



CITY OF BURLINGTON

PHASE II STORMWATER  
2011 ANNUAL REPORT

General Permit #3-9014  
NPDES Permit #VTR040000

Submitted by:  
The City of Burlington  
Stormwater Management Program  
Burlington Public Works

April 2012

## A. INTRODUCTION

This report is being submitted as part of the City of Burlington's Phase II Stormwater Plan per the NPDES (National Pollution Discharge Elimination System) requirements. It follows the same format used in previous years and includes the following information as discussed in Section H of the city's plan:

- Status of compliance with permit conditions.
- Results of information collected.
- A summary of stormwater activities planned for the next annual cycle.
- Any proposed changes as outlined in Section F of the stormwater plan.
- If applicable, provide notice as to whether or not another entity is responsible for any of the permit obligations.

Happy highlights of 2011 include the launch of a City wide update of GIS data for stormwater, wastewater and water infrastructure. This update, which includes attention toward using GIS for asset management (tracking of maintenance records), is a critical step in increasing the efficiency of our maintenance and planning activities. In October we kicked off a wetland restoration/water quality improvement feasibility, design and implementation project for a small Lake Champlain tributary ("Oakledge" tributary which drains to Blanchard Beach). Implementation is scheduled for late summer 2012.

Not-so happy highlights of 2011 include, of course, extreme rainfall events and unfavorable antecedent moisture conditions, all of which contributed to highlighting the challenges of aging infrastructure and the need for proactive assessment and repair planning. Included in the damage was the failure of a section of corrugated metal outfall pipe which was replaced late spring 2011. There were also numerous sinkholes and catch basin failures and several slope failures (due to toe scour from the Lake) along the Burlington bike path. This, combined with frequent calls from citizens as the result of historically high groundwater tables, made for a very very busy (storm)water related year.

## B. STATUS OF COMPLIANCE WITH PERMIT CONDITIONS AND INFORMATION RESULTS

This section outlines efforts taken by the City of Burlington under each of the six minimum control measures in accordance with our revised Stormwater Management Plan (2008).

### **1. Public Education/Outreach Program**

The City of Burlington continues to be a participant in the Chittenden County Regional Stormwater Education Program (RSEP) in accordance with section E1 of the stormwater plan.

During the 2011-2012 program year (March 1, 2011 through February 29, 2012), the Regional Stormwater Educational Program (RSEP) focused on using paid media and a drive to website to educate the public about the effects of stormwater runoff on water bodies and the simple steps that the public can take to reduce these effects. As in previous years, key messages of the campaign have remained the same, and include stormwater runoff and stormwater systems education, tips on prevention methods related to pet waste, car washing, fertilizer/chemicals, and home construction erosion or debris. The focus of this program year was to reduce fertilizer use and runoff through the use of soil testing to determine if fertilizer was needed. Marketing Partners, Inc. continues to work on a contract basis with RSEP to implement the public outreach campaign. The complete 2011 Summary can be found in Appendix A, pages 11-12.

The City undertook several other efforts to educate and communicate with the public regarding stormwater, including an educational presentation on stormwater issues and on the ongoing development of the Burlington stormwater program at the Neighborhood Planning Assemblies (NPAs) in 6 of the 7 wards.

- Ward 4 & 7, April 19, 2011
- Ward 6, June 2, 2011
- Ward 2 & 3, June 9, 2011
- Ward 5, July 26, 2011

Additionally, the following presentations were given:

- Training on Low Impact Development and BMPS to Burlington Planning Commission (January 6, 2011)
- EPSC and SW Management training for Chittenden County based Green Building course (October 26, 2011)

The Burlington Stormwater Management Program (BSWMP) and the Department of Public Works continues to use social media tools (Front Porch Forum, FaceBook – 149 likes and Twitter – 479 followers) to communicate information about projects and share information about workshops and meetings. Follow us at @btvdpw on Twitter or <http://www.facebook.com/BTVDPW> on Facebook.

Our Stormwater website has been updated to include a specific “Get Involved” link where we display stormwater related workshops, grant or volunteer opportunities:

<http://burlingtonvt.gov/DPW/Stormwater/Get-Involved/>

## **2. Public Involvement/Participation**

On May 7, 2011 the Community and Economic Development Office (CEDO) once again played a key role in sponsoring Green Up Day in Burlington. In total, volunteers collected 3.0 tons of garbage and 91 tires and 0.5 cubic yards of scrap metal. As in previous years, the Englesby Brook watershed was also targeted on Green Up Day.



*Englesby Ravine gets Greened Up*

The BSWMP also encouraged participation in the “Make Your Own Rain Barrel” Workshops offered by Resource, Inc. on Pine Street in Burlington by co-promoting the workshops and offering a \$40 discount on the

\$60 price of the workshop for Burlington residents who filled out the Discount Program application (see Appendix B, page 13)

Burlington citizens also participated in the stream clean-up of Sunderland Brook led by the Official (vs. Pilot) Chittenden County Stream Team October 22, 2011. The BSWMP looks forward to more CCST events and co-promoting those learning and ACTION opportunities via our social media outlets (Appendix B, pages 14-17).

### **3. Illicit Discharge and Elimination (and Outfall Inspections)**

We have completed inspection and performed optical brightener testing for 43 of our 45 mapped outfalls. The remaining 2 will be inspected and sampled in 2012. All outfalls were negative for optical brighteners. However, a number of outfalls were identified as being in poor or failed condition, with conditions likely exacerbated by the extreme storm conditions of 2011. These outfalls have been identified for additional study using planning money from the Clean Water SRF in 2012, and repair/stabilization design in 2012/2013 and implementation in 2013.

Additionally, due to our mapping update, which involved review of the last 30 years of record drawings, as well as “field luck”, we have added an additional 27 outfalls to our outfall list. Some of these outfalls are owned/operated by other City departments, but from now, will be inspected by the BSWMP to ensure compliance of all City departments with the MS-4 permit. These “new” outfalls will be fully inspected, added to our GIS database, and tested for OB in 2012.

Our regular semi-annual Wastewater Division sewer dye testing IDDE work (a requirement of our WWTP NPDES permits) related to sewer line crossing of streams and rivers continues to occur. This involves adding a strong concentration of dye upstream of the crossing and placing optical brightener (OB) pads in multiple spots downstream to pick up fluorescence from the dye. All the streams and rivers tested negative for dyes during the regular semi-annual testing for 2011.

### **4. Construction Site Stormwater Runoff Control**

Article 3 of Chapter 26 of the City Ordinance “Wastewater, Stormwater and Pollution Control” continues to provide for stronger local regulatory oversight of projects engaging in earth disturbance. Specifically, all projects disturbing greater than 400 sq. ft. are reviewed by BSWMP for compliance with minimum Erosion Prevention and Sediment Control measures.

#### *Project Review*

In 2011, approximately **78 projects** were reviewed and accepted under this program. All projects are reviewed for compliance with State jurisdictional triggers related to earth disturbance, thus ensuring that the project complies with VT DEC requirements.

At minimum, projects must submit a “Small Erosion and Sediment Control Form” which is reviewed by DPW (see [link](#) on DPW website<sup>1</sup>). Projects subject to Major Impact, Subdivision or Planned Unit Development zoning permit review must submit a more formal EPSC plan typical of that which is submitted to the State. As part of approval of the small project plan, a moderate plan or a major plan, a formal acceptance letter and notice has been established to clearly outline any additional conditions and inspections that may be required

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<sup>1</sup> <http://www.burlingtonvt.gov/DPW/Stormwater/Stormwater-Management/>

(see 2009 Annual Report for an example). If the project requires a state CGP or INDC, applying for and providing proof of coverage prior to construction is included in the conditions of the City Stormwater Approval.

Projects that are reviewed are entered into and tracked in the City's land record based permitting database currently used by the Planning & Zoning, Code Enforcement and Trades Inspection programs. Code enforcement has been working with the BSWMP to ensure that sites have been stabilized prior to issuance of certificates of occupancy.

#### *Programmatic Development*

Work is underway to refine the level of review based on the risk (disturbance area predominantly, though slope and proximity to waters will also play a factor) in order to simplify the review, documentation and close out process in favor of more frequent inspections and compliance follow up.

### **5. Post-Construction Stormwater Management in New Development and Redevelopment**

#### *Project Review*

In 2011, approximately **40 projects** were formally reviewed and accepted. All projects are reviewed for compliance with State jurisdictional triggers related to the creation of new impervious or redevelopment of impervious, thus ensuring that the project complies with VT DEC requirements. Residential (single family or duplex) properties with total proposed impervious surface greater than 2500 s.f. (the average amount of impervious for these uses) are required to submit a "stormwater questionnaire" to evaluate whether or not they are increasing the amount of connected impervious substantially (Appendix C, pages 18 - 19). Technical assistance and a site visit are often necessary to help the homeowners fill out the form as well as to help them minimize the amount of connected impervious. BMPs for mitigation of residential impervious include disconnected downspouts, strip driveways and rain barrels.



*Strip driveway instead of full width paving*

Commercial projects with increases in impervious or significant redevelopment are reviewed and are required to treat/detain (depending on the sewershed/watershed) 100% of the net new impervious as well as a significant portion (25-50%+) of existing/redeveloped impervious. Typical stormwater BMPs include pervious pavers, pipe storage, sand filters and tree plantings.

If the project requires a state stormwater 9015 or INDS permit, applying for and providing proof of coverage prior to construction is included in the conditions of the City Stormwater Approval.

Projects that are reviewed are entered into and tracked in the City's land record based permitting database currently used by the Planning & Zoning, Code Enforcement and Trades Inspection programs.

### *Programmatic Development*

While all projects disturbing 400 sq. ft. of earth are eligible for stormwater review by the BSWMP, in practice we are focusing predominantly on 1) commercial properties that are increasing impervious surface and/or undergoing significant redevelopment and 2) residential projects where the property has, or will be creating, more than the average amount of impervious associated with single family homes or duplexes (~2500 s.f.)

Work is on-going to document and codify jurisdictional triggers for the various levels of stormwater review and the specific runoff management standards and to eventually incorporate these formally into Chapter 26. The developing jurisdictional framework is based a combination of use (residential vs. commercial), amount of total impervious on the property and amount of net new impervious and redevelopment. The standards that must be met vary slightly based on whether the project discharges to the separate storm system vs. the combined sewershed, and then for projects in the separate storm sewer, whether they are discharging to Lake Champlain, the Winooski River, an impaired stream or an unnamed tributary (many of which are experiencing erosion).

## **6. Pollution Prevention and Good Housekeeping for Municipal Operations**

### *Catch Basin Maintenance and Infrastructure Repair*

In our first full year of non-contracted catch basin cleaning since the grant (SAFETEA-LU) assisted purchase of a dedicated Stormwater Vac-Con the Street Maintenance group was able to inspect and clean over **1000** of our 2200 + catch basins. Approximately **270 tons** of material was removed as a result of these activities.



**"George" the SW Vac-Con and chief handler Bill Geehan**

Approximately **120 catch basins were repaired** over the course of 2011, and an outfall pipe (Dale Road outfall) was replaced after a failure of an existing corrugated metal pipe.

### *Street Sweeping*

As in all years, the City's 96 lane miles of roadway are swept at least once annually, with many areas swept more frequently. Additionally, every spring Operation Clean Sweep occurs. This uses the city's snow/maintenance lights to get parked cars off the streets, and involves three to four sweepers working nights to thoroughly clean every street. Street sweeping removed approximately **337<sup>2</sup> tons** of material from the roadway system in 2011, for a **total of 607 tons of grit/sediment** total removed with catch basin and street sweeping activities.

### *Mapping:*

All catch basin and manholes in the City ROW were captured using a high resolution GPS over the course of 2011 and incorporated into a draft Geodatabase using the ESRI infrastructure template. As part of the preparation, record drawings from the past 30 years were scanned and delivered to the mapping contractor for inclusion in the database. This includes records from the sewer separation project implemented in the late 1980s which had yet to be fully incorporated into the GIS.



*GPS mounted on moped for efficiency*

### *Pollution Prevention:*

While installation has been delayed until 2012 due to our busy 2011 season, we have completed the design, purchased the sedimentation tanks and Koala oil/grit separation system and permitted (Planning & Zoning) a much improved vehicle wash area for our DPW yard.

The Department of Parks and Recreation continues to manage 12 dog bag stations across the city; average annual bag usage is 110,000 dog poop bags.

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<sup>2</sup> CB and street sweeping grit totals (1120 tons) reported in the Annual 2010 report were substantially greater than the total amount of grit removal reported by the street maintenance division in 2011 (607 tons). This could be due to the intense CB cleaning effort undertaken in 2009 (after a long period of infrequent cleaning) and the timing of grit disposal at the landfill. We are working to standardize the timing of the handling of the grit to ensure that we have accurate totals for both the fiscal year time period (July 1 – June 30) and the calendar year period so that we can use the grit removal data to evaluate the effectiveness of these BMPs.



*Oakledge Park Poop Scooping Station*

### *Employee Education*

Employees of the Department of Public Works regularly attended a variety of trainings/presentations and a conference during 2011 to gain additional information related to the various minimum measures:

- Municipal Employee Training – “Spill Prevention and Mitigation” – September 15, 2011 (6 employees)
- Philly LID Symposium – September 25 – 28, 2011 (1 employee)

### C. ACTIVITIES PLANNED FOR THE CURRENT ANNUAL CYCLE

All activities starting in 2012 shall be in accordance with the current management plan. This includes training, construction site review and monitoring, post-construction review of new projects and monitoring of completed projects, and continued review of municipal operations.

Additional activities planned for 2012:

#### *MM1:*

- Increase use of social media to communicate with citizens regarding stormwater topics including homeowner stormwater management tips, workshop opportunities and driving traffic to Stormwater website and Smartwaterways.org
- Maintain a dynamic City Stormwater website to include information on stormwater related workshops and presentations (“Get Involved”) and stormwater related projects (“Projects”)
- Update “Stormwater Links” on City Stormwater website to include more up-to-date and interesting links
- Present to City Council on progress to date (2009 – 2012) of BSWMP – will be broadcast on Channel 17

#### *MM2:*

- Promote the rain barrel making workshops being held at Resource via outreach mechanisms above. Subsidize cost for Burlington residents to attend workshop.
- Promote the WNRCD “Let It Rain” program; provide additional subsidies for Burlington citizens if fiscally possible
- Explore possibility of providing rebates to homeowners who are installing stormwater management practices (rain barrel, rain garden, pervious pavement etc.)

#### *MM3*

- Complete outfall inspection, IDDE and high resolution mapping for “new” outfalls.
- Perform additional IDDE testing on any questionable connections found as part of mapping/inventory

update

*MM4:*

- Revise construction stormwater review process in AMANDA permit database to streamline review and project signoff based on project “risk”
- Develop “sample applications” for small projects
- Develop EPSC project forms/checklists for moderate and major projects [**Continue**]
- Increase # of field inspections, minimum 25% of projects [**Continue**]

*MM5:*

- Revise post construction stormwater management review process in AMANDA permit database to streamline review and project signoff based on project impact (amount of total and new impervious)
- Inspect/obtain inspection certification from minimum of 50% of projects with stormwater management installed under Chapter 26 (Continue)
- Finalize jurisdictional guidelines and management plan standards for all projects
- Implement grant funds from VTDEC (\$45K) and LCBP (\$25K) to provide water quality improvements for the southern outfall to Blanchard Beach (drains Flynn Avenue and City Public Oakledge Park) [**Continue**]
  - Final Design and Construction
- Design and Install a SilvaCell Tree/SW trench on Upper Cherry Street

*MM6:*

- Update stormwater infrastructure maps through SAFETEA-LU Stormwater Mitigation Grant; develop a GIS database with the potential for city wide asset management and hydrologic/hydraulic modeling. Prioritize complete mapping, inventory and development of H/H modeling for Englesby watershed in preparation for Flow Restoration Plan development [**Continue**]
  - Evaluate technology options for seamless update of GIS database catch basin service records from field
- Upgrade GPS unit to enhance ability to maintain an updated GIS database
- Clean a minimum of 850 catch basins (~1/3 of city’s CBs) with an emphasis on MS4 basins vs. catch basins draining to the combined sewer; record inspection data on CB inspection and cleaning form
  - If possible, enter previous years’ inspection data into new GIS asset database for historical record
- Develop a map of known corrugated metal stormwater pipes in system; begin video assessment of these pipes (estimate 10% - 25% of network to be video’d) for incorporation into SW infrastructure capital improvement plan
- Using Clean Water SRF, prioritize outfall repair list for outfalls in poor condition and begin design for repair for implementation in 2013
- Inspect, inventory and test outfalls not previously identified in the SW Plan (“new”) and update GIS outfall database
- Implement vehicle wash area design to maximize oil/grease/sediment removal before discharge to the Pine Barge Canal [**Continue**]
- Develop method (forms/GIS) for tracking street sweeping activities [**Continue**]
- Evaluate barriers to increasing street sweeping frequency
- Update City impervious data for ISU rate study in late 2012 in preparation of FY14 budget development and possible rate increase to more appropriately fund the BSWMP

D. PROPOSED CHANGES TO THE STORMWATER PLAN OR TIMELINE

Our MM2 compliance will be fulfilled, in part, by our participation and payment into the Chittenden County Stream Team. However, we will continue to support Green Up Day and will also look for other opportunities to increase public participation, including promoting and, where possible, subsidizing Burlington citizens participation in workshops (Resource make your own rain barrel workshops) and grant opportunities (Let It Rain).

Additionally, while will continue to ensure that outfalls are inspected and sampled twice in a permit cycle, we anticipate staggering the inspections so that approximately half are inspected and tested each year. At the end of each 2 year cycle, all outfalls will have been inspected and tested. We may also identify outfalls that need to be inspected yearly due to their condition.

We will document this plan/schedule more fully in our SWMP for the new MS-4 permit once it is released.

The contact for general correspondence should be changed to:

Megan Moir  
Stormwater Plangineer  
*234 Penny Lane*  
Burlington, Vermont 05401  
[mmoir@ci.burlington.vt.us](mailto:mmoir@ci.burlington.vt.us)  
802-540-1748 (ph)  
802-734-4595 (cell)

E. CHANGE IN RESPONSIBILITY FOR PERMIT OBLIGATIONS

No changes are proposed at this time.

F. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

  
\_\_\_\_\_  
Megan Moir, CPESC, CPSWQ,  
Stormwater Program Manager

5/7/12  
Date Signed

  
\_\_\_\_\_  
Steven Goodkind, P.E.  
Director of Public Works

5/7/12  
Date Signed

## APPENDIX A – PUBLIC OUTREACH AND EDUCATION

### Chittenden County Regional Stormwater Educational Program Annual Review: 2011- 2012 Program Year Summary

The 2011-2012 program year (March 1, 2011 through February 29, 2012) of the Regional Stormwater Educational Program (RSEP) maintained a consistent stream of public education and outreach. This year's program focused on using paid media and a drive to website to educate the public about the effects of stormwater runoff on water bodies and the simple steps that the public can take to reduce these effects. Given the record flooding of Lake Champlain in the spring and the widespread effects of Tropical Storm Irene in many parts of the state in late summer and fall, stormwater runoff and its impact on Vermont's water bodies has never been more apparent.

As in previous years, key messages of the campaign have remained the same, and include stormwater runoff and stormwater systems education, and tips on prevention methods related to fertilizer/chemicals. The focus of this program year was to reduce fertilizer use and runoff through the use of soil testing to determine if fertilizer was needed.

Marketing Partners, Inc. continues to work on a contract basis with RSEP to implement the public outreach campaign. RSEP Communications Plan goals achieved in 2011-2012 have included:

- Updated television media from analog to digital and closed-captioning, update print ads for new year of campaign.
- Extension of the "Soil Test" campaign in partnership with the University of Vermont (UVM) Agricultural Testing Lab to provide residents within the MS4 a free soil test. The ad campaigns drove people to the RSEP website where 163 eligible residents downloaded a printable coupon during this program year. UVM continues to track the number of coupons redeemed during paid media campaigns running in the spring and fall. Thirty-six tests were submitted (an increase of 11 from 2010).
- The 2011 spring media campaign included four weeks of radio spots on VPR, WCPV, and WEZF; four weeks of cable TV spots in the Chittenden County area; four weeks of spots during local news on broadcast TV; print ads in member community newspapers; and three weeks of advertising on Front Porch Forum (an opt-in community e-newsletter). The spring 2011 media budget totaled \$19,353, an increase from 2010.
- Another paid media campaign was completed throughout Chittenden County in fall of 2011 that consisted of two weeks of print ads in member community newspapers; two weeks of radio spots on VPR, WCPV, and WEZF; two weeks of cable TV spots in the Chittenden County area; two weeks of spots during local news on broadcast TV; and two weeks of placement on Front Porch Forum. The fall 2011 ad campaign budget totaled \$10,000. This also represents an increase in media budget compared to fall 2010.
- Continued to compile website visibility tracking data and coupon download and redemptions in order to monitor outreach effectiveness.
- Continued to collaborate with partners in furthering stormwater education outreach.

# APPENDIX A – PUBLIC OUTREACH AND EDUCATION

## Gross Impressions/Audience Reach Chittenden County Regional Stormwater Educational Program Annual Review: 2010-2011 Program Year Summary

### 1. Unpaid Media (Public Relations)

In program year 2010-2011, there was no public relations effort. There were no impressions measured.

### 2. Total Paid Media Impressions, 2010-2011 (Spring and Fall campaigns)

The 2010-2011 paid media budget was less than half of the previous program year. The number of media spots, time period that paid media appeared, and the number of media outlets were reduced.

Print: 509,569\*

Cable TV: 15,444 (Nielsen program ratings)

Radio: 130,172 (based on Arbitron ratings of adult listeners age 25-54, M-F 6a – midnight)

Online: 67,800 (based on circulation reported by media outlet)

Total impressions: 722,985

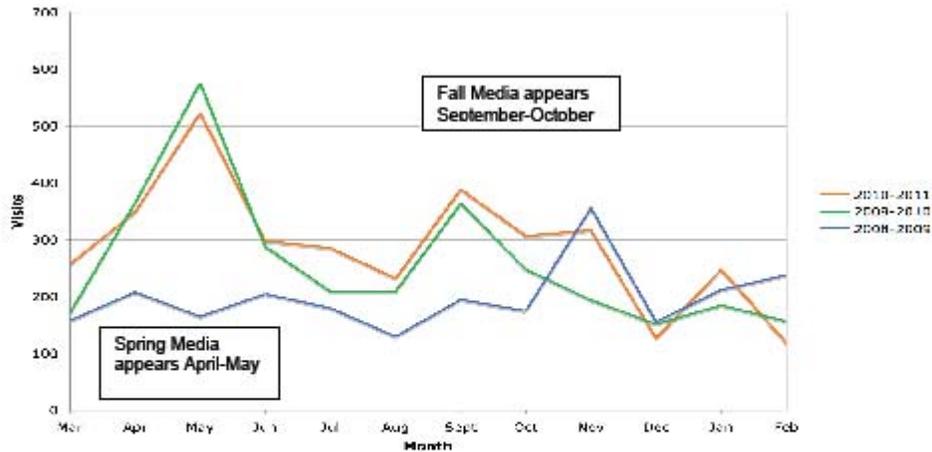
*\*Impressions are based on circulation as reported by outlet and an average readership of 2.34 per issue for community newspapers.*

### 3. Website

Below is the website visitor information for 2010, as compared to the two most recent preceding years. Website traffic increases are marked in conjunction with paid media campaigns.

#### Smartwaterways.org Website Visits

##### 3-Year Comparison



*NOTE: This chart includes data Google Analytics for reporting. In program years 2004-5 to 2007-8, Urchin website pageviews were reported. As noted previously, Google Analytics provides a more accurate picture of actual website traffic, hence the switch in 2008.*

Prepared by Marketing Partners, Inc.

## APPENDIX B – PUBLIC PARTICIPATION AND WORKSHOPS



### City of Burlington Stormwater Program "Make Your Own Rain Barrel Workshop" Discount Program

Note: You must be a City of Burlington resident to be eligible for the \$40 discount. This applies only to the "Make Your Own Rain Barrel" workshop offered by ReSOURCE. (Limit 30 participants) The rain barrel must be installed at a Burlington address.

**Discount Recipient Information:**

Name: \_\_\_\_\_

Mailing address: \_\_\_\_\_

Installation Address (if different): \_\_\_\_\_

Phone #: \_\_\_\_\_ Email Address: \_\_\_\_\_

**Survey:**

Type of structure:  Single family  Duplex  Multi-Family  Commercial

Is the gutter system that you will use to drain stormwater runoff to your rain barrel?:

Already installed  To be installed within 30 days of the workshop

Prior to hooking up your rain barrel, where does the roof downspout drain to?

Paved Driveway  Lawn or Landscaping  Other: \_\_\_\_\_

What is the main reason for installing your rain barrel?

To save \$ on water bill (water reuse)  To reduce stormwater runoff  To increase groundwater recharge

How did you hear about this opportunity? \_\_\_\_\_

How much did this discount opportunity influence your decision to take the workshop and install a rain barrel?

Completely  Somewhat  Not at all; I was planning on taking the workshop anyway

**Disclaimer:**

As a recipient of the "Make Your Own Rain Barrel Workshop" discount, I have read, understand and agree to the following terms and conditions:

- I agree that I am a City of Burlington resident.
- I understand and agree that the City of Burlington does not provide any warranties or guaranties (expressed or implied) in relation to the rain barrels and makes no claims as to the safety or reliability of the installed barrels or the resulting water. The City of Burlington is not responsible for any damage or liability that may result from the making of or use of the rain barrel.
- I understand that the water collected in the rain barrel is to be used for non-potable uses only.
- I understand that it is prohibited to sell my rain barrel for profit.
- I agree that the rain barrel will be installed at the installation location above, which is located in the City of Burlington. I understand that if I transfer the rain barrel to an address other than the listed address, or donate or give the rain barrel to another person or entity, the rain barrel will be installed and operational at an address located in the City of Burlington.
- I certify that the information I have presented in this application is accurate.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Thank you for your help in reducing stormwater runoff in the City of Burlington

# APPENDIX B – PUBLIC PARTICIPATION AND WORKSHOPS

## MCM #2

### Chittenden County Stream Team

#### Summary of Activities: July – December 2011

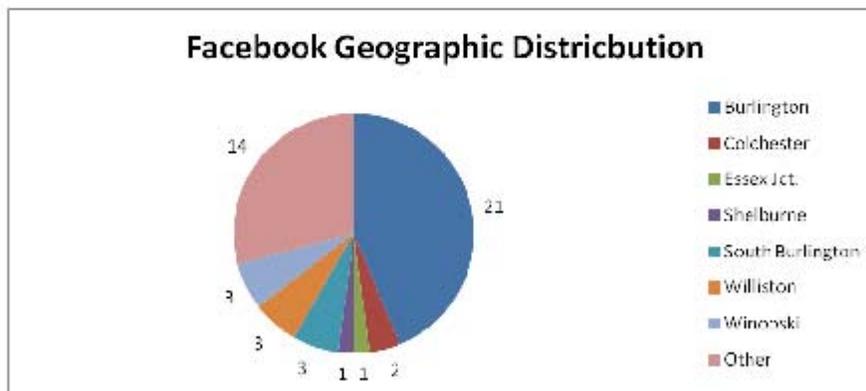
##### Prepared by Winooski Natural Resources Conservation District

In the fall of 2009, nine MS4 communities and three non-traditional MS4s located in Chittenden County began to discuss a potential collaborative approach to fulfilling their Minimum Control Measure #2 requirement. At the request of these MS4s, the Chittenden County Regional Planning Commission (CCRPC) applied for and received two grants totaling \$22,500. Using these grants, CCRPC implemented a regional pilot project called the Chittenden County Stream Team (CCST) from spring 2010 through May 2011. In its pilot year, CCST created a logo, launched a website and Facebook page, surveyed local residents, hosted a number of workshops, and completed a variety of local projects.

The success of the pilot project led to the formal adoption of the CCST program by eleven of the twelve MS4 permittees starting in July 2011 as their means of compliance with the Minimum Control Measure #2, Public Involvement and Participation. The program was put out to bid and awarded to the Winooski Natural Resources Conservation District (WNRCD), a regional entity focused on natural resource protection and management. With support from CCRPC and the participating MS4s, WNRCD worked to expand the reach of CCST. This was done by focusing efforts in three main areas: Social Media, Projects, and Outreach/Events. Note that at this time Colchester has elected not to join the CCST effort.

#### Social Media

**Facebook** – Facebook is just one of the tools that CCST uses to disseminate information to the public about workshops, events, and projects. It is updated on a regular basis and continues to grow at a steady pace. During the latter half of 2011, the number of 'likes' received on the CCST Facebook page grew to 48. This is a 50% increase from the pilot project. The majority of followers are in the 25-54 age groups. Current geographic distribution is as follows.



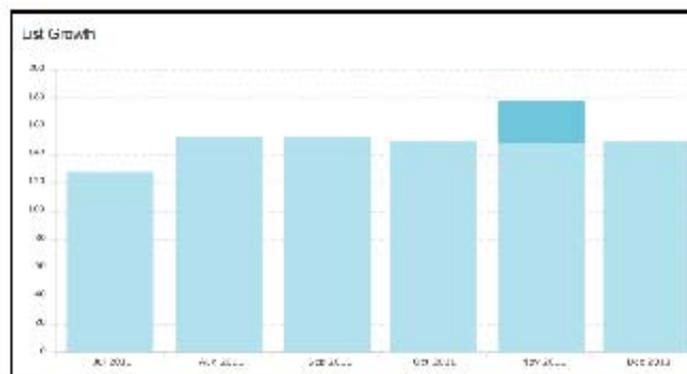
**CCST Website** – The website went through a significant overhaul in late 2011 and continues to change based on feedback from program partners and citizens. The website is the primary means by which individuals learn about CCST and as such, it was redesigned to provide users with easier access to information. The website includes information about the CCST program, impaired watersheds, events and workshops, volunteer opportunities, and helpful resources. Similar to the Facebook page, the website is updated on a regular basis.

## APPENDIX B – PUBLIC PARTICIPATION AND WORKSHOPS

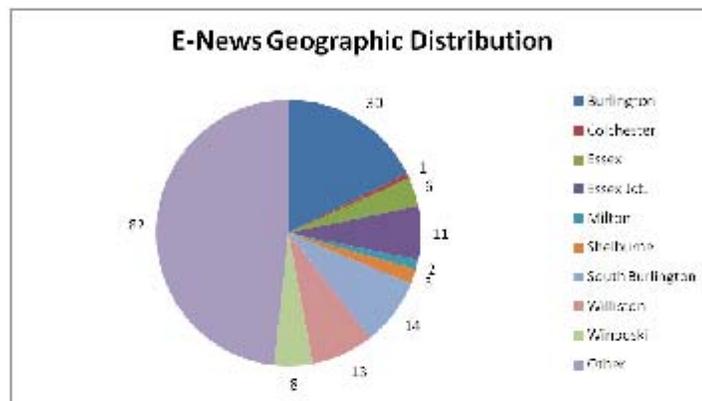
In an effort to gain a better understanding of how the public uses the website, we began tracking access using Google Analytics in December of 2011. Below is a subset of the data collected throughout the month. In total, there were 15 unique visitors with an average amount of time spent on the site tracked at 4 minutes and 15 seconds. The full set of data is below.



**E-News** – Periodic emails are another way by which CCST connects with the public. Emails, using *Mailchimp*, are typically sent out quarterly and include regional news, information about upcoming events and volunteer opportunities, and tips and resources. It is one of the more effective ways of getting information out to those who have expressed an interest in CCST's mission. At the end of 2011, the list totaled 170 subscribers, which was a slight increase over the six-month period. In general, the open rate for E-News is high at 38 - 40%. The typical open rate for similar industries is between 20-25% according to research completed by *Mailchimp*. The geographic distribution is moderate and should be expanded in future years.



## APPENDIX B – PUBLIC PARTICIPATION AND WORKSHOPS



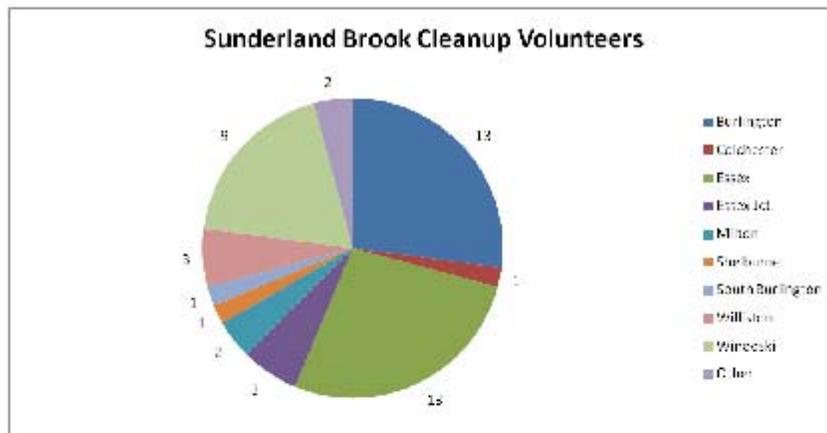
### Projects

**Chamberlin School Rain Garden** – A rain garden at the Chamberlin School in South Burlington was constructed on September 6 and 7. The garden is 210 square feet in size and includes at least 49 native plants. The garden captures and treats stormwater from the adjacent roof. Previously the water was channeled to the parking lot through a gutter downspout. The project was completed with assistance from 42 students, six teachers, and two volunteers. The garden will continue to serve as an educational tool for the school in future years. A story about this project was included in *“The Other Paper”* which serves South Burlington.



## APPENDIX B – PUBLIC PARTICIPATION AND WORKSHOPS

**Sunderland Brook Cleanup** – CCST organized a cleanup of Sunderland Brook with assistance from the Town of Essex and Village of Essex Junction on October 22. Sunderland Brook is listed as an impaired waterway on the EPA 303(d) list. This event was very well attended with 48 volunteers from around the MS4 area (see below). Together these volunteers managed to remove 1.16 tons of trash and other material from the brook and adjacent landscape. Removed items included beverage containers, shopping carts, tires, wood stoves, shingles, etc.



**Longmeadow** - In the spring of 2011, during the pilot project CCST began a project to monitor stormwater flow from the Longmeadow neighborhood in Shelburne into Monroe Brook. In theory, once baseline data was established, the data would show reductions in stormwater flow as residents installed low impact development practices on their properties. A letter was sent to 77 landowners in the neighborhood explaining the project and how they could be involved. A water level logger, barometric pressure gauge, and weir were purchased for citizen monitoring. Monitoring will begin in 2012.

### Outreach

**Williston Fourth of July** – CCST set up a booth at the Williston Fourth of July festivities on the Williston green. A number of people stopped by the booth and received information about CCST. Eleven of those signed up for the e-news and were added to the list. They included nine people from Williston, one from Burlington, and one from Essex Junction.

**Kickoff Event** – A kickoff event was hosted at Battery Park in Burlington in the evening on July 8. The purpose of the event was to expose people to CCST and educate them about stormwater issues in their community. The event included a discussion about stormwater and a chance to play the watershed game which was facilitated by staff from UVM Sea Grant. One person attended the event.

**Maritime Festival** – CCST tabled at the Maritime Festival at the Burlington Waterfront on August 13. Three volunteers from Burlington assisted by talking with and handing information out to passersby. A rain chain and a sample of pervious concrete were on display. Over 15 people stopped by the booth.

# APPENDIX C – POST CONSTRUCTION SW MANAGEMENT

**Burlington Department of Public Works  
Stormwater Program**

645 Pine Street  
Burlington, VT 05401

PH: 802-540-1748 Email: [mmoir@ci.burlington.vt.us](mailto:mmoir@ci.burlington.vt.us)



**Residential (R1 & R2) Stormwater Management Plan**

This questionnaire is required for single family detached dwellings or duplex properties where additional impervious surface is proposed and the total lot impervious surface area is greater than 2500 sq. ft. This form should be submitted directly to the DPW Stormwater Program above. If you need help completing this form, please contact [mmoir@ci.burlington.vt.us](mailto:mmoir@ci.burlington.vt.us) or 540-1748 for technical assistance.

**YOU MUST INCLUDE A SKETCH OR SITE PLAN OF YOUR EXISTING AND PROPOSED SITE AND INCLUDE THE EXISTING AND PROPOSED FLOW PATHS OF STORMWATER ON YOUR PROPERTY**

Project Location: \_\_\_\_\_

<u>Impact Review:</u> Impervious Surface Area Breakdown	Area (sq. ft.)	
	Existing	Proposed
<b>Type of Surface</b>		
Total impervious surface		
Change in Total impervious surface		
<b>Connected Impervious Surfaces</b>		
Rooftop area that drains to impervious surface and runoff reaches city street or property boundary		
Driveway area that drains directly to city street or property boundary		
Walkway/Patio/Deck/other area that drains to impervious surface and runoff reaches city street or property boundary		
Total connected impervious		
Change in total connected impervious (proposed – existing)		
<b>Disconnected Impervious Surfaces</b>		
Rooftop area that drains to pervious surface where runoff soaks in		
Driveway area that drains to pervious surface where runoff soaks in before reaching the city street or the property boundary (or a driveway made of pervious material)		
Walkway/Patio/Deck/Other area that drains to pervious surface where runoff soaks in before reaching the city street or the property boundary (or is made of pervious material)		
Total disconnected impervious		
Change in total disconnected impervious (proposed – existing)		

Impervious surfaces are areas that prevent the infiltration of water into the ground and shall include, but not be limited to, roofs, patios, garages, storage sheds and similar structures. Impervious surfaces also include compacted dirt and gravel surfaces. Decks that allow water to seep through onto pervious surfaces can be considered disconnected. Pervious surfaces are areas such as grass, clean gravel, pervious concrete, permeable pavers that allow water to infiltrate rather than runoff.

# APPENDIX C – POST CONSTRUCTION SW MANAGEMENT

For Property at: \_\_\_\_\_

Residential Stormwater Management Plan  
Page 2

### Mitigation Review:

*The Burlington Stormwater Program reserves the right to request that specific measures or a specified volume of stormwater runoff be mitigated based on the overall impact of connected impervious on the site.*

Is this a new home (including tear down and replacement)? Yes  No

If yes, complete information below and contact [mmoir@ci.burlington.vt.us](mailto:mmoir@ci.burlington.vt.us) or 540-1748 for a required technical assistance meeting.

If no, please feel free to contact the Burlington Stormwater Program for additional technical assistance, but at a minimum, you must complete the information requested below:

How will increased stormwater runoff from any increase in impervious surface be managed to the maximum extent practicable? For information regarding these and other stormwater management practices visit:

[http://www.vtwaterquality.org/stormwater/html/sw\\_LID.htm](http://www.vtwaterquality.org/stormwater/html/sw_LID.htm)

- Removal of other impervious surface balances out addition
- Installation of green roof will minimize runoff from rooftop
- Runoff from rooftops will be directed to pervious green space
- Runoff from rooftops will be directed to rain barrels\* for storage and gradual release or use
- Runoff from impervious surfaces will be directed to a rain garden\*
- Driveway is/will be permeable (permeable pavers, grass pavers, pervious gravel driveway)
- Walkways is/will be permeable (permeable pavers, grass pavers, pervious gravel driveway)
- Driveway impervious surface and connectivity has been/will be minimized with use of strip driveway  
(2 strips of asphalt with grass strip down middle)
- Connected Impervious surface has been minimized (please explain)

\_\_\_\_\_  
\_\_\_\_\_

Other, please attach explanation

### **OWNER AGREEMENT**

I attest that the information above is correct to the best of my understanding and that I will install the measures I have indicated or manage the runoff in a way to minimize the amount of stormwater runoff from my property. I understand that the City has the right to inspect my property to ensure that the measures have been installed and that failure to abide by the measures above may constitute a violation of Chapter 26 and my authorization to discharge stormwater to the City Stormwater conveyance system.

By:

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Plan Approved by: \_\_\_\_\_

Megan J. Moir, CPESC, CPSWQ

Date: \_\_\_\_\_

\* Visit [www.ci.burlington.vt.us/stormwater/getinvolved](http://www.ci.burlington.vt.us/stormwater/getinvolved) for stormwater workshops and/or rebate opportunities that may assist in the installation/purchase of these stormwater management measures.