

TOWN OF DRYDEN
STORM WATER MANAGEMENT PROGRAM ANNUAL REPORT

May 24th, 2004

SPDES Number: **NYR20A231**
Reporting Period from March 10, 2003 to March 10, 2004

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What is Stormwater and Why Does it Matter? Stormwater refers to water that runs across the landscape after rainstorms and eventually winds up in local streams and lakes. It often carries pollutants, such as excess sediment, salt, nutrients, pesticides, oils, heavy metals, and bacteria. These pollutants come from various sources and activities across the landscape. While it is difficult to pin-point exactly where the pollutants come from, this kind of “non-point-source pollution” can be reduced when people who live and work in the watershed make an effort to take a few specific actions, and to make some specific changes to current practices. When the pollutants end up in local water bodies they can impair water quality for human use and harm aquatic organisms. Moreover, when increased impervious surfaces in the landscape lead to a greater volume of stormwater runoff, this can cause increased erosion, flooding, and damage to aquatic habitat.

Executive Summary

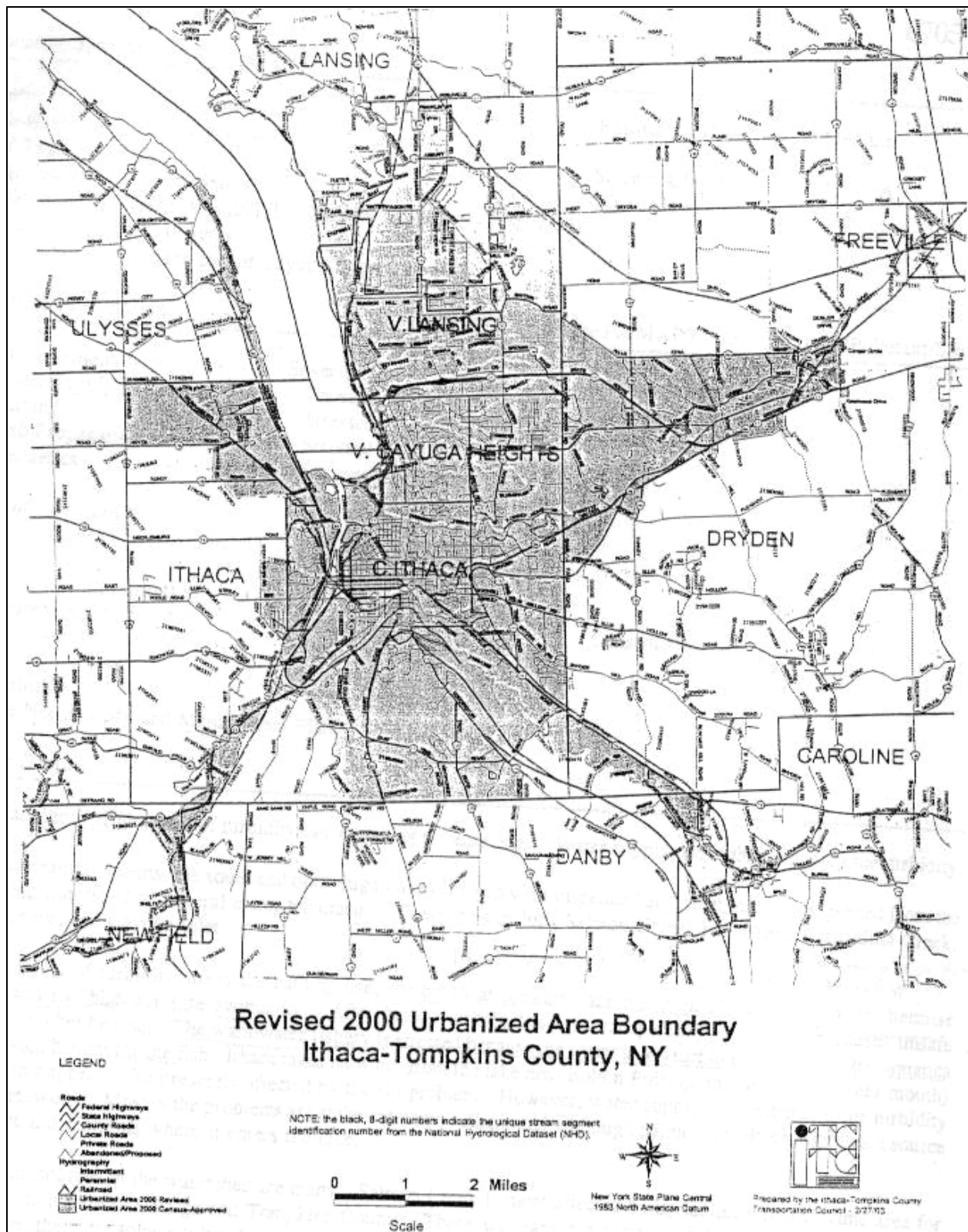
Under the Phase II Stormwater Regulations mandated by the Clean Water Act and recently initiated at the Federal level by the Environmental Protection Agency (EPA), the New York State Department of Environmental Conservation (DEC) has required the Town of Dryden to develop and implement a five year Storm Water Management Plan beginning on March 10, 2003 and continuing through January 8, 2008.

DEC also requires the Town to submit an Annual Report on its Storm Water Management Plan by June 1st of each year. In addition, a Draft Report must be shared for public comment prior to submission of the Final Report. A draft of this document was made available for public review beginning May 4th, 2004. On May 13th, 2004 the Town of Dryden held a public information meeting at 7:45PM in the Town Hall as an opportunity for all interested members of the public to hear a brief presentation on the Draft Report and to share their comments. The comments received have been incorporated into this Final Report.

The format of this report has been specified by DEC to cover six “minimum control measures” which are: public education and outreach, public involvement / participation, illicit discharge detection and elimination, construction site stormwater runoff control, post-construction stormwater management, and pollution prevention / good housekeeping for municipal operations.

The Town of Dryden is specifically required to develop a Storm Water Management Plan because it contains an area known as a “Small MS4”, which refers to *Municipal Separate Storm Sewer System* and relates to the density of population in part of the Town. Several municipalities in Tompkins County have been designated as MS4 communities due to their inclusion of sections of the Ithaca-Tompkins County Urbanized Area (map on page 2). Though the MS4 area in the Town of Dryden covers a relatively small portion of the Town’s area, Dryden has decided to apply all minimum control measures except for *illicit discharge detection and*

elimination across the whole town area because these practices provide long term benefits in terms of water quality and quantity, infrastructure longevity, and ecosystem health.



In the first year of its Stormwater Management Plan, the Town of Dryden has initiated and in many cases completed nearly all of the activities identified for year 1. Hiring an Environmental Planner was listed as a key goal for each of the six minimum measures and this was accomplished as of October, 2003. As makes sense for the first year of a five year program, many of the activities for year 1 included gathering and developing resource materials, training staff members, promoting general public awareness of stormwater issues and the new regulations, initiating and strengthening partnerships, developing opportunities for public involvement, and exploring best management practices. At this early stage, none of the management practices have been fully implemented.

In addition to continuation of activities initiated in year 1, new activities for next year will be more focused. With the assistance of the Genesee / Finger Lakes Regional Planning Council and their "Local Laws Project" the second year will be a time for development of required ordinances. The Town hopes to have drafts for all required ordinances by the end of year 2, and to have processes underway for adoption of these ordinances. Other year 2 efforts include more targeted public outreach about specific topics, such as septic system maintenance, post-construction stormwater management, and lawn care. Now that the Environmental Planner has gathered resources and materials for public outreach, presentations for community groups and specific stakeholder groups such as auto repair shop owners, Town highway department staff, and MS4 area residents and establishments will be organized. Some resources developed in year 1, such as a basic webpage and the library of printed resources, will be improved for better public access. Other activities initiated in year 1, such as the new Sixmile Creek Watershed Volunteer Monitoring Program, will really get under way in year 2.

There are no significant changes to the overall program, though a few projects which depend on assistance from others or external funding have been delayed in order to take advantage of collaborations. For example, collaborative outfall mapping will begin as soon as additional funding is received. There are no changes in the MS4 area, though as mentioned above, the Town of Dryden will be applying most Storm Water Management Activities across the whole Town area.

Stormwater Management in Tompkins County has been an extremely collaborative process. The County Stormwater Working Group was formed in February of 2003, and the list of participants is attached as Appendix A. With the Soil and Water Conservation District, the Tompkins County Planning Department, the Cayuga Lake Watershed Network, Cornell Cooperative Extension, and multiple municipalities involved, this group has access to many resources. There is no formal legally binding agreement for the collaboration, but it has been extremely helpful. The Town of Dryden and the other MS4s could never have accomplished alone what this group has achieved as a whole. After one year of working together and developing a workplan, the Stormwater Working Group is ready to move forward on specific action items, as identified in the tables below.

In addition, the Town of Dryden has developed a mutually beneficial partnership with the neighboring Town of Caroline. Starting April 1st, 2004, Dryden's recently hired Environmental Planner has been assisting the Town of Caroline with Stormwater Management activities. In return, Caroline is funding a portion of the Environmental Planner's salary, and has shared all of Caroline's Stormwater work to-date with the Environmental Planner. The formal agreement between Dryden and Caroline is attached as Appendix B.

Several municipalities are working together with the Tompkins County Planning Department on a Multi-Jurisdictional Hazard Mitigation Plan, which includes a Flood Hazard Mitigation Program and has components specific to stormwater management. Though Dryden has not been a part of this process to date (because Dryden developed a Hazard Mitigation Plan in 2000), the Town will become more involved in year 2 as the plan is finalized and the County works on coordinating local Hazard Mitigation activities. Dryden will also benefit from the Fall Creek Watershed Assessment planned for next year as part of the County's Flood Hazard Mitigation Program.

Dryden is involved in multiple watershed organizations at multiple scales, as described in the section below on "watershed organizations" (under Public Participation). As shown in the tables below, there are too many collaborative efforts to list them comprehensively here. If desired, please contact us for additional details on any of the collaborations described below.

The subsequent sections follow the format specified by DEC for reporting on accomplishments and plans for next year for each of the six minimum measures, in table format.

**Stormwater Management Program Annual report
Six Minimum Measures Section**

March 10, 2003 – March 9, 2004

Municipality Name: **Town of Dryden**

SPDES Number: **NYR20A231**

Abbreviations Used

SWG = Tompkins County Stormwater Working Group
 CCE = Cornell Cooperative Extension of Tompkins County
 Network = Cayuga Lake Watershed Network
 SWCD = Tompkins County Soil and Water Conservation District
 IO = Cayuga Lake Watershed Intermunicipal Organization
 WRC = Tompkins County Water Resources Council
 TCPD = Tompkins County Planning Department
 TC = Tompkins County

Chart Format (Column headings are abbreviated on future pages to save space)

| B. Implementation of Best Management Practices | | | C. Activities Planned for Upcoming Year |
|--|-----------------------------------|--|---|
| Type in the management practices selected in your NOI and any additional ones that you worked on. | Any done in the past year? | | Describe SWMP activities that are planned for the next year and changes to selected management practices/measurable goals. |
| | | <p>If YES, describe what measurable goals were achieved and other accomplishments.</p> <p>If NO, and the item was checked off on your NOI, describe why the task was not accomplished and, if still a measurable goal, list in column C.</p> | |
| TECHNIQUES | YES | NO | PLANS FOR NEXT YEAR AND CHANGES |
| | | ACHIEVEMENTS / EXPLANATIONS | |

MINIMUM MEASURE 1: Public Education and Outreach on Stormwater Impacts

A. Narrative Overview:

The Town of Dryden has worked closely with numerous partners that have provided public education and outreach throughout the Ithaca-Tompkins County Urbanized Area and beyond. With so much educational activity in the region, the Town has worked to ensure that town residents are aware of, and have access to, the available materials and events. Dryden's website includes an Environmental Planning page which announces upcoming stormwater related events, and contains links to the resources available from DEC, Tompkins County, and several watershed organizations. This web-page will be improved in year 2. Dryden has also been developing a library of educational materials available at the Town Hall, which will be expanded and better publicized in year 2. Dryden will continue to display printed materials produced by organizations such as the Cayuga Lake Watershed Network and the IO at the Town Hall. During year 1 the Environmental Planner has attended trainings and gathered materials to develop fact sheets and presentations to be provided in year 2 for the general public and for specific stakeholder groups as described below.

It will take some time over the next couple of years to assess the effectiveness of the education and outreach strategies used so far. For the upcoming year, the Town of Dryden will continue to ensure that the public is informed of regional learning opportunities, such as workshops provided by Cornell Cooperative Extension and the Cayuga Lake Watershed Network on planting riparian buffers, household composting (to reduce fertilizer use) and turf management. Dryden will work closely with the Tompkins County Stormwater Working Group to coordinate outreach efforts. This group is looking forward to receipt of Environmental Protection Fund support for a coordinated multi-media outreach campaign, and assistance for the Floating Classroom education project. This project will bring school groups onto Cayuga Lake to learn first hand about the impacts of stormwater runoff and the importance of watershed management.

| B. Implementation of Best Management Practices, #1 Public Education and Outreach | | | | |
|---|------------|-----------|--|--|
| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
| Plan and conduct an ongoing public education and outreach program (required) | ✓ | | <ul style="list-style-type: none"> This broad goal encompasses the specific activities described below. | <ul style="list-style-type: none"> SWG will coordinate distribution of outreach materials and event notifications to all MS4s. |
| Classroom education / school programs | ✓ | | <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> The IO is collaborating with Network and others to develop a Floating Classroom program for Cayuga Lake. 265 young people have been out on the boat for education on water quality issues. SWCD and City of Ithaca used “Enviroscape” models to deliver programs to school classes throughout the county reaching over 500 young people.” SWCD sponsors annual Envirothon – a hands on environmental education contest for high school students. Network sponsored an essay contest for youth: “How the Cayuga Lake Watershed affects my life.” City of Ithaca and SWCD purchased water quality test kits which have been used by area schools. Tompkins County Environmental Appreciation Days: Network provided lessons for school groups on non-point-source pollution and stormwater, while SWCD provided lessons on erosion and sediment control. | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> Through involvement with the IO, Dryden will work with the Floating Classroom Program to bring opportunities to local school / youth groups. <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> With additional funding, the Floating Classroom program will continue development and offer programs for more school groups. |

B. Implementation of Best Management Practices, #1 Public Education and Outreach

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|---------------------------------|-----|----|--|---|
| Outreach to commercial entities | ✓ | | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Environmental Planner has gathered materials for a power point presentation on stormwater management and will offer presentations for local businesses in future years. <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • The Tompkins County Hazard Mitigation Plan addresses prevention of hazardous waste spills at commercial sites. • CCE and Network organized a workshop on “Providing Safe Drinking Water” for businesses and organization that provide well water to customers / public. • SWCD assists agricultural operations with emergency spill plans and environmental management. • CCE sponsored meetings for Turf Industry and Garden Center Managers on Integrated Pest Management, pesticide use reduction and Neighbor Notification Law (40 attendees). • CCE offered Basic Pesticide Training class with a focus on IPM and environmental protection for farmers, landscapers, and municipal workers. 46 attendees. | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Environmental Planner will continue developing presentation materials to reach local businesses. One area of focus for year two will be auto repair shops and businesses with vehicle fleets. <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • TC Hazard Mitigation Plan will be finalized and implemented. • Workbooks from “Providing Safe Drinking Water” workshop will be distributed. |

B. Implementation of Best Management Practices, #1 Public Education and Outreach

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|------------------|-----|----|--|---|
| Webpage | ✓ | | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Town of Dryden’s website has an Environmental Planning page which includes announcements of stormwater related events, and links to Dryden’s NOI as well as to helpful websites such as Tompkins County Solid Waste Management, SWCD, DEC stormwater links, and local watershed organizations. http://www.dryden.ny.us/ep.html | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • The Environmental Planning web page will be improved to include more educational materials on stormwater, a more complete calendar of local stormwater related events, and more links. <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • SWG members will coordinate web resources to ensure that visitors to their websites receive good stormwater information. |
| Printed material | ✓ | | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Town environmental planner has nearly completed a brochure on stormwater regulations and new construction. • The County-wide Pre-Disaster Mitigation Education and Outreach project funded by FEMA and mentioned in the NOI does not specifically relate to stormwater. This item will be dropped from the SWMP. However, Dryden’s Environmental Planner has been gathering information and materials which can be used for fact sheets and educational newsletters, and she will work on distributing printed materials to Dryden residents in cooperation with the SWG next year. • Dryden has kept copies of some partner publications available for the public at the Town Hall. | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Dryden will work with the SWG to identify existing outreach materials (and where necessary, develop new materials) for distribution to residents in the form of fact sheets and a stormwater newsletter. • Fact sheets will also be distributed to applicants for building permits, zoning variances, special permits, and site plan reviews. • Dryden will continue to provide copies of partner publications at Town Hall and will improve breadth and organization of materials. |

B. Implementation of Best Management Practices, #1 Public Education and Outreach

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|---------------------------------|-----|----|--|---|
| Printed material (continued) | ✓ | | <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • Network distributed “<i>Issues in the Cayuga Lake Watershed</i>”, which includes information on nonpoint source pollution prevention - within the Ithaca Journal, and to local government buildings. • Several regular newsletters which include stormwater information produced by: Network, SWCD, IO. • EPA stormwater materials have been distributed at Water Week and Stormwater Resources Fair (see events). • Publication called “Landscaping for Erosion Control.” | <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • “<i>Issues in the Cayuga Lake Watershed</i>” is being reprinted for additional distribution. • Network is producing “Living Wisely in Your Watershed.” • A CD-Rom called “Protecting the Cayuga Lake Watershed” will be completed and distributed. |
| Media campaign | ✓ | | <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • IO organized radio public service announcements about watershed issues, 8-02. Topics included proper handling and recycling of used motor oil and household hazardous wastes, plus less hazardous alternatives for household tasks. • “There’s a New Partner for Six Mile Creek,” Sharon Anderson, Network, Ithaca Journal (10-20-03). | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Environmental Planner will assist the SWG with media campaign efforts described below, while ensuring that these efforts reach Dryden residents. <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • Pending funding from EPF Assistance to Regulated MS4s, the SWG has plans for a multi-faceted media campaign, including printed materials, utility bill stuffers, radio spots, news articles, and local television. • CCE has an upcoming piece on Ithaca Journal’s home and garden page. • TC Planning will provide an Op-Ed series about the County Comprehensive Plan, with reference to stormwater issues. |

B. Implementation of Best Management Practices, #1 Public Education and Outreach

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|----------------------------------|-----|----|--|---|
| Library of educational materials | ✓ | | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Environmental Planner has begun building up a library of educational materials on stormwater management (plus web links). <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • TCPD has a library of stormwater materials available to all in the county. | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Library of materials will be expanded, better organized for public access, and a list of resources made available on the website. <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • SWG will work together to improve accessibility to and awareness of library materials. |
| Events and programs | ✓ | | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Presentation on LEAPE (Locally-led Education and Action for Protecting the Environment) - an educational computer program for local governments and residents interested in protecting water resources in their communities. Presented for Town of Dryden and Village of Freeville by the Network. Program has been installed on two computers at Dryden Town Hall. <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • Six Mile Creek Partnership – 12-1-03 Public presentation on watershed projects in Six Mile Creek and results of Milone and MacBroom watershed assessment. | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Environmental Planner will participate in Water Week by taking a turn to staff the IO's display on the Cayuga Lake Watershed. • LEAPE can be installed at the local public library with instructions for public use. |

B. Implementation of Best Management Practices, #1 Public Education and Outreach

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|---------------------------------|-----|----|--|--|
| Events and programs (continued) | ✓ | | <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • Network has organized several trainings on LEAPE for local governments throughout Tompkins County. • Stormwater Resource Fair and Conference 7-26-03, in Ithaca, sponsored by IO, WRC, SWG, and Network: speakers from DEC, Cty GIS program, Genesee Fingerlakes RPA, and SWCD. • TC Health Dept offers Source Water Assessment Program – identifying potential sources of contamination for all drinking water systems. • CCE composting program (encourages use of compost in place of commercial fertilizer). • Network hosted the satellite conferences produced by DEC on stormwater management for MS4s and contractors. • Sixmile Creek Watershed resident survey – results will be used to further refine outreach. • SWCD tire collection program. • SWCD Agricultural Chemical Clean-Sweep. (Drop off of containers). • Homeowner well education programs, focused on pollution prevention. • Other relevant events include: Earth day, Farm City Day, Agricultural day at the mall, Lake Fest (8-03), CCE Environmental Resources Fair. | <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • More LEAPE trainings are planned. • TCPD is conducting multiple community presentations on the County’s Draft Comprehensive Plan and stormwater information will be included. • Upcoming April 15th workshop on new construction requirements of Phase II for local review boards, engineers, and contractors. • “Creekside plantings” – Network this summer. • “Gardening in the watershed” – future CCE project. |

B. Implementation of Best Management Practices, #1 Public Education and Outreach

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|------------------------------|-----|----|---|---|
| Displays | ✓ | | <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> The following organizations have portable displays, which they bring to events: SWCD, Network, TCPD, WRC, CCE, IO, City of Ithaca, Fall Creek Watershed Committee, Caroline Watershed Committee, Community Science Institute, Trout Unlimited. | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> Dryden will develop educational stormwater display materials to post on recreational trails (this could be a Youth Conservation Corps project and talk with DPW). |
| Speakers to community groups | ✓ | | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> Environmental Planner has gathered materials for a power point presentation on stormwater management and will offer presentations in future years. <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> Network provided speakers to Rotary, Kiwanis and Kendall on watershed issues including phosphorus and sediment loading. | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> Environmental Planner will offer / organize presentations on stormwater management for 2 local service groups and at local community centers. <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> This spring, CCE offered classes for Master Gardeners, general public, and Kiwanis Club on alternatives to pesticides and Neighbor Notification Law. 45 attendees. |
| Economic incentives | ✓ | | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> Environmental Planner and Deputy Supervisor have done some preliminary research on the possibility of economic incentives for storm water management actions. | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> Environmental Planner will continue research and present options to the Town Board. |

B. Implementation of Best Management Practices, #1 Public Education and Outreach

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|------------|-----|----|--|---|
| Other | ✓ | | <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • Integrated Pest Management Demo Project: Town of Ithaca, City of Ithaca, and Cornell University put together a proposal for a demonstration site for pesticide free plantings. The effort was not funded. | <p><i>Dryden Activities</i></p> <ul style="list-style-type: none"> • Signs reminding pet owners to clean up after their pets will be posted along recreational trails along with provision of bags and disposal barrels. <p><i>Partner Activities</i></p> <ul style="list-style-type: none"> • IPM Demo Project may move forward in the future. |

MINIMUM MEASURE 2: Public Involvement/Participation

A. Narrative Overview:

The Town of Dryden has provided opportunities for public involvement and participation from the outset of its Storm Water Management Program. The NOI has been available for public viewing and comment at the Town Clerk's office and on the Town website. The initial SWMP was shared with the Town Board, Planning Board, Conservation Board, and staff. This first Annual Report will be available at the Town Hall and on the Town Website for 10 days prior to a Public Information Session on May 13th, 2004. Public Comments will be summarized here below, and incorporated into the final report submitted to DEC by June 1st, 2004.

Public Comment Summary

The majority of these comments come from sharing the Draft Annual Report with Dryden's Conservation Board, composed of 7 resident volunteers.

- There was a discussion as to why swimming is not allowed at the southern end of Cayuga Lake. Apparently, it is due to turbidity and debris, rather than bacterial contamination, as the Environmental Planner had assumed. In further researching this question, the Environmental Planner came across an editorial in the Ithaca Journal in 1999 by Dr. Nelson G. Hairston, Jr. of Cornell University. He comments on the fact that the southern end of Cayuga Lake is naturally an area of sediment deposition, as it used to be a wetland. He points out that while it is important to use good management practices to reduce anthropogenic sedimentation, the natural processes will continue. (see www.utilities.cornell.edu/LSC/Mailer/HairstonSediments.htm)
- There was a question on whether direct discharge of greywater (such as from a sink) would be considered an illicit discharge. The Environmental Planner will seek further clarification on the exact definition of illicit discharges. There was also an observation that there might possibly be some old farmhouses remaining in Dryden with no septic systems. In addition, there was a reminder that the County Health Department should have a database of information on septic systems across the county. The Environmental Planner will contact the County Health Department to learn more about existing management practices and records regarding septic systems.
- This report mentions outreach to Auto Repair shops about water quality protection. A member of the Conservation Board recommended including businesses that use large fleets of vehicles.
- The Conservation Board can help with the preparation of some of the outreach materials discussed in this report.
- There was discussion about the ordinances mentioned in this report. Some of the topics to be addressed by proposed ordinances overlap, and careful thought is required to put these ordinances into the most easily implemented form, integrated as smoothly as possible with existing codes. The "local laws project" will help with this.

- There was a request for clarification of what “construction site waste management” means. The Environmental Planner will seek more information to share with code enforcement and to provide input during ordinance development.
- One Conservation Board member suggested that the “watershed assessment” conducted by Milone and MacBroom for Six Mile Creek would more accurately be called a “stream channel assessment”.
- There were several comments about road maintenance. Does road sweeping cost more than it is worth, in terms of the amount of sediment it actually removes? Since the highway department already carefully apportions use of road salt, perhaps the Conservation Board can identify areas where roads pass close to Unique Natural Areas and suggest reduced use of salt in these areas (if possible given safety requirements). Though hydroseeding has worked well on some sites, if the road ditching is too deep, it does not work. It will be important to ditch only as much and as deep as necessary, and to phase the process with hydroseeding efforts to avoid creating a situation where several freshly cut ditches run together during a rainy time of year. GIS can be used to assist in the planning of road maintenance efforts in relation to stormwater management.
- There was a request to post the annual report on the town website. This will be done as soon as possible. In the meantime, the report is available by e-mailing Debbie Gross at envplan@frontiernet.net.
- After the May 13th Public Information Session, two members of the public have specifically requested assistance from the Environmental Planner related to stormwater. There was a question about stormwater management at a new construction site, and a request for help with a well apparently contaminated by a leaking septic system. The Environmental Planner is now researching strategies for assisting homeowners in need of septic system repair.

Residents and public officials of the Town of Dryden are involved in several watershed organizations at multiple scales: the Fall Creek Watershed Committee, the Six Mile Creek Partnership, the Tompkins County Water Resources Council, and the Cayuga Lake Watershed Intermunicipal Organization. These organizations have provided good opportunity for collaboration on projects such as watershed assessments, volunteer monitoring and stream restoration activities, and educational radio broadcasts about proper handling of household hazardous materials.

The Town of Dryden looks forward to working with the new Volunteer Monitoring Program for the Sixmile Creek Watershed, modeled on the existing program for the Fall Creek Watershed. With the involvement of the Soil and Water Conservation District, Cornell Cooperative Extension, the Community Science Institute, and four municipalities, this promises to be an exciting program for public participation. Volunteer recruitment is currently underway, and monitoring will begin in the summer once volunteers have been trained.

B. Implementation of Best Management Practices, #2 Public Involvement / Participation

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|--|-----|----|--|--|
| Public notice and access to documents and information (required) | ✓ | | <ul style="list-style-type: none"> • NOI and initial SWMP available for public viewing and comment at Clerk’s office and on Town website. • Press release and legal notice about NOI, plus written notice to community associations. • Verbal notice about NOI at Town Board, Planning Board, and Conservation Board meetings. | <ul style="list-style-type: none"> • Future Annual Reports will be available for public viewing and comment in Town Hall and on website, as for all ordinances developed as part of this program. |
| Public presentation and comments received on SWMP and annual report (required) | ✓ | | <ul style="list-style-type: none"> • Initial SWMP shared with Town Board and collaborating MS4s. • First annual report made available to public at the town hall and via e-mail (upon request) on May 3rd. Public information meeting to be held during May 13th Town Board meeting – legal notice on May 3rd and press releases on April 30th. Public comments to be incorporated by June 1st. | <ul style="list-style-type: none"> • Annual public presentations and incorporation of public comments will continue. |
| Public involvement/ participation program (required) | ✓ | | <ul style="list-style-type: none"> • See more specific forms of public involvement and participation below. • Cornell Dept of Rural Sociology is conducting a study to determine most effective outreach methods for working with stakeholders along Six Mile Creek, which focuses on issues identified by Milone and MacBroom Watershed Assessment. Jan 2004 - May 2004. | <ul style="list-style-type: none"> • See sections below for more specific plans. • Cornell study results will be analyzed and applied towards future public involvement activities. |
| Contact person identified (required) | ✓ | | <ul style="list-style-type: none"> • Environmental Planner, Debbie Gross, was hired starting October 14th, 2003. Before then, Deborah Grantham, Deputy Supervisor, was the contact person. | <ul style="list-style-type: none"> • Environmental Planner will continue to be the contact person. |

B. Implementation of Best Management Practices, #2 Public Involvement / Participation

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|-------------------------------|-----|----|---|---|
| Advisory / partner committees | ✓ | | <ul style="list-style-type: none"> • Dryden Town Board, Planning Board, Conservation Advisory Council, and WRC were consulted during the preparation of Dryden’s NOI. • Dryden is also cooperating with TCPD in development of the County Comprehensive Plan. • Dryden is an active participant in the Tompkins County Municipal Officials Planning Coalition. • Dryden is an active collaborator with the Tompkins County Stormwater Working Group. (Though the NOI mentions an IO stormwater management committee, the SWG is playing this role for Tompkins County). | <ul style="list-style-type: none"> • Dryden will seek feedback from these groups as Stormwater Management activities continue. • Collaborations will continue. |
| Watershed organizations | ✓ | | <ul style="list-style-type: none"> • The Chair of Dryden’s Conservation Board, Craig Schutt, attends meetings of the Tompkins County Water Resources Council as the representative from SWCD. • Town of Dryden is an active participant in the Cayuga Lake Watershed Intermunicipal Organization. The Environmental Planner participated in the Annual Monitoring Conference, organized by the IO and the Network. | <ul style="list-style-type: none"> • Dryden will participate in review of priority issues in the Cayuga Lake Watershed with the IO and WRC. These determinations will be incorporated into the SWMP. • Dryden will continue to participate in the Annual Cayuga Watershed Monitoring Conference and will collaborate on efforts to develop monitoring databases. • Dryden will seek input from these watershed organizations on SWMP annual reports. |

B. Implementation of Best Management Practices, #2 Public Involvement / Participation

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|-------------------------------------|-----|----|--|---|
| Watershed organizations (continued) | ✓ | | <ul style="list-style-type: none"> • The Fall Creek Watershed Committee has been formed by a concerned group of citizens who want to promote the understanding of how to maintain and improve the ecological health, economic vitality and overall beauty of the watershed through education, data collection, citizen action and partnerships. • Six Mile Creek Partnership: This group has been working on watershed projects for several years with a broad coalition, including: Town of Caroline, Town of Ithaca, City of Ithaca, Dryden Conservation Advisory Council, TCPD, Network, SWCD, Several Cornell University Classes, IO, landowners, Finger Lakes Land Trust, EcoLogic Consultants, and Milone and MacBroom consultants, etc. Projects have included resource inventories, public education, stream restoration plans, and buffer planting plans. Projects have been supported by funding from the NYS DOS Clean Air - Clean Water Bond Act and the USDA Forestry Grants Program. | <ul style="list-style-type: none"> • Fall Creek Watershed Committee will continue to meet monthly and to conduct volunteer monitoring and stream clean-up efforts. • Six Mile Creek Partnership continues to meet and work with partners on public education, restoration, and planting projects. |
| Stakeholder meetings | ✓ | | <ul style="list-style-type: none"> • Several meetings were organized this past year by the SWG. See Minimum Measure 1 under Events and Programs. | <ul style="list-style-type: none"> • Dryden will work with SWG to ensure that at least two public meetings targeted to specific stakeholder groups are held in locations accessible to Dryden residents. |
| Mailing list development and use | ✓ | | <ul style="list-style-type: none"> • Town-wide mailing list is already in place and can be used for newsletter mailings. • Environmental planner has begun to build mailing list for local builders / contractors. | <ul style="list-style-type: none"> • Environmental Planner will develop mailing list for residences / businesses within the MS4 area, and for local builders / contractors. |

B. Implementation of Best Management Practices, #2 Public Involvement / Participation

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|--|-----|----|---|---|
| Reforestation program (Restoration Projects) | ✓ | | <ul style="list-style-type: none"> • Six Mile Creek Riparian Buffer Planting project (USDA funds) has been moving forward along with stream restoration project design. One site - Silt Dam to German Cross Road - is in the Town of Dryden. • Throughout County Network and SWCD have coordinated planting of 1500 willow whips provided by DEC for stream bank erosion control. | <ul style="list-style-type: none"> • SWCD will lead revegetation effort along newly restored Virgil Creek Site. This may be a good opportunity for volunteer involvement. • Erosion control needs along Six Mile Creek in the Town of Dryden will be identified as a result of the Milone and MacBroom study. • April 2004, Creek Walk jointly with Fall Creek Watershed Committee and Town of Caroline Watershed Committee and Six Mile Creek Partnership to collaborate and share insights on monitoring and restoration projects. • Willow whip program will continue. |
| Storm drain stenciling | ✓ | | <ul style="list-style-type: none"> • Though this activity was not part of Dryden's NOI, the SWG is working to identify the best method for storm drain labeling. The Network is investigating purchase of plastic labels because stencils were difficult to use. | <ul style="list-style-type: none"> • SWG will move forward on ordering Storm Drain labels and contacting DOT to determine storm drain jurisdictional issues. • Dryden will consider participating. |
| Stream, roadway cleanup | ✓ | | <ul style="list-style-type: none"> • Public works department supported Fall Creek Watershed Committee stream clean-up and removed about 3,000 lbs of trash in May of 2003. | <ul style="list-style-type: none"> • Fall Creek Watershed Committee annual stream clean-up was held in May. |

B. Implementation of Best Management Practices, #2 Public Involvement / Participation

| TECHNIQUES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|----------------------|-----|----|---|---|
| Volunteer monitoring | ✓ | | <ul style="list-style-type: none"> • New Sixmile Creek volunteer monitoring partnership developed between Town of Caroline, Town of Ithaca, City of Ithaca, Town of Dryden, SWCD, CCE, and Community Science Institute. Supported with funds from the WRC and FL-LOWPA. • Continued volunteer monitoring of Fall Creek, Cayuga Lake, Taughannock Creek. Supported with funds from the WRC and FL-LOWPA. | <ul style="list-style-type: none"> • Existing monitoring efforts will continue. • Sixmile Creek Volunteer monitoring program begins with volunteer recruitment, training, and development of monitoring plans. Partner municipalities, including Town of Dryden, will contribute funding. • Fall Creek and Six Mile Creek monitoring results will be distributed through newsletter and website and incorporated into SWMP as appropriate. |

MINIMUM MEASURE 3: Illicit Discharge Detection and Elimination

A. Narrative Overview:

This minimum measure will be an important focus of work in year 2, especially within the MS4 areas of the Town. The Stormwater Working Group, with the guidance of the City of Ithaca, has developed a protocol for outfall mapping, and is planning to assist other MS4s in Tompkins County with mapping activities, pending receipt of additional funding. The Town of Dryden still needs to coordinate mapping efforts with NYSDOT and the County Highway Department, and will do so next year. A model ordinance prohibiting illicit discharges, will be developed through participation in the “Watershed Local Laws Project”, organized by the Genesee / Finger Lakes Regional Planning Council. The Town of Dryden has done some background research, reviewing a few examples of illicit discharge model ordinances, such as the one found in the “Illicit Discharge Detection and Elimination Manual”. Some of the activities mentioned above under Minimum Measures 1 and 2 do also target illegal dumping and improper disposal of waste – such as the public service announcements sponsored by the Cayuga Lake Watershed Intermunicipal Organization.

Since public sewer only covers a small part of Dryden’s area, failing septic systems may be a significant source of pollution. The Environmental Planner recently attended a workshop called “Everything You Need to Know About Septics: The Use and Economics of Septic Systems in Changing Communities” which was sponsored by Cornell Cooperative Extension of Onondaga County. She plans to apply insights gained from this workshop to better management of septic systems in Dryden.

There is need for additional education and outreach efforts, working with the Stormwater Working Group. Next year Dryden plans to develop an educational mailing for all residents and establishments within the MS4 area. The Stormwater Working Group will also support municipalities in the development of good methodologies for illicit discharge detection and elimination.

In response to public comments during the stormwater annual report process, the Environmental Planner will clarify the definition of illicit discharges in outreach materials, coordinate septic system management efforts with the County Health Department, and research sources of financial support for septic system repair. In general, when it comes to ordinance development, it will be important to structure the new ordinances clearly so that they integrate well with existing codes.

B. Implementation of Best Management Practices, # 3 Illicit Discharge Detection and Elimination

| ACTIVITIES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|--|-----|----|---|---|
| Outfall mapping (required) | ✓ | | <ul style="list-style-type: none"> • SWG has developed a protocol and is awaiting funding to extend efforts across all MS4s. | <ul style="list-style-type: none"> • Once funding is received, City of Ithaca and Tompkins County GIS programs will assist all MS4s with mapping efforts. • Dryden will coordinate with NYSDOT and TC Highway Dept. for mapping efforts along state and county roads. |
| Illicit discharges prohibited (required) | ✓ | | <ul style="list-style-type: none"> • Town of Dryden has gathered a few examples of model ordinances regarding illicit discharges. • Town of Dryden has been developing working relationship with “Watershed Local Laws Project.” | <ul style="list-style-type: none"> • A model ordinance will be developed, in collaboration with SWG and Genesee/Finger Lakes Regional Planning Council and their DOS sponsored “Watershed Local Laws Project”. • Ordinance development will include public meetings. |
| Public, employees, businesses informed of hazards from illicit discharges (required) | ✓ | | <ul style="list-style-type: none"> • Environmental Planner attended full day workshop on management of septic systems organized by CCE of Onondaga Cty, February 2004. • Environmental planner has been gathering information for outreach efforts. | <ul style="list-style-type: none"> • Environmental Planner will prepare and implement a mailing for all MS4 area residents and establishments, which explains illicit discharges, why they are a problem, how to eliminate them, and DEC and local regulations. • Town of Dryden will work with SWG to develop and distribute information to public, employees, etc. • Information will specifically be distributed on septic system operation and maintenance and services available through Cty Health Dept. |

B. Implementation of Best Management Practices, # 3 Illicit Discharge Detection and Elimination

| ACTIVITIES | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|--|-----|----|---|--|
| Illicit discharges identified (required) | ✓ | | <ul style="list-style-type: none"> • Ongoing highway dept. inspections and health dept response to complaints may identify some illicit discharges. • Town of Dryden has responded quickly to sewer system maintenance needs. | <ul style="list-style-type: none"> • Town of Dryden will be working with Dryden Village and TC3 to address I and I problems in sewer system. • In years 2 and 3, Dryden will conduct field surveys in the MS4 area to identify illicit discharges. Such efforts will continue in all subsequent years. • SWG will identify good detection methods and support municipal efforts. |
| System mapping | | ✓ | <ul style="list-style-type: none"> • This was not an activity for year 1. | <ul style="list-style-type: none"> • Dryden will contact the County Health Department to learn about existing geographic information on septic systems within the town. |
| Dye testing | | ✓ | <ul style="list-style-type: none"> • This activity is planned for years 2-3. | <ul style="list-style-type: none"> • In years 2 and 3, all on-site wastewater treatment systems along streams and drainage ways within the MS4 area will be dye-tested. In addition, or in place of dye testing, Dryden will consider other methods for septic system inspection identified by the SWG and County Health Dept. • Owners of faulty septic systems will be notified of the need to repair the systems. |
| System inspections | | ✓ | <ul style="list-style-type: none"> • This was not an activity for year 1. | <ul style="list-style-type: none"> • A septic system inspection and maintenance program will be developed. Dryden will work with SWG and County Health to identify sources of support for homeowners needing to fix their septic systems. |

MINIMUM MEASURE 4: Construction Site Stormwater Runoff Control

A. Narrative Overview:

The Town of Dryden understands the need to adopt a local ordinance on stormwater and erosion control, in order to ensure that the Town provides protection equivalent to the NYS SPDES General Permit for Stormwater Discharges from Construction Activities, as required. The Town's existing ordinances do include some requirements addressing stormwater quantity, but not quality. The Town will work on this ordinance during year 2 with the assistance of the Genesee / Finger Lakes Regional Planning Council through the "Watershed Local Laws Project". At this point, Town Code Enforcement Officers are making sure that project applicants know about the new regulations, and the Environmental Planner has been working on a fact sheet which is nearly completed. The Town of Caroline has established an interim procedure for Construction Permit Review and uses a worksheet to help project applicants determine whether a project will exceed the 1 and 5 acre thresholds for total disturbance. Dryden may also consider these procedures for use until an ordinance is developed. Dryden understands that the ordinance will need to include provisions for public comment on construction plans, and overall construction site waste management. Dryden has copies of the *Blue Book*, the *Stormwater Management Design Manual*, and the *Instruction Manual for Stormwater Construction Permit* for distribution / loan to project applicants.

During year 1, six projects came before the Town of Dryden that required New Construction Stormwater Permits under Phase II requirements. The County SWCD helped with an Erosion and Sediment Control Plan for a new building at the Beck Farm. This plan included use of silt fence and stabilization of the road entrance with gravel. SWCD was also closely involved in erosion and sediment control at the Town's Virgil Creek Restoration Site, using silt fencing, project staging, hydroseeding, and bale mulching. A project to install self storage units on Pinckney Road required a full SWPPP (Storm Water Pollution Prevention Plan), as did a new building for F and T Food Distributors. Silt fencing, and hydroseeding were also used for these projects. In addition, two residential subdivision sketch plans have come before the planning board which will exceed the five acre threshold. These two project applicants are currently working with their engineers to develop full SWPPPs and NOIs. Dryden's zoning officer has asked for the NOIs when complete and the Planning Board has asked to see the plans. The Planning Board has also asked the town Conservation Board to review these projects and to provide advice.

The Stormwater Working Group has organized several education and training opportunities for construction site operators, as shown in the tables below. Once Dryden has an ordinance in place, the next step will be to develop a process for site inspection and enforcement. Looking to the future, a number of municipalities in Tompkins County are concerned about the potential increased workload for Code Enforcement Officers that would be required for stormwater related inspections and enforcement. There is hope that this additional workload will be supported by state funding. There is also a need to clarify the areas of responsibility for local code enforcement, County Soil and Water Conservation Districts, and DEC activities.

B. Implementation of Best Management Practices, #4 Construction Site Stormwater Runoff Control

| REQUIREMENTS | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|--|-----|----|--|--|
| Require erosion and sedimentation controls through an ordinance or other regulatory mechanism (required) | ✓ | | <ul style="list-style-type: none"> • Dryden has gathered a few examples of model ordinances. • Dryden and other municipalities have begun working with the Genesee/Finger Lakes Regional Planning Council on the “Watershed Local Laws Project”. • Dryden has completed an Open Space Inventory, which can be used to identify areas sensitive to storm water impacts (such as steep slopes and erodible soils). • Dryden Conservation Board has been working on a Stream Protection and Fill Ordinance. • Dryden has been working on a Comprehensive Plan which aims to protect environmentally sensitive areas from impacts of development. | <ul style="list-style-type: none"> • Dryden will work with the “Watershed Local Laws Project” and the SWG to develop a local ordinance on erosion and sediment control. Dryden has designated a committee with representatives from the Planning Board, Town Board, and Conservation Board to work with the Environmental Planner on ordinance development. • Stream Protection and Fill Ordinance will be enacted. • Dryden’s comprehensive plan will be adopted in year 2 or 3. |
| Provide opportunity for public comment on construction plans (required) | ✓ | | <ul style="list-style-type: none"> • Subdivisions and projects requiring site plan review, special permit review, or ZBA review are subject to public hearings. | <ul style="list-style-type: none"> • Dryden’s Erosion and Sediment Control ordinance will ensure opportunity for public comment on all projects subject to stormwater regulations. |

B. Implementation of Best Management Practices, #4 Construction Site Stormwater Runoff Control

| REQUIREMENTS | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|---|-----|----|--|--|
| Require construction site plan review (required) | ✓ | | <ul style="list-style-type: none"> • Note: this requires training for local review boards. • Dryden’s CEOs have been asking to see NOI’s for all construction projects large enough to require NOI’s. Planning Board has been asking to see SWPPPs. • Two Code Enforcement Officers and Environmental Planner each attended one course offered by Syracuse University Stormwater Management Program – including: “Planning your site for erosion and sediment control”, “Design and Selection of Stormwater Ponds and Wetlands”, and “Stormwater Hydrology and Detention Basin Design”. • In February of 2003, Network hosted satellite broadcast by DEC on stormwater management for MS4s. This was followed by a question and answer session with Steve Eidt of DEC. • In November, 2003, Environmental Planner attended training on “Stormwater Management for Local Review Boards”. She also obtained a copy of the power point presentation used for this workshop from DOS. | <ul style="list-style-type: none"> • SWG is organizing a workshop on April 15th for local review boards, engineers, and contractors. Over 70 have already registered. • Local Erosion and Sediment Control Ordinance will require construction site plan review by Town review board. |
| Require overall construction site waste management (required) | | ✓ | <ul style="list-style-type: none"> • State Building Codes and County Health may have some language on this. But more work is needed, especially for education and enforcement. | <ul style="list-style-type: none"> • Details on construction site waste management will be incorporated into ordinances and outreach efforts. |

B. Implementation of Best Management Practices, #4 Construction Site Stormwater Runoff Control

| REQUIREMENTS | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|--|-----|----|---|--|
| Site inspection and enforcement (required) | | ✓ | <ul style="list-style-type: none"> • This was not an activity for year 1. | <ul style="list-style-type: none"> • Procedures for inspections, enforcement, and employee training will be written into local ordinance. Inspections will begin in year 3. • There is a need for some state support for this additional workload, and clarification of the roles of DEC, SWCD, and local governments. |
| Education and training of construction site operators (required) | ✓ | | <ul style="list-style-type: none"> • In February of 2003, Network hosted satellite broadcast by DEC on stormwater management requirements for construction activities. • Phase II Stormwater Construction Activity Meeting, SWCD, 5-6-03. Cayuga Heights. Sponsored by SWCD for contractors. Power Point presentation by Scott Cook. • Code enforcement officers provide training in their daily work. Dryden CEOs and planning board have been informing project applicants about the new regulations. Zoning office has copy of the Blue Book available and Environmental Planner has copy of the Stormwater Design Manual. • SWCD newsletters have provided information. | <ul style="list-style-type: none"> • SWG is organizing a workshop on April 15th for local review boards, engineers, and contractors. Over 70 have already registered. • Dryden is working with SWG to develop a brochure with details on Phase II regulations to be distributed by municipalities to project applicants. • Dryden will develop a mailing list of developers and construction site operators commonly working in Dryden. This mailing list will be used for notification of training opportunities, as well as ordinances adopted and procedures determined. This information will also be posted on the website. |

MINIMUM MEASURE 5: Post-Construction Stormwater Management

A. Narrative Overview:

In year 1, two construction projects in the Town of Dryden have required post-construction stormwater management. Both plans have been designed by Gary L. Wood, PE and reviewed by the Town Engineer, David Putnam of T.G. Miller. A project to build self storage units on Pinckney Road used a Pocket Pond, designed according to the Stormwater Management Design Manual, and requires the owner, John O'Connor, to maintain the facilities. The F and T Food Distribution site will use a combination of dry swales and a dry pond to meet all stormwater quantity and quality requirements. A permanent wet pond is not feasible due to health regulations for food handling facilities. The owner is responsible for maintenance. The Town will document all management facilities installed in future years.

Dryden has made progress in assessment of existing conditions. A study of the Virgil Creek Aquifer, in cooperation with USGS, will help the Town to develop a groundwater protection program in the future. In addition, as part of a project funded through the IO, Dryden has been assessing streambank erosion problem areas in order to select a good site for a demonstration restoration project. The Town has also nearly completed a restoration project along Virgil Creek where the creek was undercutting a steep bank next to a Town road. The Fall Creek Watershed Committee continues to monitor existing conditions in Fall Creek.

Much of the sediment load in Sixmile creek is coming from streambank erosion, and this issue has been the topic of a detailed stream channel assessment conducted by the consultants Milone and MacBroom, LLC. A summary of the findings is attached as appendix C. This assessment is part of the planning effort involved in a Multi-Jurisdictional Hazard Mitigation Program effort led by the Tompkins County Planning Department. Tompkins County will sponsor a similar assessment for the Fall Creek Watershed next year. In an earlier effort, a report sponsored by the Six Mile Creek Partnership identified "Critical Areas for Watershed Management" within Sixmile Creek using a compilation of data in a Geographic Information System. A summary of this project is attached as appendix D. These two projects provide insights for reducing streambank erosion in the Six Mile Creek Watershed. Next year, the newly organized Sixmile Creek Volunteer Monitoring program will begin, allowing for additional assessments of existing conditions and change over time.

Next year, the Town of Dryden will be working on ordinance language to address post-construction stormwater management and inspection and maintenance of facilities. This effort will be assisted by the Genesee / Finger Lakes Regional Planning Council and the Stormwater Working Group, with additional insights from the Town of Ithaca, as they have already begun their ordinance development. Dryden's Environmental Planner has attended one of Don Lake's Trainings in Syracuse called "Design and Selection of Stormwater Ponds and Wetlands." She will be assisting Dryden with ordinance development.

B. Implementation of Best Management Practices, #5 Post-Construction Stormwater Management

| REQUIREMENTS | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|---|----------|----|--|---|
| <p>Assess existing conditions throughout the MS4 and identify appropriate management practices to reduce pollutant discharge to the maximum extent practicable (required)</p> | <p>✓</p> | | <ul style="list-style-type: none"> • Dryden has initiated a study of the Virgil Creek Aquifer in cooperation with USGS. • Dryden has worked with the IO to submit a DOS grant for watershed projects in the Cayuga Lake Watershed. One of the four projects will take place in Dryden. • Town of Dryden has nearly completed a large stream restoration project on Virgil Creek, with funding from FEMA through SEMO. The area was a concern due to streambank erosion and undercutting very close to a road and several homes. The restoration project has focused on restoring natural meanders and using rock structures to stabilize the stream. • TCPD has organized a watershed assessment for Sixmile Creek which takes a detailed look at sediment and erosion issues, with consultants Milone and MacBroom, LLC. • Newly organized Six Mile Creek Volunteer Monitoring program will help with assessment of existing conditions, plus Fall Creek monitoring will continue. • SWCD provides technical assistance and interpretation of practices and standards. • Cayuga Monitoring Conference, 10-14-03. • Six Mile Creek Partnership organized an assessment of Critical Areas for Watershed Management using GIS data, with USDA funding. Completed 5-03. | <ul style="list-style-type: none"> • Aquifer study will continue, with additional funding support from Tompkins County. This study (to be completed in 2007) will provide the necessary information for groundwater protection plans (to be developed in 2008). • Working with the newly hired Watershed Projects Manager for the IO, Dryden is assessing existing erosion and stormwater problem areas and developing a demonstration project to address a problem area within the Fall Creek Watershed. • Virgil Creek project will be completed and insights gained will be shared with other groups considering stream restoration projects. • TCPD will work with consultants Milone and MacBroom to conduct a watershed assessment for Fall Creek. • Working with SWCD and SWG, a procedure will be developed for addressing stormwater conflicts between landowners, which arise from existing development. • Volunteer monitoring program on Sixmile Creek will begin. • SWCD will continue to provide technical assistance and interpretation of practices and standards. • Network organizes monitoring conferences to facilitate coordination of efforts across the Cayuga Lake Watershed. |

B. Implementation of Best Management Practices, #5 Post-Construction Stormwater Management

| REQUIREMENTS | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|--|-----|----|---|--|
| Regulate post-construction runoff from development through an ordinance or other regulatory mechanism (required) | ✓ | | <ul style="list-style-type: none"> • Dryden will be working with the Genesee/Finger Lakes Regional Planning Council on the “Watershed Local Laws Project”. • Town of Ithaca has been researching ordinance development with special attention to maintenance issues. They will share results. Town of Ithaca is also working on a Riparian Buffer Ordinance and will share. | <ul style="list-style-type: none"> • Dryden has identified a committee to work with Local Laws Project consisting of representatives from Town Board, Planning Board, Conservation Board, and the Environmental Planner. • SWG will review model language and assist MS4s. • Construction site operators and developers will be notified about local ordinances and procedures as they are developed, using the Town Web Site and mailing list. |
| Develop management practice inspection and maintenance program (required) | ✓ | | <ul style="list-style-type: none"> • Town of Dryden Environmental Planner attended Syracuse Training on Design and Selection of Stormwater Ponds and Wetlands. • Town of Ithaca has been addressing this issue project by project. Insights will be incorporated into ordinance language which can be shared. | <ul style="list-style-type: none"> • SWG will review model language and assist MS4s. • SWCD will provide technical assistance. • CEOs to receive additional trainings. • In year 3, Dryden and Caroline will work with SWG to develop “Post Construction Management Form” for developer to document long range operation and maintenance. |

MINIMUM MEASURE 6: Pollution Prevention/Good Housekeeping

A. Narrative Overview:

The Town of Dryden Highway and Public Works Departments have made good progress in the area of pollution prevention. The Highway department has begun using a hydroseeder after road ditch clearing efforts and this practice will continue and hopefully expand in future years. The Highway department has also been using rip-rap, gabions, and rock check dams to address road ditch erosion problem areas. The Town does not use herbicides along roadsides, and use of road salt is carefully limited. The highway facility is regularly cleaned, vehicles are inspected for leaks before every use, and used vehicle fluids are carefully stored and recycled. Drains within the highway facility are equipped with oil separators and drain to the Village of Dryden sanitary sewer. Spill response materials including speedy dry and pig blankets are on hand at the facility. Staff receive some safety trainings through PERMA and DEC Mine Safety.

The Town has been hiring an industrial vacuum / sweeper for cleaning streets and drainage structures. The Highway department has worked with the County Soil and Water Conservation District to apply for funding to build a salt storage shed, hopefully in 2005 or 2006. The Public Works Department continues to support the Fall Creek Watershed Committee's annual stream clean-up efforts by providing for trash removal. Road kill carcasses are removed and brought to the Tompkins County Solid Waste Facility.

Plans for next year include: comparison of existing practices with DEC's Non-Point-Source Management Practices Catalog and EPA BMP fact sheets and assessment of needs for additional practices; assessment of existing training opportunities for highway and public works staff and development of a training program that addresses stormwater management and pollution prevention issues; continued hydroseeding efforts; and collaboration with the IO Watershed Project Manager for identification of road ditch best management practices.

In addition, the Tompkins County Planning Department is developing a Multi-Jurisdictional Hazard Mitigation Plan which addresses hazardous materials spills, and this plan, when finalized, may help MS4s with the Good Housekeeping requirements. The Stormwater Working Group may also be able to help by developing a Good-Housekeeping checklist for MS4s in Tompkins County.

B. Implementation of Best Management Practices, # 6 Pollution Prevention / Good Housekeeping

| REQUIREMENTS | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|---|-----|----|---|--|
| Prevent discharge of pollutants from municipal operations (required) | ✓ | | <ul style="list-style-type: none"> • SWCD, Town of Ithaca, and Village of Cayuga Heights have hydroseeders which they have been sharing with other MS4s. Hydroseeding is supported by funding from the WRC and FL-LOWPA. • Dryden snow-plow routes are evaluated every year to give the best service to the public. Pure salt is used sparingly and in specific areas, not only because of pollution concerns, but also because salt costs 6 times as much as sand. Consider less salt near Unique Natural Areas. • County hazardous waste collection. • SWCD tire collection program. • SWCD Agricultural Chemical Clean-Sweep. (Drop off of containers). | <ul style="list-style-type: none"> • IO received grant to address streambank erosion and road management in several municipalities. Project includes production of educational materials and outreach. • County All hazard mitigation plan finalization. • SWG can help municipalities to produce a good housekeeping checklist. • Limited use of road salt will continue, based on traffic volume and travel speed. |
| Follow DEC NPS management Practices catalog, or equivalent (required) | | ✓ | <ul style="list-style-type: none"> • Town has a document called: <i>The Highway Superintendent Road and Water Quality Handbook, Edition II</i>, but we need to check if the DEC catalog practices are being followed. | <ul style="list-style-type: none"> • Go through the DEC document and assess extent to which Dryden is following it and what might need to be improved. |
| Conduct employee pollution prevention training (required) | ✓ | | <ul style="list-style-type: none"> • Dryden Highway dept staff receive safety trainings through PERMA and some have received DEC Mine Safety trainings. • The NOI states that Dryden will organize a training program for the Town Highway department in year 1, however, due to lack of time, this will be addressed in year 2. • Every three years County and emergency responders have trainings on hazardous spill management. • OSHA requires some trainings. | <ul style="list-style-type: none"> • Environmental Planner will work with SWG to organize a training for Dryden Highway and DPW staff after assessing available training opportunities and developing any additional materials needed. • Trainings opportunities will also be identified and promoted for Town Board, Planning Board, and Conservation Board. |

B. Implementation of Best Management Practices, # 6 Pollution Prevention / Good Housekeeping

| REQUIREMENTS | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|--|-----|----|---|---|
| Street cleaning | ✓ | | <ul style="list-style-type: none"> A vacuum / sweeper is hired each spring to clean streets, catch basins, storm drains, and culverts. | <ul style="list-style-type: none"> Street cleaning in MS4 area and densely populated areas will continue. If funding becomes available for purchase of a combined sweeper / industrial vacuum, highway department may consider purchase – but contracting out for this service works well for now. Investigate whether street sweeping removes enough sediment to be worth-while. |
| Catch basin and storm drain system cleaning | ✓ | | <ul style="list-style-type: none"> Town Highway Dept hires an industrial vacuum for storm system cleaning. Though the NOI mentions purchase of a vacuum, contracting out for this service has been more practical. | <ul style="list-style-type: none"> Current annual cleaning program will be assessed for comprehensiveness. Sediment and debris removal will continue. |
| Alternative discharge options for chlorinated water | | ✓ | <ul style="list-style-type: none"> This item was checked off on the NOI but has not been researched at this point. | <ul style="list-style-type: none"> This item will be considered for year 2? |
| Vehicle maintenance and washing | ✓ | | <ul style="list-style-type: none"> All highway equipment is carefully inspected before each use. Vehicles are washed within the highway facility which has a drain with oil separators which drains to Village of Dryden Sanitary Sewer. | <ul style="list-style-type: none"> Careful inspection, maintenance, and washing practices will continue. |
| Hazardous and waste materials management | ✓ | | <ul style="list-style-type: none"> Highway garage is cleaned regularly, trash is removed weekly, used oil and antifreeze are stored in labeled containers and sent to be recycled by NOCO lubricants. | <ul style="list-style-type: none"> These practices will continue and additional practices identified in future trainings will be considered. |
| Landscaping and lawn care (was not checked but maybe good) | ✓ | | <ul style="list-style-type: none"> No herbicides are used along roadsides. | <ul style="list-style-type: none"> This practice will continue. |

B. Implementation of Best Management Practices, # 6 Pollution Prevention / Good Housekeeping

| REQUIREMENTS | YES | NO | ACHIEVEMENTS / EXPLANATIONS | C. PLANS FOR NEXT YEAR AND CHANGES |
|--------------------------------|-----|----|---|--|
| Road salt storage | ✓ | | <ul style="list-style-type: none"> De-icing materials are currently stored outside. Highway dept has worked with SWCD to apply for grant money to build a storage building. | <ul style="list-style-type: none"> When funding is secured, a storage facility will be built, hopefully in 2005 or 2006. |
| Roadway and bridge maintenance | ✓ | | <ul style="list-style-type: none"> Sediment and debris are removed from roadside drainage every year where needed, and in areas where residents call about problems. Erosion in road ditches is addressed through hydroseeding. Dryden stores a hydroseeder purchased by SWCD and it has been used in some areas to revegetate road ditches after cleaning. SWCD contributed over \$8,000 in funding for the hydroseeding of several miles of road. In other areas, gabion stone, riprap, and rock dams have been used. | <ul style="list-style-type: none"> Ditch cleaning and hydroseeding program will continue. As much as possible, all ditch cleaning crews will be followed with hydroseeding. Make sure that ditching is no deeper, nor more frequent, than necessary. Also make sure that ditching is carefully phased with hydroseeding to avoid creating direct conveyances for loose sediment into streams during rainy periods. Additional good maintenance practices identified in future training programs will be considered. |
| Spill response and prevention | ✓ | | <ul style="list-style-type: none"> Highway and Public Works have Speedy Dry and Pig Blankets on hand. Storage drums have materials on top to absorb any small lid spills. Drains in facility are equipped with oil separators. Staff receive safety trainings. | <ul style="list-style-type: none"> Additional measures identified by SWG during year 2 will be considered. |
| Others | ✓ | | <ul style="list-style-type: none"> Roadkill carcasses along Dryden roads are removed and sent to Tompkins County Solid Waste Facility. | <ul style="list-style-type: none"> This practice will continue. |

VII. Monitoring and Modeling Results

Although the Town of Dryden has not been required by DEC to conduct any specific monitoring activities, results from the Sixmile Creek Watershed Volunteer Monitoring Program will be available beginning next year. Results from Fall Creek Monitoring will also be summarized in next year's report. In addition, summaries of two studies, mentioned above, are attached as appendices C and D. These are, respectively, *Overview of the Six Mile Creek Flood Mitigation Needs Assessment*, and *Six Mile Creek Watershed Suitability Analysis of Critical Areas for Watershed Management*.

VIII. Summary of Funding and Use of Grant Money

The Town of Dryden has collaborated with the Tompkins County Stormwater Working Group to submit an application to the Environmental Protection Fund for assistance with Stormwater Management Plan implementation. We have just learned that this application has been fully funded. The Stormwater Working Group is very glad for the support and is now developing a work plan.

The Town of Dryden has benefited from use of the Soil and Water Conservation District's hydroseeder, which is made possible through Environmental Protection Fund assistance provided through the Finger Lakes Lake Ontario Watershed Protection Alliance (FL-LOWPA).

Stream restoration projects currently underway and planned in the Town of Dryden have received some funding from FEMA, some from DOS, and some from USDA (the last two as part of the Six Mile Creek Partnership efforts).

Tompkins County will be providing additional funding for the Virgil Creek Aquifer Study.

Appendix A: Stormwater Working Group Participants

| First Name | Last Name | Municipality / Organization | phone | email |
|-------------------|------------------|---|-----------------|-------------------------------|
| Sharon | Anderson | Cayuga Lake Watershed Network | 532-4104 (w) | steward@cayugalake.org |
| Doug | Austic | Town of Ulysses | 387-5767 (w) | tousuper@twcny.rr.com |
| Dick | Coogan | Town of Ulysses | 280-3275 (cell) | rcoogan1@twcny.rr.com |
| Kathy | Crance | Town of Newfield | 564-9981 (w) | kcrance@msn.com |
| Brent | Cross | Village of Cayuga Heights | 257-5536 (w) | bcross@cayuga-heights.ny.us |
| Seth | Dennis | TCSWCD | 257-3820 (w) | sedennis_44@hotmail.com |
| Larry | Fabbroni | City of Ithaca Water Operations | 272-1717 (w) | larryf@cityofithaca.org |
| Scott | Gibson | City of Ithaca Water Operations | 272-1717 (w) | scottg@cityofithaca.org |
| Debbie | Gross | Town of Dryden | 844-8655 (W) | envplan@frontiernet.net |
| Kate | Hackett | T C Planning Dept. | 274-5560 (w) | khackett@tomkins-co.org |
| Thom | Johnson | Cornell Univ. Env. Program Coord. | 254-2337 (w) | tbj2@cornell.edu |
| Lynn | Leopold | Village of Lansing | 273-3457 (h) | lynnbird58@yahoo.com |
| Sue | Ritter | Town of Ithaca | 273-1721 (w) | sritter@town.ithaca.ny.us |
| Todd | Schmit | Town of Caroline | 539-6130 (h) | tms1@cornell.edu |
| Tania | Schusler | Cooperative Extension | 272-2292 (w) | tms23@cornell.edu |
| Craig | Schutt | TCSWCD | 257-3820 (w) | craigschutt@hotmail.com |
| Bud | Shattuck | Town of Lansing | 272-7570 (w) | bshattuck@tomkins-co.org |
| Jessica | Verrigni | TCSWCD | 257-2340 (w) | jessica-buteau@ny.nacdnet.org |
| Linda | Wagenet | Cornell Univ., Dept. of Development Sociology | 255-6518 (w) | lpw2@cornell.edu |

APPENDIX B: A G R E E M E N T

AGREEMENT, entered into this 11th day of March, 2004, made by and between the **TOWN OF CAROLINE**, of 2670 Slaterville Road, Slaterville Springs, New York, 14881, hereinafter referred to as “**CAROLINE**”, and the **TOWN OF DRYDEN**, of 65 East Main Street, Dryden, New York, 13053, hereinafter referred to as the “**DRYDEN**”.

W I T N E S S E T H

WHEREAS, **CAROLINE** desires to have **DRYDEN** provide environmental planning services, and

WHEREAS, **DRYDEN**, through its Environmental Planner, has the technical capability to provide these services to **CAROLINE**,

NOW, THEREFORE, in consideration of the promises, covenants, and agreements contained herein, the parties agree as follows:

1. The term of this Agreement shall be from April 1, 2004, through December 31, 2004.
2. **DRYDEN** agrees to provide Environmental Planning Services to **CAROLINE** as described in Exhibit A – Environmental Planning Services. Requests for services under the Environmental Planning Services Agreement may only be initiated by the following officers and officials of **CAROLINE**: Town Supervisor, Chair of the Caroline Watershed Committee, and Chair of the Town Planning Board.
3. **CAROLINE** agrees to pay **DRYDEN** a fixed fee of \$7,500, which shall be paid after receipt of a voucher from **DRYDEN**. **CAROLINE** shall remit payment to **DRYDEN** within 30 days of the receipt of a voucher from **DRYDEN**. Since this Agreement is for personnel services, the parties agree that if **DRYDEN** is unable to perform its obligations hereunder due to illness, injury, or the termination of employment for any reason whatsoever of its Environmental Planner, then **DRYDEN** may terminate this Agreement. An adjustment of any amounts paid by **CAROLINE** to **DRYDEN** that have not been earned shall be made and **DRYDEN** shall promptly refund the amount of such adjustment to **CAROLINE**. For the purposes of this provision, the Environmental Planner’s time shall be valued at \$27.44 per hour.
4. **DRYDEN** will undertake the work described in this Agreement in a timely, professional, and competent manner, in accordance with generally accepted professional principles, and will maintain accurate and complete time records of the services provided to **CAROLINE** under this Agreement. This Agreement entitles **CAROLINE** to no more than 273 hours of the Environmental Planner’s time, which number has been calculated according to the Environmental Planner’s salary and benefits rate.

5. **CAROLINE** shall indemnify, hold harmless and defend **DRYDEN** and its officers, employees, agents and elected officials from and against any and all claims and actions brought against **DRYDEN** and its officers, employees, agents and elected officials for injury or death to any person or persons or damage to property arising out of the negligence of **CAROLINE** and its employees, subcontractors or agents.

DRYDEN shall indemnify, hold harmless and defend **CAROLINE** and its officers, employees, agents and elected officials from and against any and all claims and actions brought against **CAROLINE** and its officers, employees, agents and elected officials for injury or death to any person or persons or damage to property arising out of the negligence of **DRYDEN** and its employees, subcontractors or agents.

6. This Agreement may be amended only by written agreement between **DRYDEN** and **CAROLINE**. This Agreement may be terminated only by written agreement by each of the parties hereto.

7. It is mutually agreed between the parties that an independent contractor relationship is hereby established under the terms and conditions of this Agreement.

8. The provisions of this Agreement shall be construed under the laws of the State of New York.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

DATE: _____

Town of Dryden

Print Name

DATE: _____

Town of Caroline

Print Name

Exhibit A

ENVIRONMENTAL PLANNING SERVICES

PROVIDING/OBTAINING PLANNING SERVICES

The general purpose and intent of the Environmental Planning Services contract is to assist **CAROLINE** with environmental planning issues and regulatory affairs by providing **CAROLINE** access to a professional planner. The Environmental Planning Services contract allows **DRYDEN** to balance the overall workload of the Environmental Planner position and helps ensure that **DRYDEN** will be able to provide the planning and staff resources necessary.

PRODUCT PREPARATION

Prior to beginning work on any project that will result in the production of a document in a printed or digital format, the Environmental Planner and **CAROLINE** will define the desired product (e.g., format, general content, outline, etc.) and the number of drafts to be produced for review. Generally, unless otherwise agreed to, **DRYDEN** will provide **CAROLINE** one draft for internal review and comment, and one public review draft prior to final production. Modifications to any product after final production may be billed to **CAROLINE** on a time and materials basis.

PRODUCTS AND SERVICES

The following products and services are expected to be provided during the contract term. It is recognized by **CAROLINE** and **DRYDEN** that many of these services can occur concurrently with like services for **DRYDEN** and the time will be shared equally.

SERVICES:

1. Coordinate implementation of **CAROLINE** Municipal Separate Stormwater Sewer System (MS4) Storm Water Management Plan (SWMP) activities, initially prepared as the Notice of Intent (NOI) and identified for action in 2004, under the six classified minimum measures: (i) Public Outreach and Education, (ii) Public Involvement and Participation, (iii) Illicit Discharge and Elimination, (iv) Stormwater Runoff from Construction Activities, (v) Post-Construction Stormwater Management, and (vi) Pollution Prevention and Good Housekeeping from Municipal Operations.
2. Work with Chair of **CAROLINE** Watershed Committee and **CAROLINE** Town Board on recommended strategies for SWMP Implementation, reporting requirements, and communication with other Town officials and employees.
3. Attend meetings of the Tompkins County Urbanized Area MS4 Stormwater Working Group (SWG) on behalf of **CAROLINE** to pursue collaborative efforts through inter-municipal cooperation and planning on public outreach and participation activities, illicit discharge identification and outfall mapping, municipal operations, and ordinance development in relation to the SWMP. Additional correspondence can be directed to the Tompkins County Planning Department, Tompkins County Soil and Water Conservation District, New York State Department of Environmental Conservation, and other agencies or municipalities as required.
4. Where joint or cooperative grant opportunities arise in relation to funding for aquifer studies, watershed assessments and restoration projects, and SWMP implementation, **CAROLINE** and **DRYDEN** will work together to pursue such opportunities.

PRODUCTS:

1. Propose revisions, if any, to **CAROLINE**'s SWMP for approval by the **CAROLINE** Town Board. Adjustments to the long-term plan may be necessary to coordinate efforts with other Tompkins County MS4s, and to add or remove activities that currently exist.
2. Prepare the **CAROLINE** SWMP Annual Report and Municipal Compliance Certification form for approval by the **CAROLINE** Town Board. Coordinate publication and presentation of report for public review and comment in a reasonable time to allow submission to the New York State Department of Environmental Conservation by June 1, 2004.

MODIFICATION TO LIST OF SERVICES

The environmental planning services provided by **DRYDEN** under the Environmental Planning Services contract may be refined and modified only by written agreement between **DRYDEN** and **CAROLINE**.

Appendix C

Overview of the Six Mile Creek Flood Mitigation Needs Assessment December 1, 2003

Background

Six Mile Creek is one of the largest tributaries to Cayuga Lake and has been selected as the pilot watershed to undergo the first Flood Mitigation Needs Assessment in Tompkins County. From a broad perspective, Six Mile Creek has been found to be alternately stable and degrading, depending on location within the watershed. The most notable degradation occurs in the middle of the upper and lower halves of the creek.

In recent history, the watershed has been revegetated, with an overall reduction in sediment as compared to past land uses. The lack of sediment loading has left Six Mile Creek with a sediment deficit. In other words, the sediment transport capacity of the creek now exceeds its supply of sediment. The degradation that is occurring in Six Mile Creek is indicative of a stream that is attempting to reach a new equilibrium. In essence, the creek's lack of external sediment loading and excess energy is causing it to migrate laterally in some reaches, while degrading vertically in other reaches.

Six Mile Creek has an extremely steep watershed, dropping some 1,300 feet from its headwaters in Dryden to Cayuga Lake. The creek is subject to numerous elevational controls, both natural and man-made. Many of the tributary channels that flow into Six Mile Creek are incised in deep gullies. Some show signs of having had significant or dramatic erosion in the past, but many have since reached bedrock or till vertical control and are now relatively stable.

The Six Mile Creek channel is going through transition phases, with some segments having become incised and are now widening. Other segments are still becoming incised. Bank erosion within the main channel of Six Mile Creek is evident throughout its course, and in some areas is quite severe. The channel appears to be becoming more sinuous in an attempt to decrease its slope. This is resulting in widespread lateral migration of the channel through the highly erodible lakebed deposits that characterize much of the watershed. In other locations, the creek appears to be stable, both vertically and horizontally. Vertical stability has been attained in certain instances by virtue of the fact that the creek has eroded to bedrock, creating a stable base level below which the channel cannot rapidly erode.

Land uses within Six Mile Creek are rural in nature, with local concentrations of residential and commercial development in the town centers of Slaterville Springs, West Slaterville, Brooktondale, and along Route 79. The exception is the more intense development within the City of Ithaca, where the creek has been completely channelized. Erosion and sedimentation problems in Six Mile Creek are clearly *not* the result of poor watershed management practices. Little evidence has been observed of unnatural erosion as a result of irresponsible agricultural practices or construction activities.

Summary of Recommendations

Many techniques are available for managing channel incision and its adverse consequences. The project team recommends a broad approach that has three components. First is accepting that inevitable degradation will occur; second is reducing sediment loads from the largest sources; and third is improved downstream sediment trapping, specifically in the area near the City of Ithaca's existing siltation dam. As a mechanism for implementation, the County and watershed member towns are encouraged to adopt stream corridor protection mechanisms and certain land use controls for the future protection of the creek and its watershed. Programmatic changes in the *Flood Hazard Mitigation Program* are also recommended to steer mitigation toward a watershed-wide approach.

The following overall recommendations are offered:

1. It is not practical or economically feasible to stabilize Six Mile Creek through conventional means. Traditional approaches to river management are often limited in scope, prohibitively expensive, and environmentally unsound. The concept of managing the watershed and corridor as well as the river channel itself provides an alternate approach that allows each river function to be managed at the appropriate level. As such, bank stabilization techniques should be judiciously applied in priority areas to protect existing structures, private property, and infrastructure (i.e. bridges, gas mains, water mains, etc.).
2. At channel bank erosion problem sites, the project team recommends placing a priority on the creation of synthetic floodways to disperse flow and reduce velocity rather than construction of large scale structural bank protection measures. Highest priority should be given to hazard mitigation projects that utilize natural stabilization methods, such as the use of conventional plantings or bio-technical methods (i.e. strategic placement of boulders, root wads, hemlock revetments, etc.).
3. Most of the inspected channel reaches along Six Mile Creek have unusually low levels of channel roughness with which to reduce flow velocities and provide structural habitat. The project team recommends that a comprehensive program be undertaken to increase channel roughness that would include the following measures:
 - anchor or bury large woody debris in the banks;
 - create boulder and log sills in the riverbed to form rapids and pools;
 - install individual boulders and boulder clusters in the channel; and
 - redefine the channel's thalweg.
4. The Six Mile Creek watershed appears to have an unusually low amount of wetlands and ponds that would help delay storm runoff and trap sediment. It is recommended that additional upland ponds and wetlands be created in the tributary watersheds to help control peak runoff rates.
5. The application of the geomorphic-based design is a powerful tool, but the methodology is not appropriate in many areas of instability.

6. The priorities outlined in the table below are recommended along the Six Mile Creek: The highest priority reaches include Segment 4 (from Banks Road to Middaugh Road) and Segment 8 (from Creamery Road to Six Hundred Road). Moderate priority reaches include Segment 3 (from Burns Road to Banks Road) and Segment 5 (from Middaugh Road to Valley Road near Route 330 in Brooktondale).

Segment Restoration Priorities

| <i>Segment</i> | <i>Description of Geographic Limits</i> | <i>Priority</i> |
|----------------|---|-----------------|
| 1 | Cayuga Inlet to Van Natta's Dam | Low |
| 2 | Van Natta's Dam to Burns Road | Low |
| 3 | Burns Road to Banks Road | Moderate |
| 4 | Banks Road to Middaugh Road | High |
| 5 | Middaugh Road to Valley Road near Route 330 in Brooktondale | Moderate |
| 6 | Valley Road near Route 330 in Brooktondale to Boiceville Road | Low |
| 7 | Boiceville Road to Creamery Road | Low to Moderate |
| 8 | Creamery Road to Six Hundred Road | High |
| 9 | Six Hundred Road to Headwaters in Dryden | Low |

The following programmatic recommendations are offered:

1. Urbanization does not appear to be a significant factor in the runoff and sediment problems within the Six Mile Creek watershed. However, there are few mechanisms in place to minimize the impact of future land use changes. The project team recommends that the County and watershed member towns closely follow the New York Department of Environmental Conservation's Stormwater Management Manual and consider local regulation changes to support its application.
2. The project team strongly recommends that the County and watershed member towns create a conservation corridor along both stream banks to encourage riparian vegetation for channel and floodplain stabilization and wildlife habitat. Vegetated floodplains also help to reduce flow velocities, prevent scour and trap sediment.
3. High quality hydrologic data is essential for managing watersheds and understanding geophysical processes. It is essential that the U.S. Geological Survey stream flow gauge continue to operate.
4. Specific changes in the *Flood Hazard Mitigation Program* application process for funding are recommended that would give priority to sustainable restoration alternatives, watershed approaches, and restoration projects that are aimed at preventing damage to the natural environment. Development of minimum requirements for funding eligibility is also recommended.

Finally, the following site-specific recommendations are offered:

1. Both past and future mitigation efforts in the form of structural walls and other vertical barriers are likely to require continued maintenance and experience repeated failures. Rigid riverbank retaining walls should be designed by a qualified licensed Professional Engineer and should include a hydraulic analysis of velocity and scour impacts, as well as a stability analysis that considers active earth pressures, hydrostatic pressure, surcharge loads, and foundation conditions.
2. The Ithaca Water Department siltation basin at Burns Road should be modified to improve its efficiency, including a forebay, flow by-pass system, and a floating boom/silt curtain. The apparent increase in turbidity as water flows through the siltation basin is a peculiar situation that should be monitored to determine its cause.
3. A gas pipe crossing the river about 600 feet upstream of the siltation basin is reported to have been previously exposed by degradation and was observed to have been armored with riprap and a grade control sill. A second gas pipe crossing was found approximately 2,000 feet downstream of German Cross Road and the pipe is exposed. It is a hazard and should be stabilized immediately.
4. The existing Six Mile Creek "knick points" between Banks Road and Brooktondale should be stabilized in-place as an interim measure to minimize further upstream incision.
5. The bifurcated flow upstream of Banks Road at the property of Scott Whitham (reach #3505) should be redirected into the left channel and the right channel should be converted to a riparian wetland floodplain.
6. The eroding river bank and stacked rock retaining wall failure at the Tutton property (reach #3487) in Slaterville Springs should be addressed by creating a floodway on the left bank and backfilling the channel near the wall to increase the waterway area and reduce velocities.

The County can begin to work towards the long-term goals and objectives of a holistic watershed approach by initiating changes to its current funding program. However, many of the long-term watershed measures presented in the overall recommendations described above, will require funding that significantly exceeds the annual allocation of \$25,000 or the combined contribution of \$75,000 per year with "matching" funds.

Small projects, such as area-specific channel roughening with cobble, woody debris, islands, or bars that serve to freeze the elevation of the bed and slow down the flow to inhibit incisement would be expected to cost in the tens of thousands of dollars range, depending upon the extent of the area of application. By comparison, larger-scale projects such as channel relocation or creation of an artificial floodplain would be expected to cost in the hundreds of thousands of dollars range. Wetland creation costs are typically on the order of \$45,000 per acre.

Appendix D

Six Mile Creek Watershed Suitability Analysis of Critical Areas for Watershed Management

by Karen Edelstein, Brian L Duffany, Tom Owiyo & Jose Lozano

Six Mile Creek is the source of drinking water for the City of Ithaca. The Cayuga Lake Watershed Restoration and Protection Plan (RPP) ranked the Six Mile Creek sub-watershed as one of the most severe contributors of sediment in the Cayuga Lake watershed. Consequently, the City of Ithaca prioritized Six Mile Creek for restoration to protect the drinking water source and water quality of Cayuga Lake. The main objective of this study was to identify Critical Areas for restoration and conservation in this sub-watershed.

Our analysis uses a Geographical Information System (GIS) to identify areas that are at risk of soil erosion in the entire Six Mile Creek watershed. We used three main data layers; slopes, soils and land use, all clipped to the watershed boundary. Five slope categories were derived from the 10-meter resolution digital elevation model (DEM). The soil data were categorized based on their erodibility: very low, low, moderate, severe and very severe. Land use types were also assigned one of the five erosion risk levels based on professional judgment and other subjective criteria.

To identify the Critical Areas, the three vector layers (slopes, soils and land use) were converted to raster format to perform raster analysis. The resulting data set was categorized into five levels of erosion risk; very low, low, moderate, high and very high. We selected the "high" and "very high" ranked areas as the Critical Areas for restoration.

Approximately 10% of land in the Six Mile Creek watershed is under high to very high risk of soil erosion. This simple model allows one to quickly and easily flag areas likely to be at high risk of erosion, and can be used to identify areas for a more detailed study that includes additional variables and more definitively weighted land use rankings.