

<b>A. Permittee Information</b>	
1. Name of MS4:	
2. Permit Number: - 9014	
<b>B. Minimum Control Measures</b>	
<b>1. Public Education and Outreach</b>	
1.1 Website address:	
1.2 Participation in Regional Outreach Strategy <input type="checkbox"/> No <input type="checkbox"/> Yes, summary of activities attached	
<b>2. Public Involvement and Participation</b>	
2.1 Participation in Regional Involvement Strategy <input type="checkbox"/> No <input type="checkbox"/> Yes, summary of activities attached	
<b>3. Illicit Discharge Detection and Elimination</b>	
3.1 Stormwater infrastructure mapping complete or continuing: <input type="checkbox"/> No <input type="checkbox"/> Yes	
3.1 Number of stormwater outfalls inspected:	
3.2 Number of stormwater outfalls tested:	
3.3 Number of illicit discharges detected and eliminated:	
3.4 Additional information attached <input type="checkbox"/> No <input type="checkbox"/> Yes	
<b>4. Construction Site Runoff Control</b>	
4.1 Continued implementation of an Erosion Control Ordinance <input type="checkbox"/> No <input type="checkbox"/> Yes	
4.2 Additional information attached <input type="checkbox"/> No <input type="checkbox"/> Yes	
<b>5. Post Construction Management for New Development and Redevelopment</b>	
5.1 Continued implementation of an ordinance for disturbances of greater than one acre that are not subject to the Agency's post-construction permit program <input type="checkbox"/> No <input type="checkbox"/> Yes	
5.2 Additional information attached <input type="checkbox"/> No <input type="checkbox"/> Yes	
<b>6. Pollution Prevention and Good Housekeeping</b>	
6.1 Participation in the Municipal Compliance Assistance Program <input type="checkbox"/> No <input type="checkbox"/> Yes; Participation year:	
6.2 Number of catch basins inspected:	
6.3 Number of catch basins cleaned:	
6.4 Lane miles swept:	6.5 Cubic yards of material collected by street sweeping:
6.6 Number of staff who attended training:	
6.7 Additional information attached <input type="checkbox"/> No <input type="checkbox"/> Yes	
<b>C. Flow Restoration Plan Implementation</b>	
1. Summary of FRP implementation in stormwater impaired waters is attached: <input type="checkbox"/> NA <input type="checkbox"/> Yes	
<b>D. Phosphorus Control Plan Implementation</b>	
1. Has a Road Erosion Inventory (REI) been completed for your municipality? <input type="checkbox"/> NA <input type="checkbox"/> No <input type="checkbox"/> Yes	

**E. Incorporated Previously Permitted Stormwater Systems**

1. Has the municipality incorporated permitted stormwater systems into its MS4 authorization?  No  Yes

2. If yes, complete the following table or include this information as an attachment

Stormwater Treatment Practice Name	State Stormwater Permit No.	Date of Last Inspection	Maintenance Completed
See Attached Table			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes
			<input type="checkbox"/> NA <input type="checkbox"/> Yes

**F. Other Reporting Requirements**

1. Summary of stormwater activities planned for next reporting cycle: FRP implementation, PCP development, continued mapping updates

2. Proposed changes to the SWMP: None. A new SWMP for new MS4 permit submitted 1/25/19. Currently under review by Agency

3. Reliance on other entities to meet permit obligations: SWMP written with Town of Essex, funding also joint

**G. Certification**

This Annual Report shall be signed by a principal executive officer, ranking elected official or other duly authorized employee consistent with 40 CFR §122.22(b) and certified as follows:

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 gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information submitted 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.

Evan Teich  
 Print Name  
  
 Signature

Unified Manager  
 Title  
3/27/19  
 Date



MCM #1  
REGIONAL STORMWATER EDUCATION PROGRAM

JANUARY-DECEMBER 2018  
SUMMARY OF ACTIVITIES

Prepared by:  
Pluck

## Introduction

Since 2003, Chittenden County's twelve MS4s have worked to pool resources to professionally engage the public in a one message, one outreach effort known as the Regional Stormwater Education Program. Through regular Spring and Summer advertisements to drive people to the program's website, [www.smartwaterways.org](http://www.smartwaterways.org), this cooperative approach to fulfilling their NPDES Permit Minimum Measure #1 requirements has built a regional awareness among the public of the need for individual action to assist in fighting stormwater problems.

In the summer of 2016, the MS4s contracted with Tally Ho through their Lead Agency, the Chittenden County Regional Planning Commission, to rebrand the Smart Waterways campaign into a combined effort with the MS4's Minimum Measure #2 regional effort known as the Chittenden County Stream Team. The goal was to create one cohesive organization and outreach effort to both educate the public about stormwater and boost public participation in implementation of projects to combat the negative impacts of stormwater. In spring of 2017, Rethink Runoff was publicly launched, including a new website and revised creative.

In late 2017, Tally Ho transitioned to Pluck, retaining the same client contact. Pluck subsequently took over the creative, administration, and management of Rethink Runoff.

This 2018 Calendar Year report recaps the performance of the Regional Stormwater Education Program and describes the work done related to the new combined Minimum Measures #1 and #2 effort known as "Rethink Runoff."

## 2018 Initiatives

Having completed the initial rebranding and website design in 2017, we focused on advertising in 2018.

We revised initial digital display advertising and introduced three :30 second animations. Each animation targeted a specific action that could help reduce either stormwater runoff, or the chemicals introduced into stormwater drainage. We placed an emphasis on Lake Champlain, creating a link between the small streams throughout the Lake Champlain Basin and their larger impact on the health of the lake. The audio of the :30 second animations was also repurposed as a radio spot.

Display advertising was rolled out seasonally, with new ads appearing throughout the calendar year, according to seasonal activities, such as swimming or fishing. In addition, we included a series of ads identifying pet waste as a contributor to pollution in Lake Champlain via stormwater discharge. Videos were uploaded to Youtube. Video advertising was targeting by subject matter, age, geographic location and other demographics. Videos were also shown on WCAX in limited quantity as well as on Comcast/Infinity cable stations. The radio spot was broadcast locally, in addition to VPR underwriting.

Print advertising also reflected this seasonal approach, increasing visibility for specific activities at specific times, including a smaller campaign during Clean Water Week.

In addition to advertising, we continued to work on the website. We updated content site-wide. We redesigned the stream monitoring pages, including HTML5 graphs highlighting NaCL, Phosphorus and Turbidity measurements, providing a stronger visual display of information.

We also introduced an Events portal, allowing the Stream Team representative to post events relating to outreach efforts. We also included regional events during Clean Water Week.

For Steam Team outreach, we programmed a new HTML email template for use in MailChimp, that allows monthly e-newsletters sent to our contact list.

## Media Buy Breakdown

Below is a cost breakdown of media buys, compared with spring 2016. Overall, we reduced our television spend and increased our online digital ad spend. Over the past two years, we've also shifted some of our advertising spending to the summer. This helps to provide a longer timeframe for advertising outreach during a the warm summer months, when many people are focused on the rivers, lakes and streams in the area.

2016 – MEDIA BUY			
SOURCE	SPRING	SUMMER	FALL
RADIO	\$4,500	-	\$3,258
DIGITAL	\$7,500	-	\$4,985
TV	\$5,500	-	\$2,379
PRINT	\$2,500	-	
TOTAL	\$20,000	-	\$10,622

2017 – MEDIA BUY			
SOURCE	SPRING	SUMMER* 05/28–08/02	FALL
RADIO	\$3,088	-	\$1,080
DIGITAL	\$3,600	\$3,826	\$4,582
TV	\$2,015	-	\$1,833
PRINT	\$1,755	\$585	\$1,170
TOTAL	\$13,191	\$4,235	\$8,666

2018 – MEDIA BUY			
SOURCE	SPRING	SUMMER* 6/16–08/27	FALL
RADIO	\$2,675	-	\$1,044
DIGITAL	\$3,393.96	\$7,533.96	2986.82
TV	\$3,710	-	\$2,472
PRINT	\$1,755	-	\$1,006
TOTAL	\$8,140.96	\$7,533.96	\$7,509

\* For 2017 and 2018, Summer was initially planned as part of the Spring 2018 budget. Moving forward, the Spring Media Buy will include all purchases made through 7/1. The Fall media buy will include any media buys made from 7/1 the end of the summer.

Creative

Advertising during Year 1 included redesigned creative, incorporating existing messaging with a new visual language based on Rethink Runoff. Video and radio creative was modified to include a new URL, but otherwise remained the same.

Advertising for Year 2 included 2017 creative as well as updated ads released from April-July, tied to spring/summer activities. In addition, we included a mini-campaign promoting Clean Water Week. All ads were rolled out in 8-10 different sizes.

Three :30 second videos were launched in April, May and June. A :30 second radio spot that ran in spring and fall used the voice over of the Fertilizer video spot.

2017 Creative



2018 Creative: Spring Rollout



Summer Rollout



Clean Water Week



Videos



April - Fertilizer  
<https://www.youtube.com/watch?v=7gTbzJN-oeE>

May - Rain Garden  
<https://www.youtube.com/watch?v=imZKTaOtDo4>

June - Rain Barrel  
<https://www.youtube.com/watch?v=r4-NEvelP40>

## Most Popular Creative from Google Display Ads

### By Impressions

CALENDER YEAR 2018 NAME	SPRING: 4/15-MEMORIAL DAY NAME	SUMMER: MEMORIAL-LABOR DAY NAME	FALL: LABOR DAY-10/31 NAME
GENERAL CHAMP	RAIN GARDEN	WATER RECREATION	GENERAL CHAMP
PET WASTE	GENERAL CHAMP	PET WASTE	PET WASTE
WATER RECREATION	PET WASTE	GENERAL CHAMP	FERTILIZER

### By Interaction

CALENDER YEAR 2018 NAME	SPRING: 4/15-MEMORIAL DAY NAME	SUMMER: MEMORIAL-LABOR DAY NAME	FALL: LABOR DAY-10/31 NAME
GENERAL CHAMP	PET WASTE	WATER RECREATION	GENERAL CHAMP
PET WASTE	RAIN GARDEN	PET WASTE	PET WASTE
WATER RECREATION	GENERAL CHAMP	GENERAL CHAMP	FERTILIZER

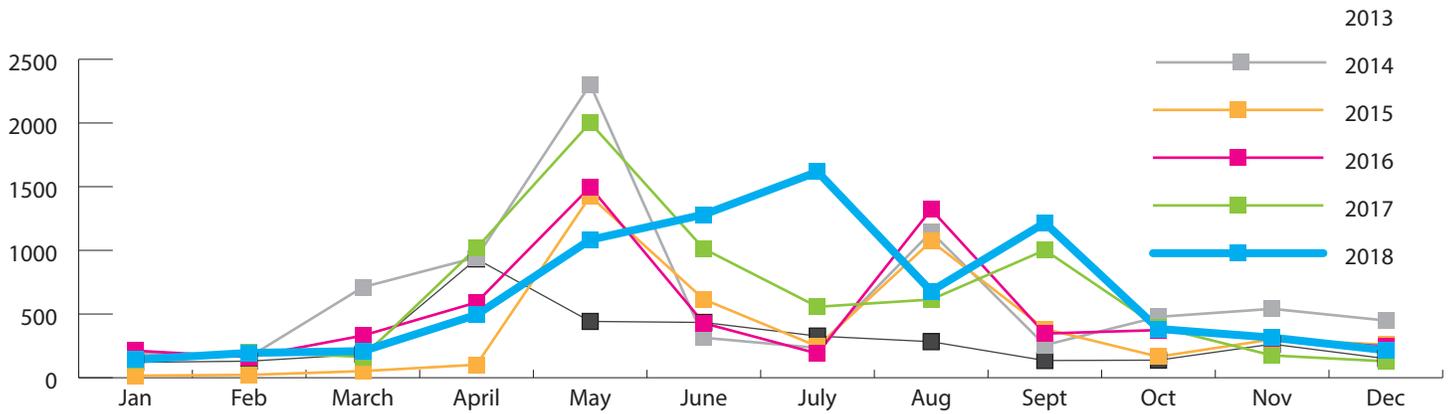
### By Cost-per-click

CALENDER YEAR 2018 TOTAL	TIME PERIOD	SPRING: 4/15-MEMORIAL DAY TOTAL	TIME PERIOD	SUMMER: MEMORIAL-LABOR DAY TOTAL	TIME PERIOD	FALL: LABOR DAY-10/31 TOTAL	TIME PERIOD
WATER REC.	\$0.45/CLICK	RAIN GARDEN	\$0.39/CLICK	WATER REC.	\$0.45/CLICK	WATER REC.	\$0.46/CLICK
RAIN GARDEN	\$0.46/CLICK	SLOW THE FLOW	\$0.39/CLICK	RAIN GARDEN	\$0.54/CLICK	FERTILIZER	\$0.54/CLICK
SLOW THE FLOW	\$0.63/CLICK	GENERAL CHAMP	\$0.39/CLICK	SLOW THE FLOW	\$0.64/CLICK	GENERAL CHAMP	\$0.65/CLICK

## Advertising Click-through Rates

SOURCE	IMPRESSIONS	INTERACTIONS/ VIEWS	COST	COST PER CLICK
DISPLAY ADS	4,091,143	3,988	\$6,238.46	\$1.56
VIDEO (YOUTUBE)	417,346	210,979	\$3,942.31	\$0.02
WCAX DIGITAL	84,467	35	\$750	\$21.42

## Website Metrics for 2018



### Total Sessions/Visits (1/1–12/31)

TOTAL	TIME PERIOD
7,832	2018
7,407	2017
6,004	2016
4,659	2015
7,728	2014
3,541	2013
2,787	2012

### Website visits by device

DEVICE	2018	2017	2016
DESKTOP	50.1%	52.8%	65.7%
TABLET	40.6%	36.4%	24.5%
MOBILE	9.3%	10.8%	9.8%

### Top Vermont Cities and Towns

TOTAL	USERS	
BURLINGTON	1318	19.25%
SOUTH BURLINGTON	767	11.34%
COLCHESTER	519	7.58%
ESSEX/ESSEX JCT.	456	6.66%
SHELBURNE	171	2.5%
WILLISTON	93	1.36%
MONTPELIER	76	1.11%
SAINT ALBANS CITY	71	1.04%
STOWE	66	.96%

### Most visited pages

TOTAL
HOMEPAGE
GET EDUCATED PROBLEMS & SOLUTIONS/PET WASTE
GET EDUCATED /PROBLEMS & SOLUTIONS/RAIN GARDEN
GET INVOLVED/STREAM TEAM
GET EDUCATED/FOR KIDS
GET EDUCATED/PROBLEMS & SOLUTIONS/FERTILIZER & LAWN CARE
GET EDUCATED/PROBLEMS & SOLUTIONS
ABOUT RETHINK RUNOFF
GET EDUCATED
GET EDUCATED/PROBLEMS & SOLUTIONS/REDIRECT YOUR DOWNSPOUTS

New York, 149 Users

Boston, 67 Users



## MCM #2

# Rethink Runoff Stream Team 2018 Summary of Activities

## Social Media

### Facebook

- 219 total “likes”- a 23% increase from 2017 (177 in at end of 2017)
- 222 total “follows” (29 posts this year)

### Instagram

- 120 total “follows” (13 posts this year)

## RRST Website

- See final report from Dave Barron (Pluck Design)

## Newsletter and e-correspondence

- As of 11/28/18, there were **508** subscribers to the RRST newsletter which is an 8% increase in 2018 (from 467 in 2017) It is the highest subscription to date. The average open rate for emails was 24%
- Arbor Day Volunteer Solicitation Email Published on 4/4/18 Opens: 99 Clicks: 7
- Summer Newsletter Published 9/13/18 Opens: 97 Clicks: 6
- Fall Newsletter Published on 11/18/18 Opens: 125 Clicks: 17

## Organizational Partnerships

The Rethink Runoff Stream Team partnered with 18 different organizations in 2018 (15 non-municipal partners, 3 municipal partners)

- Vermont Community Garden Network (Organized state-wide Day in the Dirt event which resulted in 10 volunteers signing up to help with Rain Garden Cleanup at the Coast Guard station)
- VHB (Rain Garden Cleanup)
- Winooski Valley Parks District (Provided land for S. Burlington Arbor Day tree planting, also hosted the Conservation Field Day)
- US Fish and Wildlife (Cost share on trees for Arbor Day)
- Williston Central School (students volunteered for Arbor Day tree planting)
- Lake Champlain Basin Program (Provided funding for much of Arbor Day tree planting event)
- Intervale Conservation Nursery (Supplied trees and staff for Arbor Day tree planting)
- South Burlington NR Committee (Helped with the Trees For Stream planting on Muddy Brook)
- Community Sailing Center (Invited RRST to participate in an on-board education program during the Maritime Festival)
- Chamberlin School - S. Burlington - (A stormwater lesson was taught to Chris Provost’s 4th grade class at the as part of a field trip at the Community Sailing Center in Burlington)



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- Milton Youth Coalition (Provided tabling opportunity for RRST at Milton Activities Fair)
- Shelburne Farms (Provided tabling opportunity for RRST at Shelburne Harvest Festival)
- VT DEC (La Rosa Program funded WQ sampling lab analysis)
- ECHO (Provided tabling opportunity for RRST in the museum during Clean Water Week)
- Colchester High School (students volunteered to stencil storm drains in Colchester as part of an AP Environmental Science project)
- Burlington Parks and Rec (Provided tabling opportunity for RRST at Kid's Day)
- Winooski Department of Recreation and Parks (Provided tabling opportunity for RRST at Winooski Wednesdays event)
- Winooski DPW (Assisted in selection of storm drain mural locations, cleaned catch basins and provided day-of support to artists)

## Media

The Rethink Runoff Stream Team had **six** media appearances in 2018, exceeding the work plan goal of five articles:

- Article: Call for Tree Planting Volunteers: Williston Observer & The Other Paper (April)  
<http://www.willistonobserver.com/streambank-tree-planters-needed/>  
<http://otherpapersbvt.com/community-tree-planting-event-celebrate-arbor-day-with-your-friends-and-neighbors.html>
- Article: The Citizen - Survey Results (May)  
<http://www.thecitizenvt.com/2018/05/03/survey-shows-increased-awareness-stormwater-runoff-problem-solutions/>
- Article: Call for Stream Team Volunteers, Williston Observer (June)  
<http://www.willistonobserver.com/chittenden-county-water-quality-volunteers-needed/>
- TV Coverage: Clean Water Week (August)  
<http://www.wcax.com/content/news/Lend-a-hand-with-nonpoint-water-pollution-489666141.html>
- TV Coverage: Winooski Storm Drain Mural Project (October)  
<https://www.wcax.com/content/news/Winooski-mural-aims-to-educate-on-stormwater-pollution-496723301.html>
- TV Coverage: Burlington Storm Drain Stenciling (October)  
<https://www.mychamplainvalley.com/news/protecting-vermont-s-water-by-rethinking-runoff/1510638055>



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## Outreach

Outreach includes any educational opportunities or tabling events where resources or information are provided to the community about the RRST program. There were **seven** outreach events in 2018, with an estimated total outreach to **470** people.

Outreach events in 2018 targeted the municipalities of **Milton, Shelburne and Burlington. Winooski** carried over from last year due to a venue cancellation experienced in 2017.

- **Burlington** Kid's Day (5/5/18) 150 people reached
- **Burlington** Clean Water Week Tabling at ECHO (8/1/18 & 8/2/18) Reached 117 people total (35 from our 9-municipality area)
- **Burlington** Lake Champlain Maritime Festival. In partnership with the Community Sailing Center, Rethink Runoff took our education ON the lake. The Rethink Runoff coordinator sailed aboard a small sailboat with 4 community members and shared information about the watershed and how to get involved with Stream Team. 3 adults, 1 kid reached
- **Shelburne** Harvest Festival (9/15/17) 61 adults, 77 kids reached
- **Winooski** Wednesdays (9/5/18) Reached 12 adult Winooski residents and 8 kids
- **Milton** Activities Fair (9/27/18) Reached 40 adults and 60 kids from Milton Brought 'Build a Rain Garden' activity and information about green lawn care
- **Burlington and Colchester:** Storm Drain Stencils were loaned to Jenna Olson and Karen Adams for independent projects. 39 drains marked. 20 students reached

The 2018 work plan goal for outreach participation was 400 people, which was surpassed. A total of **470** people that were engaged in outreach and educational opportunities in 2018. Chosen outreach towns for 2019 are Essex, Essex Junction, and Colchester.

**New Outreach Activity Created:** Stream team coordinator, Kristen, created a new activity to bring to tabling events to engage kids and families. The activity is called "Design Your Own Rain Garden." Using a tray of dirt and laminated pictures of plants that thrive in VT rain gardens (taped on toothpicks), participants can imagine in 3-D space what a rain garden might look like in their own backyard or school. The activity has been a hit so far. To engage adults, the coordinator brought pamphlets about green lawn care and a booklet about how to build a rain garden.



Figure 1: Build-a-Rain Garden Activity at a tabling event at ECHO



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## Event-Driven Tasks

There were **seven** hands-on events held in 2018. Event-Driven Tasks involve community members in some form of hands-on engagement. This most often means volunteering, but can also include hands-on education activities with school groups.

- Rain Garden Clean Up at Burlington Coast Guard Station (4/28/18)
  - Partnered with VT Community Garden Network to carry out this event
  - 10 volunteers
- Trees for Streams Arbor Day Planting: Williston (5/4/18)
  - Partnered with Winooski Valley Parks District, The Intervale Conservation Nursery, US Fish and Wildlife, The Lake Champlain Basin Program and Williston Central School to carry out this event
  - 50 volunteers (36 students, 14 adults)
  - 560 trees planted along Allen Brook
- Trees for Streams Arbor Day Planting: South Burlington (5/4/18)
  - Partnered with Winooski Valley Parks District, The Intervale Conservation Nursery, US Fish and Wildlife and The Lake Champlain Basin Program and to carry out this event
  - 22 volunteers
  - 840 trees planted along Muddy Brook
- Conservation Field Day at Ethan Allen Homestead (5/16/18)
  - Reached 71 students from S. Burlington, Colchester and Essex
  - This environmental education event was hosted by WVPD at Ethan Allen Homestead in Burlington. 5th grade students from regional schools spent the day rotating through a series of workshops focused on conservation stewardship. RRST coordinator taught a workshop about stormwater
- Stream Team Water Quality Volunteer Training Day at WNRCD office (7/9/18)
  - 14 people trained, materials distributed for stream sampling
- Stormwater Lesson with Chamberlin School at the Community Sailing Center (CSC)
  - 26 students (4th graders from S. Burlington) participated in a field trip at the CSC. Kristen provided 1.5 hours of watershed education at the end of the sailing segment. Students used markers and paper to trace the watershed around their school, sung a song about watersheds and interacted in small groups with hands-on watershed models. They experimented with what happened when “rain” from a spray bottle hit different surfaces and then distributed “pollution” (sprinkles, confetti, etc.) on the landscape to see where it would flow.
- Winooski Storm Drain Mural Project - Winooski (10/10/18)
  - Partnered with the Winooski DPW and local artists to carry out this event
  - 3 artists painted a total of 2 murals. Artists reported speaking to about 75 people about the project while they were out painting.



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Hands-on participation events in 2018 targeted the towns of Winooski, South Burlington, and Williston. Details about engagement in those communities can be seen above.

A total of 74 people participated in hands-on RRST events in 2018. A total of 94 people volunteered their time in a RRST activity in 2018; just falling short of the 100 volunteer goal. Chosen project towns for 2019 are Burlington, Milton, and Shelburne

## RRST Outreach Demographic Impacts

The table on this next page displays the interaction from each of the nine MS4 communities at tabling events and 2018 project events and workshops. Please note: this is not a comprehensive list of all 703 people reached, as town residence was only acquired when offered.

Town	# of participants
Burlington	255
Colchester	25
Essex Town	20
Village of Essex Junction	10
Milton (O)	100
Shelburne (O)	58
Williston*	59
South Burlington*	81
Winooski* (O)	95
TOTAL	703

**Table 1: Interaction with RRST by member town (\* = 2018 project towns (O) = outreach town)**



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## City of Winooski Project: Storm Drain Murals

RRST coordinated a storm drain mural event for the City of Winooski in 2018. A “call for artists” was published by the Essex Reporter on May 31, 2017 and the opportunity was shared with artists involved in past RRST projects. Four concepts were submitted by two artist teams and two were selected to be painted around catch basins pre-selected with guidance from the City’s Public Works Department.

On the morning of October 10, 2018, the three artists, Holly Greenleaf, Rachael Forando, and Stephen Welter were stationed at their assigned catch basins: Holly at the catch basin outside Chick’s Market at the corner of River St and Hickock St. and Rachael and Stephen as an artist team on Winooski Falls way by the bus stop. The artists signed contracts stipulating the requirements and procedures they had to adhere to in order to participate in the project. Instead of traffic paint, self-priming porch and floor enamel was used by all artists. Public Works staff assisted with thoroughly cleaning the areas to be painted and ensuring safety of the artists by providing traffic cones and vests. All murals were completed by the end of the day. Throughout the day, the RRST coordinator checked in with the artists. Each artist was given a pack of Rethink Runoff stickers and a mailing list sign up sheet. Artists reported speaking with about 75 passers-by about the project. They gave away about 30 stickers, and 2 people signed up for the mailing list. WCAX covered the story (see link in Media list above) and Facebook likes and shares were higher for this post than any other post in RRST history. About 2,800 people digitally interacted with the post.

The total estimated cost to plan, manage, and implement this project was **\$1,411**. The approximate personnel time used to plan and execute the project was 20 hours (\$900). The artists were paid a \$250 stipend each; a total of \$500. The mileage was about \$11.



*Figure 2: Winooski murals (Chick’s Market: artist Holly Greenleaf, left Winooski Falls Way: artists Rachael Forando and Stephen Welter, right)*



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## Town of Williston Project: Arbor Day Community Riparian Buffer Planting

On May 4, 2018, 50 community volunteers (including 36 students from Williston Central School) joined a crew from The Intervale Center at Allen Brook behind the Williston Central School soccer fields in Williston to plant native trees along the bare banks of this stretch of river. Volunteers planted 560 trees, covering 1.4 acres of river with native vegetation.

Prior to the volunteer day, RRST coordinator used funds from the Lake Champlain Basin Program (LCBP) Trees for Streams grant to scope sites and secure landowner agreements for the planting projects. RRST money was used to solicit volunteers and coordinate the volunteer work days on the day of the planting event.

The estimated cost to RRST to plan and carry out the tree planting event was approximately **\$1,530**. Supplies, including trees and tree protection, were purchased with funds from the LCBP grant and cost-share from the US Fish and Wildlife Partners. Personnel time used to plan and execute the project was roughly 33 hours or \$1,400. Refreshments were approximately \$30 and mileage was approximately \$15.



*Figure 3: Volunteers in Williston plant trees along Allen Brook on Arbor Day, 2018 (5/4/18)*



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*Figure 4: Some major partners for both Arbor Day Riparian Buffer Planting Projects*

## **Town of South Burlington: Arbor Day Community Riparian Buffer Planting**

On May 4, 2018, 16 community volunteers joined RRST coordinator and a crew from The Intervale Center at Muddy Brook Wetland Reserve in South Burlington to plant native trees along the bare banks of this stretch of river. Volunteers planted approximately 400 trees, covering one acre of river with native vegetation.

Prior to the volunteer day, RRST coordinator used funds from the Lake Champlain Basin Program (LCBP) Trees for Streams grant to scope sites and secure landowner agreements for the planting projects. RRST money was used to solicit volunteers and coordinate the volunteer work days on the day of the planting event.

The estimated cost to RRST to plan and carry out the tree planting event was approximately **\$1,530**. Supplies, including trees and tree protection, were purchased with funds from the LCBP grant and cost-share from the US Fish and Wildlife Partners. Personnel time used to plan and execute the project was roughly 33 hours or \$1,400. Refreshments were approximately \$30 and mileage was approximately \$15.



*Figure 5: Volunteers in S. Burlington plant trees along Muddy Brook on Arbor Day, 2018 (5/4/18)*

## **Water Quality Monitoring Program Summary**

RRST has maintained an ongoing water quality monitoring program since 2012. These urban or suburban streams are impacted by sedimentation, excessive nutrient loading, high temperatures, bacteria, and other pollution. With another year of support from VT DEC's LaRosa program, RRST collected biweekly water quality samples at twenty three sites on twelve streams in 2018 (an increase by five sites and three streams from 2017). Thirteen volunteers and one intern helped collect grab samples on five, biweekly Tuesdays from 7/10 - 9/4. Grab samples were analyzed for turbidity, total phosphorus, and chloride. These parameters were also sampled at five of the sites during one rain event on 8/18. See the 2018 Water Quality Monitoring



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Report in Appendix A for more information.

The training day for citizen science samplers took place on 7/9/18. RRST coordinator demonstrated sampling procedures, described the data collection sheets and answered questions. Throughout the season, volunteers returned their samples to the WNRCD office after sampling, and the RRST coordinator ensured all samples were accounted for and delivered to the UVM lab. All volunteers received a hand-written thank-you card at the end of the sampling season. A volunteer appreciation event is planned for spring 2019. Volunteers expressed an interest in having an educational experience, rather than a pizza party, so the plan is to host a tour of the Essex Wastewater Treatment Plant, followed by snacks.

New this year, the RRST coordinator sent bi-weekly emails to WQ volunteers to check in about sampling procedure and share interesting local water tidbits. This frequent communication was well received by the volunteers. The coordinator also solicited feedback on the training materials and field data sheets and made significant edits for 2019 to improve clarity.

WNRCD sponsored an (unpaid) water quality intern for the sampling season. James Mazzola, a recent graduate, helped collect 5-8 samples each sampling day. He also helped the RRST coordinator scope the five new sampling sites for safety and suitability and helped update directions for all sites, adding pictures and more descriptive landmarks.

<i>Stream</i>	<i>Location</i>	<i>Site ID</i>	<i>Lat / Long</i>
<b>Centennial Brook</b>	Grove Street in Burlington (by the parking lot for Schmanska Park)	Centennial 10	44.48453, -73.18423
	Patchen Road in South Burlington (through cemetery)	Centennial 20	44.47402, -73.17334
<b>Indian Brook</b>	Parking lot B of Essex High School	Indian 10	44.49668, -73.11093
	Lang Farm in Essex	Indian 20	44.50442, -73.09190
<b>Malletts Creek</b>	McMullen Road	Milton 10	44.60855, -73.10693
<b>Munroe Brook</b>	Route 7 and Bay Road (by Red Apple Motel)	Munroe 10	44.40532, -73.21735
	Spear & Webster Intersection (just south of Kwiniaska Golf Course)	Munroe 20	44.38984, -73.20103
<b>Morehouse Brook (one old site: 10 one new site: 20)</b>	Landry Park Winooski (Eastern trib)	Morehouse 10	44.50035, -73.19226
	Landry Park Winooski (main branch - west of Morehouse 10)	Morehouse 20	44.50041, -73.19444
<b>Muddy Brook (20- site changed for safety)</b>	River Cove Road in Williston	Muddy 10	44.47293, -73.13505
	S. Brownell Road Williston	Muddy 20	44.44196, -73.13228
	Van Sicklen Road in Williston	Muddy 30	44.42823, -73.14622
<b>Potash Brook (40 - site changed for safety)</b>	Kindness Court in South Burlington near Humane Society	Potash 10	44.44572, -73.21348
	Farrell Street in South Burlington near	Potash 20	44.44660, -73.20415



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	Klinger's Bakery		
	Dorset Street in South Burlington	Potash 30	44.45150, -73.17849
	Kimball Ave South Burlington	Potash 40	44.45394, -73.14809
<b>Engelsby Brook</b>	Pine St in Burlington near Champlain Elementary Community Gardens	Engelsby 10	44.45627, -73.21394
	Behind UVM Redstone Campus in Burlington	Engelsby 20	44.46654, -73.19741
<b>Alder Brook (new)</b>	Off Chapin Road in Essex	Alder 10	44.51742, -73.06559
<b>Bartlett Brook (new)</b>	By Shearer Chevrolet in South Burlington	Bartlett 10	44.42596, -73.21345
<b>Sunnyside Brook (new)</b>	Mountain View Drive in Colchester	Sunnyside 10	44.50654, -73.17823
<b>Sunderland Brook (new)</b>	In Pearl Street Park in Essex Junction	Sunderland 10	44.50179, -73.12983
	Off Pine Island Road in Colchester	Sunderland 20	44.51685, -73.20421

**Table 2: 2018 Stream Sampling Site Locations**



**Figure 6: Volunteers sampling at Indian 10, Indian 20 and Muddy 30 on 8/7/18**

Town	Number of Stream Team Volunteers
Essex Junction	3
Colchester	2
S. Burlington	2
Burlington	2
Williston	2
Shaftsbury	1
Hinesburg	1

**Table 3: Stream Team Water Quality Sampling Volunteers by town**



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## Adopt-a Rain Garden Program Summary

The Stream Team's Adopt-a-Rain Garden program is an opportunity for individuals to assist in keeping Chittenden County's public rain gardens functional and attractive. This involves basic maintenance activities like picking up trash, pruning, pulling weeds, installing new mulch, and informing the coordinator of non-functioning gardens. There are currently eleven public rain gardens managed by RRST. In 2018, there were four official adopters, but about 10 community members volunteered time to clean the Coast Guard Station garden this year as part of the Vermont Community Garden Network's Day in the Dirt event. Efforts will be made in 2019 to find individuals or groups to adopt all gardens.

This summer, the RRST coordinator visited all the gardens to remove out of date signage. The signs will be re-laminated with the current RRST logos and information and will be returned next spring. The re-branding of the signs has been organized by Dave Barron of Pluck Designs.

An assessment of each garden was conducted in summer 2018 and the status of each is provided below.:

### Callahan Park Rain Garden

**Location:** 45 Locust St., Burlington

This garden has been functioning well for some time thanks to efforts by Brad Ketterling, who has adopted this garden for several years. In 2017, Burlington Public Works brought a load of mulch to the garden and Brad spread the mulch and kept up with weeding and monitoring the garden. Several, understory shrubs and flowers have been shaded out by larger, over-story plants that need to be thinned. There are several locations that also need to be replanted, so efforts will be made to locate surplus plants that can be added in 2019.

### Chamberlain School

**Location:** 262 White Street, South Burlington

This garden was installed in partnership with WNRCD and the Let it Rain Program in 2013. This is one of several rain gardens on the grounds of Chamberlain Elementary. School teacher Chris Provost adopted this garden again in 2018 and has actively maintained it for several years.

### Coast Guard Station

**Location:** Depot Street, Burlington

This small garden is located in the parking lot abutting the bike path next to the Burlington Coast Guard Station. In 2014, RRST worked with the ECHO summer kids program to engage elementary school children in cleaning the garden and in 2015 a local resident, Wiley Reading, adopted the garden. The garden did not



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have an adopter from 2016-2018, but this garden got a “boost” of energy from 10 community volunteers through the Day in the Dirt event hosted by the Vermont Community Garden Network in spring of 2018. It is in good condition. Efforts will be made to find a volunteer for 2019.

### **Correctional Facility**

**Location:** 7 Farrell St., South Burlington

This garden is visible from the road and appears to be functioning well. Originally, employees of the prison adopted this garden and would occasionally clean the garden with inmates. There has been a lot of staff turnover in the past few years without a clear adopter. No formal adoption of this garden was made in 2018. MS4 representative, Tom DiPietro, has been in communication with Correctional Facility staff about proper maintenance. He will continue to be the main contact for 2019, with support offered from The Stream Team as needed. There is not a RRST garden sign at this garden, but one will not be installed here as visiting the area is discouraged.

### **Farrell Park**

**Location:** Swift Street, South Burlington

This garden is unique in terms of its design. It is called an “advanced wetland stormwater filter” and was installed in 2012. Stormwater enters the garden through an inlet, flows through the gravel wetland filter media, is cleaned and exits through other end. The garden requires very little maintenance because it has a flushing system that prevents sediment from building up. This garden had an active adopter for its entire life, until 2015 when the adopter moved away. The garden was never in need of additional plants or maintenance. It would not be appropriate to add mulch to this garden. RRST would like to find another adopter in 2019, primarily to weed the site and to bring any issues to our attention.

### **Landry Park**

**Location:** North St., Winooski

This garden was constructed in 2006 as two, separate gardens along the narrow strip of grass between a fence at Landry Park and the road. Over the years, the gardens have become overgrown, but Winooski DPW officials believe it still functions well, even with the tall, dense shrubs. A few years ago, nearby road construction altered the slope of the road carrying larger volumes of water into the garden. The increased flows have killed some of the vegetation and caused gullies to form, but the vegetation seems to have rebounded. It would be beneficial to the functionality of the garden to have the sediment vacuumed out and RRST has spoken with the City of Winooski DPW about this maintenance task. It is expected to be completed in spring 2019. In 2016, a group of UVM students in an Ecosystem Design course developed recommendations to repair the garden. There is no current adopter; and RRST coordinator will attempt to find one for the 2019 season.

### **Williston Town Hall Annex**

**Location:** 7900 Williston Rd, Williston



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This small garden near the entrance walkway to the Annex building and the parking lot has had an active adopter since 2014: Rita Desseau. Rita maintained the garden in 2018, but additional work needs to be done at this site to weed, thin larger shrubs, re-plant in bare spots, and mulch the garden.

**Williston Library (aka. Dorothy Alling Memorial Library)**

**Location:** 21 Library Lane, Williston

The Williston Library garden is in good condition and is primarily being cared for by the staff of the library. The flowering plants may need to be thinned out in 2019. This garden was previously cared for by Andrew Wolf.

**South Burlington High School** (formerly the location of the South Burlington Library)

540 Dorset St., South Burlington

WNRCD received a grant to construct a rain garden at the entrance to what was the South Burlington Library (now South Burlington High School) in 2013. The rain garden received minimal maintenance by the library staff over the years, and was formally adopted in 2016 by Amy Niggel’s Cub Scout 678 pack. The pack’s leadership changed hands in 2018 and the new cubmaster Bill Kett agreed to continue maintenance of the garden with his pack.

**South Burlington Fire Department**

575 Dorset St., South Burlington

The City of South Burlington installed this bioretention area/rain garden in 2015 to improve stormwater management at the Fire Department. Cub Scout pack 678 volunteered to adopt this rain garden as well in 2019.

Rain Garden	Adopter 2018	Previous adopters
Chamberlin School, South Burlington	Chris Provost and students	Chris Provost
Coast Guard Station, Burlington	None	Wily Reading
Landry Park, Winooski	None	None
Williston Annex	Rita Dessau	Rita Dessau
Williston Town Library	Town Library Staff	Andrew Wolf
Callahan Park, Burlington	Brad Ketterling	Brad Ketterling
Farrell Park, South Burlington	None	None
Department of Corrections, South Burlington	None	Dana Scofield and Lori Farley
Brownell Library, Essex Junction	None	None



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South Burlington Fire Station	Cub Scouts 678 (Bill Kett)	Cub Scouts 678 (Amy Niggel)
South Burlington Library	Cub Scouts 678 (Bill Kett)	None

**Table 4: 2018 Rain Garden Adopters**

### **2018 Staffing Notes**

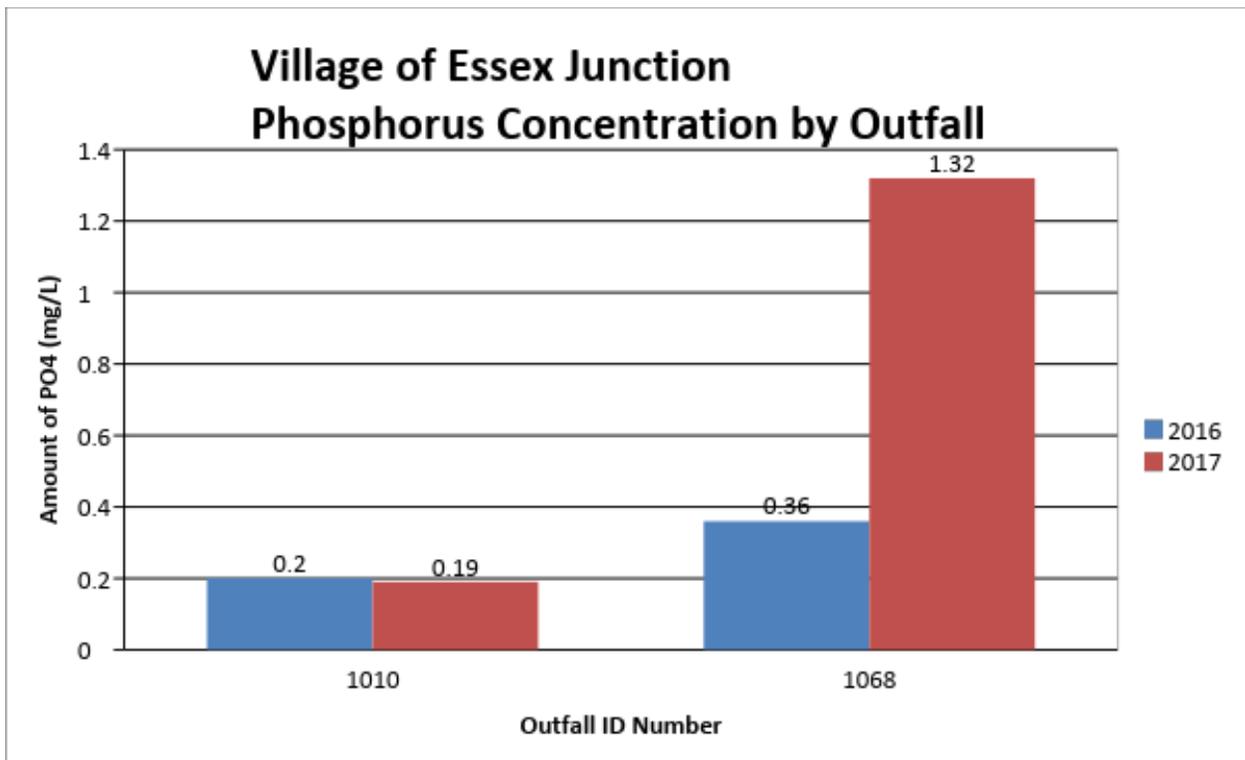
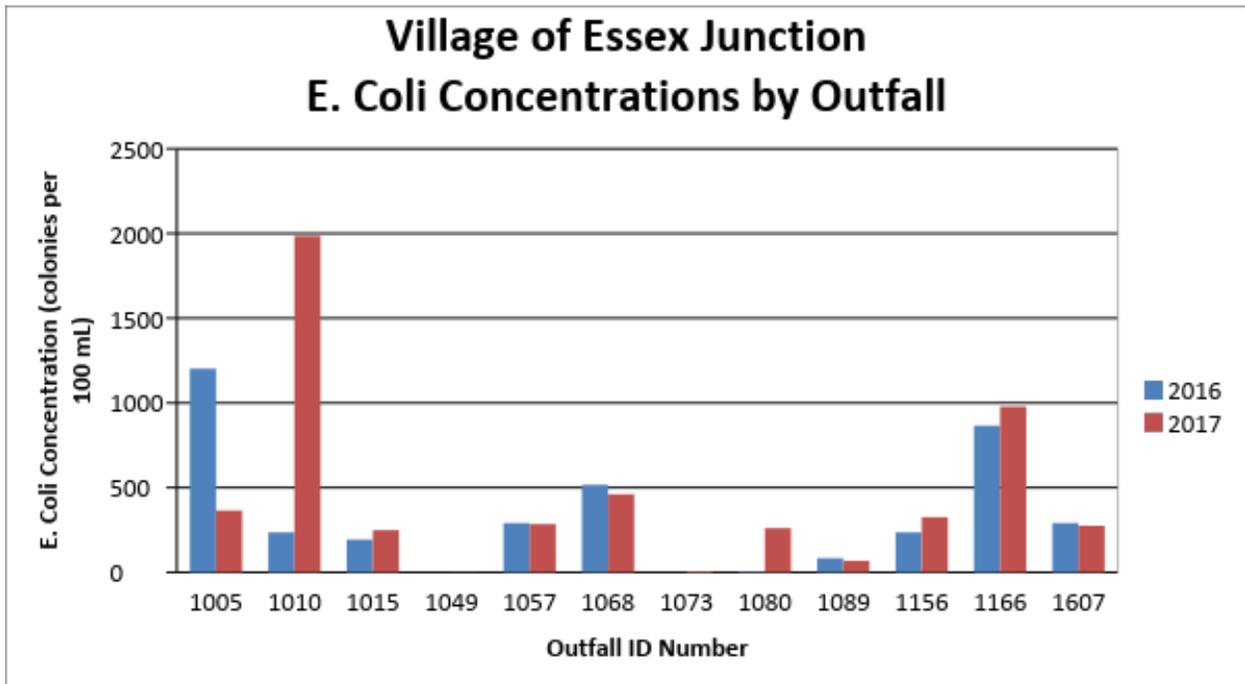
In 2018, WNRCD experienced a full staff turnover. At the end of May 2018, Holly Kreiner left her position with WNRCD and was replaced by Kristen Balschunat. In July 2018, District Manager Corrina Parnapy left her position, and was replaced by Gianna Petito. Kristen has taken primary responsibility for Stream Team activities.



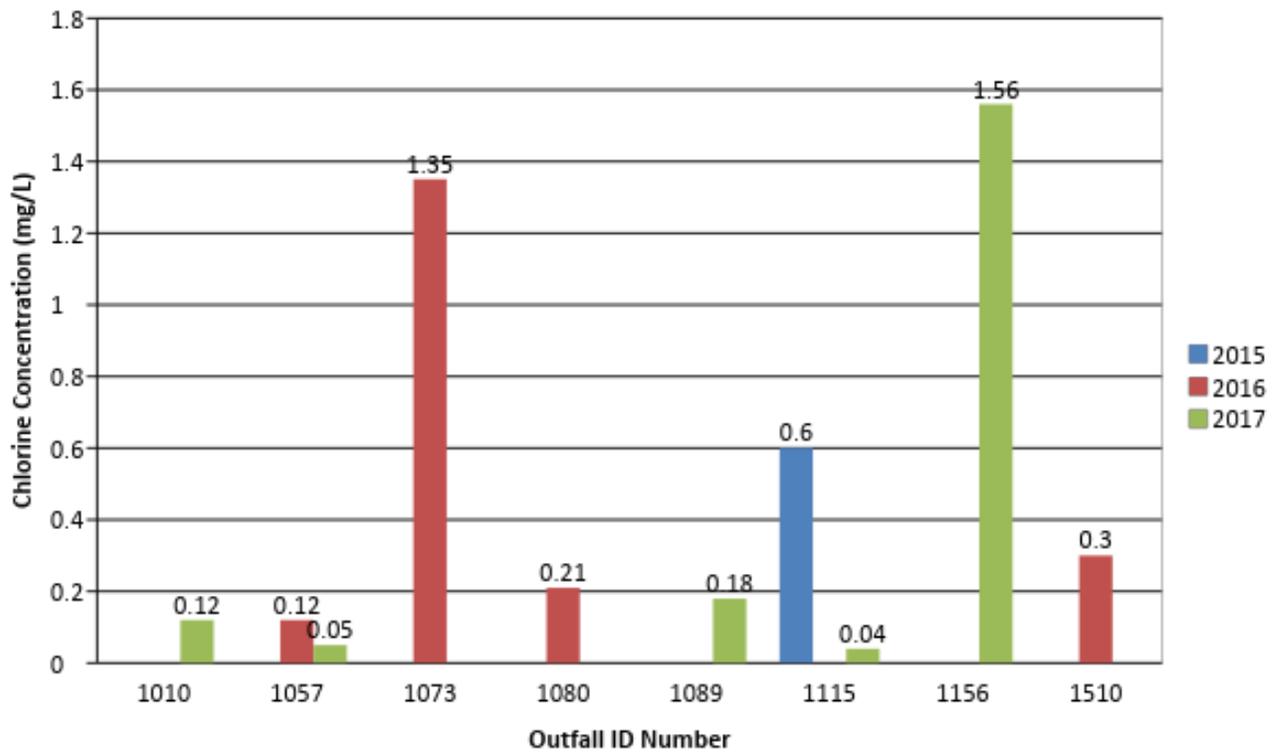
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# Village of Essex Junction

## Water Quality Summary 2014-2017

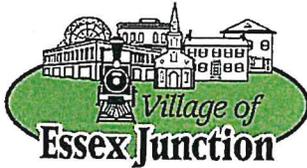


### Village of Essex Junction Chlorine Concentration per Outfall (2015-2017)



## Village of Essex Junction

Stormwater Treatment Practice	System Name	Location	State Stormwater Permit	Date of Inspection	Maintenance Completed
Vortech Unit	5 Corners North	Educational Dr/Central St	4989-INDO	6-2018	yes, cleaning
Stormwater Pond	N/A	Hawthorn Cir	7024-9014.A	6-2018	NA
Vortech Unit	N/A	Hawthorn Cir	7024-9014.A	6-2018	yes, cleaning
Dry Swale	Whitcomb Combined	South St	3547-9010.R	6-2018	NA
Vortech Unit	Upland/Drury	Brookside Ave	4128-INDO	6-2018	NA
Stormwater Pond	Whitcomb Combined	Dunbar Rd	3547-9010.R	6-2018	NA
Stormwater Pond	Whitcomb Combined	Ketchum Rd	3547-9010.R	6-2018	NA



2 Lincoln Street  
Essex Junction, VT 05452  
P: 802-878-6944  
F: 802-878-6946  
[www.essexjunction.org](http://www.essexjunction.org)



81 Main Street  
Essex Junction, VT 05452  
P: 802-878-1341  
F: 802-878-1353  
[www.essex.org](http://www.essex.org)

March 27, 2019

Ms. Christy Witters  
Vermont DEC  
Watershed Management Division  
1 National Life Drive  
Montpelier, VT 05620-3522

RE: April 1, 2019 Permit Required FRP Report

Dear Ms. Witters:

The NPDES General Permit 3-9014 issued to the Village of Essex Junction (Village) and Town of Essex (Town) requires that we submit by April 1, 2019 an update on the state approved FRP implementation progress for Indian and Sunderland Brooks. The State acknowledged that the current BMPs in the Sunderland Brook watershed demonstrate compliance with the TMDL target and no additional implementation is needed for flow at this time. The Town and Village have been awarded grants to implement the top four projects outlined in the Indian Brook FRP. Work continues on these projects:

- **VTRANS TAP GRANT with 20% local match from capital plan:**
  - **TOWN:** \$243,953.46 for the retrofit of a detention pond into an underground stone storage and infiltration gallery adjacent to Sydney Dr.
    - The Town has completed a final draft design with Dubois & King and UNH. The proposed design would utilize StormTech chambers and add in a 12" sand treatment layer below the chambers to optimize infiltration and phosphorus removal.
    - Final plans are currently being reviewed by the Town. Comments to D&K will be submitted this week. Once the comments are addressed, final plans will be submitted to VTrans for final approval. The Town is working to have the project constructed this year.
  - **VILLAGE:** \$142,455.94 for retrofit of an existing natural depression into a gravel wetland along Mansfield Ave. /Brickyard Rd.
    - Final plans have been submitted to VTRANS for approval.
    - This project is going to out to bid with anticipated construction date June/July 2018. The project will be over the maximum grant amount by approximately \$56,000 which the Town/Village has accounted for.
    - Bill Nedde from Krebs & Lensing was hired by South Creek HOA to complete the engineering work for the installation of their stormwater infrastructure. South Creek is

going to install their infrastructure first and then the gravel wetland will be built and incorporate the tie in from the newly installed system as part of the project.

- **VILLAGE & TOWN: Cul-De-Sac Retrofits: \$271,138.38 (20% match from stormwater account)**
  - Awarded March 2018 for the retrofit of 3 cul-de-sacs (Acorn Cir., Sage Cir., and Oakwood Ln.) with infiltration systems. Stantec in partnership with Stone Environmental Inc. was awarded the contract.
  - Two public meetings have been held in 2018 (local concerns & alternatives) with strong turnout from Acorn Circle.
  - Three alternatives were designed for each cul-de-sac with the exception of Oakwood Ln (two only). Phosphorus and cost were estimated for each alternative.
  - Village/Town staff chose alternatives for each cul-de-sac at the end of February.
  - Stantec will begin to draft preliminary plans for the chosen alternatives.
- **Ecosystem Restoration Grant with a 50% local match:**
  - **VILLAGE:** \$133,069 for the retrofit of an existing natural depression into a gravel wetland and culvert upgrade on the corner of Main St. /Fairview Dr. The project has been divided into a two phase project.
    - Aldrich & Elliot in partnership with Watershed Consulting Associates redesigned this project due to the discovery of significant ledge during data collection and located in a portion of the proposed gravel wetland area. The cost to remove the ledge would have made the project not feasible.
    - The altered design decreases the size of the gravel wetland and creates a two-bay treatment design. Excess stormwater runoff from Main St is no longer being diverted into the system.
    - Phase II of the project is being eliminated and instead some of the ledge being removed will be used to repair the severely eroded outfall off of Main St across from the gravel wetland.
    - Due to the 1-year no cost grant agreement extension granted to the Village on this project it must be completed by December 2019. This project will be bid and constructed in summer 2019.
- **Municipal Highway & Stormwater Mitigation Grant Program: Federal (80%)/State 20% local match**
  - **TOWN:** \$1,076,948 in state and federal funds with \$269,237 in local funds
    - The project is to retrofit the two ponds located on the LDS Church property into underground storage and infiltration galleries. The Town will approach the retrofit similarly to the Sydney Drive pond retrofit by utilizing treatment that maximizes phosphorus removal.
    - A Local Concerns Meeting was held in the summer of 2018. Conceptual designs for the project alternatives have been developed by VHB which the Town is currently reviewing.

If you have any questions, feel free to contact us.

Sincerely,

  
Chelsea H. Mandigo  
Village of Essex Junction

  
Annie Costandi  
Town of Essex