

Flood Mitigation Action Plan

**Town of Erin, Town of Van Etten,
and Village of Van Etten**

April 2001

Flood Mitigation Action Plan
Town of Erin, Town of Van Etten,
and Village of Van Etten
Chemung County, New York

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Prepared with assistance from:

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BACKGROUND

The Towns of Erin and Van Etten are located in northeastern Chemung County, New York. The Village of Van Etten and is located within the Town of Van Etten at the junction of Langford Creek and Cayuta Creek. These three municipalities have a combined population of 4,061 (1990 census: Town of Erin 2,002; Town of Van Etten 1,507; Village of Van Etten 552). Most of the development in Erin and Van Etten is concentrated in the stream valleys.

Erin and Van Etten are located within the Susquehanna River Basin. The principle drainage ways are Newtown Creek in Erin and Cayuta Creek in Van Etten. Newtown Creek originates in the Town of Erin, from which it flows westward and then south into the Chemung River. Three flood control dams are located in the Newtown Creek Watershed in the Town of Erin: Marsh Dam (located on Marsh Creek), Park Station Dam (located on Newtown Creek), and Jackson Creek Dam (located on Jackson Creek). Cayuta Creek flows southeastward through the Town and Village of Van Etten before joining the Susquehanna River. The upper portions of this watershed include Cayuta Lake and several large wetlands in Schuyler County. There are no man-made flood control structures on Cayuta Creek or its tributaries.

The streams in Erin and Van Etten are flashy systems that are subject to rapidly rising floodwater. Streambank erosion poses serious problems along many high gradient tributary streams. Localized drainage problems are also a concern throughout the area, particularly where development, timber harvesting, or beaver activity has altered drainage patterns. Many roads have sustained repeated washout problems.

The flood of record for Newtown Creek is the Tropical Storm Agnes flood in June 1972. Subsequent flooding in Erin and Van Etten occurred in September 1975 (Tropical Storm Eloise), June 1976 ("Fathers' Day Flood"), April 1993 ("Blizzard of '93" snowmelt), August 1994 (Tropical Storm Beryl), January 1996 (snowmelt and heavy rain, FEMA 1096-DR-NY), November 1996 (FEMA 1148-DR-NY), and July 1998 (localized thunderstorms). In addition to these major flood events, many additional incidents have caused localized drainage problems, ponding, streambank erosion, ice jams, groundwater flooding, and other difficulties. Flooding and drainage problems have repeatedly damaged roadways, roadside drainage structures, and residential properties.

The Town of Erin, Town of Van Etten, and Village of Van Etten all participate in the National Flood Insurance Program. (The Town of Van Etten joined in 1979; Town of Erin joined in 1982, and Village of Van Etten joined in 1988). Each municipality has enacted a local ordinance to regulate development within the areas designated as the 100-year floodplain (on the Town and Village Flood Insurance Rate Maps).

Flood insurance can be purchased for any building in Erin or Van Etten. On March 3, 1999, there were 8 flood insurance policies in the Town of Erin (3 in the 100-year floodplain), 2 policies in the Town of Van Etten (1 in the 100-year floodplain), and 2 policies in the Village of Van Etten (both in the 100-year floodplain). Flood insurance claims since 1978 have totaled \$8,267 (3 claims, all in the Town of Van Etten). This represents only a fraction of the total flood

damages because many property owners do not carry flood insurance and many damages (particularly to basements and basement contents) are not covered.

The Town of Erin, Town of Van Etten, and Village of Van Etten benefit from many ongoing efforts to resolve flooding and drainage problems. When road, shoulder, culvert, and road ditch repairs have been necessary, efforts have been made to address the problems rather than just repairing the damage. The Highway Departments have replaced drainage pipes with larger structures to accommodate increased flow from changing land use patterns. The County Soil and Water Conservation District has worked closely with the Towns and property owners to implement stream maintenance and stabilize sites experiencing streambank erosion. This Plan represents an attempt on the part of these municipalities to identify and implement measures that will further reduce flood damages.

HOW THIS PLAN WAS PREPARED

This Plan was prepared at a series of flood mitigation planning meetings. Participants included: Town of Van Etten Supervisor, Village of Van Etten Mayor, Town of Erin Councilmen, Town of Van Etten Councilmen and Councilwoman, Village of Van Etten Trustee, Town of Erin Planning Board members, Village of Van Etten Planning Board members, Code Enforcement Officer for the three municipalities, Town of Erin Highway Superintendent, Chemung County Soil and Water Conservation District, Chemung County Emergency Management Office, Cornell Cooperative Extension of Chemung County, forester with a company owning land in the Towns of Erin and Van Etten, and property owners from the Town of Erin. The Flood Mitigation Specialist for Southern Tier Central Regional Planning and Development Board provided staff support. All decisions were reached by consensus of those present.

The information and recommendations included in this Plan were assembled at a series of flood mitigation planning meetings. The Southern Tier Central Flood Mitigation Specialist documented the proceedings of each meeting for review at subsequent meetings. The following meetings were held:

- **9/29/99: Organizational meeting:** Introduction to the flood mitigation planning process. Identify planning committee members. Develop a strategy for coordinating with other agencies and elected officials. Develop a strategy for involving the public. Define the scope of the planning process.
- **10/25/99: Assess hazards and problems, Town of Erin:** Compile information about flood hazards in the Town of Erin. Identify flood problem areas and document the nature of the problems. Discuss the Hazard Mitigation Grant Program.
- **10/27/99: Assess hazards and problems, Town and Village of Van Etten:** Compile information about flood hazards in the Town and Village of Van Etten. Identify flood problem areas, document the nature of each problem, and mark flood problem areas on a map for digitizing. Discuss the Hazard Mitigation Grant Program and Project Impact.
- **11/17/99: Set flood damage reduction goals:** Review other community goals. Discuss the committee's vision of how flooding issues can be addressed and future damages prevented. Compile a list of flood damage reduction goals for Erin and Van Etten.
- **2/10/00: Evaluate Flood Solutions:** Review the proposed flood mitigation goals. Begin reviewing the Flood Solutions Worksheet – a comprehensive list of possible activities for reducing flood damages. Identify public information and preventive activities that are applicable to the resolution of flooding problems in the Town of Erin, Town of Van Etten, and Village of Van Etten.
- **3/7/00: Evaluate Flood Solutions:** Review the sections of the Flood Solutions Worksheet that encompass preventive activities, natural resource protection, property protection, structural projects, and emergency services. Identify activities that are applicable to the resolution of flooding problems in Erin and Van Etten.
- **4/25/00 and subsequent telephone contacts: Prepare an action plan:** Use the completed

Flood Solutions Worksheet and the committee's flood mitigation goals to prepare an action plan of activities for implementing the proposed solutions. Recommend post-disaster mitigation policies and procedures. Develop a strategy for implementation, evaluation, and revision of the Plan. Recommendation for public review of the draft Plan.

PUBLIC INVOLVEMENT

The chronic nature of flooding problems in Erin and Van Etten has led to interactions between residents and municipal officials concerning water management issues. This public input has occurred through personal contacts and at municipal meetings. The problems and potential solutions arising from these ongoing interactions were incorporated into this flood mitigation planning process.

Additional public input was obtained during this planning process. Municipal officials distributed information about the flood mitigation planning effort and contacted owners of flood prone property. Information about flood mitigation planning meetings was distributed at a meeting of the Chemung County Farm Bureau. The progress of the planning effort was reported to a civic group in Spencer and Van Etten. Residents and a local forester attended some of the flood mitigation planning meetings.

A draft of this Plan was presented at two public information meetings on June 27, 2000 in Erin and on June 28, 2000 in Van Etten. These meetings were publicized through local television news (Channel 4), notices posted in public areas (included in Attachment A), word of mouth, and direct mailing to flood-prone residents, municipal officials, agency personnel, and elected officials. Attendance at these meetings included: citizens, municipal board members, and planning board members. Each public meeting included a presentation of the planning process and the proposed action items followed by discussion of flooding issues, concerns, and mitigation measures. Large-format copies of the Flood Hazard and Problem Maps (Attachment B) were displayed for review and discussion. Each participant was given a handout summarizing the flood mitigation planning process (included in Attachment A) and a list of the proposed action items (Table 1 in this Plan). Copies of the entire Plan were available for review.

All of those attending the public meetings were supportive of this Plan. Several clarifications, corrections, and additions were recommended. The descriptions of several flood problem areas were revised, based on input received at these meetings. In particular, the description of erosion problems along Langford Creek in the Village of Van Etten (Problem #42) was expanded to incorporate additional erosion that had occurred during recent thunderstorms. It was recommended that some of the problem areas discussed at the meetings be specified in the descriptions of the applicable Action Items. Langford Creek in the Village of Van Etten (Problem #42) was added to Action Items #10 (Implement Stream Stabilization Projects), #11 (Streambank Protection at Roads), and #15 (Support Efforts to Restore and Construct Wetlands). A severe bank erosion problem on McDuffy Creek (Problem #46) was added to Action Item #10, Implement Stream Stabilization Projects. Town of Erin officials reported on the status of the Newtown Creek Beaver Project (Action Item #20). It was recommended that an Action Item be added specifying that the Town of Erin will consider the inclusion of a stream setback provision

in their revised zoning law (Action Item #9). Town of Erin officials requested a copy of the New York State Pollutant Discharge Elimination System (SPDES) General Permit for Storm Water Discharges from Construction Activities to understand the existing permit requirements for stormwater management. Two participants from the Town of Erin volunteered to maintain rain gauges, consistent with Action Item #21 (Increase Network of Volunteer Rain Gauge Readers).

COORDINATION WITH RELEVANT AGENCIES

Flood mitigation planning information was provided to municipal boards and planning boards throughout the planning process. Input from Town officials unable to attend flood mitigation planning meetings was obtained through personal communications, thus insuring consistency with other community goals and activities. A draft of this Flood Mitigation Action Plan was submitted to Town officials for review and comments.

County, regional, and state agencies and elected officials were contacted for relevant information and recommendations about this flood mitigation planning effort. Personnel from these agencies attended planning meetings, provided information, answered questions, reviewed minutes, and reviewed draft sections of this document. A letter was sent to each of the following agencies and offices at the beginning of the planning process. Their responses and contributions are summarized below:

- ◆ Chemung County Soil & Water Conservation District (County Hazard Mitigation Coordinator) – attended meetings, distributed educational material, provided information about channel maintenance and stabilization, reviewed minutes and draft sections of Plan, responded to questions
- ◆ Chemung County Emergency Management Office – attended a meeting, provided information about flood warning and emergency response, reviewed minutes and draft sections of Plan, responded to questions
- ◆ Chemung County Planning Department – reviewed minutes and draft sections of Plan
- ◆ Chemung County Water Quality Strategy Committee – reviewed minutes and draft sections of Plan
- ◆ Chemung County Environmental Management Council – reviewed minutes and draft sections of Plan
- ◆ Chemung County Public Works Department
- ◆ Cornell Cooperative Extension of Chemung County – attended meetings, reviewed minutes and draft sections of Plan
- ◆ Environmental Emergency Services, Inc. – provided information about gauges and flood warning capabilities
- ◆ Southern Tier Central Regional Planning and Development Board – facilitated meetings, wrote minutes, provided information, made recommendations, drafted Plan
- ◆ Sullivan Trail Resource Conservation and Development Council
- ◆ New York State Emergency Management Office, Mitigation Branch – reviewed minutes and draft sections of Plan
- ◆ New York State Department of Environmental Conservation, Flood Control – reviewed minutes and draft sections of Plan, responded to questions

- ◆ New York State Department of Transportation –provided information about state roads, reviewed minutes and draft sections of Plan
- ◆ USDA Natural Resources Conservation Service
- ◆ New York State Senator John R. Kuhl, Jr. – written response, referred to Soil and Water Conservation District for additional information
- ◆ New York State Assemblyman George Winner, Jr.

A draft of this Flood Mitigation Action Plan was submitted to the following departments and agencies for additional review and comment. Reviewers provided additional information about flood problem areas and recommended solutions. All of the recommendations received were incorporated into this plan.

- ◆ Chemung County Soil & Water Conservation District (County Hazard Mitigation Coordinator)
- ◆ Chemung County Emergency Management Office
- ◆ Chemung County Planning Department
- ◆ Chemung County Environmental Management Council
- ◆ Chemung County Public Works Department
- ◆ Cornell Cooperative Extension of Chemung County
- ◆ Environmental Emergency Services, Inc.
- ◆ Southern Tier Central Regional Planning and Development Board
- ◆ Sullivan Trail Resource Conservation and Development Council
- ◆ New York State Emergency Management Office, Mitigation Branch
- ◆ New York State Department of Environmental Conservation, Flood Control
- ◆ New York State Department of Transportation
- ◆ Federal Emergency Management Agency
- ◆ USDA Natural Resources Conservation Service

PROCEDURE FOR REVIEW AND REVISION OF THE PLAN

The Flood Mitigation Action Plan for the Town of Erin, Town of Van Etten, and Village of Van Etten will be reviewed and updated at an annual meeting of Town and Village officials and interested members of the public. The following people will be asked to participate in this process: Municipal Board members, Planning Board members, Highway Superintendents, Code Enforcement Officer, Fire Chiefs, owners of flood-prone property, and representatives of County and State agencies. If possible, the Southern Tier Central Flood Mitigation Specialist will facilitate these meetings.

FLOOD HAZARDS AND PROBLEMS

Flood hazards occur in areas that are prone to flooding, whether or not any development is affected. This Plan addresses the following hazards throughout the Town of Erin, Town of Van Etten, and Village of Van Etten: riverine flooding (from streams), wetland flooding, beaver pond problems, stormwater runoff, and erosion of streambanks. Flooding can result from heavy rainfall, rapid snowmelt, and ice jams. Flash flooding is common on tributary streams.

The Flood Insurance Rate Maps for each municipality indicate the areas expected to be inundated by 100-year flooding along the principle water bodies (Attachment B). Additional hazards due to flooding and bank erosion exist along every stream and many unmapped drainage ways. The hazard areas for overland flooding and ponding are generally not recognized unless they contribute to flooding problems. The drainage associated with roadways and roadside ditches poses hazards in many areas, particularly on steep hillsides. The potential hazard areas are thus widespread.

Flood problems occur when development is adversely impacted by flood hazards. Numerous flood problem areas have been identified throughout the three municipalities. These problems are described below and indicated on the Maps of Flood Hazards and Problems (Attachment B). This information about flooding problems was assembled from previous documentation and the knowledge of municipal officials, residents, and agency personnel familiar with flooding in Erin and Van Etten.

RIVERINE FLOODING, WETLANDS, AND BANK EROSION

Riverine flooding occurs when streams and rivers overflow their banks and inundate adjacent valleys. This occurs when heavy rainfall or rapid snowmelt produces water runoff that exceeds the carrying capacity of the channel. Riverine flood damages can be triggered or exacerbated by constriction or obstruction of stream and river channels. This blockage can result from beaver activity, undersized drainage structures, debris dams, ice jams, or accumulation of sediment within the channel. Backwater flooding occurs when a stream is unable to flow into a larger stream or lake due to high water in the downstream water body.

The Flood Insurance Rate Maps (FIRMs) for each municipality identify the areas expected to be inundated by the 100-year flood for the principle drainage ways. The 100-year floodplain delineates the predicted extent of flooding by an event with a 1% chance of being equaled or exceeded during any given year. Many areas within the 100-year floodplain are susceptible to more frequent flooding. No detailed studies were done to evaluate the expected elevations of flooding.

Development within the 100-year floodplain is regulated by local law. The floodplain development standards are intended to insure that new development in these areas is protected from flood damages and does not cause damage to other areas.

It should be noted that the delineation of 100-year floodplains was based on the assumption of unobstructed flow and is considered valid only if all channels and drainage structures remain unobstructed, operate properly, and do not fail. If these conditions do not exist, the area subject to 100-year flooding could be greater.

The potential for flooding of the numerous smaller streams in Erin and Van Etten was not evaluated when the Flood Insurance Rate Maps were prepared. Yet these streams have floodplains and pose flood hazards. Because there is no floodplain designated on the FIRMs, development along these streams is not regulated by the local laws for flood damage prevention. Yet development in these areas is at risk from both flooding and streambank erosion.

Erosion of streambanks and the subsequent deposition of eroded materials are major concerns in Erin and Van Etten. The severity of these problems is due, in part, to the widespread occurrence of poorly consolidated glacial deposits, which are particularly susceptible to erosive forces. In addition, the high gradients of streams flowing down steep slopes provide the energy needed for erosion and transport of bank materials. Natural erosional processes are accelerated during flood events. Accelerated erosion of banks loosens large volumes of material that are subsequently deposited within stream channels. Although bank erosion and channel migration are natural processes, they can be accelerated by human activities.

GENERAL PROBLEMS:

1. Streambank erosion: Channel instability poses serious problems for many streams throughout Erin and Van Etten. Existing and potential streambank erosion problems threaten all types of development: buildings, farms, yards, roads, bridges, septic systems, pipelines, etc. Severe bank erosion degrades riparian and aquatic habitat. Streambank erosion also leads to deposition of large volumes of sediment, trees, and debris within creek channels, seriously limiting their carrying capacity and increasing the risk of flooding.
2. Debris accumulation in channels: The accumulation of trees and other debris within stream channels contributes to flooding problems throughout Erin and Van Etten. This debris results from natural processes, streambank erosion (which undermines trees and other vegetation), timber harvesting operations, and dumping of material in the channel or floodplain. This material can form debris dams that impede the flow of water, particularly at culverts and bridges. When water bypasses impediments, it erodes streambanks, damages drainage structures, and floods adjacent areas. The impaired flow of water in debris-choked streams contributes to significant amounts of damage every year.
3. Sediment accumulation in channels: The accumulation of sediment within stream channels limits the capacity to convey water and can contribute to flooding of floodplain areas and bridges. The majority of this sediment is eroded from streambanks or streambeds as a result of channel instabilities. Additional sediment results from the erosion of road ditches and banks. Sediment loading also results from inappropriate erosion and sediment control practices at development sites, timber harvesting operations, and agricultural operations.
4. Beaver activity: Beaver activity obstructs and alters stream flow at many locations in Erin and Van Etten. Although beaver dams can reduce downstream flooding by detaining floodwater, they contribute to increased flooding in other areas. Problems occur where impounded water inundates developed areas and where downstream flow patterns are disrupted. The potential for failure of beaver dams threatens downstream areas. The beaver

population in Erin and Van Etten has increased significantly in recent years. This is attributed in part to land use changes, which have increased the available habitat and food supply. In addition, trapping of beaver has become less profitable. When out-of-season beaver removal is necessary to alleviate flooding problems, it costs the municipality \$75 per beaver.

Newtown Creek (Town of Erin)

Newtown Creek and its tributaries provide the primary drainage for much of the Town of Erin. Newtown Creek begins in the northern part of the Town, flowing south and then west into the Town of Horseheads and ultimately into the Chemung River in the City of Elmira. The floodplain of Newtown Creek is not extensively developed in the Town of Erin. The principle threats result from channel migration and diversion of flow.

Flood protection along Newtown Creek is provided by three dams in the Town of Erin that were constructed by the Natural Resources Conservation Service as part of the Newtown-Hoffman Creeks Flood Protection Project. These structures are: the Jackson Creek Dam (located on Jackson Creek), the Marsh Dam (located on Marsh Creek), and the Park Station Dam (located on Newtown Creek). These structures reduce peak flows during flood events and prolong the period in which Newtown Creek is bank full following each event.

Downstream of the hamlet of Erin, the channel of Newtown Creek is prone to bank erosion and channel migration. Farther upstream, Newtown Creek supports a large population of beaver, which contribute to flooding problems and blockage of culverts at road crossings. It is estimated that there are currently at least 20 to 25 beaver dams in Newtown Creek in the Town of Erin.

PROBLEM AREAS:

5. Newtown Creek downstream of Marsh Creek: The channel of Newtown Creek is unstable downstream of the confluence with Marsh Creek. Bank erosion at the meanders has caused the stream to move as much as 150 feet in recent years. Approximately 20 feet of land has eroded behind the Scotchtown Cemetery. Two or three houses on State Route 223 near the Horseheads Town line are located within the 100-year floodplain and are threatened by erosion. Road crossings occur at Langdon Hill Road and Fairview Road. The Town of Erin is working to protect banks on Newtown Creek by softening the curves.
6. Unnamed tributary at Sandbank Road: The northern tributary to Newtown Creek located near Sandbank Road is extremely unstable along its lower reach. A section of this stream was stabilized in 1997 to protect a septic tank. The 100-year floodplain, which has been delineated along the lower reach of this stream, contains two road crossings, but no buildings.
7. Unnamed tributary at Shamrock Drive: Migration of the channel for an unnamed northern tributary to Newtown Creek affects about a half dozen residents on Shamrock Drive. The natural instability of the stream is aggravated by deposition of Christmas trees and other debris near the channel. One house experienced basement flooding in January 1996. Another has problems with water seeping through the basement wall. The remaining property owners experience loss of yards and property damage. The 100-year floodplain was not mapped for this tributary.

8. Fairview Road at Newtown Creek: Approximately 6 houses on Fairview Road are located in the 100-year floodplain of Newtown Creek near its confluence with Marsh Creek. A fallen tree is obstructing flow through this reach of Newtown Creek, threatening an estimated 10 houses with flooding.
9. Unnamed tributary in hamlet of Erin: An unnamed eastern tributary to Newtown Creek crosses State Route 223 twice in the eastern part of the hamlet of Erin. The State Department of Transportation recently replaced the bridge and the box culvert and installed rock riprap along this section of the stream to protect the highway. Approximately eight houses are located within the 100-year floodplain of this tributary.
10. Newtown Creek in hamlet of Erin: State Route 223 crosses Newtown Creek in the hamlet of Erin. The NYS Department of Transportation plans to replace this bridge. This project is in the planning stage. Development in the 100-year floodplain of Newtown Creek includes a store, three houses, and about a dozen mobile homes.
11. Greenbush and Church Roads, hamlet of Erin: Extensive beaver activity upstream of the hamlet of Erin (between Maple Drive and Greenbush Road) has led to repetitive flooding problems on Greenbush Road, Church Road, and State Route 223. Over the years, beaver dams have routed floodwaters into low lying areas east of the historic channel, from which it has repeatedly inundated the hamlet. Greenbush Road was completely washed out in 1992 and in January of 1996. The road surface and roadside ditch have required repeated and extensive repairs due to flooding throughout the 1990's. Downstream of Greenbush Road, water has inundated an area with approximately 20 houses and one church on Church Road and State Route 223. At least 10 of these residences have experienced flooding of houses and one home sustained damage to the foundation in January 1996. Other properties have experienced damage to yards and out buildings. One resident reports flooding every spring from 1991 through 1996. In 1994, residents report that a wall of water inundated the neighborhood, perhaps due to a beaver dam failure upstream. In June of 1996, the water rose so fast that residents had to be evacuated by the fire department. Almost all of the structures affected by flooding are located outside of the 100-year floodplain. However, an elevated railroad embankment separates this developed area from the main stream channel, preventing floodwaters from returning to the channel. The Town plans to construct an earthen berm upstream of Greenbush Road to direct flow into the stream channel before it enters the hamlet.
12. Unnamed tributary at Maple Drive: One house on Maple Drive is located within the 100-year floodplain of an unnamed tributary to Newtown Creek.
13. Maple Drive along Newtown Creek: Extensive beaver activity in Newtown Creek near Maple Drive has resulted in flooding of the road and repeated removal of beaver. The Town of Erin is currently monitoring water levels at two dam sites. Flow problems are compounded by trees that have been pushed into the creek.
14. Kellogg Road: Beaver have repeatedly plugged the pipe that conveys Newtown Creek under Kellogg Road. A small dam below the pipe and a 3-foot high dam immediately above the pipe were recently removed. However, a 5-foot high dam a short distance upstream remains active and may threaten the road.
15. Laurel Hill Road and Red Chalk Road: The culverts that convey Newtown Creek under Laurel Hill Road and Red Chalk Road have both been repeatedly plugged by beaver activity. The Town of Erin Highway Superintendent reports cleaning both of these structures only to find them half-plugged with stones the following day. The Town culvert under Red Chalk

Road was recently replaced with 3-foot plastic pipe, which is easier to clean, but wears out with frequent cleaning. At times in late fall and early spring, daily cleaning is necessary to maintain flow at this site.

16. Houck Road: A beaver pond south of Houck Road drains north into Newtown Creek and may threaten the road.
17. Park Station Dam: Failure of the Park Station Dam during a high storage time could have severe consequences along Newtown Creek, with little or no warning time. The dam is routinely inspected and maintained by Chemung County. The probability of failure is small.

Bulkley Creek (Newtown Creek Watershed, Town of Erin)

Bulkley Creek and an unnamed eastern tributary flow through the northwest corner of the Town of Erin. Bulkley Creek joins with the North Branch of Newtown Creek in the Town of Veteran. Farther downstream in the Town of Horseheads, the North Branch of Newtown Creek is impounded by the Sullivanville Dam, which provides flood protection for development farther downstream. The high sediment load in this drainage system has resulted in significant sedimentation within the reservoir since its construction in 1989.

The 100-year floodplains delineated along Bulkley Creek and its eastern tributary are undeveloped except for road crossings on Sullivanville Road (County Route 15) and Jackson Creek Road. The area experiences extensive beaver activity.

PROBLEM AREAS:

18. Unnamed tributary at Jackson Creek Road: During 1996 flooding, two feet of water from an eastern tributary to Bulkley Creek washed over Jackson Creek Road, washing out the road surface. The road was subsequently elevated two feet. Numerous beaver dams are located upstream on this tributary and three are near Jackson Creek Road. The impoundment from a beaver dam downstream of the road crossing is causing water to pond within the culvert.

Jackson Creek (Newtown Creek Watershed, Town of Erin)

Jackson Creek flows southward in the Town of Erin, entering Newtown Creek in the Town of Horseheads (in the hamlet of Breesport). Floodwater detention is provided by the Jackson Creek Flood Control Dam, which was constructed in the Town of Erin in 1999 (by the Natural Resources Conservation Service). The Flood Insurance Rate Maps for the Town of Erin have not been revised to incorporate the flood protection benefits of this structure. The 100-year floodplain, as currently defined, is largely undeveloped except for roads.

PROBLEM AREAS:

19. Jackson Creek Dam: Failure of the Jackson Creek Dam during a high storage time could have severe consequences, with little or no warning time. The dam is routinely inspected and maintained by Chemung County. The probability of failure is small.

Marsh Creek (Newtown Creek Watershed, Town of Erin)

Marsh Creek is a southern tributary to Newtown Creek, which is located entirely within the Town of Erin. Detention at the Marsh Dam provides downstream flood protection. The inundation area above this dam is mapped as 100-year floodplain and does not contain any buildings. Debris in the channel threatens development farther downstream where there is no mapped 100-year floodplain.

PROBLEM AREAS:

20. Fairview Road: Approximately 16 houses on Fairview Road are located near Marsh Creek. Although Marsh Dam provides flood protection and no 100-year floodplain has been delineated for this section of the creek, these houses may be at risk due to channel instability and bank erosion.
21. Marsh Dam: Failure of the Marsh Dam during a high storage time could have severe consequences, with little or no warning time. The dam is routinely inspected and maintained by Chemung County. The probability of failure is small.

Baldwin Creek (Town of Erin)

The headwaters of Baldwin Creek are located in the southwestern part of the Town of Erin. It flows southward through the Town Baldwin and ultimately into the Chemung River.

The Beaver Pond located in Baldwin Creek along Breesport-North Chemung Road (County Route 1) poses a threat to downstream areas. Chemung County formerly controlled the level in this impoundment by periodically digging down the top of the beaver dam. However, this practice has been discontinued. The dam has failed twice in recent years, causing erosion of the roadway and culvert on Breesport-North Chemung Road and a culvert downstream in the Town of Baldwin. In addition, the high flows resulting from dam failure have caused extensive bank erosion and loss of trees.

Areas of 100-year floodplain have been delineated along Baldwin Creek and the eastern tributaries along Rorick Hollow Road and Murphy Road. The Baldwin Creek floodplain is sparsely developed, with a few road crossings and houses. Significant sections of both Rorick Hollow Road and Murphy Road are located within the 100-year floodplain. Bank erosion along these tributaries threatens both roads.

PROBLEM AREAS:

22. Jim Berlew Road: One house on Jim Berlew Road is located near the 100-year floodplain of Baldwin Creek and is inaccessible when the road is flooded. The culvert at this site was enlarged through a joint project of the Town of Erin and Chemung County.
23. Unnamed tributary along Murphy Road: Murphy Road is located within the narrow 100-year floodplain of a tributary to Baldwin Creek and is threatened by bank erosion. One house on the streamside of the road is within the 100-year floodplain and is at risk from bank erosion.
24. Alice Little Road: A beaver dam immediately upstream of Alice Little Road has brought the level of water in Baldwin Creek up to the level of Alice Little Road. The culvert under the road has been replaced. One house is located within the 100-year floodplain and another would be cut off if this dead end road washes out.
25. Breesport-North Chemung Road: The roadway of Breesport-North Chemung Road (County Route 1) and the culvert conveying Baldwin Creek under this road have washed out two times in recent years when the Beaver Pond dam has failed.
26. Tributary along Rorick Hollow Road: Rorick Hollow Road follows the narrow valley of a Baldwin Creek tributary. Trees, debris, and sediment have repeatedly blocked flow through the 4 culverts that convey the stream under the road, necessitating frequent maintenance and repairs. Headwalls and pipes have been replaced in recent years. Three of the stream crossings now contain double pipes. Streambank erosion has undermined the shoulder and

threatens the road itself. Some sections of road have been protected with riprap; others are still at risk. Fallen trees were removed from the channel in 1996, but a stable low-flow channel was not re-established.

Wyncoop Creek (Town of Erin, Town of Van Etten)

The headwaters of the Wyncoop Creek Watershed are located in the southeastern portion of the Town of Erin and the southwestern portion of the Town of Van Etten. Wyncoop Creek flows southward through the Town of Baldwin and ultimately into the Chemung River.

There is extensive beaver activity in the reach of Wyncoop Creek upstream of Thayer Road. Downstream of Thayer Road, high levels of sediment deposition have produced a braided channel with frequently changing flow patterns.

Areas of 100-year flooding have been delineated along Wyncoop Creek and the lower reaches of some of the tributaries in the Town of Erin (but not in the Town of Van Etten). Several sections of roadway and a few houses are located in or near these designated floodplains.

PROBLEM AREAS:

27. Unnamed tributary along Chapman Road (two sites; Town of Erin): Chapman Road has experienced wash out problems from a western tributary to Wyncoop Creek. The lower of the two pipes for Chapman Road has been upgraded. The road requires frequent maintenance due to bank failure. The culvert for a private driveway crossing has also experienced problems. Two houses downstream of the lower stream crossing are located within the 100-year floodplain.
28. Wyncoop Creek downstream of Thayer Road (Town of Erin): The channel of Wyncoop Creek is subject to migration in the area from Thayer Road to the Baldwin town line. Two houses are located in or near the 100-year floodplain. At least one yard and garage have experienced flooding problems in recent years. One house is protected by an earthen berm. Willows and sediment have been cleaned from the channel for about 1,000 feet downstream of the eastern tributary from Rumsey Hill. Additional trees and debris obstruct flow farther downstream.
29. Wyncoop Creek Road and Thayer Road (Town of Erin): The flow in Wyncoop Creek is altered by sediment deposition at the intersection of Wyncoop Creek Road and Thayer Road. The sediment influx is primarily from roadside drainage and erosion of unstable silty banks. When the streambanks wash out, it has caused water to flow over the road. This problem is aggravated by children who have repeatedly built rock dams across the stream. Out-of-channel flow has washed out both Thayer Road and the porch of a mobile home. The culvert under Thayer Road was recently replaced with a larger structure and the angle of the culvert was improved. However, it is extremely difficult to manage the flow of water through this area due to the highly erodable bank material.
30. Rumsey Hill Road near Wyncoop Creek Road (Town of Erin): Two houses on Rumsey Hill Road in the Town of Erin are located in or near the 100-year floodplain of an eastern tributary to Wyncoop Creek. The streambanks in this area have been heavily armored with rock riprap to minimize erosion damage.
31. Unnamed tributary along Rumsey Hill Road (two sites; Town of Van Etten): The southwestern end of Rumsey Hill Road follows an unnamed eastern tributary to Wyncoop

Creek in the Town of Van Etten. The road and one house are threatened by streambank erosion.

Cayuta Creek, also called Shepherd Creek (Town of Van Etten)

Cayuta Creek and its tributaries provide the primary drainage for the Town and Village of Van Etten. It flows generally southeastward through the Town of Van Etten, from the Town of Cayuta (Schuyler County) to the Town of Barton (Tioga County). Cayuta Creek is a tributary to the Upper Susquehanna River, which it joins in Toga County, NY. Cayuta Creek and some of its tributaries are New York State classified trout streams (C(t)).

Cayuta Creek meanders across a relatively wide, flat valley and is fed by high gradient tributaries from the surrounding hills. Streambank erosion is an ongoing problem along the steep tributaries. Large volumes of sediment are transported in the steep reaches of these streams and deposited in the lower gradient reaches in the Cayuta Creek Valley. This natural deposition pattern necessitates repeated gravel removal at road crossings in order to maintain the flow capacity of bridges and culverts.

PROBLEM AREAS:

32. Wyncoop Creek Road at Cayuta Creek: Two houses near the Wyncoop Creek Road (County Route 3) bridge over Cayuta Creek are located in or near the 100-year floodplain. The channel of Cayuta Creek is unstable downstream of this area.
33. Route 224 at Blake Hill Road tributary: The State Department of Transportation has cleaned gravel from the Blake Hill Road tributary in order to maintain channel capacity at the State Route 224 bridge.
34. Decker Road: Two houses on Decker Road are located near Cayuta Creek in the 100-year floodplain. These homes experienced flooding problems in 1996.
35. Agricultural land along Route 223: Agricultural land located in and near the 100-year floodplain of Cayuta Creek, northeast of State Route 223, is frequently flooded.
36. Unnamed tributary along Route 223: State Route 223 follows a steep, unnamed tributary into the Cayuta Creek Valley. Maintenance and protection of the road from erosion by this stream has required extensive work. The streambanks and stream crossings have been heavily armored with large rock riprap. Major highway reconstruction by the NYS Department of Transportation is scheduled for 2001 to 2002. Streambank erosion threatens the yards and houses of about a half dozen residential properties located at the base of the hill on Route 223.
37. Swartwood Road: Six houses on Swartwood Road have experienced repeated flooding from Cayuta Creek. Three of these houses are located within the mapped 100-year floodplain. Flooding at this site is aggravated by the Swartwood Road Bridge, which obstructs flow and is currently closed due to disrepair. Chemung County has applied for grant funding to purchase and remove 3 houses and the Swartwood Road Bridge. This project will permanently solve the flooding problems for these houses, restore natural functions of the floodplain, and enable public access for fishing.

Darling Creek (Cayuta Creek Watershed, Town of Van Etten)

Darling Creek is a short western tributary to Cayuta Creek that flows along Beckhorn Hollow Road.

PROBLEM AREAS:

38. Beckhorn Hollow Road and Robertson Road: Years ago, the channel of Darling Creek was moved to allow room for the roads at the intersection of Beckhorn Road and Robertson Road. However, channel stability was never established at this site. Despite an 8-foot culvert for Darling Creek, the stream repeatedly reverted to its previous channel and flooded the road at this site. The culvert washed out two times in recent years. In 1998, the Town of Van Etten restored the creek to its original location, rerouted Robertson Road, and installed a large box culvert.

Spring Brook and Van Etten Wildlife Sanctuary Marsh (Cayuta Creek Watershed, Town of Van Etten, Village of Van Etten)

The Cayuta Creek tributary that originates in Van Etten Wildlife Sanctuary Marsh and flows through the Village of Van Etten is referred to locally as Spring Brook. The marsh is a state designated wetland (VE-1). In 1974, the Soil Conservation Service enhanced this wetland by excavating potholes and level ditches. Residents report that the wetland has expanded in recent years, perhaps due to blockage of unknown and un-maintained agricultural drainage structures. The outlet channel from the wetland flows through a stone-lined ditch near the Van Etten Fire Station. The elevation of this ditch controls the level of water within the wetland. In order to protect residential properties adjacent to the wetland from flooding, beaver dams have been repeatedly removed from the outlet ditch. In 1994, the outlet ditch was cleaned adjacent to the railroad track in an effort to improve drainage. It is not known if additional maintenance of this ditch will provide more than marginal relief from flooding problems.

PROBLEM AREAS:

39. Tributary along Cramer Hollow Road (Town of Van Etten): Bank erosion along the Cramer Hollow Road tributary threatens 2 or 3 backyards, the road, and two road crossings. Large limestone blocks have been placed to protect the road. Downstream (west) of State Route 34, sedimentation impedes flow beneath private bridge on the Cramer Hollow Road Extension.
40. Waverly Street (two sites, Village of Van Etten): Approximately 4 or 5 houses on Waverly Street are located near the 100-year floodplain of Spring Brook and experience water in their yards during periods of high flow.
41. Hixson Street (Village of Van Etten): The Van Etten Fire Station and approximately 17 houses and outbuildings on both sides of Hixson Street are located within the 100-year floodplain of Spring Brook and the Van Etten Wildlife Sanctuary Marsh. Wetland vegetation extends into residential lawns on the southeast side of Hixson Street. These properties experience chronic flooding of crawl spaces, yards, septic systems, wells, and outbuildings. In the 1960's, the Soil Conservation Service evaluated the feasibility of building a dike to protect Hixson Street development, but the cost was deemed to be excessive. In 1999, Chemung County offered to apply for grant funding to purchase the eight residences that experience chronic flooding problems. None of the property owners were willing to sell their homes for the assessed value, so the buyout was not pursued.

Langford Creek (Cayuta Creek Watershed, Town of Van Etten, Village of Van Etten)

Langford Creek drains the east central part of the Town of Van Etten. It flows southward through the Village of Van Etten and into Cayuta Creek. Although Langford Creek was once a perennial stream, it now has only intermittent flow. During heavy rainfall events, water rises

very rapidly and carries large amounts of debris. The 100-year floodplain of Langford Creek has only been delineated near the confluence with Cayuta Creek, where it is undeveloped except for a railroad crossing.

Streambank erosion is occurring at several locations along Langford Creek and its tributaries. The channel has recently been cleaned upstream of State Route 224 and downstream of Main Street to reduce bank erosion within the Village. A section of bank upstream of Cemetery Road (Village of Van Etten) has been armored with rock. A building that was threatened by erosion has been removed. Additional erosion threats remain and have become more severe as a result of spring and summer thunderstorms in 2000.

PROBLEM AREAS:

42. Village of Van Etten: Erosion is occurring along the banks of Langford Creek in the Village of Van Etten. Over the years, this section of the stream has been the subject of repeated channel maintenance endeavors. Some of the current erosion problems may be the result of poor channel definition during gravel removal. Bank erosion is occurring at and above the Main Street bridge. The property upstream of the bridge has lost 4-5 shade trees to bank erosion in recent years and currently has two trees that are leaning over the creek. If a tree, or other debris blocks flow under the Main Street bridge, it is anticipated that flooding could impact one house, a school bus garage, and a school. The eroding bank of Langford Creek is currently about 10-20 feet from a septic leach field and 20-25 feet from a bus garage. Bank erosion is also a problem upstream near Cemetery Road, where gabion basket bank stabilization structures are in poor repair.
43. Langford Road (two sites, Town of Van Etten): Several farm buildings are threatened by erosion from Langford Creek. Chemung County has recently installed retaining walls to protect Langford Road (County Route 13).
44. Unnamed tributary along Blake Hill Road (Town of Van Etten): Bank erosion along a western tributary to Langford Creek threatens the roadway of Blake Hill Road. The Town of Van Etten installed a concrete box culvert at one road crossing after the site was damaged by erosion in 1996.

Baker Creek (Cayuta Creek Watershed, Town of Van Etten)

Baker Creek is tributary to Cayuta Creek that flows northeastward along Wyncoop Creek Road in the Town of Van Etten.

PROBLEM AREAS:

45. Wyncoop Creek Road at Baker Creek(two sites): The Town of Erin has had to replace two culverts conveying Baker Creek under Wyncoop Creek Road since 1997.

Johnson Creek (Cayuta Creek Watershed, Town of Van Etten)

Johnson Creek is a short eastern tributary to Cayuta Creek that flows through a steep, narrow hollow. This sub-watershed is essentially undeveloped, except near its mouth in the Cayuta Creek Valley.

McDuffy Creek (Cayuta Creek Watershed, Town of Van Etten)

McDuffy Creek is an eastern tributary to Cayuta Creek, located completely within the Town of Van Etten. It is high gradient stream in a narrow valley, with many actively eroding

streambanks. These eroding banks are up to 20 feet high in places. The 100-year floodplain was not mapped along McDuffy Creek or its tributaries.

PROBLEM AREAS:

46. Route 224 at McDuffy Creek: A pronounced meander in McDuffy Creek is moving progressively closer to a house on State Route 224. The stream has moved 50 to 70 feet in recent years and is now within about 50 feet of the house. Downstream of the house, the state has removed gravel from the stream channel to maintain flow under the State Route 224 Bridge.
47. Unnamed tributary at Kies Road: Kies Road is threatened by bank erosion along northern tributary to McDuffy Creek. The culvert at the stream crossing has been recently replaced by a larger structure.
48. McDuffy Hollow Road: Approximately 6 or 7 houses along McDuffy Hollow Road have yards and outbuildings that are threatened by bank erosion of McDuffy Hollow Creek.
49. Brink Road: Bank erosion along McDuffy Creek has undermined sections of Brink Road and necessitated replacement of one culvert. A private bridge over the creek has been washed out and several out buildings are threatened. The eroded streambank is currently within 18 inches of one residential out building.

McCorn Creek (Cayuta Creek Watershed, Town of Van Etten)

McCorn Creek flows southwestward through the northwestern part of the Town of Van Etten. It flows into Jackson Creek in the Town of Cayuta and then into Cayuta Creek. Areas adjacent to McCorn Creek in the Town of Van Etten are essentially undeveloped. There are numerous beaver dams.

PROBLEM AREAS:

50. Cornish Hollow Road: Cornish Hollow Road experiences flooding from McCorn Creek in several locations. This road provides access to one camp and has been “abandoned” by the Town.
51. Unnamed tributary at Elston Hill Road: The culvert where Elston Hill Road crosses an unnamed eastern tributary to McCorn Creek was washed out during a thunderstorm in 1998 and subsequently replaced.

Hulbert Hollow Creek (tributary to Catatonk Creek, Town of Van Etten)

The stream along Hulbert Hollow Road in the northeastern corner of the Town of Van Etten is a steep, flashy creek. High velocity water and diversion of flow by debris damming have contributed to erosion and flooding problems in the Town of Van Etten and adjacent municipalities. The 100-year floodplain was not mapped along Hulbert Hollow Creek and no land use regulations.

PROBLEM AREAS:

52. Hulbert Hollow Road (Town of Van Etten): Hulbert Hollow Road has one stream crossing in the Town of Van Etten, which was washed out in 1996 and replaced with a box culvert. Flooding and debris damming threaten several houses in Chemung and Tioga Counties. Two of the homes subject to flooding are located partially or completely within the Town of Van Etten. One of these is located between the creek and the road and has experienced water in the yard, over the well, and adjacent to the house. The other is located very close to the creek

and has experienced significant flood damages to both the house and property. The new culvert and roadside drainage alterations may alleviate the frequency of flooding problems at this site.

STORMWATER RUNOFF AND GROUNDWATER FLOODING

Many of the flooding problems experienced in Erin and Van Etten result from the overland flow of rain and snowmelt before it reaches stream channels. This rapid runoff results in flooding and washouts at numerous sites. Although some buildings and houses are threatened by stormwater runoff, the majority of the damage has been to roads, driveways, ditches, and culverts. The damage at many sites is compounded by the accumulation of debris, which blocks and diverts flow. Although this type of damage can be expected to recur, the specific damage sites will depend on the circumstances of each high runoff event and land use in the drainage area.

Land use practices influence the flow of stormwater runoff and can contribute to flooding problems when stormwater is not appropriately managed. Land use changes that can alter stormwater characteristics include: grading, development, altered agricultural practices, and timber harvesting. The removal of vegetative cover generally increases the amount of water that reaches the ground surface and the amount that runs off into nearby drainage ways. Pavement, roofs, and other impervious surfaces block the infiltration of water into the ground, thus increasing the amount of surface runoff. Smooth surfaces also increase the speed with which runoff reaches the streams and can thus increase the peak flow amounts. Roads, driveways, agricultural drains, and skid trails can divert the flow of water from previous patterns.

In some areas, drainage problems are caused or aggravated by dumping of trash into ravines and drainage way. Trees and other debris that accumulate naturally or from timber harvesting operations also pose problems.

Groundwater flooding results from water below the surface of the ground that seeps through basement walls or backs up through basement drains. Because groundwater levels are subject to natural fluctuations, these problems are not always apparent at the time a site is developed or when a home is purchased.

GENERAL PROBLEMS:

53. Road ditches and culverts: Roadways throughout Erin and Van Etten are susceptible to washout problems when the capacity of roadside ditches is exceeded. Problems tend to occur at sites where ditches and culverts are undersized or are obstructed by debris, sediment, or ice.
54. Debris accumulation in drainage ways: The accumulation of plant materials and other debris can block the flow of water in swales, ditches, culverts, and streams. These materials may accumulate naturally, be dumped in or near drainage ways, or be left by timber harvesting operations. Water bypassing these impediments, causes flood damage and washouts in adjacent areas. These damages can occur during modest runoff events as well as during major floods. The cumulative damage to roads, culverts, and bridges results in significant expenditures of tax revenues for infrastructure repair.

55. Land use changes: There are areas in Erin and Van Etten where land use changes have contributed to drainage problems where none previously existed. Development, timber harvesting, or changed agricultural practices can increase the runoff into nearby drainage ways and streams. Flooding and erosion problems result when the existing roadside ditches, culverts, and other drainage ways are unable to accommodate the increased flow.

PROBLEM AREAS:

56. Jackson Creek Road (Bulkley Creek Watershed, Town of Erin): The steep gradient of Jackson Creek Road east of the Bulkley Creek tributary results in rapid flow in the road ditches and erosion of the road.
57. Lesky Road (Bulkley Creek and Jackson Creek Watersheds, Town of Erin): Loose bank material along Lesky Road has resulted in washing out of the road. Some drainage pipes have been upgraded.
58. Mallory Hill Road (Jackson Creek Watershed, Town of Erin): The roadside ditches along Mallory Hill Road are subject to bank erosion and require frequent cleaning.
59. Red Chalk Road (Jackson Creek Watershed, Town of Erin): Flow from roadside ditches has washed out the headwalls of the culvert conveying a Jackson Creek tributary under Red Chalk Road. The Town of Erin addressed this problem by improving drainage and replacing the pipe. However, the silty banks of roadside ditches remained susceptible to erosion, which washed out parts of the road surface two times in 1999. In the fall of 1999, the Town reduced the flow to this site by installing a culvert to convey water under the road farther upstream.
60. Route 223 east of Shamrock Drive (Newtown Creek Watershed, Town of Erin): Stormwater draining off of the hillside north of Newtown Creek ponds at the base of the hill near State Route 223. This affects the homes, yards, and outbuildings for 10 to 15 residents. One resident has reported 6 inches of water ponding in the garage. Another has lost a cellar wall.
61. Langdon Hill Road (Newtown Creek Watershed, Town of Erin): Stormwater runoff near Langdon Hill Road has caused washout problems for the road and approximately 6 residential properties.
62. Park Hill Road near Greenbush Road (Newtown Creek Watershed, Town of Erin): Stormwater runoff flows down Park Hill Road at its southwest end. The road is lower than adjacent fields, so there is nowhere to disperse the water or the sediment load.
63. Austin Hill Road (Newtown Creek Watershed, Town of Erin): The Town of Erin has upgraded the roadside drainage culvert at the intersection of Austin Hill Road and Drake Road. Downhill of this intersection, roadside drainage along Austin Hill Road flows very fast and has eroded to within about 6 inches of the shoulder. The sediment deposits in the State Route 223 drainage ditch at the base of the hill. The Town of Erin has reshaped the ditch and installed steps to slow the water. However, additional drop structures are needed to control the flow in this ditch.
64. Laurel Hill Road (Newtown Creek Watershed, Town of Erin): Stormwater runoff causes washout problems on Laurel Hill Road, near the Cayuta Town line. The Town of Erin has improved the piping in an effort to better manage the water.
65. Wheaton Road (Marsh Creek Watershed, Town of Erin): The roadside ditches for Wheaton Road wash out on the steep grade. About 5 or 6 houses experience water in their yards and drives. The Town of Erin restores these ditches every year.
66. Moulter Road (Marsh Creek Watershed, Town of Erin): The Town of Erin experiences roadside drainage problems along Moulter Road. This limits access to about three houses.

67. Bixby Road (two sites, Marsh Creek Watershed, Town of Erin): Bixby Road crosses two upstream branches of Marsh Creek. One culvert has been washed out and replaced. In addition, the roadside drainage causes erosion on steep sections of the road.
68. Federal Road (Marsh Creek Watershed, Town of Erin): The roadside ditch along Federal Road has experienced severe erosion on the steep slope south of the intersection with Bixby Road. The Town would like to control erosion by lining the ditch with rock riprap.
69. North end of Chapman Road (Marsh Creek Watershed, Town of Erin): Chapman Road has experienced extensive road ditch erosion south of the intersection with Marsh Road.
70. Bryan Road (Baldwin Creek Watershed, Town of Erin): Stormwater overflowing onto Bryan Road has washed out the road surface. There has not been a high water event since this section has been repaired, so the likelihood of additional problems is not known.
71. Walker Road (Cayuta Creek Watershed, Town of Erin): Drainage from the hillside washes out Walker Road near the Cayuta Town line. This seasonal road has been rebuilt, but is still threatened.
72. East end Park Hill Road (two sites, Cayuta Creek Watershed, Town of Erin): Park Hill Road experiences bank erosion in ditches along steep sections of the road.
73. Corner of Murray Street and Waverly Street (Spring Brook Watershed, Village of Van Etten): One house located at the corner of Murray Street and Waverly Street experiences groundwater seepage into the basement.
74. Elston Hill Road (McDuffy Creek Watershed, Town of Van Etten): Roadside drainage down the steep gradient on the south side of Elston Hill has caused erosion of the ditch and roadway of Elston Hill Road.

FLOOD WARNING

Flood warnings in the Town of Erin, Town of Van Etten, and Village of Van Etten are provided by the Chemung County Emergency Management Office, which obtains flood warning information from the Flood Warning Service of Steuben and Chemung Counties (operated by Environmental Emergency Services, Inc.) and from the National Weather Service. These warnings are based on a network of automated rain and river-level gauges, supplemented by additional observations and reports.

Flood warnings for the streams in Erin and Van Etten are based on rainfall data, National Weather Service rainfall forecasts, and upstream observations. Information about the rates and amounts of rainfall in the area is provided by automated rain gauges located in Big Flats, Catlin, and Erin (owned and maintained by Environmental Emergency Services, Inc.). Data from these gauges are relayed by telemetry to the Flood Warning Service for Steuben and Chemung Counties and to the National Weather Service for use in preparing flood forecasts. Additional information comes from volunteer rain gauge readers, who report high rainfall amounts to the National Weather Service and the Flood Warning Service. However, volunteer rain gauge readers are often unavailable for immediate observation and reporting of high rainfall amounts. During a flood event, the Chemung County Emergency Management Office gathers stream level descriptions from the fire departments and relays this information to emergency personnel.

GENERAL PROBLEMS:

75. Flash flooding: The streams in Erin and Van Etten are highly susceptible to flash flooding, which can occur suddenly with little or no lead-time.
76. Rain gauges: The existing network of rain gauges can miss highly localized rainfall events. Additional volunteer rain gauge readers in Erin and Van Etten would increase the likelihood that a high rainfall event will be detected and reported as soon as possible.
77. Disaster plans: The Town of Erin, Town of Van Etten, and Village of Van Etten disaster plans need to be reviewed periodically to insure that they include specific information that will enable local officials and emergency personnel to respond appropriately to flood warnings and data from stream monitoring and rain gauges.

DEVELOPMENT ACTIVITIES

Erin and Van Etten are located in a rural area of Chemung County, northeast of the City of Elmira. The area has experienced limited amounts of development in recent years. Care is needed to insure that new development and changing land use practices do not contribute to increased flooding problems. Each municipality has adopted floodplain development regulations and is in good standing with the National Flood Insurance Program.

Flood damages can result from land use changes that cause increased water flow and/or sedimentation in ditches, streams, and culverts. The municipalities do not currently regulated stormwater or sediment discharges from development sites or timber harvesting operations. If construction disturbs five or more acres, a general permit for stormwater discharges is required for compliance with the State Pollutant Discharge Elimination System (SPDES). This permit requires preparation of a stormwater pollution prevention plan, but the State does not consistently review or enforce the plans.

GENERAL PROBLEMS:

78. Stormwater management: Building regulations in the Town of Erin, Town of Van Etten, and Village of Van Etten do not provide protection against increased runoff and altered drainage patterns from new development.
79. Timber harvesting: There is no mechanism for insuring that appropriate stormwater management practices are implemented during timber harvesting operations in Erin and Van Etten. This does not posed a serious problem at the present time.

FLOOD MITIGATION GOALS

The policies of the Town of Erin, Town of Van Etten, and Village of Van Etten have included a variety of efforts to mitigate flood damages. However, none of these municipalities have a formal document specifying community goals relevant to flood damage mitigation. The Town of Erin has a Master Plan, but it does not address flooding, drainage, or stream setback issues. No Master Planning has been done in the Town and Village of Van Etten. However, each municipality does have an ongoing policy of addressing flooding and drainage problems when they occur, particularly those that impact municipal roads. In addition, each municipality has adopted local floodplain development standards in compliance with the requirements of the National Flood Insurance Program.

The purpose of each municipality's Flood Damage Prevention Local Law is "to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

- (1) "regulate uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
- (2) "require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- (3) "control the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of flood waters;
- (4) "control filling, grading, dredging and other development which may increase erosion or flood damages;
- (5) "regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands, and;
- (6) "qualify and maintain for participation in the National Flood Insurance Program."

The stated objectives of each municipality's Flood Damage Prevention Local Law are:

- (1) "to protect human life and health;
- (2) "to minimize expenditure of public money for costly flood control projects;
- (3) "to minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- (4) "to minimize prolonged business interruptions;
- (5) "to minimize damage to public facilities and utilities such as water and gas mains, electric, telephone, sewer lines, streets and bridges located in areas of special flood hazard;
- (6) "to help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;
- (7) "to provide that developers are notified that property is in an area of special flood hazard; and,
- (8) "to ensure that those who occupy the areas of special flood hazard assume responsibility for their actions."

The following risk reduction goals were prepared by the Flood Mitigation Planning Committee, based on their understanding of the problems and objectives of the three

municipalities. These goals emphasize preventive measures and protection of the beneficial functions of natural systems.

PREVENTIVE MEASURES

- * Insure that all new buildings are set back from streambanks and are constructed in compliance with floodplain development laws.
- * Insure that all new private stream crossings are well designed.
- * Implement good stormwater management and erosion control practices at new development sites.
- * Inspect streams on a routine basis to identify the maintenance needs.
- * Implement routine stream maintenance.

NATURAL RESOURCE PROTECTION

- * Manage beaver populations.
- * Stabilize the channels and banks of streams, especially where existing buildings are threatened.
- * Implement best management practices for agriculture.
- * Implement best management practices during timber harvesting.

PROPERTY PROTECTION

- * Protect roads and adjacent areas by maintaining better ditching and adequately sized culverts.

EMERGENCY SERVICES

- * Maximize flood-warning time by utilizing a network of precipitation gauges.
- * Insure well-coordinated emergency response by trained personnel.

OTHER GOALS

- * Procure adequate funding to address stream, beaver, and road drainage hazards in time to prevent problems from developing.

FLOOD MITIGATION SOLUTIONS

The Erin – Van Etten Flood Mitigation Planning Committee reviewed and evaluated the measures on a comprehensive list of possible activities for reducing flood damages. The Committee selected techniques applicable to the problems and goals that had been identified for their communities. A copy of the worksheet with the recommended solutions for the Town of Erin, Town of Van Etten, and Village of Van Etten is provided in Attachment C. All of the measures listed on this worksheet were reviewed and evaluated. Some of the activities on this list are already being implemented. The techniques that committee members recommend initiating or expanding in Erin and Van Etten are indicated in Attachment C.

ACTION PLAN

The following activities are recommended to minimize the effects of flooding in the Town of Erin, Town of Van Etten, and Village of Van Etten. These are action items that can be accomplished by the municipalities with existing staff and volunteer resources within the next couple of years. These actions are not sufficient to achieve the goals set forth in this Plan, but represent the next steps that need to be taken. Additional activities will be required in future years to meet the community's flood mitigation goals. The timetable and source of funding for each activity are given in Table 1.

PUBLIC INFORMATION

Action Item #1. Display Flood Brochures in Municipal Offices

Each municipality will review existing brochures about flood hazards, flood damage prevention, and emergency preparedness and identify suitable information for display and distribution at municipal offices. Appropriate brochures will be procured and maintained at the offices of the Code Enforcement Officer and Town and Village Clerks.

Action Item #2. Flood References at Local Libraries

Municipal staff will review the information about flood history and flood mitigation that is currently available at the Horseheads Free Library and the Van Etten Reading Center. The existing information will be supplemented with additional material as appropriate. At a minimum, the municipalities will insure that each library has current Flood Insurance Rate Maps, a copy of this Flood Mitigation Action Plan, and brochures about flood hazards, flood damage prevention, and emergency preparedness. If either library is missing local accounts of the 1972 Tropical Storm Agnes flood, an effort will be made to locate copies of one or more publications and donate them to the library.

Action Item #3. Display Maps of Flood Hazards and Problems

The maps of flood hazard and flood problem areas that were prepared for this Plan will be posted at in the municipal offices of the Town of Erin, Town of Van Etten, and Village of Van Etten. Each municipality will obtain a large plot of this map from Southern Tier Central Regional Planning and Development Board. This Plan will be referenced on the map and will be readily available.

Action Item #4. Distribute Fact Sheet about Private Stream Crossings (Town of Erin, Town of Van Etten)

The Southern Tier Central Flood Mitigation Specialist has recently prepared a fact sheet entitled *Private Stream Crossings* (at the request of the Erin – Van Etten Flood Mitigation Planning Committee). This is intended to provide the public with accurate information about the responsibilities, risks, and permit requirements for private bridges and stream crossings. This information will be copied onto municipal and Soil and Water Conservation District letterhead and distributed whenever questions arise about existing or proposed private stream crossings. It is anticipated that this information will reduce the instances in which private stream crossings are constructed without adequate design standards.

Action Item #5. Articles in Erin Town Newsletter (Town of Erin)

About once each year, an article related to flooding will be included in the *Erin News*, a short newsletter that is distributed to all residents in the Town of Erin.

PREVENTIVE MEASURES

Action Item #6. Planning Board Training on Flooding and Drainage Issues

Municipal officials will ask the Chemung County Planning Department and Southern Tier Central Regional Planning and Development Board to conduct a training session for Planning Board members to address flooding and drainage issues as they relate to planning and development proposals. This program could be conducted jointly with the planning boards of neighboring municipalities.

Action Item #7. Review Drainage System Maintenance Procedures

The Town of Erin, Town of Van Etten, and Village of Van Etten will each review the existing procedures for drainage system inspection and maintenance. Each municipality will prepare a list of problem areas that require routine inspection and devise procedures to improve the implementation of periodic inspection and timely maintenance. Technical assistance with implementation of this task will be requested from the Chemung County Soil & Water Conservation District Manager and the Southern Tier Central Flood Mitigation Specialist. Any work in the Van Etten Wildlife Sanctuary Marsh (Problem #41) or classified trout streams will be coordinated with the NYS Department of Environmental Conservation. All required permits would be obtained.

Action Item #8. Implement Stream Maintenance to Protect Roads

The Town of Erin, Town of Van Etten, Village of Van Etten, Chemung County Highway Department, and NYS Department of Transportation will continue to implement beaver management and stream maintenance activities that are needed to protect roads and bridges. Technical assistance is provided by the Chemung County Soil and Water Conservation District, as needed.

Action Item #9. Consider Stream Setback Requirement (Town of Erin)

The Town of Erin is in the process of revising the Town's zoning regulations. As part of this process, the Town Planning Board will evaluate the desirability of a stream setback provision requiring that all buildings be located a designated distance from any streambank. The adoption of the revised zoning requirements is expected to occur in about 2002.

NATURAL RESOURCE PROTECTION

Action Item #10. Implement Stream Stabilization Projects

The Town of Erin, Town of Van Etten, and Village of Van Etten will continue to work cooperatively with the County Soil and Water Conservation District (S&WCD) and property owners to implement stream stabilization projects. Stabilization techniques include rock riprap, drop structures, and natural stream restoration. Projects constructed under the County's 1/3 program will be cost shared by the municipality, the County, and

the property owner. The Town of Erin will request that the S&WCD attend a public meeting to clear up misinformation about the 1/3 program. The Village of Van Etten will contact the S&WCD to discuss whether the erosion sites on Langford Creek (Problem #42) can be addressed through the 1/3 program. The Town of Van Etten will discuss the 1/3 program with the owner of a house threatened by meandering of McDuffy Creek (Problem #46).

Action Item #11. Streambank Protection at Roads

The Town of Erin, Town of Van Etten, Village of Van Etten, Chemung County Highway Department, and NYS Department of Transportation will continue to implement streambank stabilization projects that are needed to protect roads and bridges. Technical assistance is provided by the Chemung County Soil and Water Conservation District, as needed. The Village of Van Etten will contact the Chemung County Highway Department about the erosion problems at and above the Main Street Bridge over Langford Creek (Problem #42).

Action Item #12. Publicize Timber Harvesting Registration (Town of Erin)

The Town of Erin has an ordinance that requires timber harvesters to notify the Town Highway superintendent of harvesting operations within the Town. However, most landowners, foresters, and loggers do not comply because they are not aware of the registration requirement. The Town of Erin will distribute copies of the registration ordinance to area loggers. They will also evaluate the cost of posting signs at Town lines along major roads indicating that registration of timber harvesting is required in the Town of Erin.

Action Item #13. Distribute Educational Information About Timber Harvesting Practices

The Chemung County Soil and Water Conservation District has prepared a booklet entitled *Best Management Practices During Timber Harvesting*. This publication will be distributed at municipal offices. The Town of Erin will provide this information to all loggers who register harvesting operations.

Action Item #14. Evaluate Timber Registration Ordinance (Town of Van Etten)

The Town of Van Etten will evaluate the desirability of adopting a local ordinance requiring registration of timber harvesting operations. The principle objective of such an ordinance would be to increase the opportunities for educational outreach about timber management and timber harvesting practices. Additional benefits could be derived from notification of those who might be impacted by timber harvesting operations (highway departments and adjoining property owners).

Action Item #15. Support Efforts to Restore and Construct Wetlands

The Towns will cooperate and assist with ongoing efforts by the Upper Susquehanna Coalition, Chemung County Soil and Water Conservation District, and others to establish flood mitigation wetlands. Current efforts involve identification of potential sites for wetland construction, restoration, or enhancement. Wetland projects will only be implemented on sites volunteered by the land owner. Funding will be sought for implementation of identified wetland projects. The Town of Van Etten will discuss the possibility of water detention or wetland creation with the owner of a site in the Langford

Creek Watershed that might be suitable for impoundment of floodwaters (above Problem #42).

PROPERTY PROTECTION

Action Item #16. Provide Technical Assistance for Floodproofing

The Town of Erin, Town of Van Etten, and Village of Van Etten encourage floodproofing of new and existing structures and provide technical assistance for implementation of floodproofing measures. The Southern Tier Central Flood Mitigation Specialist will provide each municipality with brochures and technical references about flood protection measures. This information will be available in the Code Enforcement Offices. When the Code Enforcement Officer receives a request for additional information, he will work with the property owner to identify applicable floodproofing measures.

Action Item #17. Property Buyout on Swartwood Road (Town of Van Etten)

Chemung County has applied for funding (from the NYS Clean Water/Clean Air Bond Act) to purchase three repetitively flooded houses on Swartwood Road (Problem #37). If this project is funded, the County will demolish these floodplain structures and remove the Swartwood Road Bridge over Cayuta Creek. The natural functions of the floodplain would then be restored at this site and flooding problems would be permanently eliminated for three residential properties.

Action Item #18. Upgrade Roadside Drainage Structures and Stream Crossings

When roads, ditches, and culverts are damaged due to drainage and flooding problems, the Towns and Village make every effort to mitigate the problem when repairs are made. When a culvert is replaced, the size is generally increased (even if there are no existing drainage problems at that site) in order to accommodate increased runoff from changing land use practices. The Town Highway Departments will continue the ongoing efforts to upgrade existing drainage structures as the need and funding permit.

Action Item #19. Improve Drainage and Bank Protection on Route 223 (Town of Van Etten)

The NYS Department of Transportation is planning to reconstruct State Route 223 on Swartwood Hill in 2001 and 2002 (Problem #36). This project will include replacement of drainage structures and streambank stabilization.

STRUCTURAL SOLUTIONS

Action Item #20. Complete the Newtown Creek Beaver Damage Control Project (Town of Erin)

The Town of Erin has been awarded Clean Water/Clean Air Bond Act funding to construct an earthen berm to protect the Greenbush and Church Road areas from flooding. This project will protect areas in the hamlet of Erin that are located outside of the 100-year floodplain, but have experienced chronic flooding problems due to upstream beaver activity

(Problem #11). The Town of Erin is committed to completion of this project, which is scheduled for construction in 2000.

EMERGENCY SERVICES

Action Item #21. Increase Network of Volunteer Rain Gauge Readers

The National Weather Service (NWS) implements a volunteer rain gauge program in which a network of volunteers monitor precipitation amounts and report extreme events. Chemung County volunteers are asked to report high rainfall amounts to both the NWS and the Flood Warning Service of Chemung and Steuben Counties. The Town of Erin, Town of Van Etten, and Village of Van Etten will recruit volunteers to fill the gaps in this existing rain gauge network (Problem #76). Recruitment efforts will include announcement at municipal board meetings, a request in the *Erin News*, and personal requests to likely individuals.

Action Item #22. Review and Update Emergency Plans

The Town of Erin, Town of Van Etten, and Village of Van Etten will each review the existing emergency plans and revise/update these plans as appropriate. The Chemung County Emergency Management Office will provide assistance with this task.

Action Item #23. Dam Safety Training (Town of Erin)

The three flood control dams located within the Town of Erin (Park Station Dam, Jackson Creek Dam, and Marsh Dam) are routinely inspected and maintained by the Chemung County Department of Buildings and Grounds. The Chemung County Emergency Management Office will request that the NYS Department of Environmental Conservation provide dam safety training for both Chemung County and Town of Erin personnel. This training of local staff will improve the quality of routine and emergency inspection of these structures.

POST-DISASTER MITIGATION POLICIES AND PROCEDURES

Following a flood incident, the Town of Erin, Town of Van Etten, and Village of Van Etten will examine the damage areas, evaluate the suitability of rebuilding damaged structures, and make recommendations to property owners. The Code Enforcement Officer will recommend elevation of utilities that have been damaged and other floodproofing measures, as appropriate. The municipalities will increase efforts to disseminate information about floodproofing, building elevation, relocation, and other property protection measures (Action Item #15).

Repairs to buildings located within the 100-year floodplain will comply with the local laws for floodplain development, which specify that structures that are substantially damaged (cost of restoring the structure to its before damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred) will only be rebuilt if they are brought into compliance with current floodplain development standards.

Table 1. Flood Mitigation Action Items (page 1 of 3)

PUBLIC INFORMATION			
Task	Responsible Person	Time Table	Financing
1. Display flood brochures in municipal offices	Town and Village Clerks	2000	Copy expenses; staff time
2. Flood references at local libraries	Erin Town Board, Van Etten Village Board	2000	Copy expenses; volunteer time
3. Display maps of flood hazards and problems	Town and Village Code Enforcement Officer	2000	None required
4. Distribute fact sheet about private stream crossings (T. Erin, T. Van Etten)	County Soil & Water Conservation District, Town Highway Superintendents	2000	Copy expenses
5. Articles in Erin Town Newsletter (T. Erin)	Erin Town Board, Code Enforcement Officer, Highway Superintendent	Begin 2000	Existing expense

PREVENTIVE MEASURES			
Task	Responsible Person	Time Table	Financing
6. Planning Board training on flooding and drainage issues	Planning Boards	2000 or 2001	Staff and volunteer time
7. Review drainage system maintenance procedures	Town Highway Superintendents, Van Etten Village Board	2000 or 2001; implement as funding permits	Staff and volunteer time; implementation funding unknown
8. Implement stream maintenance to protect roads	Town Highway Superintendents, County Highway Department, State Dept. of Transportation	Ongoing	Highway Department budgets
9. Consider stream setback requirement (T. Erin)	Town of Erin Planning Board	2002	None

Table 1. Flood Mitigation Action Items (page 2 of 3)

NATURAL RESOURCE PROTECTION			
Task	Responsible Person	Time Table	Financing
10. Implement Stream Stabilization Projects	County Soil & Water Conservation District	Ongoing	Municipalities, County, property owners
11. Streambank protection at roads	Town Highway Superintendents, County Highway Department, State Department of Transportation	Ongoing; as funding permits	Highway Department budgets
12. Publicize timber harvesting registration (T. Erin)	Town of Erin Highway Superintendent	Begin 2000	Highway Department budget
13. Distribute educational information about timber harvesting practices	Clerks and Highway Superintendents	Begin 2000	County printing expenses
14. Evaluate timber registration ordinance (T. Van Etten)	Van Etten Town Board	2000-2001	None
15. Support efforts to restore and construct wetlands	Municipal Boards (in cooperation with County S&WCD, Upper Susquehanna Coalition)	As funding permits	Seek funding

PROPERTY PROTECTION			
Task	Responsible Person	Time Table	Financing
16. Provide technical assistance for floodproofing	Town and Village Code Enforcement Officers	Begin 2000	Staff time
17. Property buyout on Swartwood Road (T. Van Etten)	Chemung County Soil & Water Conservation District	When funding is available	\$135,000; Bond Act & Chemung County
18. Upgrade roadside drainage structures and stream crossings	Town Highway Superintendents	Ongoing; as funding permits	Highway Department budgets
19. Improve drainage and bank protection on Route 223 (T. Van Etten)	NYS Department of Transportation	2001-2002	State Department of Transportation

Table 1. Flood Mitigation Action Items (page 3 of 3)

STRUCTURAL SOLUTIONS			
Task	Responsible Person	Time Table	Financing
20. Complete Newtown Creek Beaver Damage Control Project (T. Erin)	Erin Town Board	Complete 2000	\$140,000; grant and Town funding

EMERGENCY SERVICES			
Task	Responsible Person	Time Table	Financing
21. Increase network of volunteer rain gauge readers	Town and Village staff and elected officials	2000	Volunteer and staff time
22. Review and update emergency plans	Municipal Boards, with assistance from the County Emergency Management Office	2000-2001	Volunteer time
23. Dam safety training (T. Erin)	County Emergency Management Office	2000-2001	Staff time

ATTACHMENT A

Documentation of Public Involvement:

Meeting Notices for Public Information Meetings
(posted in public locations
and distributed by direct mailing)

Handout Summarizing the Flood Mitigation Action Plan
(distributed at public information meetings)



TOWN OF ERIN

1138 Breesport Road
Erin, New York 14838
(607) 739-8681
FAX (607) 739-9396



MEETING NOTICE

DRAFT FLOOD MITIGATION ACTION PLAN

TOWN OF ERIN

The Town of Erin invites you to comment on their Draft Flood Mitigation Action Plan. This plan documents the community's flood problem areas and identifies activities that will be implemented to address these problems.

A public information meeting is scheduled for:

Tuesday, June 27, 2000, 7:00 p.m.

Erin Town Hall, 1138 Breesport Road, Erin

FOR MORE INFORMATION CONTACT: Janet Thigpen, Flood Mitigation
Specialist, Southern Tier Central Regional Planning and Development Board,
737-2096

VILLAGE OF VAN ETTEN
P.O. BOX 156
VAN ETTEN, NEW YORK 14889-0156

MEETING NOTICE

DRAFT FLOOD MITIGATION ACTION PLAN

TOWN AND VILLAGE OF VAN ETTEN

The Town of Van Etten and Village of Van Etten invite you to comment on their Draft Flood Mitigation Action Plan. This plan documents the communities' flood problem areas and identifies activities that will be implemented to address these problems.

A public information meeting is scheduled for:

Wednesday, June 28, 2000, 7:00 p.m.

Van Etten Fire Station, 2 Hixson Street, Van Etten

FOR MORE INFORMATION CONTACT: Janet Thigpen, Flood Mitigation
Specialist, Southern Tier Central Regional Planning and Development Board,
737-2096

Flood Mitigation Planning

Town of Erin, Town of Van Etten, & Village of Van Etten

The Town of Erin, Town of Van Etten, and Village of Van Etten have evaluated the communities' flooding problems and a variety of potential solutions in order to prepare a program of activities to tackle these problems.

WHY?

- Planning is a critical step toward coordinated implementation of activities that will reduce flood damages.
- Fulfill planning requirements for state or federal assistance programs (particularly the newly established Flood Mitigation Assistance Program).
- Qualify for Community Rating System credit toward reduced flood insurance premiums.

ASSESS THE FLOOD HAZARDS AND PROBLEMS

Municipal officials have identified and documented 79 flooding and drainage problems in the Town of Erin, Town of Van Etten, and Village of Van Etten. This documentation includes problems that have been addressed by the municipalities as well as those that still require resolution. Maps indicating the locations of flood problem areas were prepared.

SET RISK REDUCTION GOALS

Long-range goals for reducing future flood damages in Erin and Van Etten were proposed. These goals emphasize preventive measures and protection of the beneficial functions of natural systems.

ASSESS POSSIBLE MITIGATION MEASURES

Participants reviewed a comprehensive list of possible measures for resolving flooding problems. They identified those solutions that are most applicable to the flooding problems and community needs in the Town of Erin, Town of Van Etten, and Village of Van Etten.

DEVELOP AN ACTION PLAN

Municipal officials prepared an Action Plan, which describes 22 activities that can be implemented locally to address flooding problems. This Plan will be reviewed and updated annually to incorporate subsequent steps toward achieving the communities' long-term flood damage reduction goals.

REVIEW AND ADOPTION OF THE PLAN

The Town of Erin, Town of Van Etten, and Village of Van Etten are now soliciting comments and input to the Draft Flood Mitigation Action Plan. Once local input has been incorporated, the Plan will be submitted to the State Emergency Management Office and Federal Emergency Management Agency for approval. It will then be presented to each municipal board for adoption. Adoption of this plan will enable the municipalities to qualify for Flood Mitigation Assistance grant funding.

ATTACHMENT B

**Map of Flood Hazards and Problems
Town of Erin**

**Map of Flood Hazards and Problems
Town and Village of Van Etten**

Summary of Flooding Problems

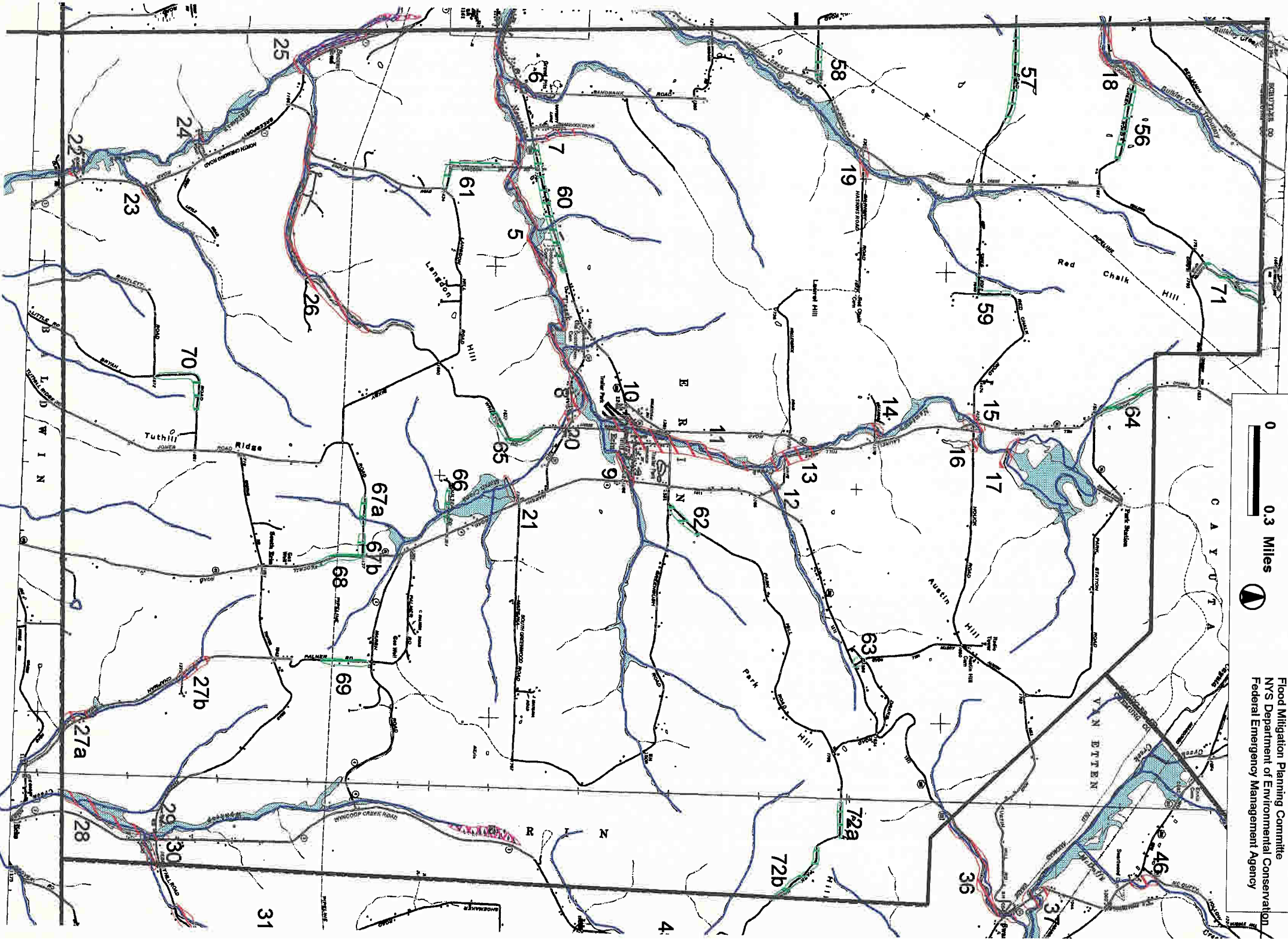
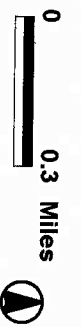
Town of Erin Flood Hazards and Problems

Flood problems are described in "Flood Mitigation Action Plan, Town of Erin, Town of Van Etten, and Village of Van Etten" (Available at municipal offices).

Note: Floodplain and Wetland data are approximate. Not for legal floodplain or wetland determination.

Source:
Flood Mitigation Planning Committee
NYS Department of Environmental Conservation
Federal Emergency Management Agency

-  Flood Problem Areas
-  Flooding and Bank Erosion (#1-52)
-  Stormwater Problems (#53-74)
-  Streams, Rivers & Lakes
-  DEC Wetlands
-  100 Year Flood Zone



Town and Village of Van Etten Flood Hazards and Problems

- Flood Problem Areas**
-  Flooding and Bank Erosion (#1-52)
 -  Stormwater Problems (#53-74)
 -  Streams, Rivers & Lakes
 -  DEC Wetlands
 -  100 Year Flood Zone

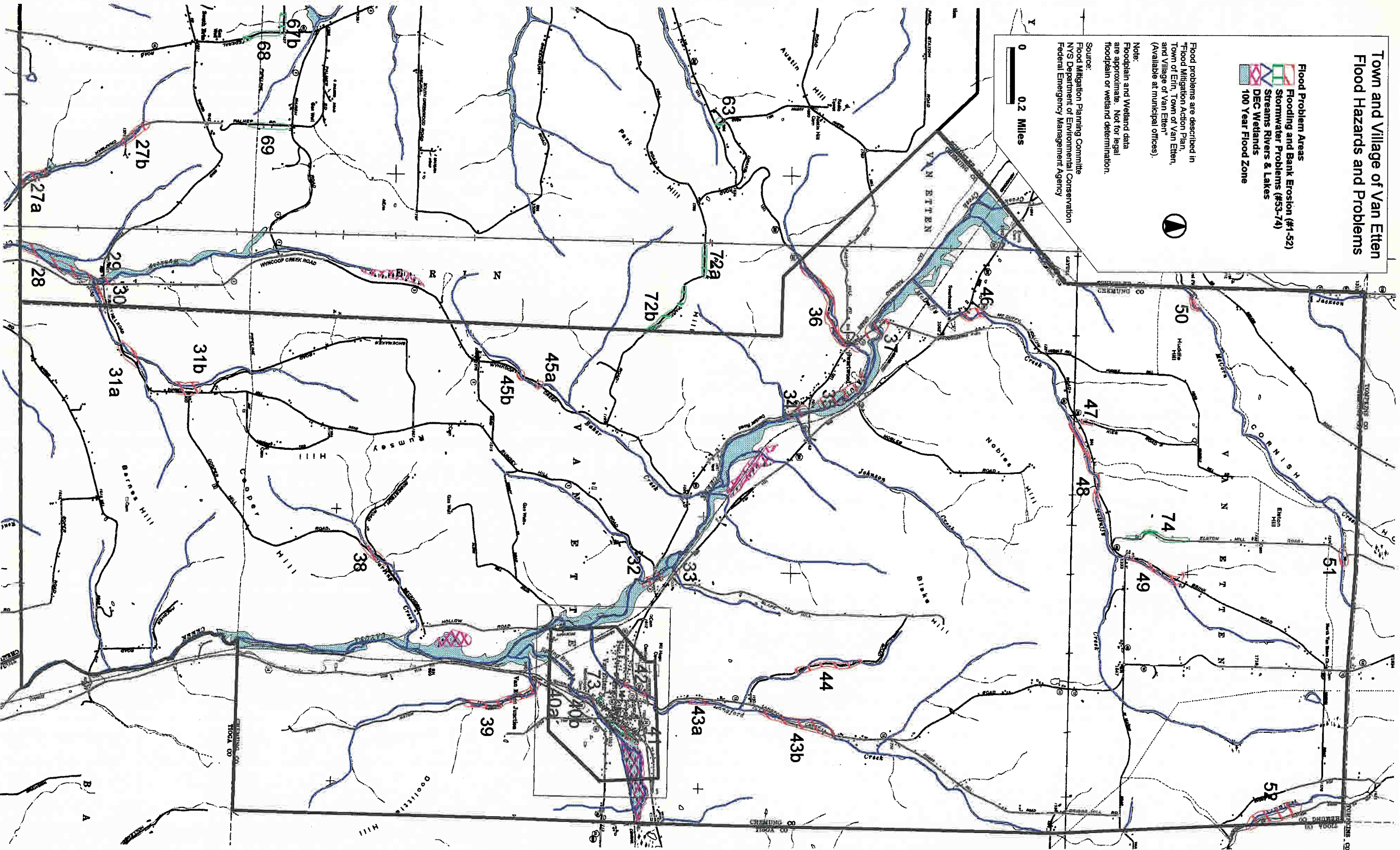
Flood problems are described in
Flood Mitigation Action Plan,
Town of Erin, Town of Van Etten,
and Village of Van Etten
(Available at municipal offices).

Note:
Floodplain and Wetland data
are approximate. Not for legal
floodplain or wetland determination.

Source:
Flood Mitigation Planning Committee
NYS Department of Environmental Conservation
Federal Emergency Management Agency



0 0.2 Miles



SUMMARY OF FLOODING PROBLEMS
Town of Erin, Town of Van Etten, and Village of Van Etten

Problem No.	Stream/Drainage Basin	Problem Name	Municipality	Houses/Businesses Affected?	Roads/Culverts/Bridges Affected?	Streambank Erosion?	Riverine/Wetland Flooding?	Groundwater Flooding?	Stormwater Flooding?
1	All	Streambank erosion	T. Erin, T. & V. Van Etten	yes	yes	no	no	no	no
2	All	Debris accumulation in channels	T. Erin, T. & V. Van Etten	yes	yes	yes	no	no	no
3	All	Sediment accumulation in channels	T. Erin, T. & V. Van Etten	yes	yes	yes	no	no	no
4	All	Beaver activity	T. Erin, T. & V. Van Etten	yes	no	yes	no	no	no
5	Newtown Creek	Newtown Cr. downstream of Marsh Cr.	T. Erin	3	yes	yes	no	no	no
6	Newtown Creek	Unnamed tributary at Sandbank Road	T. Erin	0	yes	no	no	no	no
7	Newtown Creek	Unnamed tributary at Shamrock Drive	T. Erin	2	no	yes	no	no	no
8	Newtown Creek	Fairview Road at Newtown Creek	T. Erin	10	yes	yes	no	no	no
9	Newtown Creek	Unnamed tributary in hamlet of Erin	T. Erin	8	yes	yes	no	no	no
10	Newtown Creek	Newtown Creek in hamlet of Erin	T. Erin	16	yes	no	yes	no	no
11	Newtown Creek	Greenbush and Church Roads	T. Erin	11	yes	no	yes	no	no
12	Newtown Creek	Unnamed tributary at Maple Drive	T. Erin	1	no	yes	no	no	no
13	Newtown Creek	Maple Drive along Newtown Creek	T. Erin	0	yes	no	yes	no	no
14	Newtown Creek	Kellogg Road	T. Erin	0	yes	no	yes	no	no
15	Newtown Creek	Laurel Hill Road and Red Chalk Road	T. Erin	0	yes	no	yes	no	no
16	Newtown Creek	Houck Road	T. Erin	0	yes	no	yes	no	no
17	Newtown Creek	Park Station Dam	T. Erin	yes	yes	yes	no	no	no
18	Bulkley Creek	Unnamed tributary at Jackson Cr. Rd.	T. Erin	0	yes	no	yes	no	no
19	Jackson Creek	Jackson Creek Dam	T. Erin	yes	yes	yes	no	no	no
20	Marsh Creek	Fairview Road along Marsh Creek	T. Erin	16	no	yes	no	no	no
21	Marsh Creek	Marsh Dam	T. Erin	yes	yes	yes	no	no	no
22	Baldwin Creek	Jim Berlew Road	T. Erin	1	yes	no	yes	no	no

SUMMARY OF FLOODING PROBLEMS
Town of Erin, Town of Van Etten, and Village of Van Etten

Problem No.	Stream/Drainage Basin	Problem Name	Municipality	Houses/Businesses Affected?	Roads/Culverts/Bridges Affected?	Streambank Erosion?	Riverine/Wetland Flooding?	Groundwater Flooding?	Stormwater Flooding?
23	Baldwin Creek	Unnamed tributary along Murphy Road	T. Erin	1	yes	yes	yes	no	no
24	Baldwin Creek	Alice Little Road	T. Erin	1	yes	no	yes	no	no
25	Baldwin Creek	Breesport-North Chemung Road	T. Erin	0	yes	yes	yes	no	no
26	Baldwin Creek	Tributary along Rorick Hollow Rd.	T. Erin	0	yes	yes	no	no	no
27a	Wynkoop Creek	Unnamed tributary along Chapman Rd.	T. Erin	2	yes	yes	yes	no	no
27b	Wynkoop Creek	Unnamed tributary along Chapman Rd.	T. Erin	0	yes	yes	no	no	no
28	Wynkoop Creek	Wynkoop Cr. downstream of Thayer Rd.	T. Erin	2	no	yes	yes	no	no
29	Wynkoop Creek	Wynkoop Creek Road & Thayer Road	T. Erin	1	yes	yes	yes	no	no
30	Wynkoop Creek	Rumsey Hill Rd. near Wynkoop Cr. Rd.	T. Erin	2	no	yes	yes	no	no
31a	Wynkoop Creek	Unnamed tributary at Rumsey Hill Rd.	T. Van Etten	1	yes	yes	no	no	no
31b	Wynkoop Creek	Unnamed tributary at Rumsey Hill Rd.	T. Van Etten	0	yes	yes	no	no	no
32	Cayuta Creek (Shepherd Cr.)	Wynkoop Creek Road at Cayuta Creek	T. Van Etten	2	no	yes	yes	no	no
33	Cayuta Creek (Shepherd Cr.)	Route 224 at Blake Hill Road tributary	T. Van Etten	0	yes	yes	no	no	no
34	Cayuta Creek (Shepherd Cr.)	Decker Road	T. Van Etten	2	no	no	yes	no	no
35	Cayuta Creek (Shepherd Cr.)	Agricultural land along Route 223	T. Van Etten	0	no	no	yes	no	no
36	Cayuta Creek (Shepherd Cr.)	Unnamed tributary along Route 223	T. Van Etten	4	yes	yes	no	no	no
37	Cayuta Creek (Shepherd Cr.)	Swartwood Road	T. Van Etten	6	yes	no	yes	no	no
38	Darling Creek	Beckhorn Hollow Rd. & Robertson Rd.	T. Van Etten	0	yes	yes	no	no	no
39	Spring Brook	Tributary along Cramer Hollow Rd.	T. Van Etten	0	yes	yes	no	no	no

SUMMARY OF FLOODING PROBLEMS
Town of Erin, Town of Van Etten, and Village of Van Etten

Problem No.	Stream/Drainage Basin	Problem Name	Municipality	Houses/Businesses Affected?	Roads/Culverts/Bridges Affected?	Streambank Erosion?	Riverine/Wetland Flooding?	Groundwater Flooding?	Stormwater Flooding?
40a	Spring Brook	Waverly Street	V. Van Etten	5	no	no	yes	no	no
40b	Spring Brook	Waverly Street	V. Van Etten	5	no	no	yes	no	no
41	Van Etten Wildlife Sanctuary	Hixson Street	V. Van Etten	18	yes	no	yes	yes	no
42	Langford Creek	Village of Van Etten	V. Van Etten	2	yes	yes	no	no	no
43a	Langford Creek	Langford Road	T. Van Etten	0	yes	yes	no	no	no
43b	Langford Creek	Langford Road	T. Van Etten	3	yes	yes	no	no	no
44	Langford Creek	Unnamed tributary along Blake Hill Rd.	T. Van Etten	0	yes	yes	no	no	no
45a	Baker Creek	Wynkoop Creek Road at Baker Creek	T. Van Etten	0	yes	yes	no	no	no
45b	Baker Creek	Wynkoop Creek Road at Baker Creek	T. Van Etten	0	yes	yes	no	no	no
46	McDuffy Creek	Route 224 at McDuffy Creek	T. Van Etten	1	yes	yes	no	no	no
47	McDuffy Creek	Unnamed tributary at Keis Road	T. Van Etten	0	yes	yes	no	no	no
48	McDuffy Creek	McDuffy Hollow Road	T. Van Etten	0	no	yes	no	no	no
49	McDuffy Creek	Brink Road	T. Van Etten	0	yes	yes	no	no	no
50	McCorn Creek	Cornish Hollow Road	T. Van Etten	0	yes	yes	yes	no	no
51	McCorn Creek	Unnamed tributary at Elston Hill Road	T. Van Etten	0	yes	yes	no	no	no
52	Hulbert Hollow Creek	Hulbert Hollow Road	T. Van Etten	2	yes	yes	no	no	no
STORMWATER RUNOFF AND GROUNDWATER FLOODING									
53	All	Road ditches and culverts	T. Erin, T. & V. Van Etten	0	yes	no	no	no	yes
54	All	Debris accumulation in drainage ways	T. Erin, T. & V. Van Etten	yes	yes	no	no	no	yes
55	All	Land use changes	T. Erin, T. & V. Van Etten	yes	yes	no	no	no	yes
56	Bulkley Creek Watershed	Jackson Creek Road	T. Erin	0	yes	no	no	no	yes
57	Newtown Creek Watershed	Lesky Road	T. Erin	0	yes	no	no	no	yes

SUMMARY OF FLOODING PROBLEMS
Town of Erin, Town of Van Etten, and Village of Van Etten

Problem No.	Stream/Drainage Basin	Problem Name	Municipality	Houses/Businesses Affected?	Roads/Culverts/Bridges Affected?	Streambank Erosion?	Riverine/Wetland Flooding?	Groundwater Flooding?	Stormwater Flooding?
58	Jackson Creek Watershed	Mallory Hill Road	T. Erin	0	yes	no	no	no	yes
59	Jackson Creek Watershed	Red Chalk Road	T. Erin	0	yes	no	no	no	yes
60	Newtown Creek Watershed	Route 223 east of Shamrock Drive	T. Erin	1	yes	no	no	no	yes
61	Newtown Creek Watershed	Langdon Hill Road	T. Erin	0	yes	no	no	no	yes
62	Newtown Creek Watershed	Park Hill Road near Greenbush Road	T. Erin	0	yes	no	no	no	yes
63	Newtown Creek Watershed	Austin Hill Road	T. Erin	0	yes	no	no	no	yes
64	Newtown Creek Watershed	Laurel Hill Road	T. Erin	0	yes	no	no	no	yes
65	Marsh Creek Watershed	Wheaton Road	T. Erin	0	yes	no	no	no	yes
66	Marsh Creek Watershed	Moulter Road	T. Erin	0	yes	no	no	no	yes
67a	Marsh Creek Watershed	Bixby Road	T. Erin	0	yes	no	no	no	yes
67b	Marsh Creek Watershed	Bixby Road	T. Erin	0	yes	no	no	no	yes
68	Marsh Creek Watershed	Federal Road	T. Erin	0	yes	no	no	no	yes
69	Marsh Creek Watershed	North end of Chapman Road	T. Erin	0	yes	no	no	no	yes
70	Baldwin Creek Watershed	Bryan Road	T. Erin	0	yes	no	no	no	yes
71	Cayuta Creek Watershed	Walker Road	T. Erin	0	yes	no	no	no	yes
72a	Cayuta Creek Watershed	East end Park Hill Road	T. Erin	0	yes	no	no	no	yes
72b	Cayuta Creek Watershed	East end Park Hill Road	T. Erin	0	yes	no	no	no	yes
73	Spring Brook Watershed	Murray Street and Waverly Street	V. Van Etten	1	no	no	no	yes	no
74	McDuffy Creek Watershed	Elston Hill Road	T. Van Etten	0	yes	no	no	no	yes
FLOOD WARNING									
75	All	Flash flooding	T. Erin, T. & V. Van Etten	yes	yes	no	yes	no	yes
76	All	Rain gauges	T. Erin, T. & V. Van Etten	yes	yes	no	yes	no	yes

SUMMARY OF FLOODING PROBLEMS
Town of Erin, Town of Van Etten, and Village of Van Etten

Problem No.	Stream/Drainage Basin	Problem Name	Municipality	Houses/Businesses Affected?	Roads/Culverts/Bridges Affected?	Streambank Erosion?	Riverine/Wetland Flooding?	Groundwater Flooding?	Stormwater Flooding?
77	All	Disaster plans	T. Erin, T. & V. Van Etten	yes	yes	yes	yes	yes	yes
DEVELOPMENT ACTIVITIES									
78	All	Stormwater management	T. Erin, T. & V. Van Etten	yes	yes	yes	yes	yes	yes
79	All	Timber harvesting	T. Erin, T. & V. Van Etten	yes	yes	yes	yes	no	yes

ATTACHMENT C

Flood Solutions Worksheet Completed by the Erin – Van Etten Mitigation Planning Committee

Attached is a completed copy of the worksheet used to evaluate flood mitigation measures. All of the measures listed on this worksheet were reviewed and evaluated by the Erin – Van Etten Flood Mitigation Planning Committee. Recommended techniques for the Town of Erin, Town of Van Etten, and Village of Van Etten are marked in the left column of the worksheet. One X indicates that at least one participant supported an idea; XX indicates that about half were in favor; and XXX indicates near-unanimous support of those who participated. Comments applicable to Erin and Van Etten are indicated in italics.

Name: Flood Mitigation Planning Committee

Municipality: Town of Erin, Town of Van

Etten, and Village of Van Etten

FLOOD SOLUTIONS WORKSHEET

As you listen to and participate in discussions of alternative techniques for reducing flood damages, record your ideas and thoughts on this worksheet. Check those ideas that might work in your community. Specify the geographic areas for applying these solutions.

Alternative Flood Damage Reduction Techniques

PUBLIC INFORMATION

Information About Flood Insurance Rate Maps

- Post floodplain maps in municipal buildings
- Map determinations (flood zone for a particular property or structure)
- Provide information about additional locations with known flood problems (riverine flooding, shallow water table, bank erosion, etc.)
- Other: brochures in the Code Enforcement Offices, Town and Village Halls

Flood Information Outreach Projects

- Newsletter article in Town of Erin newsletter (at least once a year)
- Enclosure in utility bills _____
- Direct mailing to _____
- Special outreach project programs in local elementary schools
- Other: brochures in Code Enforcement Offices, Town and Village Halls, Library

Real Estate Disclosure

- Education of potential property buyers – distribute County brochures
- Education of real estate agents – distribute County brochures to local agents
- Mandatory disclosure of flood history by real estate agents
- Other: _____

Provide References to Public Library – Horseheads and Van Etten Libraries

- Current Flood Insurance Rate Maps
- Flood insurance information
- Information about protecting buildings from flooding
- Documents on community floodplain management and flood hazard mitigation
- Information about the natural and beneficial functions of floodplains
- Local accounts of past flood events
- Directory of sources for additional information on these topics
- Other: _____

Provide Technical Assistance

- Site-specific information about historic flood events
- Names of contractors and consultants knowledgeable or experienced in retrofitting techniques and construction
- Material on how to select a qualified contractor and what recourse people have if they are dissatisfied with a contractor’s performance
- Site visits to review flooding, drainage, and sewer problems or provide advice on contemplated development – *by Code Enforcement Officer*
- Advice and assistance on retrofitting techniques
- Other: *Code Enforcement Officer provides info about waterproofing basements*

Environmental Education

- Education programs for children – *elementary schools*
- Education programs for adults
- Other: _____

PREVENTIVE ACTIVITIES

Floodplain Regulations – *Base Flood Elevations are not currently available for any streams*

- Training for local officials (Code Enforcement Officer, Planning Board, etc.)
- Adopt updated NYS Model Law
- Revise law to require building elevation 2 feet above base flood elevation
- Revise law to include additional flood-prone areas
- Update Flood Insurance Rate Maps (restudy, amend, or revise)
- Require that all new buildings in and out of the designated floodplain be elevated above historic high water levels
- Other: _____

Conventional Zoning – *No zoning in the Village of Van Etten*

- Low-density zoning
- Depth restrictions for basements at _____
- Standards for private bridges
- Standards for driveways and driveway culverts – *T. Erin has in Highway specs*
- Maximum lot coverage for impervious surfaces
- Other: *Distribute a fact sheet about hazards and responsibility for private bridges*

Subdivision Regulations – *No subdivision regulations in the Village of Van Etten*

- Require that each lot includes a safe building site at an elevation above selected flood heights (either by a lot layout that enables out-of-the-floodplain construction or by filling a portion of each lot)
- Require placement of streets above selected flood protection elevations
- Require placement of public utilities above selected flood protection elevations
- Prohibit encroachment of floodway
- Require that flood hazard areas be shown on plat - *and streams and drainage ways*
- Require adequate drainage facilities
- Other: _____

Cluster Development

- X Cluster development provisions
- X in zoning ordinance
- X in subdivision ordinance
- as a separate ordinance
- Other: _____

Open Space Preservation

- X Stream setback requirement
- Lake shore setback requirement
- Vegetated buffer strips along _____
- Conservation District or other restrictive development regulations _____
- Agricultural districts
- Parks, preserves, or recreation areas _____
- Transferable development rights
- Land use easements _____
- Apply floodway development standards to wider area along _____
- Other: _____

Stormwater Management

- Stormwater management plan for _____ watershed(s)
- X Stormwater management regulations
- in zoning ordinance
- in subdivision ordinance
- as a separate ordinance
- XXX Stormwater management regulations for timber harvesting -- *registration*
- XXX Education and technical assistance
- X Design and construction of regional stormwater management facilities
- to address existing problems at _____
- in anticipation of future development at _____
- X Inspection and maintenance of stormwater management facilities
- XX Other: *Registration and education for timber harvesting*

Drainage System Maintenance

- XX Line item in budget for drainage system maintenance
- XX Debris removal when problems occur
- XXX Routine inspection and removal of debris *1 to 2* times per year
- XX Written drainage system maintenance plan (specifying maintenance needs and responsibilities)
- Establish a drainage district
- XXX Channel/bank stabilization ~~on~~ *as needed*
- Debris basin(s) on _____
- XXX Other: *Prepare and use a chart or map of problem areas that require inspection*

NATURAL RESOURCE PROTECTION

Wetlands

- Protect existing wetlands at *Van Etten Wildlife Refuge*
- Enlarge existing wetlands at *volunteered sites*
- Create new wetlands at *volunteered sites*
- Other: _____

Erosion and Sediment Control

- Channel/bank stabilization of *Langford Creek north of Main Street and other sites*
- Erosion and sediment control at new development
 - through regulation
 - through education and technical assistance
- Other: _____

Best Management Practices

- Agriculture
 - education and technical assistance
 - _____ financial incentives
- Timber harvesting
 - regulations
 - education and technical assistance
- Other: *Publicize existing timber registration requirement in T. Erin--signs, mail*

PROPERTY PROTECTION

Relocation

- Relocation of building(s) from _____
- Other: _____

Acquisition

- Acquisition of undeveloped flood-prone property at _____
- Acquisition and demolition of buildings at *Swartwood Road*
- Acquisition of development rights or easements at _____
- Other: _____

Building Elevation

- Elevate existing building(s) at _____
- Other: _____

Floodproofing of Buildings and Sewer Backup Protection

- Distribute information about floodproofing techniques
- Technical assistance
- Financial assistance _____
- Other: _____

Infrastructure Protection

- Design standards for new or replaced bridges and culverts
- Mitigation of existing problems at _____
- Debris removal when problems occur
- Routine inspection and maintenance
- Other: *Document problems and make known to all agencies working at those site*

Insurance

- Education of property owners
- Education of insurance agents, mortgage lenders, and real estate agents
- Community Rating System (to reduce insurance premiums)
- Other: _____

STRUCTURAL PROJECTS

Reservoirs

- New water retention structures in _____ watershed
- Identify and maintain existing ponds and retention structures
- Other: _____

Levees and Floodwalls

- New levee along _____
- Increased protection of existing levee along _____
- Maintain existing dike system
- Other: *Complete Bond Act project in hamlet of Erin*

Diversions

- High flow diversion channel at _____
- Other: _____

Channel Modifications

- Removal of sand bars or islands ~~from~~ *working with DEC and SWCD*
- Straightening, widening, or deepening of _____
- Channel paving of _____
- Other: *Work with DEC and SWCD on restoration and improvements as needed*

Storm Sewers

- Storm sewer installation at _____
- Increased storm sewer capacity at _____
- Inspection and maintenance of existing storm sewer at _____
- Other: _____

EMERGENCY SERVICES

Flood Warning

- Rain gauges
 - Automated gauges – *existing gauges in Big Flats, Caton, and Erin*
 - Volunteer reporting solicit volunteers at Board Mtgs. and in newsletters
 - Stream/river/lake level gauges
 - Automated gauges at _____
 - Staff gauges at _____
 - Historic information for _____
 - Stage relation information for _____
- Local flood forecast center (operated by Environmental Emergency Services)
- Other: _____

Flood Response

- Flood stage forecast maps for _____
- Emergency plan for municipality (command structure, communication procedures, emergency flood proofing measures, evacuation procedures, etc.) *find and update*
- Other: Dam safety training

Critical Facilities Protection

- Protection or relocation of critical facilities (sites with toxic materials, medical facilities, emergency operation centers, utilities) _____
- Emergency plan for critical facilities _____
- Other: _____