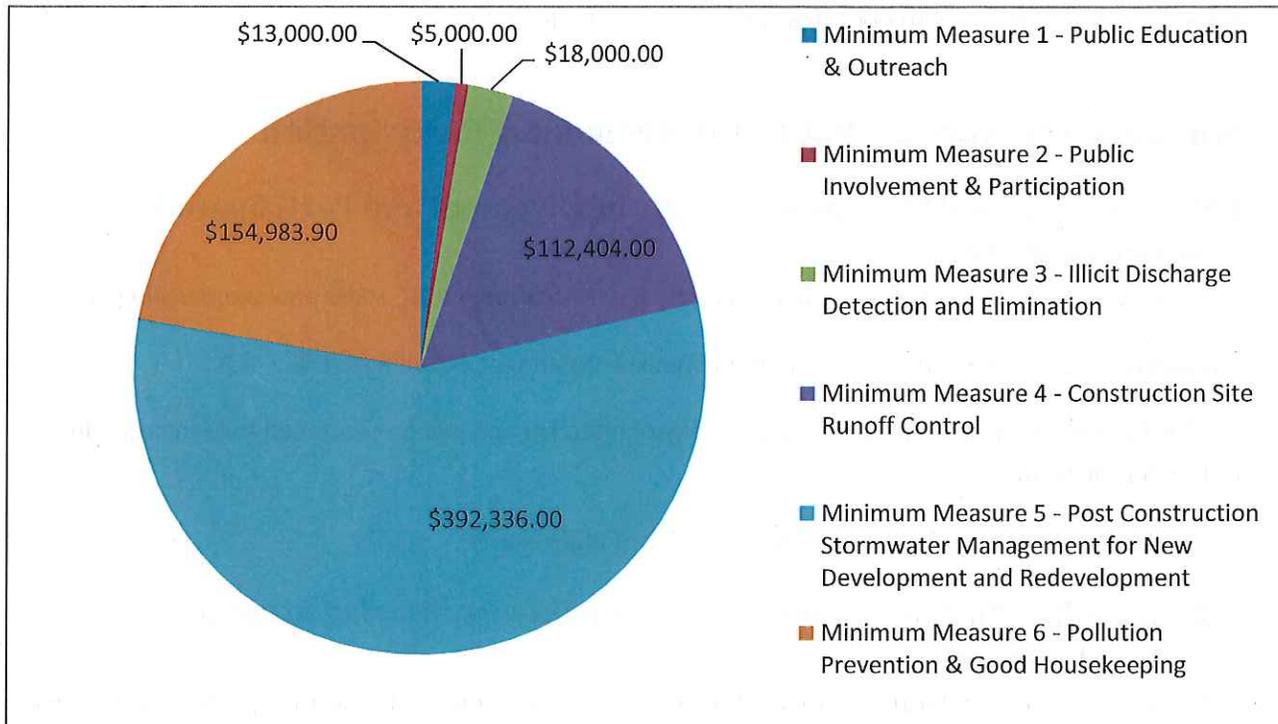


**2014 MS4 Annual Report**  
**Vermont Agency of Transportation**  
**April 1, 2015**

*General Permit 3-9014 National Pollutant Discharge Elimination System  
 Number VTR040000*

In 2014 the Vermont Agency of Transportation (VTrans) spent \$695,723.90 implementing the MS4 program. The following table and chart break out the cost per minimum measure:

Minimum Measure	Cost
Total Program Cost	\$ 695,723.90
Minimum Measure 1 - Public Education & Outreach	\$ 13,000.00
Minimum Measure 2 - Public Involvement & Participation	\$ 5,000.00
Minimum Measure 3 - Illicit Discharge Detection and Elimination	\$ 18,000.00
Minimum Measure 4 - Construction Site Runoff Control	\$ 112,404.00
Minimum Measure 5 - Post Construction Stormwater Management for New Development and Redevelopment	\$ 392,336.00
Minimum Measure 6 - Pollution Prevention & Good Housekeeping	\$ 154,983.90



## **Minimum Measure 1 – Public Education & Outreach**

### **BMP 1-1 – VTrans Stormwater Website**

**Activity:** A "VTrans Operations Stormwater" web site has been developed and activated by VTrans Operations Division, as responsibility for managing compliance with the MS4 GP has been transferred to Operations in November of 2007. The web site is updated.

**Indicators:** Went live with the new web site in 2009 and maintained the new web site during 2010 through 2014.

**BMP Effectiveness:** This BMP has proven to be somewhat effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$3,000(time for 2 staff)

### **BMP 1-2 – Regional Stormwater Education Program (RSEP)**

**Activity:** VTrans continued its participation in the RSEP and paid the \$5,000 annual operating fee.

**Indicators:** See attached RSEP Annual Review Document (Attachment A)

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$10,000(\$5000 + time for multiple staff)

## **Minimum Measure 2 – Public Involvement & Participation**

### **BMP 2-9 – Regional Stormwater Public Involvement and Participation Program (RSPIPP)**

**Activity:** VTrans continued its participation in the RSPIPP and paid the \$1,800 annual operating fee.

**Indicators:** See attached Stream Team Annual Review Document (Attachment B)

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$5,000(\$1,800 + time for multiple staff)

### **BMP 2-2 – Establish or support a water quality monitoring program involving citizen volunteers.**

**Activity:** VTrans will establish a partnership with a citizen water quality monitoring program in first year and report accomplishments annually.

**Indicators:** VTrans has started the process to establish a partnership but has not yet instituted a program. Vtrans plans to move this initiative forward in the next year.

*BMP Effectiveness:* N/A

*Estimated Expenditures:* \$ N/A

**BMP 2-3 – Institute an on-going public workshop series on stormwater awareness. VTrans will develop and put on workshops for employees Requirements**

*Activity:* VTrans will report on the number, attendance and, title of trainings provided.

*Indicators:* VTrans has started the process to develop workshops for employees and plans to institute the first tier of a three tiered stormwater training program in the next year.

*BMP Effectiveness:* N/A

*Estimated Expenditures:* \$ N/A

**BMP 2-6 – Establish and support a citizen “stormwater watch” group. VTrans will develop a web page for citizens to report alleged stormwater concerns, such as erosion, illegal dumping, hazmat spills, unauthorized non-stormwater discharges, etc.**

*Activity:* VTrans will report on the number and the nature of the reports that are submitted annually.

*Indicators:* VTrans has started the process to establish a stormwater watch group web page and plans to institute a program in the next year.

*BMP Effectiveness:* N/A

*Estimated Expenditures:* \$ N/A

**Minimum Measure 3 – Illicit Discharge Detection and Elimination**

**BMPs 3-1 and 3-3 Develop and Implement an Enhanced VTrans Non-traditional MS4s Illicit Discharge Detection and Elimination (IDDE) Policy & Procedure building upon the current prohibition of foreign non-stormwater conveyance systems and work with VTANR and other MS4s to develop and implement enforcement measures**

*Activity:* A plan and prohibition on illicit discharge are in place . VTrans continues to work on an enhanced IDDE Policy & Procedure and an IDDE Testing and Monitoring Protocol to be formally adopted and put into practice to detect and eliminate non-stormwater discharges into the VTrans stormwater systems in the VTrans MS4. VTrans is using the Center for Watershed Protection IDDE Guidance Manual (2009) as its current IDDE. For VTrans, a non-traditional linear MS4, monitoring for and encounters with illicit discharges occurs at multiple levels. Monitoring for illicit discharges occurs as a standard operation procedure under the Permit. Encountering illicit discharges occurs during project development &

design, right-of-way negotiation and acquisition, project construction, maintenance operations, Multi-Sector General Permit (MSGP) inspections, Hazardous Materials Spill Reporting Procedures, or from unsolicited reports from the general public.

**Indicators:** A plan and prohibition on illicit discharge are in place. VTrans continues to work on an enhanced IDDE Policy & Procedure and an IDDE Testing and Monitoring Protocol to be formally adopted to detect and eliminate non-stormwater discharges into the VTrans stormwater systems in the VTrans MS4.

**BMP Effectiveness:** Work under this BMP is moving along and will prove to be very effective. Therefore it will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$3,000 (staff time)

### **BMP 3-2 Maintain GPS and GIS Mapping Project**

**Activity:** VTrans will develop and maintain a storm sewer geographic information systems (GIS) map of the small MS4, showing the location of all outfalls and the names and location of all waters of the State and waters of the United States that receive discharges from those outfalls. In the first year of the permit, VTrans will map infrastructure within the Rugg and Stevens Brook Watersheds. VTrans will update the mapping already completed for the Moon Brook Watershed as well as the Chittenden County area in years 2 and 3 of the permit term.

**Indicators:** In 2013 VTrans mapped 81 Drop Inlets and 173 Culvert Outlets in the Rugg and Stevens Brook Watersheds. VTrans plans to update the mapping for the Moon Brook Watershed and Chittenden County during the field season of 2015.

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$ 2,000 (staff and equipment)

### **BMP 3-4 Develop and Implement an IDDE Testing & Monitoring Protocol**

**Activity:** Develop and implement a plan to detect and address non- stormwater discharges, with emphasis on outfalls in the stormwater impaired watershed(s) and random illegal dumping to the system, such as the dumping of RV wastes, used oil, paint, etc. VTrans completed testing of outfalls for illicit discharges in Chittenden County in 2006. VTrans will complete testing of outfalls in the Moon, Rugg and Stevens Brooks following completion of the mapping in those watersheds.

Many of the VTrans and other MS4 storm sewer systems are connected and stormwater flows across MS4 jurisdictional boundaries. VTrans representative(s) have participated in quarterly VANR/CCRPC hosted Phase 2 "Regional Stormwater Education Program" group meetings where MS4 Communities engage in discussions and share information related to MS4 compliance and initiatives. VTrans has coordinated with most MS4 Communities on proposed new private development projects. The drainage infrastructure inventory / ArcGIS Personal Geo Data Base has been sent to the CCRPC and to the VANR-

Stormwater Section and all MS4s, CCRPC, and ANR are working together on a mapping update standardization procedure.

VTrans Operations Stormwater Technician continues to participate in the Regional Stormwater Education Program, where data and information is shared between all MS4s. VTrans is also developing an enhanced IDDE Policy & Procedure and an IDDE Testing and Monitoring Protocol which will be developed in partnership with other MS4s in Vermont due to the interconnectivity of the MS4 storm sewer systems and lack of enforcement authority VTrans has over discharges from non-VTrans property. VTrans has coordinated with all involved MS4s in completing its 2009/2010 Phase I and II IDDE Assessment & Reporting.

### **BMP 3-5 Inform public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste to satisfy**

**Activity:** VTrans has continued the various trainings for its District Maintenance Personnel on various topics, including stormwater and illicit discharges. RSEP provides multiple opportunities to inform the public on this topic, as does the VTrans and RSEP Stormwater web sites. VTrans will continue to take advantage of activities to the extent practicable to host as many forums as is practicable to meet the intent of this BMP. Additionally, VTrans will develop an informational flyer to give to 1111 permit holders that discusses these hazards.

**Indicators:** VTrans Operations has provided over 60 hours of spill response, waste disposal and Spill Prevention Containment and Countermeasure training to district personnel located within the MS4 during 2014. VTrans Operations has begun working with the VTrans Utilities and Permitting staff and a consultant to develop flyers.

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$3,000 (staff time)

### **BMP 3- VTrans Title 19, Section 1111 Access Management Program, Highway Permits, and Development Agreements to satisfy**

**Activity:** VTrans has an existing program that issues permits for residential and commercial driveway access to the State Rights-of-Way (ROW). VTrans also issues permits for non-VTrans projects within the ROW. The program includes review of proposals for open and/or closed connection to the VTrans MS4 from residential and commercial property owners. To the extent allowable under State or local law, VTrans uses this Section 1111 Permitting authority to effectively prohibit non-stormwater discharges into the VTrans MS4 storm sewer system and implement appropriate enforcement procedures and actions to satisfy the terms of the Permit. This is implemented through the imposition of Special Conditions (put in place in 2007) under its Title 19, Section 1111 Permitting Authority on all identified proposed and existing connections to the VTrans MS4 stormwater system. VTrans will adopt an illegal connection illicit discharge policy to enhance title 19 authorization in year three.

**Indicators:** VTrans Operations Division and Program Development Stormwater Engineer have started to work with VTrans Utilities and Permitting staff to update and adopt the illegal connection illicit discharge policy to enhance title 19 authority.

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$10,000 (staff time)

## **Minimum Measure 4 – Construction Site Runoff Control**

### **BMP 4-1 – Construction General Permit and Individual Permit Compliance**

**Activity:** VTrans continues to comply, and/or requires others working in our right-of-way under a Section 1111 Permit to comply, with ANR issued General Permit 3-9020 (2008) and/or Individual Permit regulating stormwater runoff from construction sites which result in land disturbance equal to or greater than one acres of land.

**Indicators:** VTrans projects in the MS4 area under construction during 2012 having coverage under an Individual General Permit-3-9020 for Construction include: NONE. Those with coverage under Moderate Risk under CGP 3-9020 include: Two. We did not have any other projects in the MS4 that had Construction Permits or SP 652.

- Milton IM 089-3(66), Moderate Risk CGP 3-9020, Bridge Construction, approach work
- Rutland City STP 019-3(57), Moderate Risk CGP 3-9020, Roadway, Underground Utility, Sidewalk Construction

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$100,000

### **BMP 4-2 – Erosion Prevention and Sediment Control Guidance Materials**

**Activity:** Vtrans will review existing policies to determine their effectiveness in managing construction-related erosion and sediment. The policies will also be reviewed for their consistency with the requirements of the Secretary's general permits for stormwater runoff from large and small construction sites and construction erosion guidelines for low impact development. In 2002 VTrans developed an "Environmental Field Handbook for Culvert and Ditching Procedures". This Handbook is based on field application of the VTrans Statewide Culvert and Ditching Procedures that have been in effect since 1997. The Culvert and Ditching Procedures were developed with participation from the ANR, US Army Corps of Engineer, US Environmental Protection Agency, US Fish and Wildlife Service, and the Federal Highway Administration. The VTrans EPSC Protocol was developed in late Fall 2006 and sets guidelines for Consultants, VTrans Designers, VTrans Construction Management Staff and District field staff for creating and implementing consistent Erosion Prevention and Sediment Control Plans that meet the requirements of the New CGP 3-9020 and for those projects disturbing less than 1 acre with any

potential to impact resources. The guidelines include EPSC Plan Checklists, flowcharts, detail drawings, specifications and general guidance; all of which are posted on the VTrans Environmental Webpage. VTrans will review and update as needed the Culvert and Ditching Procedures and the EPSC Protocol.

**Indicators:** There were no updates to the EPSC Protocol or any other documents in 2014.

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** see BMP 4-1

### **BMP 4-3 – Continue implementation of Erosion Prevention & Sediment Control Review Protocol for all VTrans Construction Projects going through the VTrans Contract Administration Process (jurisdictional and non-jurisdictional projects)**

**Activity:** The VTrans EPSC Protocol was developed in late Fall 2006. The protocol replaces the MOA drafted in 2004 and sets guidelines for Consultants, VTrans Designers, VTrans Construction Management Staff and District field staff for creating and implementing consistent Erosion Prevention and Sediment Control Plans that meet the requirements of the Construction General Permit CGP 3-9020 (2008) and for those non-jurisdictional projects disturbing less than 1 acre with any potential to impact resources. The guidelines include EPSC Plan Checklists, flowcharts, detail drawings, specifications and general guidance; all of which are posted on the VTrans Environmental Webpage at <http://www.aot.state.vt.us/TechServices/EnvPermit/erosionpreventionandsedimentcontrol.htm>.

**Indicators:** VTrans continues implementation of its EPSC Protocol developed in 2006. It sets guidelines for Consultant and in-house Designers and field staff for creating and implementing consistent Erosion Prevention and Sediment Control Plans that meet the requirements of the CGP 3-9020 and for those projects disturbing less than 1 acre with any potential to impact resources. The guidelines include EPSC Plan Checklists, flowcharts, detail drawings, specifications and general guidance; all of which are posted on VTrans Environmental Section Webpage. ONE project was under construction in 2010 for which this protocol was applied:

- Jericho STP FTBR(3), VTrans under 1 acre EPSC Protocol Acceptance, New footbridge, related approach work.

### **BMP 4-4 – Stormwater Management – Erosion Prevention & Sediment control Training**

**Activity:** VTrans offers a broad range of formal training on erosion and sediment control and stormwater management design to agency staff. These training classes are instructed by VTrans and non-VTrans subject experts from around the country.

**Indicators:** For each project that goes out to contract that has environmental impacts the Construction Environmental Engineer (CEE) and Assistant Construction Environmental Engineer (ACEE) meet with each contractor and VTrans field staff to ensure there is a clear understanding of expectations. The CEE and ACEE work with both the Contractor and VTrans field staff to help them better understand how to

avoid non-compliance issues. The CEE and ACEE also provide plan review comments that help educate people throughout the Agency and Contracting and Consulting communities.

Several professional trainings were attended to hone the skills of the Construction Environmental Engineers as well as to further the understanding of some of the challenges they have in the field.

Listed are some of the professional trainings that were attended:

- Successful Green Infrastructure Program Drivers- Real World Case Studies & Lessons Learned, webinar 1.5 hrs (CEE & ACEE)
- Sustainable Shallow Slope Stabilization & Erosion Control, webinar 1 hrs (CEE & ACEE)
- Northeast International Erosion Control Association Conference, 3 days (12 training hours), 12 VTrans attendees

Also:

- For each project that goes out to contract that has environmental impacts we meet with each contractor and VTrans field staff to ensure there is a clear understanding of expectations. The CEE and ACEE work with both the Contractor and VTrans field staff to help them better understand how to avoid non-compliance issues. They also provide plan reviews comments that help educate people throughout the Agency and Contracting and Consulting communities.
- The CEE and ACEE are board members on the NE International Erosion Control Association which meets 4 times a year.
- TS4 discussion participation

***BMP Effectiveness:*** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

***Estimated Expenditures:*** \$10,000 (staff time)

### **BMP 4-5 – Erosion Prevention and Sediment control Assurance Visits**

***Activity:*** This BMP has evolved with the hiring of the VTrans Construction Environmental Engineer and Assistant Construction Environmental Engineer. The primary purpose of Erosion Prevention and Sediment Control Assurance Visits is to ensure that VTrans protects natural resources and complies with state and federal regulations through implementation of project Erosion Prevention and Sediment Control Plans and compliance with environmental permit conditions. The CEE and ACEE visit VTrans contracted construction projects to provide input, training, support, and resources relative to erosion prevention and sediment control.

***Indicators:*** The CEE and ACEE conducted multiple assurance visits to every VTrans managed construction project statewide. At which time they ensure permit compliance and recommend corrective actions to maintain water quality standards. In the VTrans MS4, there were only 2 projects under construction totaling 9 inspections.

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$2,404 (staff time)

## **Minimum Measure 5 – Post-Construction Stormwater Management for New Development and Redevelopment**

### **BMP 5-1, 5-2, and 5-3 – Maintain Post-Construction Stormwater Management Compliance for VTrans Projects and Implement VTrans internal “Permit Jurisdictional Threshold Gap Procedure” for VTrans Projects not subject to VTANR Post Construction Stormwater Discharge Permitting**

**Activity:** VTrans is complying with the requirements of ANR permit “Stormwater Discharges from New Development and Redevelopment to non-WIP Waters General Permit 3-9015.” VTrans has also developed an internal procedure to address the permit jurisdictional threshold gap between the VANR GP-3-9015 jurisdictional thresholds and the EPA one acre of land disturbance permit threshold. The goal of this internal procedure is to protect water quality by designing post-construction stormwater management systems on all new and redeveloped VTrans projects in the VTrans MS4 to comply with the Vermont Stormwater Management Manual to the extent that is practical.

**Indicators:** USACE VT GP (Cat 1 or Cat 2): Milton IM CULV (50), Milton IM 089-3(75), and St. Albans Town BR 19 on VT 104 and VT Operational Stormwater GP3-9015 or INDS: JERICO STP HES 030-1(21) and Milton IM 089-3(75)

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$270,000

### **BMP 5-1a Green Stormwater Infrastructure Executive Order**

**Activity:** VTrans will assess whether changes can be made to its process and policies in order to support low impact design options whether changes can be made to current street design and parking lot guidelines and other local requirements that affect the creation of impervious surfaces to support low impact design options. Governor Shumlin, in March of 2012, signed an Executive Order which established an Interagency Green Stormwater Infrastructure Council. The Council includes the Secretaries (or delegates) of the Agency of Natural Resources, Agency of Transportation, Agency of Commerce and Community Development, and the Commissioner of the Department of Buildings and General Services or their designees. Members of the Council are responsible for the development of *Green Stormwater Infrastructure (GSI) Implementation Work Plans*. The purpose of the work plans is to highlight current initiatives, identify barriers to the implementation of green infrastructure practices, and set a direction for the promotion and adoption of green stormwater infrastructure in the years ahead.

**Indicators:** In year 2014, VTrans staff began implementing the VTrans Green Infrastructure Work Plan and completed and submitted the Green stormwater Infrastructure Annual Report (see Attachment C)

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$N/A

### **BMP 5-4 – Asset Management Tool**

**Activity:** VTrans will develop and implement an asset management tool that will ensure adequate inspections and long-term operation and maintenance of Best Management Practices. Permit term years 1 and 2 will focus on the development of the tool with the anticipation of implementing it in year 3.

**Indicators:** In year 2013, Operations staff worked with a consultant to develop the asset management tool for District 8 as a pilot project. In year 2014, Operations staff worked with a consultant to complete the asset management tool for all permitted BMPs in the state owned airports and began development of the asset management tool for the remaining districts.

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$107,336

### **BMP 5-6 – Stormwater Management and Erosion and Sediment Control Training**

**Activity:** See BMP 4-4

**Indicators:** See BMP 4-4 In addition, the following Stormwater Management Trainings were provided:

- VT Better Backroads related UVM research findings (B. Wemple) brown bag webinar (3 staff) 1hr
- VT Stormwater Manual revision update meetings (4 staff 3 days) 14hrs
- VT Green Stormwater Infrastructure Roundtable (2 staff) 6hrs
- Investigation for a National Testing/Evaluation for Stormwater Products/Practices webinar (1 staff) 2hrs
- Innovative Transportation Stormwater Management: Green Infrastructure in Road Projects webcast (2 staff) 2hrs
- LCBP Climate Change workshop (2 staff) 12hrs
- ANR Municipal Day- Presented strategies to minimize SW impacts from gravel roads to Municipal officials (4 staff) 4hrs
- Raising the Bar: GSI 2 day workshop (4 staff) 12hrs
- EPA More Bang for the Buck: Integrating Green Infrastructure into Existing Public Works Projects webcast (3 staff) 2hrs
- Climate Change adaptation workshop (2 staff) 6hrs

- Biohaven™ floating SW island webinar (1 staff) 1hr
- Teach Your Gravel Roads a Lesson webinar (1 staff) 1.5hr
- Roadway Design and Maintenance of Post-Construction Stormwater Controls webinar (2 staff) 1.5hr
- UVM Climate Change Collaboration meetings (3 staff) 6hrs
- Getting stormwater off the road webinar (1 staff) 1.5hrs
- NCHRP -Long-Term Performance and Life-Cycle Costs of Stormwater Best Management Practices webinar (2 staff) 1.5hrs
- Community/ Watershed Approach with Build-Out and Traditional Stormwater Focus webinar (1 staff) 1hr
- IECA conference (8staff) 14hrs
- Winter Roadway Deicing/Anti-icing Operations: Approaches to Help Keep Roads Clear and Waters Clean webinar (2staff) 1.5hrs
- Strategies to Mitigate the Impacts of Chloride Roadway Deicers on the Natural Environment webinar (2staff) 1.5hrs
- NEIWPC Water Quality Conference (1staff) 2days
- Rivers and Roads Training Tier 2 (30 staff)

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$15,000 (see BMP 4-4 plus additional costs associated with Stormwater related trainings)

## **Minimum Measure 6 – Pollution Prevention & Good Housekeeping**

### **BMP 6-1 – Enhance VTrans MS4 related Maintenance & Best Management Activities**

**Activity:** VTrans continued with this ongoing effort. See Indicators & Accomplishments.

**Indicators:**

- # of VTrans Culvert Outfalls Inspected/Surveyed in the VTrans MS4 coverage area = 102
- # of VTrans Catch Basins Inspected/Surveyed in the VTrans MS4 coverage area = 735
- # of Catch Basins Cleaned and cubic yards of material collected in the VTrans MS4 coverage area = Cleaned 785 basins or 82 c.y.
- Street Sweeping: approximately 190 cubic yards of material collected in the VTrans MS4 coverage from street sweeping
- VTrans generated and disposed of roughly 1.3 tons of various waste streams in the MS4 area. We are successfully implementing a host of pollution prevention strategies that has virtually eliminated Hazardous Waste Disposal generated by the District Garages.

- In 2014 there were 18 spills reported within the State ROWs. 2 of the spills were the responsibility of VTrans
- The Vtrans Haz Mat Section conducted over 60 hours of spill response, waste disposal and Spill Prevention Containment and Countermeasure training to district personnel in the MS4 area during 2014.

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$100,000 (includes payment to South Burlington under MOU as well as District and staff time – some costs carried under BMP 3.B)

### **BMP Activities related to Lake Champlain Phosphorus TMDL**

**Activity:** Sand reduction, phosphorus reduction and roadside bank stabilization projects including riparian corridor restoration/bank stabilization/buffer enhancement

**Indicators:** VTrans highway traction sand use = NONE

Slope/Ditch repair work: no large projects to report this year

Fertilizer Use:

Fertilizers are not tracked in MATS. Only invoices are available to determine how much was purchased and possibly used. Fertilizing is used primarily for turf establishment, typically for ditches, slopes and around culverts. It is more common that the Districts do not use any. No effort is under way to reduce fertilizers. When they do apply them, usually it is a 10-10-10 formula with no specific rate of application. Contractors establishing turf for the Districts, generally hydro seed using a liquid 19-19-19 fertilizer.

No effort to reduce phosphorous. No indication that it is being misused. House bill passed in 2011 primarily addressing turf maintenance. This bill requires use of only low or no phosphorous fertilizers unless a soil test is taken to require more. VTrans does not use any fertilizer for turf management.

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term. More work with Fertilizers may be needed.

**Estimated Expenditures:** \$40,000 for staff time and resources in support of this BMP are carried here.

### **BMP Activities related to Herbicide Use**

**Activity:** Manage and reduce Herbicide use, provide appropriate training, certifications, license and permits.

**Indicators:** Herbicide Use = Chittenden County – Oust XP 13.7 lbs and Rodeo 2.3 gallons

Rutland County – Oust XP 16.5 lbs and Rodeo 35.5 gallons

Franklin County – Oust 15 lbs and Rodeo 25.4 gallons

Training = Eight hour of instruction for fifteen people was conducted for pesticide training. 12 hours of individual training conducted for pesticides throughout the year.

**BMP Effectiveness:** This BMP has proven to be very effective and will be continued thru the remainder of the Permit Term.

**Estimated Expenditures:** \$6,000 (staff time to manage and apply)

## **Flow Restoration Plan (FRP) Development**

VTrans must participate in the development of 11 FRPs for the stormwater impaired watersheds located within VTrans's MS4 boundary. VTrans intends to work with other MS4s and hire consultants to complete these FRPs by the deadlines specified in the MS4 permit. Below is an update on VTrans's progress on individual FRPs:

- Allen Brook FRP – VTrans began work on a FRP for the Allen Brook watershed in 2011. Significant progress towards identification of STPs necessary to meet flow targets has been completed. VTrans still needs to prepare a financial plan and implementation schedule before this FRP can be considered complete.
- Bartlett Brook FRP – VTrans worked collaboratively with the City of South Burlington on a FRP for the Bartlett Brook watershed. Significant progress towards identification of STPs necessary to meet flow targets has been completed. VTrans still needs to prepare a financial plan and implementation schedule before this FRP can be considered complete.
- Centennial Brook FRP – VTrans began work on a FRP for the Centennial Brook watershed in 2013. Significant progress towards identification of STPs necessary to meet flow targets has been completed. VTrans still needs to prepare a financial plan and implementation schedule before this FRP can be considered complete.
- Englesby Brook FRP – VTrans has not yet begun work on a FRP for the Englesby Brook watershed. However, the City of Burlington began work on a FRP in 2014 and VTrans plans to work collaboratively with Burlington to complete this FRP.
- Indian Brook FRP – VTrans worked collaboratively with the Towns of Essex and Essex Junction on a FRP for the Indian Brook watershed. Significant progress towards identification of STPs necessary to meet flow targets has been completed. VTrans still needs to prepare a financial plan and implementation schedule before this FRP can be considered complete.
- Moon Brook FRP – VTrans began work on a FRP for the Moon Brook watershed in 2013. Significant progress towards identification of STPs necessary to meet flow targets has been completed. VTrans still needs to prepare a financial plan and implementation schedule before this FRP can be considered complete.
- Munroe Brook FRP – VTrans has begun to work collaboratively on a FRP for the Munroe Brook watershed with the Town of Shelburne and the City of South Burlington. VTrans plans to continue this work and complete this FRP in 2015.
- Potash Brook FRP – VTrans has begun to work collaboratively on a FRP for the Potash Brook watershed with the City of South Burlington. We anticipate the work on this FRP to be complete in 2015.
- Rugg Brook FRP - VTrans began work on a FRP for the Rugg Brook watershed in 2013. Significant progress towards identification of STPs necessary to meet flow targets has been completed.

VTrans still needs to prepare a financial plan and implementation schedule before this FRP can be considered complete.

- Stevens Brook FRP- VTrans began work on a FRP for the Stevens Brook watershed in 2013. Significant progress towards identification of STPs necessary to meet flow targets has been completed. VTrans still needs to prepare a financial plan and implementation schedule before this FRP can be considered complete.
- Sunderland Brook FRP - VTrans worked collaboratively with the Towns of Essex and Essex Junction on a FRP for the Indian Brook watershed. Significant progress towards identification of STPs necessary to meet flow targets has been completed. VTrans still needs to prepare a financial plan and implementation schedule before this FRP can be considered complete.

Attachment A  
RSEP Annual Review Document

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**Chittenden County Regional Stormwater Educational Program  
Annual Review: 2014 Calendar Year Summary**

The 2014 calendar year marks our first full year of new campaign strategy and full spend on campaigns, and has provided a high level of marketing success. We have driven thousands more people to our website than ever before (7728 vs. 3542 the previous year). Also, based on the rich amount of data that comes with online advertising, we're able to continue to adapt strategy based on the results.

Also during this program year we refreshed our website, modernizing the look a bit while also updating the back end so that the site can withstand updates to Wordpress well into the future. The updated site also gave us the opportunity to clean up old and broken links so that visitors have access to the best and most current stormwater resources in Vermont and nationwide.

**Spring Advertising Campaign**

This campaign marked the return to the Spring/Fall cycle that has been typical for RSEP, and provided the program with its largest ever spike in web traffic. The focus on online advertising has proven quite successful for RSEP, with 80% of web visits being driven by online ads which account for 38% of the overall spending.

Because web advertising also provides a strong data set, we were able to assess these results and refine them for future campaigns, with the goal of even better results.

Spring 2014 Campaign Online Media Results				
Tactic	Impressions	Clicks	Cost	Cost per click
Google	pay-per-click	1512	\$1,195.12	\$0.79
WCAX	120,000	129	\$1,000.00	\$7.75
Front Porch Forum	210,000	465	\$1,510.00	\$3.25
Free Press	210,000	121	\$1,410.00	\$11.65
Xfinity.com	105,000	184	\$2,000.00	\$10.87
Seven Days	75,000	78	\$540.00	\$6.92
<b>Total clicks</b>		<b>2489</b>	<b>\$7,655.12</b>	<b>\$3.08</b>

**Fall Campaign**

Fall campaign results closely align with Spring results in several notable ways. Again, the web ad strategy drove strong traffic to the site. Bounce rates during the campaign windows were also consistent. As stated above, we made some tactical changes to the media plan based on Spring results.



Through that effort we drove down cost-per-click for some media. Changes to the Google ads drove up cost, however. We will revert back to text-only ads for 2015 to achieve the highest possible return on our investment.

Fall 2014 Campaign Online Media Results				
	Impressions	Clicks	Cost	Cost per Click
WCAX	75,000 impressions	86	\$600	\$6.98
Xfinity	video pre-roll	131	\$750	\$5.73
Front Porch Forum	58,000 impressions	127	\$756	\$5.95
Google	pay-per-click	411	\$1,000	\$2.43
Seven Days	87,500 impressions	77	\$700	\$9.09
<b>Total Clicks</b>		<b>832</b>	<b>\$3,806</b>	<b>\$4.57</b>

### Web Refresh

In late 2014, the SmartWaterWays website experienced problems due to the old Wordpress theme on which it was built. J Andrews Marketing worked with RSEP to choose a new theme and migrate the full site over. We also worked with a web subcommittee to simultaneously identify old and broken links and update the site content to ensure the best possible user experience. Finally, we also migrated the Stormville game from Flash to html, so that it is now functional for users that access the site from their iPhone or iPad.

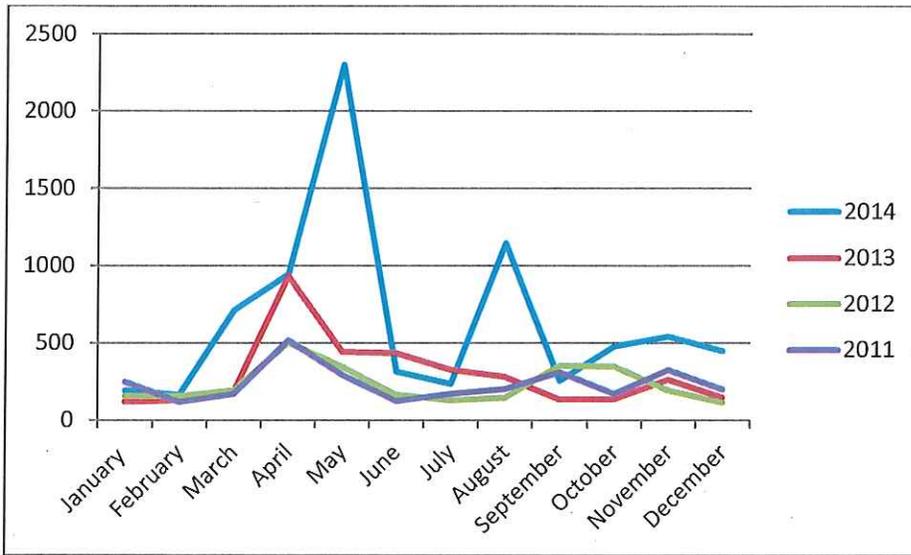
In 2015, we still plan to update site content to improve the clarity of language.

### Traffic to Program Website ([www.smartwaterways.org](http://www.smartwaterways.org))

Below is the website visitor information for 2014, as compared to the three most recent preceding years. The site had 7,488 visits during 2014, more than double the amount of 2013 and by far our most successful year for the web on record. Website traffic increases/spikes are in conjunction with media campaigns.

The Connecting the Drops program ran for Williston and Essex in the June/July timeframe, keeping web traffic high in between campaigns.





TOTAL	TIME PERIOD
7728	2014
3542	2013
2817	2012
2859	2011





Attachment B  
Stream Team Annual Review Document

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**MCM #2**  
**Chittenden County Stream Team**  
**Summary of Activities January-December 2014**

This report summarizes CCST activities in the 2014 calendar year. Demographic data about participant numbers from each town is presented in tabular form following the narrative.

## **Social Media**

### **Facebook**

- 104 “likes”-- a 25% increase in likes from 2013 annual report numbers (83 likes)
- 36% of the people who like CCST are from Burlington (37 people)
- 53.8% of the people who like CCST live in CCST member towns (56 people)

### **CCST Website**

Google Analytics provides website traffic data from January 1, 2014 to December 31, 2014:

- 1,454 website visits, spending an average of 2 minutes and 2 seconds on the website per visit. The number of visits is up 81.5% from 2013 (801 visits)
- 3,683 page views, up 40% from 2013 (2,619 views)
- 74.7% of visitors were new visitors to the site.
- The highest spike in page views occurred on May 7<sup>th</sup>, with 28 visits. This was shortly after a rain barrel workshop was held in Shelburne that received some press and after a few other activities including a rain garden clean-up day, outreach at Green-Up Day in South Burlington and outreach at the Winooski Natural Resources Conservation District’s Annual Tree Sale. Other spikes occurred in the days following the Connecting the Drops rain barrel auction and throughout the summer after outreach events. On average, the busiest months for web traffic were April, May, June and July.

## **Newsletter and e-correspondence**

- In 2014, there were 295 subscribers to the CCST newsletter, up 13% from 261 in 2013.
- A fall newsletter was sent out in September with a 37.1% open rate. CCST E-News open rate is high; the typical open rate for similar industries is between 20-25% according to research completed by Mail Chimp.
- The Mail Chimp email list was used throughout the year to announce rain barrel workshops and to request volunteers for water quality monitoring.

## **Organizational Partnerships**

The Chittenden County Stream Team partnered with twelve different organizations in 2014.

- A local gardener donated plants for the Stream Team’s rain gardens. In 2014, Ann Pearce provided CCST with dozens of iris, lobelia and native grasses for multiple rain gardens (Chamberlin School, South Burlington; Williston Town Hall Annex, Williston; and Coast Guard Station, Burlington).
- CCST worked with multiple schools and school groups this year for hands-on events and for outreach opportunities. The Stream Team partnered with teachers from Williston Central School, Winooski Elementary School, Winooski’s summer school education program and ECHO’s summer kid’s environmental program.
- CCST partnered with towns and other local organizations to host two rain barrel workshops. CCST partnered with the Shelburne Natural Resources Committee and the Shelburne Recreation



**MCM #2**  
**Chittenden County Stream Team**  
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Department for a rain barrel workshop in April. CCST partnered with Essex Junction's Department of Recreation and Parks to host a rain barrel workshop in May.

- In October, CCST held a stormwater walk for local residents in the town of Williston in partnership with the Town of Williston.
- During the 2014 Connecting the Drops outreach campaign and events, CCST partnered with the Let it Rain program (administered by Winooski Natural Resources Conservation District and UVM's Lake Champlain Sea Grant) to develop outreach materials. Lake Champlain Sea Grant staff member Becky Tharp recruited the artists for the displayed rain barrels and coordinated press and advertising. The Regional Stormwater Education Program (RSEP) contributed funds to pay for advertising and additional costs associated with the Connecting the Drops campaign. CCST partnered with the towns of Essex and Essex Junction and their public works departments to provide outreach for Connecting the Drops, display the barrels and engage citizens.

## Media

The Chittenden County Stream Team had four media appearances this year. Copies of each article are archived in the CCST 3-ring binder housed at the office of the CCST chair (if applicable).

- Vermont Public Radio story about Shelburne rain barrel workshop. (4/21/14)  
<http://digital.vpr.net/post/environmental-group-teaches-vermonters-build-diy-rain-barrels>
- National SeaGrant Newsletter article on Connecting the Drops (July 18,2014)  
<http://seagrants.noaa.gov/News/FeatureStories/TabId/268/ArtMID/715/ArticleID/261/Urban-Stormwater-Management-Research-and-Outreach.aspx>
- Interview with FOX44 about Connecting the Drops (06/09/2014)  
<http://www.mychamplainvalley.com/story/d/story/rain-barrels-raise-awareness-for-stormwater-pollut/15632/ha1pUEXjsU6tSu6jMHQ5vw>
- Kids VT Feature (July 2014 Issue) "Connecting the Drops in Essex Junction"  
<http://issuu.com/kidsvt/docs/kvt0714> available on Page 7.

## Outreach

Outreach events include tabling and the distribution of educational materials or information. There were seven outreach events in 2014. See Table 1 below for detailed outreach audience information.

- Green-Up Day in South Burlington (5/03/2014, 25 people)
- Five Corners Farmers Market (7/11/2014, 31 people)
- Essex Junction Block Party (7/19/2014, 58 people)
- Stormwater Outreach to Winooski Summer School Program (7/30/2014, 22 people)
- Winooski Farmers Market (8/24/2014, 38 people)
- Targeted Outreach Materials Delivered to Oneida Acres Neighborhood in Williston (10/02/2014, 38 people)
- South Burlington Harvest Festival (10/13/2014, 25 people)



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**Chittenden County Stream Team**  
**Summary of Activities January-December 2014**

**Event-Driven Tasks**

There were ten hands-on events held and the continuation of on-going tasks including water-level monitoring in Shelburne, rain garden adoption and maintenance, and water quality monitoring in 2014. Detailed participation data is provided in Table 2.

- Shelburne Rain Barrel Workshop (4/19/2014)
  - Partnered with the Shelburne Natural Resources Committee and the Shelburne Department of Parks and Recreation
  - 45 participants built 32 rain barrels. All participants received outreach materials about rain barrels and stormwater
- University of Vermont Students Provide Maintenance to Rain Gardens (4/30/2014)
  - Five UVM students provided maintenance to the gardens at Landry Park in Winooski and at the Williston Town Hall Annex
- Allen Brook Stream Clean-Up (4/22/2014)
  - Partnered with Williston Central School, 48 children and 4 adults participated in the clean-up and discussion on stormwater and watershed health.
- Connecting the Drops 2.0 Rain Barrel Workshop (6/14/2014)
  - Partnered with Essex Junction's Department of Recreation and Parks, the Towns of Essex and Essex Junction and Lake Champlain Sea Grant to prepare and advertise for the event.
  - 36 participants built 26 rain barrels. All participants received outreach materials about rain barrels and stormwater.
- Volunteer Water Quality Monitoring Training (6/15/2014) and Sampling
  - Interest in the water quality monitoring program was high; 32 people contacted CCST to find out more information about volunteering. Of those who contacted CCST, 15 volunteers participated in the water quality monitoring training session. Sampling occurred on five scheduled dates (6/24, 7/08, 7/22, 8/05, 8/19)
  - Analyzed sampling data was uploaded to the CCST [website](#).
- Rain Barrel Painting and Education with the Winooski Elementary School Summer Environmental Program (6/25/2014)
  - 18 school children and 3 teachers participated in learning about rain barrels and painting rain barrels. The school has installed two of the barrels on their property
- Rain Barrel Decorating at the Essex Junction Block Party for Connecting the Drops 2.0 (7/19/2014)
  - 27 people participated in the rain barrel decorating activity during the Block Party; most also signed up to win a rain barrel.
- Rain Garden Work Days with ECHO Kid's Program (7/30/2014 and 8/7/2014)
  - 14 middle school-aged children worked to pull weeds and plant new rain garden plants at the Coast Guard Station rain garden in Burlington on 7/30/14.
  - 18 elementary school-aged children cleaned out trash, pulled weeds and applied mulch to the Coast Guard Station rain garden in Burlington on 8/07/2014.
- Indian Brook and Pearl Street Park Clean-Up (9/20/2014)
  - Partnered with the Town of Essex



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- Nine volunteers participated in the clean-up day
- Williston Neighborhood Stormwater Walk (10/26/2014)
  - Partnered with Williston Planning Department
  - 15 residents of the Oneida Acres neighborhood in Williston participated in an education stormwater walk through their neighborhood. Stormwater issues and current strategies to address these issues were discussed. Residents received outreach materials encouraging the installation of rain gardens.
- Adopt-a-Rain Garden
  - On-going volunteer activity: rain garden adopters maintain gardens during spring, fall and summer by ensuring they are functioning properly and weeded/planted as needed. There are currently seven rain garden adopters (3, Burlington, 1 Essex Junction, 2 Williston, 1 South Burlington)
  - Rain Garden Status Information: Landry Park rain garden in Winooski is in need of repair. Callahan Park rain garden in Burlington has a sink hole, but it functions well and has an active volunteer adopter. Farrell Park in South Burlington needs a new adopter. The remaining CCST managed rain gardens are in great shape with active adopters.
  - Donated rain garden plants were planted in the Chamberlin School garden in South Burlington, the Williston Town Hall Annex garden, Landry Park garden in Winooski, and in the Coast Guard Station garden in Burlington. The other gardens did not need additional plants this year. Mulch was applied to these four gardens in 2014.
- Shelburne Longmeadow Flow Monitoring
  - Data collected by a volunteer (Shelburne) was compiled through July 2014
  - Data storage and analysis has been transferred to a member of the Shelburne Natural Resources Committee, CCST ended its participation in the data collection portion of this effort
  - CCST developed a final report on the water-level data collection and project history

The target towns for hands-on participation in 2014 were Essex, Essex Junction and Williston. The target numbers (based on the attached workplan) were met in all three towns. There were a total of 249 event participants in 2014, exceeding the workplan goal of 100 participants. Based on the participation numbers from 2014 and time since CCST has targeted each town, the towns targeted for outreach in 2015 are Shelburne, Burlington and Milton.



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**Chittenden County Stream Team**  
**Summary of Activities January-December 2014**

**Table 1: Participation in Outreach Activities**

Participation in Outreach Activities											
CCST Participant Town											
Activity	Location	Burlington	South Burlington	Essex	Essex Jct	Milton	Shelburne	Williston	Winooski	Other/ Unkown	Total
Facebook 'Likes'	N/A	37	6	1	2	0	3	3	4	48	104
Website Visits	N/A	334	51	93	0	2	27	64	6	422	877
e-news Mailing List	N/A	44	31	8	28	23	11	22	23	105	295
Green-Up Day	South Burlington	0	25	0	0	0	0	0	0	0	25
5 Corners Farmers Market	Essex Junction	0	2	12	14		0	0	0	1	31
Essex Junction Block Party	Essex Junction	6	0	18	30	0	0	0	0	4	58
Winooski Summer School	Winooski	0	0	0	0	0	0	0	22	0	22
Winooski Farmers Market	Winooski	5	0	0	0	0	0		29	4	38
Oneida Acres Outreach	Williston	0	0	0	0	0	0	38	0	0	38
South Burlington Harvest Festival	South Burlington	1	20	0	0	0	0	4	0	0	25
	<b>Total</b>	<b>427</b>	<b>135</b>	<b>132</b>	<b>74</b>	<b>25</b>	<b>41</b>	<b>131</b>	<b>84</b>	<b>584</b>	<b>1513</b>

\*\*Colchester represents a portion of the “other” participants, with 41 Colchester residents engaged with CCST outreach events (See Table 3 for details).

Since participation numbers for Williston and Winooski in 2013 and CCST had not focused on South Burlington in some time, these were the outreach target towns in 2014. Displayed in the table below, 2014 outreach efforts in these towns were a success and all workplan goals were met.. Hands-on events are planned for these 3 towns in 2015.



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**Table 2: Participation in Hands-On /Event-Driven Projects**

Hands-On Project Participation (Event Driven Tasks)											
CCST Participant Town											
Activity	Location	Burlington	South Burlington	Essex	Essex Jct	Milton	Shelburne	Williston	Winooski	Other/ Unkown	Total
Volunteer Thank You Event	Winooski	2	2	1	0	2	0	1	0	2	10
Shelburne Rain Barrel Workshop	Shelburne	5	4	0	0	0	22	10	3	1	45
UVM Student Rain Garden Maintenance	Williston and Winooski	5	0	0	0	0	0	0	0	0	5
Allen Brook Stream Clean-Up	Williston	0	0	0	0	0	0	52	0	0	52
CtD2.0 Rain Barrel Workshop	Essex Junction	0	0	16	17	0	0	3	0	0	36
Water Quality Monitoring Training	South Burlington	4	4	0	1	0	1	5	0	0	15
Water Quality Monitoring Volunteers	Multiple	6	3	0	1	0	1	3	0	0	14
Rain Barrel Painting/Stormwater Education	Winooski	21	0	0	0	0	0	0	0	0	21
Adopt-A-Rain Garden Maintenance Days	Multiple	2	4	0	3	0	0	1	0	0	10
ECHO Kids Rain Garden Maintenance and Education (2 events)	Burlington	21	0	0	0	0	0	0	11	0	32
Oneida Acres Stormwater Walk	Burlington	0	0	0	0	0	0	15	0	0	15
Indian Brook and Pearl Street Park Clean-Up	Essex	0	0	9	0	0	0	0	0	0	9
	Total	66	17	26	22	2	24	90	14	3	264



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Other Vermont towns that are not part of the Chittenden County Stream Team participate in CCST activities. The chart below identifies towns with significant participation (Table 3).

**Table 3. Participation in CCST Activities from Non-Member Towns**

CCST Outreach and Event Participation Beyond Participating MS4 Towns								
	Town	Jericho	Richmond	Hinesburg	Charlotte	Colchester	Montpelier	Other Towns
Facebook Likes	N/A	3	0	2	0	4	4	35
Website Activity	N/A	6	0	2	0	25	58	788
Mailing List Members	N/A	2	1	0	1	9	0	92
Outreach at Essex Jct 5 Corners Farmers Market	Essex Jct	0	0	0	0	1	0	0
Outreach at Essex Junction Block Party (CtD 2.0)	Essex Jct	0	0	0	0	0	2	2
Outreach at Winooski Farmers Market	Winooski	0	2	0	0	2	0	0
Shelburne Rain Barrel Workshop	Shelburne	0	0	0	1	0	0	0
	Total	11	3	4	2	41	64	917

## Connecting the Drops 2.0

In 2013, the Winooski Natural Resources Conservation District received a grant from the Ecosystem Restoration Program, VT DEC, for Let it Rain, a technical and financial assistance program aimed at supporting landowners in the installation of low impact development practices, and subsequently received funding from the Lake Champlain Basin Program to support this initiative with funding for outreach and education to landowners about stormwater. Connecting the Drops emerged from Let it Rain as an art and education installation about stormwater, featuring rain barrels, in downtown Burlington in the summer of 2013. WNRCD received a \$40,000 grant from ECOS to develop Connecting the Drops. RSEP provided an additional \$12,500 to leverage the exhibit's exposure for logo placement on print and web ads, signage, website, fliers, and verbal recognition at public events associated with the exhibit.

Based on the successful outcomes of the 2013 campaign, RSEP members requested a proposal for a second year of the Connecting the Drops Project, known as Connecting the Drops 2.0 (CtD 2.0). With a significantly smaller scope, Lake Champlain Sea Grant (LCSG) worked with CCST to develop a "traveling" version of the Connecting the Drops exhibit to be held in Essex Junction during the summer of 2014. Five professionally-painted rain barrels with informational signage and the Kids VT stormwater story panels were installed at Maple Street Park in Essex Junction on June 9<sup>th</sup>, 2014. There were two outreach events associated with the CtD 2.0 campaign and a rain barrel workshop. The build-a-rain-barrel workshop was held at Maple Street Park on June 14, 2014 and served to kick off the rain barrel exhibit. The workshop was attended by 36 people who built a total of 26 barrels. CCST provided outreach at the 5 Corners Farmers Market on July 11, 2014 and at the Essex Junction Block Party on July 19, 2014. The artist-decorated rain barrels were given away on stage at the Block Party. Throughout the five weeks that the artist-decorated rain barrels were on display in Maple Park, before the Block party, 71 people applied through the Let it Rain website to win a rain barrel



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(Table 4); an additional 36 people signed up during the Block Party for a total of 107 sign-ups. Full reports on the details of the CtD 2.0 and 2013's Connecting the Drops campaign are available and on file with the CCST chairs.

**Table 4. Rain Barrel Sign-Ups by Town**

Demographics of People who Signed up to Win a Rain Barrel through QR Code	
Town	Number of People
Williston	12
Essex	13
Essex Junction	22
South Burlington	0
Burlington	6
Shelburne	0
Milton	1
Winooski	0
Other	17
<b>TOTAL</b>	<b>71</b>

No town information is available on the 36 people who signed up to win a rain barrel during the Block Party. The 71 people who signed up through the website, did so while the barrels were on display at Maple Street Park

In 2014, RSEP contributed \$2,857.28 to support the operations of CtD2.0. These funds helped compensate the five professional artists (\$1,000), paid for advertising (\$1,729.20) and signage (\$45.00). LCSG contributed 57 hours of in-kind personnel time. The municipal entities of Essex and Essex Junction contributed 10 hours of in-kind labor from interns and 15 hours of staff personnel time for event planning. Kids VT also provided \$750 of in-kind advertising as a sponsor of CtD2.0.

A portion of RSEP's funds went to supplement CCST personnel hours to lead outreach and hands-on events for CtD 2.0. In FY 15, RSEP provided CCST with a grant of \$4,031.16 to support increased staff time to conduct CtD2.0 and to meet additional requests for outreach and hands-on participation in the CCST target communities. CCST staff used 42.5 personnel hours and \$67.65 of mileage to plan and execute CtD2.0. There was a \$38.88 profit on materials for the CtD2.0 rain barrel workshop; participants were charged \$30 for the workshop to cover supply costs. In total, CCST spent \$1,728.77 for the entire CtD 2.0 campaign.

Connecting the Drops 2.0 had a significant impact on CCST's very successful year in 2014. The amount spent by CCST (\$1,728.77) is six percent of CCST's FY15 budget. This relatively small budget percentage had a large impact on the overall participation numbers in 2014. All workplan targets for outreach and event participation in Essex and Essex Junction were exceeded through the CtD 2.0 events. Additionally, the draw of signing up to win a rain barrel at the Essex Junction Block Party brought outreach numbers at a single event higher than any previous CCST numbers, for a total of 58 people reached at the Essex Junction Block party. Not only did these people sign up to win a barrel, but many of them took outreach materials, talked with CCST staff and/or decorated CCST's chalkboard rain barrel. A comparison of participation numbers in Essex and Essex Junction in 2013 and 2014 for equivalent events and interactions is provided below (Table 5). The elevated numbers may be attributed to the increased CCST presence and advertising efforts that occurred through CtD2.0.



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**Table 5. Participation Comparisons in Essex and Essex Junction between 2013 and 2014**

A Comparison of Participation in Essex and Essex Junction in 2013-2014								
	e-news		Facebook "likes"		5 Corners Farmers Market		Essex Junction Block Party	
	2013	2014	2013	2014	2013	2014	2013	2014
Essex	14	28	1	2	9	14	10	30
Essex Junction	7	8	0	1	0	12	3	18

Based on the participation numbers from 2013 and 2014, Connecting the Drops is a successful and repeatable strategy to engage target towns in both outreach and hands-on events. The scaled-down version held in Essex and Essex Junction in 2014 helped efficiently meet workplan goals at a small cost.





Attachment C  
VTrans Green Stormwater Infrastructure  
Annual Report

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## GREEN STORMWATER INFRASTRUCTURE ANNUAL REPORT

(July 1, 2013 to July 1, 2014)

VTrans Green Stormwater Infrastructure (GSI) Program

Submitted by: Craig DiGiammarino, Environmental Program Manager & VTrans GSI Team Lead

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As reported under the July 2013 VTrans GSI Implementation Work Plan in response to the March 2012 Executive Order, a short-term strategy was developed to continue and enhance what VTrans has been doing to incorporate GSI practices and systems into Agency Programs and a VTrans GSI Liaison has been charged with coordinating and tracking all internal GSI efforts and to sit on the joint State Agency GSI Council as the Agency's sole representative. An internal GSI Team representing each relevant program in VTrans was formed to address the following short-term objectives over the past year:

- A. Develop strategic policy recommendations and specific actions addressing the issues, barriers, questions, and opportunities put forth in the GSI Work Plan.
- B. Implement GSI Work Plan and prepare annual reports addressing accomplishments and challenges in that year and opportunities and strategies moving forward in the coming year.
- C. Work with ANR to identify training opportunities for VTrans staff.
- D. Support research and monitoring of new and innovative technologies.
- E. Support GSI initiatives at the local level (town road crews).
- F. Support development of technical guidance and standards.
- G. Review Better Back Roads Program for applicability of GSI components.

The first year's focus was on forming the group, providing education to those members of the team and to set a direction for the promotion and adoption of GSI in the years ahead. Note that efforts taken by this group in the first year is a significant first step towards greater integration of GSI concepts into State Transportation processes, programs, and projects. It was a successful year for getting this program off the ground and has set the stage for a lot of great work to follow in the years ahead.

Summary response to A through G above.

- A. A number of action items were put forth over the past year and are included on the pages that follow.
- B. We have begun to implement the GSI Work Plan, are preparing annual reports, and addressing challenges and opportunities. Educating VTrans GSI Team Members on GSI was the primary objective.
- C. VTrans and ANR have collaborated on trainings and those are listed under the Training and Education Action Item on the following pages.
- D. Research continues at the Randolph Park and Ride site and accomplishments are reported on the following pages under Research.
- E. More work needs to be done on rolling GSI out at the local level and will be targeted in the next year.
- F. More work will be put into developing technical guidance and standards. We have started this and our efforts are reported on the following pages.
- G. The Better Back Roads Program will be rolled into our second year work program.

**VTrans GSI Team was formed and met 6 times since October 2013. Team Members include:**

Division	Participant
Operations	Craig DiGiammarino, Env'I PM & GSI Team Lead & State Liaison Jennifer Callahan, Stormwater (HQ and District) Brad McAvoy, Facilities
Policy, Planning and Intermodal Development	Gina Campoli, Policy & Planning Amy Rast, Public Transit James Thompson, Aviation Dan Delabruere, Rail
Program Development	Jon Armstrong, Env'I SW Engineer Chris Slesar, Env'I Specialist Supervisor Jane Brown Env'I Landscape Design Craig Keller, Utilities & Permits Phil Peloquin, Highway Safety & Design Amos Kempton, Highway Safety & Design Brandon Kipp, Highway Safety & Design Mike Fowler, Pavement Management Jonathan Harrington, Pavement Management Hiram Salls, Structures Scott Robertson, Local Transportation Facilities Andrea Wright, Construction Vacant – tbd - Rob White, Right-of-Way Vacant – tbd - , Materials & Research To be added, VTrans Better Back Roads

GSI first year work plan action items, assignments and accomplishments are noted in the following table.

Leader & Support	Task/Action ANNUAL STATUS REPORT – END OF FIRST YEAR (July 2013 - July 2014)
<p><b>Craig DiGiammarino</b></p> <p>Supported by: GSI Team</p>	<p><b>INFORMATION SHARING &amp; ANNUAL REPORTING</b></p> <p><b>GOAL:</b> Set up and maintain Agency GSI SharePoint page. Annual Reporting due in July to include:</p> <ul style="list-style-type: none"> <li>σ Strategic policy recommendations and actions</li> <li>σ Program changes, resource needs, funding needs, and timing</li> <li>σ Long-term Vision and adaptive management approach</li> <li>σ Accomplishments, challenges, opportunities, etc...</li> </ul> <p><b>ACCOMPLISHMENTS:</b> Established and maintained internal Agency SharePoint Page for GSI efforts Established and facilitate GSI Team and held 6 meetings over the year Develop annual report for submittal in July 2014</p>
<p><b>Jon Armstrong</b></p> <p>Supported by: C. DiGiammarino J. Callahan Andrea Wright</p>	<p><b>TRAINING &amp; EDUCATION</b></p> <p><b>GOAL:</b> Educate VTrans staff, consulting engineers, project managers, &amp; Ex. Staff about GSI.</p> <ul style="list-style-type: none"> <li>σ Develop and maintain list of current and upcoming relevant trainings using SharePoint/Web/Other</li> <li>σ Partner and collaborate with sister state agencies and other DOTs to develop and deliver relevant trainings through the VTrans Training Center or other venue</li> <li>σ Develop tracking systems for annual reporting</li> </ul> <p><b>ACCOMPLISHMENTS:</b> <b>Trainings (some coordinated with ANR) attended by various VTrans staff</b> UVM Study of Backroad bmp effectiveness presentations 7/11/13 &amp; 3/20/14 Valuing GSI webinar 9/23/13 Invasive Species training 11/7/13 NW VT LID Stormwater tour 11/22/13 From Biorétention to Permeable Pvt: An in-depth intro to GSI (“Trinkaus”) 12/5/13 Rivers and Roads Tier 2 Training 10/22-25/13 Innovative Transportation Stormwater Mgt: GSI in Road Projects webinar 3/6/ 14 LCBP Climate change workshop 3/24-25/14 ANR Municipal Training Day 3/21/14 Successful GSI program drivers webinar: 4/2/14 Raising the Bar: GSI planning and design:4/22-23/14 Integrating GSI into Existing Public Works Projects webinar 5/6/14 Climate change adaptation workshop 5/12/14</p>

<b>Leader &amp; Support</b>	<b>Task/Action</b>
<p><b>Phil Peloquin</b></p> <p>Supported by: Chris Slesar Jon Armstrong Mike Fowler Jenn Callahan Jane Brown</p>	<p><b>ANNUAL STATUS REPORT – END OF FIRST YEAR (July 2013 - July 2014)</b></p> <p><b>DESIGN STANDARDS</b></p> <p><b>GOAL:</b> Promote the modification of existing procedures, protocol, design standards, and specifications to include elements of the GSI. Build consensus around definitions and characteristics of GSI in the transportation sector.</p> <p>Review existing design standards for opportunities to incorporate GSI, looking for opportunities that can be put into place over the short-term and will hold off from full review of design standards or even developing a full set of new GSI specific standards until after ANR has updated its Stormwater Design Manual.</p> <p><b>ACCOMPLISHMENTS:</b> The major focus under this action item was to develop an understanding of what GSI is and how it can be applied to transportation projects. Much more work is planned for the second year. We have been successful in working with our design staff to promote sheet flow off our roads by removing timber curbs under guardrail where site conditions and slope stability make this possible. This has been a trial run and we will start reporting miles of “sheet flow restored” in the second year.</p>
<p><b>Phil Peloquin</b></p> <p>Supported by: Jon Armstrong Jenn Callahan Mike Fowler Patti Coburn</p>	<p><b>GSI DESIGN CHECKLIST FOR PDD LINEAR PROJECTS</b></p> <p><b>GOAL:</b> Develop a stronger vision for GSI in highway design with specific goals and targets including consideration of stormwater early on in project scoping/design, even when a state stormwater permit is not required. Draft a checklist of GSI opportunities to consider in project design (PDD and LTF).</p> <p><b>ACCOMPLISHMENTS:</b> VTrans will be using the “Complete Streets” checklist as template which will likely refer out to a set of GSI practices or even GSI database of practices available and suitable for transportation projects. This checklist will not only be used on VTrans projects, but also be used by Municipalities proposing projects within the State ROW.</p> <p>The major focus under this action item was to develop an understanding of what GSI is and how it can be applied to transportation projects. Much more work is planned for the second year.</p>
<p><b>Jenn Callahan</b></p> <p>Supported by: Amy Rast Jon Armstrong Brad McAvoy James Thompson</p>	<p><b>GSI DESIGN CHECKLISTS FACILITIES</b></p> <p><b>GOAL:</b> Develop a stronger vision for GSI in facility design processes with specific goals and targets including consideration of stormwater early on in project scoping/design, even when a state stormwater permit is not required. This effort includes Public Transit, Highway Maintenance, and Aviation Facilities. Draft a checklist of GSI opportunities to consider in project design.</p> <p><b>ACCOMPLISHMENTS:</b> A draft checklist is being developed and will require more work early in the second year.</p>

<b>Leader &amp; Support</b>	<b>Task/Action</b>
<p><b>Jenn Callahan</b></p> <p>Supported by: Gina Campoli Craig Keller</p>	<p><b>ANNUAL STATUS REPORT – END OF FIRST YEAR (July 2013 - July 2014)</b></p> <p><b>GSI TECHNICAL ASSISTANCE</b></p> <p><b>GOAL:</b> NPDES Municipal Separate Storm Sewer System (MS4) General Permit requires the development of a GSI technical assistance program targeting VTrans “Public”. For VTrans, a designated MS4, this means targeting Municipalities, VTrans Staff and users of the Highway system. The VTrans compliance program under the MS4 could be applied statewide and could include GSI. Implement MS4 Technical Assistance program statewide; report annually under GSI. Enhance the VTrans web site to better provide technical guidance on GSI.</p> <p><b>ACCOMPLISHMENTS:</b> Working with Utilities and Permits and Districts on GSI educational flyer to accompany Section 1111 application materials and to be posted on Utilities and Permit web serving as technical assistance flyer will be developed as an educational tool for those considering altering flow of stormwater entering the State ROW.</p> <p>Working with Agency of Agriculture on providing technical assistance to the farm community and participated in Agency of Agriculture sponsored training for technical assistance providers to the farm community.</p>
<p><b>Craig DiGiammarino</b></p> <p>Supported by: Craig Keller Andrea Wright Jenn Callahan Jon Armstrong VTrans Legal Right-of-Way</p>	<p><b>REGULATING “RUN-ON” &amp; CONNECTIONS – POLICY &amp; PROCEDURE</b></p> <p><b>GOAL:</b> Develop a consistent approach addressing “run-on” (altered discharge) from adjacent properties, requests to connect to the State stormwater system, connections discovered during construction and enforcement of all the above. Develop and adopt a policy statement and procedure addressing “run-on”, illegal connections, illicit (non-stormwater) discharges entering, directed at or connected to the State ROW and the stormwater system within the State ROW.</p> <p><b>ACCOMPLISHMENTS:</b> A “draft” policy and procedure is being drafted and internal meetings are being held.</p>
<p><b>Chris Slesar</b></p> <p>Supported by: Craig DiGiammarino</p>	<p><b>WASTE, STAGING &amp; BORROW – STANDARD CONDITIONS</b></p> <p><b>GOAL:</b> Consider opportunities to better manage waste, staging and borrow sites approved for use in VTrans ROW or on VTrans land to include GSI concepts. Update existing waste site approval process such that areas providing natural stormwater treatment (GSI) are preserved and not filled with waste materials.</p> <p><b>ACCOMPLISHMENTS:</b> A draft policy and procedure is being discussed and will likely be in place for the use during the 2014 construction season. We will also look to identify, map and preserve areas permitted and currently treating stormwater.</p>

<b>Leader &amp; Support</b>	<b>Task/Action</b>
<b>Materials &amp; Research</b>	<p align="center"><b>ANNUAL STATUS REPORT – END OF FIRST YEAR (July 2013 - July 2014)</b></p> <p><b>RESEARCH</b></p> <p><b>GOAL:</b> Continue ongoing research on GSI techniques tailored for the linear nature of most transportation infrastructure and conduct research/literature search regarding benefits of GSI in the Transportation sector and prioritize GSI life-cycle cost data collection. There is some work that can be done by M&amp;R to support our need to understand what other DOTs are doing for GSI and what the next steps are for past GSI BMP research VTrans has conducted.</p> <p><b>ACCOMPLISHMENTS:</b> It was agreed to hold off on this until after ANR has issued its updated Stormwater Design Manual.</p>
<p><b>Craig DiGiammarino</b></p> <p>Supported by: Jon Armstrong Materials &amp; Research FHWA UVM TRC</p>	<p><b>GSI PRACTICE RESEARCH @ RANDOLPH PARK &amp; RIDE</b></p> <p><b>GOAL:</b> Continue with ongoing research on porous pavement at Randolph Park &amp; Ride. Continue to work with M&amp;R on the resurfacing of this park &amp; ride and continued cooperative research with UVM TRC.</p> <p><b>ACCOMPLISHMENTS:</b> FHWA has recently authorized expanding the research effort at this site to include replacing the failed porous pavement with porous concrete slabs (Stormcrete). The research effort at this park and ride will continue over the coming years.</p>
<p><b>Gina Campoli</b></p> <p>Supported by: tbd</p>	<p><b>REGIONAL PLANNING</b></p> <p><b>GOAL:</b> Identify on-going and sustainable funding sources to support regional planning, coordination and implementation efforts involving GSI and LID. Consider opportunities to integrate GSI and LID into Regional Planning and Funding.</p> <p><b>ACCOMPLISHMENTS:</b> This effort has been put on hold pending the outcome of other efforts and gaining further insight as to its applicability to VTrans.</p>
<p><b>Jenn Callahan</b></p> <p>Supported by: Brad McAvoy James Thompson Amy Rast</p>	<p><b>DISTRICT MAINTENANCE FACILITIES GSI AUDITS</b></p> <p><b>GOAL:</b> Conduct buildings/facilities audits and develop/update/maintain Stormwater Pollution Prevention Plans (SWPPP) for each site. This effort includes Public Transit, Highway Maintenance, and Aviation Facilities. List all sites and propose realistic/achievable strategy for undertaking this audit.</p> <p><b>ACCOMPLISHMENTS:</b> Audits are being delayed until the checklists are completed. We expect audits to get underway in the second year.</p>

Leader & Support	Task/Action
<p><b>Craig DiGiammarino</b></p> <p>Supported by: ROW</p>	<p><b>ANNUAL STATUS REPORT – END OF FIRST YEAR (July 2013 - July 2014)</b></p> <p><b>SURPLUS LAND HOLDINGS</b></p> <p><b>GOAL:</b> Play a role in reviewing designation for State and Federal “Surplus” Landholdings and ROW land. Undeveloped land holdings treating stormwater naturally (GSI) are a valuable “transportation use” and thus should not be designated as surplus.</p> <p>Regarding land purchased with State funds – get involved in the review and designation process.</p> <p>Regarding land purchased with Federal funds – get involved in the review and designation process – have coordinated with ROW and am waiting to be added to their SharePoint review process. Will also need to educate DTA’s on this effort as they see requests for surplus designations very early in the process.</p> <p><b>ACCOMPLISHMENTS:</b> These goals have been accomplished and VTrans Operations is now reviewing surplus land designations early in the process. To date this year one 38 acre parcel of roadside forest and meadow have been taken off the list due to stormwater and water quality needs associated with State highway runoff.</p>
<p><b>Craig DiGiammarino</b></p> <p>Supported by: OPS Asset Management ROW</p>	<p><b>MAPPING</b></p> <p><b>GOAL:</b> Develop GIS layer of VTrans land holdings. Work with ROW on mapping surplus land. Work with OPS Asset Management on mapping lands preserved for stormwater treatment (GSI) in its natural state.</p> <p><b>ACCOMPLISHMENTS:</b> The lengthy mapping project is now underway and may span many annual reports.</p>
<p><b>Jenn Callahan</b></p> <p>Supported by: BGS</p>	<p><b>BGS GSI DEMONSTRATION SITES</b></p> <p><b>GOAL:</b> Collaborate with BGS on installing demonstration GSI practices at Welcome Centers. <u>As time, funding and opportunity allow</u>, work with BGS on demonstration sites.</p> <p><b>ACCOMPLISHMENTS:</b> There are no accomplishments to report this year.</p>

