Awareness, Knowledge, Opinions, and Behaviors Related to Stormwater in Chittenden County, Vermont

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Introduction

In June 2013, the Chittenden County Regional Stormwater Education Program (RSEP) commissioned a study to access awareness, knowledge, opinions, and behaviors related to stormwater pollution among households in nine municipalities in Chittenden County. This document presents the methods and findings from the study.

Methods

Data Collection

The data for this study was collected by the Center for Rural Studies at the University of Vermont. The survey instrument (questionnaire) and methods used for this study were reviewed and approved by the University of Vermont Committee on Human Research in the Behavioral Sciences.

The data collection process was conducted between the hours of 4:00 p.m. and 9:00 p.m. beginning on July 8, 2013 and ending on July 15, 2013. The survey was administered by telephone from the University of Vermont using computer-aided telephone interviewing (CATI). The sample was randomly drawn from a list of telephone numbers, updated quarterly, from nine municipalities in Chittenden County, Vermont, which included: Burlington, Colchester, Essex Junction, Essex Town, Milton, Shelburne, South Burlington, Williston, and Winooski. Each potential respondent who was contacted had to be a resident of one of these nine municipalities and be over the age of eighteen in order to qualify for the study.

In total, 3,444 households were contacted, yielding 449 complete responses; therefore, 13.0 percent of all calls made resulted in a completed survey. The results based on a group of this size have a margin of error of plus or minus 5 percent with a confidence interval of 95 percent.

This means that if the survey were repeated, 95 percent of the time the results would be plus or minus 5 percent of the number reported.

Data Storage, Analysis, & Reporting

The data were stored electronically using Microsoft Excel on a password-protected server. In order to protect the privacy and confidentiality of the respondents, no identifying information was stored with the data. The Statistical Package for the Social Sciences (SPSS) was used for the analysis.

The findings from the descriptive statistical analysis are presented page 4 through 30. Each variable is presented separately in a table which includes the wording of the question and a table with the frequency and percent values. Additional analysis to compare the results of the univariate analysis of the 2013 survey with the results of the univariate analysis of the 2008 was conducted in two stages and is presented page 31 through page 61. The additional analysis was conducted on questions that were asked both in 2008 and 2013. First, percentage point and percentage changes were calculated. Second, longitudinal analysis was conducted by running cross tabulations using time as a variable. The results of the test are considered statistically significant if the value of the test is ≤ to 0.1. The results of bivariate analysis are reported using the following convention: Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%). Statistical significance means that the response to the same question at different point in time is not likely to have happened by accident or by chance.

No discussion or conclusions are presented in this document. The significance and meaning of the findings will be left to the discretion of the parties that commissioned the study.

Results from 2013 survey

Question 1: In general, compared to ten years ago, do you think that Lake Champlain is more polluted, less polluted or about the same?

	Frequency	Percent
More polluted	193	43.0
Less polluted	43	9.6
About the same	145	32.3
Don't know	68	15.1
Total	449	100.0

Question 2: Compared to ten years ago, do you think that your local streams and waterways are more polluted, less polluted or about the same?

	Frequency	Percent
More polluted	161	36.0
Less polluted	66	14.8
About the same	136	30.4
Don't know	84	18.8
Total	447	100.0

Question 3: Now, thinking specifically about water from your kitchen and bath that leaves your home – can you tell me if that water gets treated at a sewage treatment plant, a septic system or does it run directly into streams, rivers and Lake Champlain?

	Frequency	Percent
Sewage Treatment Plant	293	65.5
Septic System	125	28.0
Directly into streams/rivers/lakes	4	0.9
Don't know	25	5.6
Total	447	100.0

Question 4: When it rains, can you tell me where the water from your driveway or parking area, drains to? Select all that apply. (n = 449)

	Frequency	Percent
Goes into sewage treatment plant	29	6.5
Runs to streams/rivers/lakes	60	13.4
Runs into a storm drain	184	41.0
Absorbed into the ground	154	34.3
Absorbed into the ground, enters storm drains, and runs into streams/rivers/lakes	44	9.8
Don't know	22	4.9

Note. Multiple responses could be selected for this question; thus, the total percent may be greater than 100.0 percent.

Question 5a: I am going to read you a list of environmental problems. As I read each one, would you please tell me if you are (1) very concerned about this problem, (2) concerned, (3) somewhat concerned, (4) not at all concerned, or (5) don't know?

Lake Champlain's Water Quality

	Frequency	Percent
Very concerned	171	38.3
Concerned	158	35.3
Somewhat concerned	76	17.0
Not at all concerned	36	8.1
Don't know	6	1.3
Total	447	100.0

Question 5b: I am going to read you a list of environmental problems. As I read each one, would you please tell me if you are (1) very concerned about this problem, (2) concerned, (3) somewhat concerned, (4) not at all concerned, or (5) don't know?

Sewage Disposal

	Frequency	Percent
Very concerned	140	31.4
Concerned	134	30.0
Somewhat concerned	66	14.8
Not at all concerned	86	19.3
Don't know	20	4.5
Total	446	100.0

Question 5c: I am going to read you a list of environmental problems. As I read each one, would you please tell me if you are (1) very concerned about this problem, (2) concerned, (3) somewhat concerned, (4) not at all concerned, or (5) don't know?

Stormwater Pollution

	Frequency	Percent
Very concerned	141	31.5
Concerned	128	28.6
Somewhat concerned	94	21.0
Not at all concerned	63	14.1
Don't know	21	4.7
Total	447	100.0

Question 5e: I am going to read you a list of environmental problems. As I read each one, would you please tell me if you are (1) very concerned about this problem, (2) concerned, (3) somewhat concerned, (4) not at all concerned, or (5) don't know?

Quality of drinking water

	Frequency	Percent
Very concerned	165	37.0
Concerned	72	16.1
Somewhat concerned	42	9.4
Not at all concerned	160	35.9
Don't know	7	1.6
Total	446	100.0

Question 6a: I'm going to mention some possible sources of stormwater pollution. Please tell me if each has a (1) great impact, (2) some impact, (3) very little impact, or (4) no impact on water quality in your region.

Rain run-off from residential neighborhoods

	Frequency	Percent
Great impact	101	22.6
Some impact	190	42.5
Very little impact	60	13.4
No impact	67	15.0
Don't know	29	6.5
Total	447	100.0

Question 6b: I'm going to mention some possible sources of stormwater pollution. Please tell me if each has a (1) great impact, (2) some impact, (3) very little impact, or (4) no impact on water quality in your region.

Rain-run-off from parking lots for stores or offices

	Frequency	Percent
Great impact	127	28.4
Some impact	154	34.5
Very little impact	50	11.2
No impact	84	18.8
Don't know	32	7.2
Total	447	100

Question 6c: I'm going to mention some possible sources of stormwater pollution. Please tell me if each has a (1) great impact, (2) some impact, (3) very little impact, or (4) no impact on water quality in your region.

Rain run-off from lawns and gardens

	Frequency	Percent
Great impact	82	18.3
Some impact	182	40.7
Very little impact	77	17.2
No impact	83	18.6
Don't know	23	5.1
Total	447	100.0

Question 6d: I'm going to mention some possible sources of stormwater pollution. Please tell me if each has a (1) great impact, (2) some impact, (3) very little impact, or (4) no impact on water quality in your region.

Rain run-off from farms

	Frequency	Percent
Great impact	170	38.1
Some impact	114	25.6
Very little impact	45	10.1
No impact	89	20.0
Don't know	28	6.3
Total	446	100.0

Question 6e: I'm going to mention some possible sources of stormwater pollution. Please tell me if each has a (1) great impact, (2) some impact, (3) very little impact, or (4) no impact on water quality in your region.

Hosing sand, salt, gravel, and other debris off driveways and into street gutters

	Frequency	Percent
Great impact	105	23.5
Some impact	166	37.2
Very little impact	53	11.9
No impact	86	19.3
Don't know	36	8.1
Total	446	100.0

Question 7: Would you say you strongly agree, agree, disagree, strongly disagree, or don't know about the following statement:

My personal actions affect the quality of water in Lake Champlain

	Frequency	Percent
Strongly agree	123	27.6
Agree	194	43.5
Neither agree nor disagree	29	6.5
Disagree	70	15.7
Strongly Disagree	22	4.9
Don't know	8	1.8
Total	446	100.0

Question 8: I'm going to ask you some questions about your yard and how you care for it. When we talk about how you care for it, I'd like you to try to average what you've typically done in the years prior to this summer. Okay?

	Frequency	Percent
Yes – I can answer these types of questions	416	93.3
No – I can't answer these questions	29	6.5
Don't know	1	0.2
Total	446	100

SKIP PATTERN
IF Q8 = No or Don't Know go to Q18

Question 9: Did you (or your family) maintain your lawn yourself, or did you or your landlord hire a lawn care company?

	Frequency	Percent
Self	291	70.0
Lawn care company	111	26.7
No lawn	12	2.9
Don't know	2	0.5
Total	416	100.0

Question 10: When you mow your lawn, what do you typically do with the clippings?

	Frequency	Percent
Leave clippings on lawn	198	68.3
Put clippings into the street	4	1.4
Compost clippings	67	23.1
Bag clippings and take to transfer station/dump	18	6.2
Don't know	3	1.0
Total	290	100.0

Question 11: When you rake your leaves on your lawn, what do you typically do with the leaves?

	Frequency	Percent
Leave leaves on the lawn or ground	51	17.5
Rake leaves into the street	7	2.4
Compost leaves on property	117	40.2
Bag leaves and take to transfer station/dump	105	36.1
Don't know	11	3.8
Total	291	100.0

Question 12: Have you ever had a soil test done for your garden or lawn?

	Frequency	Percent
Yes	70	24.1
No	210	72.4
Don't know	10	3.4
Total	290	100.0

Question 13: Did you or anyone in your household use any fertilizers outside?

	Frequency	Percent
Yes	84	28.9
No	203	69.8
Don't know	4	1.4
Total	291	100.0

SKIP PATTERN
IF Q13 = No or Don't Know go to Q18

Question 14: What was the fertilizer used on? (n = 84)

	Frequency	Percent
The lawn	56	66.7
A vegetable garden	37	44.0
A flower garden	29	34.5
Landscape areas	12	14.3
Somewhere else	2	2.4
Don't know	0	0.0

Note. Multiple responses could be selected for this question; thus, the total percent may be greater than 100.0 percent.

Question 16: What time of year do you usually fertilize your lawn? Select all that apply. (n=84)

	Frequency	Percent
Spring	62	73.8
Summer	29	34.5
Fall	33	39.3
Winter	3	3.6
Don't Know	6	7.1

Note. Multiple responses could be selected for this question; thus, the total percent may be greater than 100.0 percent.

Question 17: Does the fertilizer you use contain phosphorus?

	Frequency	Percent
Yes, it does contain phosphorus	15	17.9
Yes, but it's a low phosphorus blend?	7	8.3
No, it does not contain phosphorus	38	45.2
Don't know	24	28.6
Total	84	100.0

Question 18: Do you own any dogs?

	Frequency	Percent
Yes	126	28.2
No	318	71.1
Don't know	3	0.7
Total	447	100.0

SKIP PATTERN
IF Q18 = No or Don't Know go to Q21

Question 19a: When you take your dog(s) for a walk in your neighborhood, what do you typically do with the dog's waste?

	Frequency	Percent
Leave it on the ground	7	5.7
Put it in the trash	99	81.1
Pickup and toss it into the woods or brush	5	4.1
Other	6	4.9
Don't know	5	4.1
Total	122	100.0

Question 19b: When you take your dog(s) for a walk in the woods, what do you typically do with the dog's waste?

	Frequency	Percent
Leave it on the ground	30	25.4
Put it in the trash	57	48.3
Pickup and toss it into the woods or brush	12	10.2
Other	10	8.5
Don't know	9	7.6
Total	118	100.0

Question 19c: When you take your dog(s) for a walk in the winter, what do you typically do with the dog's waste?

	Frequency	Percent
Leave it on the ground	20	16.3
Put it in the trash	88	71.5
Pickup and toss it into the woods or brush	8	6.5
Other	3	2.4
Don't know	4	3.3
Total	123	100.0

Question 20: When your dog(s) leaves waste in your yard, what do you typically do with the dog's waste?

	Frequency	Percent
Leave it on the ground	26	20.8
Put it in the trash	83	66.4
Pickup and toss it into the woods or brush	11	8.8
Do not have a yard	1	0.8
Other	2	1.6
Don't know	2	1.6
Total	125	100.0

Question 21: When your car needs washing, do you typically wash it at home, do you take it to car wash or is it never washed?

	Frequency	Percent
At home	108	25.1
Car wash	223	51.7
Never wash	87	20.2
Don't know	13	3.0
Total	431	100.0

SKIP PATTERN
IF Q21 = Car Wash, Never Wash, or Don't Know go to Q23

Question 22: When you or others in your household wash your car at home, is the car usually in the driveway, road, or yard?

	Frequency	Percent
Driveway	87	81.3
Road	5	4.7
Yard	14	13.1
Don't know	1	0.9
Total	107	100.0

Question 23: Which method of car washing do you think introduces the least amount of pollution into streams?

	Frequency	Percent
Commercial car washes	216	56.0
Washing your car at home in your driveway	61	15.8
Washing your car at home in the road	13	3.4
Washing your car at home in your yard	92	23.8
Don't know	4	1.0
Total	386	100.0

Question 24: Now, thinking about your residence, the rain that flows off the front roof, does it flow into a gutter and into a downspout, or does it run right off the roof?

	Frequency	Percent
Into a gutter and downspout	294	65.9
Right off the roof	140	31.4
Don't know	12	2.7
Total	446	100.0

SKIP PATTERN
IF Q24 = Into a Gutter and Downspout go to Q25
IF Q24 = Right off the Roof go to Q26

Question 25: Where does the *downspout* direct the water?

	Frequency	Percent
Onto the driveway parking lot or road	42	14.3
Onto the lawn or vegetation	206	70.1
Into underground pipes	20	6.8
Into a rain barrel	18	6.1
Don't know	8	2.7
Total	294	100.0

Question 26: When the rain runs *off the roof*, where does it land?

	Frequency	Percent
Onto the driveway parking lot or road	24	17.1
Onto the lawn or vegetation	108	77.1
Don't know	8	5.7
Total	140	100.0

Question 28: Do you recall seeing or hearing educational information about stormwater from the Regional Stormwater Education Program of Chittenden County?

	Frequency	Percent
Yes	130	29.1
No	292	65.5
Don't know	24	5.4
Total	446	100.0

Question 29: Where did you see or hear about the Regional Stormwater Education Program of Chittenden County? (n = 130)

	Frequency	Percent
Television	39	30.0
Radio	6	4.6
Newspaper	43	33.1
Online	5	3.8
Town/city meeting	18	13.8
Lake Monsters or other local events	3	2.3
School	4	3.1
Don't know	35	26.9

Note. Multiple responses could be selected for this question; thus, the total percent may be greater than 100.0 percent.

Question 30: Have you ever visited the website www.smartwaterways.org?

	Frequency	Percent
Yes	16	3.6
No	423	94.8
Don't know	7	1.6
Total	446	100.0

Question 31: With regard to money spent on water quality improvements, do you think your city or town is:

	Frequency	Percent
Spending too much	24	5.4
Spending just the right amount	154	34.6
Not spending enough	110	24.7
Don't know	157	35.3
Total	445	100.0

Question 32: How much would you be willing to be charged on a monthly basis to deal with the problems caused by Stormwater?

	Frequency	Percent
$0	132	30.0
$1 to $3	85	19.3
$4 to $6	60	13.6
$7 to $9	20	4.5
$10 to $12	41	9.3
$13 or greater	36	8.2
Don't know	66	15.0
Total	440	100.0

Question 33: On a daily basis, which of the following sources do you use most often?

	Frequency	Percent
Broadcast or cable televisions	193	43.7
Radio	73	16.5
Newspapers	51	11.5
Informational websites on the internet	103	23.3
Social media websites on the internet	17	3.8
Don't know	5	1.1
Total	442	100.0

Question 34a: I am going to read a series of issues to you, two at a time. Please let me know which one of the two issues is a more critical concern to Chittenden County.

Climate change or stormwater runoff

	Frequency	Percent
Climate change	174	39.6
Stormwater runoff	246	56.0
Don't know	19	4.3
Total	439	100.0

Question 34b: I am going to read a series of issues to you, two at a time. Please let me know which one of the two issues is a more critical concern to Chittenden County.

Negative impacts of wind tower energy development or stormwater runoff

	Frequency	Percent
Negative impacts of wind tower energy development	60	13.5
Stormwater runoff	347	78.3
Don't know	36	8.1
Total	443	100.0

Question 34c: I am going to read a series of issues to you, two at a time. Please let me know which one of the two issues is a more critical concern to Chittenden County.

Traffic congestion or stormwater runoff

	Frequency	Percent
Traffic congestion	243	55.0
Stormwater runoff	177	40.0
Don't know	22	5.0
Total	442	100.0

Question 34d: I am going to read a series of issues to you, two at a time. Please let me know which one of the two issues is a more critical concern to Chittenden County.

Air pollution or stormwater runoff

	Frequency	Percent
Air pollution	144	32.7
Stormwater runoff	268	60.9
Don't know	28	6.4
Total	440	100.0

Question 34e: I am going to read a series of issues to you, two at a time. Please let me know which one of the two issues is a more critical concern to Chittenden County.

Failed septic systems or stormwater runoff

	Frequency	Percent
Failed septic systems	194	43.8
Stormwater runoff	195	44.0
Don't know	54	12.2
Total	443	100.0

Question d1: Could you please tell me what city or town do you live in?

	Frequency	Percent
Burlington	142	32.1
Shelburne	27	6.1
Winooski	24	5.4
Colchester	58	13.1
Essex	36	8.1
South Burlington	55	12.4
Essex Junction	30	6.8
Williston	29	6.5
Milton	33	7.4
Don't know	9	2.0
Total	443	100.0

Question d2: Age in years

Measure	Value
N	430
Mean	61.7
Median	62.5
Mode	63.0
Standard Deviation	14.4
Minimum	18
Maximum	95
33.3 Percentile	56
66.6 Percentile	69

Note: Calculated from the question: What year were you born?

Question d3: What is the highest level of education you've completed?

	Frequency	Percent
High School, GED, or less	89	20.2
Some college (1 to 3 years, no degree) or technical school	107	24.3
Four year college degree	110	24.9
Graduate degree	135	30.6
Don't know	0	0.0
Total	441	100.0

Question d5: Do you own or rent your home?

	Frequency	Percent
Own	382	86.8
Rent	56	12.7
Don't know	2	0.5
Total	440	100.0

Question d6: Which of the following best describes your primary residence -- a single family house, a multi family house, an apartment, a condominium, or a mobile home?

	Frequency	Percent
Single-family house	320	72.6
Multi-family house	16	3.6
Apartment	39	8.8
Condominium/townhouse	58	13.2
Mobile home	2	0.5
Other	4	0.9
Don't know	2	0.5
Total	441	100.0

Question d7: What is your gender?

	Frequency	Percent
Male	195	43.9
Female	249	56.1
Don't know	0.0	0.0
Total	444	100.0

Comparison of survey results of 2008 and 2013

Question 1: In general, compared to ten years ago, do you think that Lake Champlain is more polluted, less polluted or about the same?

	2008 Percent (n = 438)	2013 Percent (n = 449)	Percentage POINTS change	Percentage change
More polluted	38.3	43.0	+ 4.7**	+ 12.3**
Less polluted	16.7	9.6	- 7.1**	- 42.5**
About the same	33.4	32.3	- 1.1**	- 3.3**
Don't know	11.6	15.1	+ 3.5**	+ 30.2**
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 2: Compared to ten years ago, do you think that your local streams and waterways are more polluted, less polluted or about the same?

	2008 Percent (n = 439)	2013 Percent (n = 447)	Percentage POINTS change	Percentage change
More polluted	33.7	36.0	+ 2.3	+ 6.8
Less polluted	19.4	14.8	- 4.6	- 23.7
About the same	32.5	30.4	- 2.1	- 6.5
Don't know	14.3	18.8	+ 4.5	+ 31.5
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 3: Now, thinking specifically about water from your kitchen and bath that leaves your home – can you tell me if that water gets treated at a sewage treatment plant, a septic system or does it run directly into streams, rivers and Lake Champlain?

	2008 Percent (n = 437)	2013 Percent (n = 447)	Percentage POINTS change	Percentage change
Sewage Treatment Plant	65.1	65.5	+ 0.4	+ 0.6
Septic System	28.0	28.0	0.0	0.0
Directly into streams/rivers/lakes	1.5	0.9	- 0.6	- 40.0
Don't know	5.4	5.6	+ 0.2	+ 3.7
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 4: When it rains, can you tell me where the water from your driveway or parking area, drains to? Select all that apply.

	2008 Percent (n = 439)	2013 Percent (n = 449)	Percentage POINTS change	Percentage change
Goes into sewage treatment plant	5.2	6.5	+ 1.3	+ 25.0
Runs to streams/rivers/lakes	14.5	13.4	- 1.1	- 7.6
Runs into a storm drain	54.6	41.0	- 13.6***	- 24.9***
Absorbed into the ground	26.8	34.3	+ 7.5*	+ 28.0*
Absorbed into the ground, enters storm drains, and runs into streams/rivers/lakes	9.4	9.8	+ 0.4	+ 4.3
Don't know	3.9	4.9	+ 1.0	+ 25.6

*Note. Multiple responses could be selected for this question; thus, the total percent may be greater than 100.0 percent. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 5a: I am going to read you a list of environmental problems. As I read each one, would you please tell me if you are (1) very concerned about this problem, (2) concerned, (3) somewhat concerned, (4) not at all concerned, or (5) don't know?

Lake Champlain's Water Quality

	2008 Percent (n = 439)	2013 Percent (n = 447)	Percentage POINTS change	Percentage change
Very concerned	43.8	38.3	- 5.5	- 12.6
Concerned	32.2	35.3	+ 3.1	+ 9.6
Somewhat concerned	16.5	17.0	+ 0.5	+ 3.0
Not at all concerned	7.1	8.1	+ 1.0	+ 14.1
Don't know	0.3	1.3	+ 1.0	+ 333.3
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 5b: I am going to read you a list of environmental problems. As I read each one, would you please tell me if you are (1) very concerned about this problem, (2) concerned, (3) somewhat concerned, (4) not at all concerned, or (5) don't know?

Sewage Disposal

	2008 Percent (n = 438)	2013 Percent (n = 446)	Percentage POINTS change	Percentage change
Very concerned	39.2	31.4	- 7.8***	- 19.9***
Concerned	32.5	30.0	- 2.5***	- 7.7***
Somewhat concerned	13.6	14.8	+ 1.2***	+ 8.8***
Not at all concerned	13.1	19.3	+ 6.2***	+ 47.3***
Don't know	1.5	4.5	+ 3.0***	+ 200.0***
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 5c: I am going to read you a list of environmental problems. As I read each one, would you please tell me if you are (1) very concerned about this problem, (2) concerned, (3) somewhat concerned, (4) not at all concerned, or (5) don't know?

Stormwater Pollution

	2008 Percent (n = 439)	2013 Percent (n = 447)	Percentage POINTS change	Percentage change
Very concerned	31.4	31.5	+ 0.1	+ 0.3
Concerned	33.0	28.6	- 4.4	- 13.3
Somewhat concerned	23.3	21.0	- 2.3	- 9.9
Not at all concerned	9.5	14.1	+ 4.6	+ 48.4
Don't know	2.7	4.7	+ 2.0	+ 74.1
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 5e: I am going to read you a list of environmental problems. As I read each one, would you please tell me if you are (1) very concerned about this problem, (2) concerned, (3) somewhat concerned, (4) not at all concerned, or (5) don't know?

Quality of drinking water

	2008 Percent (n = 439)	2013 Percent (n = 446)	Percentage POINTS change	Percentage change
Very concerned	38.1	37.0	- 1.1***	- 2.9***
Concerned	21.5	16.1	- 5.4***	- 25.1***
Somewhat concerned	16.7	9.4	- 7.3***	- 43.7***
Not at all concerned	23.8	35.9	+ 12.1***	+ 50.8***
Don't know	0.0	1.6	+ 1.6***	Can't calculate
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 6a: I'm going to mention some possible sources of stormwater pollution. Please tell me if each has a (1) great impact, (2) some impact, (3) very little impact, or (4) no impact on water quality in your region.

Rain run-off from residential neighborhoods

	2008 Percent (n = 439)	2013 Percent (n = 447)	Percentage POINTS change	Percentage change
Great impact	21.0	22.6	+ 1.6	+ 7.6
Some impact	45.6	42.5	- 3.1	- 6.8
Very little impact	17.7	13.4	- 4.3	- 24.3
No impact	10.7	15.0	+ 4.3	+ 40.2
Don't know	4.9	6.5	+ 1.6	+ 32.7
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 6b: I'm going to mention some possible sources of stormwater pollution. Please tell me if each has a (1) great impact, (2) some impact, (3) very little impact, or (4) no impact on water quality in your region.

Rain-run-off from parking lots for stores or offices

	2008 Percent (n = 439)	2013 Percent (n = 447)	Percentage POINTS change	Percentage change
Great impact	31.0	28.4	- 2.6**	- 8.4**
Some impact	41.5	34.5	- 7.0**	- 16.9**
Very little impact	10.9	11.2	+ 0.3**	+ 2.8**
No impact	12.3	18.8	+ 6.5**	+ 52.8**
Don't know	4.3	7.2	+ 2.9**	+ 67.4**
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 6c: I'm going to mention some possible sources of stormwater pollution. Please tell me if each has a (1) great impact, (2) some impact, (3) very little impact, or (4) no impact on water quality in your region.

Rain run-off from lawns and gardens

	2008 Percent (n = 439)	2013 Percent (n = 447)	Percentage POINTS change	Percentage change
Great impact	25.8	18.3	- 7.5***	- 29.1***
Some impact	39.0	40.7	+ 1.7***	+ 4.4***
Very little impact	17.5	17.2	- 0.3***	- 1.7***
No impact	14.6	18.6	+ 4.0***	+ 27.4***
Don't know	3.1	5.1	+ 2.0***	+ 64.5***
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 6d: I'm going to mention some possible sources of stormwater pollution. Please tell me if each has a (1) great impact, (2) some impact, (3) very little impact, or (4) no impact on water quality in your region.

Rain run-off from farms

	2008 Percent (n = 439)	2013 Percent (n = 446)	Percentage POINTS change	Percentage change
Great impact	47.4	38.1	- 9.3**	- 19.6**
Some impact	26.8	25.6	- 1.2**	- 4.5**
Very little impact	8.5	10.1	+ 1.6**	+ 18.8**
No impact	12.6	20.0	+ 7.4**	+ 58.7**
Don't know	4.6	6.3	+ 1.7**	+ 37.0**
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 6e: I'm going to mention some possible sources of stormwater pollution. Please tell me if each has a (1) great impact, (2) some impact, (3) very little impact, or (4) no impact on water quality in your region.

Hosing sand, salt, gravel, and other debris off driveways and into street gutters

	2008 Percent (n = 439)	2013 Percent (n = 446)	Percentage POINTS change	Percentage change
Great impact	23.6	23.5	- 0.1***	- 0.4***
Some impact	40.5	37.2	- 3.3***	- 8.1***
Very little impact	17.5	11.9	- 5.6***	- 32.0***
No impact	13.9	19.3	+ 5.4***	+ 38.8***
Don't know	4.4	8.1	+ 3.7***	+ 84.1***
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 7: Would you say you strongly agree, agree, disagree, strongly disagree, or don't know about the following statement:

My personal actions affect the quality of water in Lake Champlain

	2008 Percent (n = 439)	2013 Percent (n = 446)	Percentage POINTS change	Percentage change
Strongly agree	32.9	27.6	- 5.3	- 16.1
Agree	44.2	43.5	- 0.7	- 1.6
Neither agree nor disagree	5.8	6.5	+ 0.7	+ 12.1
Disagree	12.8	15.7	+ 2.9	+ 22.7
Strongly Disagree	2.7	4.9	+ 2.2	+ 81.5
Don't know	1.5	1.8	+ 0.3	+ 0.2
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 8: I'm going to ask you some questions about your yard and how you care for it. When we talk about how you care for it, I'd like you to try to average what you've typically done in the years prior to this summer. Okay?

	2008 Percent (n = 439)	2013 Percent (n = 446)	Percentage POINTS change	Percentage change
Yes – I can answer these types of questions	92.8	93.3	+ 0.5	+ 0.5
No – I can't answer these questions	7.2	6.5	- 0.7	- 9.7
Don't know	0.0	0.2	+ 0.2	Can't calculate
Total	100.0	100		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

SKIP PATTERN
IF Q8 = No or Don't Know go to Q18

Question 9: Did you (or your family) maintain your lawn yourself, or did you or your landlord hire a lawn care company?

	2008 Percent (n = 407)	2013 Percent (n = 416)	Percentage POINTS change	Percentage change
Self	70.6	70.0	- 0.6	- 0.8
Lawn care company	28.1	26.7	- 1.4	- 5.0
No lawn	0.7	2.9	+ 2.2	+ 314.3
Don't know	0.5	0.5	0.0	0.0
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 10: When you mow your lawn, what do you typically do with the clippings?

	2008 Percent (n = 288)	2013 Percent (n = 290)	Percentage POINTS change	Percentage change
Leave clippings on lawn	78.2	68.3	- 9.9**	-12.7**
Put clippings into the street	0.0	1.4	+ 1.4	Can't calculate
Compost clippings	16.1	23.1	+ 7.0**	43.5**
Bag clippings and take to transfer station/dump	5.0	6.2	+ 1.2**	24.0**
Don't know	0.8	1.0	+ 0.29**	25.0**
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 11: When you rake your leaves on your lawn, what do you typically do with the leaves?

	2008 Percent (n = 283)	2013 Percent (n = 291)	Percentage POINTS change	Percentage change
Leave leaves on the lawn or ground	13.2	17.5	+ 4.3*	32.6*
Rake leaves into the street	0.0	2.4	+ 2.4*	Can't calculate
Compost leaves on property	45.4	40.2	- 5.2*	-11.5*
Bag leaves and take to transfer station/dump	39.0	36.1	- 2.9*	-7.4*
Don't know	2.4	3.8	+ 1.4*	58.3*
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 12: Have you ever had a soil test done for your garden or lawn?

	2008 Percent (n = 288)	2013 Percent (n = 290)	Percentage POINTS change	Percentage change
Yes	20.5	24.1	+ 3.6	+ 17.6
No	77.6	72.4	- 5.2	- 6.7
Don't know	1.8	3.4	+ 1.6	+ 88.9
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 13: Did you or anyone in your household use any fertilizers outside?

	2008 Percent (n = 288)	2013 Percent (n = 291)	Percentage POINTS change	Percentage change
Yes	50.1	28.9	- 21.2***	- 42.3***
No	49.7	69.8	+ 20.1***	+ 40.4***
Don't know	0.3	1.4	+ 1.1***	+ 366.7***
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

SKIP PATTERN
IF Q13 = No or Don't Know go to Q18

Question 14: What was the fertilizer used on?

	2008 Percent (n = 144)	2013 Percent (n = 84)	Percentage POINTS change	Percentage change
The lawn	73.4	66.7	- 6.7	- 9.1
A vegetable garden	31.2	44.0	+ 12.8*	+ 41.0*
A flower garden	34.3	34.5	+ 0.2	+ 0.6
Landscape areas	7.7	14.3	+ 6.6*	+ 85.7*
Somewhere else	1.0	2.4	+ 1.4	+ 140.0
Don't know	0.0	0.0	0.0	Can't calculate

*Note. Multiple responses could be selected for this question; thus, the total percent may be greater than 100.0 percent. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

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Question 16: What time of year do you usually fertilize your lawn? Select all that apply.

	2008 Percent (n = 144)	2013 Percent (n = 84)	Percentage POINTS change	Percentage change
Spring	75.7	73.8	- 1.9	- 2.5
Summer	21.2	34.5	+ 13.3**	+ 62.7**
Fall	3.7	39.3	+ 35.6***	+ 962.2***
Winter	31.6	3.6	- 28***	- 88.6***
Don't Know	7.8	7.1	- 0.7	- 9.0

*Note. Multiple responses could be selected for this question; thus, the total percent may be greater than 100.0 percent. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 17: Does the fertilizer you use contain phosphorus?

	2008 Percent (n = 143)	2013 Percent (n = 84)	Percentage POINTS change	Percentage change
Yes, it does contain phosphorus	22.3	17.9	- 4.4**	- 19.7**
Yes, but it's a low phosphorus blend?	14.2	8.3	- 5.9**	- 41.5**
No, it does not contain phosphorus	26.7	45.2	+ 18.5**	+ 69.3**
Don't know	36.8	28.6	- 8.2**	- 22.3**
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 18: Do you own any dogs?

	2008 Percent (n = 439)	2013 Percent (n = 447)	Percentage POINTS change	Percentage change
Yes	27.8	28.2	+ 0.4	+ 1.4
No	72.1	71.1	- 1	- 1.4
Don't know	0.2	0.7	+ 0.5	+ 250.0
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

SKIP PATTERN
IF Q18 = No or Don't Know go to Q21

Question 19: When you take your dog(s) for a walk, what do you typically do with the dog's waste?

	2008 Percent (n = 121)	2013 Percent (n = 122)	Percentage POINTS change	Percentage change
Leave it on the ground	8.6	5.7	- 2.9	- 33.7
Put it in the trash	74.7	81.1	+ 6.4	+ 8.6
Pickup and toss it into the woods or brush	8.7	4.1	- 4.6	- 52.9
Other	6.8	4.9	- 1.9	- 27.9
Don't know	1.2	4.1	+ 2.9	+ 241.7
Total	100.0	100.0		

Note In 2008, respondents were asked: "When you take your dog(s) for a walk, what do you typically do with the dog's waste?" while in 2013 respondents were asked: "When you take your dog(s) for a walk in your neighborhood, what do you typically do with the dog's waste?".
Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)

Question 20: When your dog(s) leaves waste in your yard, what do you typically do with the dog's waste?

	2008 Percent (n = 122)	2013 Percent (n = 125)	Percentage POINTS change	Percentage change
Leave it on the ground	14.7	20.8	+ 6.1***	+ 41.5***
Put it in the trash	54.0	66.4	+ 12.4***	+ 23.0***
Pickup and toss it into the woods or brush	20.9	8.8	- 12.1***	- 57.9***
Do not have a yard	#	0.8		
Other	9.2	1.6	- 7.6***	- 82.6***
Don't know	1	1.6	+ 0.6***	+ 60.0***
Total	100.0	100.0		

*Note. # option was not available in 2008 survey. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 21: When your car needs washing, do you typically wash it at home, do you take it to car wash or is it never washed?

	2008 Percent (n = 431)	2013 Percent (n = 431)	Percentage POINTS change	Percentage change
At home	23.7	25.1	+ 1.4	+ 5.9
Car wash	54.3	51.7	- 2.6	- 4.8
Never wash	20.4	20.2	- 0.2	- 1.0
Don't know	1.6	3.0	+ 1.4	+ 87.5
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

SKIP PATTERN
IF Q21 = Car Wash, Never Wash, or Don't Know go to Q23

Question 22: When you or others in your household wash your car at home, is the car usually in the driveway, road, or yard?

	2008 Percent (n = 102)	2013 Percent (n = 107)	Percentage POINTS change	Percentage change
Driveway	85.4	81.3	- 4.1	- 4.8
Road	2.2	4.7	+ 2.5	+ 113.6
Yard	12.4	13.1	+ 0.7	+ 5.6
Don't know	0.0	0.9	+ 0.9	Can't calculate
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 23: Which method of car washing do you think introduces the least amount of pollution into streams?

	2008 Percent (n = 435)	2013 Percent (n = 386)	Percentage POINTS change	Percentage change
Commercial car washes	45.9	56.0	+ 10.1	+ 22.0
Washing your car at home in your driveway	10.0	15.8	+ 5.8	+ 58.0
Washing your car at home in the road	2.0	3.4	+ 1.4	+ 70.0
Washing your car at home in your yard	29.0	23.8	- 5.2	- 17.9
Don't know	13.1	1.0	- 12.1	- 92.4
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 24: Now, thinking about your residence, the rain that flows off the front roof, does it flow into a gutter and into a downspout, or does it run right off the roof?

	2008 Percent (n = 438)	2013 Percent (n = 446)	Percentage POINTS change	Percentage change
Into a gutter and downspout	66.4	65.9	- 0.5	- 0.8
Right off the roof	31.9	31.4	- 0.5	- 1.6
Don't know	1.7	2.7	+ 1.0	+ 58.8
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

SKIP PATTERN
IF Q24 = Into a Gutter and Downspout go to Q25
IF Q24 = Right off the Roof go to Q26

Question 25: Where does the *downspout* direct the water?

	2008 Percent (n = 289)	2013 Percent (n = 294)	Percentage POINTS change	Percentage change
Onto the driveway parking lot or road	8.8	14.3	+ 5.5***	+ 62.5***
Onto the lawn or vegetation	80.8	70.1	- 10.7***	- 13.2***
Into underground pipes	7.5	6.8	- 0.7***	- 9.3***
Into a rain barrel	1.3	6.1	+ 4.8***	+ 369.2***
Don't know	1.6	2.7	+ 1.1***	+ 68.8***
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 26: When the rain runs *off the roof*, where does it land?

	2008 Percent (n = 140)	2013 Percent (n = 140)	Percentage POINTS change	Percentage change
Onto the driveway parking lot or road	16.6	17.1	+ 0.5	+ 3.0
Onto the lawn or vegetation	81.2	77.1	- 4.1	- 5.0
Don't know	2.2	5.7	+ 3.5	+ 159.1
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 28: Do you recall seeing or hearing educational information about stormwater from the Regional Stormwater Education Program of Chittenden County?

	2008 Percent (n = 438)	2013 Percent (n = 446)	Percentage POINTS change	Percentage change
Yes	31.9	29.1	-2.8	- 8.8
No	63.8	65.5	1.7	+ 2.7
Don't know	4.3	5.4	1.1	+ 25.6
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 29: Where did you see or hear about the Regional Stormwater Education Program of Chittenden County?

	2008 Percent (n = 140)	2013 Percent (n = 130)	Percentage POINTS change	Percentage change
Television	30.7	30.0	- 0.7	- 2.3
Radio	15.0	4.6	- 10.4***	- 69.3***
Newspaper	60.7	33.1	- 27.6***	- 45.5***
Online	5.0	3.8	- 1.2	- 24.0
Town/city meeting	21.4	13.8	- 7.6**	- 35.5**
Lake Monsters or other local events	5.7	2.3	- 3.4	- 59.6
School	0.7	3.1	+ 2.4**	+ 342.9**
Don't know	0.0	26.9	+ 26.9	Can't calculate

*Note. Multiple responses could be selected for this question; thus, the total percent may be greater than 100.0 percent. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question 30: Have you ever visited the website www.smartwaterways.org?

	2008 Percent (n = 438)	2013 Percent (n = 446)	Percentage POINTS change	Percentage change
Yes	1.7	3.6	+ 1.9*	+ 111.8*
No	97.6	94.8	- 2.8*	- 2.9*
Don't know	0.7	1.6	+ 0.9*	+ 128.6*
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question d1: Could you please tell me what city or town do you live in?

	2008 Percent (n = 439)	2013 Percent (n = 443)	Percentage POINTS change	Percentage change
Burlington	33.0	32.1	- 0.9	- 2.7
Shelburne	5.9	6.1	+ 0.2	+ 3.4
Winooski	3.6	5.4	+ 1.8	+ 50.0
Colchester	13.0	13.1	+0.1	+ 0.8
Essex	7.6	8.1	+ 0.5	+ 6.6
South Burlington	11.4	12.4	+ 1.0	+ 8.8
Essex Junction	12.6	6.8	- 5.8	- 46.0
Williston	6.5	6.5	0	0.0
Milton	6.3	7.4	+ 1.1	+ 17.5
Don't know	0.0	2.0	+ 2.0	Can't calculate
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question d2: Age in years

Measure	2008 Value (n = 433)	2013 Value (n = 430)	Percentage POINTS change	Percentage change
Mean	56.1	61.7	+ 5.6**	+ 9.98 **
Median	56.2	62.5	+ 6.3	+ 11.2
Mode	58.0	63.0	+ 5.0	+ 8.62
Standard Deviation	15.7	14.4		
Minimum	18.0	18.0		
Maximum	94.0	95.0		
33.3 Percentile	50.0	56.0	+ 6.0	+ 12.0
66.6 Percentile	64.0	69.0	+ 5.0	+ 7.81

Note: Calculated from the question: What year were you born? *Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question d3: What is the highest level of education you've completed?

	2008 Percent (n = 439)	2013 Percent (n = 441)	Percentage POINTS change	Percentage change
High School, GED, or less	12.8	20.2	+ 7.4***	+ 57.8***
Some college (1 to 3 years, no degree) or technical school	25.3	24.3	- 1.0***	- 4.0***
Four year college degree	36.5	24.9	- 11.6***	- 31.8***
Graduate degree	25.4	30.6	+ 5.2***	+ 20.5***
Don't know	0.0	0.0	0***	Can't calculate
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question d5: Do you own or rent your home?

	2008 Percent (n = 437)	2013 Percent (n = 440)	Percentage POINTS change	Percentage change
Own	82.8	86.8	+ 4.0	+ 4.8
Rent	16.9	12.7	- 4.2	- 24.9
Don't know	0.3	0.5	+ 0.2	+ 66.7
Total	100.0	100.0		

*Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)*

Question d6: Which of the following best describes your primary residence -- a single family house, a multi family house, an apartment, a condominium, or a mobile home?

	2008 Percent (n = 439)	2013 Percent (n = 441)	Percentage POINTS change	Percentage change
Single-family house	69.5	72.6	+ 3.1	+ 4.5
Multi-family house	6.8	3.6	- 3.2	- 47.1
Apartment	9.0	8.8	- 0.2	- 2.2
Condominium/townhouse	11.6	13.2	+ 1.6	+ 13.8
Mobile home	1.4	0.5	- 0.9	- 64.3
Other	1.7	0.9	- 0.8	- 47.1
Don't know	0.0	0.5	+ 0.5	Can't calculate
Total	100.0	100.0		

Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)

Question d7: What is your gender?

	2008 Percent (n = 438)	2013 Percent (n = 444)	Percentage POINTS change	Percentage change
Male	49.9	43.9	- 6.0***	- 12.0***
Female	50.1	56.1	+ 6.0***	+ 12.0***
Don't know	0.0	0.0	0	Can't calculate
Total	100.0	100.0		

Note. Statistical significance: * = 0.10 level (10%), ** = 0.05 level (5%), *** = 0.01 level (1%)