



Photo Credit: Stephen L Tabone Nature Photography

Annual Report  
Northern Virginia Regional Commission  
Coastal Resources  
Technical Assistance Program

October 1, 2017 – September 30, 2018  
NOAA Grant # NA17NOS4190171  
Fiscal Year 2017, Task 46

**Northern Virginia Regional  
Commission**

[www.novaregion.org](http://www.novaregion.org)

*The Voice of Northern Virginia*

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## Table of Contents

Executive Summary .....	1
1 Introduction .....	2
2 Product Number One: Outcomes of Northern Virginia’s Coastal Resources Technical Assistance Program .....	2
3 Special Project Report: Northern Virginia Clean Water Partners Regional Stormwater Education Campaign.....	4
4 Benefits Accrued from Prior CZM Grants .....	6

## Appendices

A. Summary of Regional Stormwater Education Campaign.....	13
B. Regional Stormwater Education Campaign Survey Results .....	16



## **Executive Summary**

This report was produced, in part, through financial assistance from the Virginia Coastal Zone Management Program (CZMP), Virginia Department of Environmental Quality through Grant No. NA16NOS4190171 from the National Oceanic and Atmospheric Administration (NOAA). This report describes the technical assistance program conducted by the Northern Virginia Regional Commission (NVRC) through its Coastal Resources Management Program. The Coastal Resources Program at NVRC includes; coordination of regional programs that advance Virginia CZMP's interests in coastal resource management, public outreach, education and training, environmental impact and permit reviews, and technical assistance on coastal issues relevant to Northern Virginia localities.

This report fulfills the product requirements set forth in the FY 2017 Virginia Coastal Zone Management Program Grant, Task 46 (NOAA Grant # NA17NOS4190171) for:

- Product #1 – Annual Report – NOVA Coastal Resources Technical Assistance Program (55 %)
- Product #2 – Special Project Summary of Regional Stormwater Education Campaign (40%)
- Product #3 - Benefits accrued from prior CZM grants (5%)

## **1 Introduction**

The Northern Virginia Regional Commission's (NVRC) Regional Coastal Resources Program has been fostering an effective partnership among federal, state, and local governments in the region for over twenty years. Through its partnership with the Virginia Coastal Zone Management Program, NVRC has been conducting research on ongoing and new or emerging coastal issues affecting the region and providing technical and planning assistance to Northern Virginia localities on these issues since 1992.

The Virginia Coastal Zone Management Program awarded the NVRC a technical assistance grant of \$30,000 on October 1, 2017 to continue its Regional Coastal Resources Management Program through September 30, 2018. The general objectives of the Coastal Program in Northern Virginia include; promote the sustainable use of coastal resources, provide technical assistance to local governments and non-governmental organizations on emerging issues facing the coast such as water quality and coastal hazard planning, improve local capacity to protect, manage and restore coastal ecosystems, improve public access to the coast, serve as a forum for information exchange, training, and coordination of planning among local, state, and federal stakeholders in the region. This report documents the outcomes of the technical assistance grant in FY17.

## **2 Product Number One: Outcomes of Northern Virginia's Coastal Resources Technical Assistance Program**

The Technical Assistance grant from CZM allows NVRC's Coastal Resources Management Program to conduct public outreach and education on coastal issues, coordinate regional programs that advance VA CZM's interests in coastal resource management and serve as a point of technical information exchange for local planning involving coastal issues. The Technical Assistance grant also allows NVRC to support the VA CZMP through serving as a member of the VA Coastal Policy Team, participation in the quarterly Coastal PDC meetings, semi-annual Coastal Policy Team meetings, Coastal Partners Workshop, Potomac Watershed Roundtable and the Northern Virginia Urban Forestry Roundtable. These meetings help to identify appropriate special projects and technical studies that would benefit the region as well as ensuring that local efforts may take advantage of or leverage other related initiatives taking place throughout the coastal zone of Virginia.

Outcomes of the FY 17 grant include:

***Residential Rain Gardens - Beautifying Your Yard for Clean Water (Feb. 10, 2018)***



NVRC co-hosted one Beautifying Your Yard for Clean Water workshop on building small-scale rain gardens. Through the workshop, 50 participants learned how to design, build, landscape, and maintain small-scale residential rain gardens. The workshop was held at Providence Community Center in Vienna, VA. These workshops have proven to be instrumental in providing technical expertise and resources to support the application of stormwater management practices on private properties. Over three-quarters of all participants who provided feedback stated that they will move forward with placing a rain garden on their properties. The presentations and other information pertaining to rain gardens can be viewed at [www.novaregion.org/raingardens](http://www.novaregion.org/raingardens)

NVRC staff participated, coordinated, or provided technical assistance in support of the following trainings, meetings and conferences:

- ***Coastal Planning District Commissions Planning Meetings***
  - November 8, 2017
  - June 13, 2018
- ***Virginia Coastal Policy Team Meetings***
  - February 9, 2018
  - September 12, 2018
- ***Local Implementation of Potomac Heritage National Scenic Trail Quarterly Meetings in Woodbridge***
  - December 15, 2017
  - July 31, 2018
- ***Fairfax County Stormwater and Marine Debris Working Group Meetings***
  - June 12, 2018
  - July 12, 2018
  - August 27, 2018

- ***Northern Virginia Salt Management Strategy***
  - February 22, 2018
  - September 6, 2018

NVRC also continues to participate in the EA/EIS and permit intergovernmental review process. Over the fiscal year, NVRC responded to 4 EA/EIS requests throughout the region as part of the intergovernmental review process.

### **3 Special Project Report: Northern Virginia Clean Water Partners Regional Stormwater Education Campaign**

Polluted stormwater runoff is the number one cause of poor water quality in streams and rivers in Northern Virginia. To reduce the impacts of stormwater pollution, the Northern Virginia Clean Water Partners program aims to educate the public about the impact of stormwater runoff on water quality and change human behaviors in our cities and neighborhoods through Regional Stormwater Education Campaign.

The Northern Virginia Clean Water Partners is comprised of a multi-disciplined group of local governments, drinking water and sanitation authorities, and individual businesses working together to address the common issues surrounding pollution prevention, stormwater management, and source water protection. “Only Rain Down the Storm Drain” is the motto of the partnership.

The Regional Stormwater Education Campaign was initiated in 2003 to assist localities in leveraging funds to achieve common goals regarding stormwater education and outreach and promote consistent messages. NVRC held several meetings with the Partners to discuss and determine the high priority water quality issues for the region. Regional water quality impairments were the primary criteria used to determine the issues. The three high priority water quality issues identified by the Partners were bacteria, nutrients, and motor oil/chemical contaminants. These issues became the focus of the education and outreach campaign for 2017-2018. The 2017-2018 campaign helped to satisfy MS4 (Municipal Separate Storm Sewer System) Phase I and Phase II permit requirements for stormwater education and documenting changes in behavior.

Fifteen local jurisdiction members contributed financial and in-kind resources to the program in FY2017, for a total budget of \$100,000. The Partners met three times in FY17 to foster dialogue among the partners and the Department of Environmental Quality as well as to plan and implement campaign activities.

In FY2017, educational ads featuring messages on the importance of proper pet waste disposal, over fertilization of lawns and gardens, and proper disposal of motor oil were distributed to the public via television, print, internet advertising and the Only Rain Down the Storm Drain website. In addition to the educational advertisements, public outreach events hosted throughout the Northern Virginia region also raised awareness and encouraged positive behavior change in residents. The educational ads featured the well-known national symbol of non-point source pollution; the rubber ducky.

From July 2017 through June 2018, the advertisements aired on 31 English language cable TV networks, and five Spanish language networks a total of 17,922 times. The networks were selected based upon research that shows they have the highest 'reach' to the target audiences.

These TV ads delivered 5,299,360 household impressions. The campaign also featured banner ads on the Xfinity.com website that promote the same messages as the cable TV ads. In addition to cable network advertising, digital banner ads were displayed on Xfinity.com and Cox.com resulted in 966,169 impressions.

The Northern Virginia Clean Water Partners website [www.onlyrain.org](http://www.onlyrain.org) was updated with new information and moved to a more modern and secure platform. The site received 18,848 unique visits during the year. These activities helped to fulfill the outreach and education requirements of the jurisdictions' MS4 permits including requirement for each permittee to identify three high priority issues, determine the target audience for each high priority issue, and reach 20% of the target audience for each high priority issue. In total, 75% of the target audience for each issue was reached.

An online survey of 500 Northern Virginia residents was conducted by a market research firm to determine the effectiveness of the ads, reveal any changes in behavior, and aid in directing the future efforts of the campaign. Sixteen percent of survey respondents recalled seeing the ad after watching the video. Responses to the survey suggest that public support remains strong for local government programs that improve the quality of water in local and regional streams and rivers and the Chesapeake Bay however the transient demographics of the Northern Virginia region indicate that there continues to be a need to educate residents about stormwater pollution and how they can reduce their impact. Complete survey results are included as Appendix B.

NVRC staff prepared a summary of the results from the Only Rain campaign and distributed it to the Partners in September 2018. This report is included as Appendix A.

## **4 Benefits Accrued from Prior CZM Grants**

The Technical Assistance grant from CZM has served as a foundation for the Northern Virginia Clean Water Partners project.

To reduce the impacts of stormwater pollution, the Northern Virginia Clean Water Partners aims to change human behaviors in our cities and neighborhoods through a public awareness and education campaign. The partnership is comprised of a multi-disciplinary group of local governments, drinking water and sanitation authorities, and individual businesses working together to address the common issues surrounding pollution prevention, stormwater management, and source water protection. “Only Rain Down the Storm Drain” is the motto of the partnership. By participating in the program, local jurisdictions have an unprecedented opportunity to pool local outreach dollars to collectively target pollution-causing behaviors for greater impact at less cost and effort. In addition to multi-media outreach, the strategy provides for community engagement and the production of educational materials that can be customized and used by each locality again and again. The primary goal of the partnership is to bring awareness of the impact stormwater has on waterbodies in Northern Virginia and to reduce stormwater-related pollution from entering local waterways.

To meet this goal, the Partners work together to:

- Educate the region’s residents on simple ways to reduce pollution around their homes;
- Monitor changes in behavior through surveys and other data collection techniques; and
- Pilot new cost-effective opportunities for public outreach and education.

Members include stormwater program managers, Municipal Separate Storm Sewer System (MS4) Permit managers, communication directors, public information officers, water quality compliance specialists, and environmental planners. Membership is voluntary. However, the partnership provides a cost-effective means to meet mandatory state and federal stormwater requirements. By working together the partners are able to leverage their available funds to develop and place bi-lingual products with common messages and themes, thereby extending their individual reach.

The Annual Regional Stormwater Education Campaign was initiated in 2003 to assist localities in leveraging funds to achieve common goals regarding stormwater education and outreach and promote consistent messages for fertilizer and pesticide use, pet waste disposal, and motor oil recycling.

The 2017-18 campaign partially satisfied MS4 (Municipal Separate Storm Sewer System) Phase I and Phase II permit requirements for stormwater education and documenting changes in behavior.

For more information visit [www.onlyrain.org](http://www.onlyrain.org)

Funds Leveraged since 2007: \$1,064,225.00

**Appendix A**

**Northern Virginia Clean Water Partners Summary of Regional Stormwater Education Campaign**



# Northern Virginia Clean Water Partners

## 2018 Summary

WORKING TOGETHER FOR HEALTHY STREAMS AND RIVERS

WWW.ONLYRAIN.ORG

**P**olluted stormwater runoff is the number one cause of poor water quality in streams and rivers in Northern Virginia. When it rains, the water runs off streets, driveways, yards and parking lots and picks up pesticides, grass clippings, fertilizer, bacteria, and oil. All of this pollution enters the storm drains on the street and is discharged directly to a stream. The runoff is not filtered or sent to a wastewater treatment facility.

To reduce the impacts of stormwater pollution, the Northern Virginia Clean Water Partners came together to change peoples' behavior through a public education campaign.

### About the Partnership

The Northern Virginia Clean Water Partners is composed of a group of local governments, drinking water

and sanitation authorities, and businesses that share the common goals to keep Northern Virginia residents healthy and safe by reducing the amount of pollution from stormwater runoff that reaches local creeks and rivers, and empower individuals to take action to reduce pollution.

To meet these goals, the Partners work together to:

- Identify high priority water quality issues for the region;
- Identify the target audience(s) for outreach;
- Educate the region's residents on simple ways to reduce pollution around their homes;
- Monitor changes in behavior through surveys and other data collection techniques; and
- Pilot new cost-effective opportunities for public outreach and education.

Membership is voluntary and each member makes an annual contribution to fund the program. By working together the partners are able to leverage their funds to develop and place bilingual educational products with common messages and themes, thereby extending the campaign's reach.

***Only Rain Down the Storm Drain*** is the motto of the partnership.

The 2018 campaign helped to satisfy MS4 (Municipal Separate Storm Sewer System) Phase I and Phase II permit requirements for stormwater education and documenting changes in behavior.

For more information visit [www.onlyrain.org](http://www.onlyrain.org)



# 2018 Campaign Overview and Accomplishments

In 2018, the Northern Virginia Clean Water Partners selected the following three high priority water quality issues to focus on for the Campaign:

- bacteria,
- nutrients, and
- illicit discharge of chemical contaminants.

The Partners identified the target audiences for these issues as pet owners, homeowners with a lawn or garden, and home mechanics and do-it-yourselfers.

The campaign used television, print, internet advertising and the [Only Rain Down the Storm Drain](http://www.onlyrain.org) website to distribute messages linked to specific stormwater issues, such as improper pet waste disposal, over fertilization of lawns and gardens, and improper disposal of motor oil.

In addition to the multi-channel media campaign, partners participated in local events to raise awareness and encourage positive behavior change in residents. Television and internet ads featured the well-known national symbol of non-point source pollution; the rubber ducky.



<b>5,299,360</b>	Total household television impressions*
<b>966,169</b>	Total digital impressions (internet banner ads and in-stream video ads)
<b>17,922</b>	Number of times the ads aired from July 2017- June 2018
<b>18,848</b>	Visits to the <a href="http://www.onlyrain.org">www.onlyrain.org</a> website
<b>500</b>	Online Annual Survey Responses
<b>&gt;75%</b>	Percent of target audience reached
<b>1</b>	New Outreach Strategy Piloted

*\*Impressions are the number of times an ad appeared on a single television or computer screen.*

Throughout the campaign year, the Partners made the following efforts to educate the public and promote awareness of stormwater pollution:

- From July 2017 through June 2018, aired four Public Service Announcements on 31 English language cable TV networks, and five Spanish speaking networks a total of 17,922 times. The ads featured messages on the importance of picking up pet waste and general household stormwater pollution reduction measures.
- Placed digital ads on Premium Digital Video websites that promote the same messages as the cable TV ads.

- Featured two full day, full page ads for Only Rain on the sign-in pages for Xfinity.com.



- In 2018, the Partners piloted a creative new strategy aimed at raising awareness about stormwater pollution called **"Write as Rain"**. The effort used stencils and an eco-friendly rain resistant spray (called RainWorks) to blanket the region's sidewalks, streetscapes and

thoroughfares with fun and educational motivational messages about stormwater that appear when the surfaces are wet. The goal of the effort was to raise public awareness about the environmental impacts of storm water pollution.



- Conducted an online survey of 500 Northern Virginia residents to determine the effectiveness of the ads, aid in directing the future efforts of the campaign, and to reveal any changes in behavior.
- Continued to update and maintain the Northern Virginia Clean Water Partners website.



### Findings in the 2018 survey include:

- 15% of respondents recalled seeing the ad on TV after watching the video clip in the survey.
- Of those who recalled seeing the ads, 49 percent state they already take action to protect clean water, 24 percent state they now pick up their pet waste more often, 12 percent state that they now properly dispose of motor oil, and 23 percent state they plan to fertilize fewer times per year.
- When shown the Only Rain Down the Storm Drain logo, 59 percent of the respondents recognized it compared to 54 percent in 2013. This increase indicates that awareness of the logo has increased over time.
- More than half of respondents feel at least somewhat confident that they would know where to report potential water pollution but, only 42 percent would report water pollution if they saw it. This suggests there is a need to encourage residents to speak up and report if they see something.
- One in five respondents stated they don't know they need to take action around their home to protect clean water.
- About four in ten respondents felt they were

most prevented to take action to protect clean water because they don't know what to do.

- The majority of respondents (64%) indicated that email newsletters with reminders and quick tips and/or online resources would help them take action to protect clean water.

### Understanding Behaviors

In addition to capturing responses to questions regarding the effectiveness of the campaign, this year's survey honed in on the current behaviors and attitudes of Northern Virginia residents as they relate to pet waste management, lawn care, and motor oil disposal. Responses to these questions support the development of future messages and targeted promotion.

The most important reason dog owners are motivated to pick up their pet's waste is because "It's what good neighbors do". The number of respondents choosing "It causes water pollution" as the most important reason to pick it up has fluctuated but was the second most common reason in 2018.

78% of lawn and garden owners fertilize their lawns at least once per year. Among those who fertilize once a year, 18 percent fertilize in the spring and only five percent fertilize in the fall. This suggests that there is room to educate residents of Northern Virginia that fertilizing in the fall is better for local waterways.

About half of the respondents reported using an herbicide to treat weeds in their lawn or garden.

Among those who fertilize their lawn, 75 percent have never had or were not sure if their soil had been tested for fertility or pH and fifty five percent reported using a slow release fertilizer.

In a new question for 2018, after reading a description of a rain barrel, rain garden, and conservation landscaping, respondents were asked if they had implemented these features at their home or had heard about them. Seven percent reported having a rain barrel, while four percent reported having a rain garden, and 11 percent reported having conservation landscapes in their yard.

Consistent with the past seven years, the majority of respondents take their vehicle to a service station for oil changes (82%) or take used oil to a gas station or hazmat facility for recycling (11%). Three percent of Northern Virginians reported storing used motor oil in their garage, placing it in the trash or dumping it down the storm drain.



# Only Rain Down the Drain

[www.onlyrain.org](http://www.onlyrain.org)

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## 2018 Northern Virginia Clean Water Partners

Fairfax County | Arlington County | Loudoun County | Stafford County | Fairfax Water |  
City of Alexandria | Loudoun Water | City of Fairfax |  
Town of Herndon | City of Falls Church | Town of Leesburg | Town of Vienna |  
Town of Dumfries | Doody Calls | Northern Virginia Regional Commission | George Mason University | Virginia  
Coastal Zone Management Program | Fairfax County Public Schools | Prince William County Public Schools |  
Northern Virginia Soil and Water Conservation District



Summary prepared by NVRC on behalf of the Partners

## **Appendix B**

### **Regional Stormwater Education Campaign Survey Results**

# **Northern Virginia Regional Commission 2018 Only Rain NVRC Survey**

*Summary Report of Findings*

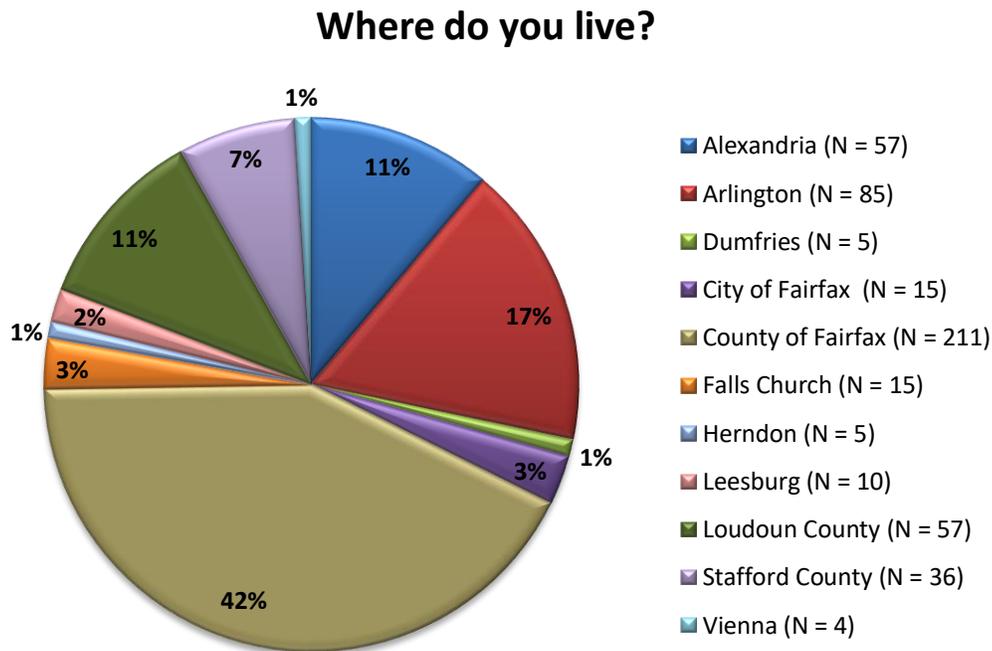
7/16/2018

**Amplitude Research, Inc.**

## Study Methodology & Respondent Characteristics

The Northern Virginia Regional Commission (NVRC) hired Amplitude Research, Inc. to conduct a survey of residents of northern Virginia to measure beliefs and attitudes related to pollution of the Potomac River and Chesapeake Bay.

Amplitude Research administered the study online starting in mid-June, 2018. In the end, 500 surveys were completed by web panelists who live in one of the areas of Virginia shown in the chart below. (In the legend, “N =” indicates the number of respondents in each city, county, or town. Note that the percentages in the chart add to 99% due to rounding.)



Later in this report, the results for some of the questions are “broken out” by area, in addition to presenting the results for the total sample. However, the specific areas listed above were grouped together into larger areas so that each larger area used for analysis had a reasonable number of respondents.

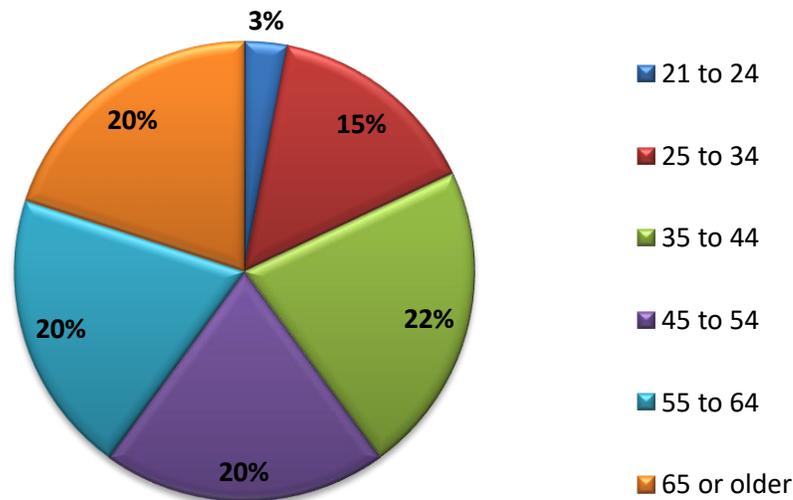
Residents from Leesburg and Loudoun County were combined into a single category labeled “**Leesburg / Loudoun**,” since the town of Leesburg lies within Loudoun County. Another category used for analysis was “**Dumfries / Stafford**,” since Dumfries lies just north of Stafford County. Although Dumfries is not located within Stafford County, it is closer to Stafford than to the other counties covered in the survey. (There were too few survey respondents living in Dumfries to examine the results for Dumfries separately.) The City of Fairfax, Falls Church, Herndon, and Vienna were combined with Fairfax County to create the category “**Fairfax Inclusive**,” since these cities and towns lie within the Fairfax County area. Although the City of

Fairfax and City of Falls Church are distinct areas, their location falls within the larger area circumscribed by Fairfax County.

Alexandria and Arlington each had a sufficient number of respondents so that each of these areas can be examined separately.

The minimum age to participate in the survey was 21. As shown in the chart below, each age group was well represented in the survey. Although a small proportion were age 21 to 24, this category has fewer years than the other categories shown. For analysis purposes later in this report, the categories “21 to 24” and “25 to 34” were combined into the broader category of “21 to 34.”

### Which category includes your age?



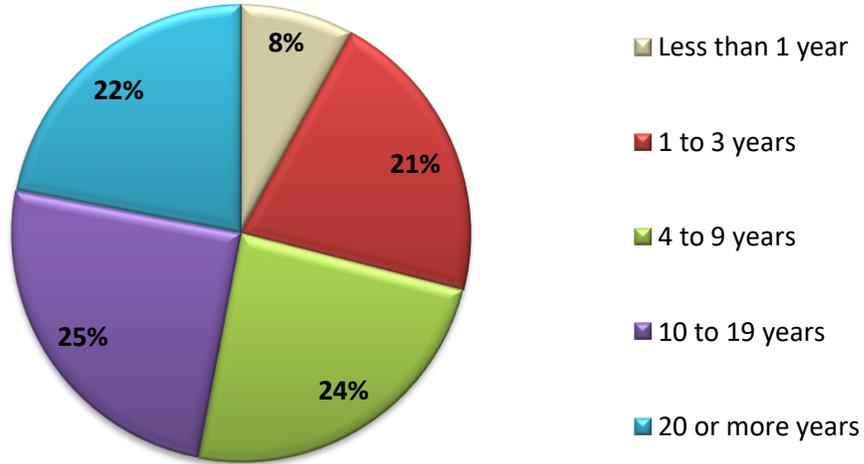
The survey respondents were split between males (49%) and females (51%), while approximately three-fourths (74%) indicated that they own their residence, and 26% reported renting.

The chart on the next page shows how long respondents have lived in their current residence.

A survey was conducted in each year between 2011 and 2017 that included many of the same or similar questions, targeted the same geographic area, and had a similar demographic mix as in this 2018 study. Later in this report, comparisons between years are shown where appropriate. Initially, the title used for the study was “NVRC Resident Survey.” Starting in 2013, the study title was changed to “Only Rain NVRC Survey,” since a new question was added about awareness of the “Only Rain” logo.

In 2018, a minimum quota of 8% of the total sample was set for those who are of Hispanic heritage to allow analysis of results specifically among Hispanic respondents.

## For how many years have you lived in your current residence?



## Sampling Variability

While examining the survey findings, it is helpful to keep in mind that the results are based on a sample and are therefore subject to sampling variability, often referred to as “sampling error.” The degree of uncertainty for an estimate (e.g., a particular percentage from the survey) arising from sampling variability is represented through the use of a margin of error. A sampling margin of error at the “95% confidence level” can be interpreted as providing a 95% probability that the interval created by the estimate plus and minus the margin of error contains the true value. (The “true” value would be known only if everyone in the target market was surveyed rather than just a sample.) In addition to sampling variability, results may be subject to various sources of non-sampling error (e.g., non-response bias, respondent misinterpretation of question wording, etc.). The degree of non-sampling error is not represented by the sampling margin of error and is usually unknown.

For a “sample size” of 500 survey respondents, the “maximum” margin of sampling error for percentages from the survey is +/- 4.4 percentage points at the 95% confidence level. Here, “maximum” refers to the margin of error being highest for proportions from the survey near 50%, while the margin of error declines as percentages get further from 50%. For example, given the same sample size of 500 respondents, a result from the survey near 10% or 90% would have a margin of sampling error of +/- 2.6 percentage points.

The margin of sampling error increases as the sample size decreases. Thus, when a question is asked of only a subset of the total sample, the associated margin of sampling error is larger than that quoted above. Also, even if a question is asked of all respondents, when examining results for a particular subgroup, the margin of sampling error depends on the number of respondents in that subgroup. For example, the “maximum” margin of sampling error would be +/- 9.8 percentage points at the “95% confidence level” when based on a subgroup of 100 survey respondents. In some parts of this report, results are shown for subgroups that include a fairly small number of respondents, and caution is recommended when thinking about these findings.

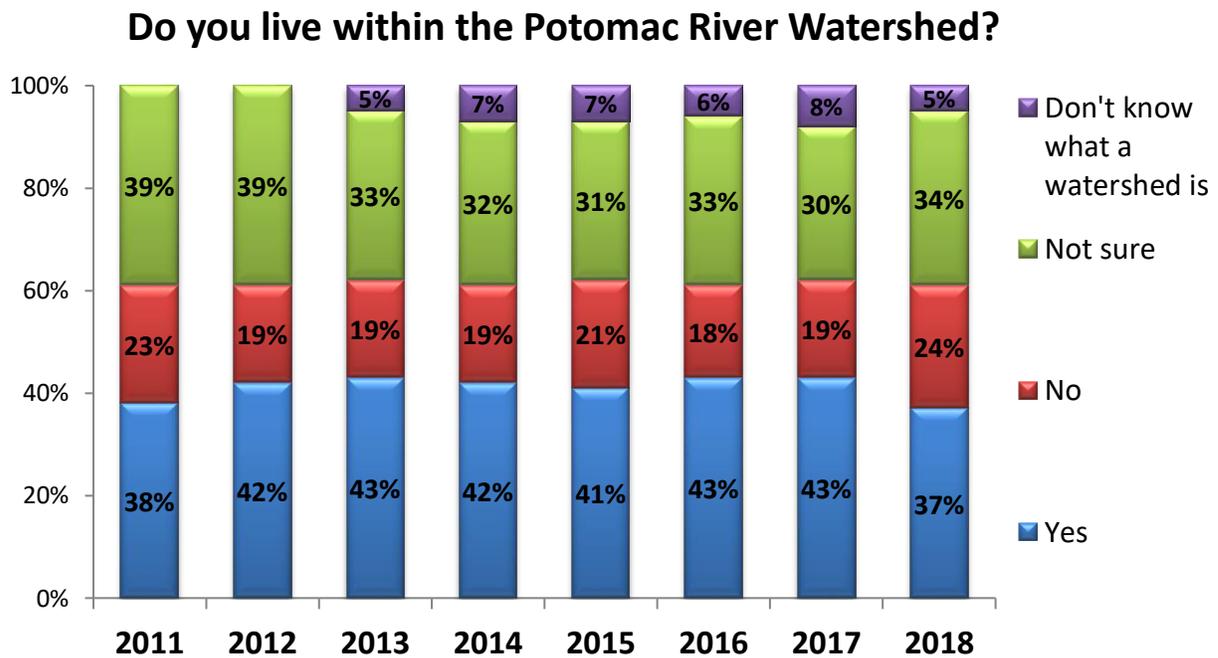
This suggests that results for different subgroups can be considered “similar” when the differences are small (i.e., small enough to be within the range of sampling error).

Results from different years can be considered similar when differences between the years are small. If the difference between two years is referred to as “statistically significant,” this essentially means that the difference in the survey results is large enough to be highly confident (i.e., at the “95% confidence level”) that there has been a real change. That is, a “statistically significant” difference in the survey results from one year to the next is larger than what would usually be expected from sampling error alone.

In this report, when a result from 2018 is described as “significantly” higher (or lower) than the result from a previous year, this means that the difference between these years is “statistically significant.” Also, when one subgroup is described as “more likely” (or “less likely”) than another subgroup to answer in a particular way, this is based on a statistically significant difference.

## Potomac River Watershed

- Early in the survey, respondents were asked if they lived within the “Potomac River Watershed.” As shown in the chart below, slightly less than four-in-ten (37%) in 2018 believed that they did in fact live within the Potomac River Watershed. This was slightly lower than in previous years, but the change in 2018 was not quite large enough to be statistically significant.



- When breaking the results out by area, as shown in the table below, the proportion answering “Yes” did not differ significantly. Although the result was lower in Dumfries / Stafford, the difference between this area and the other areas was not large enough to be statistically significant. (Note that the sample size of 41 respondents for Dumfries / Stafford is fairly small.)

<b>Live Within Potomac River Watershed</b>	<b>Alexandria</b>	<b>Arlington</b>	<b>Fairfax Inclusive</b>	<b>Leesburg / Loudoun</b>	<b>Dumfries / Stafford</b>
Yes	42%	38%	38%	39%	24%
No	19%	14%	26%	22%	39%
Not sure	34%	43%	29%	37%	32%
Don't know what a watershed is	5%	5%	7%	2%	5%
<i>N = number of respondents</i>	57	85	250	67	41

- As shown in the next table, those who have been in their current residence for less than 4 years were less likely than those who have been in their current residence for 10 or more years to say they live within the Potomac River Watershed.

<b>Live Within Potomac River Watershed</b>	<b>Have Lived in Current Residence &lt; 4 Years</b>	<b>4 to 9 Years</b>	<b>10 to 19 Years</b>	<b>20 or More Years</b>
Yes	30%	36%	42%	42%
No	27%	25%	18%	25%
Not sure	38%	32%	37%	27%
Don't know what a watershed is	5%	7%	3%	6%
<i>N = number of respondents</i>	146	118	126	110

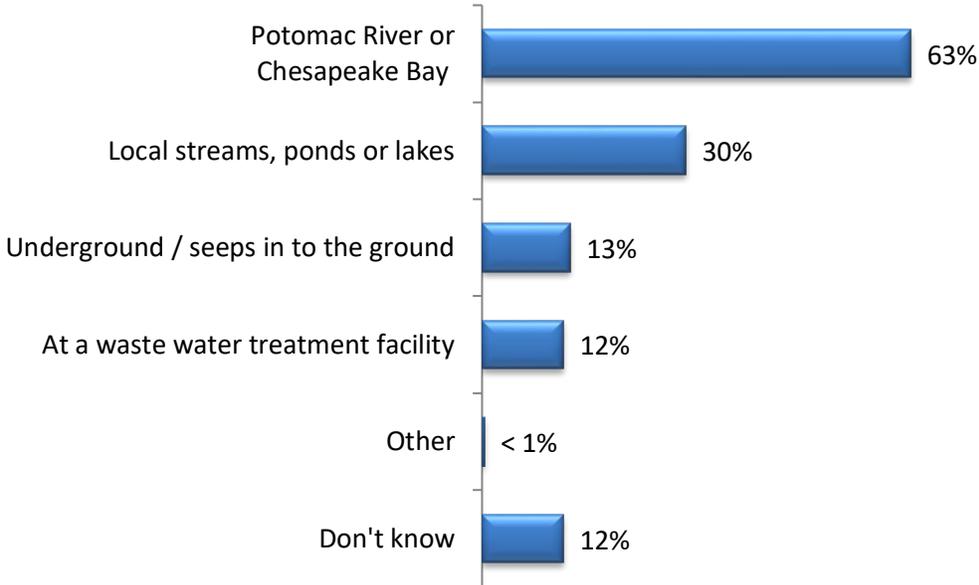
- Those age 65 or older were more likely than those under age 55 to believe that they live in the Potomac River Watershed.

<b>Live Within Potomac River Watershed</b>	<b>Age 21 to 34</b>	<b>35 to 44</b>	<b>45 to 54</b>	<b>55 to 64</b>	<b>65 +</b>
Yes	29%	37%	34%	37%	48%
No	28%	22%	31%	23%	16%
Not sure	38%	37%	26%	34%	32%
Don't know what a watershed is	5%	4%	9%	6%	4%
<i>N = number of respondents</i>	92	109	101	97	101

- When examining the results by other subgroups, males were more likely than females and homeowners were more likely than renters to believe that they live within the Potomac River Watershed.

<b>Live Within Potomac River Watershed</b>	<b>Male</b>	<b>Female</b>	<b>Homeowners</b>	<b>Renters</b>	<b>Hispanic Respondents</b>
Yes	46%	29%	40%	29%	38%
No	21%	26%	23%	27%	30%
Not sure	30%	37%	32%	39%	32%
Don't know what a watershed is	3%	8%	5%	5%	0%
<i>N = number of respondents</i>	244	256	372	128	40

**"Stormwater" runoff is rain or other water that flows into the street, along the gutter and into the storm drain. To the best of your knowledge, where do you believe storm water eventually ends up?**



- The majority (63%) believe that storm water eventually ends up in the Potomac River or Chesapeake Bay. The results are shown only for 2018 above because the 2018 questionnaire had two separate options in place of a single option of “Local streams, Potomac River or Chesapeake Bay” last year.
- Results by various subgroups are shown on the next two pages. For example, those from Arlington and Fairfax Inclusive were more likely than those from Dumfries / Stafford to select Potomac River or Chesapeake Bay. Those age 65 or older were more likely than those under 35, and males were more likely than females to select that response.

**Believed Destination  
of Stormwater**

	Alexandria	Arlington	Fairfax Inclusive	Leesburg / Loudoun	Dumfries / Stafford
Potomac River or Chesapeake Bay	60%	67%	66%	58%	46%
Local streams, ponds or lakes	40%	34%	27%	25%	32%
Underground / seeps in to the ground	14%	9%	13%	13%	17%
At a waste water treatment facility	16%	13%	12%	12%	7%
Other	2%	0%	0%	0%	0%
Don't know	12%	7%	12%	16%	17%

*N = number of respondents*                      57                      85                      250                      67                      41

**Believed Destination  
of Stormwater**

**Have Lived  
in Current  
Residence  
< 4 Years**

**4 to 9 Years**

**10 to 19  
Years**

**20 or More  
Years**

	Have Lived in Current Residence < 4 Years	4 to 9 Years	10 to 19 Years	20 or More Years
Potomac River or Chesapeake Bay	61%	61%	65%	65%
Local streams, ponds or lakes	37%	38%	25%	17%
Underground / seeps in to the ground	18%	16%	6%	11%
At a waste water treatment facility	14%	12%	11%	10%
Other	0%	0%	1%	1%
Don't know	12%	14%	12%	12%

*N = number of respondents*                      146                      118                      126                      110

**Believed Destination  
of Stormwater**

	<b>Age 21 to 34</b>	<b>35 to 44</b>	<b>45 to 54</b>	<b>55 to 64</b>	<b>65 +</b>
Potomac River or Chesapeake Bay	52%	62%	61%	65%	72%
Local streams, ponds or lakes	43%	40%	30%	22%	14%
Underground / seeps in to the ground	20%	20%	10%	8%	6%
At a waste water treatment facility	20%	18%	7%	11%	4%
Other	0%	0%	0%	0%	2%
Don't know	9%	14%	16%	10%	13%

*N = number of respondents*                      92                      109                      101                      97                      101

**Believed Destination  
of Stormwater**

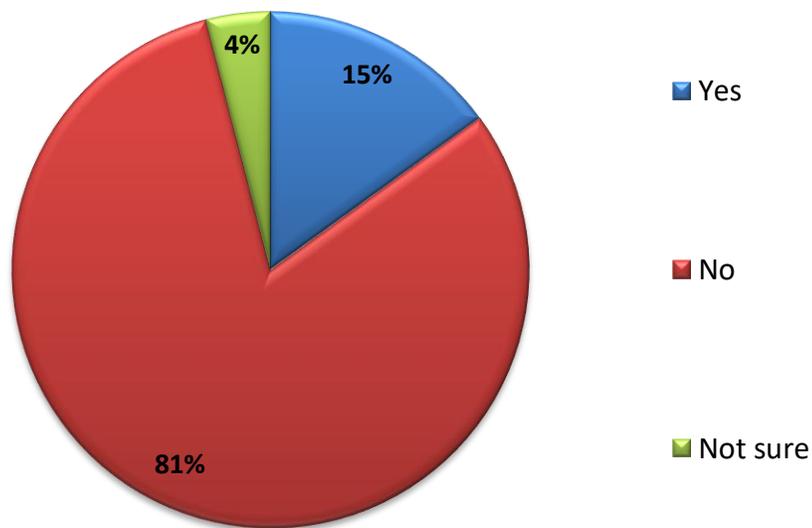
	<b>Male</b>	<b>Female</b>	<b>Homeowners</b>	<b>Renters</b>	<b>Hispanic</b>
Potomac River or Chesapeake Bay	70%	56%	65%	57%	58%
Local streams, ponds or lakes	20%	39%	28%	35%	48%
Underground / seeps in to the ground	10%	15%	12%	16%	20%
At a waste water treatment facility	11%	13%	10%	18%	13%
Other	1%	0%	1%	0%	0%
Don't know	11%	13%	12%	15%	8%

*N = number of respondents*                      244                      256                      372                      128                      40

## Advertising / Information About Reducing Water Pollution

- In 2018, a video of an advertisement featuring “rubber duckies” was presented in the survey, and respondents were asked if they had seen it on TV. A similar question was asked in 2017 and 2016, but the survey wording referred to TV *or Internet*, whereas the 2018 wording referred only to TV. The proportion recalling related TV advertising was 15% in 2018, as shown in the chart below. (The proportion recalling related TV or Internet advertising was 24% in 2017 and 16% in 2016.)

**Please watch the video below. Before this survey, had you seen this ad or a similar one on TV about reducing water pollution?**



- The proportion recalling the ad by area ranged from 12% to 24%, with Dumfries / Stafford having a significantly higher result than Fairfax Inclusive.

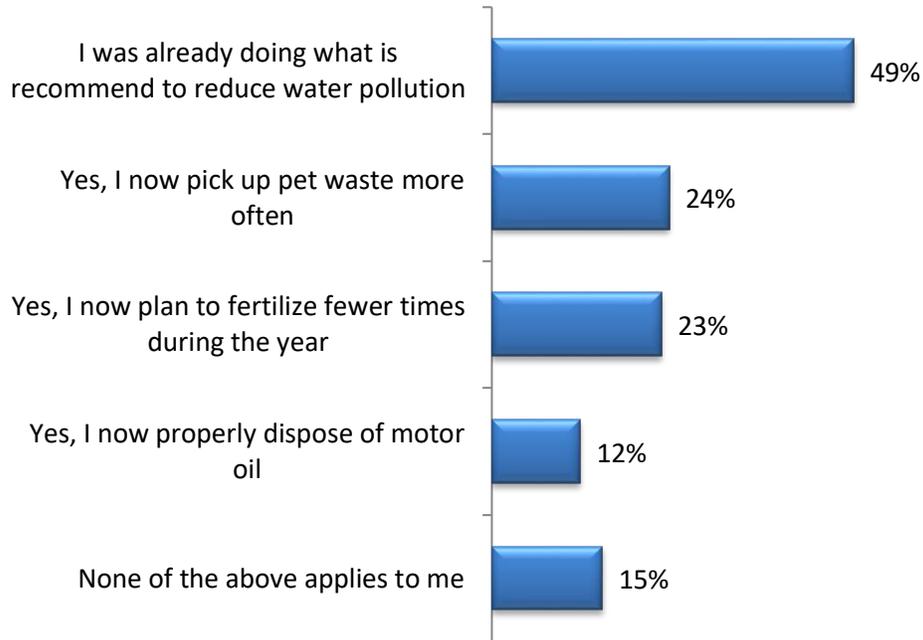
<b>Saw TV Ads on Reducing Water Pollution</b>	<b>Alexandria</b>	<b>Arlington</b>	<b>Fairfax Inclusive</b>	<b>Leesburg / Loudoun</b>	<b>Dumfries / Stafford</b>
Yes	18%	14%	12%	18%	24%
No	77%	85%	82%	79%	73%
Not sure	5%	1%	6%	3%	3%
<i>N = number of respondents</i>	57	85	250	67	41

<b>Saw TV Ads on Reducing Water Pollution</b>	<b>Have Lived in Current Residence &lt; 4 Years</b>			
	<b>4 to 9 Years</b>	<b>10 to 19 Years</b>	<b>20 or More Years</b>	
Yes	13%	17%	14%	15%
No	85%	78%	80%	80%
Not sure	2%	5%	6%	5%
<i>N = number of respondents</i>	146	118	126	110

<b>Saw TV Ads on Reducing Water Pollution</b>	<b>Age</b>				
	<b>21 to 34</b>	<b>35 to 44</b>	<b>45 to 54</b>	<b>55 to 64</b>	<b>65 +</b>
Yes	22%	12%	11%	17%	14%
No	75%	84%	85%	76%	83%
Not sure	3%	4%	4%	7%	3%
<i>N = number of respondents</i>	92	109	101	97	101

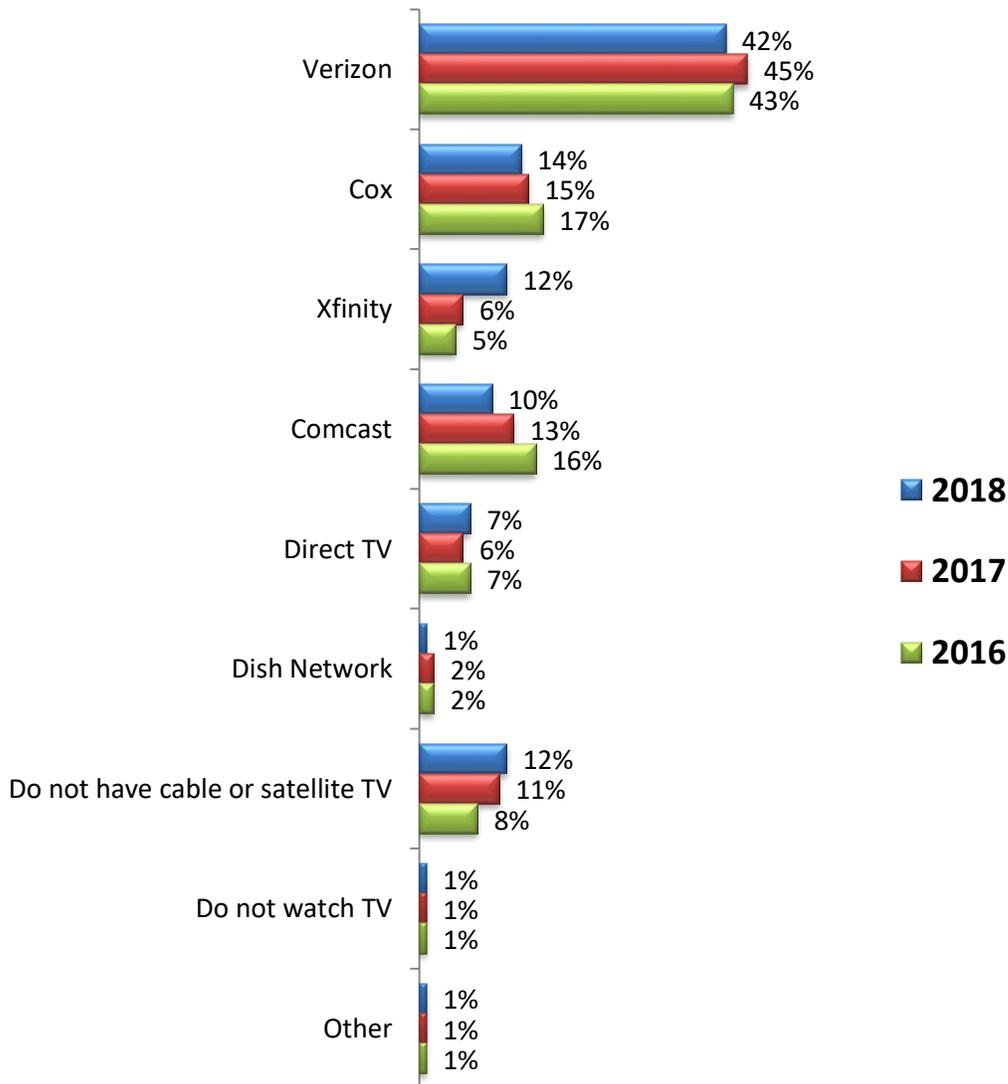
<b>Saw TV Ads on Reducing Water Pollution</b>	<b>Gender</b>		<b>Homeownership</b>		<b>Hispanic Respondents</b>
	<b>Male</b>	<b>Female</b>	<b>Homeowners</b>	<b>Renters</b>	
Yes	18%	12%	15%	14%	22%
No	78%	84%	81%	82%	70%
Not sure	4%	4%	4%	4%	8%
<i>N = number of respondents</i>	244	256	372	128	40

**Did seeing the ad(s) about reducing water pollution make you change any of your behaviors related to fertilizing less often and/or reducing water pollution?**



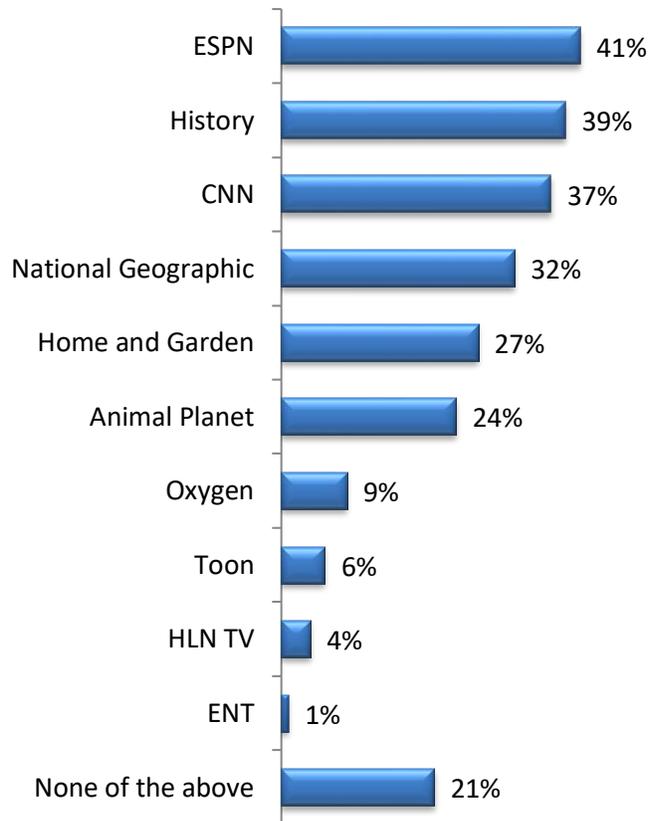
- Those who recalled the advertising were asked the question above, and noticeable proportions reported changing their behavior related to fertilizing less often and/or reducing water pollution.

## What TV service provider do you use?



- Verizon was selected most often (by 42% in 2018) as their TV service provider.
- One reason for asking the question above was to determine if recall of the advertising differed by TV provider. Based on a separate analysis (not shown in chart), it turns out that TV recall was similar across the larger providers. When looking at the providers with at least 50 respondents using the provider, the proportion recalling the ad was 17% among Verizon customers, 17% among Cox customers, 16% among Xfinity customers, and 19% among Comcast customers.
- In 2017 and 2016, there was a category for “I only watched streamed video content,” but the proportion selecting this option was added to “Do not have cable or satellite TV” for the chart above.

## Which of the following channels, if any, do you watch?

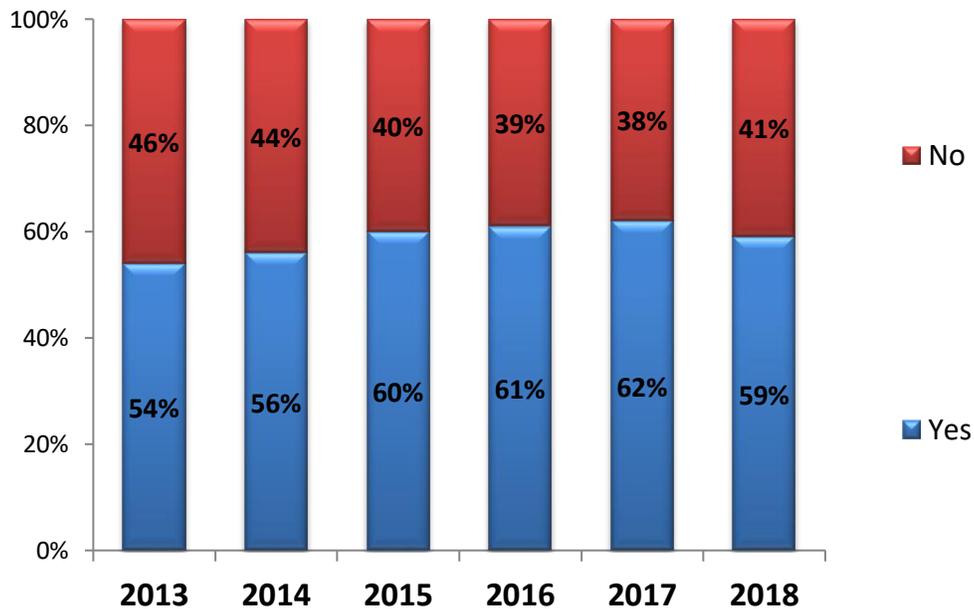


- Of the channels covered in the survey, ESPN had the highest proportion reporting that they watch the channel (41%). (In the 2017 and 2016 surveys, the wording of the question referred to channels watched in the past 30 days, whereas the 2018 wording does not specify a timeframe.)
- One reason for adding the question above was to determine if recall of the advertising differed by channels watched. Based on a separate analysis (not shown in chart), for three of the channels, their viewers were significantly more likely than others to recall the advertising that was shown in the survey: Oxygen (28% of those who watched this channel recalled the advertising), Animal Planet (23%), and History Channel (21%).
- Among those who watched *none* of the channels above, only 6% recalled the advertising.

- The logo below was shown to all respondents regardless of whether they had seen advertising or not, and more than half of the total sample recognized the logo each year since 2013. The 2018 result was not the highest, but it was also not the lowest compared to previous years.



**Have you seen the logo above anywhere?**



- Results for the question above in 2018 by subgroup are shown on the next page. Interestingly, awareness was significantly lower in Dumfries / Stafford. This was the case last year and the year before that as well. At the same time, males were more likely than females to recall the logo.

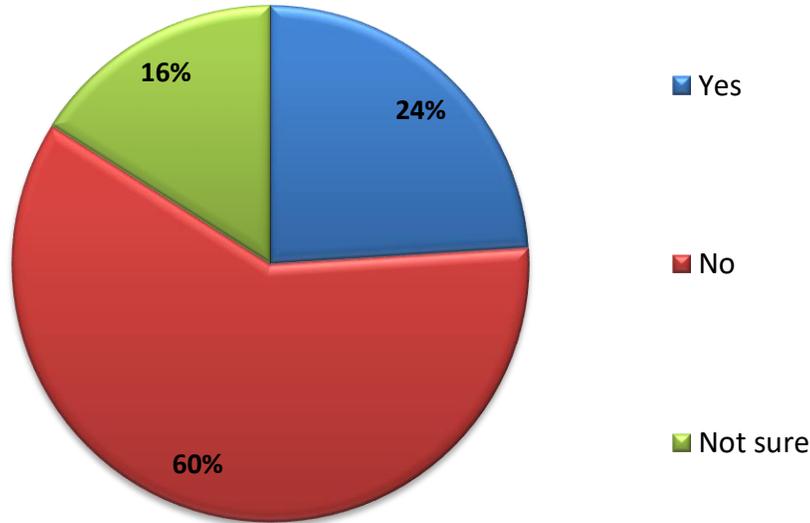
<b>Have Seen Logo</b>	<b>Alexandria</b>	<b>Arlington</b>	<b>Fairfax Inclusive</b>	<b>Leesburg / Loudoun</b>	<b>Dumfries / Stafford</b>
Yes	65%	69%	60%	58%	24%
No	35%	31%	40%	42%	76%
<i>N = number of respondents</i>	57	85	250	67	41

<b>Have Seen Logo</b>	<b>Have Lived in Current Residence &lt; 4 Years</b>	<b>4 to 9 Years</b>	<b>10 to 19 Years</b>	<b>20 or More Years</b>
Yes	58%	61%	61%	55%
No	42%	39%	39%	45%
<i>N = number of respondents</i>	146	118	126	110

<b>Have Seen Logo</b>	<b>Age 21 to 34</b>	<b>35 to 44</b>	<b>45 to 54</b>	<b>55 to 64</b>	<b>65 +</b>
Yes	53%	67%	55%	60%	57%
No	47%	33%	45%	40%	43%
<i>N = number of respondents</i>	92	109	101	97	101

<b>Have Seen Logo</b>	<b>Male</b>	<b>Female</b>	<b>Homeowners</b>	<b>Renters</b>	<b>Hispanic Respondents</b>
Yes	65%	53%	61%	53%	63%
No	35%	47%	39%	47%	38%
<i>N = number of respondents</i>	244	256	372	128	40

**Regardless of whether you have seen that specific ad or logo, have you seen or received information about reducing water pollution from any source in the past 12 months?**



- Nearly one-fourth (24%) reported that they have seen or received information about reducing water pollution in the past 12 months. The results for this question were similar across the different subgroups examined in the following tables.

<b>Received Info. About Reducing Water Pollution</b>	<b>Alexandria</b>	<b>Arlington</b>	<b>Fairfax Inclusive</b>	<b>Leesburg / Loudoun</b>	<b>Dumfries / Stafford</b>
Yes	30%	22%	24%	27%	20%
No	53%	60%	61%	61%	61%
Not sure	17%	18%	15%	12%	19%
<i>N = number of respondents</i>	57	85	250	67	41

<b>Received Info. About Reducing Water Pollution</b>	<b>Have Lived in Current Residence &lt; 4 Years</b>	<b>4 to 9 Years</b>	<b>10 to 19 Years</b>	<b>20 or More Years</b>
Yes	23%	27%	27%	21%
No	61%	60%	57%	60%
Not sure	16%	13%	16%	19%
<i>N = number of respondents</i>	146	118	126	110

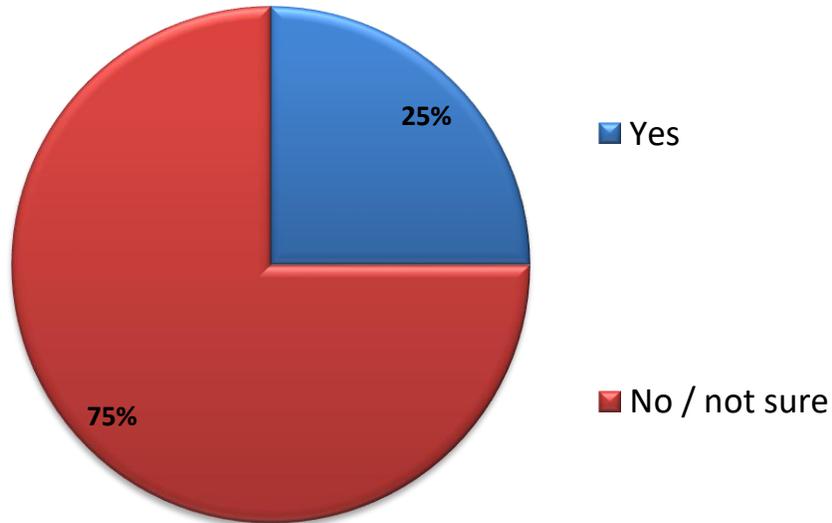
**Received Info.  
About Reducing  
Water Pollution**

	<b>Age 21 to 34</b>	<b>35 to 44</b>	<b>45 to 54</b>	<b>55 to 64</b>	<b>65 +</b>
Yes	28%	27%	21%	22%	25%
No	58%	59%	62%	61%	58%
Not sure	14%	14%	17%	17%	17%
<i>N = number of respondents</i>	92	109	101	97	101

**Received Info.  
About Reducing  
Water Pollution**

	<b>Male</b>	<b>Female</b>	<b>Homeowners</b>	<b>Renters</b>	<b>Hispanic Respondents</b>
Yes	27%	21%	25%	24%	25%
No	57%	63%	59%	62%	62%
Not sure	16%	16%	16%	14%	13%
<i>N = number of respondents</i>	244	256	372	128	40

**Thinking about the last 12 months, have you heard about any opportunities to participate in a water quality activity, such as a stream clean up, helping to install storm drain labels, etc.?**



- One-fourth (25%) have heard about opportunities to participate in a water quality activity in the past 12 months. The result was lower in Dumfries / Stafford, but the difference between this area and others was not quite large enough to be statistically significant. However, males were significantly more likely than females to answer “Yes” to the question above.

<b>Heard of Water Quality Activities Past 12 Months</b>	<b>Alexandria</b>	<b>Arlington</b>	<b>Fairfax Inclusive</b>	<b>Leesburg / Loudoun</b>	<b>Dumfries / Stafford</b>
Yes	25%	29%	25%	22%	15%
No / not sure	75%	71%	75%	78%	85%
<i>N = number of respondents</i>	57	85	250	67	41

<b>Heard of Water Quality Activities Past 12 Months</b>	<b>Have Lived in Current Residence &lt; 4 Years</b>	<b>4 to 9 Years</b>	<b>10 to 19 Years</b>	<b>20 or More Years</b>
Yes	20%	23%	30%	26%
No / not sure	80%	77%	70%	74%
<i>N = number of respondents</i>	146	118	126	110

**Heard of Water  
Quality Activities  
Past 12 Months**

	<b>Age 21 to 34</b>	<b>35 to 44</b>	<b>45 to 54</b>	<b>55 to 64</b>	<b>65 +</b>
Yes	23%	25%	27%	20%	29%
No / not sure	77%	75%	73%	80%	71%
<i>N = number of respondents</i>	92	109	101	97	101

**Heard of Water  
Quality Activities  
Past 12 Months**

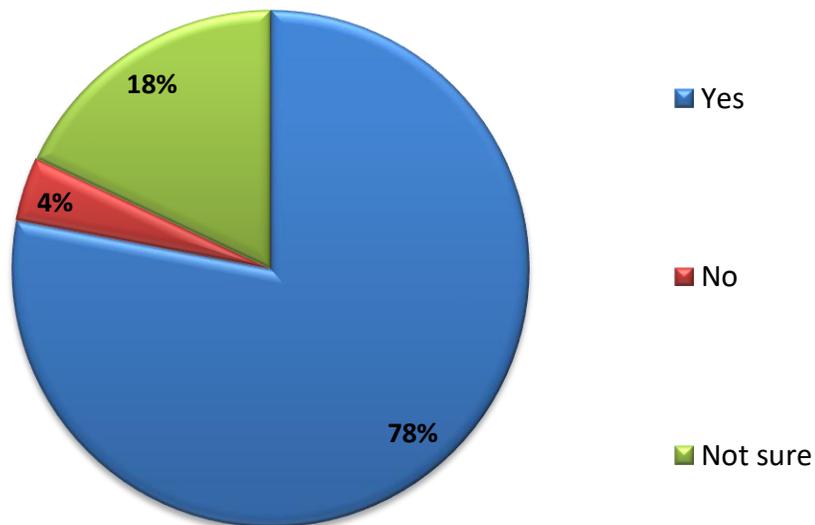
	<b>Male</b>	<b>Female</b>	<b>Homeowners</b>	<b>Renters</b>	<b>Hispanic Respondents</b>
Yes	30%	20%	25%	24%	28%
No / not sure	70%	80%	75%	76%	73%
<i>N = number of respondents</i>	244	256	372	128	40

- In a separate question asked only of those who answered “Yes” to the question on the previous page, 26% indicated that they *participated* in a water quality activity. Since this 26% applies to the 25% who answered “Yes” to the question on the previous page, it turns out that 6% (= 26% x 25%) of the total sample reported both hearing about and participating in a water quality activity in the past 12 months.

## Potential Water Pollution Source

- Two pictures were shown to the survey respondents in 2018, and they were asked the question below. (The images used can be found in the questionnaire in the Appendix.)

**Looking at the pictures below, would you consider this to be a potential source of water pollution?**



- More than three-fourths (78%) felt that the pictures showed a potential source of water pollution. As shown in the table below, this was true for three-fourths or more in each area. As shown in tables on the next page, the proportion feeling this way was high in all of the subgroups examined.

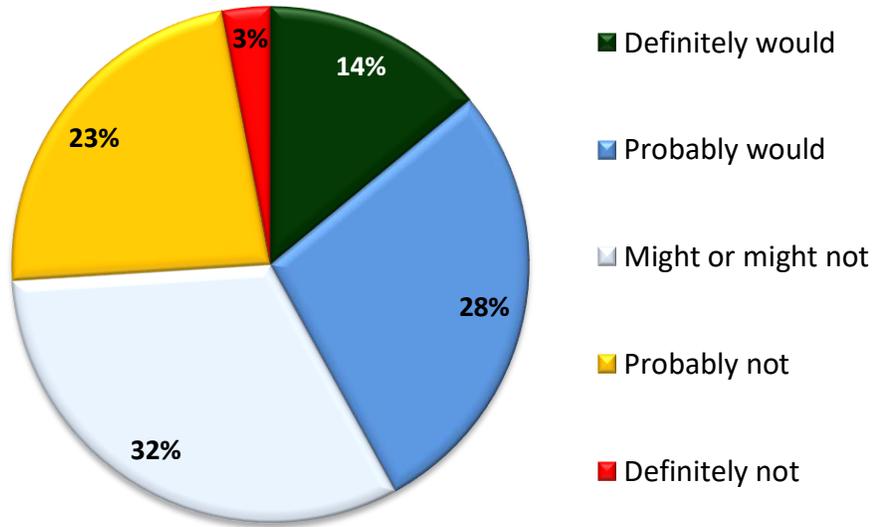
<b>Consider it Potential Source of Water Pollution</b>	<b>Alexandria</b>	<b>Arlington</b>	<b>Fairfax Inclusive</b>	<b>Leesburg / Loudoun</b>	<b>Dumfries / Stafford</b>
Yes	75%	77%	79%	79%	78%
No	4%	8%	4%	3%	5%
Not sure	21%	15%	17%	18%	17%
<i>N = number of respondents</i>	57	85	250	67	41

<b>Consider it Potential Source of Water Pollution</b>	<b>Have Lived in Current Residence</b>			
	<b>&lt; 4 Years</b>	<b>4 to 9 Years</b>	<b>10 to 19 Years</b>	<b>20 or More Years</b>
Yes	77%	78%	79%	78%
No	4%	4%	6%	4%
Not sure	19%	18%	15%	18%
<i>N = number of respondents</i>	146	118	126	110

<b>Consider it Potential Source of Water Pollution</b>	<b>Age</b>				
	<b>21 to 34</b>	<b>35 to 44</b>	<b>45 to 54</b>	<b>55 to 64</b>	<b>65 +</b>
Yes	75%	77%	78%	84%	76%
No	10%	4%	6%	2%	1%
Not sure	15%	19%	16%	14%	23%
<i>N = number of respondents</i>	92	109	101	97	101

<b>Consider it Potential Source of Water Pollution</b>	<b>Gender</b>		<b>Homeownership</b>		<b>Hispanic Respondents</b>
	<b>Male</b>	<b>Female</b>	<b>Homeowners</b>	<b>Renters</b>	
Yes	75%	81%	79%	74%	72%
No	5%	4%	4%	6%	5%
Not sure	20%	15%	17%	20%	23%
<i>N = number of respondents</i>	244	256	372	128	40

**What is the likelihood that you would call county or town officials to report potential pollution so they could investigate the cause?**



- One-in-seven (14%) felt that they “Definitely would” report potential pollution to county or town officials. As shown in the following tables, the proportion rating “Definitely would” for various subgroups ranged from 11% to 22%.

<b>Likelihood Report Potential Pollution</b>	<b>Alexandria</b>	<b>Arlington</b>	<b>Fairfax Inclusive</b>	<b>Leesburg / Loudoun</b>	<b>Dumfries / Stafford</b>
Definitely would	11%	12%	12%	22%	17%
Probably would	33%	27%	30%	22%	20%
Might or might not	26%	33%	32%	27%	44%
Probably would	26%	25%	23%	24%	19%
Definitely not	4%	3%	3%	5%	0%
<i>N = number of respondents</i>	57	85	250	67	41

**Likelihood Report  
Potential Pollution**

**Have Lived  
in Current  
Residence  
< 4 Years**

**4 to 9 Years**

**10 to 19  
Years**

**20 or More  
Years**

Definitely would	12%	14%	14%	16%
Probably would	25%	31%	28%	28%
Might or might not	31%	28%	33%	36%
Probably would	29%	24%	23%	16%
Definitely not	3%	3%	2%	4%

*N = number of respondents*

146

118

126

110

**Likelihood Report  
Potential Pollution**

**Age  
21 to 34**

**35 to 44**

**45 to 54**

**55 to 64**

**65 +**

Definitely would	20%	11%	16%	10%	13%
Probably would	21%	32%	24%	36%	26%
Might or might not	26%	26%	37%	35%	34%
Probably would	29%	27%	20%	15%	26%
Definitely not	4%	4%	3%	4%	1%

*N = number of respondents*

92

109

101

97

101

**Likelihood Report  
Potential Pollution**

**Male**

**Female**

**Homeowners**

**Renters**

**Hispanic  
Respondents**

Definitely would	11%	17%	13%	15%	22%
Probably would	31%	24%	30%	22%	25%
Might or might not	33%	30%	34%	25%	28%
Probably would	21%	26%	20%	33%	22%
Definitely not	4%	3%	3%	5%	3%

*N = number of respondents*

244

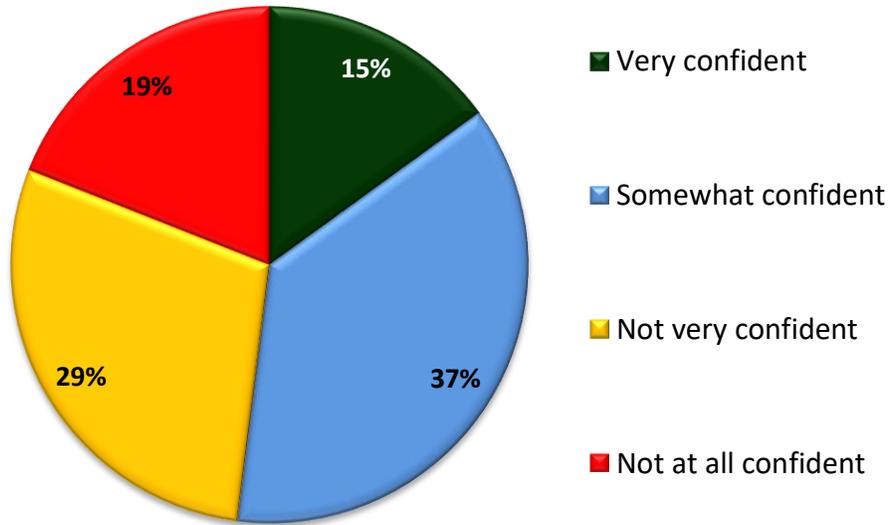
256

372

128

40

## How confident are you that you would know where to report potential water pollution?



- A small proportion (15%) were “Very confident,” although more than one-third (37%) were “Somewhat confident” that they would know where to report potential water pollution. The proportion “Very confident” increased with the amount of time they have lived in their current residence. At the same time, those age 55 or older, males, and homeowners were more likely than others to feel “Very confident.”

<b>Confidence Know Where to Report</b>	<b>Alexandria</b>	<b>Arlington</b>	<b>Fairfax Inclusive</b>	<b>Leesburg / Loudoun</b>	<b>Dumfries / Stafford</b>
Very confident	14%	15%	15%	15%	15%
Somewhat confident	26%	37%	37%	40%	44%
Not very confident	35%	27%	30%	24%	27%
Not at all confident	25%	21%	18%	21%	14%
<i>N = number of respondents</i>	57	85	250	67	41

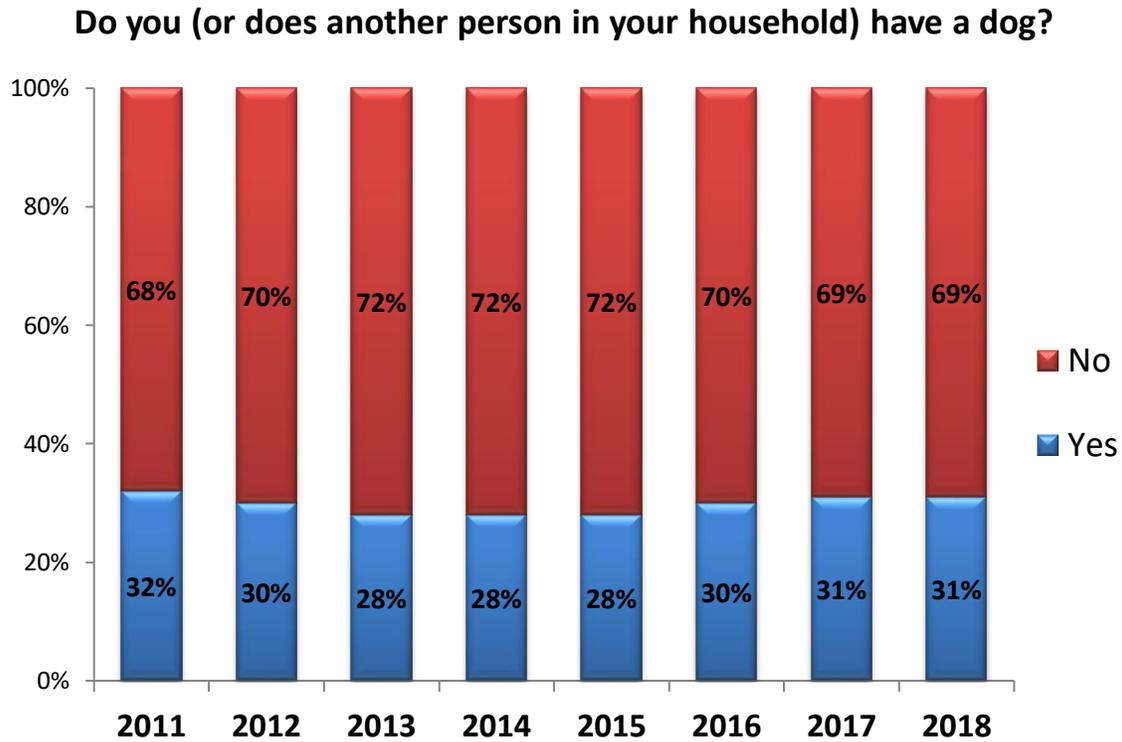
<b>Confidence Know Where to Report</b>	<b>Have Lived in Current Residence</b>			
	<b>&lt; 4 Years</b>	<b>4 to 9 Years</b>	<b>10 to 19 Years</b>	<b>20 or More Years</b>
Very confident	6%	14%	18%	24%
Somewhat confident	36%	39%	37%	35%
Not very confident	32%	32%	28%	24%
Not at all confident	26%	15%	17%	17%
<i>N = number of respondents</i>	146	118	126	110

<b>Confidence Know Where to Report</b>	<b>Age</b>				
	<b>21 to 34</b>	<b>35 to 44</b>	<b>45 to 54</b>	<b>55 to 64</b>	<b>65 +</b>
Very confident	11%	13%	11%	19%	22%
Somewhat confident	37%	30%	41%	42%	32%
Not very confident	25%	39%	26%	28%	27%
Not at all confident	27%	18%	22%	11%	19%
<i>N = number of respondents</i>	92	109	101	97	101

<b>Confidence Know Where to Report</b>	<b>Gender</b>		<b>Homeownership</b>		<b>Hispanic Respondents</b>
	<b>Male</b>	<b>Female</b>	<b>Homeowners</b>	<b>Renters</b>	
Very confident	20%	10%	17%	9%	20%
Somewhat confident	39%	34%	37%	36%	35%
Not very confident	28%	30%	30%	27%	25%
Not at all confident	13%	26%	16%	28%	20%
<i>N = number of respondents</i>	244	256	372	128	40

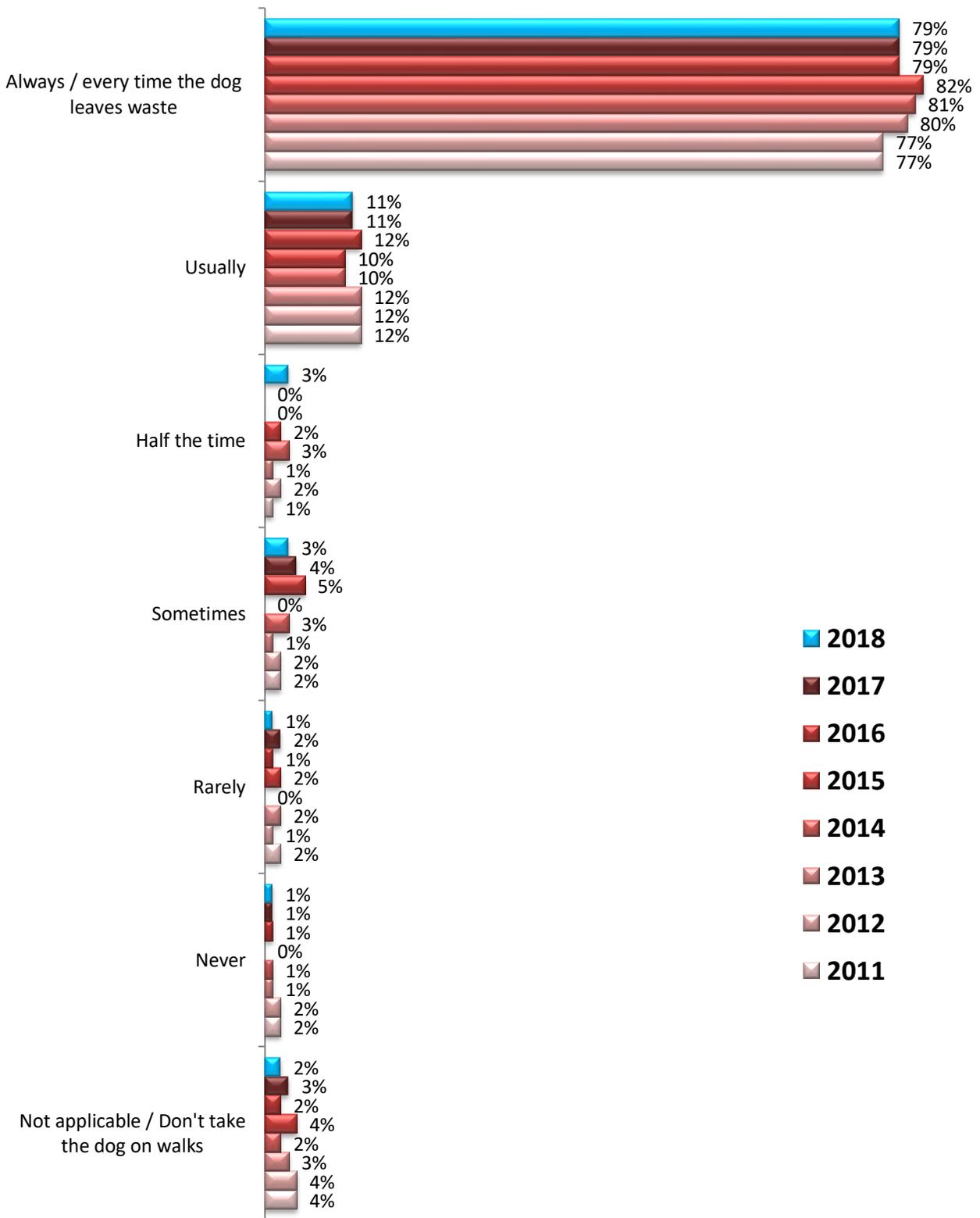
## Behavior Among Dog Owners

- More than one-fourth each year indicated that they have a dog (or someone else in their household has a dog).

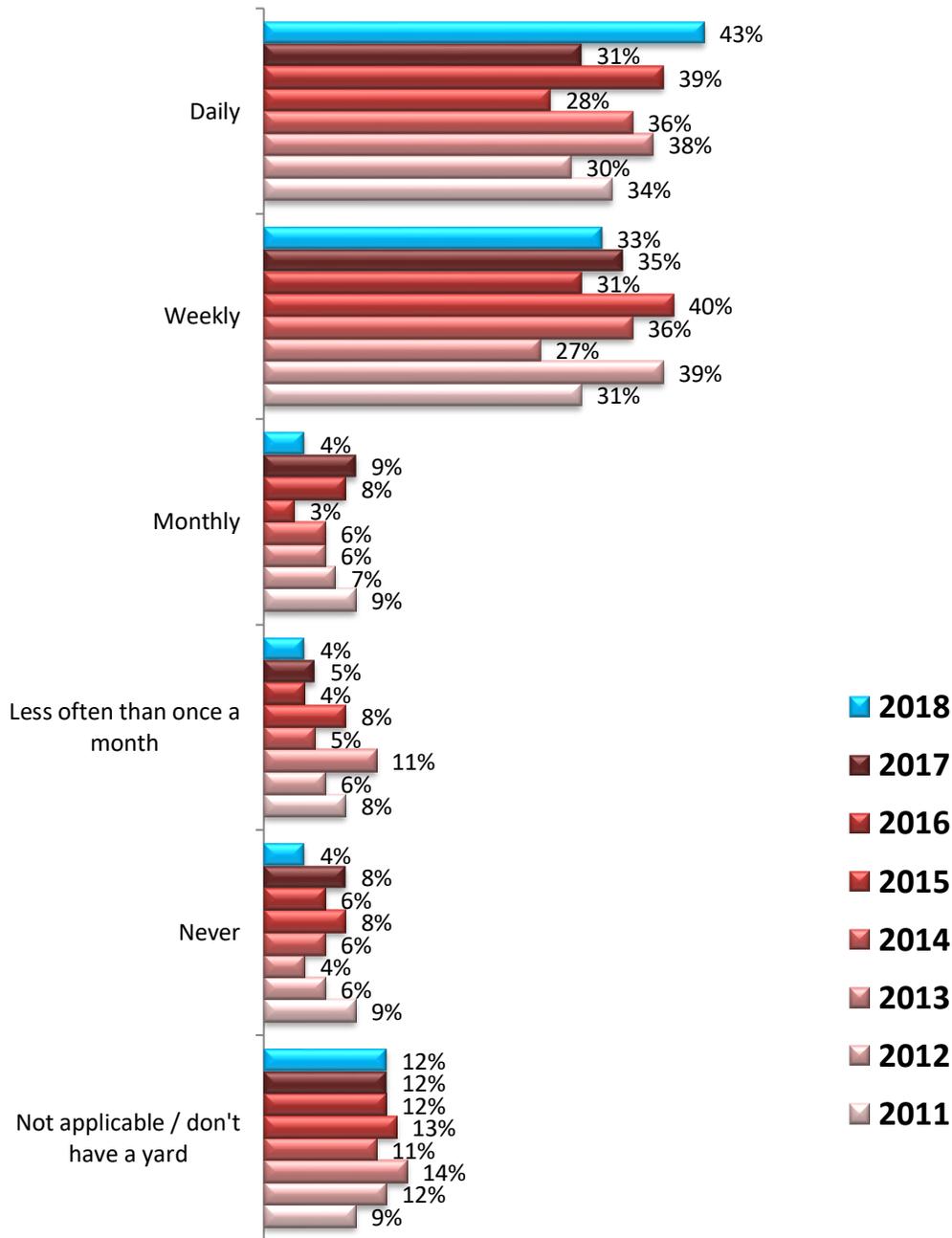


- On the following pages, results are shown for questions about how often dog owners pick up after their dogs and what motivates them to do so. For example, nearly eight-in-ten (79%) in last three years indicated that they *always* pick up after their dog(s) when taking the dog(s) for a walk.

## When taking your dog(s) for a walk, how often do you pick up after your dog(s)?

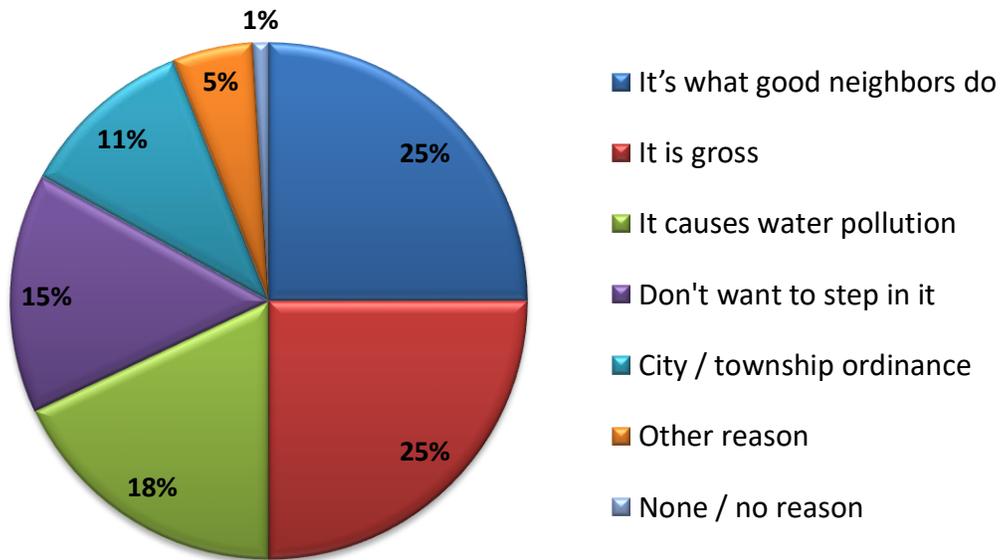


## How often do you (or does someone else from your household) remove dog waste from your yard?



- In their own yard, the majority removed pet waste daily or weekly.
- There was some fluctuation from year to year in the proportions reporting daily and weekly removal of dog waste from their yard, but recall that this question was asked only of dog owners, and the sample size of dog owners is lower than the total sample size, while the margin of error is higher for a lower sample size.

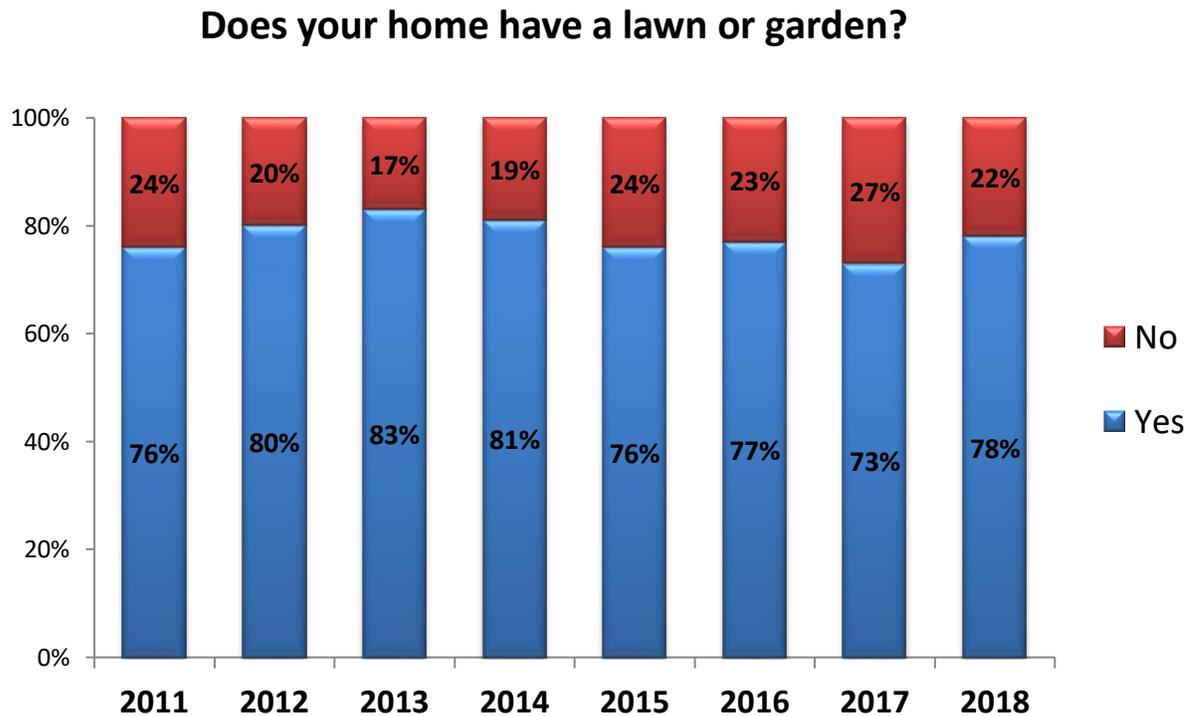
## What is the most important reason to pick up after your dog(s)?



- When asked about the “Most important reason” for picking up after their dog(s), one-fourth (25%) selected “It's what good neighbors do,” and another one-fourth (25%) selected “It is gross.”
- The same question was asked last year but the response option “It is gross” was added in 2018. This makes the 2018 results not comparable to last year because only one answer was allowed for this question.

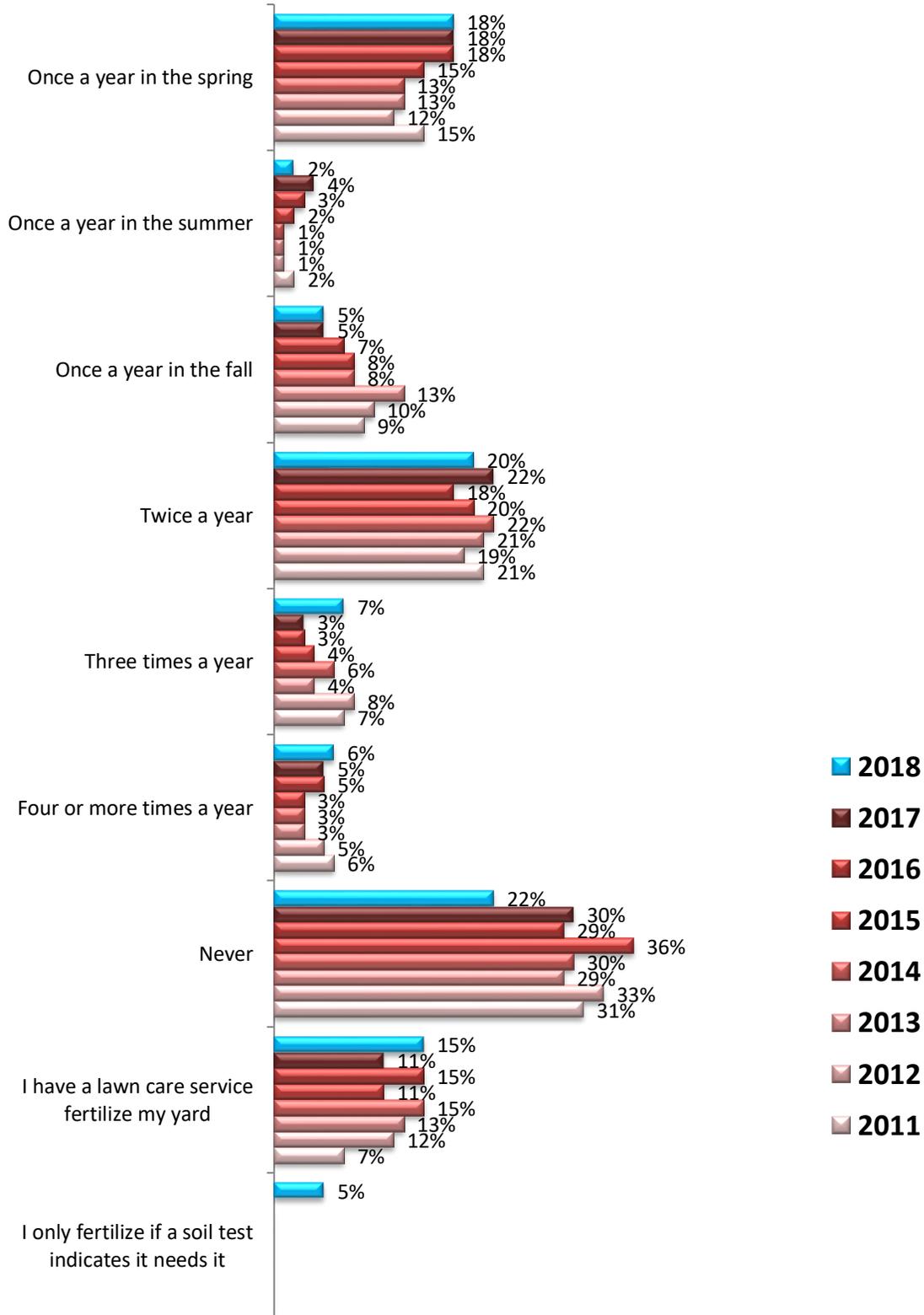
## Behavior Related to Lawns & Gardens

- More than three-fourths (78%) of the survey respondents in 2018 indicated that their current home has a lawn or garden.

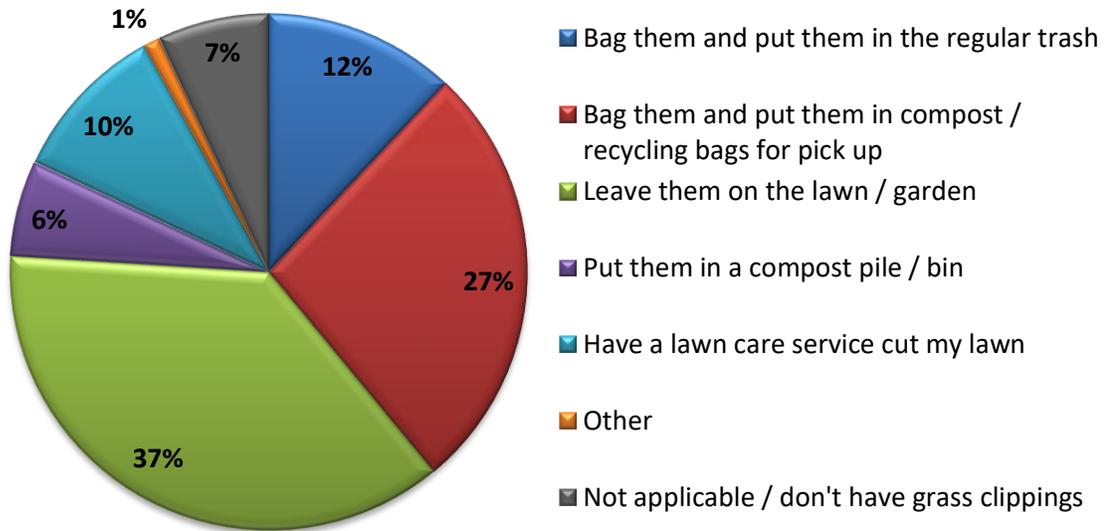


- In a separate question, of the respondents who have a lawn or garden, eight-in-ten (80%) in 2018 identified themselves as the primary person taking care of the lawn or garden or as being familiar with the practices used for the garden or lawn. Several questions about lawns and gardens were then asked only of these respondents.
- As shown on the next page, the most common response when asked how frequently they fertilize was “Never,” but the proportion selecting this option was significantly lower in 2018 than in 2017.
- The option “I only fertilize if a soil test indicates the grass needs fertilizer” was first introduced in the 2018 survey.

## Which of the following best describes how often you fertilize your lawn?

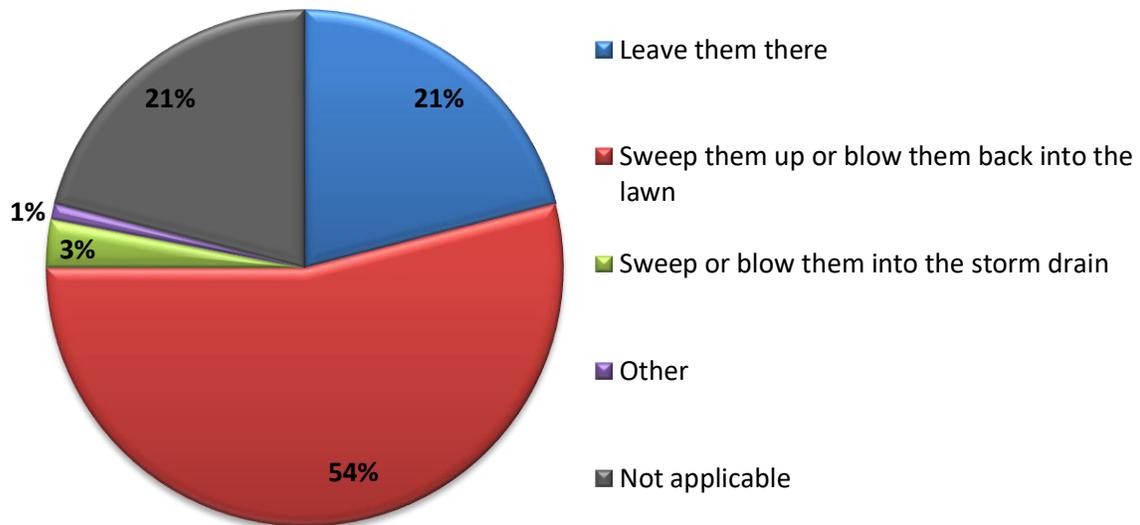


## What do you do with grass clippings from your lawn or garden?



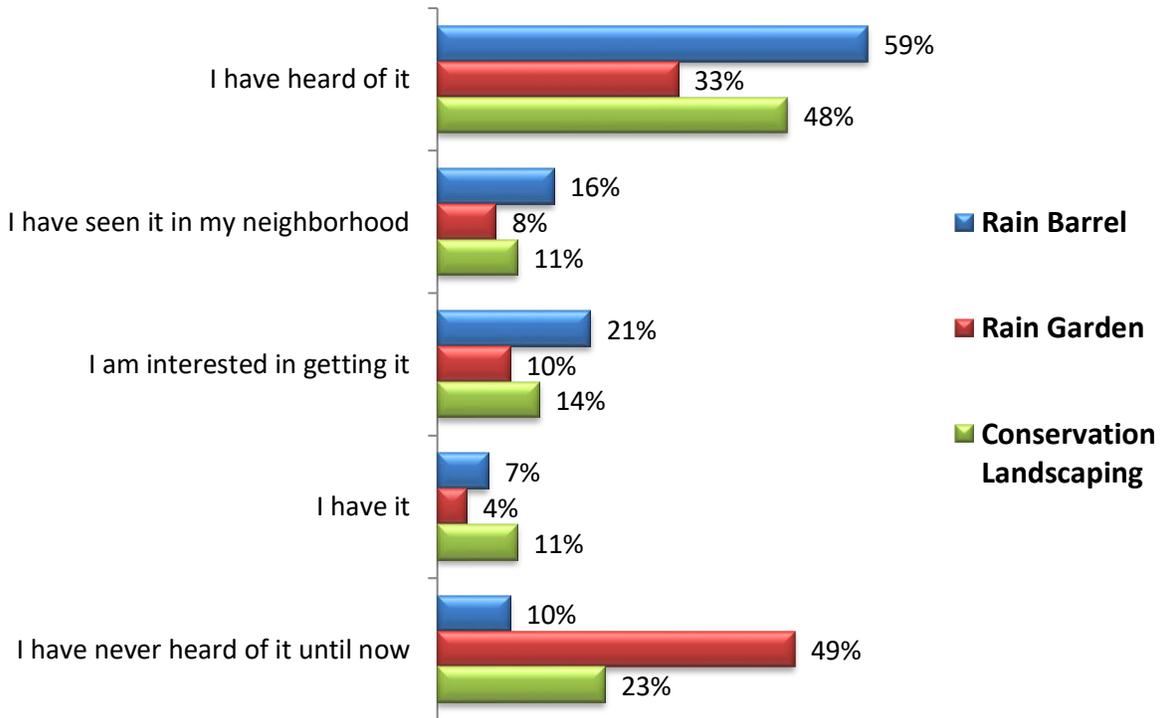
- More than one-third (37%) leave their grass clippings on their lawn / garden, while more than one-fourth (27%) bag grass clippings from their lawn / garden and put them in compost / recycling bags for pick up.

**After you cut your grass, if grass clippings end up in the street, do you:**



- More than half (54%) sweep them up or blow them back into the lawn if they have grass clippings end up in the street.
- Approximately one-in-five (21%) felt this question was not applicable to them. This is higher than the proportion selecting “Not applicable” for the question on the previous page, but there is more than one reason that the question above may not be applicable. One reason is that they might not have grass clippings. Another reason is that they might not have grass clippings end up in the street.

## Which of the following best describe your familiarity with...



- After reading a description of a rain barrel, rain garden, and conservation landscaping, respondents were asked which of the categories in the chart above applied to them. For example, 7% reported having a rain barrel, while 4% reported having a rain garden, and 11% reported having conservation landscapes in their yard.
- Those who indicated having the item typically did not also select “I have heard of it.” For a few cases in which a respondent selected both “I have heard of it” and “I have it,” the data was “cleaned” so that the respondent did not have “I have heard of it” selected. This means that these two response options do not overlap in the results shown above. In other words, the first response option in the chart above means that they do not have one but they have heard of it.
- As a technical note, in place of “it” that shows in the chart, the survey showed rain barrel, rain garden, or conservation landscaping (in three different questions). The reason for rewording the response options for the chart was to facilitate comparisons between the three items.

## Behavior Related to Automobiles

- When asked about changing the oil in their car or truck, eight-in-ten or more each year reported that they use an oil change service, while 9% in 2018 reported taking old motor oil to a gas station or hazmat facility for recycling. A small number of respondents selected other response options. Because the number selecting some response options was very small, the results are shown in the tables below, with the frequency (number of respondents selecting each response) and the percentage.

### 2018: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	412	82.4%
Take the old motor oil to a gas station or hazmat facility for recycling	47	9.4%
Store it in my garage	12	2.4%
Put it in the trash	4	.8%
Dump it in the gutter or down the storm sewer	2	.4%
Dump it down the sink	2	.4%
Other	2	.4%
Don't own a car or truck	19	3.8%
Total	500	100.0%

### 2017: When you need to change the oil in your car or truck, what do you do with the old motor oil?

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	410	82.0%
Take the old motor oil to a gas station or hazmat facility for recycling	57	11.4%
Store it in my garage	10	2.0%
Put it in the trash	6	1.2%
Dump it in the gutter or down the storm sewer	2	.4%
Other	5	1.0%
Don't own a car or truck	10	2.0%
Total	500	100.0%

**2016: When you need to change the oil in your car or truck, what do you do with the old motor oil?**

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	399	79.8%
Take the old motor oil to a gas station or hazmat facility for recycling	65	13.0%
Store it in my garage	9	1.8%
Put it in the trash	8	1.6%
Other	2	0.4%
Don't own a car or truck	17	3.4%
Total	500	100.0%

**2015: When you need to change the oil in your car or truck, what do you do with the old motor oil?**

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	54	10.8%
Store it in my garage	4	0.8%
Put it in the trash	3	0.6%
Don't own a car or truck	13	2.6%
Total	500	100.0%

**2014: When you need to change the oil in your car or truck, what do you do with the old motor oil?**

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	50	10.0%
Put it in the trash	5	1.0%
Store it in my garage	4	0.8%
Other	1	0.2%
Don't own a car or truck	14	2.8%
Total	500	100.0%

**2013: When you need to change the oil in your car or truck, what do you do with the old motor oil?**

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	427	85.4%
Take the old motor oil to a gas station or hazmat facility for recycling	57	11.4%
Put it in the trash	3	0.6%
Dump it in the gutter or down the storm sewer	2	0.4%
Store it in my garage	1	0.2%
Don't own a car or truck	10	2.0%
Total	500	100.0%

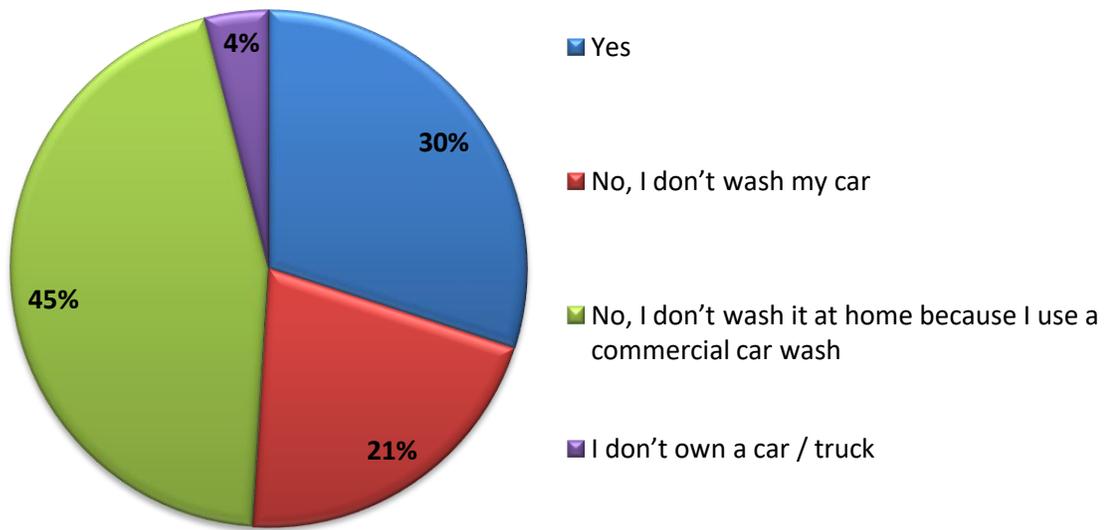
**2012: When you need to change the oil in your car or truck, what do you do with the old motor oil?**

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	426	85.2%
Take the old motor oil to a gas station or hazmat facility for recycling	49	9.8%
Store it in my garage	3	0.6%
Put it in the trash	2	0.4%
Other	2	0.4%
Don't own a car or truck	18	3.6%
Total	500	100.0%

**2011: When you need to change the oil in your car or truck, what do you do with the old motor oil?**

	<i>Frequency</i>	<i>Percent</i>
I don't change the oil myself / I take it to a garage / oil change service	413	82.6%
Take the old motor oil to a gas station or hazmat facility for recycling	60	12.0%
Put it in the trash	2	0.4%
Other	2	0.4%
Don't own a car or truck	23	4.6%
Total	500	100.0%

## Do you wash your car / truck at home?



- Slightly less than one-third (30%) reported washing their car / truck *at home*. It was more common to use a commercial car wash (45%). When examining the results by subgroups, those living in Dumfries / Stafford had a relatively high proportion washing their vehicle at home. Those in Alexandria and Arlington were less likely than those in Fairfax Inclusive and Dumfries / Stafford to wash their vehicle at home. At the same time, those who have lived in their residence for 20 or more years and homeowners were more likely than others to report washing their vehicle at home.

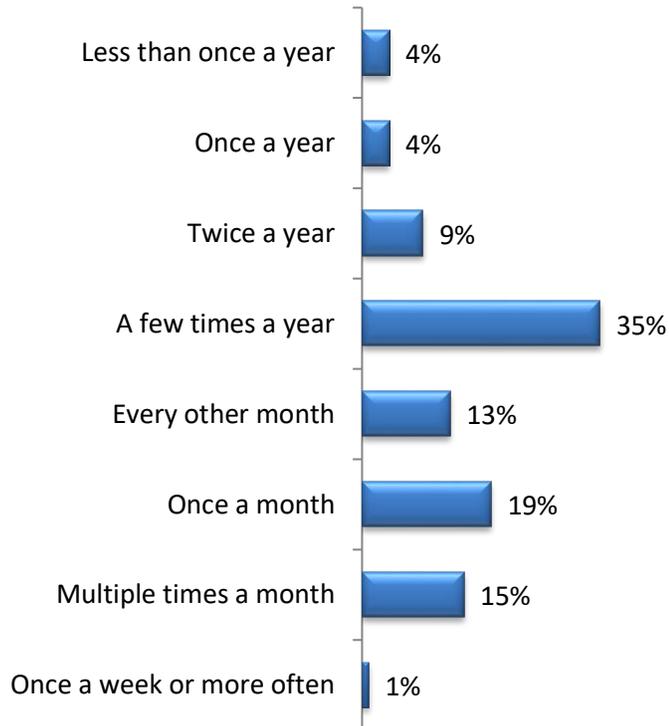
<b>Wash Car / Truck At Home</b>	<b>Alexandria</b>	<b>Arlington</b>	<b>Fairfax Inclusive</b>	<b>Leesburg / Loudoun</b>	<b>Dumfries / Stafford</b>
Yes	17%	19%	34%	27%	49%
No, don't wash it	30%	24%	20%	21%	17%
No, use car wash	46%	43%	45%	52%	34%
Don't own a car / truck	7%	14%	1%	0%	0%
<i>N = number of respondents</i>	57	85	250	67	41

<b>Wash Car / Truck At Home</b>	<b>Have Lived in Current Residence</b>			
	<b>&lt; 4 Years</b>	<b>4 to 9 Years</b>	<b>10 to 19 Years</b>	<b>20 or More Years</b>
Yes	24%	27%	29%	42%
No, don't wash it	19%	27%	23%	16%
No, use car wash	49%	43%	46%	41%
Don't own a car / truck	8%	3%	2%	1%
<i>N = number of respondents</i>	146	118	126	110

<b>Wash Car / Truck At Home</b>	<b>Age</b>				
	<b>21 to 34</b>	<b>35 to 44</b>	<b>45 to 54</b>	<b>55 to 64</b>	<b>65 +</b>
Yes	33%	20%	30%	36%	32%
No, don't wash it	18%	30%	22%	18%	18%
No, use car wash	40%	46%	46%	46%	45%
Don't own a car / truck	9%	4%	2%	0%	5%
<i>N = number of respondents</i>	92	109	101	97	101

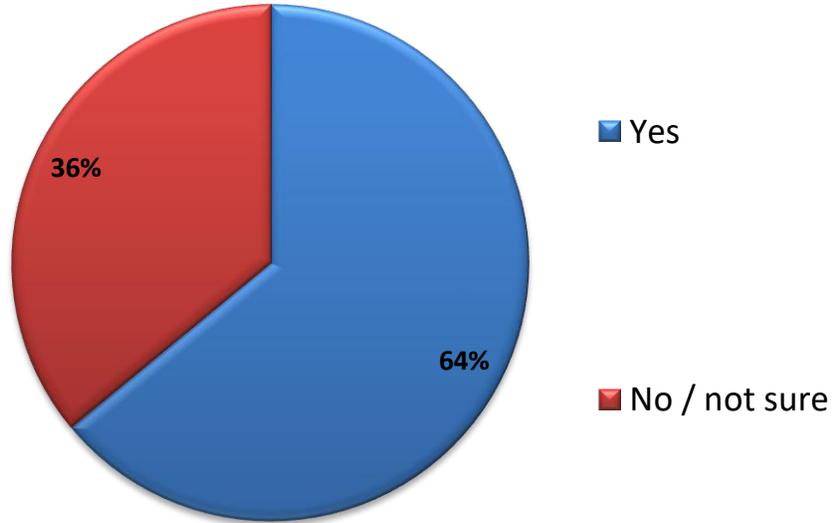
<b>Wash Car / Truck At Home</b>	<b>Gender</b>		<b>Homeownership</b>		<b>Hispanic Respondents</b>
	<b>Male</b>	<b>Female</b>	<b>Homeowners</b>	<b>Renters</b>	
Yes	33%	27%	35%	16%	32%
No, don't wash it	22%	21%	19%	27%	25%
No, use car wash	42%	48%	44%	48%	40%
Don't own a car / truck	3%	4%	2%	9%	3%
<i>N = number of respondents</i>	244	256	372	128	40

## How often do you wash your car / truck at home?



- Among those who wash their car / truck at home, the most common frequency of doing so was a few times a year (35%).
- For a separate question about what applied when washing their car / truck at home, the results are shown below.
  - 46% selected “I used environmentally friendly detergent.”
  - 19% selected “I try to wash on the grass or other surface that absorbs water.”
  - 11% selected “I don’t use any detergent – use water only.”
  - 32% selected none of the above.

**Are you aware of whether your locality has a specific place for residents to drop off household hazardous waste (HHW)?**



- The majority (64%) indicated that they were aware of whether their locality has a specific place to drop off household hazardous waste. As shown in the table below, this was true for the majority in each area. However, awareness increased significantly with age and length of time living in their current residence. Also, males and homeowners were more likely than others to be aware.

<b>HHW Awareness</b>	<b>Alexandria</b>	<b>Arlington</b>	<b>Fairfax Inclusive</b>	<b>Leesburg / Loudoun</b>	<b>Dumfries / Stafford</b>
Yes	60%	56%	66%	63%	76%
No / not sure	40%	44%	34%	37%	24%
<i>N = number of respondents</i>	57	85	250	67	41

<b>HHW Awareness</b>	<b>Have Lived in Current Residence &lt; 4 Years</b>	<b>4 to 9 Years</b>	<b>10 to 19 Years</b>	<b>20 or More Years</b>
Yes	47%	64%	66%	85%
No / not sure	53%	36%	34%	15%
<i>N = number of respondents</i>	146	118	126	110

**HHW Awareness**

	<b>Age 21 to 34</b>	<b>35 to 44</b>	<b>45 to 54</b>	<b>55 to 64</b>	<b>65 +</b>
Yes	45%	54%	64%	72%	84%
No / not sure	55%	46%	36%	28%	16%
<i>N = number of respondents</i>	92	109	101	97	101

**HHW Awareness**

	<b>Male</b>	<b>Female</b>	<b>Homeowners</b>	<b>Renters</b>	<b>Hispanic Respondents</b>
Yes	73%	55%	71%	43%	70%
No / not sure	27%	45%	29%	57%	30%
<i>N = number of respondents</i>	244	256	372	128	40

## Appendix: Questionnaire

### 2018 Only Rain NVRC Survey

#### **INTRODUCTION:**

Welcome, and thank you for participating in this important research survey.

S1. Are you:

- Male
- Female

S2. Which of the following categories includes your age?

- Under 18 **[END SURVEY]**
- 18 to 20 **[END SURVEY]**
- 21 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 to 74
- 75 or older

S3. Which of the following best describes your residence?

- I own my home
- I rent my home
- Neither **[END SURVEY]**

S4. Do you live in the state of Virginia?

- Yes
- No **[END SURVEY]**

S5. Which of the following best describes where you live (county or city or town)?

- Alexandria
- Arlington
- Dumfries
- Fairfax (city of)
- Fairfax (county of)
- Falls Church
- Herndon
- Leesburg
- Loudoun County
- Stafford County
- Vienna
- None of the above **[END SURVEY]**

S6. Which of the following describes your ethnicity? (Please select all that apply)

- African American / Black
- American Indian / Alaska Native
- Asian
- Hispanic / Latino
- Native Hawaiian / Pacific Islander
- White / Caucasian
- Other: \_\_\_\_\_

Q1. For how many years have you lived in your current residence?

- Less than 1 year
- 1 to 3 years
- 4 to 9 years
- 10 to 19 years
- 20 or more years

Q2. Do you live within the Potomac River Watershed?

- Yes
- No
- Not Sure
- I do not know what a “watershed” is

Q3. "Stormwater" is rain or other water that flows into the street, along the gutter and into the storm drain. To the best of your knowledge, where do you believe storm water eventually ends up?

- At a waste water treatment facility
- Local streams, ponds or lakes
- Potomac River or Chesapeake Bay
- Underground / seeps in to the ground
- Don't know
- Other: \_\_\_\_\_

Q4. Do you (or does another person in your household) have a dog?

- Yes [**CONTINUE WITH Q5**]
- No [**SKIP TO Q8**]

Q5. When taking your dog(s) for a walk, how often do you pick up after your dog(s)?

- Always / every time the dog leaves waste
- Usually
- Half the time
- Sometimes
- Rarely
- Never
- Not applicable / I don't take the dog(s) on walks

Q6. How often do you (or does someone else from your household) remove dog waste from your yard?

- Daily
- Weekly
- Monthly
- Less often than once a month
- Never
- Not applicable / don't have a yard

**[SKIP OVER Q7 IF NEVER OR NOT APPLICABLE IN BOTH Q5 and Q6]**

Q7. What is the most important reason to pick up after your dog(s)? (Please select only one)

- City / County ordinance
- Don't want to step in it
- It causes water pollution
- It is gross
- It's what good neighbors do
- Odor
- Other reason
- None / no reason to

Q8. Does your home have a lawn or garden?

- Yes **[CONTINUE WITH Q9]**
- No **[SKIP TO Q16]**

Q9. Are you the primary person who takes care of the lawn or garden, or are you familiar with the practices used for your garden or lawn?

- Yes **[CONTINUE WITH Q10]**
- No **[SKIP TO Q16]**

Q10. What do you do with grass clippings from your lawn or garden?

- Bag them and put them in the regular trash
- Bag them and put them in compost / recycling bags for pick up
- Leave them on the lawn / garden
- Put them in a compost pile / bin
- Have a lawn care service cut my lawn
- Other
- Not applicable / don't have grass clippings

Q11. After you cut your grass, if grass clippings end up in the street, do you:

- Leave them there
- Sweep them up or blow them back into the lawn
- Sweep or blow them into the storm drain
- Not applicable / don't have grass clippings
- 
- Other: \_\_\_\_\_

Q12. Which of the following best describes how often you fertilize your lawn?

- Once a year in the spring
- Once a year in the summer
- Once a year in the fall
- Twice a year
- Three times a year
- Four or more times a year
- Never
- I have a lawn care service fertilize my yard
- I only fertilize if a soil test indicates the grass needs fertilizer

Q13. A rain barrel is a barrel you put under your downspout to collect rain water that you can use around your yard. Which of the following best describe your level of familiarity with rain barrels? [Allow multi-select]

- I have heard of rain barrels
- I have seen rain barrels in my neighborhood
- I am interested in getting a rain barrel
- I have a rain barrel
- I have never heard of a rain barrel until now.

Q14. A rain garden is a bowl shaped garden area where runoff can collect and soak into the ground. Which of the following best describe your level of familiarity with rain gardens? [Allow multi-select]

- I have heard of rain gardens
- I have seen rain gardens in my neighborhood
- I am interested in installing a rain garden in my yard
- I have a rain garden
- I have never heard of a rain garden until now.

Q15. Conservation landscaping is replacing an area of lawn or bare soil in your yard with native plants. Which of the following best describe your level of familiarity with conservation landscaping? [Allow multi-select]

- I have heard of conservation landscaping
- I have seen conservation landscaping in my neighborhood
- I am interested in installing conservation landscaping in my yard
- I have conservation landscapes in my yard
- I have never heard of conservation landscaping until now.

Q16. When you need to change the oil in your car or truck, what do you do with the old motor oil?

- I don't change the oil myself / I take it to a garage / oil change service
- Take the old motor oil to a gas station or hazmat facility for recycling
- Store it in my garage
- Put it in the trash
- Dump it in the gutter or down the storm sewer
- Dump it down the sink
- I dump it on the ground
- I don't own a car or truck
- Other: \_\_\_\_\_

Q17. Are you aware of whether your locality has a specific place for residents to drop off household hazardous waste (HHW)? HHW includes items like automobile fluids, pesticides and herbicides, oil-based paint and paint thinners, etc.

- Yes
- No / not sure

Q18. Do you wash your car / truck at home?

- Yes
- No, I don't wash my car
- No, I don't wash it at home because I use a commercial car wash
- I don't own a car

Q19. [If yes to Q18] How often do you wash your car / truck at home?

- Less than once a year
- Once a year
- Twice a year
- A few times a year
- Every other month
- Once a month
- Multiple times a month
- Once a week or more often

Q20. [If yes to Q18] When you wash your car / truck at home, which of the following apply?

- I try to wash on the grass or other surface that absorbs water
- I use environmentally friendly detergent
- I don't use any detergent – use water only
- None of the above

Q21. Looking at the pictures below, would you consider this to be a potential source of water pollution?

- Yes
- No
- Not sure



Q22. What is the likelihood that you would call county or town officials to report potential pollution so they could investigate the cause?

- Definitely would
- Probably would
- Might or might not
- Probably not
- Definitely not

Q23. How confident are you that you would know where to report potential water pollution?

- Very confident
- Somewhat confident
- Not very confident
- Not at all confident

Q24. What TV service provider do you use? [RANDOMIZE]

- Verizon
- Comcast
- Cox
- Direct TV
- Dish Network
- Xfinity
- Do not have cable TV
- Do not watch TV
- Other: \_\_\_\_\_

Q25. Which of the following channels, if any, do you watch? [RANDOMIZE]

- HLN TV
- Oxygen
- Toon
- ENT
- Animal Planet
- CNN
- ESPN
- History
- National Geographic
- Home and Garden
- None of the above

Q26. Thinking about the last 12 months, have you heard about any opportunities to participate in a water quality activity, such as a stream clean up, helping to install storm drain labels, etc.?

- Yes
- No / not sure

Q27. [IF YES IN Q26] Thinking about the last 12 months, have you participated in a water quality activity, such as a stream clean up, helping to install storm drain labels, etc.?

- Yes
- No

Q28. Please watch the video below. Before this survey, had you seen this ad, or a similar one on TV about reducing water pollution?

- Yes [**CONTINUE WITH Q29**]
- No [**SKIP TO Q30**]
- Not sure [**SKIP TO Q30**]

Q29. Did seeing the ad(s) about reducing water pollution make you change any of your behaviors related to fertilizing less often and/or reducing water pollution?  
(Select all that apply)

- Yes, I now pick up pet waste more often
- Yes, I now plan to fertilize fewer times during the year
- Yes, I now properly dispose of motor oil
- I was already doing what is recommend to reduce water pollution
- None of the above applies to me



Q30. Have you seen the logo above anywhere? (Show Only Rain logo)

- Yes
- No

Q31. Regardless of whether you have seen that specific ad or logo, have you seen or received information about reducing water pollution from any source in the past 12 months?

- Yes
- No
- Not sure