

Watershed Plan for the North Chili Tributary of Black Creek O-117-19-7

V. Analysis of Potential Actions

A. Stormwater Management Alternatives

1. Regional Planning and Development

One option for stormwater management is one or more regional stormwater management facilities. A dual-purpose regional facility to address both flooding and water quality would require a design that includes wetland characteristics or features. Such a facility is currently located in the Town of Pittsford. In that facility, the stormwater enters a wetland where some water quality treatment occurs. The water then flows to a larger facility that provides the primary flood control benefits. Funding for this facility was provided by the Town as well as by many other sources. The NYSDEC, Monroe County, and the USGS contributed because the project included water quality benefits. Local golf courses made contributions because of an arrangement made to assist them in irrigation needs to replace siphoning from the Barge Canal, and to address some of the nuisance flooding that occurred at the golf courses during summer months.

There are several considerations in evaluation of this alternative: Identification of one or more feasible locations; determination of the needed capacity and other design features; identification of the costs; and development and pursuit of a funding strategy. Each of these considerations are briefly outlined below.

a. Location

One or more possible locations for such a regional facility needs to be identified. As noted earlier, usually the most beneficial location for a regional facility is in the downstream portion of the watershed. In this watershed, such locations would be in the Towns of Riga and/or Chili. Efforts to involve the Town of Riga in the watershed planning efforts would be needed in order to consider possible benefits to both towns. The first step would be to identify locations where stormwater capture could do the most good in alleviating or preventing flooding. The second step would be to consider the feasibility of obtaining the land. For example, it may be more feasible to obtain land that is identified as floodplain and part of a parcel of land proposed for development where stormwater controls will be required. It would be much more difficult to obtain land that is already developed.

b. Capacity

The needed capacity of such a facility would be dependent on the location and the design storm recurrence selected. An engineer would need to evaluate the existing and future runoff for the watershed and determine the design capacity accordingly.

c. Costs

Key factors in determining the costs include the regional facility purpose, location, and capacity. An engineer would need to develop a cost estimate after the other factors are determined. It should be noted that the total cost of the 697,000 cubic foot Pittsford dual-purpose facility built in 1995 was \$1.2 million. The facility was partly funded through a grant.

d. Funding Strategy

The costs of a regional facility are significant enough that a funding strategy would need to be developed and then actions taken to secure the funds. In the case of the Town of Pittsford, the design strategy included seeking funds from many sources, including landowners who benefit from the project, government grants, in-kind services of County agency staff, and town tax revenues. It took more than 2 years for all of the funding sources to be secured.

2. Onsite Stormwater Management for New Development

Town stormwater management regulations should be reviewed to identify opportunities to make modifications that will improve stormwater management. Town stormwater regulations should include requirements to manage both stormwater quantity and quality and to minimize the amount of impervious surfaces of new development. Stormwater quality and quantity requirements can be met by construction of wetlands. Stormwater quantity can be addressed by building detention or retention facilities, which have minimal impact on water quality.

Any review of opportunities to improve stormwater regulations should include an analysis of options for maintenance of facilities and funding for such long-term maintenance. Some towns prefer to take ownership of the facilities and to create one or more stormwater (or drainage) districts to fund their maintenance. Others take responsibility for maintenance but use the general tax base for funding. Some towns encourage the developer to maintain ownership and maintenance responsibility. In all cases, it is important to insure that stormwater facility designs require minimal maintenance. (See discussion below.)

3. Stormwater Management Facility Maintenance

A drainage system or stormwater management system comprises all conduits that convey stormwater. These can be open channels, piped sewers with receiving basins, and stormwater management basins. As development occurs, most municipalities take easements over the stormwater conveyance system in order to maintain drainage, control flooding and enhance water quality. Maintenance of stormwater management facilities is critical to ensure that they remain effective. Stormwater management facilities need to be designed in a manner that minimizes maintenance requirements. A formal stormwater management maintenance program should be developed for this watershed.

The Town of Chili has a consolidated drainage district that allows it to levy an annual fee (based on the appraised value) to properties within the district. The consolidated drainage district allows the Town to maintain drainage systems on an as needed basis. New subdivisions and those properties that need to obtain building permits are required to join the district. By design, large tracts of land (mainly farms) are not in the district and, therefore, do not require the Town to maintain their (private) drainage systems. The Town also has a general drainage fund to perform routine maintenance to all other areas.

Typically, those storm sewers or open channels in a highway right-of-way belong to the municipality or government agency that owns the highway. Roads in the North Chili tributary watershed are owned by the Town, County or State. A well devised maintenance plan will require coordination of these agencies.

The Town of Chili has taken drainage easements across most stormwater management basins. This allows the Town to perform maintenance as needed. Homeowners' associations own and manage some existing stormwater management basins in the watershed and levy fees from all property owners in the development to pay for services such as maintenance. In some cases, however, associations have requested the Town to perform maintenance on these basins that would jeopardize the water quality features or have resisted modifying stormwater basins for water quality purposes. In an attempt to achieve a "reflecting pool" image, some management measures used by stormwater basin owners limit pollutant removal performance. For these reasons, it is recommended that stormwater management basins be owned outright by the Town.

An operation and maintenance inspection form developed for the U.S. Environmental Protection Agency can be found in the appendices. This type of form could be used as a model for developing a management program for all stormwater management practices in the watershed.

a. Stormwater Wetlands

Stormwater wetlands are the preferred stormwater management facility for quantity and quality control. Many of the design features recommended for stormwater wetlands are intended to reduce long-term maintenance needs. One of these features is a low maintenance access road to the inlets and outlets. The access road can be vegetated for aesthetics and annually mowed to prevent woody plants from growing and blocking the driveway. The access is needed to allow municipal public works staff and equipment to get to these points, which typically need to be checked for, or cleared of, debris blockages.

A second maintenance feature is to minimize debris blockages at facility discharge pipes by reversing the pipe discharge slope such that the inlet is below water surface level by 6-18 inches. This technique prevents clogging of typical floating debris like wood and litter.

Stormwater carries litter, sediment, oil, metals, nutrients, pesticides, road salt and bacteria into stormwater management facilities. To encourage particulate pollutants to settle out of suspension, modern stormwater wetlands are designed with forebays (deep pools, 4-6 feet deep at the inlets). A second form of deep pool is also needed at the discharge point to allow for the submerged outlet pipe and to be another point of settling before discharge. As debris and pollutants accumulate in these pools, some periodic maintenance in the form of dredging should be expected. A rule of thumb to help gauge dredging maintenance requirements, which has been used in other areas of the country, is one inch per year sediment accumulation. Using the one-inch rule and understanding that a significant loss in depth of the forebay or micropool can diminish pollutant removal performance, a maintenance schedule and budgeting for dredging can be planned. A one-foot accumulation of sediment in these deep pools should be considered reasonable. Therefore, dredging should be planned for approximately every 10-12 years. More frequent dredging schedules have been suggested and should be considered if rates of accumulation are higher than expected. For this reason, depth checks of the deep pools should be made annually, perhaps as part of a maintenance checklist.

b. Storm Sewers

Storm sewers and their catch basins accumulate particulate matter and litter from stormwater runoff. A typical practice to clean storm sewers, used by many public works departments, is high-pressure hoses. This practice degrades receiving streams and needs to be avoided. An alternative is to use a vacuum truck that sucks debris and sludge out of catch basins and sewers. The Town of Chili owns one of these trucks. Recent studies have shown low, overall pollutant removal rates where catch basins are vacuumed out frequently. This is likely due to the way catch basins are designed to convey water efficiently and the unpredictability of storm events. To counter this, some water quality modifications to catch basins include installing inverted siphons to create a sump that holds water and debris at the bottom for vacuum removal. The efficiency of these practices is yet unknown. It is recommended that a maintenance program for storm sewer cleaning be developed for this watershed.

c. Open Channels

For water quality purposes, open channels are preferred over piped sewers because stormwater can flow through pollutant-removing vegetation in the channel. Studies suggest that slight modifications to the open channel design can also enhance pollutant removal. In this watershed, however, low gradient channels can back up stormwater into yards and homes causing greater problems. Previous sections of this report discuss the need to sewer these areas. Maintenance is required for open channels to assure proper stormwater runoff conveyance. These channels need to be periodically cleaned of debris and woody plants, re-excavated to maintain their slope and seeded with an appropriate grass mixture.

d. Water Quality Inlets

Water quality inlets are modified catch basins that are designed to capture sediment and oils carried in stormwater runoff. If they are working efficiently, they accumulate these pollutants in storage compartments that need to be cleaned out. The frequency of the clean-outs is typically defined by the product manufacturer, but in no case should inspection of these structures be less than once a year.

4. Installation or Modification of Stormwater Facilities in Areas of Existing Development

Actions could be taken to evaluate opportunities to install or modify stormwater facilities in areas where development exists, but drainage and/or water quality problems occur. Dry detention basins can be retrofitted to address water quality, and/or be undercut to allow retention of larger storm volumes.

5. Elimination of Inflow

A concerted effort needs to be made to permanently remove improper connections from the sanitary sewer system. Once improper connections are identified, specific recommendations need to be made to determine alternative discharge points such as to an existing storm lateral, a new sump line, or an outside-the-house discharge to the yard.

Remediation of this problem needs to be a cooperative effort between the Town and the homeowners. The following are possible solutions that need to be evaluated and further explored:

- Creation of a Town of Chili sewer use ordinance, consistent with County sewer use law (see Appendix A), that would include provisions for prohibiting sump pump and other stormwater discharges into the County sanitary sewer system; establishment and enforcement of penalties for noncompliance
- Pursuit of possible State and Federal grants to assist homeowners with correcting improper plumbing
- Tax increases to fund necessary infrastructure improvements
- Continuing system-wide evaluation
- Flow metering in sanitary sewers
- Dye testing in basements and roof/gutter drains

6. Elimination of Infiltration

In order to help resolve the infiltration problems in North Chili and other areas within Monroe County, the County has recently taken a proactive approach and has hired a consultant to help develop an all-inclusive, systematic approach to identify infiltration contributions, prioritize their significance, and initiate remedial actions.

As of October 1998, through the use of closed-circuit video cameras, internal inspections have revealed several significant sources of infiltration within this basin on Union Street and on Province Drive. As a result, the County rehabilitated four stretches of 8-inch and

10-inch sewer on Union Street, equaling 874 feet in length. Two new methods of pipe repair, known as pipe bursting and cured-in-place lining system were used. On Province Drive, remediation required two lateral excavations to eliminate infiltration entering through the connection point to the main sewer.

Further video inspection, as well as compilation of an inventory of manhole structures and their location and condition, will be a continued focus of the County. The County will continue to conduct the monitoring effort necessary to better understand the causes and effects of infiltration on the existing sanitary sewer system. An infiltration remediation plan can then be developed for portions of the collection system. Funding will be required for the implementation of this work.

B. Other Recommendations

1. Educational Opportunities

Table 4 summarizes issues that have been raised in this Watershed Plan and methods that can be used to educate about these issues. Further details are available below.

a. Educational Methods

- The County and Town Web pages can announce convenient sources of information on any of the topics.
- Local officials should monitor the County web site for county-wide educational programs of interest to developers in the Town.
- Information about Community Water Watch and the storm drain stenciling program should be made available at the County and Town of Chili web sites and at the Town Hall and Town Library. The programs should also be announced in the Gates Chili News.
- Booklets, pamphlets and fact sheets for public distribution can be available at the Town Hall and Town Library. Materials should be displayed in easily visible display racks. The Town Hall display could include materials of interest to homeowners and the general public. Manuals and other reference books could be incorporated into either the Town of Chili Library or a staff library, depending on the topic.
- The Gates-Chili News is a good source of information for homeowners and the general public, especially if the topic lends itself to photos or illustrations.
- The Town of Chili quarterly newsletter can publish articles on water quantity and quality issues.
- Public access TV Channel 12 lends itself to topics for which scenic photography is especially appropriate.
- Meetings with homeowner associations could be used to inform members about a topic specific to the development covered by the association, such as constructed wetlands. Topics of more general interest could be included.
- Meetings with community groups, such as service organizations and garden clubs, should be used for topics of general public interest.

- Targeted mailings are appropriate for topics that concern only a limited number of citizens or businesses.
- Public information meetings are appropriate either as a follow-up to a mailing on a specific topic, or as a part of a development review that includes special features such as constructed wetlands.
- Local hardware and building supply stores could be asked to display information of interest to the homeowner including: plumbing code, plumbing materials, garbage disposal do's and don'ts, cross connections, septic systems, acceptable waste discharge practices, and laundry waste.
- Information for new homeowners may be reinforced if the developer assists in providing the information.
- Developers should be given written guidelines on topics involving the development process as soon as possible when any development is proposed.

b. Sources of Information and Phone Numbers

In most cases, it is not necessary for the Town of Chili to create new educational materials. Materials are already available from the sources shown in Table 5.

Insert Table 4

Insert Table 5 page 1

Insert Table 5 page 2

Insert Table 5 page 3

2. Monitoring

a. Water Quality and Quantity

- (1) Data from streams (to be coordinated with the U.S. Geological Survey and the Monroe County Environmental Health Laboratory)

The effectiveness of erosion and sediment control measures and the impact of impervious surfaces within the watershed could be evaluated if two monitoring sites could be established, one upstream and one downstream of the North Chili tributary discharge to Black Creek. Comparison of water quality data from the two sites would allow for the evaluation. At this time, one U.S. Geological Survey (USGS) monitoring site exists on Black Creek in the Village of Churchville, an upstream site. This site was established in 1945. Streamflow data exists from 1945 to the present, while water quality data exists from 1998 to the present. However, a downstream USGS site is not feasible due to the backwater effect from the Genesee River. Therefore, the suggested water quality comparison cannot be made. (There is a USGS measuring station on the Genesee River on East River Road south of Ballantyne Road that provides daily mean stage data.)

A strategy for determining water levels would be to install a series of staff gauges at locations along Black Creek and the North Chili tributary. (A staff gauge is a measuring stick that tracks creek height.) This array of gauges could be important in predicting flood levels within the Black Creek watershed. The Town could make the gauges, install them, and have them linked to USGS elevations. The cost for three staff gauges would be less than \$100. The tasks of occasionally cleaning off the gauges and reading them during storm events could be assigned to citizens who live nearby.

- (2) Data from existing stormwater management facilities

The effectiveness of stormwater management facilities to protect water quality should be monitored. However, due to the costs associated with monitoring, effectiveness of stormwater management facilities should be determined through literature review, especially local studies. Diversity, health and quantity of wetland plants and abundance and types of wildlife could be determined through the work of either volunteers or paid professionals. The information collected would be used to improve the design of the wetland and to design future wetlands.

b. Health and Acreage of Existing Natural Wetlands and Constructed Wetlands in Mitigation Banking

New York State designated wetlands and constructed wetlands in mitigation banking within the watershed should be monitored periodically to learn if current regulatory

controls are sufficient to preserve the health of the wetlands for habitat, water quality, and flood control. Parameters that could be measured include: wetland area, plant species richness, cover of herbaceous and woody plant species, presence or absence of open water, populations of amphibians, populations of marsh birds, water quality parameters, and soil nutrient levels, as appropriate for the classes of wetlands in the watershed. If wetland size or quality is found to be deteriorating, further regulations to protect the wetlands should be considered.

c. Adherence to Erosion and Sediment Control Plans at Construction Sites

The first step in controlling erosion and sediment at construction sites is preparation of the Stormwater Pollution Prevention Plan that is required by the New York State Department of Environmental Conservation. A copy of the Plan must be given to the Town and a copy must be retained at the construction site. The Town must ensure that a Plan is prepared for all sites one acre or larger in size and that monetary guarantees are posted to ensure compliance throughout the duration of the construction. Construction sites should be inspected periodically by Town of Chili staff to ensure that the planned pollution prevention measures are in place and operating effectively.

d. Land Use Types and Amount of Impervious Surface

Stormwater quality is directly related to the amount of impervious surface in a watershed (See Chapter 1, Figure 1). The amount of impervious surface generally depends on land use. For example, a shopping center with an extensive paved parking lot will have a larger percentage of impervious surface than a residential area with lawns. The Monroe County Department of Planning and Development can assist the Town of Chili every few years in plotting land use within the Town and calculating the approximate percentage of impervious surface. This monitoring will provide a check on the ability of the Town's regulations to minimize impervious surface. This will also serve as a reminder to the Town to look for ways to decrease the amount of impervious surface in every land use type, and to be aware of the impact of zoning changes on impervious surface.

e. Citizen Complaints; Public Opinion

A Town of Chili official should be designated to record citizen complaints on flooding, maintenance of drainage ways, and water quality issues. A log of such complaints should be maintained and should note how each problem was resolved. The log should be reviewed annually and used as a planning tool for future activities.

f. Failing Onsite Sewage Disposal (Septic) Systems

Town of Chili officials should refer citizen complaints about onsite sewage disposal systems to the Monroe County Health Department at 274-6055. The County Health Department should note if many complaints are concentrated in one area of the Town.

If so, a survey of onsite systems could be performed in the area with the cooperation of the Town, or the extension of an existing sanitary sewer line could be considered. As appropriate and at least an annual basis, the County Health Department should share information about complaints and their resolution with the Town.

3. Regulatory Changes

a. Preservation of Natural Vegetation in Stream Corridors

The removal of streambank or shoreline vegetation eliminates both protective cover and possible nesting sites and also allows more sunlight to reach the water, thus increasing its temperature and reducing dissolved oxygen levels. In addition, streambank vegetation is critical in stabilizing the streambank, thus reducing erosion and sedimentation and filtering pollutants.

An Environmental Protection Overlay District (EPOD) is designed to provide a municipality with an additional level of control over environmentally sensitive areas such as stream corridors. The EPOD supplements, rather than replaces, the existing underlying zoning. The term overlay refers to the map which delineates the location of the environmental feature regulated by ordinance. Applicants who wish to conduct a regulated activity within the overlay district must comply with specific standards which are designed to minimize the impacts of human activities on environmentally sensitive resources.

In the Rochester Embayment watershed, there are a number of municipalities with EPODs. The Town of Penfield's EPODs, which are designed to protect watercourses, steep slopes, and woodlots, serve as a useful illustration. For example, applicants who wish to conduct a regulated activity within a Town of Penfield Watercourse Protection District must demonstrate that the proposed activity will not adversely impact water quality, watercourse flood carrying capacities, rate of sedimentation, rate/velocity of groundwater runoff, or the natural characteristics of the watercourse. Regulated activities include clearing, dredging, excavating, depositing of materials, construction, placement of a septic system, and any activity which alters the natural flow pattern of the watercourse. Other Monroe County municipalities which use EPODs include Hamlin, Irondequoit, Perinton, and Brighton. From a water quality perspective, EPODs such as those in the towns of Hamlin and Perinton are particularly valuable in that they protect wet areas (i.e. wetlands) which may not be protected by federal or state regulations.

b. Preservation of Natural Wetlands

Wetlands prevent flooding by temporarily storing and slowly releasing stormwater. Wetlands also reduce water flow, thus allowing sediments and associated pollutants to settle out. Beneficial microorganisms live on wetland plants and process some

forms of pollution. In addition, roots of wetland vegetation hold soils in place, thus stabilizing the banks of rivers and streams.

There are many threats to wetlands including urban expansion and agricultural activities. According to estimates, 60% of the original wetlands in New York State have been lost. In recognition of the value of wetlands, both federal and state regulations have been enacted to protect them. The United States Army Corps of Engineers (USACOE) regulates filling and dredging in wetland areas and the New York State Department of Environmental Conservation (NYSDEC) regulates activities in freshwater wetlands 12.4 acres or larger in size. Although these regulations have slowed the loss of wetlands, there remains an ongoing net loss in the quantity and quality of wetland habitat.

Municipalities may also develop ordinances designed to protect important natural resources that serve as critical fish and wildlife habitat. For example, the Town of Pittsford has developed a Wetlands Protection Ordinance which is designed to protect small wetlands which may not be protected by existing state or federal regulations. Applicants who wish to conduct a regulated activity (such as draining, dredging, excavation, filling, or construction) within a wetland must obtain a permit from the Town. The ordinance contains a number of standards which are used in making permit decisions. For example, the ordinance states “No permit shall be issued by the agency pursuant to this Article unless the agency shall find that the proposed regulated activity is consistent with the policy of this law to preserve, protect, and conserve freshwater wetlands and the benefits derived therefrom...” (Pittsford Code Article VII Section 25-706(b)(1)).

As noted in the above section, an Environmental Protection Overlay District (EPOD) can provide a municipality with an additional level of control over environmentally sensitive areas such as wetlands.

c. Preparation of Stormwater Pollution Prevention Plans for Construction Projects as Part of the Town Development Review Process

The proper preparation and implementation of stormwater pollution prevention plans for new development can reduce soil erosion and stream sedimentation during construction. Implementation of such plans can also mitigate the polluting impact of new impervious surfaces that collect air pollutants and transport the pollutants to streams along with stormwater runoff.

The New York State Pollution Discharge Elimination System (SPDES) requires that stormwater pollution prevention plans be prepared for developments involving disturbance of 5 or more acres of land (to be changed in 2003 to 1 or more acres). Municipalities can supplement the SPDES regulations and ensure that they are enforced (New York State leaves responsibility for enforcement to municipalities). A regulation would include requirements for installation and maintenance of effective erosion and sedimentation measures during construction and a long-term strategy to

manage stormwater quantity and quality. Quantity and quality could be addressed by a developer through a created stormwater wetland that would manage water quantity with storage and manage quality by providing vegetation substrate to grow and process stormwater pollutants. There are also combinations of stormwater best management practices that could be used to address stormwater quantity and quality generated from a development proposal.

d. Water Quality Fee in Place of Onsite Stormwater Management

If a development is less than 1 acre in size or a stormwater management facility is not feasible due to site conditions, a fee can be collected to support off-site stormwater management. In such situations, the fee would be used to pay a portion of the total cost of an off-site stormwater wetland or other best management practice that would mitigate the impact of that development within the same watershed. Such an off-site structure may be constructed to mitigate the impacts of stormwater runoff from one or more areas of development. Fees could be levied according to impervious surfaces created or quantity of stormwater generated.

e. Minimization of Impervious Surfaces

There are 4 areas where municipalities can minimize impervious surfaces:

- (1) Manage vehicle-oriented pavement: Examples of ways to do this include developing standards for narrower residential streets and sidewalks, or sidewalks on only 1 side of the street, and flexible parking regulations that limit the amount of impervious surface while still providing for true parking needs.
- (2) Construction practices and landscaped areas: Examples of measures include limiting soil compaction on newly developed sites, limiting clearing during construction, and enacting restrictive covenants to protect existing vegetated areas.
- (3) Design and placement of buildings: Examples include encouragement of cluster development and encouragement of the building of taller structures to reduce the size of building footprints.
- (4) Community involvement and education: To encourage fewer impervious surfaces, it will be important to educate the community. Basic information on the relationship between impervious surfaces and water pollution could be included in County and Town web pages. Printed materials that could be distributed at the Town Hall for developers and their engineers could also be useful. Training and technical assistance to the Town's development and business community could be done by the Town or by the County.

f. Town Ordinance Prohibiting Sump Pump Discharge into Sanitary Sewers

The discharge of clean groundwater from basement sump pumps into sanitary sewers causes the sanitary sewers to exceed capacity. When sanitary sewer capacity is exceeded, the sewage may have to be discharged untreated to waterways. To help avoid this, it would be useful for Towns to enact regulations prohibiting the connection of sump pumps to sewers. Enforcement regulations must also be enacted.

g. Town of Chili Fill and Excavation Permits

Filling or excavation of a site is an action similar to that of the grading work performed on many construction projects and should be regulated in a similar fashion. Essentially, the topographic features and ground cover of the land are altered, therefore changing the site drainage and soil stability. When neglected, a fill or excavation site has the potential to leave a parcel of land naked to the elements. Without appropriate planning, soil erosion will quickly occur, leading to possible problems, such as, but not limited to, contamination of groundwater, stream sedimentation, and sedimentation within existing stormwater facilities.

Other potential problems associated with filling and excavation can occur when sites are unsupervised and improper fill material is used and/or unapproved areas are filled or excavated. Improper fill can create hazardous physical pitfalls and/or leave a site laden with environmental hazards. Unsupervised filling and excavation can result in the altering of floodplains, floodways, and wetlands, thus violating local, state, and federal codes, as well as eliminating valuable habitat and/or natural resources such as topsoil.

As stated in V.B.3.c (Preparation of Stormwater Pollution Prevention Plans), the proper preparation, as required by a municipality for the impacted areas, can limit soil erosion and its associated problems. Currently, the Town of Chili has filling regulations explained in Chapter 115 “Zoning,” Section 115-42 I of the *Code of Chili*, as well as other restrictions applied in Chapter 54 “Excavations and Topsoil Removal.” The Town requires that an application for a “Site Filling Permit,” including a State Environmental Quality Review (SEQR) Short Environmental Assessment Form, be filed at the Town Hall.

For excavation, a detailed plan of the work to be performed must be prepared and approved by the Building Inspector and Town Engineer before work can commence. While these permits are valid, the Building Inspector and/or Town Engineer periodically monitor the progress at each site.

In the future, the Town of Chili could alter its filling and excavation permit procedures and requirements in the following ways:

- Choose a stricter threshold for requiring a permit.
- Require re-establishment of vegetative cover within a certain time frame.
- Consider requirements that improve aesthetics during and after the filling or excavation.
- Add special requirements for activity in a floodplain.

- Require annual documentation of permits granted under the terms of the Intermunicipal Agreement with Monroe County. Provide the documentation to the Town Supervisor and/or Monroe County.
- Require that permits for a large project be approved by the Planning Board.
- Modify the *Code of Chili*.

4. Other Potential Actions

a. Annual Reports on Watershed Monitoring

An annual report should be prepared to report on activities within the watershed that are related to drainage and water quality. The annual report does not need to be either long or formal. To the extent possible, it should simply be a collection of existing information from Town or Monroe County sources, and/or the minutes taken at an “annual report meeting” as part of the Monroe County/Town of Chili Intermunicipal Agreement (IMA). The report should be prepared annually as long as the IMA is in effect.

The table below lists the topics to be included in the annual report and the representative of the Watershed Planning Team who should have the major responsibility for preparing it. (The Watershed Planning Team includes representatives from Monroe County’s Water Quality Planning Bureau, Environmental Health Laboratory, Department of Environmental Services, Department of Planning and Development, and Soil and Water Conservation District, and the Town of Chili and any other Town that is involved.) If the Watershed Planning Team ceases to meet, the table can still be used to determine who should assist with each topic. The table also refers to the section of this report where the action is described.

Table 6. Annual Report Topics	Reference	Responsible Party
Establishment of stormwater management facilities, either a regional facility or onsite facilities as part of new development	V.A.1 V.A.2	SWCD
Installation or modification of stormwater facilities in areas of existing development	V.A.4	SWCD
Progress in identifying and correcting unauthorized stormwater connections to sanitary sewers and infiltration and inflow problems	V.A.5 V.A.6	DES
Initiation and/or success of any significant educational programs that are related to water quality or drainage concerns	V.B.1	BWQP, Chili, Riga
Monitoring data for streams and for existing stormwater management facilities	V.B.2.a	EHL
Monitoring of the health and acreage of wetlands	V.B.2.b	Not identified

Table 6. Annual Report Topics	Reference	Responsible Party
Monitoring of adherence to erosion and sediment control plans at construction sites	V.B.2.c	Chili, Riga
Monitoring of significant changes in land use and amount of impervious surface	V.B.2.d	Chili, Riga, DP&D
Monitoring of citizen complaints	V.B.2.e	Chili, Riga
Regulatory changes in the Town of Chili related to drainage or water quality	V.B.3	Chili, Riga
Involvement of Towns of Riga and Ogden	V.B.4.b	Chili, Riga
Repair or replacement of failing onsite sewage disposal systems	V.B.4.c V.B.2.f	DOH
Extension of sanitary sewer lines or construction of storm sewers	V.B.4.d V.B.4.e	DES Chili, Riga
Elimination of illegal connections of commercial floor drains	V.B.4.f	Not identified
Funding opportunities related to any of the above	VII	All
Public involvement in drainage and water quality issues	VIII	Chili, Riga

BWQP Monroe County Department of Health, Bureau of Water Quality Planning representative
Chili Town of Chili representative
DES Monroe County Department of Environmental Services representative
DOH Monroe County Department of Health, Onsite Sewage Disposal Bureau representative
EHL Monroe County Environmental Health Laboratory representative
DP&D Monroe County Department of Planning and Development representative
Riga Town of Riga representative
SWCD Monroe County Soil and Water Conservation District representative

b. Involvement of Representatives of the Towns of Riga and Ogden on the Existing Watershed Planning Team

Less than 1% of the North Chili tributary watershed lies in the Town of Ogden to the north of Chili. After discussion, the Watershed Planning Team agreed that it was therefore not necessary to enlist participation from Ogden in this effort. However, it should be noted that Ogden will be recruited to participate in the development of a watershed plan for the entire Black Creek watershed. Plans for development of this larger plan is discussed in further detail in this section, item i.

A significant portion of the watershed, approximately 12.5%, lies in the Town of Riga to the west of Chili. No watershed plan can be complete without the involvement of the Town of Riga. On April 21, 1999, a letter was sent from the Watershed Planning Team to the Supervisor of the Town of Riga inviting the participation of a Riga representative on the Watershed Planning Team. The Supervisor responded positively, assigning the Town's Conservation Board as a liaison to the Planning Team. Members of the Planning Team met with the Riga Conservation Board to review the Plan. A member of the Riga Conservation Board attended the public

information meeting (see Appendix C). The Town of Riga is supportive of the concept of the Plan.

c. Repair or Replacement of Failing Onsite Sewage Disposal (Septic) Systems

County Department of Health personnel have several means of detecting failing septic systems as outlined in section V.B.2.f, Monitoring. If an isolated problem is found with a septic system, the Department of Health advises the individual homeowner on necessary further action to resolve the problem. If a large area of septic system failure exists, it may be feasible to extend sewers to serve the area.

In an area where soils and lot sizes allow adequate septic systems to be built and maintained over the long term, a septic tank maintenance district can be created. Such a district requires that property owners pay to have someone regularly pump out and inspect their septic systems. When the district is established, residents may be required to upgrade their systems to current standards.

Requiring repairs when problems are evident may meet with resistance from property owners due to high costs. The need for financial assistance can be a major problem. Programs that may provide funding assistance include the Farmer's Home Program, the Home Improvement Loan Program (HILP), and the Genesee Valley Rural Preservation Council.

In some areas, problem soils or small lot sizes make system repairs very difficult to achieve. If sewers cannot be extended to such an area, water conservation will help to extend the life of a system. However, water conservation will not help a system in failure.

d. Storm Sewer Construction

Much of the North Chili area lacks a regular network of storm sewers. The residential sections rely on sheet flow surface drainage and roadside swales. Union Street, the main north-south highway, also has only roadside swales. Homes do not have access to storm sewers and must rely on surface discharge of roof gutter downspouts and sump pump pipes. Soils are poor draining over most of the North Chili tributary watershed, thus being an impediment to surface disposal of stormwater.

It is recognized that the first choice to manage stormwater is to have overland flow to achieve groundwater recharge, filtering of pollutants and reduced downstream flows. When this is not feasible, a master plan for strategically placed storm sewers and stormwater wetlands should be developed and implemented. Roadway drainage could be collected in receiving basins along the existing roadside swales, thereby reducing the volume of flows that now travel long distances along the swales, which presently are of small capacity. Homes could be provided with storm sewer connection points for roof and sump pump discharge, thus reducing the volume that

now flows along side and rear yard drainage swales. Presently when heavy rainfall occurs, a fair portion of the drainage swales overflow, resulting in wet basements and flooded street intersections.

Installation of storm sewers would be disruptive initially and would be expensive. Funding sources would need to be explored. A master plan for strategic storm sewers could be followed with a plan for funding of these needed improvements.

e. Extension of Sanitary Sewer Lines

A discussion is presently being conducted in the Town of Chili about extending sanitary sewers south from King Road along Union Street. Such an extension could bring sanitary sewer service to the existing industrial businesses along Union Street, allow for existing business expansion, and help promote growth in this industrial zone.

Two major issues must be resolved before this Union Street sewer extension can become a reality: authority for extension of a sewer district and funding.

- Authority for extension of a sewer district. Most sanitary sewer systems are owned and operated by the local municipality. Towns, under New York State law, are empowered to approve sewer district extension and bond the cost of improvements. However, the Gates-Chili-Ogden (GCO) district is owned and operated by Monroe County Pure Waters, which is not currently empowered to authorize capital expenditures. The Town of Chili and Monroe County Pure Waters must together explore options for extending the district.
- Funding. Funding is always a critical factor in the consideration of service extensions and this is particularly true for the small number of existing parcels being serviced that can only shoulder, under New York State Audit and Control guidelines, a certain level of the annual debt reduction costs. Alternative fund sources will need to be reviewed, such as low interest loans, grants and other contributions.

Ultimately, the extension of a sanitary sewer along Union Street could also bring service to the existing residential properties on Union Street, Paul Road Extension and Davis Road. In addition, the approximately fifty homes along the westerly section of King Road are not served by sanitary sewers. The land is generally flat and soils are poorly drained. Plans should include the extension of sanitary sewers for King Road as well. These extensions would benefit water quality because they would replace existing septic systems.

The extension of sanitary sewers are likely to promote growth and an increase in impervious surface. Prior to any extension of the sewer, the Town of Chili should ensure that its regulations address the increase in quantity and quality of stormwater running off the impervious surfaces. If adequate regulations are not already in place, a stormwater regulation should be amended or enacted.

f. Elimination of Commercial Floor Drains Discharging to Stormwater Systems;
Ensuring Proper Use of Oil/Water Separators

Floor drains, installed in many commercial use buildings, have the potential to cause water pollution if they are connected to storm sewer systems that discharge to local waterways or if they discharge to dry wells or leach fields. The most common type of commercial facility with floor drains are those that service or wash vehicles. These facilities have the potential to discharge oil, grease and/or detergents. The preferred method of managing wastes is to eliminate the floor drain and institute dry clean-up methods (absorbents).

New York State law requires that floor drains be discharged to sanitary sewers when they are available. Even when connected to sanitary sewers, floor drain wastewater must first be directed to oil/water separators where the oil floats on top of the water and must periodically be drawn off and properly disposed. The “clean” water is then discharged to the sanitary sewer.

When sanitary sewers are not available, appropriate best management practices and protocols must be used to prevent pollution of waterways or the ground. Once again, the preferred method is to design a system without floor drains. Plans for new commercial facilities with floor drains that do not discharge to a sanitary sewer are reviewed first by the Monroe County Department of Health. They are then referred to the New York State Department of Environmental Conservation (NYSDEC), Division of Water, for State Pollution Discharge Elimination System (SPDES) permitting.

New York State encourages “vehicle staging” wherein different kinds of operations involving vehicles take place in separate single purpose (or similar purpose) bays. The level of wastewater treatment will depend on the type of use in the vehicle bays.

- For vehicle maintenance areas where snow melt or cold water rinses are directed to floor drains, appropriate best management practices may include a grit chamber and oil/water separators. Such discharges do not require SPDES permits.
- For vehicle maintenance area service bays where no detergent wash water will be discharged to floor drains, oil/water separators may be appropriate. The discharge will require a SPDES permit from NYSDEC.
- When detergent wash water (without solvents) will be discharged to floor drains, advanced treatment systems, such as an oil/water separator followed by a dissolved air flotation system and intermittent sand filtration, may be required. The discharge will require a SPDES permit from the NYSDEC. The air flotation and sand filtration systems are not commonly used in Monroe County.
- For locations where service wastewater is discharged to floor drains, an oil water separator, followed by filtration and either activated carbon or air stripping, may be required but are not commonly used in Monroe County.

The *Rochester Embayment Remedial Action Plan 1999 Addendum* explains that in Monroe County there has been no uniform long-term policy for the connection of existing residential and non-residential in-building drains, such as floor drains, to sewer systems. Some of these drains are noted in records and some are not. Some of these drains discharge into sanitary sewers, some discharge into dry wells, and some discharge into storm sewers.

The *RAP 1999 Addendum* recommends that a pilot program be set up for a town to inventory and document all of the residential and non-residential in-building drains (including garages). This may include some dye testing and smoke testing to help determine where a drain or sewer connection discharges. It is estimated that such a program would cost approximately \$30,000 for inventory and documentation of in-building drains in a town, and approximately \$5,000 for the North Chili tributary watershed. The expected benefits of such a study could be to serve as a basis for: an education program in the pilot program area; remediation in the pilot program area; an inspection program in a larger area; improvements and requirements for construction and inspection of new facilities with in-building drains and/or sewer connections.

g. Hubbard Park Tributary Improvement (See IV.C.5)

The main sub-tributary of the North Chili tributary flows from the North Chili Plaza, south across Buffalo Road, east across Union Street into and through Hubbard Park, south across Parkway, west across Union Street and then southerly toward its confluence with the main North Chili tributary. This last mentioned section flows through a small (approximately eight acre) federal wetland. This major drainage course has not been maintained for many years and, as the wetland vegetation grows, stream flow becomes more restricted. As a result, the box culvert under Union Street is operating at half capacity. During heavy rainfall, stormwater backs up along Parkway and in Hubbard Park.

Efforts must be made to develop an acceptable plan adhering to the federal wetland permitting procedures to permit the cleaning of this ditch line or to construct some form of bypass channel. Working with the U.S. Army Corps of Engineers, some form of improvement could be made. The solution could be expensive and funding sources would need to be investigated.

h. Improved Maintenance of Roadside Ditches

Nearly all of the main highways and residential streets in the North Chili area are served with roadside swales as opposed to storm sewers and catch basins for the conveyance of stormwater. Maintenance of these roadside swales is difficult in residential areas since the Highway Department typically recuts the swales which disturbs front lawns, making lawn mowing more difficult. With lack of maintenance, roadside swales gradually fill in and restrict storm flows. These swales are important particularly for conveying larger volumes of stormwater during heavy rainfall.

The Town of Chili Public Works Department could take a more proactive approach to this situation by contacting residents of a section of roadway about ditches that need maintenance. By discussing the importance of the issue and working with the residents to accomplish shallow sloped swales, placement of good quality screened topsoil and applications of hydroseeding, these improvements could be accomplished. The same approach could be used along major highways such as Union Street. Most residents want their ditches piped. However, this is not practical as a maintenance effort and does not address the other stormwater issues as mentioned in sections above.

i. Prepare a Watershed Plan for the Entire Black Creek Watershed

The watershed plan contained within this document includes a relatively small portion of the 214 square mile Black Creek watershed. The full Black Creek watershed lies mainly in Monroe and Genesee Counties, but includes portions of four counties, 12 towns, 3 villages, and 1 city (Batavia). In order for flooding and water quality concerns related to Black Creek to be addressed, a watershed plan should be prepared and implemented for the entire Black Creek watershed. This will require that representatives from all of the municipalities be included in the planning effort, and that one or more organizations take on the responsibility of leading the planning effort. Funds and/or in-kind services must also be obtained to develop the watershed plan.

At a workshop sponsored by the Rochester Area Community Foundation held in the Spring of 2000, a discussion regarding the interest in preparing a Black Creek Watershed Plan began with representatives and residents of Monroe and Genesee Counties. The discussion initiated at that time led to a commitment of staff time from the Monroe County Departments of Planning and Development and Health to help spearhead a watershed planning effort together with Genesee County. That effort is expected to get under way in 2001.