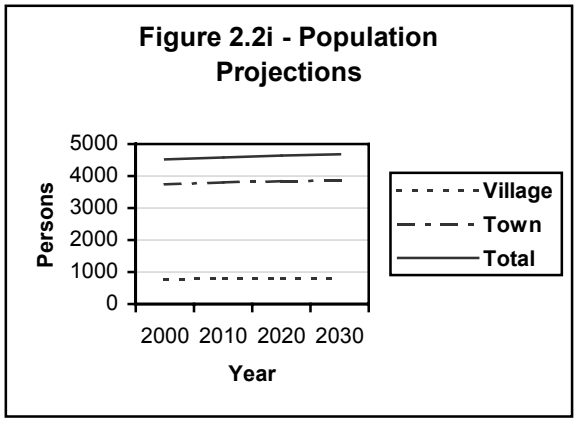
		Total Area*	Watershed	Total Area in Tonawanda and/or Oatka Watersheds	Percent of Municipality in the Watersheds	Total Area in Tonawanda and/or Oatka Flood Zone	Percent of Municipality in the Flood Zone
Alabama**	Town	42.95	Tonawanda	8.64	20.1%	0.48	1.11%
Alexander	Town	35.56	Tonawanda	33.42	94.0%	5.80	16.31%
Alexander	Village	0.44	Tonawanda	0.44	100.0%	0.10	22.99%
Attica	Village (part)	0.2	Tonawanda	0.2	100.0%	0.04	20.23%
Batavia	City	5.27	Tonawanda	4.32	82.0%	1.08	20.42%
Batavia	Town	48.43	Tonawanda	38.23	78.9%	6.28	12.97%
Bethany	Town	36.12	Both	22.54	62.4%	1.37	3.78%
Darien	Town	47.59	Tonawanda	1.09	2.3%	0.08	0.16%
LeRoy	Town	42.15	Oatka	41.43	98.3%	1.87	4.44%
LeRoy	Village	2.67	Oatka	2.67	100.0%	0.20	7.55%
Pavilion	Town	35.79	Oatka	31.3	87.5%	1.20	3.34%
Pembroke	Town	41.79	Tonawanda	10.68	25.6%	1.34	3.20%
Stafford	Town	31.32	Both	10.41	33.2%	0.14	0.46%
Tonawanda Reservation	Indian Reservation	9.1	Tonawanda	7.56	83.1%	1.23	13.54%

* Town figures include any villages contained within; all figures in square miles

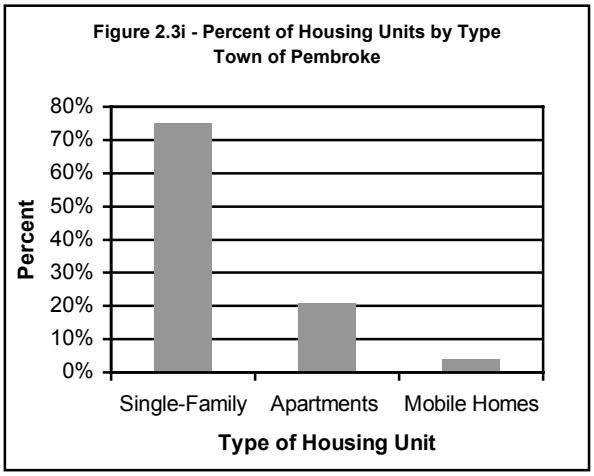
** Excludes the Tonawanda Reservation

2.2 – Population, Housing, and Socioeconomic Characteristics

The 2000 Census stated that the population in the Town of Pembroke was 3,748 outside of the Village, with an additional population of 782 in the Village of Corfu. Therefore, the total population for the Town of Pembroke in the year 2000 was 4,530. The following graph shows population projections done by the Genesee/Finger Lakes Regional Planning Council. According to these projections, the population will increase at a slow rate over the next thirty years.



The Town of Pembroke had a total of 1,772 available housing units. 75% of those housing units were single-family homes while the remaining 25% were made up of apartments and mobile homes. The following graph displays the distribution of housing units by type (US Census Bureau).



In 2000, there were 304 occupied housing units in the Village and 1,356 more in the Town. Of the 1,660 total occupied housing units, 79% were owner occupied. The median value of owner-occupied housing units was $91,700.

Table 2.2 - Major Employer in the Town of Pembroke

Company	City	Employment #
Kristner Concrete	East Pembroke	107

Source: Genesee County Industrial Development Agency, 2003

Median household income in 1999 for the Town was $41,266 and $37,159 for the Village. Per capita income for the Town was $17,148 and 4.8 % of the Town's population while 4.2% of the Village's population was below the poverty level.

2.3 – Sources of the Flooding Problems

Geography of the Tonawanda and Oatka Creek Watersheds

The geography of the Tonawanda and Oatka Creek watershed basins include a varied physical terrain as well as a unique meteorological situation. These watersheds occupy substantial areas of Genesee and Wyoming Counties and generally flow from south to north.

The morphology of the terrain was heavily influenced by the latest period of glaciation, where substantial amounts of ice moved over the area in a north to south pattern. This movement left deep gashes in the land's surface in the direction of advance and retreat, forming the well-known Finger Lakes and other parallel valleys. Not only were the lakes left as artifacts of the glacial era, but the general stream and drainage pattern was established during this period. Surface water runoff today generally flows in a northerly direction to the Great Lakes, thus ultimately entering the North Atlantic Ocean through the St. Lawrence River.

While this period of glaciation and its subsequent melt smoothed out the land east of Lake Erie and immediately south of Lake Ontario, the gradual foothills of the Appalachians located further south in Western New York continue to be characterized by prominent hills and deep valleys. Steep slopes and higher elevations are common in portions of Wyoming County, and they form the edge of what is known as the Allegheny Plateau. While maximum elevations remain modest in global terms, the difference of several hundred feet between valley floor and hilltops produces dramatic scenery in central and southern Wyoming County.

Since Wyoming County is the origin of both watersheds, an understanding of the localized weather phenomenon of this portion of the region is certainly important. The elevation of Lake Erie is approximately 575 feet, while hills in Wyoming County reach over 2000 feet. This change in elevation can be cited as a major factor contributing to the prevalence of localized weather phenomenon within the Tonawanda and Oatka Creek basins.

The close proximity of Lakes Erie and Ontario to these counties, has a pronounced affect on the regional weather patterns. Prevailing westerly winds blowing over the lakes moderate summer heat but also enhances severe summer thunderstorms and winter snowstorms. The elevation of some areas, particularly Wyoming County, further compounds the lake effect weather. Moist air driven off the lakes is forced east over dry ground, rising in elevation. The air would experience some cooling of a degree or two as it is forced up in elevation onto the edge of the Allegheny Plateau. Depending on other characteristics of the air mass (such as dew point) and the ground conditions, this cooling often results in sudden precipitation at the higher elevations in Wyoming County. This phenomenon is often referred to as orographic precipitation. Depending on the season, these can be bands of rain or snow whose affect can be very localized.

Such was the case in July 1998 when bands of severe rain moved over the towns of Sheldon and Orangeville in Wyoming County, dumping up to 7 inches of rain within a 24-hour period. While these towns suffered significant flood damage, the steep slopes and high stream gradient caused the water to quickly drain northward down the Tonawanda Valley. Though rainfall in Attica was not severe, flooding was. Attica is at the northern edge of Wyoming County where the Allegheny Plateau begins to flatten out toward the Ontario Lake Plain. The gradient of the creek decreased, water slowed down, spread out, and low-lying areas were flooded.

Tonawanda Creek

The Tonawanda Creek watershed encompasses approximately 648 square miles (U.S. Army Corps of Engineers, 1983) in Western New York. The stream originates in the Cattaraugus Hills in Wyoming County, flowing northward approximately 22 miles to the Village of Attica, on the Genesee County line. Tonawanda Creek enters Genesee County with a top of bank elevation of approximately 950 feet above sea level in the Town of Alexander (USGS., Attica, NY 7.5' Topographic Map, 1978). From Attica, the main channel of Tonawanda Creek flows generally north through the Town and Village

of Alexander, and turning westward at Kibbe Park, in the City of Batavia. The U.S. Geological Survey (USGS) maintains a gauging station in Batavia, on the north bank of the Creek about 500 feet east of the Walnut Street Bridge. The elevation at this gauging station is 888 feet (USGS., Batavia South, NY 7.5' Topographic Map, rev. 1978). From this point, the channel flows westerly through the City and Town of Batavia, and a portion of the Town of Pembroke. The channel again turns north at Indian Falls in the Town of Pembroke, flowing generally north-northwest through Tonawanda Indian Reservation and on into Erie County. The channel elevation near Route 77 in Indian Falls is approximately 800 feet above sea level.

Numerous small- and medium-sized tributaries flow into the main channel of Tonawanda Creek between the Village of Attica (Wyoming County) and the City of Batavia. In this reach, the creek channel meanders across a broad flood plain ranging in width from approximately one to three miles, reaching its widest point just south of the City of Batavia.

Major tributaries of Tonawanda Creek in Genesee County include Little Tonawanda Creek and Bowen Creek. Little Tonawanda Creek originates in Wyoming County in the Town of Middlebury, flowing north and northwesterly through the Towns of Bethany, Alexander and Batavia until it forms a confluence with the main channel of Tonawanda Creek approximately two miles south of the City of Batavia. Bowen Creek originates in the northwest quadrant of the Town of Alexander. It flows northeasterly, joining the main channel of Tonawanda Creek approximately 830 feet west of Hartshorn Road in the Town of Batavia.

Although the gradient of Tonawanda Creek is generally quite steep in Wyoming County, it flattens out between Attica and the City of Batavia. The Army Corps of Engineers (ACE) noted in its 1983 study that this reach of Tonawanda Creek has limited channel capacity, and low height of the banks. The area of the Tonawanda Creek floodplain between Alexander and Batavia is generally known as "The Flats".

The northern portion of the Village of Attica lies within Genesee County. Areas that have sustained damage in the Genesee County portion of the Village of Attica include commercial properties and Village wastewater treatment plant on Prospect Street. Two people were killed during the 1998 flood in the Village of Attica.

In the Town of Alexander, flooding affects residences on Maplewood and Genesee Streets, and municipal infrastructure in the Village. Log jams and debris accumulate around the piers of the Railroad Avenue Bridge over Tonawanda Creek. Flooding may result from accumulation of debris in culverts under abandoned and active railroad beds in the Towns of Alexander and Batavia. The responsibility for removing this debris is often unclear, depending upon the ownership of the right of way.

In the Town of Batavia, ice jams develop in sharp bends in the Tonawanda Creek channel at Kibbe Park and near Wortendyke Road, flooding roads and damaging

properties and structures. While ice jamming is a seasonal problem, the flooding is generally more widespread because the jams tend to develop during high flow events.

Log jams and woody debris obstruct the stream channel of Little Tonawanda Creek near Linden Road and Mill Road in the Town of Bethany. These obstructions cause localized flooding during high flow events and often affect residences located near the stream channel, requiring evacuation of occupants.

In the City of Batavia, overbank flooding affects low-lying residential areas along Law Street and Walnut Street. Frequent overbank flooding also affects single-family residences and trailer parks located in the flood plain south of Route 5 west of the City of Batavia. In localized areas, this flooding may be made worse by the accumulation of woody debris and silt bars in the channel.

Maps of the floodplain included in this report (see Map 4.1) display a generalized 100-year floodplain and floodway area for Genesee County. The 100-year floodplain is the area subject to inundation by water as a result of a flood that has a one-percent chance of occurring in any given year. These maps were prepared from digitized copies of flood hazard boundary maps and flood insurance rate maps available for the project area.

According to the Federal Emergency Management Agency (FEMA), the floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood (also referred to as the intermediate regional flood or base flood) can be carried without substantial increases in flood heights.

2.4 – A Brief History of the Flooding Problems

The Tonawanda Watershed has a history of annual flooding where the Tonawanda Creek flows through regions of Genesee County and Wyoming County. Floods can be expected yearly between late winter and throughout the spring. Severe flooding during this season is commonly the result of combinations of heavy rains and melting ice or snow.

In addition to climate conditions, geographic factors of the watershed create highly interconnected weather patterns along the Creek. Although the headwaters of the Tonawanda are in the hills of southern Wyoming County, flooding frequently begins where the Tonawanda Creek flows through Attica, as this is where the channel gradient starts to flatten out. As the Creek continues north and west through Genesee County, there is potential for flooding along its banks in the towns of Alexander and Batavia. Thus, flood conditions in Attica act as good predictors of later conditions in areas downstream. Generally, runoff water from Attica can be expected to reach Batavia within 12 to 24 hours.

Lowlands are the most easily flooded areas along the Tonawanda. These include the lowlands between Attica and Alexander and the lowlands between Batavia and Alexander.

The most severe recorded Tonawanda Creek floods have occurred in March and July 1902, throughout the spring of 1916, in January 1929, the defining flood of March 1942 that initiated significant public interest in flood prevention, in June 1989, and in January and July of 1998.

An ice jam at the Chestnut Street Bridge in March 1902 was cause of the first significant recorded flood in the region. In Batavia, West and South Main Streets were completely submerged under water, and were navigable only by boat. As water receded, piles of ice left behind on the street were recorded at up to 16 feet tall (*Batavia Daily News, March 1, 1902*). Supports for the Walnut Street and Chestnut Street Bridges in Batavia were carried away, and the bridges almost did not persevere through the weather. A second major flood of the year would occur in July 1902.

In the spring of 1916, Tonawanda Creek overflows created five significant floods within four months. Recorded as Batavia's greatest flood to the time, March 1916's waters were made severe by the combination of rain with melting snow. Late April brought the second major flood of the Tonawanda in 1916, made more extreme in Alexander and Batavia by the effects of floods upstream. Less than a month later, in mid-May 1916, the third flood of the year would prove the most severe. The New York Central Railroad running through Alexander was cut off, and over two feet of water was reported in Attica. Early June would be the setting for a fourth flood, and early July would be the fifth significant flood of the season. The intense floods of 1916 would lead to the first public discussion of government intervention for flood protection. Although it would never be implemented, a "gravity water system" was proposed in March 1918.

The end of January 1929 was the next case of severe flooding. Flooding in Attica acted as the precipitator of more severe situations in Alexander and Batavia. Greater than the flood of 1902, the rise of water in Batavia became the Town's new high record. The intensity of the flood inspired more talks about the proposed gravity water system and other calls for government relief that had lain dormant since 1918.

The flood in March 1942 was a defining event for the region. Attica was cited as enduring "normal flooding," while effects in Batavia were extreme. (*Batavia Daily News, March 19, 1942*) The additional complication of the Little Tonawanda Creek overflow would lead to a new record flood level for the City of Batavia. Many residents in the southwestern part of the City of Batavia were stranded in their homes for more than three days. Sewers ran at capacity, flooding over a thousand residential basements and incapacitating many houses' heating and fuel sources. The American Red Cross was called in to help deal with repercussions of the flood. In addition to giving temporary aid to flood victims, the American Red Cross found the need to create a permanent agency to deal with the ongoing flood problems of the Tonawanda Creek. Stunned to see a flood of such magnitude and inconvenience, residents prompted

public discussion that led to mandates for national government aid for their region. Although conditions were not severe enough to gain national attention, sufficient constituent demand continued, turning flood relief and prevention into local government topics with priority status.

By 1955, an official flood prevention plan was enacted by the Buffalo District's ACE; areas of the Tonawanda Creek within the city limits of Batavia were widened, and a large wall was erected. The plan estimated protecting from 87 to 88 percent of annual flood damages (*Batavia Daily News, October 9, 1953*). The flood season of 1956 acted as a test of the project's utility; residents of Batavia deemed the project a success and called for further undertakings. However, the construction in Batavia increased the intensity of flooding in places down-stream, and western municipalities such as Pembroke were upset with the changes.

Throughout the 1950s, the 1960s, and the 1970s, the ACE continued with various studies and proposals for further flood prevention plans. Some studies focused on the area between Bushville and Batavia, some focused on the area between Alexander and Batavia, and other plans called for work on the western part of the City of Batavia. Conflicting ideas and constant underlying banter about how to obtain funding left the Creek neglected during this period.

Late June 1989 was the next major instance of flooding along the Tonawanda. A state of emergency was declared in Genesee County after enduring several flash floods. Multiple bridges were destroyed, including two in Alexander. Damages were severe enough that Governor Mario Cuomo requested federal emergency loans for farmers in both Genesee and Wyoming Counties.

The most recent defining flood season of the Tonawanda Creek was in 1998. In January, Tonawanda Creek flooding affected areas within its watershed in large parts of both Genesee County and Wyoming County. Regions of Wyoming County were declared eligible for federal aid in July 1998 following more severe flooding.

The annual flooding of the Tonawanda continues. As recently as March 21, 2003, flooding of the Creek forced road closings in Alexander. The *Batavia Daily News* alluded to the inevitability of the flooding of the Tonawanda by dismissing its gravity as merely a "rite of spring, up there with geese flying south and robins showing up in the yard." (*Batavia Daily News*, March 22, 2003)

2.5 Federal, State and Local Regulation

2.5.1 Federal Regulation

National Flood Insurance Act - 1968

The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. The NFIP is a Federal program

enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance, thus reducing the escalating costs of repairing damage to buildings and their contents caused by floods.

The primary purposes of the National Flood Insurance Act are to:

- Better indemnify individuals for flood losses through insurance;
- Reduce future flood damages through State and community floodplain management regulations; and
- Reduce Federal expenditures for disaster assistance and flood control.

Community Participation

Section 1315 is a key provision that prohibits the Federal Emergency Management Agency (FEMA) from providing flood insurance unless the community adopts and enforces floodplain management regulations that meet or exceed the floodplain management criteria established in Section 1361(c) of the Act. These floodplain management criteria are contained in 44 Code of Federal Regulations (CFR) Part 60, Criteria for Land Management and Use. The emphasis of the NFIP floodplain management requirements is directed toward reducing threats to lives and the potential for damages to property in flood-prone areas. Over 19,700 communities presently participate in the NFIP. These include nearly all communities with significant flood hazards.

When the NFIP was created, the U.S. Congress recognized that insurance for “existing buildings” constructed before a community joined the Program would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these flood-prone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. Under the NFIP, “existing buildings” are generally referred to as Pre-FIRM (Flood Insurance Rate Map) buildings. These buildings were built before the flood risk was known and identified on the community’s FIRM. Currently about 26 percent of the 4.3 million NFIP policies in force are Pre-FIRM subsidized compared to 70 percent of the policies being subsidized in 1978.

In exchange for the availability of subsidized insurance for existing buildings, communities are required to protect new construction and substantially improved structures through adoption and enforcement of community floodplain management ordinances. The 1968 Act requires that full actuarial rates reflecting the complete flood

risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as “Post-FIRM” buildings.

The authors of the original study of the NFIP thought that the passage of time, natural forces, and more stringent floodplain management requirements and building codes would gradually eliminate the number of Pre-FIRM structures. Nevertheless, modern construction techniques have extended the useful life of these Pre-FIRM buildings beyond what was originally expected. However, their numbers overall continue to decrease. The decrease in the number of Pre-FIRM buildings has been attributed to a number of factors such as, severe floods in which buildings were destroyed or substantially damaged, redevelopment, natural attrition, acquisition of flood damaged structures, as well as flood control projects.

Mapping Floodplains

In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP identifies and maps the Nation’s floodplains. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance.

Flood Disaster Protection Act - 1973

Early in the NFIP’s history, the Federal Government found that providing subsidized flood insurance for existing buildings was not a sufficient incentive for communities to voluntarily join the NFIP nor for individuals to purchase flood insurance. Tropical Storm Agnes in 1972, which caused extensive riverine flooding along the east coast, proved that few property owners in identified floodplains were insured. This storm cost the Nation more in disaster assistance than any previous disaster. For the Nation as a whole, only a few thousand communities participated in the NFIP and only 95,000 policies were in force.

As a result, Congress passed the Flood Disaster Protection Act of 1973. The 1973 Act prohibits Federal agencies from providing financial assistance for acquisition or construction of buildings and certain disaster assistance in the floodplains in any community that did not participate in the NFIP by July 1, 1975, or within 1 year of being identified as flood-prone.

Additionally, the 1973 Act required that Federal agencies and federally insured or regulated lenders had to require flood insurance on all grants and loans for acquisition or construction of buildings in designated Special Flood Hazard Areas (SFHAs) in communities that participate in the NFIP. This requirement is referred to as the Mandatory Flood Insurance Purchase Requirement. The SFHA is that land within the floodplain of a community subject to a 1 percent or greater chance of flooding in any given year, commonly referred to as the 100-year flood.

The Mandatory Flood Insurance Purchase Requirement, in particular, resulted in a dramatic increase in the number of communities that joined the NFIP in subsequent years. In 1973, just over 2,200 communities participated in the NFIP. Within 4 years, approximately 15,000 communities had joined the Program. It also resulted in a dramatic increase in the number of flood insurance policies in force. In 1977, approximately 1.2 million flood insurance policies were in force, an increase of almost 900,000 over the number policies in force in December of 1973.

Nation Flood Insurance Reform Act - 1994

Following the multi-billion dollar flood disaster in the Midwest in 1993, Congress enacted the National Flood Insurance Reform Act, which amended the 1968 Act and the 1973 Act. The 1994 Act included measures, among others, to:

- Increase compliance by mortgage lenders with the mandatory purchase requirement and improve coverage;
- Increase the amount of flood insurance coverage that can be purchased;
- Provide flood insurance coverage for the cost of complying with floodplain management regulations by individual property owners (Increased Cost of Compliance coverage);
- Establish a Flood Mitigation Assistance grant program to assist States and communities to develop mitigation plans and implement measures to reduce future flood damages to structures;
- Codify the NFIP's Community Rating System; and
- Require FEMA to assess its flood hazard map inventory at least once every 5 years.

Funding for the NFIP is through the National Flood Insurance Fund, which was established in the Treasury by the 1968 Act. Premiums collected are deposited into the fund, and losses and operating and administrative costs are paid out of the fund. In addition, the Program has the authority to borrow up to $1.5 billion from the Treasury, which must be repaid along with interest. Until 1986, Federal salaries and program expenses, as well as the costs associated with flood hazard mapping and floodplain management were paid by an annual appropriation from Congress. From 1987 to 1990, Congress required the Program to pay these expenses out of premium dollars. When expressed in current dollars, $485 million of policyholder premiums were transferred to pay salary and other expenses of the Program. Beginning in 1991, a Federal policy fee of $25 dollars, which was increased to $30 in 1995, is applied to most policies in order to generate the funds for salaries, expenses, and mitigation costs.

Community Rating System

The National Flood Insurance Program's (NFIP) Community Rating System (CRS) was implemented in 1990 as a program for recognizing and encouraging community floodplain management activities that exceed the minimum NFIP standards. The

National Flood Insurance Reform Act of 1994 codified the Community Rating System in the NFIP. Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that meet the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance.

There are ten CRS classes: class 1 requires the most credit points and gives the largest premium reduction; class 10 receives no premium reduction. The CRS recognizes 18 creditable activities, organized under four categories numbered 300 through 600: Public Information, Mapping and Regulations, Flood Damage Reduction, and Flood Preparedness.

The CRS application process has been greatly simplified over the past several years based on community comments to make the CRS more user friendly as possible. Extensive technical assistance is also available for communities who request it.

Community application for the CRS is voluntary. Any community that is in full compliance with the rules and regulations of the NFIP may apply for a CRS classification better than class 10. The applicant community submits documentation that it is doing activities recognized in the CRS. A community applies by sending completed application worksheets with appropriate documentation to its FEMA Regional Office.

A community's CRS classification is assigned on the basis of a field verification of the activities described in its application. These verifications are conducted by the Insurance Services Office, Inc. (ISO), an organization that provides rating, actuarial, and forms writing services to the insurance industry. ISO is the entity that has been conducting community grading for fire insurance for many years and is now performing the grading of communities under the newly implemented Building Code Effectiveness Grading Schedule. This organization's resources provide an efficient means to carry out the field work involved with the CRS.

Disaster Mitigation Act - 2000

The Disaster Mitigation Act (DMA) of 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988. The DMA authorizes the creation of a pre-disaster mitigation program to make grants to State, local and tribal governments. It also includes a provision that defines mitigation planning requirements for State, local and tribal governments. This new section (Section 322) establishes a new requirement for local and tribal mitigation plans; authorizes up to 7 percent of the HMGP funds available to a State to be used for development of State, local and tribal mitigation plans; and provides for States to receive an increased percentage of HMGP funds from 15 percent to 20 percent if, at the time of the disaster declaration, the State has in effect a FEMA approved State Mitigation Plan that meets the criteria established in regulations.

Repetitive Loss

Repetitive loss structure is a term that is usually associated with the National Flood Insurance Program (NFIP). For Flood Mitigation Assistance (FMA) program purposes, this is a structure, covered by a contract of flood insurance under the NFIP, that has suffered flood damage on two or more occasions over a 10-year period ending on the date when a second claim is made, in which the cost to repair the flood damage, on average, equals or exceeds 25% of the market-value of the structure at the time of each flood loss event. For the Community Rating System (CRS) of the NFIP, a repetitive loss property is any property, which the NFIP has paid two or more flood claims of $1,000 or more in any, given 10-year period since 1978. A repetitive loss structure is important to the NFIP, since structures that flood frequently put a strain on the flood insurance fund. It should also be important to a community because residents' lives are disrupted and may be threatened by the continual flooding.

A Community that a prepares a mitigation plan for the FMA program is required to include a map showing the location of all repetitive loss structures and address ways to reduce or eliminate the damages. The community should also identify whether the structures are residential, commercial or industrial uses, since mitigation actions are frequently dependent on the use of the structure. Information regarding whether a community has any repetitive loss structures may be obtained from the State NFIP Coordinator's Office or the FEMA Regional Office.

Common sources of funding which can be used to mitigate repetitive loss structures are FMA funds and Hazard Mitigation Grant Program (HMGP) funds. Increased Cost of Compliance (ICC) funds for substantially damaged structure covered by flood insurance can also be used to mitigate repetitive loss structures.

Since actual losses are not limited to those structures that are in the NFIP or those that are at risk to only flood damage, communities are encouraged to identify any structure that is susceptible to the hazards included in the plan and may have been repeatedly damaged. This helps to ensure that the community becomes disaster resistant. Communities may determine the location of repetitive loss structures by reviewing the records of their local emergency responders, by relying on visual records after a disaster, or by surveys of the community.

Some communities have been concerned with including information on repetitive loss structures in the mitigation plan because of "Privacy Act" issues. As long as the plan only includes the address of each structure, a note that the particular address is a repetitive loss structure, and an accompany map showing the location of the hazard and the structure, this should not be an issue.

2.5.2 State Regulation

State Floodplain Management Role

New York State also has a role in the NFIP. Each State has designated an NFIP State Coordinating Agency as a point of contact for the NFIP, and in New York, that agency is the Department of Environmental Conservation (DEC).

The Department's Flood Protection Bureau and its Regional Floodplain Management Coordinators act as the liaison between FEMA and local municipalities. Also, Article 36 of the Environmental Conservation Law directs the Department to give municipalities any necessary technical assistance to qualify them for entrance into the NFIP. Following is a list of DEC activities related to the Program:

- explain NFIP requirements for Program eligibility to local officials;
- assist in the preparation of local floodplain management regulations;
- provide model regulations;
- if requested by the community, attend local hearings on regulations to assist in answering questions regarding the NFIP;
- assist local officials in understanding flood insurance studies and maps;
- assist the local administrator in permit review;
- be the repository of data and calculation used in the preparation of flood insurance studies; and
- monitor community compliance with the NFIP.

A community may request assistance in any of these areas by contacting the appropriate DEC Regional Office or the Flood Protection Bureau in Albany.

Article 36, Environmental Conservation Law (ECL)

Article 36, ECL, is the basis for the Department's action in relation to the National Flood Insurance Program. The federal Flood Disaster Protection Act of 1973, among other provisions, requires the purchase of flood insurance in connection with receiving any form of federal financial assistance for acquisition or construction purposes in identified special flood hazard areas. The State Legislature recognized that if a flood-prone community did not join the NFIP or did not maintain its eligibility, federal grants or mortgages for purchasing or repairing structures in the special flood hazard area would be denied. Therefore, the Legislature directed that: (1) the DEC provide technical assistance to local governments in the preparation of programs necessary to qualify for the NFIP; (2) in the event that a local government fails to take the steps necessary to join the NFIP, drops out or is suspended from the Program, the DEC has the authority to invoke floodplain management regulations and to enroll the community; and (3) State agencies take actions that minimize flood hazards and losses in connection with state-owned facilities and programs.

As a result of this mandate, the DEC promulgated two sets of regulation that spell out how these actions are to be accomplished. They can be found in Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, under Part 500 and Part 502.

Part 500 - State Regulation in Communities

The Department of Environmental Conservation, under the authority of Article 36, ECL, may institute a floodplain development permit program in a community that fails to qualify for the National Flood Insurance Program on its own. When a community is first notified by FEMA that it has special flood hazard areas, it has one year from the notification date to qualify for the NFIP before sanctions are applied. Also, when a community moves from the Emergency Phase to the Regular Phase of the Program, it usually has to add new provisions to its local floodplain management law. It has six months after notice from FEMA to do this. IF the community does not take the steps necessary to qualify by three months before the deadline, the DEC may then institute Part 500 regulations and enroll the community in the NFIP. The DEC may also institute Part 500 regulations in any community that withdraws from the NFIP or has its eligibility suspended.

To implement Part 500 regulations in a community, the DEC must publish, in a newspaper having general circulation in that community, a notice containing the following: (1) a statement that the community may not be or is not qualified for eligibility in the NFIP: (2) a statement that the DEC will administer the Part 500 regulations if the community does not qualify; (3) a statement that the Part 500 regulation will take precedence over less restrictive local laws, ordinances, regulation or codes; and (4) the date, time and location of a public meeting to be held in or near the community within ten days of publication of the notice at which interested parties may appear for information purposes. The regulations become effective in the community on the date specified in the Commissioner's "Order of Applicability". The DEC submits to FEMA, on behalf of the community, an application for eligibility. When FEMA notifies the Department that the community is eligible, a notice of such is published in the local newspaper. The regulations apply only in special flood hazard areas in the community as shown on the Flood Hazard Boundary Map or Flood Insurance Rate Map.

When a community is under Part 500 regulations, no one may undertake any project in a special flood hazard area without applying and receiving a permit from a DEC Regional Office. "Project" has a broad definition here and includes: construction of a new structure; installation of any sewer, gas or water main or electrical transmission line or other service line or facility; the improvement, alteration, repair, reconstruction or restoration of an existing structure including but not limited to the cutting, modification, relocation, rearrangement or removal of any wall, flood, roof, beam, support or part thereof that would affect the loading structural integrity or flood resistance of such structure; the emplacement of pilings or a foundation or the affixing of a manufactured home (mobile home) to a permanent site. It also includes the following: paving, mining, drilling, dredging, clearing, grading, filling or depositing; excavation for basement

footings, piers or a foundation; the erection of temporary forms; installation of pilings under proposed sub-surface footings and the subdivision of land. It does not include usual farming and gardening activities.

A community under Part 500 regulations may assume local administration of the NFIP from DEC. For instructions on the requirements contact DEC flood Protection Bureau in Albany.

Part 502 - State Agency Compliance

Under Article 36 of the Environmental Conservation Law, State agencies are directed to minimize flood hazards and losses in connection with State-owned and State financed buildings, roads and other facilities. The Part 502 regulations contain the criteria that State agencies must meet. These criteria meet or exceed the floodplain management criteria of the National Flood Insurance Program and ensure that State projects will not negatively impact a community's special flood hazard areas. Contact the DEC Flood Protection Bureau in Albany or a DEC Regional Floodplain Coordinator for more information about these regulations.

2.5.3 Local Land Use Regulation and Control in the Flood Zone

The Town of Pembroke has 856.5 acres of flood zone in the Tonawanda Creek watershed with much of it, 88.2%, having an agricultural or low density residential designation. However, a there is an area of 86.1 acres that has a higher density residential designation. The town may want to re-examine this zoning to ensure that higher density residential development does not occur in flood prone areas. As Pembroke experiences more rural development, as well as development in the Thruway interchange area, it is important to enforce appropriate building codes for anyone wishing to build in a flood prone area.

Table 2.3 - Land Use Regulation and Control in Genesee County

Municipality (Mun)	Mapped Flood Zone in Mun (in acres)*	Ag/Residential		Agricultural		Commercial/ business		Commercial/ industrial (mixed)		Higher Density Residential		Industrial		Lower Density Residential		No Zoning		Open space		Special Incentive Zone	
		Amt (acres)	% of Flood Zone	Amt (acres)	% of Flood Zone	Amt (acres)	%of Flood Zone	Amt (acres)	% of Flood Zone	Amt (acres)	% of Flood Zone	Amt (acres)	% of Flood Zone	Amt (acres)	% of Flood Zone	Amt (acres)	% of Flood Zone	Amt (acres)	%of Flood Zone	Amt (acres)	% of Flood Zone
Alabama T**	304.570	1.590	0.5%															304.570	100.0%		
Alexander T	3712.650	3681.700	99.2%					11.180	0.3%	0.560	0.0%	1.440	0.0%	17.770	0.5%						
Alexander V	64.730	2.560	4.0%			1.410	2.2%			4.450	6.9%	47.810	73.9%					8.500	13.1%		
Attica V***	25.900					25.900	100.0%														
Batavia C	688.660	1.490	0.2%			68.850	10.0%					241.050	35.0%	317.830	46.2%			39.900	5.8%	19.540	2.8%
Batavia T	4020.050	3114.590	77.5%			254.930	6.3%			2.370	0.1%	646.590	16.1%	1.570	0.0%						
Bethany T	874.870	874.870	100.0 %																		
Darien T	49.400													49.400	100.0%						
Leroy T	1198.850	853.040	71.2%			40.000	3.3%			9.720	0.8%	110.750	9.2%	185.330	15.5%						
Leroy V	129.090					1.230	1.0%			0.110	0.1%	13.800	10.7%	48.730	37.7%			65.210	50.5%		
Pavilion T	764.820	654.510	85.6%									24.550	3.2%	85.760	11.2%						
Pembroke T	856.490	289.450	33.8%	465.660	54.4%	15.290	1.8%			86.090	10.1%										
Stafford T***	91.790	91.790	100.0 %																		
Tonawanda Res.	788.690															788.690	100.0%				
County Total	**13570.560**	**9565.590**	**70.5%**	**44.097**	**0.3%**	**407.610**	**3.0%**	**1.059**	**0.0%**	**103.300**	**0.8%**	**1085.990**	**8.0%**	**706.390**	**5.2%**	**74.686**	**0.6%**	**418.180**	**3.1%**	**1.851**	**0.0%**

* Flood zones in Tonawanda or Oatka watersheds only; town figures exclude any villages contained within; amounts less than one one-hundredth of an acre were not included
** Does not include the Tonawanda Reservation
*** Genesee County portion only
**** Town of Stafford is not completely mapped

2.6 - National Flood Insurance Program (NFIP) Participation

In order to gain the full benefit of the NFIP, local officials must be aware of key aspects of the program. Table 2.4 shows some questions and/or inconsistencies that came up during the municipal interview process.

First, in order to participate in the NFIP, a municipality MUST have a Flood Prevention Ordinance (FPO). A model ordinance was prepared several years ago by the DEC and this is essentially what most communities have adopted as part of their zoning regulations or local laws. However, some municipalities in the study area are unaware that such an ordinance is on the books in their municipality.

Second, some municipalities are not aware that they participate in the NFIP. In reality, all participate (with the exception of Middlebury). Although some local officials are unsure of their participation status, or the program in general, the local participation status has been cross-checked on the Federal Insurance Administration's Community Status List (see Table 2.5), available from FEMA.

Third, every community that participates in the NFIP has a Flood Plain Administrator identified in their local FPO. In some cases it is the Town Board, but in most cases it is the Zoning Enforcement Officer or Building Inspector. Whether or not the person is trained depends on whether or not they attended training sessions provided by NYSDEC. The FPO issues floodplain development permits for activities in the floodplain.

Finally, it should be noted that although some municipalities are unaware of their NFIP status and other issues surrounding this program, in some cases it is simply a case of not asking the right municipal official. However, it still needs to be stressed that there are some towns where the responsible official is unaware of the program and the local ordinances that back it up. This issue needs attention at the local level.

Table 2.4 - National Flood Insurance Program Participation in the Oatka and Tonawanda Creek Watersheds

Municipality	Participate in NFIP?	NFIP Community #	FIRM Date	Rebuilding Policy?	Trained Floodplain Administrator?	Notes/Questions/ Inconsistencies
Alabama T	Yes	361067C	11/18/1983*	No	No	town was not sure if it participated
Alexander T	Yes	360277	5/4/87	No	No	town indicated that it did not have a FPO
Alexander V	Yes	361496	5/4/87	No	No	village indicated that it did not have a FPO
Attica T	Yes	360940	4/30/86	No	No	
Attica V	Yes	360985	7/3/86	No	Yes	
Batavia C	Yes	360279	9/16/82	Yes	Yes	
Batavia T	Yes	360278	1/17/85	Yes	No **	town was not sure if it participated
Bennington T	Yes	360941C	12/23/1983*	No	Yes	
Bethany T	Yes	361138	9/24/1984*	Yes	Yes	
Covington T	Yes	360942B	12/23/1983*	No	No	town indicated that it did not participate in NFIP and had no FPO
Darien T	Yes	361140A	7/6/1984*	No	No	town indicated that it did not participate in NFIP and did not think it had a FPO
Gainesville T	Yes	360944B	12/23/1983*	No	No	
Leroy T	Yes	360280	9/14/1979*	Yes**	Yes	
Leroy V	Yes	360281	8/3/81	Yes**	Yes	
Middlebury T	No		No	No	No	
Orangeville T	Yes	360945	12/23/1983*	No	No	town did not think it participated and indicated that it did not have a FPO
Pavilion T	Yes	360282B	2/27/1984*	No	Yes **	town indicated that it did not participate in NFIP
Pembroke T	Yes	360283	1/20/1984*	No	No	town indicated that it did not have a FPO
Sheldon T	Yes	360949B	12/23/1983*	No	No	town indicated that it did not have a FPO
Stafford T	Yes	361118A	7/16/82			
Tonawanda Reservation	No		?***	N/A	No	
Warsaw T	Yes	360950B	12/23/1983*	No**	Yes	
Warsaw V	Yes	360951	11/18/81	No**	Yes	
Wyoming V	Yes	360952	8/3/81	No	No	village indicated that it did not participate in NFIP and had no FPO

* Characterized by FEMA as minimally flood-prone, therefore no elevation on FIRM

** unsure

***The Reservation has mapped floodplains, but source of floodplain mapping unclear

Table 2.5 NFIP Information - Genesee County				
Communities	**# of Policies**	**# of Claims**	**Insurance in Force**	**Total Losses Paid since 1978**
Alabama, Town of	2	1	$97,000	$0
Alexander, Town of	7	8	$620,900	$79,510
Alexander, Village of	6	6	$311,900	$65,593
Batavia, City of	369	32	$23,805,400	$40,266
Batavia, Town of	39	11	$2,317,800	$26,848
Bethany, Town of	3	0	$263,300	$0
Darien, Town of	2	0	$201,000	$0
LeRoy, Town of	10	3	$1,026,700	$14,843
LeRoy, Village of	6	2	$330,600	$4,879
Pavilion, Town of	4	1	$213,800	$16
Pembroke, Town of	6	0	$323,700	0
Stafford, Town of	2	1	$121,000	$0
Tonawanda Reservation	N/A	N/A	N/A	N/A

Source: Federal Emergency Management Agency

3 – Planning Process

This plan is a result of the commitment of the participating municipalities and the efforts of the Joint Flood Mitigation Planning Committee, along with federal, state, regional, county, and municipal input. Each participating municipality adopted a supporting resolution at the beginning of the planning process (see Appendix A). The Planning Committee was comprised of representatives from public agencies and municipalities (see Appendix B).

Coordination between a number of agencies at the local, county, regional, state, and federal levels along with private interests was initiated to insure that the issues affecting both residents and businesses in Genesee County would be included in the development of the flood mitigation action plan.

This chapter describes the work done cooperatively by multiple agencies at the meetings, activities done to insure public awareness and participation, and the process by which the plan was reviewed and amended.

3.1 - Flood Mitigation Planning Committee

The Planning Committee met monthly on the fourth Tuesday, beginning in November 2002. The minutes of the Planning Committee meetings can be found in Appendix B. The following is a brief summary of the monthly meetings:

November 25, 2002 - The Committee held its initial meeting to discuss the overall purpose of the plan (including preliminary goals and objectives) and begin developing a process to involve the public, municipalities and identify flood hazard areas.

It was decided that each municipality would get a letter of invitation that would identify participating municipalities, identify a key contact person at each municipality, identify potential municipal representatives to Planning Committee, and identify other key people in each municipality.

January 28, 2003 - The Committee reviewed project progress, the property owner survey, the floodway delineation, list of critical facilities, list of county and municipal contacts, and public outreach. A draft list of questions and contacts for municipalities was distributed for comment. Information and data gathering sessions with key county agencies was discussed.

February 25, 2003 - The Committee reviewed project progress, municipal contacts, and the process for the first series of public meetings. The use of the Genesee County web site as the project web site was announced. The coordination with the Oatka Creek Watershed Committee for public meetings was discussed.

March 25, 2003 - The Committee reviewed project progress, municipal contacts and resolutions, public meeting logistics, and the draft prioritization criteria for site hazard

evaluation. Completed interviews with state and county agencies and municipalities was discussed. The process for historical flood analysis was discussed.

April 22, 2003 - The Committee reviewed project progress, the outcome of the public meetings, risk assessment issues, the final prioritization criteria for site hazard evaluation, initial survey outcomes, and draft flood mitigation plan goals and objectives.

May 27, 2003 - The Committee reviewed project progress, initial survey analysis, the dam inventory, and the list of prioritized sites for site hazard evaluation.

June 24, 2003 - The Committee reviewed project progress, draft sections of the report, and discussed potential flood mitigation action steps.

July 22, 2003 - The Committee reviewed the draft report.

August 26, 2003 – The Committee developed an outline for the Executive Summary, considered final Mitigation Plan distribution, and considered the county and municipal Mitigation Plan adoption process.

3.2 – Coordination among Relevant Agencies and Municipalities

In order to coordinate the activities of the Joint Flood Mitigation Project and to get a better understanding of the flooding issues in Genesee and Wyoming Counties interviews were set up with all associated federal, state, and county agencies as well as informed members of each participating municipality.

The following is a list of state and federal agency interviews that assisted in coordinating activities and identifying issues and potential solutions related to the project:

State

1. Agency: NYS Department of Environmental Conservation, Permitting
   Date: June 9, 2003
   Person(s) Interviewed: Robert Shearer (Region 8), Steve Deleski (Region 9)

2. Agency: NYS Department of Environmental Conservation, Flood
   Date: March 4, 2003
   Person(s) Interviewed: Paul Schmied (Region 8), Rebecca Anderson (Region 9)

Federal

1. Agency: Army Corps' of Engineers
   Date: May 15, 2003
   Person Interviewed: Richard K. Theobald

The following county agencies were permanent members of the Planning Committee: Emergency Management Office, Soil & Water Conservation, and Planning. Additionally, the following is a list of county agency interviews that assisted in coordinating activities and identifying issues and potential solutions related to the project:

Genesee County

1. Agency: Genesee County Soil & Water Conservation District
   Date: January, 17, 2003
   Person(s) Interviewed: George Squires (Manager)

2. Agency: Genesee County Emergency Management Office
   Date: January 17, 2003
   Person(s) Interviewed: Roger Lander (Director)

3. Agency: Genesee County Planning
   Date: January 17, 2003
   Person(s) Interviewed: James Duval (Director), Felipe Oltremari (Senior Planner)

4. Agency: Genesee County Highway Department
   Date: February 25, 2003
   Person(s) Interviewed: Tim Hens (Highway Superintendent)

5. Agency: Genesee County Historian
   Date: February 25, 2003
   Person(s) Interviewed: Sue Conklin (County Historian/Records Management Officer)

6. Agency: Genesee County Health Department
   Date: March 4, 2003
   Person(s) Interviewed: Christopher Szwagiel (Director)

All participating municipalities in the Tonawanda and Oatka Creek Watershed in Genesee County have at least one representative on the Planning Committee. Additionally, the following meeting was held with the Town of Pembroke to gain a better understanding of flooding issues using a standard interview methodology (see Appendix C):

Municipality: Town of Pembroke
Date and Time: March 27, 2003, 9:00 AM
Persons Interviewed: Ed Beideck (Supervisor), Jim Duschen (Highway Superintendent), Jim Mallory (Councilmember)

3.3 – Public Involvement and Outreach

There were two series of public meetings for the project. The first series of public meetings were held on the following dates and locations:

- March 27, 2003, 7:00-9:00pm, Warsaw, New York
- April 1, 2003, 7:00-9:00pm, Pavilion, New York
- April 3, 2003, 7:00-9:00pm, LeRoy, New York
- April 8, 2003, 7:00-9:00pm, Alexander, New York

The meetings were organized to provide information, benefits of flood mitigation planning, provide findings of the initial hazard assessment, and to provide a forum for input into the plan. The information portion of the meeting included definitions of watersheds, flooding, floodplains, floodzones and base flood elevation, and floodplain management and a discussion of funding, the National Flood Insurance Program (NFIP), the Community Rating System (CRS), intermunicipal cooperation, damage reduction and safety, erosion and sediment control, critical facilities, and flooding risks.

The issues raised at the meetings included debris clearing and habitat disruption, streambank erosion and restoration, siltation, culvert maintenance and sizing, dams, education and awareness, flooding in the tributaries, development and increased impervious surfaces, creek straightening, increased flooding in recent years, buffer zones and the roles of the ACE (see Appendix D for a full list of issues raised).

The second series of public meetings were held on the following dates and locations:

- August 19, 2003, 7:00-9:00pm, Attica High School, Attica
- August 21, 2003, 7:00-9:00pm, Pavilion Town Hall, Pavilion

These meetings were held to update the public on the progress of the Joint Flood Mitigation Plan and raise awareness of the planning process and flooding in general. Representatives from the two counties, Genesee/Finger Lakes Regional Planning Council, and Lu Engineers were there to present the findings of the report and answer public questions.

The meetings were publicized in the Batavia Daily News, the Warsaw Country Courier, and the Rochester Democrat and Chronicle. Approximately 25 people attended between the two meetings.

3.4 – Review, Revision, and Adoption of the Plan

4 – Flood Hazards/Risk Assessment

Areas prone to frequent flooding exist throughout the Town of Pembroke. Flood hazards include problems caused by flooding to existing development and potential problems that will occur if development in specified flood prone areas is permitted. These hazards pose threats to safety and property regardless of whether or not there is development present on the land.

A number of sources were used to identify and determine the type and severity of flooding throughout the Tonawanda Creek Watershed. Initially, the Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) provided by the ACE through FEMA were utilized to gain a basic delineation of the flood hazard areas.

However, the FIRM and FIS were based on hydraulic analyses that assumed there would be unobstructed flow of floodwaters through the channels of the creeks and their tributaries. Any development or encroachment in the floodplain will increase the height of floodwaters and the possibility of damage to even more properties than those shown on the FIRM.

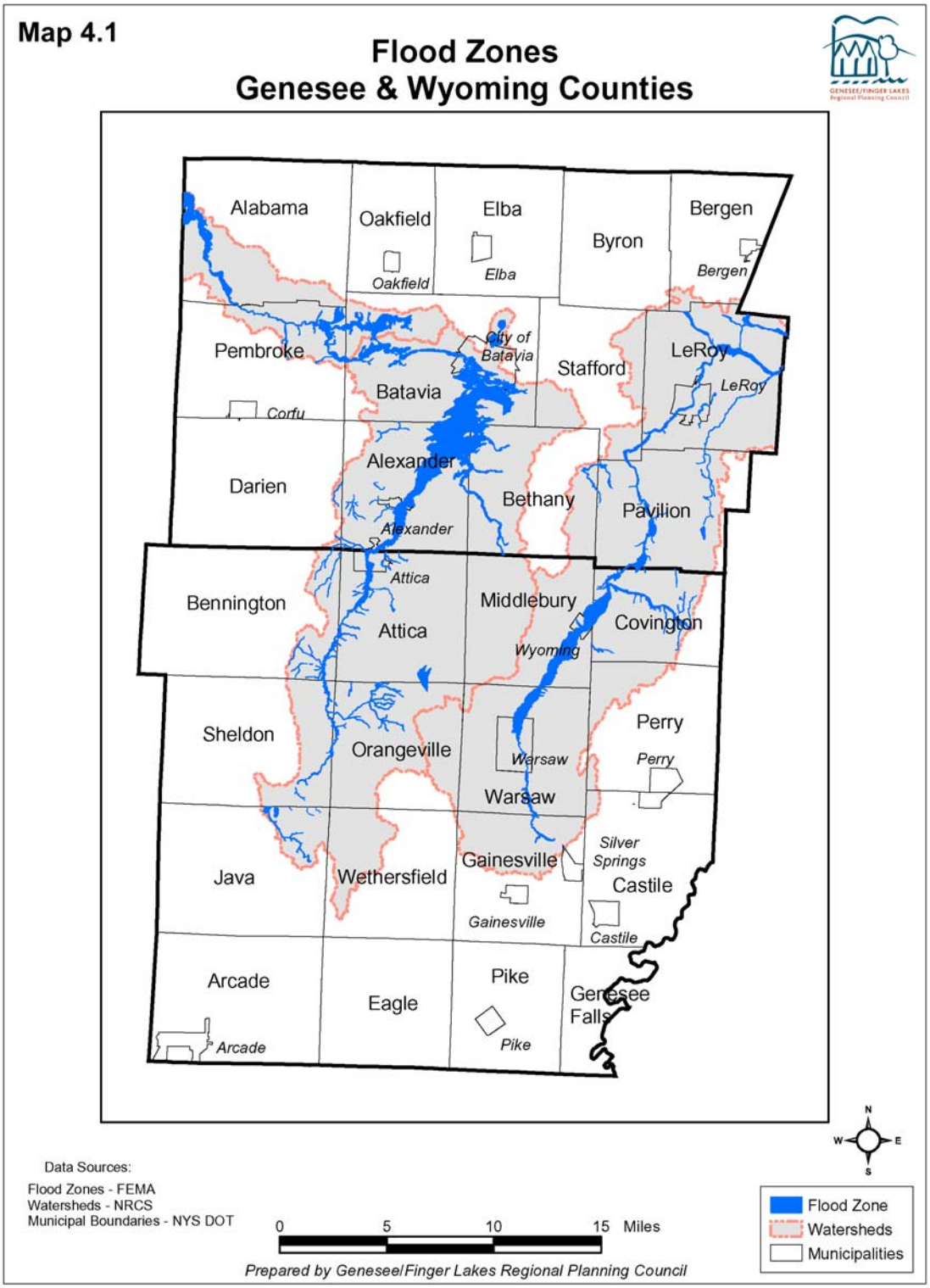
For this reason, other methods were used to identify flood hazard areas not currently identified on the FIRM or FIS. These methods included:

- A parcel survey developed by the Planning Committee (see Section 4.8);
- information from local, county and state agencies gathered at Planning Committee meetings and interviews (see Chapter 3);
- residents' input at the public information forums;
- aerial photographs of priority sites provided by the Genesee County SWCD; and
- previous studies and reports.

4.1 - FIRM Determined Base Flood Elevation

The most widely distributed flood map product is the Flood Insurance Rate Map (FIRM). Flood risk information presented on FIRMs is based on historic, meteorologic, hydrologic, and hydraulic data, as well as open-space conditions, flood control works, and development. To prepare FIRMs that illustrate the extent of flood hazard in a flood prone community, FEMA conducts engineering studies referred to as Flood Insurance Studies (FISs). Using information gathered in these studies, FEMA engineers and cartographers delineate Special Flood Hazard Areas (SFHAs) on FIRMs. SFHAs are those areas subject to inundation by a flood that has a 1-percent or greater chance of being equaled or exceeded during any given year. This type of flood is referred to as a base flood. A base flood has a 26-percent chance of occurring during a 30-year period, the length of many mortgages. The base flood is a regulatory standard used by Federal agencies, and most states, to administer floodplain management programs, and is also used by the NFIP as the basis for insurance requirements nationwide.

The Town of Pembroke has FIRM determined base flood elevations (see Map 4.1). It is important to note that FIRM map extent of flooding assumes no stream channel obstructions. This is not the case with the Tonawanda Creek channel.



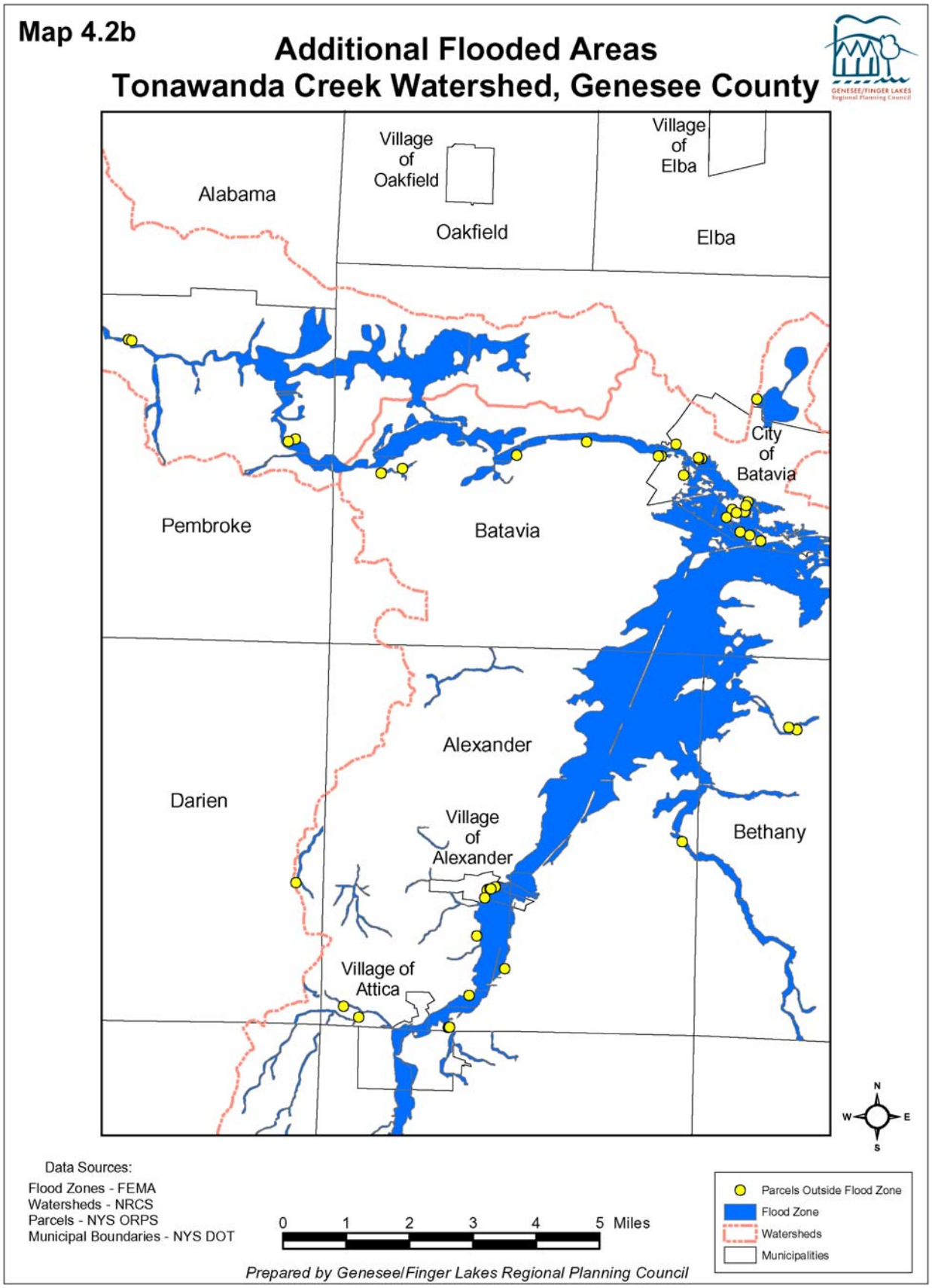
4.2 – Additional Flooded Areas

The flood hazard areas described below in Table 4.1 and Maps 4.1, were determined based on the residential, agricultural and commercial/industrial surveys (see Section 4.8) and discussions of the Planning Committee and interviews held with federal, state and county agencies and municipal representatives (see Chapter 3).

The purpose of investigating areas outside the FIRM designated floodplain is to gain a better understanding of areas at risk due to riverine flooding, overland flooding/stormwater runoff, and ponding.

Table 4.1 - Additional Flooded Areas

	Total	In Flood Zone	Damage	Out of Flood Zone	Damage
Genesee County	**179**	**118**		**61**	
City of Batavia	71	57	B,1,P	14	B,1,P
Alabama	0	0		0	
Alexander	15	6	B	9	B,P
Batavia	33	26	B,P,S	7	B
Bethany	8	6	B,1,P	2	P,S
Darien	1	0		1	P
LeRoy	11	6	B,P	5	P,B
Pavilion	14	5	B,C,P	9	B
Pembroke	11	7	P	4	P
Stafford	1	1	B	0	
V. of Alexander	9	3	B,C,P	6	B,1
V. of Attica	0	0		0	
V. of LeRoy	5	1	B	4	B
B=Basement					
Y=Yard					
S=Structural					
C=Crops					
P=Property					
1= 1st Floor					


Map 4.2b
Additional Flooded Areas
Tonawanda Creek Watershed, Genesee County
Village of Oakfield
Village of Elba
Alabama
Oakfield
Elba
City of Batavia
Pembroke
Batavia
Alexander
Darien
Village of Alexander
Bethany
Village of Attica
N
W
E
S
Data Sources:
Flood Zones - FEMA
Watersheds - NRCS
Parcels - NYS ORPS
Municipal Boundaries - NYS DOT
0 1 2 3 4 5 Miles
Parcels Outside Flood Zone
Flood Zone
Watersheds
Municipalities
Prepared by Genesee/Finger Lakes Regional Planning Council

4.3 General Flood Hazards

4.3.1 Structural Damage

Several factors related to flooding may cause structural damage. Structures such as homes and businesses may be swept off their foundations and carried downstream by fast-moving flood waters. Structures such as bridges and houses may also be damaged by impacts from debris carried in fast-moving flood waters. Flood waters also erode and undercut streambanks, threatening foundations of nearby structures. Wood structures that are flooded for long periods of time may develop dry rot as a result of waterlogging.

4.3.2 Flood Plain Development and Impervious Surface

Flood plains and associated wetlands have a critical role in maintaining the overall flow regime in riverine systems. A river overflows into the flood plain when it exceeds bankfull discharge. Vegetation and organic litter, such as fallen leaves and branches, trap precipitation and release the water slowly into streams after a storm event. However, impervious surfaces such as pavement, building roof tops, and other hard surfaces immediately shed the water which falls on them. When land is cleared of vegetative cover and organic litter, and when impervious surface increases in a watershed, rainfall moves more quickly into streams. As this occurs, the frequency and height of flood-plain overflow both increase, often significantly affecting land uses in or near the flood plain.

No significant development of the Tonawanda Creek floodplain has occurred in the Town of Pembroke.

4.3.3 Debris

The accumulation of large woody debris in the channels of Tonawanda Creek and Oatka Creek was cited as the single most important cause of localized flooding in both study areas. Woody debris accumulates in the stream channels mainly due to water flow undercutting the stream bank. Live trees fall into the channel if their root bases are eroded away. Trees with large trunks and root masses partially obstruct flow in the channel, causing more small debris to accumulate around the larger masses. Other sources of woody debris include beaver activity along the banks, and timber harvesting operations that leave small woody debris scattered in a flood prone area.
In a recent study to determine the potential for stream channels to generate woody debris large enough to damage bridges, Diehl and Bryan (1993) concluded that bank instability seems to be the channel characteristic most useful in identifying channel reaches with high potential for production of large woody debris. Stream channels with high and steep banks, erodible bank materials, and a history of channel widening or lateral migration are capable of generating large quantities of woody debris.

4.3.4 Siltation

Siltation is a general term referring to fluvial (river-transported or deposited) sediment. Siltation results when stream banks are eroded and sediments are transported and deposited downstream in the channel. Siltation results when upland areas are farmed, and soil erodes from field surfaces. Other land uses such as timber harvesting, road building and other land development activities cause silt to be deposited in stream channels when it is not properly contained.

In both Tonawanda and Oatka Creeks, gravel and sediment washes into the stream channels from unvegetated road cuts, and steep hillsides. Excessive siltation in gravel beds can adverse affect the quality of salmonid spawning areas. This is particularly an issue on Oatka Creek, which is known as an important salmonid fishery resource.

4.3.5 Culvert Maintenance and Sizing

Inadequate culvert maintenance and sizing was identified during the interview process as being an important cause of localized flooding. The problem results when gravel and soil is washed into roadside drainage ditches and deposited in culverts. If culverts are not cleaned regularly, sediment accumulations reduce the capacity of the culvert to carry channel flows during storm events.

In the Tonawanda Creek watershed, residents and local officials reported flooding caused by clogged culverts under active and abandoned railroads. The problem of culvert cleanout is exacerbated with abandoned railroads because responsible parties are difficult to contact. If responsible parties can be found, they may not have funds or manpower to complete the task.

Culvert maintenance along NYS highways is the responsibility of the NYS Department of Transportation. The NYS Department of Transportation is also responsible for inspection of all structures, including culverts, greater than 5 feet in diameter or length. Culvert clogs on local and County roadways also cause localized flooding, and may cause damage to the road itself.

4.3.6 Dam Issues

Several dams were identified within the Town of Pembroke. These include the Indian Falls Lake Dam, and two abandoned dams on the Tonawanda main channel. The Indian Falls Lake Dam is an active structure that maintains an impoundment for recreational use.

The interview process highlighted the issues of dam ownership and maintenance responsibility as significant issues relating to dams. A broken dam was reported in Tonawanda Creek near North Pembroke Road in the Town of Pembroke. This former mill dam broke several years ago during a flood event, and has never been repaired. No owner has been identified for the structure. Debris from the broken dam causes flow

in the creek to undercut the bank near the wingwalls for the North Pembroke Road bridge. Local officials agree that this structure should be removed because it threatens the integrity of the road bridge, but no responsible party has been identified.

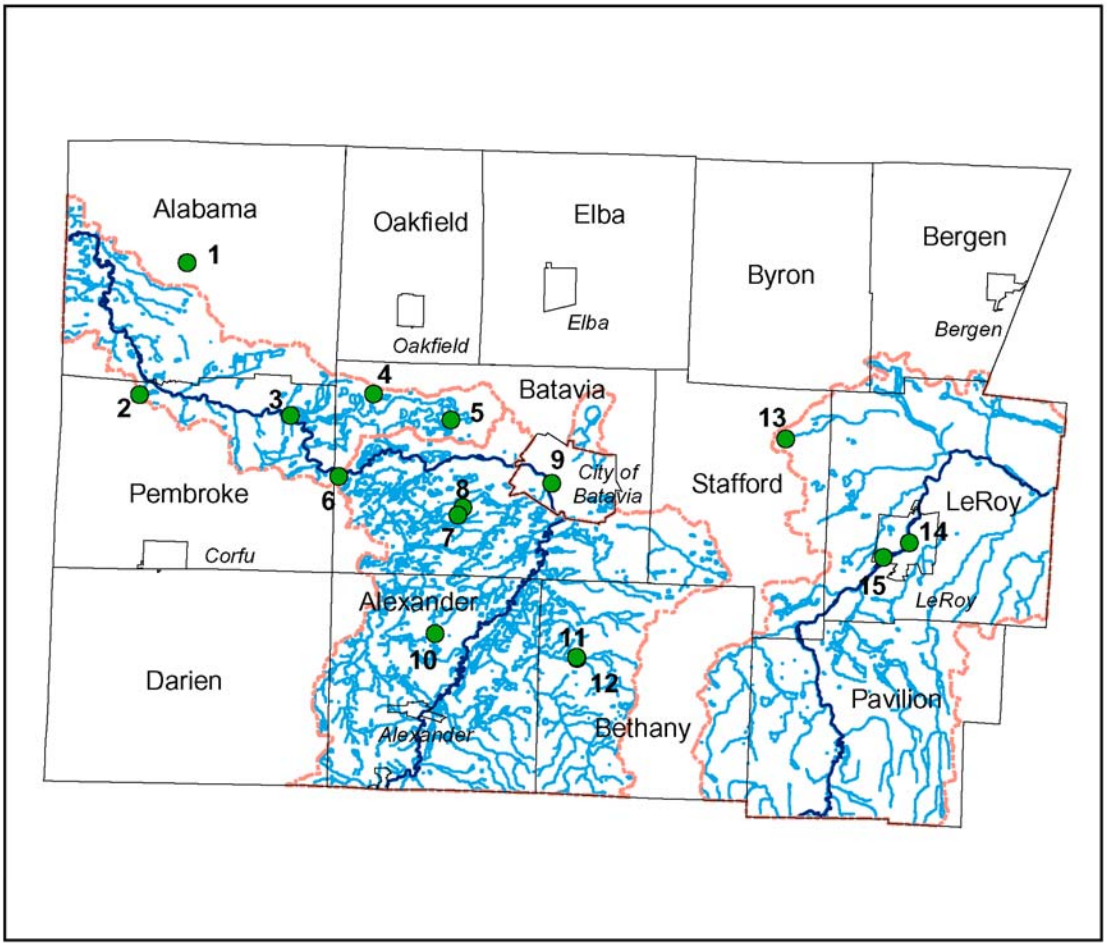
A second dam was reported near East Pembroke. The condition and ownership of this structure is unknown.

Table 4.2 - Tonawanda and Oatka Creek Dams in Genesee County

NAME	TOWNSHIP	OWNER	Stream	DAM LENGTH	DAM HEIGHT	DAM TYPE	OWN TYPE	PURPOSE	YR COMP
CRAWFORD DAM	PEMBROKE	FRED B CRAWFORD	TONAWANDA CREEK	155	9	BUTTRESS	PRIVATE		1840
BATAVIA MUNICIPAL DAM	BATAVIA	CITY OF BATAVIA	TONAWANDA CREEK	110	8	BUTTRESS	LOC GOV'T	WATER SUPPLY	1912
SMITH DAM	PEMBROKE	CHARLES SMITH	TONAWANDA CREEK	150	6	GRAVITY	PRIVATE		1860
EDDY ROBERTSON DAM	STAFFORD	EDDY ROBERTSON	OATKA CREEK	0	7	EARTH	PRIVATE	RECREATION	1964
OATKA CREEK DAM	LEROY	VILLAGE OF LEROY	OATKA CREEK	196	15	GRAVITY	LOC GOV'T	OTHER	1934
OATKA CREEK DAM	LEROY		OATKA CREEK	280	12	GRAVITY		RECREATION	
HORACE BLOOD MARSH DAM	BATAVIA	HORACE BLOOD	TONAWANDA CREEK	0	5	EARTH	PRIVATE	RECREATION	1950
CLEMENS&DIEGELMAN DAM	BATAVIA	CLEMENS&HERBERT DIEGELMAN	TONAWANDA CREEK	0	8	EARTH	PRIVATE	RECREATION	1953
EDWIN CHASE POND DAM	BATAVIA	EDWIN CHASE	TONAWANDA CREEK	0	7	EARTH	PRIVATE	RECREATION	1952
KLOSSNER MUSKRAT MARSH DAM	ALEXANDER	HAROLD BROWN	TONAWANDA CREEK	0	6	EARTH	PRIVATE		1958
KISTNER SETTLEMENT POND DAM	BETHANY	CAROL A KISTNER	TONAWANDA CREEK	1000	28	EARTH	PRIVATE	RECREATION	2000
KISTNER MAIN POND DAM	BETHANY	CAROL A KISTNER	TONAWANDA CREEK	1277	13	EARTH	PRIVATE	RECREATION	2000
EDWIN CHASE FARM POND DAM	BATAVIA	EDWIN F CHASE	TONAWANDA CREEK	0	9	EARTH	PRIVATE	FIRESTOCK	1949
JOHN WHITE FARM POND DAM	ALABAMA	NYS DEC	TONAWANDA CREEK	0	7	EARTH	STATE		1952
INDIAN FALLS LAKE DAM		INDIAN FALLS LAKE CORP.	TONAWANDA CREEK	150	17	EARTH	PRIVATE	RECREATION	

Map 4.3

Genesee County Dams



1 - John White Farm Pond Dam
2 - Indian Falls Lake Dam
3 - Smith Dam
4 - Horace Blood Marsh Dam
5 - Clemens & Diegelman Dam
6 - Crawford Dam
7 - Edwin Chase Farm Pond Dam
8 - Edwin Chase Pond Dam
9 - Batavia Municipal Dam
10 - Klossner Muskrat Marsh Dam
11 - Kistner Main Pond Dam
12 - Kistner Settlement Pond Dam
13 - Eddy Robertson Dam
14 - Oatka Creek Dam
15 - Oatka Creek Dam

N W E S

Data Sources:
Dams - Genesee County Emergency Management
Watersheds - NRCS
Hydrography - NYS DEC
Municipal Boundaries - NYS DOT

0 5 10 Miles

Genesee Dams
Municipalities
Watersheds
Hydrography
Creeks

Prepared by Genesee/Finger Lakes Regional Planning Council

4.4 Streambank Erosion

Streambank erosion is directly related to morphological and physical geographic features that affect lateral stream channel movement. Important morphological features include channel depth, gradient, current velocity, bank height, soil type and type of substrate (e.g., bedrock, mud, gravel, etc.). Physical geographic features that affect stream location include the presence of hard bedrock materials which may form waterfalls, barriers to lateral channel movement, or solution channels which may cause streams to "go underground". Land use practices and vegetation cover type also affect the amount of stream bank erosion that occurs in a given stream reach.

The upper reaches of Tonawanda Creek are characterized by steep slopes and high stream banks. Channel gradients are very steep, and strong, fast currents undercut stream banks, dislodge soil and carry it downstream to be deposited in gravel and silt bars in slow-moving portions of the channel. Gravel is often deposited in or near road culverts or near confluences with tributaries that flow down from the steep hillsides into the valleys of the Tonawanda Creek.

Stream channels tend to erode fastest in areas where forest vegetation has been removed. Where a buffer of trees is maintained along a stream channel, the amount of erosion is lessened because tree roots stabilize the banks, and leaf litter reduces the potential for heavy rainfall to erode bare soil surfaces on steep slopes. Development of rill and gully erosion is evident in areas where agricultural and forestry best management practices have not been followed.

Stream channel meandering is most active in low-lying, flood prone valleys where agricultural lands are cultivated up to the top of the stream bank. Where a buffer of trees is maintained along the channel, meandering is less extreme.

Stream channel straightening has also contributed extensively to channel erosion and sedimentation downstream. During a review of historic aerial photographs of the Oatka and Tonawanda Creek channels from 1938 to 2002, it became evident that two factors which strong influenced the erosion potential for a channel reach included the presence of a forested buffer zone along the channel, and a lack of stream straightening activity. In virtually every instance where stream channel straightening was attempted, the channel eventually resumed its natural course, unless it was physically prevented from doing so by the presence of retaining walls.

4.5 Roads and Bridges

Genesee County Highway Department has maintenance responsibility for all bridges, culverts and other structures over five feet in any dimension (width, length, diameter). NYS DOT inspects all bridges and culverts over five feet in dimension every year. Specific flood hazards associated with roads and bridges are identified in Section 4.6, Specific Flood Hazards.

4.6 Specific Flood Hazards

The following section is meant to give a description of specific flood hazards that have been identified through the hazard assessment process. Site numbers (specific sites or areas) are indicated in parenthesis and are shown on Map 4.4. All sites were ranked based on a priority site evaluation methodology (see Appendix E).

4.6.1 Priority Sites

No priority sites were located in the Town of Pembroke.

4.6.2 Other Sites

Site 114 – East Pembroke Dam – This is an old structure that may be failing. The Genesee County Highway Department indicates that the dam has been breached, causing silt to accumulate around a bridge pier. NYSDEC identified the owner of the facility, but could not locate that individual. NYSDEC recommended that the dam should be removed.

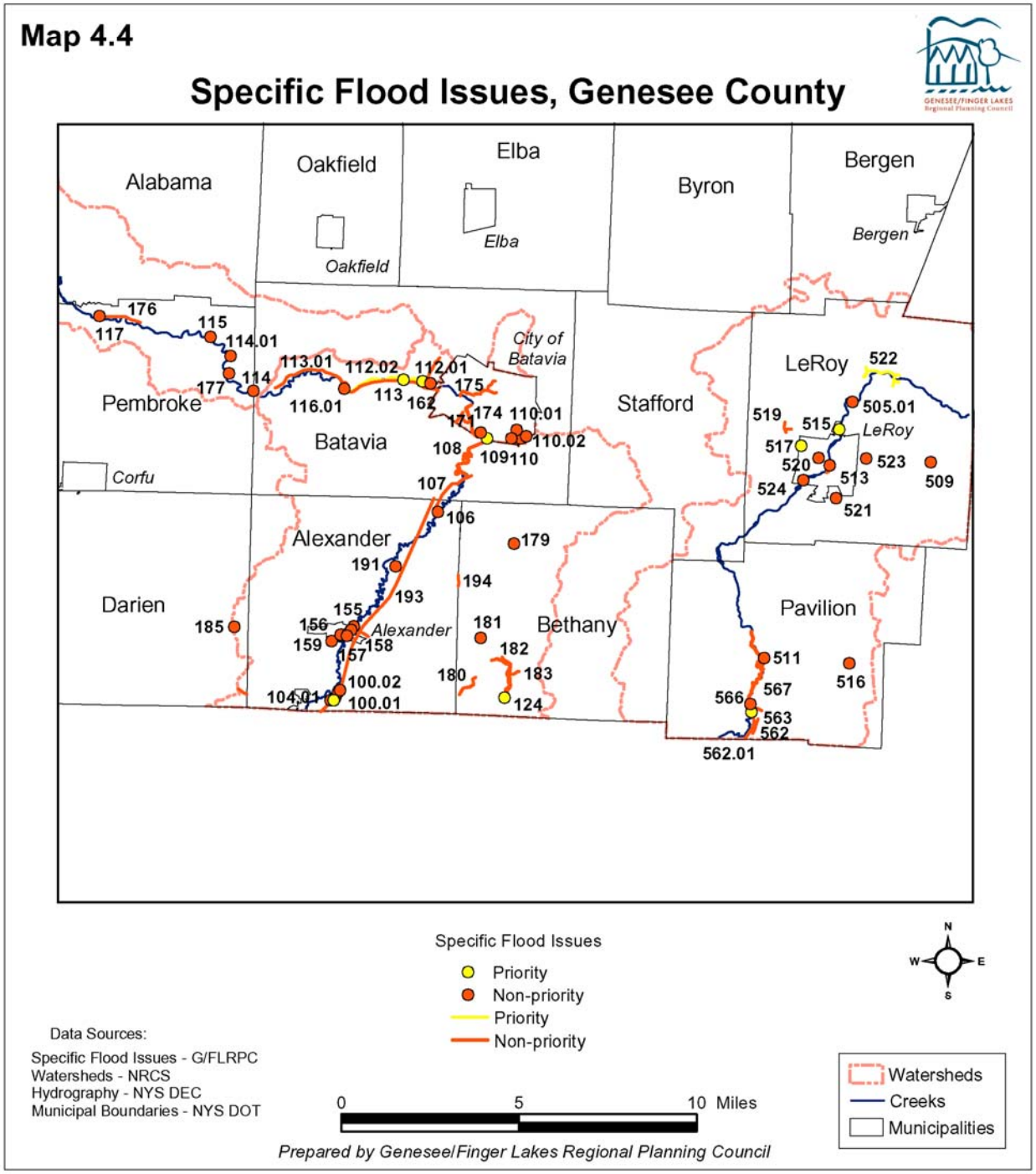
Site 114.01 – NYS Thruway Bridge over Tonawanda Creek – The Thruway flooded in 1998 at this location. Studies have shown undersized culverts and the need for additional detention. The size of this structure is becoming more of a concern as the area south of it develops.

Site 115 – North Pembroke Dam – This is an old mill structure. The structure is deteriorated and is only visible along one bank. The dam is located only a few feet upstream from the North Pembroke Road bridge, a recently rehabilitated structure. The dam was breached several years ago. There is a question as to whether the structure is needed and who has maintenance responsibility. NYSDOT has inspected the dam and found significant siltation at the center pier of the North Pembroke Road bridge.

Site 117 – Indian Falls Hamlet – Several houses are very close to the stream channel at this location. County health officials are concerned about weathering bedrock and erosion issues as well as a sewer outfall into Tonawanda Creek.

Site 176 – Phelps Road – This road is occasionally flooded from Tonawanda Creek. Very few residential structures are affected.

Site 177 – Pratt Road – This local road experiences minor over the road flooding. Some agricultural fields are affected.



4.6.3 Critical Facilities

Critical facilities are structures or sites that warrant identification because they are of special importance to the community or have special needs that need to be met during flood emergencies. Table 4.3 and Map 4.5 identify the critical that are in the Tonawanda and Oatka Creek Watershed. Table 4.4 identifies the critical facilities that

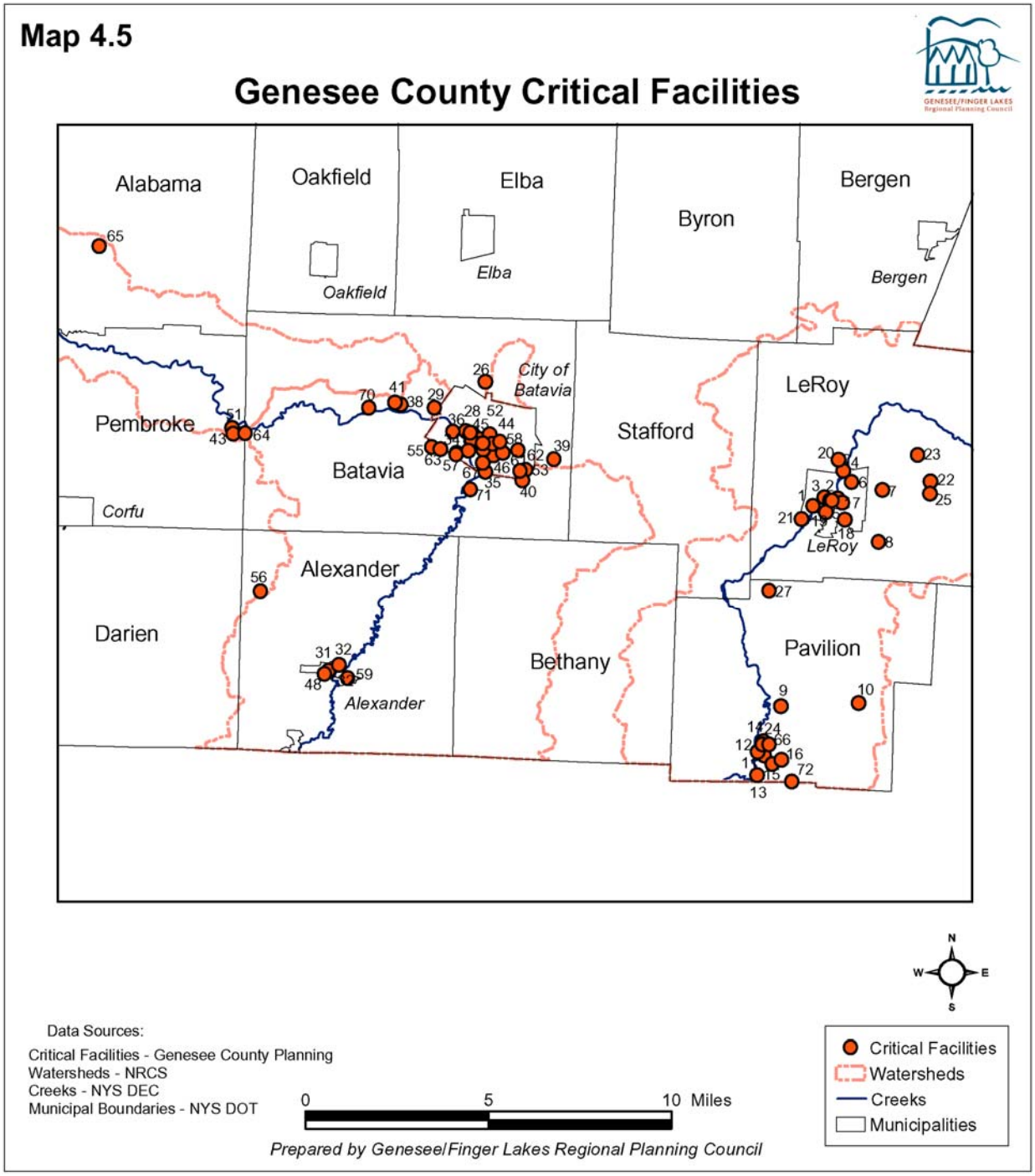
are in or adjacent to the flood zone. Specific flood hazard issues associated with critical facilities are noted in Section 4.6.

Table 4.3 - Critical Facilities, Town of Pembroke

Map ID	NAME	ADDRESS	MUNICIPALITY
43	Empire Telephone Corporation	2461 Main Road	East Pembroke
51	East Pembroke Primary School	2486 Main Road	East Pembroke
64	East Pembroke Post Office	8643 Read Road	East Pembroke

Table 4.4 - Critical Facility At or Adjacent to Flood Zone – Town of Pembroke

Map ID	Facility
43	Empire Telephone Corporation



4.7 Flood Warning System

While no formal warning system is in place in either the Tonawanda or Oatka watershed, downstream communities have benefited from informal warnings of flooding. Dating back to the 19th century, places like Attica and Warsaw have telegraphed or telephoned downstream communities such as Batavia and LeRoy to warn them of rising waters. The geography of the region causes enough of a lag time between rainfall in

the upland areas and flooding downstream for this informal warning system to be effective.

4.8 Parcel Survey

As part of the outreach and information gathering portion of the planning process a survey was sent to each parcel in the flood zone.

4.8.1 Flood Survey Methodology Outline

Survey Creation
For each county, a survey was created for each of the following categories: Agriculture / Undeveloped / Mixed Use, Commercial / Industrial, Residential. Classifications were derived from parcel centroid data obtained from NYS Office of Real Property Services; using the Property Classification Codes. The selection of parcels to be included in the survey process was done geographically based on their location relative to the flood zones. Again, utilizing the data from NYS ORPS, all parcel centroids that are either within the flood zones or are within a 250 foot buffer zone around the flood zones were selected. Parcels that had a Property Classification Code between 300 and 399 were removed because they are classified as Vacant. Parcels with insufficient location information in the Location Number attribute were also removed.

Survey Distribution
In preparation of the survey mailing, address labels and corresponding survey labels were printed utilizing a mail-merge process resulting in labels containing address information extracted from the NYS ORPS database and a unique identification number that would identify the survey when returned. One of the three surveys was then sent to each of the selected parcels, based on the Property Classification Code for that parcel (example: parcels classified as Residential were sent a Residential survey). Surveys were also sent to all project contacts from Planning Committee, each municipality's highest elected official (supervisor, mayor, etc.), Emergency Management Office (Genesee and Wyoming Counties), Planning Departments (Genesee and Wyoming Counties), and Soil & Water Conservation Districts (Genesee and Wyoming Counties). Of the surveys returned by the U.S. Postal Service, surveys were resent to parcels in which address information could be corrected

Survey Follow-Up
A large number of surveys were returned by the U.S. Postal Service. Of these, surveys were resent to parcels in which address information could be corrected. In addition, to increase the response rate and to obtain as much valuable information as possible, a reminder postcard was sent to those parcels who had not returned the completed surveys

Survey Response and Analysis
As surveys were returned, the data contained in the surveys was entered into databases, organized by survey type and county and any and all comments were noted

and compiled for future reference. When the survey process was completed and all data had been compiled, the parcels were mapped based on their unique identification number to determine response rates by municipality, county and watershed for purposes of analysis. Finally, an analysis was performed based on the data contained in the survey response. This analysis was again done by municipality, county and watershed.

Survey Distribution and Response Rates

Total Parcels (in flood zone or in 250 foot buffer area):		**4,935**
Excluded Parcels:	1,051	
Vacant (according to RPS):	251	
Insufficient Address Information:	800	
Surveys Sent:	**3,884**	
Returned by U.S. Postal Service:	966	
Resent (with attempted Address correction):	566	
Not Resent (unable to correct Address Information):	*400*	
Returned by U.S. Postal Service (2nd group of resent surveys):	*252*	

**Reminder postcards sent to 2,341 parcels (March 24, 2003)*

Surveys Reaching Destination:	*3,884*
	- 400
	- 252
Surveys returned from parcels not originally included:	*+ 4*
	3,236
Responses:	1,119
Percent (%) of Response (1,119 of 3,236):	34.6%

Distribution of Responses:

Genesee – Residential:	702
Genesee – Commercial/Industrial:	78
Genesee – Ag/Undeveloped/Mixed:	20
Wyoming – Residential:	283
Wyoming – Commercial/Industrial:	30
Wyoming – Ag/Undeveloped/Mixed:	6

4.8.2 Survey Analysis

Genesee County - Agricultural

Responses (Response Rate): 20 out of 47 responded (43%)

In Flow Path: 70% of respondents said that the Tonawanda, Little Tonawanda, Oatka, or one of its tributaries flowed through their property

- Included those people that noted that a particular creek functions as a property line and therefore flows through their property

Flooded: 55% of respondents reported that they had been flooded at that property

- Included those people that noted "property only" flooding and no structural flooding

Flooded Yearly: 50%
Depth: reported any amount of depth
Depth - Other: most of the respondents noted other as yard, field, or property

Damage - Structure: Respondents reported $500 or more of damage to structures
Damage of Contents (basement, garage, 1st floor, or property): noted $200 of damage or more

Recovery - Days: Reported between 1 and 6 days for recovery time
Recovery - Weeks: Number of respondents that reported 1-4 weeks

Insurance: Out of 20 respondents in Genesee County 1 had Flood Insurance (5%).

Insured and Flooded: 100% of people who have insurance were flooded (1 of 1).
Flooded and Insured: 9% of people who were flooded had insurance (1 of 11).

Assistance:

- Flood Insurance & FEMA aid: None
- Other federal funds: 2 respondents in Pavilion reported having other federal aid.
- State Emergency Management Agency Funds: None
- Flood Insurance: None
- Other Insurance: 17% of those reporting flooding also reported receiving aid from other Insurance.
- Other Sources: None.

Genesee - Commercial/Industrial

Responses (Response Rate): 78 out of 243 responded (32%)

Flow Path: 14% of respondents said that the Tonawanda, Little Tonawanda, Oatka, or one of its tributaries flowed through their property

- Included those people that noted that a particular creek functions as a property line and therefore flows through their property

Flooded: 19% of respondents reported that they had been flooded at that property
- Included those people that noted “property only” flooding and no structural flooding

Flooded Yearly: 0%

Depth: reported any amount of depth
Depth - Other: most of the respondents noted other as yard, field, or property

Damage - Structure: Respondents reported $500 or more of damage to structures
Damage of Contents (basement, garage, 1st floor, or property): noted $200 of damage or more

Recovery - Days: Reported between 1 and 6 days for recovery time
Recovery - Weeks: Number of respondents that reported 1-4 weeks

Insurance: Out of 78 respondents in Genesee County 14 had Flood Insurance (18%).

Insured and Flooded: 21% of people who have insurance were flooded (3 of 14).
Flooded and Insured: 20% of people who were flooded had insurance (3 of 15).

Assistance:
- Flood Insurance & FEMA aid: Only 13 out of 30 respondents that reported flooding and having flood insurance also reported receiving aid from FEMA (43%).
- Other federal funds: None
- State Emergency Management Agency Funds: None
- Flood Insurance: None
- Other Insurance: None
- Other Sources: None

Genesee - Residential

Responses (Response Rate): 702 out of 2,071 Responded (34%)

Flow Path: 28% of respondents said that the Tonawanda, Little Tonawanda, Oatka, or one of it’s tributaries flowed through their property
- Included those people that noted that a particular creek functions as a property line and therefore flows through their property

Flooded: 21% of respondents reported that they had been flooded at that property
- Included those people that noted “property only” flooding and no structural flooding

Flooded Yearly: 5%

Depth: reported any amount of depth
Depth - Other: most of the respondents noted other as yard, field, or property

Damage - Structure: Respondents reported $500 or more of damage to structures
Damage of Contents (basement, garage, 1st floor, or property): noted $200 of damage or more

Recovery - Days: Reported between 1 and 6 days for recovery time
Recovery - Weeks: Number of respondents that reported 1-4 weeks

Insurance: Out of 702 respondents in Genesee County 185 had Flood Insurance (26%), 150 of which were in the City of Batavia

Insured and Flooded: 19% of people who have insurance were flooded (35 of 184).
Flooded and Insured: 24% of people who were flooded had insurance (35 of 146).

Assistance:

- Flood Insurance & FEMA aid: only 4 out of 36 respondents that reported flooding and having flood insurance also reported receiving aid from FEMA (11%)
- Other federal funds: None
- State Emergency Management Office Funds: 2 people reported receiving SEMO
- Flood Insurance: Only 19% of the respondents that were flooded and had flood insurance checked that they received aid from their flood insurance
- 3 out of the 9 Flood Insured respondents in Alexander that reported flooding received Flood Insurance Assistance (33%)
- Other Insurance: 4% of those reporting flooding also reported receiving aid from other insurance
- Other Sources: 4 responded noted that their local fire departments provided assistance (those local fire departments were in the City of Batavia, Town of Batavia, Village of LeRoy, and Town of Pavilion)

5 - Flood Mitigation Action Plan Goals and Objectives

Goals:

- To develop a watershed wide and municipal approach for mitigating and reducing flood hazards along the Oatka and Tonawanda Creek Watersheds.
- Adopt plans for participating communities that identify the most effective means of implementing measures to eliminate or reduce the impacts of flood hazards.

Objectives:

- Apply a planning process that will insure a cooperative effort between all interested parties, public and private.
- Identify the flood hazards and assess the risks associated with those hazards.
- Involve the public to create awareness and understanding of local flood hazards and their associated risks and build public support for actions to mitigate those risks.
- Develop and evaluate appropriate mitigation activities to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP).
- Develop and evaluate appropriate mitigation activities to reduce or eliminate the long-term risk of flood damage to natural resources.
- Identify and evaluate alternative incentives and resources available to encourage flood mitigation activities by the affected municipalities.
- Adopt implementation-ready flood mitigation plans for participating communities and counties.
- Assist in securing state and federal approval for each of the municipal flood mitigation plans.

6 – Flood Mitigation Action Steps

The flood mitigation action items presented here are measures that the Planning Committee has determined will meet the flood mitigation goals set forth by the Committee. The action items are based on the risk assessment in Chapter 4 and/or attempt to build upon efforts and projects previously undertaken or currently underway.

The action items are divided into six categories:

Public Awareness and Information
Preventive Measures
Natural Resource Protection
Property Protection
Structural Measures
Emergency Services

6.1 General Flood Mitigation Action Steps

Preventive Measures

All Hazard Mitigation Plan
It is recommended that the Joint Flood Mitigation Plan be used as the first phase in the development of a All Hazard Mitigation Plan. The Disaster Mitigation Act (DMA) of 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988. The DMA authorizes the creation of a pre-disaster mitigation program to make grants to State, local and tribal governments. It also includes a provision that defines mitigation planning requirements for State, local and tribal governments. This new section (Section 322) establishes a new requirement for local and tribal mitigation plans; authorizes up to 7 percent of the HMGP funds available to a State to be used for development of State, local and tribal mitigation plans; and provides for States to receive an increased percentage of HMGP funds from 15 percent to 20 percent if, at the time of the disaster declaration, the State has in effect a FEMA approved State Mitigation Plan that meets the criteria established in regulations.

Community Rating System
It is recommended that the municipalities along the Oatka and Tonawanda Creek take advantage of the development of the Joint Flood Mitigation Plan and any subsequent implementation by participating in the Community Rating System. The NFIP's Community Rating System (CRS) recognizes community efforts beyond minimum standards by reducing flood insurance premiums for the community's property owners.
Trained Flood Plain Administrator

Flood Plain Administrator
Every community that participates in the NFIP has a Flood Plain Administrator identified in their local FPO. In some cases it is the Town Board, but in most cases it is the Zoning Enforcement Officer or Building Inspector. That person should be trained by

attending training sessions provided by NYSDEC. The FPO issues floodplain development permits for activities in the floodplain.

Floodplain Mapping
While all municipalities have their floodplains mapped with the exception of Middlebury, not all municipalities have a detailed base flood elevation mapped. Therefore, all communities should be mapped so that there is a defined base flood elevation (A Zone). If there is no defined base flood elevation an engineer should be used, along with design standards for siting of new development in the floodplain.

Natural Resource Protection

Debris
Debris in the streams is one of the main issues associated with flooding in the Oatka and Tonawanda Creeks. Therefore debris removal should be a high priority for implementation. All communities should work cooperatively with county agencies, Soil and Water Conservation District, NYSDEC, ACE and neighboring counties and municipalities on the following:

- Inventory and prioritize sites
- Discuss permitting issues with NYSDEC and ACE
- Acquire land owner cooperation/partnerships, including easements
- Develop a mechanism/model for funding debris removal

Additionally, consideration should be given to the following timing and location issues:

- Start downstream and work upstream
- Consider conservation easement areas so that water can be stored temporarily in low-lying, flood-prone areas
- Consider time of year. In most cases late summer to early winter might be best
- Consider restrictions on clearing such as trout spawning season

Siltation
Siltation is caused by erosion. The following mitigation measures are recommended:

- Maintain riparian buffers on stream channels
- Discourage agricultural practices within 50 to 100 feet of stream. This could include grass filter strips, agricultural best management practices, and keeping livestock out of stream channel.
- In places that are experiencing streambank erosion consider streambank restoration
- Vegetate and maintain road ditches

Property Protection

Repetitive Loss
It is recommended that properties covered by a contract of flood insurance under the NFIP, that has suffered flood damage on two or more occasions over a 10-year period ending on the date when a second claim is made, in which the cost to repair the flood

damage, on average, equals or exceeds 25% of the market-value of the structure at the time of each flood loss event consider filing for Repetitive Loss coverage to implement long-term structural solutions to flooding problems.

Structural Measures

Development and impervious surfaces
In general all municipalities should consider the impact of impervious surfaces for stormwater management and facilities should be designed accordingly to meet current flood plain and stormwater regulations.

Culvert Maintenance and Sizing
Culvert maintenance and sizing is one of the main issues associated with flooding along the Oatka and Tonawanda Creeks. Therefore culvert maintenance should be a high priority for implementation. This should include an aggressive program of monitoring, cleaning, and partnering with NYSDOT (state and federal roads). Additionally, sizing of culverts associated with private driveways crossing roads or streams should be installed using a hydraulic analysis that is handled by an engineer or qualified professional.

Little used and/or abandoned railroads are also a major issue associated with flooding along the Oatka and Tonawanda Creeks. The following process is recommended:
- Establish ownership and responsibility
- Inventory problem areas
- Work with owner to make aware of the problem and, if necessary, enforce drainage laws

Dams
In a few cases dams are failing. In all cases dams need regular inspection and maintenance, including the old NYSDEC wildlife dams cited in Section X. The process should include improvement to the existing inventory that would establish ownership and establish which dams could be removed or replaced where appropriate.

6.2 County-Wide Flood Mitigation Action Steps

Public Awareness and Information

Official Flood Information
An important part of raising awareness of flood hazards is providing residents with a way of determining the potential risk they face during periods of heavy rainfall. The availability of residents to view the FIRM and understand it is essential to informing them of flood hazards affecting them. Revisions to the FIRM are documented by FEMA and confirmation is sent to the municipality. The following official flood information dissemination is recommended:
- Make copies of the FIRM available at libraries and town and village halls
- Make copies of the Letters of Map Amendments (LOMA) at libraries and town and village halls

- Make copies of the Flood Mitigation Plan available at libraries and town and village halls

Disclosure of flood hazards to potential property owners is another important aspect of informing those at risk to flood hazards. Real estate agents are an important resource in disseminating flood hazards to potential property owners. It is recommended that a package be prepared for real estate agents that outlines the risks inherent in purchasing a property that lies in a floodzone and a description of the NFIP and who to contact for further information.

Flood Prevention Ordinances
While the majority of land in the flood zones is zoned appropriately- agricultural or low density residential, as was noted throughout the municipal interview process, there needs to be a greater awareness of a municipality's own ordinances on the part of the elected officials, local government staff, and citizens. In many cases, there are Flood Prevention Ordinances on the books but varying degrees of knowledge and/or enforcement of them. Many flooding problems can be avoided with thorough understanding and rigorous enforcement of the existing regulations. One way that could potentially improve this situation is to make the flood zones an official zoning designation, as the Town of Byron in Genesee County has done. Then, the flood prone areas automatically show up on zoning maps of the municipality, they are seen more often by residents, officials, and staff, and the flood prevention ordinance is more completely integrated into the general land use regulations of the community, rather than being more of a stand-alone law and separate map.

Preventive Measures

Land Use Controls
While the majority of land in the flood zones is zoned appropriately- agricultural or low density residential- there are a few recommended changes to consider.

- First would be to reduce the amount of commercial, industrial, and higher density residential land located in floodplains. Commercial and industrial buildings are often harder to flood-proof or elevate, as required for buildings in a flood zone, and are more expensive to repair/replace in the event of flooding. In addition, should such buildings ever get flooded, the ripple effects through the community in terms of lost days of work could be significant.

  Also, higher density residential units such as mobile homes and apartment complexes are more susceptible to flood damage and can present problems in the event of evacuations.

- Second, there is minimal land zoned for parks or recreational areas in the flood zones. This type of land use is ultimately the most appropriate for flood prone areas. Not only do they take advantage of the stream as a community amenity

and provide public access to this amenity, but parks and open space suffer relatively little damage in the event of flooding.

- Finally, to implement these recommendations, it is suggested that municipalities regularly review their zoning ordinances and land use regulations. Not only does this make newer officials and staff aware of them, but it allows for the possibility of more frequent updates or re-writes.

6.3 Community Flood Mitigation Action Steps

Preventive Measures
The Town of Pembroke has 81.1 acres of flood zone in the Tonawanda Creek watershed with much of it, 88.2%, having an agricultural or low density residential designation. However, a there is an area of 8.2 acres that has a higher density residential designation. The Town may want to re-examine this zoning to ensure that higher density residential development does not occur in flood prone areas. As Pembroke experiences more rural development, as well as development in the Thruway interchange area, it is important to enforce appropriate building codes for anyone wishing to build in a flood prone area.

Every community that has NFIP has a Flood Plain Administrator identified in their Flood Prevention Ordinance. At present there is no designated Flood Plain Administrator. It is recommended that a Flood Plain Administrator should be designated

Structural Measures
The North Pembroke Dam (Site 115) is an old mill structure. It is recommended that this structure be removed.

The East Pembroke Dam (Site 114) is an old structure that may be failing. NYSDEC has recommended that the dam be removed.

The Thruway bridge over Tonawanda Creek (Site 114.01) flooded some years ago. Studies have shown undersized culverts and the need for additional detention. These, along with raising the profile of the bridge should be considered.

Appendix A - Municipal Resolutions

Appendix B - Planning Committee

Roger	Becker	Town of Orangeville
Rod	Cook	Town of Batavia
Thomas	Douglas	Town of Bethany
James	Duval	Genesee County Planning
William	Gick	Town of Bethany
Jason	Haremza	G/FLRPC
Henry	Hooper	Town of Darien
John	Hurst	Town of Middlebury Supt of Highways
William	Hurst	Town of Middlebury
Mike	Kehl	Town of Sheldon Highway Department
Dan	Kelsey	Supervisor, Town of Alexander
Neil	Kingdon	Supervisor, Town of Pavilion
Roger	Lander	Genesee County Emergency Mgmt
Thomas	Lowe	Town of Alexander Supt of Highways
James	Mallory	Town of Pembroke
Felipe	Oltremari	Genesee County Planning
Doug	Post	Village of Attica
Ronald	Pritchett	Supervisor, Town of Alabama
Dave	Reckahn	Wyoming County SWCD
Fran	Reese	Lu Engineers
Jim	Reger	Wyoming County Emergency Mgmt
Richard	Scharlau	Mayor, Village of Alexander
Gene	Sinclair	Town/Village of LeRoy
Tom	Skoglund	Wyoming County Planning
Jerome	Smith	Town of Warsaw
George	Squires	Genesee County SWCD
James	Starr	Town of Pavilion
John	Strathearn	Town of Pavilion, Supt of Highways
William	Wagner	Village of Alexander
Len	Walker	City of Batavia
David	Zorn	G/FLRPC

Tonawanda and Oatka Creek Watersheds
Municipal Flood Mitigation Planning
Organizational Meeting Notes
November 25, 2002

Present: Courtnie Simmons, G/FLRPC, George Squires, Genesee County Soil & Water Conservation District (SWCD), James Duval, Genesee County Planning, Felipe Oltremari, Genesee County Planning, Tom Skoglund, Wyoming County Planning, Dave Reckahn, Wyoming County SWCD, Roger Lander, Genesee County Emergency Management, Jim Reger, Wyoming County Emergency Management, Fran Reese, Lu Engineers, David Zorn, G/FLRPC

Introductions

The following project specific items were discussed:
General Organization

County Level/Hazard Assessment/Technical Committee
- County Meetings - Village of Attica Fire Hall, 4th Tuesday, starting January 28, 2003 at 10 am
- County contacts - see attached list

Municipal Level - Genesee and Wyoming County Emergency Management will mail out a letter to each municipality asking for a resolution and a contact person. David Zorn will get list of goals, objectives and benefits to Genesee County Planning to include in the letter. The return letter will allow for the following:

- Identify participating municipalities
- Identify key contact person in each municipality
- Identify potential municipal representatives to county meeting
- Identify key people in each municipality
- Work with key person/people in each municipality to explore expectations for meeting with each community

Watershed Management Plan Processes - Dave Reckahn and George Squires are part of the Oatka Creek Watershed Management Plan process. The Oatka Creek Watershed Committee is planning a series of four public meetings. They have also produced a summary of their public findings. David Zorn will also contact Rick Venvertloh, Chairman of the Oatka Creek Watershed Committee and ask about the public findings summary and coordinating with their public meetings and web site.

Existing studies, plans and reports - G/FLRPC will set up a time to review existing studies, plans and reports at Genesee County Planning and SWCD, and review HAZNY reports at Genesee and Wyoming Counties Emergency Management office. Other documents include:
- City and Town of Batavia Flood Study
- Town of Alexander Flood Study
- Tonawanda Creek (AOC)
- Warsaw and Attica Studies - Jim Reger will check
- USGS Gaging Stations - Attica (Tonawanda Creek), Batavia (Tonawanda Creek), Warsaw (Oatka Creek), and Garbutt (Oatka Creek)

Public Participation and Awareness

Public Participation Committee in each municipality for the purposes of public education and outreach will be based on municipality key contacts and various municipalities working together. Jim Duval and Roger Lander will check with Genesee County Association of Municipalities.

Residential and commercial surveys to assess properties that have been flooded in the past and the damage incurred will be reviewed by Technical Committee. A suggestion was made to check with Doug Post in Attica to see what their survey was.

Public Hearings - one at draft for review and input and one at final.

Assess the Flood Hazards and Risks

Utilize a Geographic Information System to analyze and map known flood hazards in relation to existing land uses. This will include:

- Floodways and floodplains as shown on FEMA Flood Insurance Rate Maps
- Areas not identified on the FIRM that are known to flood based on existing studies, surveys, historical records, and public meetings
- Digital parcel boundaries based on county tax maps (Genesee will supply), parcel images and centroids (Wyoming will supply parcel images) and Real Property parcel data to analyze property-specific attributes.
- Digital orthophotos (including Pictometry (November 2001) in Genesee County)
- Slope and elevations
- Surface water

Utilize aerial photography to determine changes in stream patterns and land use (county based). Genesee County SWCD has 1938, 1954, 1963, 1974, 1985, 1990. Genesee County Planning has 1938, 1954, 1968, 1974, 1985. Wyoming County SWCD has similar aerial photography.

Describe the known flood hazards. (Municipal and county) This will include:

- Source of floodwater,
- Discussion of past floods, and
- Depths, velocities, and warning times of previous flooding if available.

Evaluate streambank erosion based on previous studies by county, state, and federal agencies (SWCDs). Genesee County SCS did a study many years ago. Wyoming County SWCD has some records.

Identify the locations of critical facilities and structures (town/village halls, schools, power substations, bridges, culverts, roads (county) - identify with counties, etc.). The process will include the following:

- Develop a list of critical facilities and structures
- Review list with Technical Committee and municipalities
- Map critical facilities and structures
- Review draft map
- Final map

Action Items

Appointments need to be made to go through the libraries at the county and municipal offices

Addition of Upper Tonawanda Creek to the map

A summary report should be made after every meeting to post to the Genesee County website

Provide the planners with a one-page fact sheet about the project's goals and benefits to be included in the municipal mailing.
Counties will put together a draft letter that will go to municipalities
Contact Rick Venvertloh of the OWMP to get a summary of their meetings, possible coordination of public meetings, and possibly gain information from State of the Oatka Creek Watershed publication.
Genesee County Planning Department will supply G/FLRPC with digital tax parcels. Wyoming County Planning Department will supply G/FLRPC with scanned images of tax parcels.
G/FLRPC will get gauging station data
G/FLRPC to develop a draft list of critical facilities and structures

Next Meeting: January 28, 2003

Tonawanda and Oatka Creek Watersheds
Municipal Flood Mitigation Planning
Technical Committee
Meeting Minutes
January 28, 2003

Attica Fire Hall
Attica Village Offices
9 Water Street
Attica, NY 14011

Present: Courtnie Simmons, G/FLRPC, George Squires, Genesee County Soil & Water Conservation District (SWCD), James Duval, Genesee County Planning, Felipe Oltremari, Genesee County Planning, Tom Skoglund, Wyoming County Planning, Dave Reckahn, Wyoming County SWCD, Roger Lander, Genesee County Emergency Management, Jim Reger, Wyoming County Emergency Management, Fran Reese, Lu Engineers, David Zorn, G/FLRPC, James Mallory, Town of Pembroke, Dan Kelsey, Town of Alexander, Thomas Lowe, Town of Alaxander, William Glick, Town of Bethany, Len Walker, City of Batavia, Rod Cook, Town of Batavia, Pearl Granger, Wyoming County Emergency Management, Jim Starr, Neil Kingdom, Town of Pavilion, Douglas A. Post, Village of Attica, Henry J. Hooper, Town of Darien, John W. Hurst, Town of Middlebury, Gene Sinclair, Town/Village of LeRoy

Introductions

Project Updates

Meetings where held with Genesee and Wyoming County EMO, SWCD, Planning Departments to gather county level data and information

The following items are mapped
- Revised watersheds
- Floodplains (except for Middlebury)
- Parcels/centroids
- Digital orthophotos
- Slope and elevation
- Surface water
- Critical facilities
  - Need to do some follow-up to pinpoint sites that were not initially pinpointed on map
  - Some sensitive sites will not be pinpointed on map but will be noted by municipality for report
- SPDES permits (Genesee)

Dam inventory has been started

First Technical Committee minutes were sent to Technical Committee and supplied to Genesee County web site

Letter to municipalities and Indian Reservation asking for participation with goals and benefits summary sent out

Contacted Oatka Creek Watershed Committee Chairman regarding working together on public education

Upcoming Tasks
Additional County Interviews - Department of Health, Highway Superintendent, County Historian, County Code Officer (Wyoming)
Municipal Interviews
NYS Department of Environmental Conservation and Army Corps of Engineers Interviews
Survey distribution
Finalize dam inventory
Analyze municipal regulation in the flood zone
Analyze land use in flood zone

Residential, Commercial, Agricultural Floodway Survey Review and Approval
Additional changes to survey or survey process
- Include major tribs on survey and add map
- Include "Structure and impervious surface" category to "Damage or loss incurred from event" section on Agriculture survey
- Include "mixed use" category on survey
- Indicate on survey cover letter that individuals that have questions can contact the municipal contact as well as G/FLRPC
- Survey cover letter will be on County Emergency Management stationary
- Include project goals/objectives/benefits with survey
- Send copy of survey mailing to municipal contact, village mayors, and town supervisors

Deadline for survey review and comments back to David Zorn is January 31, 2003

Additional County Contacts - Department of Health, Highway Superintendent, County Historian, County Code Officer (Wyoming)

Municipal Sample Interview and Resource Checklist (see enclosed Sample Interview and Resource Checklist) - Committee decided to have all review comments back to David Zorn by 1/31/03

Municipal Participation - County EMOs will finalize list of participating municipalities and get municipal resolutions by end of first week in February

NYSDEC/ACE/SEMO Technical Committee Involvement - The committee felt that it would be a good idea for these state and federal agencies to be involved with Technical Committee

Additional Streams/Tributaries Not Delineated in Upper Tonawanda and Oatka Creek Watershed in Genesee and Wyoming County - Committee decided to only do flood mitigation plan for areas in delineated watersheds.

Oatka Creek - George Squires distributed copies of the Oatka Creek State of the Basin Report and indicated that Oatka Creek would be doing public meetings in support of the State of the Basin Report and the Joint Flood Mitigation Plan project.

Action Items

Finalize survey as per comments at meeting and any additional comment that come in by 1/31/03
Do final location of critical facilities that are going to be point located
Set up meeting with additional county contacts
Set up meeting with NYSDEC and ACE contacts
Finalize municipal participation and resolutions by first week in February
Develop survey cover letter and put on County EMO stationary
Send out survey after municipal participation is finalized
Set up municipal contact interviews for information and data collection
Invite NYSDEC, ACE, and SEMO representative to join Technical Committee

Next Meeting: February 25, 2003 at Attica Village Hall/Fire Hall

Tonawanda and Oatka Creek Watersheds
Municipal Flood Mitigation Planning
Technical Committee
Meeting Minutes
February 25, 2003

Attica Fire Hall
Attica Village Offices
9 Water Street
Attica, NY 14011

Present: Frances Tucker, Genesee County Soil & Water Conservation District (SWCD), James Duval, Genesee County Planning, Felipe Oltremari, Genesee County Planning, Tom Skoglund, Wyoming County Planning, Dave Reckahn, Wyoming County SWCD, Roger Lander, Genesee County Emergency Management, Jim Reger, Wyoming County Emergency Management, Fran Reese, Lu Engineers, David Zorn, G/FLRPC, James Mallory, Town of Pembroke, Dan Kelsey, Town of Alexander, Thomas Lowe, Town of Alaxander, William Gick, Town of Bethany, Len Walker, City of Batavia, Neil Kingdon, Town of Pavilion, Douglas A. Post, Village of Attica, John W. Hurst, Town of Middlebury, Gene Sinclair, Town/Village of LeRoy, John Strathearn, Town of Pavilion, Roger Becker, Town of Orangeville, Thomas Douglas, Town of Bethany, James Stan, Town of Pavilion, William Hirsch, Town of Alexander, William Wagner, Village of Alexander, Mike Kehl, Town of Sheldon, Jason Haremza, G/FLRPC.

Introductions

Distribution of January 28, 2003 meeting minutes

Project Updates
Additional county meetings held (DOH, Highway Supt, Historian, Enforcement)
Information and data collection
Survey distribution
Mapping
Revised Floodplains
County Issues
Parcels/centroids
Digital orthophotos
Slope and elevation
Surface water
Critical facilities
Web Site - has been set up at www.co.genesee.ny.us, click on What's Happening
Technical Committee Summary Reports
Maps
Oatka Creek Watershed Committee contact has been made - public meetings in the Oatka Creek Watershed for the Flood Mitigation Plan will be held in association with the Oatka Creek Watershed Management Plan public meetings.
Municipal interviews

Finalized process based on Technical Committee input
Interviews
    Initial interview with City of Batavia has been done
    Scheduled additional interviews at Technical Committee meeting
    Will need to have all municipal interviews complete by the end of March/beginning of April

Upcoming
Municipal Interviews
NYSDEC and ACE Interviews
Survey follow-up and tabulation
Finalize dam inventory
Analysis of municipal regulation in the flood zone
Analyze land use in flood zone
Historical - floods, changes in stream
Description of known flood hazards - source, streambank erosion

Public Outreach
News article/release
Batavia Daily News (Roger Mulick)
County Currier
PennySavers - meeting notice (Roger Lander and Jim Reger will post)
Drummer
D&C (John Kohlstrand)
Buffalo News

Hold meetings in early April
Oatka Creek Watershed Meetings - LeRoy, Pavilion, and Warsaw in association with the Oatka Creek Watershed public outreach.
Tonawanda Creek Watershed - Alexander Recreation Hall
In notice ask people to bring significant information they have about flooding to public meeting.

Action Items
Get another map for web site to Felipe Oltremari
Schedule and hold remaining municipal interviews
Public meeting - locations, dates, news release/notice

Next Meeting: March 25, 2003 at Attica Village Hall/Fire Hall

Tonawanda and Oatka Creek Watersheds
Municipal Flood Mitigation Planning
Technical Committee
Meeting Minutes
March 25, 2003

Attica Fire Hall
Attica Village Offices
9 Water Street
Attica, NY 14011

Present: George Squires, Genesee County Soil & Water Conservation District (SWCD), James Duval, Genesee County Planning, Felipe Oltremari, Genesee County Planning, Tom Skoglund, Wyoming County Planning, Dave Reckahn, Wyoming County SWCD, Roger Lander, Genesee County Emergency Management, Jim Reger, Wyoming County Emergency Management, Fran Reese, Lu Engineers, David Zorn, G/FLRPC, James Mallory, Town of Pembroke, Thomas Lowe, Town of Alaxander, William Gick, Town of Bethany, Neil Kingdon, Town of Pavilion, Douglas A. Post, Village of Attica, John W. Hurst, Town of Middlebury, John Strathearn, Town of Pavilion, William Hirsch, Town of Alexander, Mike Kehl, Town of Sheldon, Rodney Cook, Town of Batavia, Don Beardslee, Village of Wyoming, Harold Bush, Town of Gainsville, Jason Haremza, G/FLRPC.

Introductions

Project Updates

Interviews

State - David Zorn reported on completed interviews with NYSDEC, will follow-up with Dam Safety Division

County - David Zorn reported on completed interviews with Planning, SWCD, Emergency Management, Highway Superintendent, Historian, Health Department, Enforcement (Wyoming)

Municipal - Jason Haremza reported on completed interviews, scheduled interviews, and interviews that need to be scheduled for March or early April (see enclosed Municipal Interview Schedule)

Information and data collection

Historical - David Zorn reported on progress of newspaper search from the 1800's through present.

Survey

Initial responses - David Zorn reported on status of survey (see attached Flood Survey Status). Roger Lander asked that a list of those who have responded thus far be provided.

Follow-up - David Zorn reported that 2,341 reminder post cards have been sent.

Roger Lander asked that a news release be done on surveys

Additional survey forms - Jim Duval asked that additional surveys be available at the upcoming public meetings.

Public Meetings - David Zorn reported that preparation for the upcoming public meetings has been underway (see attached Joint Flood Presentation). Jim Duval asked that the flyer announcing the public meetings be emailed to Technical Committee.

Prioritization Criteria for Site Hazard Evaluation - Fran Reese explained the draft Evaluation form. She pointed out that it will be used to identify priority sites for further study and urgent need of mitigation. (An updated version of the form is attached based on recommendations at meeting)

Municipal Contacts and Resolutions
As of this meeting all municipalities have municipal contacts and all Genesee County municipalities have municipal resolutions. Felipe Oltremari requested that there be a Town of Stafford contact.

Public Outreach

Information on public meetings distributed at meeting (attached)

Action Items
Update Prioritization Criteria for Site Hazard Evaluation (update attached)
Email list of those returning surveys (emailed 3/25/03)
Bring extra surveys to public meetings
News release regarding surveys for Batavia Daily (sent to Jim Duval on 3/25/03)
Check Stafford contact
New digital ortho-photos - Genesee and Wyoming County Planning will send to G/FLRPC

Next Meeting: April 22, 2003, 10 am at Attica Village Hall/Fire Hall

Tonawanda and Oatka Creek Watersheds
Municipal Flood Mitigation Planning
Technical Committee
Meeting Minutes
April 22, 2003

Attica Fire Hall
Attica Village Offices
9 Water Street
Attica, NY 14011

Present: George Squires, Genesee County Soil & Water Conservation District (SWCD), James Duval, Genesee County Planning, Felipe Oltremari, Genesee County Planning, Jim Reger, Wyoming County Emergency Management, Fran Reese, Lu Engineers, David Zorn, G/FLRPC, William Gick, Town of Bethany, John W. Hurst, Town of Middlebury, Don Beardslee, Village of Wyoming, Jason Haremza, G/FLRPC, Linda Logan and Mardell Sundown, Tonawanda Seneca Nation, Jerry Davis, Town of Covington, Gene Sinclair, Town and Village of LeRoy, Len Walker, City of Batavia, William Wagner, Village of Alexander, Henry Hooper, Town of Darien, Jerome Smith, Town of Warsaw, Dale Slocum, Town of Attica.

Introductions

Project Updates
Interviews
- State
- County
- Municipal - still trying to schedule Stafford and Alabama
- Information and data collection
- Historical - completed

Survey
Initial responses and follow-up completed
Additional survey forms - handed out at public meetings
Technical Committee was asked to follow-up with property owners in community so that more surveys could be sent back.
Web Site
Technical Committee Summary Reports
Maps
Public Meetings - completed four public meetings
Prioritization Criteria for Site Hazard Evaluation

Risk Assessment
Fran Reese and Jason Haremza reported on the initial Risk Assessment citing the following issues: streambank erosion, debris, relocation of affected structures, culvert maintenance and sizing, development in flood zones, dam maintenance.

Final Prioritization Criteria for Site Hazard Evaluation

Fran Reese reviewed the revised Prioritization Criteria for Site Hazard Evaluation and the list of sites in Genesee and Wyoming County (enclosed if not at meeting). She pointed out additions will be made to the list as municipal interviews are finalized.

Flood Mitigation Goals and Objectives

David Zorn handed out the original goals and objectives and asked for them to be reviewed for the May meeting when draft goals and objectives will have to be set for the plans.

Action Items

Survey follow-up
Check with NYSDEC on municipal participation in NFIP
Finalize Prioritization Criteria and develop list of priority sites
Review goals and objectives

Next Meeting: May 27, 2003, 10 am at Attica Village Hall/Fire Hall

Tonawanda and Oatka Creek Watersheds
Municipal Flood Mitigation Planning
Technical Committee
Meeting Minutes
May 27, 2003

Attica Fire Hall
Attica Village Offices
9 Water Street
Attica, NY 14011

Present: George Squires, Genesee County Soil & Water Conservation District (SWCD), James Duval, Genesee County Planning, Felipe Oltremari, Genesee County Planning, David Zorn, G/FLRPC, William Gick, Town of Bethany, John W. Hurst, Town of Middlebury, Len Walker, City of Batavia, Jerome Smith, Town of Warsaw, John Strathearn, Town of Pavilion, Thomas Douglas, Town of Bethany, Roger Lander, Genesee County Emergency Management Office, Tom Skoglund, Wyoming County Planning, Dave Reckahn, Wyoming County Soil & Water Conservation District, Lou Gayton, Town of Bethany.

Introductions

Project Updates
Interviews - Complete
Information and data collection - Historical inventory complete and cataloged
Survey - complete.
Recommended sites for further detailed evaluation - draft recommendations complete
Dam Inventory - George Squires pointed out that one dam was listed as being in Genesee County but in the Town of Orangeville. George was going to follow-up on the location of the dam.

Priority Sites

All sites were reviewed with the following comments:

Genesee County
522 - Russ Hand is the owner of the corner parcel where Oatka Creek makes right turn. George Squires is checking on permits for him. While research is done on this area please contact George Squires for up-to-date- details on what is going on with that parcel.
104.01 is in the TOWN of Alexander
112.02 - the trailer park west of West End is called Batavia Mobil Home Park
113 should read SOUTH Main St.
110.02 is called the Bureau of Maint.
110 - no one could recall anytime this building has been flooded but there is a beaver dam problem in this area that continues to back water up to wetland in close proximity.
Talk to Len Walker about including City of Batavia Fire HQ in priority sites
Check on Genesee County Court Facility and 3 W Main building - see if in or out of floodplain

if one of the two sites above are in the floodplain and have been flooded it was felt that they are more important then #124

Wyoming County
144 serves the Village of Attica but it is in Genesee County.
542 - spreading of manure in the floodplain should be considered. One recommendation for the report would be to do a Wellhead Protection Plan, which could get at the issue of such things as spreading manure in the wellhead protection zones.
531 is now called Francis Herrmann Trailer Park (not Schoff). Jerome Smith does not feel trailer park is in floodplain but others remembered that it did need to be sandbagged in the past
558 - In answer to the question in the comment column this site should not be listed as a critical facility in that it is not the official town hall and it is not owned by the Village.
526.02 - The WTP is at the same location (adjacent)
547 - Jerome did not feel that this was an issue
188 - the DEC permit should be checked

Both counties wanted until the end of this week -5/30- to review the prioritization list

Surveys Analysis
Sample analysis was distributed and the full analysis will be made available when completed by county, municipality and watershed.

Flood Mitigation Plan Goals and Objectives
David Zorn asked that any input on the goals and objective be sent to him in the next week.

Distribution of Draft Sections
David Zorn pointed out that draft sections of the reports for review would be available by the next Technical Committee meeting

Other
There will be a meeting on June 9, 2003 at 9:00 in the Genesee County Planning Conference room to discuss the NYSDEC permitting process with regard to flooding issues and practices

Action Items
Input on priority sites by May 30, 2003
Get out survey analysis by type of survey and county, municipality and watershed
Input on Flood Mitigation Plan Goals and Objectives by May 30, 2003

Next Meeting: June 24, 2003, 10 am at Attica Village Hall/Fire Hall

Tonawanda and Oatka Creek Watersheds
Municipal Flood Mitigation Planning
Technical Committee
Meeting Minutes
June 24, 2003

Attica Fire Hall
Attica Village Offices
9 Water Street
Attica, NY 14011

Present: George Squires, Genesee County Soil & Water Conservation District (SWCD), James Duval, Genesee County Planning, Felipe Oltremari, Genesee County Planning, David Zorn, G/FLRPC, William Gick, Town of Bethany, John W. Hurst, Town of Middlebury, Len Walker, City of Batavia, Jerome Smith, Town of Warsaw, Roger Lander, Genesee County Emergency Management Office, Dave Reckahn, Wyoming County Soil & Water Conservation District, Fran Reese, LU Engineers, Devon Lay, Wyoming County Soil & Water Conservation District, Neil Kingdon, Town of Pavilion, Thomas Lowe, Town of Alexander, Gene Sinclair, Town of LeRoy, Mardell Sundown, Tonwanda Seneca Nation, Linda Logan, Tonawanda Seneca Nation, Jerry Diskin, Genesee County EMO, Douglas Post, Village of Attica, James Reger, Wyoming County Emergency Management Office, Jason Haremza, G/FLRPC

Introductions

Project Updates
Permitting Meeting with NYSDEC (minutes enclosed). Discussion on debris removal included the following:
In many cases removal is the responsibility of the property owner
There is some 404 funding available but there was questions on how it was going to be distributed.
There was a question on county cooperation on sharing of equipment
An inventory needs to be done (Genesee and Wyoming County are working on)
Find out property owners - see if an easement can be obtained
Use local newspapers to get out the word - need sample article
SEQRA review

Survey Analysis (see draft report)

Priority Sites
Final priority sites listed in draft report. Historical photos are being scanned and analysis underway.

Distribution of Draft Sections
Draft sections of Chapters 1 through 4 were distributed. It was decided that comments were due back to G/FLRPC by July 4, 2003.

Discussion of Flood Mitigation Action Steps

Use Genesee County ArcIMS system to get data. In Wyoming County maps are available from county agencies.

Structural damage - add section on safety hazards and loss of life and property including warning system, how to get word out, reference to County Emergency Management Plan, and repetitive loss.

Floodplain development - discussion included retrofitting, Stormwater Phase II guidelines, local land use regulation and control, and building permit checklist

Public Meetings

Consensus was to schedule the meetings in Pavilion and Attica (Jim Reger will check on school) but do not schedule in week of August 10.

Action Items

Follow up on 404 funding

Comments on draft sections by July 4, 2003

Check on availability of Attica school for public meeting - Jim Reger

Next Meeting: July 22, 2003, 10 am at Attica Village Hall/Fire Hall

Tonawanda and Oatka Creek Watersheds
Municipal Flood Mitigation Planning
Technical Committee
Meeting Minutes
July 22, 2003

Attica Fire Hall
Attica Village Offices
9 Water Street
Attica, NY 14011

Present: George Squires, Genesee County Soil & Water Conservation District (SWCD), Felipe Oltremari, Genesee County Planning, David Zorn, G/FLRPC, William Gick, Town of Bethany, Len Walker, City of Batavia, Jerome Smith, Town of Warsaw, Dave Reckahn, Wyoming County Soil & Water Conservation District, Fran Reese, LU Engineers, Neil Kingdon, Town of Pavilion, Gene Sinclair, Town of LeRoy, Jason Haremza, G/FLRPC, Jerry Davis, Town of Covington, Tom Skoglund, Wyoming County Economic Development and Planning, Mike Kehl, Town of Sheldon

Introductions

Additions to the Agenda
Army Corps of Engineers flood study of Tonawanda Creek Watershed - George Squires handed out a press release entitled, "House approves Reynolds'$100,000 request for Tonawanda Creek Watershed, Army Corps of Engineers authorized to study in order to stop flooding, aid environment". George stated that he had no other information on this project but that he would attempt to coordinate with ACE.

Project Updates
Fran Reese followed up on the Hazard Mitigation funding that was talked about at the last Planning Committee meeting by Roger Lander. She said she attended a pre-proposal meeting with Roger and felt that some funding was available and that Genesee County was going to apply. She pointed out that letters of intent to file a proposal must be in by August 8, 2003 and any questions on the content of the Genesee County proposal should be directed to Roger Lander.

Distribution of Draft Sections
The second revision of the draft report was distributed and discussed. The following timeline was agreed upon:

Comments on the second revision should be received by G/FLRPC by August 1, 2003
A copy of the full draft will be distributed to the Planning Committee on August 12, 2003
A comments on the full draft should be received by G/FLRPC by August 22, 2003
The final draft will be discussed at the August 26, 2003 Planning Committee meeting

Public Meetings

Consensus was to schedule the meetings in Pavilion (Town Hall - August 21) and Attica (school - August 19).

Action Items
Review and supply input to draft report
Municipalities sign and return authorization letters to release NFIP data to G/FLRPC

Next Meeting: August 26, 2003, 10 am at Attica Village Hall/Fire Hall

Tonawanda and Oatka Creek Watersheds
Municipal Flood Mitigation Planning
Technical Committee
Meeting Minutes
August 26, 2003

Attica Fire Hall
Attica Village Offices
9 Water Street
Attica, NY 14011

Present: Thomas Lowe, Town of Alexander, William Gick, Town of Bethany, Jim Duval, Genesee County Planning, Felipe Oltremari, Genesee County Planning, Douglas Post, Village of Attica, Jim Reger, Wyoming County Emergency Services, Jerome Smith, Town of Warsaw, Dave Reckahn, Wyoming County SWCD, Fran Reese, Lu Engineers, Jason Haremza, G/FLRPC, Dave Zorn, G/FLRPC, George Squires, Genesee County SWCD, Roger Lander, Genesee County Emergency Services

Introductions

Development of Executive Summary
It was felt that the report Executive Summary should include an introduction to the project, priority issues, priority recommendations, goals, objectives and benefits, and narrative on the need for municipal adoption and the concept o f an All-Hazard Mitigation Plan. It was agreed that the first draft of the Executive Summary would be emailed to the Planning Committee for comment.

Final Draft Reports
Municipal final draft reports were distributed. County final draft reports were distributed to the County Emergency Management Office, County Planning, and County Soil & Water Conservation District the week of August 18, 2003. It was noted that the final draft should be used for adoption. After adoption a final version will be sent out with the adoption resolution and any corrections noted.

Action Items
Adopt final draft reports
Final reports - G/FLRPC will send one to the municipality and two to County Emergency Management
Jason Haremza will send both public meeting presentations to County Emergency Management
A draft resolution for adoption of the Plan will be sent to the municipalities
Check on SEQRA in relation to approval of Plans
Putting reports on Wyoming County web site - Jim Reger will followup with David Zorn

Appendix C – Municipal Interviews

Requested Participants, Resources, and Standard Questions

Participants:

- Lead as named by City/Town/Village
- Public Works Director
- Highway Superintendent
- Planner
- Zoning officer
- Code Enforcement Officer
- Building Inspector
- Watershed Inspector
- Clerk
- Historian
- Fire Chief/Marshal

Resources:

- Any flood studies or reports for the municipality
- Any flood maps
- Any municipal ordinances that deal specifically with waterways, floods, or land use in or near floodplains
- Pictures or records of past and historical flood events, including pictures of any damage

Questions:

1. Does your community participate in the National Flood Insurance Program (NFIP)?

2. What is the history of flooding along Oatka/Tonawanda/[name of tributary creek] in your community? Please show the limits or extent of flooding on this map, if possible.

3. Do you have any critical facilities located in areas of flooding? Examples: Highway Garage, police station, hospital, school, day care facility, senior center, senior living facility, nursing home, wells/water treatment plant, sewage treatment plant. Have list of mapped/listed critical facilities available.

4. Do you have any structures or infrastructure that has sustained damage from flooding? Do you have cost estimates or actual repair costs on these facilities? Examples: roads, bridges, pipelines, buildings

5. What protective/preventive measures have you taken to protect critical facilities from flooding? What measures would you like to see in the short and long term?

6. Have you experienced erosion problems along the streambanks in your community? Where are the main problem areas? Are any buildings, roads or infrastructure in immediate danger?

7. Do you have special permitted uses in flood prone areas? If so, what are they?

8. Do you have a flood damage prevention ordinance in your community? If so, how is it used or implemented? Who evaluates proposed development in flood prone areas?

9. Do you have a policy on stormwater management for new development in your community? What are the procedures? Who evaluates this?

10. Do you have Flood Insurance Rate Maps (FIRM) available in your community? Who keeps them? Do you use them when reviewing proposals for new development?

11. Do you have any information available on flood damage records for private structures (homes, businesses, etc.)? How is this information kept? Does the building inspector or code enforcement officer inspect properties that have been damaged by flooding before re-occupancy?

12. Do you have a community policy on rebuilding in flood prone areas?

13. Do you have a trained floodplain administrator?

14. Do you have dams or flood structures? If so who maintains these?

Appendix D – Public Information Meetings

First Public Information Meetings
Issues

- Debris clearing vs. habitat disruption
  - Creek filling in
  - Eliminate log jams and sand bars
  - Permit issue
  - Land owner approval and/or cooperation
  - Clear tributaries first
  - Who is responsible for removal
  - Who would pay for debris removal
  - Ice jamming in areas of high debris
  - Opening channels upstream will cause more problems downstream (start downstream)
  - Liability of municipalities in maintenance of streams
  - Individuals who do not have equipment - getting assistance
- Streambank erosion and restoration
  - Slow creek flow with natural structures
- Siltation
- Culvert maintenance
  - Notably DOT
  - Route 19
  - Route 19 reconstruction in Wyoming County - culverts to handle increased runoff
- Dams
  - Create more problems in some areas
- Beaver dams - rechannel natural flow
  - Permit issue
  - Land owner approval and/or cooperation
- Education and awareness - need more
- Tributaries
  - Major causes of flooding
  - Identify to slow and alleviate flooding
  - Pearl and Oatka Creek junction recently cleared and improvement seen
- Increased impervious surface
  - Flooding issues of open land vs. impervious surface
- Creek straightening
- Perception that flooding is occurring more lately
- Flooding causing more damage then any other natural disaster in NYS
- Need buffer zones between creek and structures
- What is the Army Corps' role

Appendix E - Prioritization Criteria for Site Hazard Evaluation Methodology

All sites were ranked according to the following methodology:

Rank	Criteria	Yes	No	Previously repaired or mitigated (Y/N)	Does previous mitigation require repair?
16	Critical facilities affected by flooding or streambank erosion				
15	Critical facilities threatened by flooding or streambank erosion				
14	Residences affected by flooding or stream bank erosion				
13	Residences threatened by flooding or stream bank erosion				
12	Industrial structure affected by flooding or stream bank erosion				
11	Industrial structure threatened by flooding or stream bank erosion				
10	Agri-business structure affected by flooding or stream bank erosion				
9	Agri-business structure threatened by flooding or stream bank erosion				
8	Commercial structure affected by flooding or stream bank erosion				
7	Commercial structure threatened by flooding or stream bank erosion				
6	Road/bridge affected by flooding or stream bank erosion				
5	Road/bridge threatened by flooding or stream bank erosion				
4	Infrastructure affected by flooding or stream bank erosion				
3	Infrastructure threatened by flooding or stream bank erosion				
2	Property (not structures) affected by flooding or stream bank erosion				
1	Property (not structures) threatened by flooding or stream bank erosion				

Each site then received a total score. Ranked sites were then provided to the Planning Committee for review and input. Priority sites for further investigation are based on both the quantitative ranking and the qualitative review by the Planning Committee.

Appendix F – Residential/Agricultural & Commercial/Industrial Surveys

Flood Survey Results by County, Municipality & Watershed

	Total Parcels (in Buffer Zone)	Ag/Undev/Mixed			Commercial/Ind			Residential			Total		
		Surveys Sent	Surveys Delivered	Res-ponses	Surveys Sent	Surveys Delivered	Res-ponses	Surveys Sent	Surveys Delivered	Res-ponses	Surveys Sent	Surveys Delivered	Res-ponses
Genesee County	**3,541**	**53**	**47**	**20**	**338**	**243**	**78**	**2,485**	**2,071**	**702**	**2,876**	**2,361**	**800**
Batavia (C)	1,901	0	0	0	231	164	56	1,468	1,202	386	1,699	1,366	442
Alabama	16	0	0	0	1	1	1	6	3	1	7	4	2
Alexander	215	17	15	9	4	3	1	102	91	29	123	109	39
Batavia	405	9	6	2	39	27	4	252	213	70	300	246	76
*Bethany	83	5	6	1	0	0	0	54	48	20	59	54	21
Darien	9	0	0	0	0	0	0	7	6	2	7	6	2
LeRoy	197	9	8	2	4	4	2	131	126	51	144	138	55
Pavilion	136	6	7	4	9	8	4	66	59	21	81	74	29
Pembroke	206	6	4	1	12	6	2	139	106	35	157	116	38
Stafford	17	0	0	0	0	0	0	13	11	3	13	11	3
Alexander (V)	53	1	1	1	6	4	0	28	25	16	35	30	17
Attica (V)	15	0	0	0	3	3	0	0	0	0	3	3	0
LeRoy (V)	288	0	0	0	29	23	8	219	181	68	248	204	76
Wyoming County	**1,394**	**21**	**20**	**6**	**98**	**73**	**30**	**889**	**782**	**283**	**1,008**	**875**	**319**
Attica	93	2	2	2	7	7	2	51	47	21	60	56	25
Bennington	79	2	2	1	0	0	0	31	28	8	33	30	9
Covington	102	4	4	2	2	1	1	68	67	25	74	72	28
Gainesville	57	1	1	0	7	2	0	37	31	10	45	34	10
Java	33	1	0	0	1	1	1	16	13	3	18	14	4
Middlebury	36	3	3	1	0	0	0	7	7	2	10	10	3
Orangeville	104	3	3	0	1	0	0	56	53	21	60	56	21
Sheldon	123	2	2	0	3	3	2	81	77	30	86	82	32
Warsaw	106	2	2	0	8	6	1	60	54	20	70	62	21
Attica (V)	314	1	1	0	33	27	13	233	202	73	267	230	86
Warsaw (V)	264	0	0	0	29	19	9	197	156	56	226	175	65
Wyoming (V)	83	0	0	0	7	7	1	52	47	14	59	54	15
Tonawanda	**3,639**	**48**	**41**	**17**	**341**	**246**	**82**	**2,520**	**2,111**	**714**	**2,909**	**2,398**	**813**
Oatka	**1,296**	**26**	**26**	**9**	**95**	**70**	**26**	**854**	**742**	**271**	**975**	**838**	**306**
Totals	**4,935**	**74**	**67**	**26**	**436**	**316**	**108**	**3,374**	**2,853**	**985**	**3,884**	**3,236**	**1,119**

* The Town of Bethany was the only Municipality to have parcels in both the Tonawanda and Oatka Creek Watersheds.
The only survey response was in the Oatka Creek Watershed, indicating that no flooding has occurred.

Flood Damage Survey - Comments

Agricultural / Undeveloped / Mixed Use

ID #	Comment
1950	Wolfley Farms works over 100 acres of cropland in the Tonawanda Creek Watershed or flood plain. The biggest problem with frequent flooding is the Tonawanda Creek is filled in numerous places with logjams, which hold back the flow of water and causes frequent flooding. Logjams should be removed to give the Tonawanda more capacity to handle the water flow. – Willard Wolfley
2066	We become stuck in or out when all roads to home have road-closed signs and/or flood water across the road.

Commercial / Industrial

ID #	Comment
1881	In response to your survey questionnaire, the following information may be relevant. Chapin Manufacturing owns 126 acres of land, 80 acres in the Town of Batavia, and 40+ acres in the City. A large portion of the property is a State and Federal Regulated Wetlands that drains to the Celery Creek to the Tonawanda. The Creek is in the very far South corner of the property. In the past 5 years, flooding has occurred in areas North of the Niagara Mohawk Easement that were previously not wet. The cause of the flooding is not known but several factors may have contributed: - A local company discharges 500,000 to 700,000 gallons a day into a DOT easement onto Chapin property. Chapin is working with Dave Lange, DOT on several problems with the easement and flooding that is occurring in this area. Additional problems have been generated by this constant flow of water in attracting Beavers to the area. Several areas have been flooded, and some animals have been removed under a DEC nuisance permit. - I have spoken with Roger Lander about this survey; please contact him or myself (585) 343-3140 x3033 for further information.
4085	At our expense, we dug up our basement floor to set tile in the foundation and installed a sump pump. We also dug up the property to install tile in the ground and upgraded our gutter system. The greatest difficulty has been our frustration obtaining assistance – even insurance. Since our major work however, we've not had the same flooding difficulties.

Residential (Genesee County)

I I # I	Comment
431	1941 Batavia Flood affected homes on Ganson Avenue, when the curve on Ganson Ave. was an open field. Since then St. has been extended and storm drains added. In 1989 the City of Batavia re-paved and redid storm drains. Area #2: Land mass between Ganson and Morton Ave has had flooding problem. A manhole in this area was covered with soil and disconnected (according to the city of Batavia). If cleaned out &

	re-connected flooding between these streets would be alleviated. Issue with mandated flood insurance: Suggestion- Ganson Ave. hasn't seen flooding since improvements to drainage and installation of discharge gate, please include renaming of the flood zone in Batavia. Why is my NFI rate $577/yr for $65,000 coverage and my brother's $301/yr for $284,000 in NC. Day phone: 344-0055, home: 716-308-2009.
501	Tonawanda flow obstructed by fallen trees, sedimentary erosion, and other natural debris. Deepening channel in shallow spots may be necessary since so much silt has been deposited filling in the basin. Grew up on Creek Road near "Whiskey Run" and saw it flood regularly.
922	Flood Insurance: Program is overpriced, coverage is poor, & deductibles are too high. People who have had to use flood insurance have complained about poor settlements and attempts to avoid paying. NFIP needs to be revisited. Flooding Remedies: Clean brush and trees from banks. Clear and deepen channel. Monitor yearly maintenance of channels and banks.
1472	We have lived at 160 Jackson St. for 33 years and have never seen flooding. We would like to know who determined our property and when this was done. We believe Insurance Companies are trying to get rich off of people who don't really need flood insurance. Ann Brzezniak 334-0126.
2308	Several years ago I sat on the Tonawanda Watershed Advisory Committee and creek clean up was an issue we discussed. However, instead of the much-needed removal of logjams south of the city, the advisory council organized a "clean-up" of stretch that flows under the Rt. 98 bridge as well as just upstream and downstream from the bridge. Why not remove logjams from Rt. 20 all the way to the WBTA radio tower on Creek Road? Wouldn't this speed the flow of water through the area?
1534	61 years ago, the Tonawanda creek overflowed its banks and reached South Liberty Street forcing residents to leave homes in rowboats. Hasn't happened again in past 53 years I've lived here. For past 19 years I've lived on Liberty St. I've had to pay $500/yr in flood insurance, which only covers structure/foundation, not contents or appliances in basement. I'd rather take the risk of flooding than pay the insurance premium. I feel nobody should be forced to pay for flood insurance.
1572	Recent changes on Law St in Batavia have helped alleviate flooding across the street. One area of concern I see is flooding at Kibbee Park. Also, I do not agree that I should be required to carry flood insurance by the bank. In the 30 years I have lived at 114 S. Swan St in Batavia, I have not been aware of any floodwaters in this area. The flood zone should be revised.
1248	I was an original member of the Tonawanda Creek Watershed Committee and after months of study, I made a motion which was passed by the committee to proceed with the Upper Tonawanda (just S of City of Batavia) for a flood control project. This project was to control flooding by retention ponds to release the water in a timely manner into the creek to prevent flooding. Unfortunately during President Reagan's term cutback were made in programs that would have funded this project. Town of Amherst would have benefited the most and should have born the greatest burden for maintenance.
1018	My neighbor has lived on his property for 50 years and has never seen the Tonawanda Creek cross the road. He said the Army Corp of Engineers redesigned it years ago so it wouldn't flood. I live on the South side of south Main Street at Eastern end, I've only

	seen yards flooded on the North side of the Street on the Western end. I pay $500/yr unwillingly for flood insurance (mandatory by mortgage).
2779	The Oatka Creek is full up to banks every Spring thaw (occasionally overflows banks) preventing drainage tributary from releasing into the Oatka. Flood waters back up and 10+ acres of farmland. In LeRoy, the problem has worsened over past few years as the village and Town have approved more development and parking lots (more roofs and landcover).
1100	Although the Tonawanda Creek has not flooded our property since we've owned it, flooding is a concern of ours as the creek rises every Spring. The Tonawanda did flood this property and most of the South side of Batavia in the 1940's before the creek bed was widened and deepened.
2249	I owned the nursery and greenhouse during the devastating floods of 1959-60. This flooding occurred after flood control work was done by the city of Batavia. I decided to close the business as a result of the flooding. My daughter and son have since reactivated the business and made some flood prepared changes. We now have gas heating and are able to elevate the units. Also ice jams are no longer an issue b/c the city's wastewater deposits warm water in the creek. I believe those who defeated the building of a flood control dam south of the city did the area.
429	Flood insurance is worthless in the city of Batavia b/c it isn't valid unless the whole city is declared in a state of emergency. My street & house may be flooded, but unless there is an SOE insurance would be of no use. Flooding in the city kept to a minimum since the widening of the creek plus pump stations run by the city. Hasn't been a flood in the city of Batavia since early 40's.
1024	Since house was built in 1898 no flooding damage has occurred. During 100-yr. flood peak, water was still 175' from house. I find it ridiculous that I must pay $547/yr in flood insurance. Flood zone needs to be adjusted.
3001	Built house in 1989 knowing that could be in flood zone we built it on top of a hill. Army Corp flood maps show we were in flood zone so we hired a surveyor to map elevations. Report is attached. First floor elevation of new home: 862.5' Top bank of Tonawanda Creek: 848.4' (difference 14.1')
2071	We live directly on the Attica-Alexander boarder just South of Attica 2000' from Tonawanda, but 300' from inlet that feeds into it and floods our yard every year. We are having problems with our septic system due to the flooding. Flooding increased after a bridge going under Genesee St was made smaller.
2384	Concern with floodwater at 9557 Creek Rd in Bethany: We have well water at our house and are concerned with water quality during flooding b/c of local farming. Also concern with nearby culvert being blocked during spring flooding.
747	Serious problem with flood control dike on Jackson Ave in city of Batavia. This cement dike is undermined at its base. City is aware but has done nothing. For more info. about this problem contact RJ Smith (585) 345-6350.
2187	Old mill dam behind E. Pembroke Fire Dept needs to be removed. No longer of any use. It backs up water into Bowen Creek onto my property. If removed it would allow water to flow faster and lower level of Bowen Creek. Tonawanda Creek needs cleanup countywide. Trees and brush needs to be removed.
385	Drainage ditch in yard about 4' wide turns into lake during flooding. I believe a dam between Batavia and Alexander should have been built on the Tonawanda about 30

	years ago.
1122	Tonawanda Creek concerns in City of Batavia: South side of Creek near Walnut St pedestrian bridge needs stone work done to bank like North Side. Ice jams cause water to back up every Spring. My backyard is slowly sliding into the creek. Original fence posts are 4 to 6' down the sloop. Garage has broken cement pad on North side and leans to the North.
20	Flash flooding in Batavia: stormwater drainage ends up at our end immediately adjacent to Main St (RT 5) and directly in front of our house. Problem began with increase of commercial development on west side of Batavia and indicates that there is not adequate drainage in our immediate vicinity.
1038	See attached Flood/Elevation survey of 2-4 Davis Ave. in Batavia: First floor elevation is 3.1' above base flood elevation of 889.5'
1079	Our house has never been flooded, but many years it has come close. Every year we worry it could be the year our house does get flooded. I will be glad to see a Flood Mitigation Project for the Tonawanda Creek.
1152	Concern with accuracy of being in flood zone: Attached is fax from City of Batavia showing tax parcels and 100Yr flood zone.
2771	Oatka Tributary crosses under Rt 19 into Rusk's fields between their greenhouses and 8547 Lake St Rd. making land unusable until water leaves.
1904	Storm sewer under Rt. 98 in Alexander needs to be replaced. Tonawanda Creek needs to be cleaned out.
157	In my opinion, you cannot control mother nature. Making costly changes to the environment would only have higher maintenance costs in the future. We moved here knowing the risk and with that the Tonawanda near me is left just the way it is. Previous homeowner built the house in 1900 and only recalled one flood since.
17	Flooding is always a concern here in the area every Spring. The City of Batavia has made drainage improvements and we recently purchased a generator for emergency pumping in case of power outage. We have been fortunate through the history of flooding nearby.
2748	Marked location on Oatka Creek in LeRoy where removed many large boulders and tried to change the flow at a bend in the creek. Area of lime pit mining where creek overflows in wet years. Creek needs to be cleaned out, increasing its depth.
2086	Tonawanda Creek should be dredged from Batavia to East Pembroke to allow more water to be held within its banks and provide more opportunities for recreational uses. Removing trees, garbage and other debris would help increase rate of flow.
18	Main and Redfield intersection in Batavia floods every time there are heavy rains. Water spreads across Redfield as it goes down the street.
1607	They built a new dyke years ago to prevent floods in this area. Why must I still have flood insurance?
2162	Floodwaters have come up to our house, but not inside 3 times in past 8 years. We are slightly more elevated than our neighbors. We were asked to leave our house in Jan 1998 but stayed and were fine. We feel there is a great need for flood control. Given the right conditions (melting snow pack + rain) we are in danger of a disaster. Other concern: our neighbor's gray water leaches into the Tonawanda.
2304	Our property floods each spring and after heavy rains due to water backing up in drainage ditch across the road from the Tonawanda and poor drainage in back yard. No

	history of structural damage, but water gets 2' deep in yard.
2431	For many years there was an "S" curve to the creek on my property. Over the years, flooding has completely straightened out the curve and as a result each spring the waters rush by rapidly causing erosion of my land and higher water on the land itself.
2532	Concerned with: 1) Silt build up behind dam on Munson St. 2) Erosion of bank on East side of Oatka on Wolcott St - vicinity of school 3) Condition of retaining walls on West side of Oatka, below Post Office and Falls on North side of Main St. bridge.
2230	Ice Jam at Brushville Bridge caused flood in 1959. After 1959, we built a dyke along the bank to prevent future flooding. Ice jams would be prevented if trees and other debris along the banks were cleared out as they did to the West City line. Most years we get some "surface water" but don't see damage.
122	Only flood in area over past 70 years was in 1942. In 25 years I have lived at 136 S. Main in Batavia water has only come 25' into my yard. At $500/Yr NFI is a waste of money.
2935	I am strongly opposed to any project that would alter the natural flow of the Tonawanda. Aquifer my well water is supplied by required Tonawanda to remain unchanged. Years ago the Army Corps of Engineers did a study to dam the Creek to prevent flooding in Erie County. Project would have permanently flooded large areas of agricultural lands in Genesee County, adversely affecting the livelihood of the farming and dairy industry here.

Residential (Wyoming County)

ID #	Comment
3153	N. Washington St: problems every year. Man changed flow of creek years ago from end of street. Now old creek bed fills up near house and doesn't drain. In 1998 flood, this was the source of flooding in our basement and 1st floor, doing much damage (electrical, furnace, carpets, and walls). Old creek bed needs to be leveled out so water drains into creek. Also, much debris (i.e. downed trees) blocking flow of water in existing creek bed.
3185	Severe flooding occurs along Washington / N. Washington neighborhoods every spring. Little has been done to protect this area in past 58 yrs.
3513	Oatka and tributary Pearl Creek fears: Work on Pearl Creek bed over summer with DEC & NRCS. When Oatka overflows banks here, flows over 1200' of farmland in some places. Backs up Pearl Creek sending water across Rt. 19, just south of Wyoming Rd. across our fields and towards the farmstead. Many basements flooded in Pearl Creek Hamlet. In major floods (i.e. 1972 & 1989) Oatka and Pearl send water over G&W railroad tracks into gravel pit, which fills then spills across our fields, cutting deep channels and depositing hundreds of tons of sand and sediment. Silt also blocks flow in ditches and tile outlets affecting underground drainage tile that costs thousands of dollars to install. Silt deposits these rates seen will cause loss of many acres of valuable farmland over next decade. **Need to clean up logjams, dig out key sandbars between North of Pavilion and South of Wyoming.** *R.L Jeffres & Sons, Inc. and Jeffres Farms* willing to donate time and equipment to facilitate project. Phone (585) 584-3110
3700	Creek Bank erosion major is during flooding. Spring floodwaters in 2001 & 2002 rose 6ft over bank and approaching house. Contacted WCSW, est. cost $14,000-

	$16,000, but no funding available. Please contact with any advice: Robert Schmieder 585-535-0259
4089	Severe erosion & loss of property along Oatka Creek just south of village of Warsaw on Rt. 19. Loss hundreds of ft of acreage along Oatka as result of high water and debris in the creek. Daughter's driveway that was 150 ft from creek when install is now less than 20 away. Recently received permission and instructions from DEC for a channel to reroute some of the water.
4124	Main concern is Relyea Creek stream bank erosion. Rt. 19 bridge compromised during flooding.
3629 3748	Village Brook in Wyoming causes severe erosion in back yard along break wall. The creek direction was changed some years back forcing water to make 2 right angles before continuing to bridge. Village brook should be straightened behind my house. 17 years ago, bridge in front of house was replaced with a box culvert, which was about one-third the size of the original bridge. This was the reason for my flooding in 98.
3236	Flooding at 11247 Genesee Street, Attica. Flooding was not a problem prior to county rebuilding bridge those Tonawanda tributary flows under.
3133	Water Street flooding, Attica: flooding where I live could be helped by building dike on landowners back property lines from Water Street to North Street. Part of problem caused by a dam, which carries sewage from west to east side of village. Dam doesn't cross-stream at 90 degrees, causing erosion along banks on Water Street. Wall and trees fallen into creek behind old theater (now a tavern). Flood issues along lower Prospect Street where 2 loves lost.
3852	Oatka Creek, village of Warsaw: creeks narrows, twists and turns as it flows North from Court St bridge, creating bottleneck and causes it to overflow banks < 1/2 mi from bridge. We feel Oatka creek should be widened and straightened from the Court St bridge to "old Buffalo Rd" (village limits), greatly reducing flooding in the populated area of the village.
3876	1955 Flood: Still building house, flooding basement up to 1st floor. Lost furnace and water heater, freezer. Grease on rafters from gas station on Buffalo St.
3753	After 97 flood, path of creek moved couple hundred ft. toward road destroyed a cabin. Erosion is continuing towards my house and neighbor's. All levels of government will not assist in problem, only issue permit to do work ourselves. I have a video of flooding in the area and other flood damage in the town if interested. *Frank Piacente. 2168 Route 98 Attica NY*
3814	Between 1973-1974 the state came in and altered the natural flow of the Tonawanda in back yard, where it previous flowed straight and caused no problems. They created a berm12' high along the 500 ft. of creek bank in our yard. Each year high water would flow behind this bank leaving a trail of debris, garbage, dead cow parts, syringes in our yard. In 1996, acquired permit to level the berm and grade the yard back to the streambed, costing $6000. The 200-year flood in 1998 brought in so much water and sediment from the hills West of here overflowed a pond across the street and eventually meets the creek churning up a storm and ate up our yard foot by foot. DEC permit was still valid after this storm and spent $12,000 on a bulldozing crew to put yard back in place. Creek eventually going back to state it was in before it was

	messed with in the 70's. Call 585-535-7363 for more info. We have video of the '98 flood.
3291	Tonawanda Creek bed between Varysburg and Attica has an abundance of logs and debris in it. Frequent flooding occurs behind Attica Rodeo Grounds & contributes to damage of personal property on Exchange Street in Village of Attica. Retains walls behind Attica Fire Hall in very bad condition, need immediate attention. Tonawanda Creek under the railroad overpass in downtown Attica collects much debris/logs. Drainage on Exchange St needs serious attention (not enough catch basins). Village Park on Exchange St has no drainage, sees lots of standing water.
3120	Property at 112 Market St is gets flooding when runoff from across street backs up in culvert across Rd. Normally culvert empties into the Tonawanda, but it is already above its banks, it comes across the road (Rt. 98) and towards our house (which sits 8-10 ft below Rd.)
3432	We feel that if the trees that fall across and into the creek (Tonawanda) creek would keep flowing without the damming and overflow during hard rains. This happened in 98. Trees cause creek to re-route through our property until trees gave way, water then gushed into Attica Village.
3402	Approx. 400ft of backyard has been eroded away during Tonawanda Creek flooding events over past 40 years and is getting way too close to house.
3477	Was willing to accept yearly spring and fall flooding when purchased property. All appliances in basement are on concrete blocks; take down pasture fence yearly, put back up after flood season, plant flood resistant varieties of plants.
3366	Last year Attica town crew came out and removed a large curve in the Creek (Tonawanda), seems to have helped move water more rapidly without backing up and going over the bank.
3366	Flood Insurance does not cover anything below grade except a furnace, appliances and unfinished drywall. We are required to carry flood insurance because of SBA disaster loan, but unless house is carried away in a flood I never see more than a few dollars after paying $700/year premium.