

Town of Colchester



Permit Application for:

General Permit 3-9014
National Pollutant Discharge Elimination System (NPDES)
Number: VTR040000

For:
Stormwater Discharges From Small Municipal Separate Storm Sewer Systems
(MS4's)

Submitted to:

Vermont Agency of Natural Resources
Department of Environmental Conservation
Water Quality Division, Stormwater Management Program
103 South Main Street, Building 10 North
Waterbury, Vermont 05671-0408

Submitted by:

Town of Colchester
P.O. Box 55, 835 Blakely Road
Colchester, Vermont 05446

Date Submitted:

February 7, 2008

CONTENTS

Letter of Transmittal

Notice of Intent

Section 3.1.2	Water Quality Controls for Discharge to Impaired Waters	Page 1
Section 3.1.3	Consistency with TMDL Requirements	Page 1
Section 4.2.1	Public Education and Outreach	Page 3
Section 4.2.2	Public Participation/Involvement	Page 3
Section 4.2.3	Illicit Discharge Detection and Elimination	Page 8
Section 4.2.4	Construction Site Runoff Control	Page 13
Section 4.2.5	Post-Construction Runoff Control	Page 16
Section 4.2.6	Pollution Prevention/Good Housekeeping	Page 20

Appendix

- EPA Grant Application and Work Program
- Colchester Storm Water Outfall Assessment (excerpt)
- Colchester Public Works Standards (excerpt)
- Regional Stormwater Education Program MOU
- Regional Storm Water Education Program Web Site
- Colchester Public Works Storm Water Website
- IDDE Program
- Storm Water Ordinances and Permitting Requirements
- Riparian Buffer Ordinances
- Map of Storm Water Watch Group Areas

TOWN OF COLCHESTER

Storm Water Management Plan

Section 3.1.2

Water Quality Controls for Discharge to Impaired Waterbodies

The Vermont Agency of Natural Resources has identified both the Morehouse and Sunderland Watersheds as being impaired by storm water. The Town of Colchester intends to achieve compliance to this section through the implementation of the Storm Water Management Plan, (SWMP) outlined on the following pages.

The Vermont Agency of Natural Resources considers several of the unnamed tributaries into Malletts Bay, as well as Smith Hollow Brook and Crooked Creek to be impaired by e-coli based upon the Town's past monitoring efforts. To minimize this pollutant, the Town's SWMP contains several strategies aimed at controlling e-coli contamination. These strategies include controlling sediment through the implementation of Sections 4.2.4 and 4.2.5 of the Town's SWMP. The plan also works toward the control of illicit discharges through the implementation of Section 4.2.3 of the Town's SWMP. The Town also intends to continue existing programs associated with animal control to facilitate the removal of dead animals from the roadway system, and, programs to minimize dog waste in Town parks and along multi-use paths. The Town will also continue its Water Quality Monitoring program which has been in existence now for over a decade, to continue improving the Town's understanding of e-coli contamination in Malletts Bay. To supplement these efforts, the Town will be implementing a Microbial Source Tracking program to better understand the source of e-coli contamination entering into Malletts Bay.

Section 3.1.3

Consistency with Total Maximum Daily Load (TMDL) Requirements.

Erosion Controls - Within the Town's SWMP, erosion controls have been adopted as outlined in Section 4.2.4 and 4.2.5. Past efforts have included the design and construction of a storm water outfall treatment structure which collects sediment before storm water is discharged to Malletts Bay, two large river bank stabilization projects on the lower Winooski River located at the Heineberg Access off Heineberg Drive, and along River Road in Colchester, and eight storm water outfall upgrade projects located in the Indian Brook, Colchester Pond Brook, Winooski River, Inner Malletts Bay and Sunderland Watersheds. In 2009, a large storm water outfall project will be constructed in Fort Ethan Allen within the Sunderland Watershed.

Gravel Road Maintenance - Although Colchester's limited gravel road system represents only about 25% of the state average, the Town has taken several steps to minimize the runoff from this portion of the transportation system. The Town has developed an alternative methodology to perform Traffic and Engineering studies on gravel roads for the establishment of speed limits. This allows the Town to post speed limits that do not exceed 35mph along gravel roads, which in turn, significantly reduces the degradation of the gravel surface. Our Equipment operators continue to receive regular training on the proper grading of gravel roads which allows less gravel to be applied to the roadways, and minimizes the amount of gravel that enters roadside ditches. The technical specifications of the Town's equipment have been revised to facilitate these proper grading procedures. The Town has also completed several erosion control projects along gravel roads to reinforce roadside ditches to minimize erosion of the ditch lines and the edge of the roadways during periods of high runoff. As a part of new development, the Town's design review process includes assessing the adequacy of storm water culverts, both public and private to avoid flood damage due to high runoff. The Town also cleans roadside ditches of debris and buildup on an as needed basis to ensure that blockages do not result in washouts within the drainage system. Finally, the Town's gravel road system serves primarily agricultural areas, where the Town has taken deliberate steps to preserve this land use, which generally prevents high density development within these areas.

Riparian Buffers - Several years ago, the Town of Colchester developed and adopted a stream bank protection ordinance. Generally, the ordinance does not allow development within 85 feet of major streams and tributaries throughout the community. Supplemental information for this ordinance has been developed and submitted to the ANR consistent with the requirements of 4.2.5.1.2.1 and 4.2.3.1.2.2. The Town has also developed a Street Tree Master Plan which is aimed at re-establishing the community's urban forest. All new development in Colchester is required to submit for review and approval, a vegetation and landscape plan.

Impervious Surface Minimization - The Town has adopted revisions to its Technical Roadway Standards. The revised standards allow for most roadways to be constructed at a narrower width, and as well, allow increased options for open drainage systems to promote pre-treatment of storm water runoff. New standards have been developed to support High Density Mixed-Use Development, which requires that pedestrian areas contain a minimum of 25% green space. The Town has also revised its Zoning Regulations reducing the allowable impervious surfaces in front yards from 50% to 30%.

Section 4.2.1

Public Education and Outreach on Storm Water Impacts

Section 4.2.1.1

The Town of Colchester will continue to participate in the regional storm water education and outreach strategy described in the 2008 Memorandum of Understanding between

designated MS4's, and the Chittenden County Regional Planning Commission. A copy of this MOU associated with this regional initiative is contained within the appendix of this application.

As a part of this regional initiative, the Town of Colchester will continue to participate in the development of a regional storm water web site. The site is linked to the Town's current web site, which contains local storm water information on the Public Works Department site. The Departments site will be updated as needed to include general, as well as locally relevant information relating to storm water and water quality. The Town's web site is located at <http://town.colchester.vt.us/>

Section 4.2.2

Public Involvement and Participation

General Rationale

The Best Management Practices, (BMP's) identified under this minimum control measure are aimed primarily at improving total species numbers and species density in receiving waters through the reduction of toxins in storm water runoff.

Other alternative BMP's that were considered, yet not adopted under this minimum control measure include a citizen storm water advisory panel, a water quality monitoring program involving citizen volunteers, an on-going public workshop series on storm water awareness, and an "adopt a stream" program. It is anticipated that the selected BMP's will involve a larger percentage of the public than a Citizen Water Advisory Panel. Although the Town does have a long standing water quality monitoring program, it would likely be difficult to locate available volunteers considering the scheduling requirements of such a program. On-going public workshops would not likely attract significant numbers of residents, or a diverse audience. An "adopt a stream" program presents too many organizational and logistical challenges whereby simpler BMP's would be equally as effective.

Implementation of the selected BMP's will require a behavioral change within the community which could be characterized by an improved level of awareness of what storm water pollution is, and how it occurs. It will also require an increased desire by citizens to become actively involved in the solution of storm water pollution.

The expected water quality outcomes under this minimum control measure are improvements in total species numbers and species density within receiving waters through the reduction of toxins in storm water runoff.

Section 4.2.2.2.1

The development of the Town's SWMP is built upon many of the previously completed storm water initiatives within the community. These initiatives have included significant

public involvement and participation. In March of 2002, the Town completed a Storm Water Management Plan for the community. The intent and use of the plan is outlined as follows:

- Preserve and improve water quality within Colchester and its receiving waters.
- Identify problematic areas within the community where improved storm water management is needed.
- Assist in the development of capital plans and other efforts to improve water quality.
- Provide an improved understanding of the relationships between water quality and land use.
- Create the basis from which to develop a storm water ordinance.

Public involvement and participation within the development of this plan were encouraged in multiple ways:

Public Meetings:

To provide the greatest opportunity for public involvement, three public meetings were conducted throughout the project. Each meeting was coordinated as an agenda item at a regularly scheduled Select Board meeting. These meetings were an opportunity for the Town to present the latest project related information as well as provide an open forum for feed back from the community.

Local Cable Access:

Every public meeting was video taped and provided for broadcast by the local cable access system by the Town of Colchester. This provided an increased opportunity for community involvement and participation by reaching a wider audience.

Newsletter:

In order to ensure that the widest audience was reached to encourage public involvement and participation, a newsletter titled “The Runoff Roundup” was mailed to every landowner and residence within the community. Each newsletter provided a schedule of upcoming project related events and information on how to provide input to the project. Three issues of the newsletter were mailed during the development of the plan.

Project Web Site Development:

Since many Colchester residents, particularly in the critical Malletts Bay area, are seasonal and may not be able to attend a public meeting or receive the newsletter in a timely fashion, a web site was provided. The site was updated regularly and contained web based versions of the newsletter, project information, and an email feedback link used to solicit public input.

The Town has also developed a Strategic Water Quality Plan. The SWQP contains a strategic action plan for the community to launch an integrated approach toward water quality issues related to storm water, wastewater, land use and recreational activities. The plan utilizes a multi-criteria assessment and resource vulnerability assessment to analyze various alternatives to address water quality issues throughout the community. Public involvement and participation within the development of this plan were encouraged in multiple ways:

Water Quality Committee (WQC):

A citizen committee was charged with the development of the SWQP. Working with the Town's Public Works Department, the committee developed a scope of work which was used to request proposals from engineering consultants to develop the plan. The committee assisted in the interview and selection process, and played a key management role in overseeing the development of the plan.

Community Survey:

The WQC assisted the consultant and Town staff to develop a survey which was distributed to the community. The survey measured beliefs, attitudes and behaviors throughout the community relating to water quality issues.

Web Site:

The WQC created a web site that provides both local and national information on water quality issues. Also included on the site are the committee's meeting schedules and agendas, as well as their meeting minutes, which provide the opportunity for additional public involvement and participation.

Additional steps in further developing and implementing the BMP's within this program include obtaining the services of citizen volunteers. This will be accomplished through various means including but not limited to the following:

- Advertising through the Town's websites, local news papers, public notice locations.
- Coordinating with the Community Development Corporation.
- Coordinating with Green up Day Coordinators.
- Announcements at publicly televised Town meetings.
- Coordination with the Town's Conservation Commission.

Available volunteers will be assigned to the development and implementation of specific BMP's identified under this program. Every attempt will be made to assign volunteers to BMP's they are most interested in. Once the groups are organized, a kick off meeting will be scheduled to begin developing the implementation plan for the BMP's. This would include the identification of necessary resources and the assignment of specific

responsibilities. The Town would develop a support structure to provide a point of contact and the necessary resources and assistance to implement the BMP's.

Section 4.2.2.2.2

The strategies outlined to obtain the services of citizen volunteers have been designed to encourage involvement from as many affected stakeholders as possible. For example, coordination with the Colchester Community Development Corporation attempts to engage public participation and involvement from the business community.

Section 4.2.2.2.3

In addition to complying with State and local public notice requirements, the public involvement activities included in the program are as follows:

- Continue and maintain storm drain stenciling throughout the MS4 with citizen involvement when available.
- Annual Green up day activities.
- Establish and support a citizen "storm water watch" group for impaired waters.
- Establish and support a citizen "storm water watch" group for un-impaired waters.

Section 4.2.2.2.4

The Town of Colchester, through its Department of Public Works will be responsible for the overall management and implementation of the public involvement and participation program. The Director of Public Works shall have the primary responsibility, and shall delegate specific tasks to key staff such as the department's engineer and/or the Operations Manager.

Section 4.2.2.2.5

The success of this minimum measure will be evaluated through developing and achieving measurable goals. The selection of measurable goals has been completed in a manner that allows the Town to gauge program effectiveness. Additionally the measurable goals have been based upon the needs and characteristics of the Town and the area served. Finally, they have been selected to ensure an integrated approach that fully addresses the requirements and intent of this minimum control measure.

Year	BMP's	Measurable Goals
1	<ol style="list-style-type: none"> 1. Stenciling Project. 2. Stream Corridor Clean-up. 3. Storm Water Watch Group. 	<ol style="list-style-type: none"> 1. Continue to maintain all storm water curb markers and stenciling within the MS4, using citizen volunteers when available. 2. Continue cleaning up the remaining illegal dump sites previously identified within the Sunderland Brook Watershed, and participating in annual Green Up Day activities, using citizen volunteers when ever possible. 3. Continue expanding citizen volunteer base for storm water watch groups.
2	<ol style="list-style-type: none"> 1. Stenciling Project 2. Stream Corridor Clean-up 3. Storm Water Watch Group 	<ol style="list-style-type: none"> 1. Continue to maintain all storm water curb markers and stenciling within the MS4, using citizen volunteers when available. 2. Continue cleaning up the remaining illegal dump sites previously identified within the Sunderland Brook Watershed, and participating in annual Green Up Day activities, using citizen volunteers when ever possible. 3. Continue expanding citizen volunteer base for storm water watch groups.
3	<ol style="list-style-type: none"> 1. Stenciling Project 2. Stream Corridor Clean-up 3. Storm Water Watch Group 	<ol style="list-style-type: none"> 1. Continue to maintain all storm water curb markers and stenciling within the MS4, using citizen volunteers when available. 2. Continue cleaning up the remaining illegal dump sites previously identified within the Sunderland Brook Watershed, and participating in annual Green Up Day activities, using citizen volunteers when ever possible. 3. Continue expanding citizen volunteer base for storm water watch groups.
4	<ol style="list-style-type: none"> 1. Stenciling Project. 2. Stream Corridor Clean-up. 3. Storm Water Watch Group. 	<ol style="list-style-type: none"> 1. Continue to maintain all storm water curb markers and stenciling within the MS4, using citizen volunteers when available. 2. Continue cleaning up the remaining illegal dump sites previously identified within the Sunderland Brook Watershed, and participating in annual Green Up Day activities, using citizen volunteers when ever possible. 3. Continue expanding citizen volunteer base for storm water watch groups.
5	<ol style="list-style-type: none"> 1. Stenciling Project 2. Stream Corridor Clean-up 3. Storm Water Watch Group 	<ol style="list-style-type: none"> 1. Continue to maintain all storm water curb markers and stenciling within the MS4, using citizen volunteers when available. 2. Continue cleaning up the remaining illegal dump sites previously identified within the Sunderland Brook Watershed, and participating in annual Green Up Day activities, using citizen volunteers when ever possible. 3. Continue expanding citizen volunteer base for storm water watch groups.

Section 4.2.3

Illicit Discharge Detection and Elimination

General Rationale

The BMP's identified under this minimum control measure are aimed primarily at improving total species numbers and species density in receiving waters through the reduction of toxins in storm water runoff.

There are no major alternative BMP's under this minimum control measure.

The implementation of this measure will require the support of both the community and its legislative body to support the enforcement of a local ordinance to regulate and prohibit illicit discharges.

The expected water quality outcomes under this minimum control measure are improvements in total species numbers and species density within receiving waters through the reduction of toxins in storm water runoff.

Section 4.2.3.2.1

The Town has completed a GIS base map of the Town's storm water system through the Chittenden County Regional Planning Commission. Mapping was completed using multiple information sources and procedures.

A storm water system inventory was completed for Colchester by the CCRPC in 2004. This information was collected through the examination of record drawings and field reconnaissance. This information was updated through field reconnaissance utilizing GPS technology. To ensure accuracy and completeness, Public Works maintenance personnel were assigned to reconnaissance teams, and, the inspection of record drawings was performed when needed.

The Town has also completed a storm water outfall inventory and assessment. This involved locating each outfall by coordinates, identifying the receiving waters, a structural and environmental assessment, and a prioritized maintenance and repair plan, including cost estimates where necessary. The Town's completed Storm Water Management Plan was used to locate outfall locations on a sub-watershed basis.

The Town continues to rely upon the CCRPC for mapping support, and will continue to do so into the future. As new storm water outfalls are constructed in Colchester, or information changes, the Town now requires developers to provide digital files to allow infrastructure databases to be updated. The Town is continuing to move toward developing in-house mapping capability.

Section 4.2.3.2.2

The Town currently relies upon local ordinances to prohibit illicit discharges into the MS4. The use of a local ordinance, versus other regulatory mechanisms, is believed to be the most practical and effective means of prohibiting illicit discharges within the MS4. The Town collected several model ordinances to serve as a guide. The adoption of the Town's ordinance involved a public hearing in compliance with State and public notice requirements, which provided the opportunity for public input and participation within the process.

Section 4.2.3.2.3

See Section 4.2.3.2.4

Section 4.2.3.2.4

The Town has completed a storm water outfall inventory and assessment. This has provided the locations and receiving waters for all storm water outfalls. Outfalls have been placed on a regular inspection schedule. An ordinance prohibiting illicit discharges has been developed which provides the authority for the Town to regulate and prohibit illicit discharges. The overall illicit discharge elimination plan contains the necessary procedures to locate and identify problematic areas, procedures to find specific sources within the problematic areas, a mechanism to remove or correct the illicit discharge, and procedures to document the efforts and results under the illicit discharge elimination plan.

Section 4.2.3.2.4.1

Storm water system base maps illustrating storm water outfall locations, and wastewater service area base maps, have been overlaid to identify priority areas for screening. Land use maps have also be used to identify land use patterns, such as industrial and commercial uses, that may create a higher likelihood of illicit connections. The establishment of Storm Water Watch Groups provides valuable information regarding dry weather, or other unusual flow characteristics that may be observed. Visual screening is accomplished through regular inspection as defined within the Town's IDDE Program. These inspections will include sampling when dry weather flows are observed.

Section 4.2.3.2.4.2

The Town utilizes a variety of techniques to trace the origin of illicit discharges once identified. The specific techniques may vary depending on such circumstances as the type of contaminate, the location of the discharge, the flow volumes within the storm sewer system, etc. Generally however, the Town may use methods that include dye-testing and smoke testing of buildings within a problematic area, tracing the discharge up stream in the storm sewer through additional sampling, use of video inspection equipment within the storm sewer system, and also the inspection of on-site waste water systems through

the use of the Town's staff. The Town currently has several staff positions that are qualified to perform such inspections.

Section 4.2.3.2.4.3

The procedures for removing the source of the illicit discharge are identified within the Town's Illicit Discharge Ordinance. The procedures include a process where the offending discharger would be notified and directed to correct the problem.

Section 4.2.3.2.4.4

All actions taken under the plan are documented. Documented actions will be included in all reports required under this General Permit, and will include such information as: the number of outfalls screened; any complaints received and corrected; and the number of discharges and quantities of flow eliminated.

Section 4.2.3.2.5

Educational outreach associated with the prevention and elimination of illicit discharges is targeted at public employees, business and the general public. Businesses and the general public will benefit from the planned activities outlined under Section 4.2.1.1. The Town's Community Development Office will also be used to serve as a delivery conduit of educational materials to the business community. Additional outreach to the general public will also be accomplished through the activities outlined in Section 4.2.2.3. As a part of the Town's program for Pollution Prevention and Good Housekeeping, education of public employees will be accomplished through annual training sessions associated with the prevention and elimination of illicit discharges.

Section 4.2.3.2.6

The Town of Colchester, through its Department of Public Works will be responsible for the overall management and implementation of the public involvement and participation program. The Director of Public Works shall have the primary responsibility, and shall delegate specific tasks to key staff such as the department's engineer and/or the Operations Manager.

Section 4.2.3.2.7

The success of this minimum measure will be evaluated through developing and achieving measurable goals. The selection of measurable goals has been completed in a manner that allows the Town to gauge program effectiveness. Additionally, the measurable goals have been based upon the needs and characteristics of the Town and the area served. Finally, they have been selected to ensure an integrated approach that fully addresses the requirements and intent of this minimum control measure.

Year	BMP's	Measurable Goals
1	<ol style="list-style-type: none"> 1. Storm sewer mapping. 2. IDDE Program 3. Educational outreach. 	<ol style="list-style-type: none"> 1. Update storm water base map as required. 2. Perform inspection of all storm water outfalls within MS4 designated area identified as potential hot spots or outfalls of concern within the Town's IDDE Program. 3. Identify any illicit discharges and take the appropriate actions to correct all illicit discharges detected. 4. Update training for public employees as a part of the Town's program for Pollution Prevention and Good Housekeeping. 5. Provide updated educational materials to the Colchester Community Development Corporation for distribution to the business community. 6. Continue accomplishing additional educational outreach as outlined in Section 4.2.2.2.3 7. Document all actions.
2	<ol style="list-style-type: none"> 1. Storm sewer mapping. 2. IDDE Program 3. Educational outreach. 	<ol style="list-style-type: none"> 1. Update storm water base map as required. 2. Perform inspection of all storm water outfalls within MS4 designated area identified as potential hot spots or outfalls of concern within the Town's IDDE Program. 3. Identify any illicit discharges and take the appropriate actions to correct all illicit discharges detected. 4. Update training for public employees as a part of the Town's program for Pollution Prevention and Good Housekeeping. 5. Provide updated educational materials to the Colchester Community Development Corporation for distribution to the business community. 6. Continue accomplishing additional educational outreach as outlined in Section 4.2.2.2.3 7. Document all actions.
3	<ol style="list-style-type: none"> 1. Storm sewer mapping 2. IDDE Program 3. Educational outreach 	<ol style="list-style-type: none"> 1. Update storm water base map as required. 2. Perform inspection of all storm water outfalls within MS4 designated area identified as potential hot spots or outfalls of concern within the Town's IDDE Program. 3. Identify any illicit discharges and take the appropriate actions to correct all illicit discharges detected. 4. Update training for public employees as a part of the Town's program for Pollution Prevention and Good Housekeeping. 5. Provide updated educational materials to the Colchester Community Development Corporation for distribution to the business community. 6. Continue accomplishing additional educational outreach as outlined in Section 4.2.2.2.3 7. Document all actions.

4	<ol style="list-style-type: none"> 1. Storm sewer mapping 2. IDDE Program 3. Educational outreach 	<ol style="list-style-type: none"> 1. Update storm water base map as required. 2. Perform inspection of all storm water outfalls within MS4 designated area identified as potential hot spots or outfalls of concern within the Town's IDDE Program. 3. Identify any illicit discharges and take the appropriate actions to correct all illicit discharges detected. 4. Update training for public employees as a part of the Town's program for Pollution Prevention and Good Housekeeping. 5. Provide updated educational materials to the Colchester Community Development Corporation for distribution to the business community. 6. Continue accomplishing additional educational outreach as outlined in Section 4.2.2.2.3 7. Document all actions.
5	<ol style="list-style-type: none"> 1. Storm sewer mapping. 2. IDDE Program 3. Educational outreach. 	<ol style="list-style-type: none"> 1. Update storm water base map as required. 2. Perform inspection of all storm water outfalls within MS4 designated area identified as potential hot spots or outfalls of concern within the Town's IDDE Program. 3. Identify any illicit discharges and take the appropriate actions to correct all illicit discharges detected. 4. Update training for public employees as a part of the Town's program for Pollution Prevention and Good Housekeeping. 5. Provide updated educational materials to the Colchester Community Development Corporation for distribution to the business community. 6. Continue accomplishing additional educational outreach as outlined in Section 4.2.2.2.3 7. Document all actions.

Section 4.2.4

Construction Site Storm Water Runoff Control

General Rationale

The BMP's identified under this minimum control measure are aimed primarily at improving the nutrient index within receiving waters by reducing the discharge of phosphorous and nitrogen, improving clean water species counts by reducing storm water runoff volume during construction before storm water controls are completed, and improving total number of species and species density by reducing the discharge of sediment and toxins that are generated by construction activities.

There are no major alternative BMP's under this minimum control measure.

The implementation of this measure will require the support of both the community and its legislative body to support the enforcement of local ordinances to regulate run off from construction sites.

The expected water quality outcomes under this minimum control measure are improvements in the nutrient index, clean water species, total species numbers, and species density within receiving waters through the reduction of phosphorus, nitrogen, sediment and toxins in storm water runoff.

Section 4.2.4.2.1

The Town relies upon the technical specifications within the Public Works Ordinances and the Town's Storm Water Ordinance as the mechanism to require erosion and sediment controls at construction sites. The language within this document works to ensure effectiveness in managing construction related erosion and sediment and other wastes generated from construction activities that may cause adverse impacts to water quality. These documents also ensure consistency with the requirements of the Secretary's general permits for storm water runoff from large and small construction sites.

The erosion control requirements within these documents apply to all land disturbances requiring a permit as required in the Town's Zoning Regulations. Currently, all land disturbances require a permit.

The Town reviews all construction activities involving land disturbance. This process relies upon the Public Works and Storm Water Ordinances for guidance. These documents are considered to be the most appropriate mechanism to require erosion and sediment controls at construction sites.

Section 4.2.4.2.2

All land disturbances will require a permit from the Town. All permits issued from the Planning and Zoning Office are evaluated by staff, either as an Administrative Review, or through the Town's Development Review Process. Inspection responsibilities for all such permits issued are assigned to the Town's inspectors. Any local violations would be noticed by the inspectors, with enforcement action, if necessary, taken by the Town of Colchester based upon the construction site erosion control requirements within the Town's Public Works and Storm Water Ordinances.

The Town will endeavor to inspect all construction sites as often as possible, with emphasis on larger projects, and those projects that are located in areas where run off to receiving waters is more likely. Inspections will also be targeted at phases of the construction that may be more susceptible to problems relating to construction site run off.

Through the permit application process, a determination will be made by the Planning and Zoning Office regarding the total area of land disturbance. This office will determine whether the one-acre and five-acre state regulatory thresholds are met, and report such activities to the Secretary of the Agency of Natural Resources to assure all such projects are properly permitted. During regular inspections, Town inspectors will inspect for obvious signs of non-compliance such as eroding soils and turbid waters on state permitted projects. Town inspectors will report any suspected violations on these projects to the Vermont Agency of Natural Resources.

Section 4.2.4.2.3

The Town of Colchester, through both its Public Works Department and Planning and Zoning Department will be responsible for the overall management and implementation of the Construction Site Storm Water Control Program. The Directors from these departments have the primary responsibilities, with specific tasks delegated to the Town Engineer and the Town's inspectors.

Section 4.2.4.2.4

The success of this minimum measure will be evaluated through developing and achieving measurable goals. The selection of measurable goals has been completed in a manner that allows the Town to gauge program effectiveness. Additionally, the measurable goals have been based upon the needs and characteristics of the Town and the area served. Finally, they have been selected to ensure an integrated approach that fully addresses the requirements and intent of this minimum control measure.

Year	BMP's	Measurable Goals
1	<ol style="list-style-type: none"> 1. Plan review. 2. Inspection and enforcement. 	<ol style="list-style-type: none"> 1. Conduct plan review for all land disturbances requiring permits under Town zoning. 2. Inspect all locally permitted projects causing land disturbance for compliance to local erosion control ordinance, and take appropriate actions, including enforcement for violations. Report any suspected violations to ANR.
2	<ol style="list-style-type: none"> 1. Plan review. 2. Inspection and enforcement. 	<ol style="list-style-type: none"> 1. Conduct plan review for all land disturbances requiring permits under Town zoning. 2. Inspect all locally permitted projects causing land disturbance for compliance to local erosion control ordinance, and take appropriate actions, including enforcement for violations. Report any suspected violations to ANR.
3	<ol style="list-style-type: none"> 1. Plan review. 2. Inspection and enforcement. 	<ol style="list-style-type: none"> 1. Conduct plan review for all land disturbances requiring permits under Town zoning. 2. Inspect all locally permitted projects causing land disturbance for compliance to local erosion control ordinance, and take appropriate actions, including enforcement for violations. Report any suspected violations to ANR.
4	<ol style="list-style-type: none"> 1. Plan review. 2. Inspection and enforcement. 	<ol style="list-style-type: none"> 1. Conduct plan review for all land disturbances requiring permits under Town zoning. 2. Inspect all locally permitted projects causing land disturbance for compliance to local erosion control ordinance, and take appropriate actions, including enforcement for violations. Report any suspected violations to ANR.
5	<ol style="list-style-type: none"> 1. Plan review. 2. Inspection and enforcement. 	<ol style="list-style-type: none"> 1. Conduct plan review for all land disturbances requiring permits under Town zoning. 2. Inspect all locally permitted projects causing land disturbance for compliance to local erosion control ordinance, and take appropriate actions, including enforcement for violations. Report any suspected violations to ANR.

Section 4.2.5

Post-Construction Storm Water Management in New Development and Redevelopment.

General Rationale

The BMP's identified under this minimum control measure are aimed primarily at improving clean water species counts by reducing or attenuating storm water runoff volume and by reducing the effects of storm water scouring and flooding.

There are no major alternative BMP's under this minimum control measure.

The implementation of this measure will require the support of both the community and its legislative body to support the enforcement of local ordinances to regulate post-construction storm water run off.

The expected water quality outcomes under this minimum control measure are improvements to the clean water species by reducing or attenuating storm water runoff volume and by reducing the effects of storm water scouring and flooding.

Section 4.2.5.1.2.1

The Town has developed and will continue to use local Zoning Regulations to provide the legal authorities and strategies to protect and regulate development in the stream corridors of storm water impaired waters as defined by 10 V.S.A § 1264 (a)(13).

Section 4.2.5.1.2.2

The Town has developed and submitted a plan to the VANR outlining options for enhanced protection of stream corridors of storm water impaired waters. The plan includes a map of stream corridors depicting areas that have been converted to impervious surface and areas that are undeveloped or have not been converted to impervious surface. The preparation of the plan was developing after review of riparian buffer and stream fluvial geomorphological information provided by the VANR as a result of the Agency's preparation of TMDL's as set fourth in 10V.S.A § 1264 (f)(3).

Section 4.2.5.1.2.2.1

The plan for enhanced protection of stream corridors of storm water impaired waters identifies options for ensuring enhanced protection as outlined.

Section 4.2.5.1.2.2.2

For those areas of stream corridors that have been developed or otherwise converted to impervious surfaces, the plan for enhanced protection of stream corridors of storm water impaired waters identifies options for stream corridor restoration as outlined.

Section 4.2.5.1.3

The Town of Colchester, through its Planning and Zoning Office, identifies and records the area of land disturbance and impervious surfaces for all projects requiring local permits. This information is reported to the State each year as a part of the MS4 Annual Report.

Section 4.2.5.2.1

The Town relies upon the technical specifications within the Public Works Ordinances and the Town's Storm Water Ordinances as the mechanism to address post-construction runoff from new development and redevelopment that result in a land disturbance of greater than one acre and that have less than one acre of impervious surface. The Ordinances contain a combination of structural and non-structural BMP's which are appropriate for the community and consistent with the Agency's 2002 Vermont State Storm Water Management Manual (and any amendments thereto). Additionally, the Ordinances ensure consistency with the requirements of the Secretary's general permits regulating storm water runoff from new development and redevelopment projects that have one or more acres of impervious surface. These post-construction storm water controls and requirements apply to all land disturbances requiring a permit as required in the Town's Zoning Regulations.

The Town reviews all construction activities involving land disturbance. Because this process relies upon the Public Works Specifications for guidance, these specifications are considered to be the most appropriate mechanism to require post-construction storm water controls for new development and redevelopment.

Section 4.2.5.2.2

All land disturbances require a permit from the Town. Through the issuance of a permit, the appropriate conditions are attached to the permit, that require the post-development landowner to perform the proper long-term operation and maintenance of the BMP's required through the review and approval process that are not taken under public ownership.

Section 4.2.5.2.3

The Town utilizes multiple mechanisms to accomplish reasonable and effective site inspection and enforcement of control measures for projects falling under both local and state jurisdiction. These include the following:

- The Town's full time Building Inspector position spends the majority of its time in the field inspecting new construction or re-construction in progress. Traveling to inspections throughout all areas of the community allows this position to make observations of storm water problems throughout the community.
- The Town's full time Life Safety Inspector position also spends the majority of its time in the field. This position performs several functions that result in extensive travel and observation throughout the community. These duties include post construction inspection of all new development or re-development to ensure compliance to all applicable fire codes, annual health and safety inspections of all rental housing units, and regular inspection of all on-site wastewater systems.
- The Town's Highway Division spends virtually all of its time on the Town's transportation system traveling throughout the community, which involves in many cases, performing maintenance on the public storm water system.
- As a part of this SWMP, as outlined in Section 4.2.2.2.3, the Town has organized Storm Water Watch Groups that provide the opportunity for substantial observation and feedback regarding storm water controls throughout the community.
- Also as a part of this SWMP, as outlined in Section 4.2.3.2.4, the Town has implemented a regular inspection program for storm water outfalls throughout the MS4 designated area. Considering that ultimately all storm water drains to these outfalls, this creates the opportunity to identify up stream storm water control problems that can be traced, identified and addressed appropriately.

In each case, these activities provide multiple opportunities for the Town to observe and react to storm water control problems for both new development and re-development, and report the observations to the appropriate jurisdiction.

Section 4.2.5.2.4

The Town of Colchester, through both its Public Works Department and Planning and Zoning Department are responsible for the overall management and implementation of the post-construction storm water management program. The Directors from these departments have the primary responsibilities, with specific tasks delegated to the Public Works Operations Manager, Town Engineer, Town's inspectors, and citizen storm water watch groups.

Section 4.2.5.2.5

The success of this minimum measure will be evaluated through developing and achieving measurable goals. The selection of measurable goals has been completed in a manner that allows the Town to gauge program effectiveness. Additionally, the

measurable goals have been based upon the needs and characteristics of the Town and the area served. Finally, they have been selected to ensure an integrated approach that fully addresses the requirements and intent of this minimum control measure.

Year	BMP's	Measurable Goals
1	<ol style="list-style-type: none"> 1. Development review process. 2. Operation and maintenance. 3. Inspection and enforcement. 	<ol style="list-style-type: none"> 1. Conduct development review process for all land disturbances requiring permits and require the appropriate post-construction storm water controls. 2. Attach O&M permit conditions to approvals for all land disturbances that are not taken under public ownership. 3. Perform inspection activities as outlined in Section 4.2.5.2.3 and report any suspected violations to the appropriate jurisdiction.
2	<ol style="list-style-type: none"> 1. Development review process. 2. Operation and maintenance. 3. Inspection and enforcement. 	<ol style="list-style-type: none"> 1. Conduct development review process for all land disturbances requiring permits and require the appropriate post-construction storm water controls. 2. Attach O&M permit conditions to approvals for all land disturbances that are not taken under public ownership. 3. Perform inspection activities as outlined in Section 4.2.5.2.3 and report any suspected violations to the appropriate jurisdiction.
3	<ol style="list-style-type: none"> 1. Development review process. 2. Operation and maintenance. 3. Inspection and enforcement. 	<ol style="list-style-type: none"> 1. Conduct development review process for all land disturbances requiring permits and require the appropriate post-construction storm water controls. 2. Attach O&M permit conditions to approvals for all land disturbances that are not taken under public ownership. 3. Perform inspection activities as outlined in Section 4.2.5.2.3 and report any suspected violations to the appropriate jurisdiction.
4	<ol style="list-style-type: none"> 1. Development review process. 2. Operation and maintenance. 3. Inspection and enforcement. 	<ol style="list-style-type: none"> 1. Conduct development review process for all land disturbances requiring permits and require the appropriate post-construction storm water controls. 2. Attach O&M permit conditions to approvals for all land disturbances that are not taken under public ownership. 3. Perform inspection activities as outlined in Section 4.2.5.2.3 and report any suspected violations to the appropriate jurisdiction.
5	<ol style="list-style-type: none"> 1. Development review process. 2. Operation and maintenance. 3. Inspection and enforcement. 	<ol style="list-style-type: none"> 1. Conduct development review process for all land disturbances requiring permits and require the appropriate post-construction storm water controls. 2. Attach O&M permit conditions to approvals for all land disturbances that are not taken under public ownership. 3. Perform inspection activities as outlined in Section 4.2.5.2.3 and report any suspected violations to the appropriate jurisdiction.

Section 4.2.6

Pollution Prevention/ Good Housekeeping for Municipal Operations

General Rationale

The BMP's identified under this minimum control measure are aimed primarily at improving the nutrient index within receiving waters by reducing the discharge of phosphorous and nitrogen, and improving the total number of species and species density by reducing the discharge of sediment and toxins that can be generated by municipal operations.

There are no major alternative BMP's under this minimum control measure.

The implementation of this measure will require an increased level of awareness on the part of public employees of how the Town's municipal operation can contribute to water quality both positively and negatively.

The expected water quality outcomes under this minimum control measure are improvements in the nutrient index, total species numbers, and species density within receiving waters through the reduction of phosphorus, nitrogen, sediment and toxins in storm water runoff.

Section 4.2.6.1.2

On February 28, 2002, representatives from the Agency of Natural Resource's Municipal Compliance Assistance Program inspected the Town's facilities and issued a report outlining recommended improvements to the facilities. On July 16, 2002, the Town's facilities were subjected to an unannounced environmental audit by the U.S. Environmental Protection Agency, which resulted in an additional written report outlining both required and recommended improvements to the facilities. At this point, all required and recommended improvements required by both agencies have been completed. The Town of Colchester shall continue to maintain the improvements and procedures outlined within these environmental audits, and will schedule a follow up MCAP audit within this permit cycle.

Section 4.2.6.1.3

None

Section 4.2.6.2.1

The Town of Colchester has four municipal operations that are impacted by our operation and maintenance program. These include the following:

Highway Maintenance:

Snow Removal Activities: - The Town's snow and ice removal procedures are designed to minimize the use of de-icers and abrasives that may ultimately enter receiving waters. Colchester does not have a "bare roads" policy. The application of de-icers is limited to specific phases of storms and types of weather conditions. During snow events, de-icers are applied when precipitation is beginning to prevent compaction and bonding of snow to the roadway. Under ordinary circumstances, de-icers will not be applied again until the storm has ended to restore the paved surface. To avoid excessive use of de-icers, these materials are not applied at temperatures below their optimal effectiveness range. During freezing rain, or ice storms, de-icers are applied as needed throughout the entire storm event.

The use of abrasives is limited to non-paved roads in rural sections of the community, and paved roads when temperatures are too low for de-icers. The application of abrasives on paved roads is typically limited to critical areas such as steep grades, sharp corners and roadway intersections.

All primary snow removal equipment operated by the Town is equipped with on-board computers that control and regulate the application rates of materials. The Town operates no snow storage areas.

De-icers are stored in an enclosed facility. Abrasives are stored in an open pile on the ground at the Public Works Maintenance Facility. Minimal amounts of de-icers are added to the stock pile to prevent freezing. A silt fence is erected and maintained around the stock pile, and an earthen berm and vegetative buffer strip has been constructed at the down stream end of the site.

Street Sweeping – The Town owns its own street sweeper. The equipment removes debris from the roadways by vacuum which reduces airborne dust. Town roads are cleaned both in the spring and fall of the year.

Basin Cleaning – Storm water basins are currently cleaned on an as needed basis. Emphasis is placed on storm water basins located on steep grades, and structures located near outfalls to receiving waters. Basins are inspected during cleaning.

Storm Water Outfalls – The Town has inventoried, assessed and mapped all of its storm water outfall structures. These structures have been placed on a regular inspection schedule as outlined in the Town's Storm Water Outfall Assessment Program. Inspection forms are used to record any damage or signs of failure. Observations of flow characteristics are also recorded. The inspection of storm water outfalls also will involve the activities outlined in Section 4.2.3 of this permit.

Drainage Ways – Roadside ditches and drainage ways are inspected routinely during other highway maintenance operations such as street sweeping, grading of gravel roads

and roadside mowing. Solid wastes are removed from these drainage ways annually as a part of the Town's Green-up day activities. Roadside mowing is completed 3-4 times per year, or as needed, to keep the drainage ways clear. Regradeing of drainage ways is only done on an as-needed basis to minimize any unnecessary soil disturbance.

Dust Control – Dust control material for gravel roads is limited to one application per year. Diluted liquid chloride is used for dust control. Applications are carefully applied to avoid any overspray into roadside drainage ways. The application of dust control material is coordinated with weather conditions to avoid excessive runoff into drainage ways.

Material Storage – Construction materials are stored within the Public Works Maintenance Facility yard. An earthen berm and vegetative buffer strip has been constructed at the lower end of the site to prevent any runoff or discharge of sediment from the site.

Buildings and Grounds Maintenance:

Sanitary Facilities and Wastes – All Town facilities and primary parks are equipped with bathroom facilities. All facilities are served by on-site wastewater systems, which are pumped and inspected every two to three years depending on the facility and size of tank.

Solid Wastes – All solid wastes from Town facilities are removed regularly on a contractual basis. Solid wastes from park lands are collected daily by Town maintenance crews. All solid wastes are properly disposed of in approved landfills.

Storm Water Runoff – Most Town facilities are located on relatively flat ground where no concentrated discharge occurs. On facilities that have concentrated discharges, a mixture of BMP's including grass lined swales, storm water ponds, storm water control berms and vegetative buffer strips are used. These controls are monitored regularly during grounds maintenance operations.

Fertilization – All types and quantities of fertilizers applied to Town owned grounds are in compliance to all state and federal guidelines regulating the use of fertilizers. To prevent over application of phosphorus, soil tests are conducted in advance of applications. Nitrogen is controlled through the use of slow release materials which allow the nitrogen to be used by the soil before reaching ground water. Fertilizers are applied primarily to athletic fields with general open space receiving only limited applications. Any over spray of fertilizers onto impervious surfaces are swept off after each application. Fertilizers are only purchased on an as-needed basis, and are stored inside under cover within approved containers before application.

Pesticides – All types and quantities of pesticides applied to Town owned grounds are in compliance to all state and federal guidelines regulating the use of pesticides. The Town uses Integrated Pest Management within its pesticide program for Town owned grounds. This involves testing of soils before applications to determine whether the application of pesticides is necessary.

Any over spray of pesticides onto impervious surfaces are swept off after each application. Pesticides are only purchased on an as-needed basis, and are stored inside under cover within approved containers before application.

Animal Waste – Town parks and recreational paths are equipped with supplies to allow pet owners to remove and dispose of pet waste within Town parks.

Equipment Maintenance:

Equipment Repair – All Town owned equipment is maintained and repaired within the Town's Public Works Maintenance Facility. Waste oils are collected and burned within an approved waste oil furnace within the maintenance facility. Coolants are recycled through equipment at the facility. All uniforms and rags that may be contaminated with oils, greases and other materials are collected within approved containers and cleaned on a contractual basis by an industrial cleaner. All other solid wastes, including batteries, discarded parts, and oil absorption materials, are collected and stored in approved containers, and disposed of at the appropriate facilities. Where fluids are stored that may be subject to accidental spills, double containment is provided. Aerosol products are managed to minimize the number of containers actively in use within the shop area.

Equipment Storage – The majority of the Town's equipment is stored inside. The Town operates a Capital Equipment Program that allows all equipment to be replaced on a regular basis. Together with the facilities computerized work order and maintenance systems, the Town's equipment is in very good condition, and is generally free of fluid leaks, rust, paint flakes and other possible contaminants that may be washed from the site during storm water flow conditions.

Equipment Washing – The facilities floor drains are connected to an oil and grease/water separator, which is connected to a holding tank. The tank is pumped on an as-needed basis, with the material disposed off in the Town's sewer system. The washing area outside is located such that wash water runs to a vegetated area and dissipates into the ground. Total outside equipment washing does not exceed thirty vehicles per week. There is no steam cleaning or engine degreasing performed during outside equipment washing.

Fueling Facility – The Town's fueling facility is served by two UST's with secondary containment. The facility is covered by a fueling canopy to avoid the collection of rain water and subsequent run off from the fueling pad. The fueling pad is slightly elevated to avoid contact from any other site run off that may be directed to the pad. The overall site is graded such that runoff is not directed toward the pad. The fueling system is equipped with both spill and vapor recovery systems. The system is also equipped with an electronic monitoring system that automatically reports fuel levels on a daily basis, and is equipped with an audible alarm connected to a leak detection system.

Wastewater System Maintenance:

Overflow Controls – All Town wastewater pumping stations are equipped with either auxiliary power capability, or emergency storage to prevent overflow conditions. All waste water pumping stations are inspected daily. In the event of an over flow, all practical steps are taken to prevent a discharge including but not limited to, erecting containment systems, flow diversion or emergency pumping and tanker truck operations.

Chemical Pre-treatment – All pumping stations equipped with chemical pre-treatment systems store their chemicals in above ground double containment tanks. All waste water pumping stations are inspected daily to ensure both the normal operation of the facilities, as well as the integrity of chemical storage tanks and other systems. Any problems are either repaired immediately by maintenance personnel, or if immediate repairs are not possible, reported to the Public Works Operations Manager to develop and implement a repair plan.

New Construction and Land Disturbance

New construction and land disturbance associated with municipal operations shall be addressed through the provisions of Sections 4.2.4 and 4.2.5 of this permit.

Training

Town maintenance crews shall receive annual training associated with the correct procedures to minimize the discharge of sediments, toxins, phosphorus, nutrients and other harmful contaminants, that may be caused through the Town's municipal operations. Training exercises shall contain at a minimum, an understanding of the location and characteristics of the natural resources that may be vulnerable to municipal operations, sources of contamination that may be generated from the municipal operations, and how they may impact natural resources, procedures to minimize the potential effects of municipal operations on natural resources, and the specific requirements and conditions of the Town's Phase II permit.

Section 4.2.6.2.3

The Town of Colchester, through its Public Works Department will be responsible for the overall management and implementation the pollution prevention/good housekeeping program. The Director of Public Works will have the primary responsibility, with many of the specific tasks delegated to the Public Works Operations Manager.

Section 4.2.6.2.4

The success of this minimum measure will be evaluated through developing and achieving measurable goals. The selection of measurable goals has been completed in a manner that allows the Town to gauge program effectiveness.

Additionally, the measurable goals have been based upon the needs and characteristics of the Town and the area served. Finally, they have been selected to ensure an integrated approach that fully addresses the requirements and intent of this minimum control measure.

Year	BMP's	Measurable Goals
1	<ol style="list-style-type: none"> 1. Municipal Compliance Assistance Program. 2. Operation and Maintenance Program. 3. Employee Training. 	<ol style="list-style-type: none"> 1. Maintain the improvements and procedures outlined in the MCAP program. 2. Maintain operation and maintenance program as identified in Section 4.2.6.2.1. 3. Conduct employee training as specified in Section 4.2.6.2.1
2	<ol style="list-style-type: none"> 1. Municipal Compliance Assistance Program. 2. Operation and Maintenance Program. 3. Employee Training. 	<ol style="list-style-type: none"> 1. Maintain the improvements and procedures outlined in the MCAP program. 2. Maintain operation and maintenance program as identified in Section 4.2.6.2.1. 3. Conduct employee training as specified in Section 4.2.6.2.1
3	<ol style="list-style-type: none"> 1. Municipal Compliance Assistance Program. 2. Operation and Maintenance Program. 3. Employee Training. 	<ol style="list-style-type: none"> 1. Maintain the improvements and procedures outlined in the MCAP program. 2. Maintain operation and maintenance program as identified in Section 4.2.6.2.1. 3. Conduct employee training as specified in Section 4.2.6.2.1
4	<ol style="list-style-type: none"> 1. Municipal Compliance Assistance Program. 2. Operation and Maintenance Program. 3. Employee Training. 	<ol style="list-style-type: none"> 1. Maintain the improvements and procedures outlined in the MCAP program. 2. Maintain operation and maintenance program as identified in Section 4.2.6.2.1. 3. Conduct employee training as specified in Section 4.2.6.2.1
5	<ol style="list-style-type: none"> 1. Municipal Compliance Assistance Program. 2. Operation and Maintenance Program. 3. Employee Training. 	<ol style="list-style-type: none"> 1. Maintain the improvements and procedures outlined in the MCAP program. 2. Maintain operation and maintenance program as identified in Section 4.2.6.2.1. 3. Conduct employee training as specified in Section 4.2.6.2.1