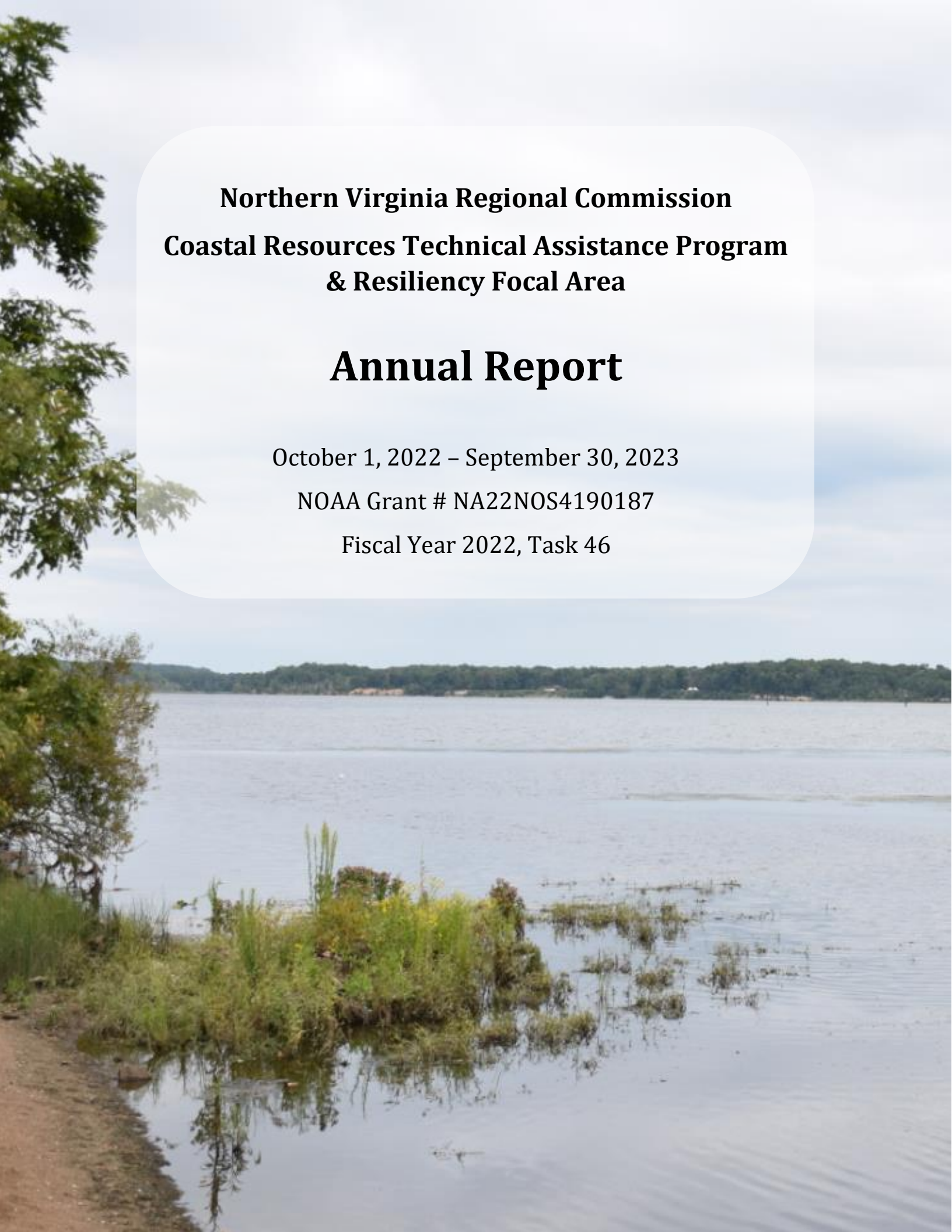

Northern Virginia Regional Commission

Coastal Resources Technical Assistance Program & Resiliency Focal Area

Annual Report

October 1, 2022 – September 30, 2023

NOAA Grant # NA22NOS4190187

Fiscal Year 2022, Task 46

In Grant Year 2022 (October 1, 2022 – September 30, 2023 for Task 46), the Northern Virginia Coastal Resources Technical Assistance Program was funded in part by the Virginia Coastal Zone Management Program at the Department of Environmental Quality, through Grant NA22NOS4190187 of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration,

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Cover Photo: Occoquan Bay National Wildlife Refuge by Monica Larcom, National Park Service

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Executive Summary

The Virginia Coastal Zone Management Program (Virginia CZM) Technical Assistance (TA) grant program and Resilience Focal Area (RFA) strategies have allowed the Northern Virginia Regional Commission (NVRC) to support and advance critical coastal resources management planning and projects in Northern Virginia since 1992. The Coastal Resources Management Program at NVRC includes coordination of regional programs that advance VA CZM's interests in coastal resource management, public outreach, education and training events, environmental impact and permit reviews, and other technical assistance activities around coastal issues and priorities relevant to Northern Virginia localities. This report describes NVRC's activities and outcomes from the FY22 TA grant program as well as Year 3 of CZM's FY20-22 Resiliency Focal Area strategy.

NVRC produced the following work products as a part of its FY22 programming:

FY22 TA Program:

Product #1: Annual Report – Northern Virginia Coastal Resources Technical Assistance Program Outcomes

Product #2: Regional Stormwater Education Campaign

Product #3: Benefits Accrued from Prior CZM Grants

Year 3 of Resiliency Focal Area:

Product #4: Regional & Local Resilience Planning

Introduction

Northern Virginia Regional Commission (NVRC)'s Coastal Resources Management Program has provided coordination of coastal resources planning and projects amongst local jurisdictions as well as state and federal entities for over twenty years. Primary objectives of NVRC's 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 marine debris, water quality and coastal hazard planning; improve local capacity to protect, manage and restore coastal ecosystems; improve public access to the coast; and serve as a forum for information exchange, training, and coordination of planning among stakeholders in the region.

Through its partnership with the Virginia Coastal Zone Management Program (Virginia CZM), NVRC has advanced a range of new and ongoing coastal resources management efforts through technical and planning assistance to Northern Virginia localities. In 2020, this work expanded significantly to include CZM's 3-year Resiliency Focal Area (RFA) strategy, in which NVRC has worked to build long-term capacity for community resilience through coordination of local resiliency planning and programming in Northern Virginia. For FY22, Virginia CZM awarded $34,500 to NVRC through its Technical Assistance (TA) grant program to continue its Coastal Resources Management Program as well as $30,000 as a part of the 3-year RFA strategy between October 1, 2022 and September 30, 2023. This report provides outcomes of NVRC's activities for this grant period for both the TA program and RFA strategy.

Technical Assistance Program

Product #1: Program Outcomes

Through Virginia CZM's TA program, NVRC serves as a technical resource for Northern Virginia localities on coastal resource management issues and activities, including education and outreach, data and mapping, local projects, and regulatory processes. To support education and outreach, NVRC provides several annual workshops and training events on topics of local and/or regional interest that promote relevant coastal-related projects, practices, and/or policies.

Through the program, NVRC serves as a member of the Virginia Coastal Policy Team (CPT) with semi-annual meetings and participates in quarterly coastal PDC meetings. NVRC staff also take part in regularly occurring meetings for the Coastal Virginia Shoreline Stakeholders Group, Potomac Watershed Roundtable, Fairfax Trees Community of Practice, Salt Management Strategy Workgroup, and Virginia Community Rating System (CRS) Workgroup. These meetings help NVRC to not only share relevant projects and resources from Northern Virginia, but also gain new information, tools, and best practices from other regions of the Commonwealth.

NVRC also reviews and responds to Environmental Assessment/Environmental Impact Statement (EA/EIS) requests as a part of the intergovernmental review process. NVRC staff responded to 2 EIS/EA requests over the fiscal year.

1.1 Meetings

NVRC coordinated, took part in, or provided general technical assistance for the following meetings in FY22:

Coastal PDC Meetings (Quarterly):

Date	Meeting Outcomes
2/21/23	Discussion on PDC resilience project uploads to the Virginia Coastal Resilience Master Plan project database and updates to the 2016 Working Waterfronts Master Plan. The group also reviewed new funding opportunities for the coming year, including priority projects for consideration.
5/25/23	Virginia Institute of Marine Science (VIMS) conducted a "Broader Impacts Training" to explore how PDCs could more closely collaborate with the institute on future projects and coastal resilience planning.
8/31/23	NVRC hosted the meeting at George Mason University's Potomac Science Center in Woodbridge, VA. The group reviewed ongoing grant opportunities and ideas for future funding as well as next steps for the PDCs' resilience focal area projects.

Virginia CPT (Semi-Annual):

Date	Meeting Outcomes
2/15/23	Review of projects for 306A funding and programming for Year 3 of the Coastal Resilience Focal Area. The group also discussed ongoing funding opportunities, including Bi-partisan Infrastructure Law (BIL) grant programs, and ways to coordinate as a group when new funding arises.
9/21/23	Review of the Virginia CZM program, including CPT goals, Focal Areas, and Projects of Special Merit. The CPT also assessed the BIL process for submitting projects through CZM as well as proposals for Inflation Reduction Act (IRA) non-competitive funding.

Other Meetings:

Date	Group/Meeting

11/17/22	Northern Virginia Salt Management Strategy Outreach Meeting
11/30/22	VA CRS Workgroup
1/13/23	Potomac Watershed Roundtable
1/25/23	Northern Virginia Clean Water Partners
2/6/23	Coastal Virginia Shoreline Stakeholders Group
3/8/23	Fairfax Trees Community of Practice
4/3/23	DEQ MS4 Phase II Permit Presentation
4/5/23	VA CRS Workgroup
4/14/23	Potomac Watershed Roundtable
5/10/23	Northern Virginia Clean Water Partners
5/31/23	VA CRS Workgroup
7/7/23	Potomac Watershed Roundtable
9/13/23	Northern Virginia Clean Water Partners

1.2 Training Events

NVRC held four virtual training events that focused on litter monitoring, resilient public spaces and housing, and flood mitigation in Northern Virginia. Recordings and additional information for these events can be viewed on NVRC's website: https://www.novaregion.org/1567/Webinar-Series-2023.

1.2.1 NOVA Litter Monitoring Workshop

3/21/2023 | 32 Participants | Issue: (C) Coastal Habitat/Marine Debris Stewardship

A virtual workshop with Metropolitan Washington Council of Governments (MWCOG) to learn about their Anacostia Trash Monitoring Program, including its goals, data collection protocols, lessons learned, and recent data results. The event featured a discussion on potential litter monitoring opportunities for Northern Virginia jurisdictions with a focus on litter management approaches and data collection techniques to replicate from MWCOG's program.

1.2.2 Comprehensive Flood Mitigation Planning: Exchange of Lessons from Alexandria, VA and Hamburg, Germany

3/22/2023 | 54 Participants | (D) Coastal Hazards

A webinar to share local long- and short-term planning processes for flood protection and climate resiliency in Alexandria, VA and Hamburg, Germany. Discussions centered around sustainable flood mitigation practices and opportunities for collaboration and lessons learning across the Atlantic.

1.2.3 Social Housing that is Ecological, Equitable, and Economic: The Case of Hamburg's Pergolenviertel

6/28/23 **|** 37 Participants **|** Issue: (E) Coastal Dependent Uses and Community Development/Coastal Water Quality

A webinar on the city of Hamburg, Germany's "Pergolenviertel", an example of large-scale social housing that integrates a range of social equity and economic attributes with environmental benefits, including green infrastructure practices to mitigate stormwater and urban heat island effects. Discussions centered around potential applications for the Northern Virginia region.

1.2.4 Creating Resilient Public Spaces to Cope with Extreme Heat: The Cases of Cologne and Wiesbaden, Germany

8/29/2023 **|** 35 Participants **|** Issue: (A) Coastal Dependent Uses and Community Development/Coastal Water Quality

A webinar to explore how German cities have planned and operated public pools ("Freibaeder") that integrate designs for open spaces to promote multiple recreational uses beyond swimming. The webinar included a discussion on similar opportunities in Northern Virginia to mitigate extreme heat, and in turn, build more resilient urban areas across the region.

Product #2: Regional Stormwater Education Campaign (Special Project)

The Northern Virginia Clean Water Partners (NVCWP) is composed of a group of local governments, drinking water and sanitation authorities, schools, 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. Membership is voluntary and each partner makes an annual contribution to support the program. By working together, the partners are able to leverage their funds to develop and implement a range of bilingual education and outreach strategies throughout Northern Virginia. Since the NVCWP was developed in 2003, over 20 partners now participate in the program and meet on a bi-annual basis to collaborate and advance new and ongoing pollution-reduction initiatives. Meetings during FY22 were held on 1/25/22, 5/10/23, and 9/13/23.

As a part of their education and outreach strategies, the partners conduct an annual Regional Stormwater Education Campaign using a combination of social media, local engagement activities, television advertisements, educational materials, and the Only Rain website to distribute messaging that aims to improve stormwater-related knowledge and behaviors. The annual

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

For the 2023 campaign year, the NVCWP identified several high priority pollution issues to address, including nutrients, illicit discharge, salt, and bacteria. Target audiences for these issues are comprised of pet owners, winter salt applicators, home mechanics, and residents with a lawn or garden. To build from previous campaign years, the partners also developed several new social marketing tools:

- Updated infographics and fact sheets to promote pollution-reduction practices
- New social media content, including monthly partner spotlights
- A new campaign video
- NVCWP Instagram and Threads accounts

Since 2020, the Partners have utilized Facebook and Twitter/X to share campaign messaging and effectively target the audiences described above. During the 2023 campaign, the Facebook page gained 115 new followers for a total of 518 followers. The page had 387 posts, 20,858 post engagements, and 6,987 post link clicks. The Twitter/X account reached 165 followers and had 393 tweets, 1,093 tweet engagements, and 116 link clicks. The partners also created Instagram and Threads accounts to further engage the public. Since it was created in December 2022, the Instagram account has gained 140 followers and shared 79 posts.

The campaign also continued to reach residents through a series of video advertisements that focused on residential stormwater management actions. In 2023, the campaign aired two public service announcements (one in English and one in Spanish) on a combination of 44 English and Spanish language networks for a total of 865,060 impressions, or views.

In addition to the Regional Stormwater Education Campaign, the Partners also conducted an annual online survey of 500 Northern Virginia residents to better understand changes in stormwater-related knowledge and behaviors over time. Results help the partners to assess their campaign's effectiveness and direct future education and outreach strategies. Questions for the 2023 survey continued to focus on the campaign's advertising effectiveness, residents' general watershed and stormwater knowledge, as well as their behaviors around relevant stormwater management and pollution issues, including pet waste, lawn and garden care, car fluids, and household hazardous waste. The survey also added in new questions to gauge residents' perceptions of the NVCWP.

In general, the results highlighted positive public perceptions of the NVCWP as well as growing familiarity with the campaign in recent years through new social media strategies and education resources. Results also indicated residents' increasing awareness of stormwater management features, such as rain gardens and conservation landscaping, and the need for further opportunities and resources for installation and maintenance of these features, including regional workshops and other education events, throughout the year. Please see Appendices for the annual summary and complete survey results for 2023. A summary of the campaign and survey results can also be viewed on the Only Rain website: https://www.onlyrain.org/annual-summaries.

Product #3: Benefits Accrued from Prior CZM Grants

The Virginia CZM TA program has been critical to the development and success of several programs, partnerships, and projects for NVRC since 1992, including the Northern Virginia Clean Water Partners (NVCWP). Established in 2003, the NVCWP is composed of local jurisdictions, regional drinking water and sanitation authorities, schools, and businesses that work together to address regional stormwater pollution and source water protection issues through targeted education and outreach initiatives. The primary goals of the program include to:

- Identify high priority water quality issues for the region
- Identify 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
- Pilot new cost-effective opportunities for public outreach and education

With CZM TA funding, NVRC provides broad program coordination and administration involving the acquisition of leveraged funds from the Partners to conduct a Regional Stormwater Education Campaign. For over ten years, the campaign has utilized a range of communications through social media, television advertisements, local engagement activities, printed materials, and the Only Rain website to share relevant messaging for improved stormwater-related knowledge and behaviors. Each year, the partners seek to incorporate new campaign strategies to better reach and engage their target audiences, such as new or updated social media platforms, outreach materials, and other education resources.

The partners are also able to assess the effectiveness of the campaign through an annual knowledge and behavior survey of 500 Northern Virginia residents. Results from the survey help to direct future education and outreach efforts and track larger trends in stormwater-related actions over time. A summary of the 2023 survey and campaign, as well as reports from prior campaign years, can be viewed on the Partners' Only Rain Website: https://www.onlyrain.org/annual-summaries. Full results from the 2023 survey as well as the campaign summary are included in the Appendices.

Over 20 partners now participate in the program and meet on a semi-annual basis to collaborate on campaign development and ways to enhance their ongoing pollution-reduction efforts. The 2023 Stormwater Education Campaign continued to build off of prior years with a budget of $110,000 to conduct a range of outreach and education activities. Notably, the Partners have been able to leverage $1,502,225 in funds for the program since 2007.

Resiliency Focal Area Outcomes

Product #4: Regional and Local Resilience Planning

4.1 Regional Coordination for Resilience Planning

NVRC staff have actively worked with regional stakeholders on resiliency-related planning and projects for over five years. In particular, CZM's three-year Resiliency Focal Area has been instrumental in helping NVRC to support its growing stakeholder network as well as to identify and advance resilience needs and priorities across the region.

In 2021, NVRC formally established the NOVA Flood Mitigation and Resilience Workgroup as a way for regional stakeholders to collaborate on and prioritize resilience strategies relating to flooding and associated hazards with participation from local stormwater engineers, public works staff, outreach and education staff, and planners. State-level stakeholders and staff from other PDCs also take part in the workgroup to share projects, best practices, and other relevant information for the region. See below for topics and outcomes from the workgroup's quarterly meetings over the past year:

Date	Flood Mitigation and Resiliency Workgroup Meeting Outcomes
12/15/23	The meeting focused on brainstorming activities and priorities for the workgroup in 2023, including outreach and engagement objectives and upcoming projects.
3/16/23	The meeting included updates on Arlington County's Risk Assessment and Management Plan and the City of Alexandria's Flood Mitigation Program. Additional discussions focused on projects to include in the Virginia Coastal Resilience Master Plan (VCRMP) project database and development of an updated critical infrastructure inventory for Northern Virginia.
6/29/23	The meeting included a presentation from Hampton Roads PDC on their roadway flooding sensor network, updates on the VCRMP database, federal funding opportunities, and NVRC's other upcoming projects.
9/29/23	The meeting included a presentation on George Mason University's flood hazard laboratory and current flooded road closure mapping exercise. NVRC staff also shared draft results for their critical infrastructure mapping exercise and provided new grant opportunities, updates on their rain gauge audit report, and next steps for their rain gauge programming.

4.2 Identification of Local Needs in the Northern Virginia Region

In 2018, Governor Northam directed the Chief Resilience Officer, with the assistance of the Special Assistant to the Governor for Coastal Adaptation and Protection, to create and implement the Virginia Coastal Resilience Master Plan (VCRMP) for coastal Virginia to reduce the impacts of tidal and storm surge flooding. Phase I of the VCRMP was published in December 2021 with Phase II expected to be complete by the end of 2024. With funding from the Resiliency Focal Area, NVRC staff have continued to contribute to Phase II the VCRMP process through participation in the Technical Advisory Committee (TAC) as well as the Research, Data, and Innovation Subcommittee. In FY22, NVRC took part in the following meetings as a part of the process:

Date	Meeting Type
12/1/22	TAC Meeting
3/16/23	TAC Meeting
6/27/23	TAC Meeting
9/19/23	TAC Meeting
9/22/23	Research, Data, and Innovation Subcommittee Meeting

Coastal PDCs were requested to compile new and ongoing resilience projects in Northern Virginia to incorporate into the VCRMP Phase II's updated project database. In submitting these projects, NVRC and other PDCs have been able to assist the Virginia Department of Conservation and Recreation in not only understanding the types of resilience projects that are being completed around the state, but also identifying gaps in resilience work within certain regions. As a result, NVRC coordinated with local jurisdictions and other relevant stakeholders to submit a total of 59 resilience projects and 10 capacity building initiatives. NVRC's submissions highlighted the range of resiliency programming taking place across the region and associated project priorities, including stormwater and riverine flood management as well as data and mapping.

4.3 Identification of Local Critical Infrastructure

Through the NOVA Flood Mitigation and Resilience Workgroup and other coordination efforts, NVRC looks to identify and advance regional priorities relating to resiliency planning and programming. In particular, comprehensive inventorying and assessments of critical infrastructure have been identified as top needs from local jurisdictions and other regional stakeholders in order to base future resiliency planning and projects around the protection of essential services and functioning of the region's communities against increasing climate hazards.

While the Northern Virginia Hazard Mitigation Plan and other planning processes have captured some extent of critical infrastructure in Northern Virginia, there has lacked a publicly available, community-focused assessment of critical infrastructure for the region that includes both green and grey infrastructure. In turn, NVRC compiled its existing data as well as open data from local

jurisdictions and state agencies, such as Virginia CZM's Coastal GEMS, to produce community-based critical infrastructure layers in Northern Virginia, including data for housing, transportation, health, and other key sectors that are deemed essential to the region's residents for daily function. In addition, certain forms of green infrastructure, including parks and wetlands, were included to emphasize the significant intersection of green space and built infrastructure in the region. From workgroup meetings and additional coordination, NVRC also incorporated feedback from stakeholders on types of critical infrastructure that should be included in the inventory.

Overall, the data inventory and associated mapping will serve as an important educational tool for the public to highlight the range of built and natural assets that face impacts from the region's climate hazards. As such, collected data will also be incorporated into future assessments of key hazards, including sea level rise, pluvial flooding, and extreme heat. To share data with the public, NVRC developed an ArcGIS Instant Application in which users can explore different types of critical infrastructure and view information for specific attributes. The application can be viewed on NVRC's ArcGIS open data webpage: https://arcg.is/1XSaKz1. Information on individual layers and associated metadata is also available through the application.

PDF maps of the compiled critical infrastructure points are included in Appendix A.

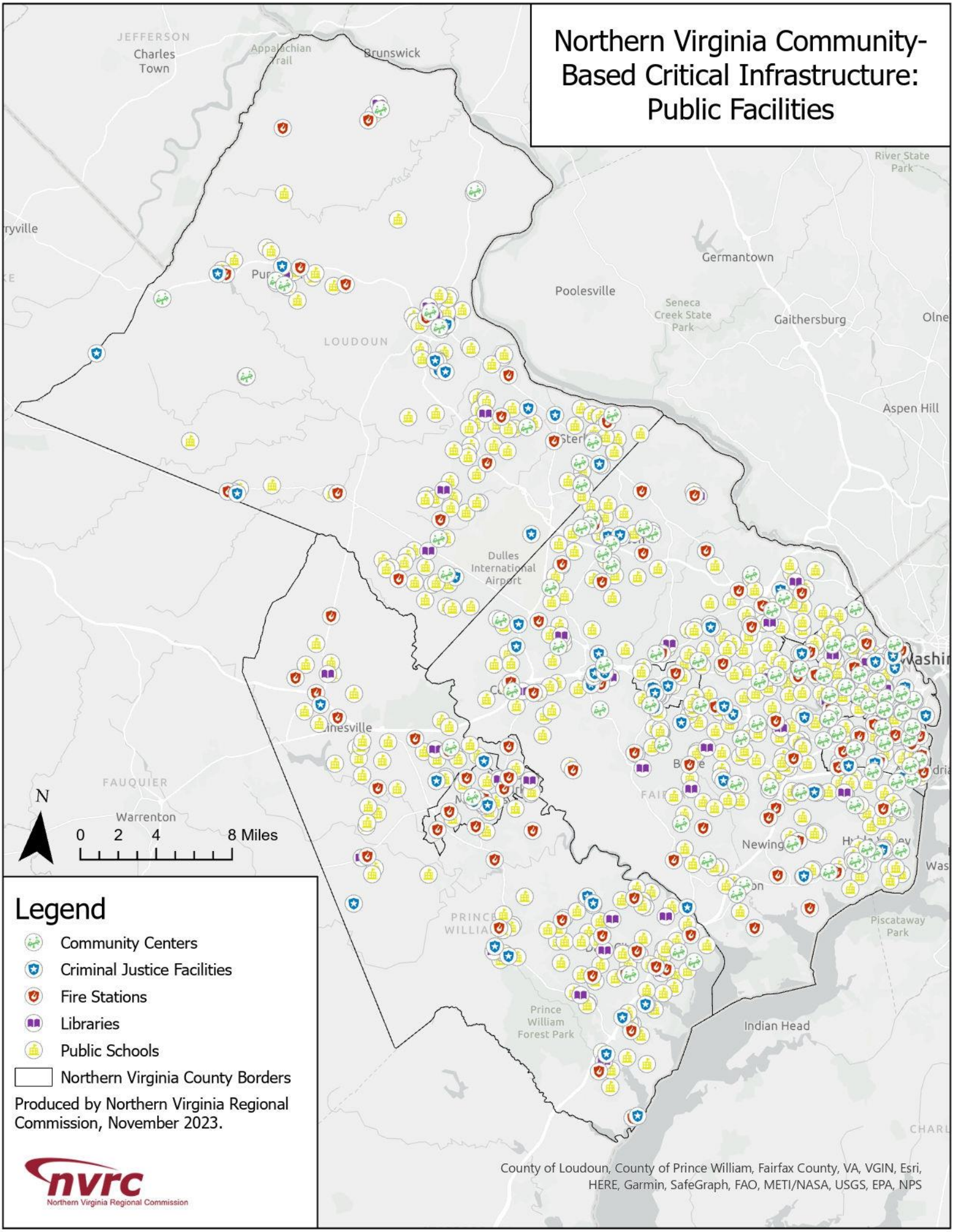
Appendices

Appendix A: Community-Based Critical Infrastructure Maps

The following maps highlight community-based critical infrastructure sectors for Northern Virginia, including public health and housing, transportation, public facilities, and other key facility types that are deemed essential to the region's communities for daily function. In addition to built infrastructure, natural infrastructure points, such as parks and wetlands, are also included as a key component to the region's health, economy, and environmental resilience. As such, please note that these layers do not represent the full breadth of critical infrastructure within Northern Virginia, including infrastructure containing sensitive or restricted information.

Data from these maps, including metadata, are available to more easily view and download as an ArcGIS application: https://arcg.is/1vjLfX.

Northern Virginia Community-Based Critical Infrastructure: Public Facilities



Legend

- Community Centers
- Criminal Justice Facilities
- Fire Stations
- Libraries
- Public Schools
- Northern Virginia County Borders

Produced by Northern Virginia Regional Commission, November 2023.

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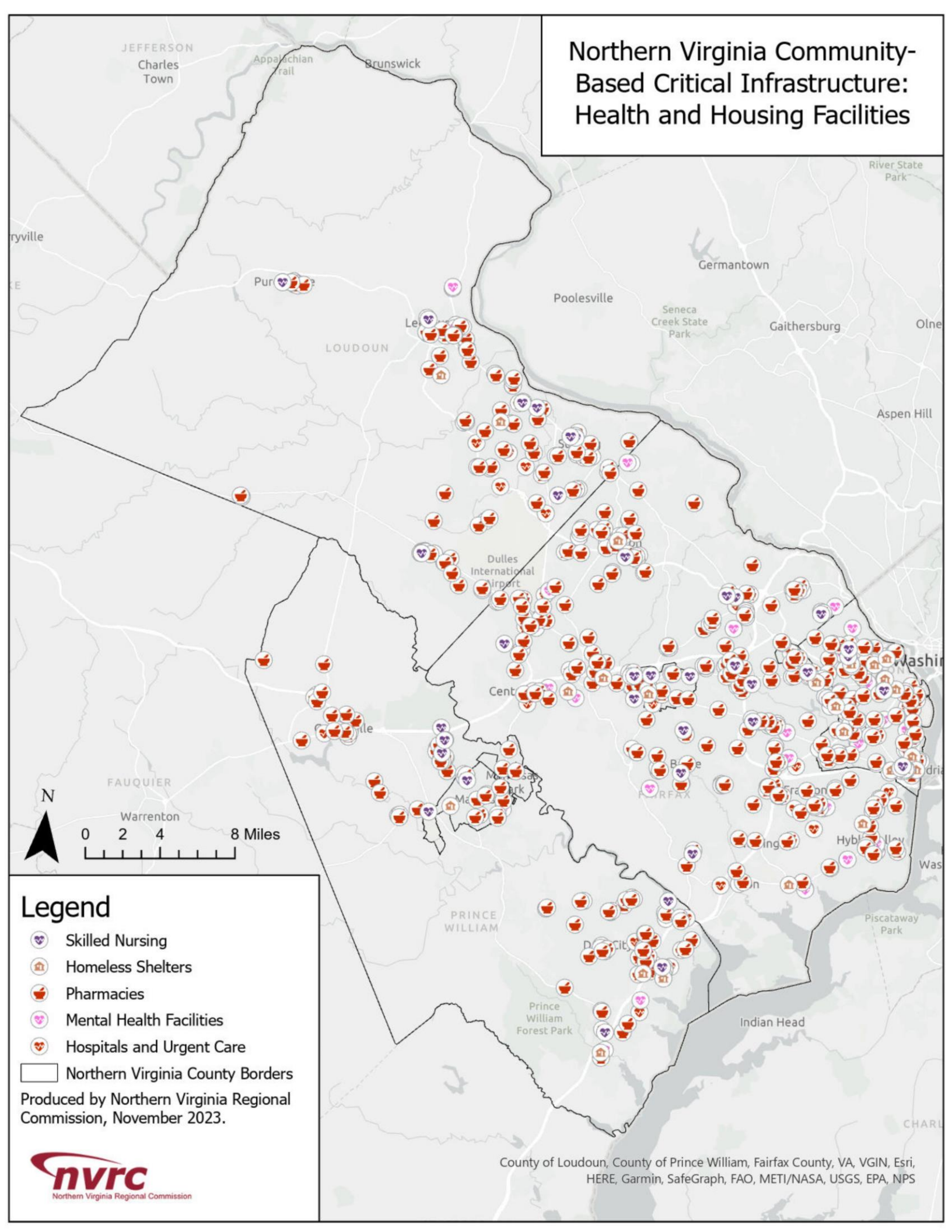
County of Loudoun, County of Prince William, Fairfax County, VA, VGIN, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS


Northern Virginia Community-Based Critical Infrastructure: Health and Housing Facilities
JEFFERSON
Charles Town
Appalachian Trail
Brunswick
River State Park
Germantown
Poolesville
Seneca Creek State Park
Gaithersburg
LOUDOUN
Aspen Hill
Dulles International Airport
FAUQUIER
Warrenton
PRINCE WILLIAM
Prince William Forest Park
Indian Head
Piscataway Park
N
0 2 4 8 Miles
Legend
Skilled Nursing
Homeless Shelters
Pharmacies
Mental Health Facilities
Hospitals and Urgent Care
Northern Virginia County Borders
Produced by Northern Virginia Regional Commission, November 2023.
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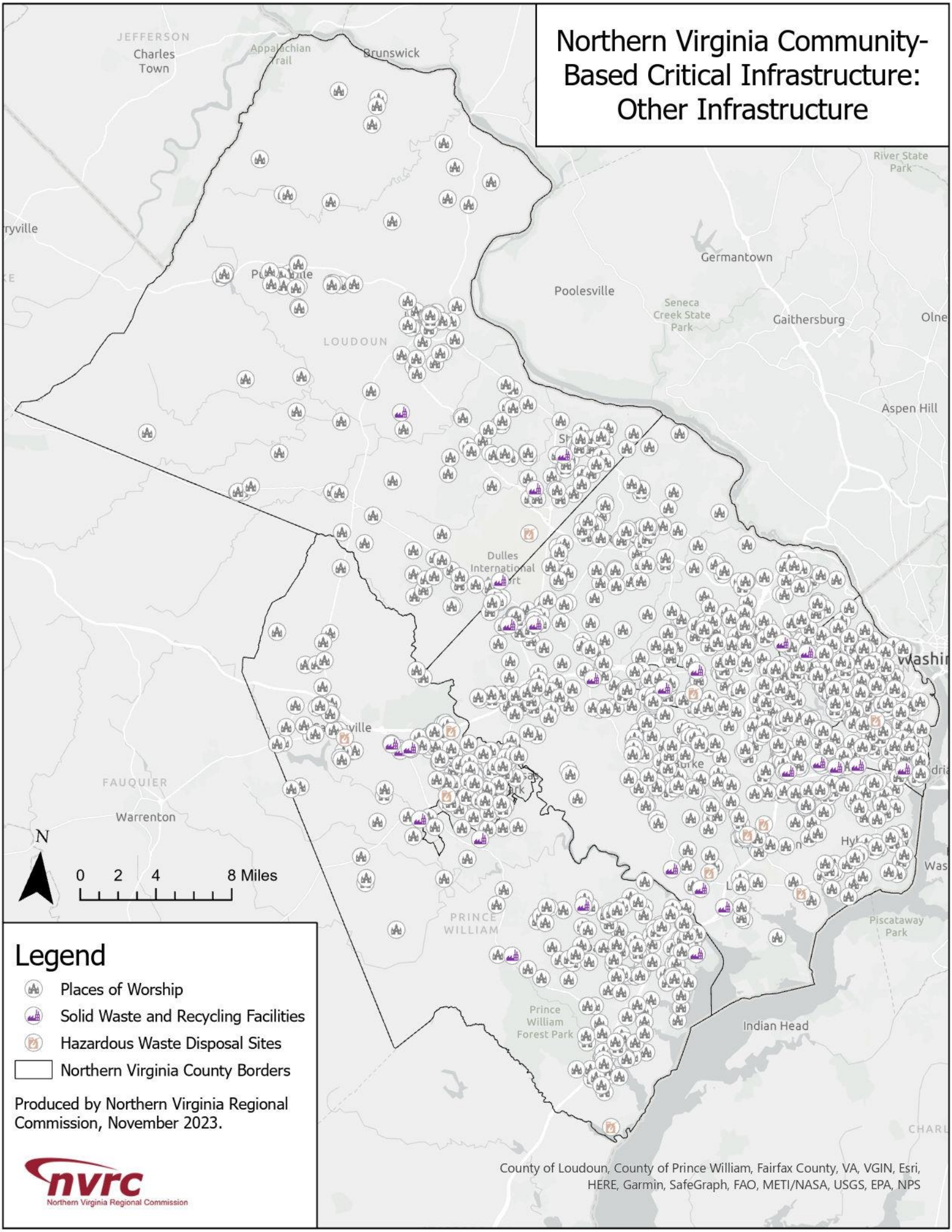
Northern Virginia Regional Commission
County of Loudoun, County of Prince William, Fairfax County, VA, VGIN, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

Northern Virginia Community-Based Critical Infrastructure: Other Infrastructure



Legend

- Places of Worship
- Solid Waste and Recycling Facilities
- Hazardous Waste Disposal Sites
- Northern Virginia County Borders

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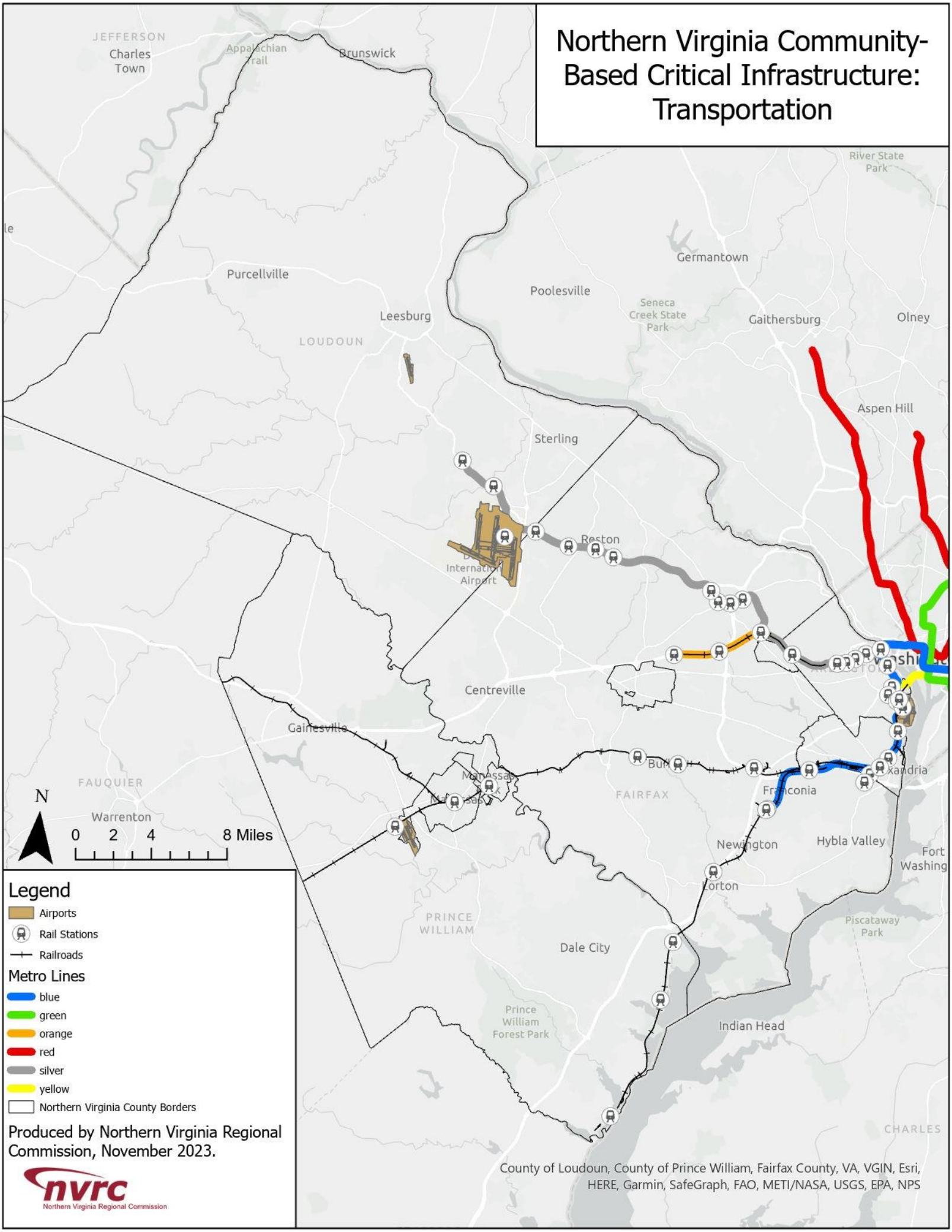
County of Loudoun, County of Prince William, Fairfax County, VA, VGIN, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

Northern Virginia Community-Based Critical Infrastructure: Transportation



Legend

- Airports
- Rail Stations
- Railroads

Metro Lines

- blue
- green
- orange
- red
- silver
- yellow

- Northern Virginia County Borders

Produced by Northern Virginia Regional Commission, November 2023.

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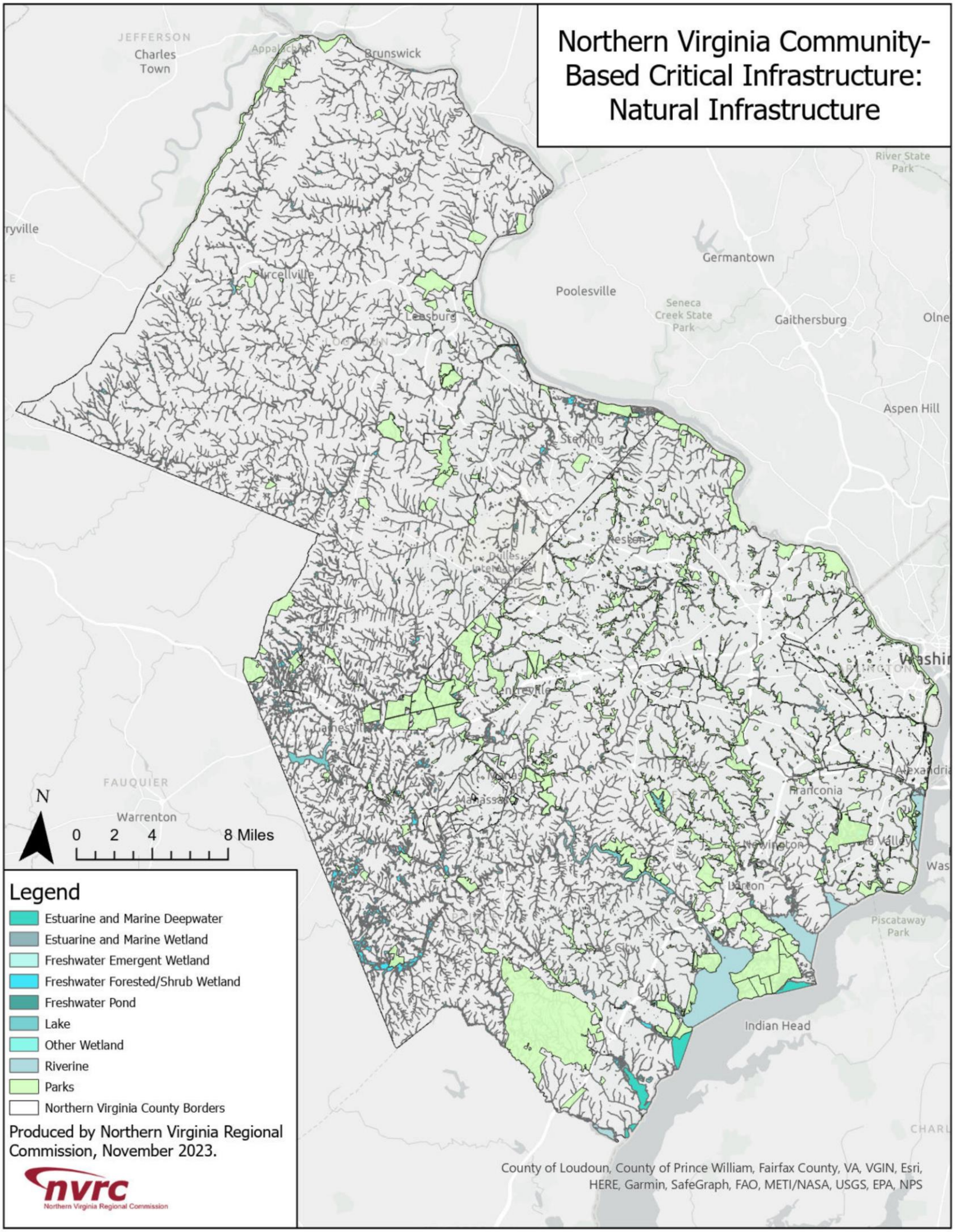
Northern Virginia Community-Based Critical Infrastructure: Natural Infrastructure



Legend

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other Wetland
- Riverine
- Parks
- Northern Virginia County Borders

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Appendix B: Annual Stormwater Survey Results

Keisler SOCIAL & BEHAVIORAL RESEARCH

Northern Virginia Resident Stormwater Knowledge and Behavior Study

2023 Summary Report of Findings

Prepared for:
Northern Virginia Clean Water Partners

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September 1, 2023

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INTRODUCTION AND APPROACH

Keisler Social & Behavioral Research (Keisler Research) was contracted by the Northern Virginia Regional Commission (NVRC) to conduct a survey of northern Virginia residents to capture knowledge, perceptions, beliefs, and behaviors surrounding stormwater and water pollution. The survey also assesses awareness and perceptions of two media campaigns conducted by the Northern Virginia Clean Water Partners (NVCWP) on stormwater drainage and water pollution, as well as awareness perceptions of NVCWP as an organization. The survey instrument is provided in the APPENDIX.

The survey was administered online in June of 2023 on the Alchemer survey platform. Individuals that participate in Alchemer's survey panel, and other partner survey panels, were invited to participate in the survey. Compensation was provided in the form of points on the Alchemer panel system, which can be redeemed for gift cards, prize drawings, and retail deals. To qualify for the survey, respondents must have been 21 years of age or older at the time of participation and reside in of the following cities and counties in northern Virginia: Fairfax County, Loudoun County, Prince William County, Arlington County, and Alexandria.

SUMMARY OF 2023 FINDINGS

Participant Characteristics

The final dataset includes surveys of 596 adults residing in Northern Virginia. Northern Virginia is defined as the following cities and counties: Fairfax County, Loudoun County, Prince William County, Arlington County, and Alexandria. All participants were above 21 years of age.

A demographic summary of survey participants is provided in Table 1. Survey participants were about evenly split between men (51.6%) and women (46.9%). All participants were above 21 years of age. About one-quarter of respondents fell between 25-to-34-years-olds, while only 1.3% of respondents were 75 or older. White people make up over 40% of the sample and African American or Black people comprised just over one-third of the sample. Participants

were asked which locality they reside in and the locality with the highest rate is Fairfax County (16.5%) followed by Alexandria (15.7%) with Falls Church (3.3%) and Manassas Park (1.2%) having the smallest rates in the sample. Household income is fairly evenly split amongst participants, with most participants living in a household with an income between $50,000 and $149,999.

About three-fourths of the sample have lived in their residence between 1 and 19 years, while 17.0% have lived in their current residence for over 20 years. A majority of participants (57.8%) own their residence. Most participants also have a lawn or garden in their home (79.0%) and a majority also own or lease a vehicle (88.3%). About half (51.0%) own at least one dog.

Table 1. Survey participant demographic characteristics. .

Demographic	Sub-category	Percentage
Gender	Male	51.6%
	Female	46.9%
Age	21 to 24	16.5%
	25 to 34	28.9%
	35 to 44	25.9%
	45 to 54	12.2%
	55 to 64	8.8%
	65 to 74	6.3%
	75 or older	1.3%
Ethnicity	African American/Black	33.9%
	American Indian/Native Alaskan	2.7%
	Asian	14.4%
	Hispanic/Latino	12.9%
	Native Hawaiian/Pacific Islander	1.5%
	White/Caucasian	41.2%
	Other	2.7%
Locality	Alexandria	15.7%
	Arlington	12.0%
	Fairfax City	8.7%
	Herndon	5.0%
	Vienna	4.2%

Demographic	Sub-category	Percentage
	Fairfax County	16.5%
	Falls Church	3.3%
	Leesburg	6.8%
	Loudoun County	8.5%
	Dumfries	5.0%
	Manassas	5.3%
	Manassas Park	1.2%
	Prince William County	7.7%
Years of Residence	Less than 1 year	12.4%
	1 to 3 years	28.4%
	4 to 9 years	26.2%
	10 to 19 years	16.0%
	20 or more years	17.0%
Home Ownership	Owned	57.8%
	Rented	39.6%
	Military housing	1.5%
	Transitional housing	0.7%
	Other (write-in)	0.5%
Household Income	Less than $35,000	12.2%
	$35,000 to $49,999	10.9%
	$50,000 to $74,999	19.9%
	$75,000 to $99,999	16.7%
	$100,000 to $124,999	11.2%
	$125,000 to $149,999	11.0%
	$150,000 to $174,999	6.3%
	$175,000 to $199,999	3.8%
	$200,000 or greater	8.0%
Lawn or Garden at Residence	Yes	79.0%
	No	21.0%
Own or Lease a Vehicle	Yes	88.3%
	No	11.7%
Dog Ownership	Yes	51.0%
	No	49.0%

Behaviors and Behavioral Drivers

Lawn/Garden Fertilization

Respondents were asked about their behavior regarding lawns or gardens and if their residence has a lawn or garden regardless of size. Results are summarized in Table 2 and displayed in Figure 1. Over three-fourths of those surveyed (79.0%) report having a lawn or garden, no matter how small. Of those with a lawn or garden, 66.1% report using a lawn care service at least once per year and almost all (91.6%) are familiar with how their lawn is cared for. Respondents with lawns were asked how often their lawns were fertilized, regardless of whether fertilization was done by someone in the household or an outside service. The response options were "1 time a year", "2 times a year", "3 times a year", "4+ times a year", "Only if/when a soil test indicates the grass needs fertilizer", "Never", or "Not sure". Far fewer (12.4%) fertilize only when a soil test indicates the grass needs fertilizer, and about one-fifth (19.8%) never fertilize their lawn or garden.

More men than women are familiar with how their lawn or garden is cared for, and more men use lawn services than women. Familiarity with how the lawn/garden is cared for also generally increases with resident tenure (i.e., how long the respondent lived in the location). Men report fertilizing more frequently than women, and women reported higher rates of never fertilizing compared to men. Additionally, in general, higher age groups had higher rates of never fertilizing.

Table 2. Lawn and garden fertilization behaviors by demographic group.

Demographic	Sub-category	Familiar with Lawn/Garden Care	Lawn Care Service Used at Least Once a Year	Frequency of Lawn Fertilization					
				1 time a year	2 times a year	3 times a year	4+ times a year	Only if soil test indicates	Never
	All Respondents	**91.6%**	**66.1%**	**18.2%**	**25.5%**	**16.3%**	**11.3%**	**9.9%**	**13.0%**
Gender	Male	93.3%	75.2%	15.8%	29.9%	23.5%	13.7%	7.7%	8.1%
	Female	90.7%	54.9%	20.5%	20.5%	7.6%	7.6%	12.4%	19.5%

Demographic	Sub-category	Familiar with Lawn/Garden Care	Lawn Care Service Used at Least Once a Year	Frequency of Lawn Fertilization					
				1 time a year	2 times a year	3 times a year	4+ times a year	Only if soil test indicates	Never
Age	21 to 24	83.1%	68.8%	17.2%	32.8%	14.1%	14.1%	9.4%	6.3%
	25 to 34	92.4%	71.8%	17.4%	26.6%	13.8%	15.6%	11.0%	10.1%
	35 to 44	93.9%	73.1%	22.1%	23.8%	22.1%	9.8%	8.2%	8.2%
	45 to 54	94.7%	66.7%	16.7%	24.1%	13.0%	7.4%	18.5%	16.7%
	55 to 64	90.7%	30.2%	15.4%	17.9%	5.1%	7.7%	5.1%	41.0%
	65 to 74	93.5%	56.3%	17.2%	24.1%	24.1%	6.9%	6.9%	13.8%
	75 or older	100.0%	71.4%	0.0%	28.6%	28.6%	14.3%	0.0%	14.3%
Locality	Alexandria	84.2%	72.9%	16.7%	33.3%	16.7%	12.5%	6.3%	8.3%
	Arlington	81.6%	65.8%	16.1%	35.5%	9.7%	12.9%	6.5%	16.1%
	Fairfax - Inclusive	94.2%	68.4%	20.2%	22.5%	19.1%	11.2%	12.4%	11.8%
	Prince William - Inclusive	92.4%	58.7%	20.8%	21.9%	10.4%	11.5%	11.5%	11.5%
	Leesburg/Loudon	94.7%	65.3%	11.3%	28.2%	19.7%	9.9%	5.6%	19.7%
Ethnicity	Hispanic/Latino	86.0%	66.7%	22.9%	27.1%	14.6%	12.5%	6.3%	10.4%
	Not Hispanic/Latino	92.4%	66.0%	17.6%	25.3%	16.5%	11.2%	10.4%	13.3%
Years of Residence	Less than 1 year	76.7%	53.5%	12.1%	30.3%	6.1%	3.0%	18.2%	12.1%
	1 to 3 years	87.5%	67.5%	26.9%	21.2%	12.5%	8.7%	13.5%	10.6%
	4 to 9 years	95.2%	71.7%	15.1%	32.8%	17.6%	10.9%	5.0%	14.3%
	10 to 19 years	97.6%	63.0%	12.5%	22.5%	21.3%	15.0%	7.5%	13.8%
	20 or more years	93.6%	65.3%	19.3%	21.6%	18.2%	14.8%	11.4%	13.6%
Home Ownership	Owned	96.0%	68.0%	18.1%	26.2%	15.9%	13.3%	9.1%	13.9%
	Rented	81.5%	60.6%	18.9%	22.6%	17.9%	3.8%	13.2%	10.4%
Household Income	Less than $35,000	78.7%	52.2%	24.3%	24.3%	10.8%	2.7%	16.2%	16.2%
	$35,000 to $49,999	90.2%	62.8%	10.8%	27.0%	16.2%	8.1%	13.5%	16.2%
	$50,000 to $74,999	88.2%	62.4%	17.3%	19.8%	14.8%	13.6%	12.3%	14.8%
	$75,000 to $99,999	93.5%	75.9%	13.9%	30.6%	15.3%	12.5%	9.7%	9.7%
	$100,000 to $124,999	88.2%	60.0%	26.7%	26.7%	13.3%	6.7%	6.7%	15.6%
	$125,000 to $149,999	100.0%	62.7%	20.3%	27.1%	16.9%	10.2%	8.5%	13.6%
	$150,000 to $174,999	100.0%	71.9%	12.5%	25.0%	31.3%	12.5%	6.3%	6.3%

Demographic	Sub-category	Familiar with Lawn/Garden Care	Lawn Care Service Used at Least Once a Year	Frequency of Lawn Fertilization					
				1 time a year	2 times a year	3 times a year	4+ times a year	Only if soil test indicates	Never
	$175,000 to $199,999	95.2%	90.5%	15.0%	20.0%	35.0%	15.0%	5.0%	10.0%
	$200,000 or greater	95.5%	69.8%	22.0%	26.8%	7.3%	19.5%	7.3%	12.2%

** Red font indicates significant differences within a demographic subgroup.*

Figure 1. Frequency of lawn fertilization.

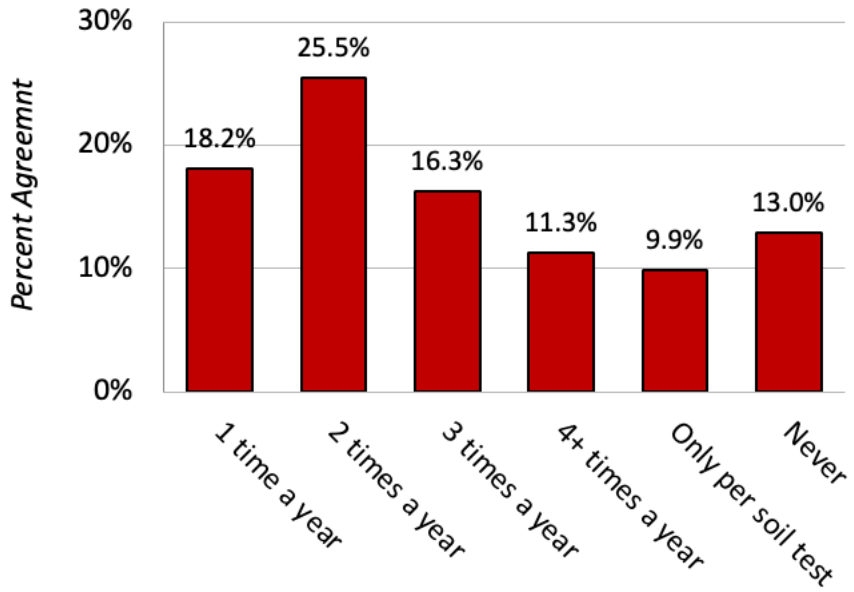
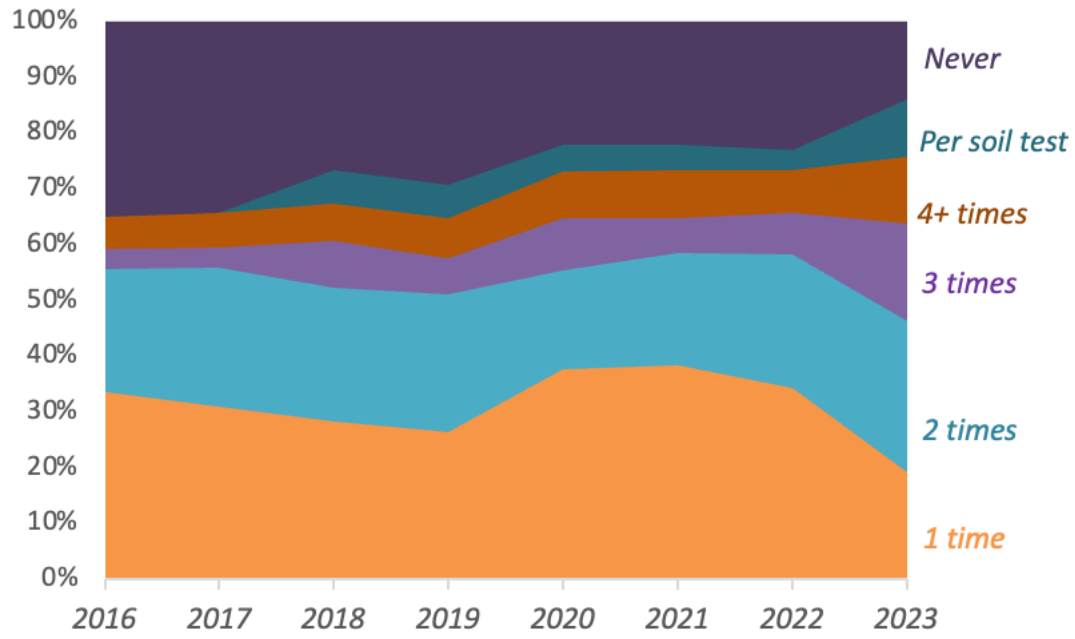


Table 3. Lawn fertilization frequency across years.

Year of Survey								
How often lawn is fertilized per year	2016	2017	2018	2019	2020	2021	2022	2023
1 time	33.6%	31.0%	28.4%	26.4%	37.8%	38.3%	34.3%	19.3%
2 times	22.0%	24.8%	23.9%	24.8%	17.7%	20.3%	24.1%	27.1%
3 times	3.6%	3.8%	8.3%	6.4%	9.2%	6.2%	7.3%	17.3%
4+ times	5.8%	6.2%	6.8%	7.2%	8.4%	8.6%	7.7%	12.0%
Per soil test	-	-	6.1%	6.0%	4.8%	4.5%	3.5%	10.5%
Never	35.0%	34.3%	26.5%	29.2%	22.1%	22.1%	23.1%	13.8%

** Red font indicates that the value significantly differs from the current 2023 value.*

Figure 2. Lawn fertilization frequency across years.



Grass Clipping Disposal

Respondents that reported having a lawn or garden were asked how they dispose of their grass clippings. The provided response options were “Bagged and put in the regular trash”, “Bagged and put in compost/recycling bags for pick up”, “Left on the lawn/garden”, “Put in a compost

pile/bin", "Not sure", "Other", and "Not applicable/don't have grass clippings". As shown in *Table 4* and *Figure 3*, the most common response is bagging the grass and putting it in compost or recycling for pickup, with 31.7% providing this response. The next most common response (28.6%) is leaving the grass on their lawn/garden, while 23.6% of respondents bag it and put it in the regular trash. Finally, 9.0% report putting their grass in a compost pile or bin, 3.5% are not sure how their grass is disposed of, and 0.4% reported disposing of their grass clippings in some other way. Older age groups had higher rates of leaving their grass clippings on the lawn. Men had higher rates of bagging and putting their clippings in the regular trash. People from Arlington had higher rates of putting their grass clippings in the compost pile.

Table 4. Disposal of grass clippings by demographic group.

Demographic	Sub-category	Grass Clippings Handling					
		Bagged and put in Regular Trash	Bagged and put in Compost/ Recycling for Pickup	Left on Lawn/Garden	Put in Compost Pile/Bin	Not Sure	Other
	All Respondents	**23.6%**	**31.7%**	**28.6%**	**9.0%**	**3.5%**	**0.4%**
Gender	Male	27.5%	31.8%	28.8%	9.0%	1.3%	0.4%
	Female	18.8%	31.7%	28.5%	8.6%	6.5%	2.2%
Age	21 to 24	28.1%	31.3%	28.1%	7.8%	3.1%	0.0%
	25 to 34	28.7%	38.0%	13.9%	11.1%	2.8%	2.8%
	35 to 44	25.4%	34.4%	25.4%	8.2%	4.1%	0.8%
	45 to 54	24.1%	29.6%	33.3%	7.4%	5.6%	0.0%
	55 to 64	10.3%	20.5%	48.7%	10.3%	2.6%	2.6%
	65 to 74	10.3%	13.8%	58.6%	10.3%	3.4%	0.0%
	75 or older	0.0%	42.9%	42.9%	0.0%	0.0%	0.0%
Locality	Alexandria	25.0%	39.6%	22.9%	6.3%	2.1%	0.0%
	Arlington	30.0%	30.0%	16.7%	23.3%	0.0%	0.0%
	Fairfax - Inclusive	18.6%	34.5%	27.7%	10.2%	4.5%	1.7%
	Prince William - Inclusive	26.8%	26.8%	30.9%	7.2%	3.1%	2.1%
	Leesburg/Loudon	28.2%	26.8%	36.6%	4.2%	4.2%	0.0%
Ethnicity	Hispanic/Latino	26.5%	42.9%	18.4%	8.2%	4.1%	0.0%
	Not Hispanic/Latino	23.3%	30.2%	29.9%	9.1%	3.5%	1.3%
Years of Residence	Less than 1 year	30.3%	21.2%	24.2%	9.1%	9.1%	0.0%
	1 to 3 years	26.7%	37.1%	26.7%	4.8%	2.9%	1.9%
	4 to 9 years	24.4%	32.8%	26.1%	9.2%	2.5%	0.8%
	10 to 19 years	21.8%	32.1%	30.8%	11.5%	1.3%	1.3%

Demographic	Sub-category	Grass Clippings Handling					
		Bagged and put in Regular Trash	Bagged and put in Compost/ Recycling for Pickup	Left on Lawn/Garden	Put in Compost Pile/Bin	Not Sure	Other
	20 or more years	18.2%	27.3%	34.1%	11.4%	5.7%	1.1%
Home Ownership	Owned	22.4%	32.1%	30.2%	8.8%	2.9%	1.3%
	Rented	26.4%	31.1%	25.5%	7.5%	5.7%	0.9%
Household Income	Less than $35,000	21.6%	21.6%	35.1%	13.5%	2.7%	2.7%
	$35,000 to $49,999	29.7%	21.6%	24.3%	5.4%	8.1%	2.7%
	$50,000 to $74,999	32.1%	34.6%	22.2%	4.9%	3.7%	1.2%
	$75,000 to $99,999	18.1%	33.3%	31.9%	11.1%	4.2%	0.0%
	$100,000 to $124,999	37.8%	24.4%	22.2%	11.1%	2.2%	2.2%
	$125,000 to $149,999	6.8%	40.7%	39.0%	8.5%	1.7%	0.0%
	$150,000 to $174,999	25.8%	41.9%	16.1%	9.7%	3.2%	0.0%
	$175,000 to $199,999	26.3%	21.1%	26.3%	10.5%	10.5%	0.0%
	$200,000 or greater	19.0%	33.3%	35.7%	9.5%	0.0%	2.4%

** Red font indicates significant differences within a demographic subgroup.*

Figure 3. Disposal of grass clippings.

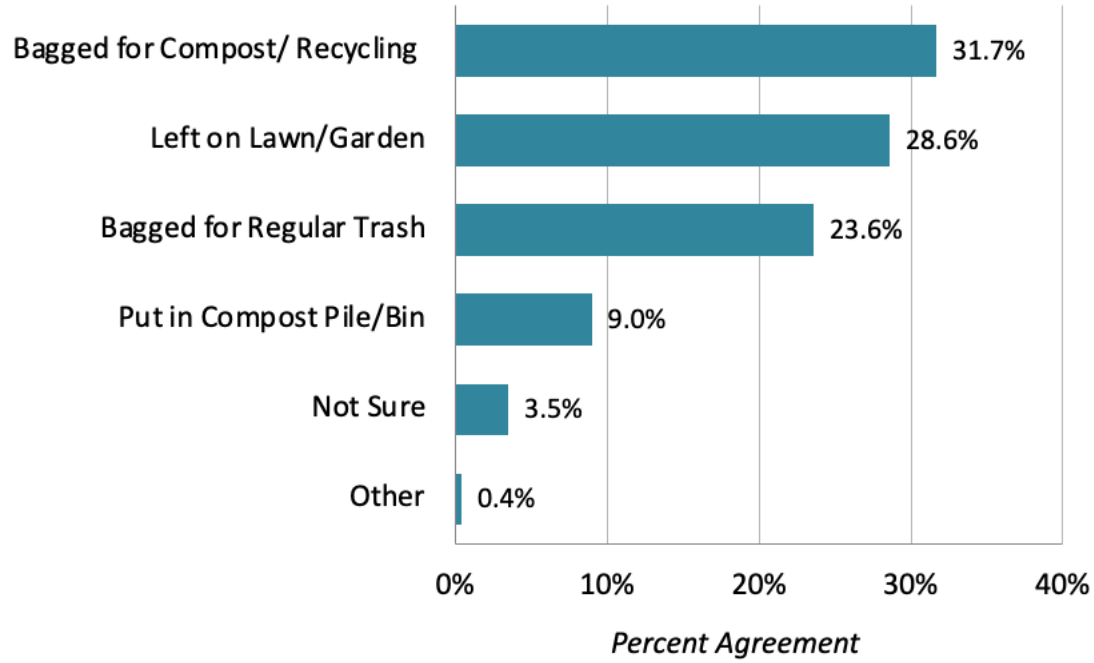
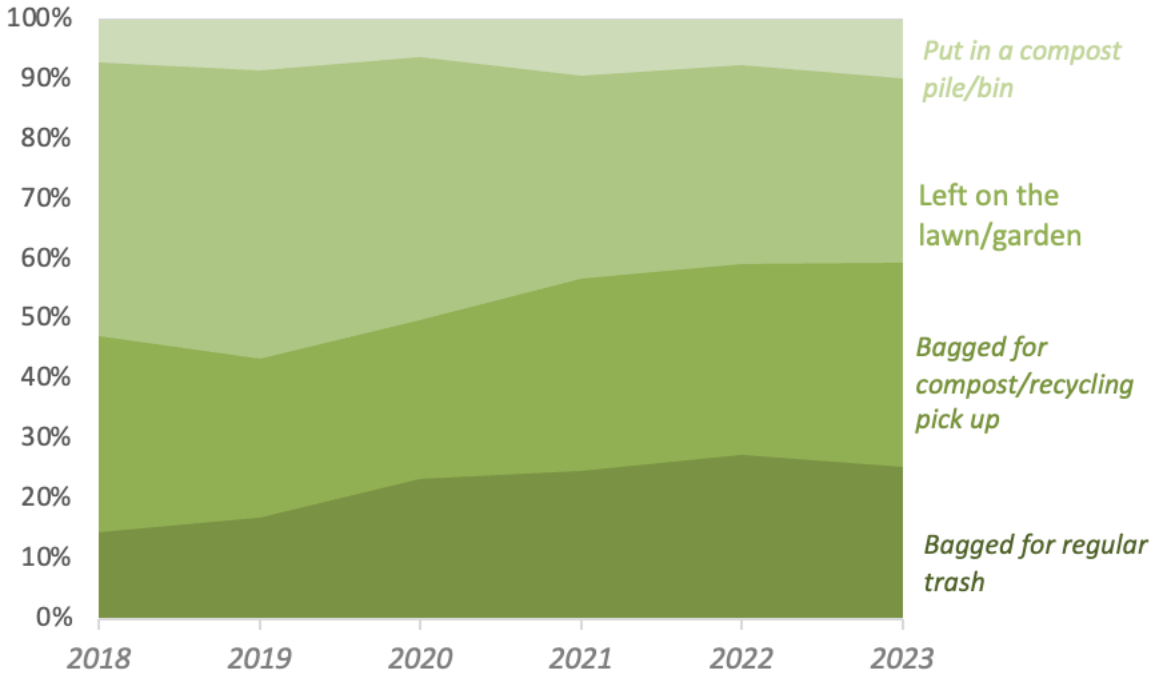


Table 5. Disposal of grass clippings across years.

	Year of Survey							
Grass clipping disposal	2016	2017	2018	2019	2020	2021	2022	2023
Bagged for regular trash	*	*	14.5%	17.0%	23.3%	24.6%	27.3%	25.4%
Bagged for compost/recycling pick up	*	*	32.8%	26.4%	26.7%	32.3%	32.0%	34.1%
Left on the lawn/garden	*	*	45.7%	48.1%	43.8%	33.7%	33.1%	30.8%
Put in a compost pile/bin	5.8%	6.2%	7.0%	8.5%	6.3%	9.5%	7.6%	9.7%

** Red font indicates that the value significantly differs from the current 2023 value.*
Asterisks (*) indicate that the question did not appear in the survey that year.

Figure 4. Disposal of grass clippings across years.



Participants were also asked what is done with grass clippings if they end up in the street, if anything. The response options were "They are left there", "They are swept or blown back into the lawn", "They are swept or blown into the storm drain", "Not applicable/don't have grass clippings", "Not Sure", or "Other" with write-in option. Of those with a lawn or garden, 53.1% report sweeping or blowing them back into their lawn, while 19.7% report leaving them in the street, as can be seen in *Table 6* and *Figure 5*. Lastly, 14.5% report sweeping or blowing them into the storm drain. People from Leesburg/Loudon (34.7%) had higher rates of leaving grass clippings on the street, compared to other localities.

Table 6. Handling of grass clippings in street by demographic group.

Demographic	Sub-category	Grass Clippings on Street Handling				
		Leave There	Swept or Blown Back into the Lawn	Swept or Blown into Storm Drain	Not Sure	Other
	All Respondents	**19.7%**	**53.1%**	**14.5%**	**3.8%**	**4.0%**

Demographic	Sub-category	Grass Clippings on Street Handling				
		Leave There	Swept or Blown Back into the Lawn	Swept or Blown into Storm Drain	Not Sure	Other
Gender	Male	22.3%	53.6%	16.3%	1.3%	3.4%
	Female	16.8%	52.2%	12.5%	6.5%	4.3%
Age	21 to 24	26.6%	54.7%	15.6%	1.6%	0.0%
	25 to 34	20.4%	46.3%	22.2%	3.7%	2.8%
	35 to 44	19.7%	49.2%	18.0%	6.6%	3.3%
	45 to 54	18.5%	68.5%	7.4%	0.0%	1.9%
	55 to 64	17.9%	48.7%	0.0%	7.7%	15.4%
	65 to 74	7.1%	67.9%	0.0%	0.0%	10.7%
	75 or older	14.3%	57.1%	14.3%	0.0%	0.0%
Locality	Alexandria	20.8%	52.1%	16.7%	2.1%	2.1%
	Arlington	23.3%	43.3%	23.3%	0.0%	6.7%
	Fairfax - Inclusive	16.6%	58.9%	12.0%	4.0%	2.9%
	Prince William - Inclusive	12.4%	54.6%	16.5%	5.2%	7.2%
	Leesburg/Loudon	34.7%	41.7%	12.5%	4.2%	2.8%
Ethnicity	Hispanic/Latino	28.6%	49.0%	14.3%	6.1%	0.0%
	Not Hispanic/Latino	18.5%	53.6%	14.5%	3.5%	4.6%
Years of Residence	Less than 1 year	25.0%	43.8%	15.6%	6.3%	0.0%
	1 to 3 years	15.4%	56.7%	16.3%	5.8%	3.8%
	4 to 9 years	20.2%	54.6%	12.6%	2.5%	5.9%
	10 to 19 years	23.8%	47.5%	16.3%	3.8%	3.8%
	20 or more years	18.4%	55.2%	12.6%	2.3%	3.4%
Home Ownership	Owned	20.8%	52.1%	14.7%	3.3%	3.9%
	Rented	15.1%	56.6%	14.2%	5.7%	3.8%
Household Income	Less than $35,000	10.8%	56.8%	18.9%	5.4%	0.0%
	$35,000 to $49,999	19.4%	55.6%	16.7%	0.0%	0.0%
	$50,000 to $74,999	18.3%	50.0%	17.1%	7.3%	4.9%
	$75,000 to $99,999	15.5%	59.2%	12.7%	5.6%	5.6%
	$100,000 to $124,999	17.8%	57.8%	15.6%	6.7%	0.0%
	$125,000 to $149,999	19.0%	53.4%	17.2%	0.0%	5.2%
	$150,000 to $174,999	28.1%	40.6%	12.5%	0.0%	0.0%

Demographic	Sub-category	Grass Clippings on Street Handling				
		Leave There	Swept or Blown Back into the Lawn	Swept or Blown into Storm Drain	Not Sure	Other
	$175,000 to $199,999	35.0%	55.0%	0.0%	0.0%	0.0%
	$200,000 or greater	26.8%	46.3%	9.8%	2.4%	14.6%

** Red font indicates significant differences within a demographic subgroup.*

Figure 5. Handling of grass clippings in the street.

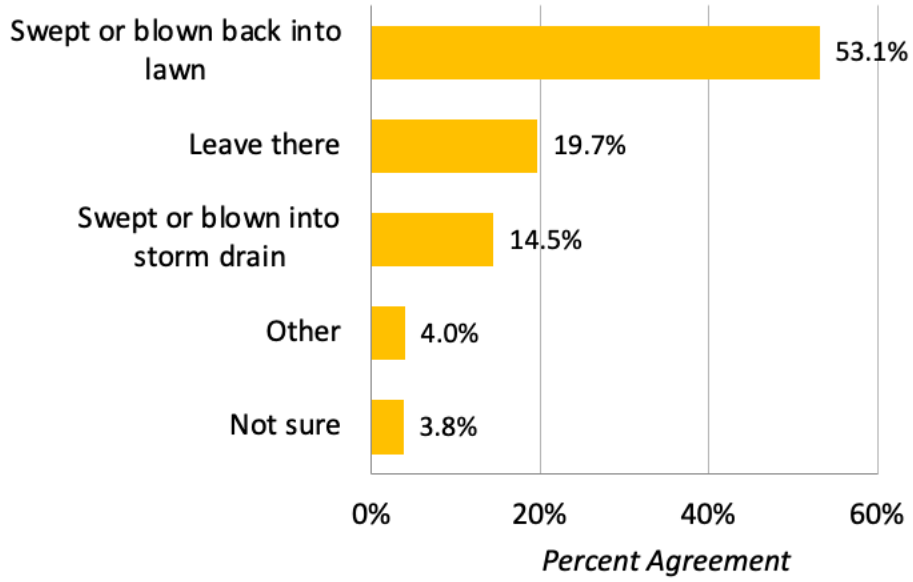
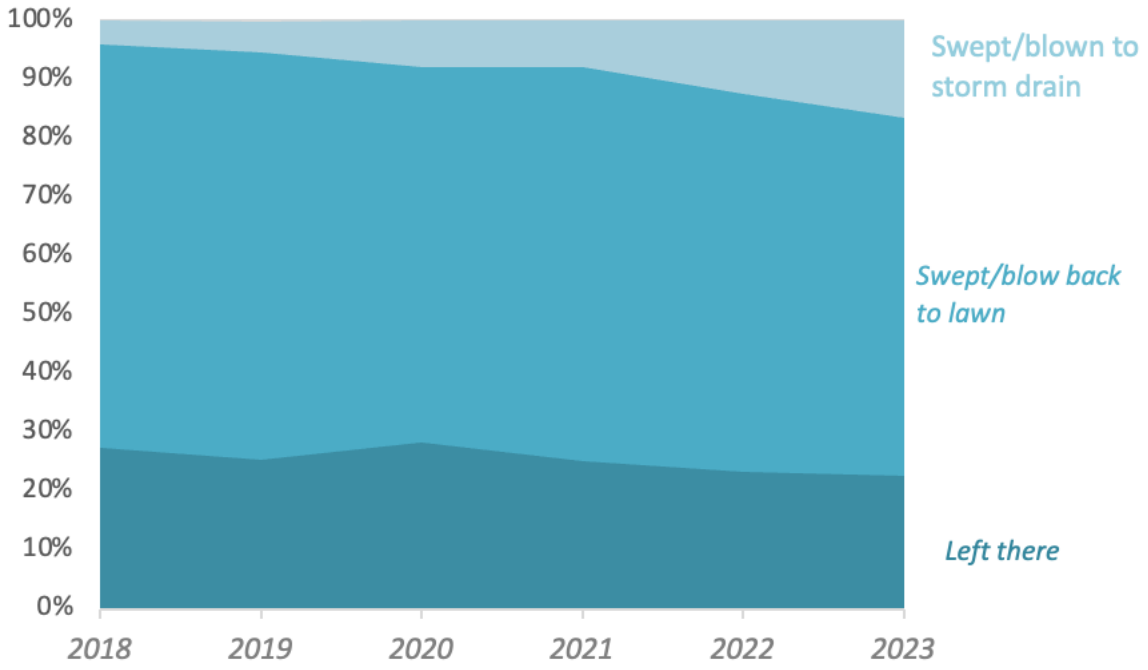


Table 7. Handling of grass clippings in the street across years.

Year of Survey								
Grass clippings in street	2016	2017	2018	2019	2020	2021	2022	2023
Left there	*	*	27.5%	25.3%	28.3%	25.1%	23.4%	22.6%
Swept/blow back to lawn	*	*	68.4%	69.3%	63.9%	67.0%	64.2%	60.9%
Swept/blown to storm drain	*	*	4.1%	5.3%	7.8%	7.9%	12.4%	16.6%

** Red font indicates that the value significantly differs from the current 2023 value.*
Asterisks (*) indicate that the question did not appear in the survey that year.

Figure 6. Handling of grass clippings in the street across years.



Pet Waste Pickup

Respondents who indicated they are responsible or partially responsible for at least one dog were asked how often they pick up after their dog(s) while on a walk. The response options were “Always”, “Usually”, “Sometimes”, “Rarely”, “Never”, or “Not applicable/I don’t take the dog(s) on walks”. The responses are summarized in *Table 8* and displayed in *Figure 7*. Of all respondents, 51.0% report having one or more dog(s) in their household for which they are at least partially responsible. Most dog owners (88.7%) report they always or usually pick up after their dog(s) on walks, 8.6% report sometimes picking up after their dog(s) and 2.9% report rarely or never picking up after their dog(s).

Table 8. Frequency of picking up dog waste by demographic group.

Demographic	Sub-category	Own a Dog	Frequency Pickup Dog Waste on Walks	Frequency Pickup Dog Waste in Yard
	All Respondents	**51.0%**	**88.7%**	**61.3%**

Demographic	Sub-category	Own a Dog	Frequency Pickup Dog Waste on Walks	Frequency Pickup Dog Waste in Yard
Gender	Male	57.5%	88.5%	64.3%
Gender	Female	43.7%	90.2%	56.3%
Age	21 to 24	63.3%	88.7%	57.1%
Age	25 to 34	58.1%	87.0%	59.5%
Age	35 to 44	55.2%	85.7%	65.8%
Age	45 to 54	45.2%	93.9%	58.6%
Age	55 to 64	30.2%	100.0%	69.2%
Age	65 to 74	18.4%	100.0%	50.0%
Age	75 or older	12.5%	0.0%	100.0%
Locality	Alexandria	43.6%	95.1%	65.5%
Locality	Arlington	37.5%	85.2%	89.5%
Locality	Fairfax - Inclusive	50.4%	85.7%	54.2%
Locality	Prince William - Inclusive	58.8%	90.9%	57.6%
Locality	Leesburg/Loudon	60.9%	89.1%	66.0%
Ethnicity	Hispanic/Latino	57.9%	93.2%	55.0%
Ethnicity	Not Hispanic/Latino	50.0%	87.9%	62.4%
Years of Residence	Less than 1 year	40.8%	93.1%	55.0%
Years of Residence	1 to 3 years	50.0%	92.9%	48.5%
Years of Residence	4 to 9 years	59.9%	76.6%	65.9%
Years of Residence	10 to 19 years	50.0%	91.5%	65.1%
Years of Residence	20 or more years	47.1%	100.0%	71.4%
Home Ownership	Owned	58.4%	88.9%	60.8%
Home Ownership	Rented	39.4%	93.5%	65.6%
Household Income	Less than $35,000	38.0%	85.2%	69.6%
Household Income	$35,000 to $49,999	46.2%	90.0%	57.1%
Household Income	$50,000 to $74,999	44.5%	90.6%	71.1%
Household Income	$75,000 to $99,999	54.0%	85.2%	56.8%
Household Income	$100,000 to $124,999	64.2%	95.2%	53.3%
Household Income	$125,000 to $149,999	47.0%	74.2%	55.2%
Household Income	$150,000 to $174,999	64.9%	82.6%	55.0%
Household Income	$175,000 to $199,999	69.6%	100.0%	81.3%
Household Income	$200,000 or greater	54.2%	100.0%	56.0%

** Red font indicates significant differences within a demographic subgroup.*

Figure 7. Frequency of picking up dog waste.

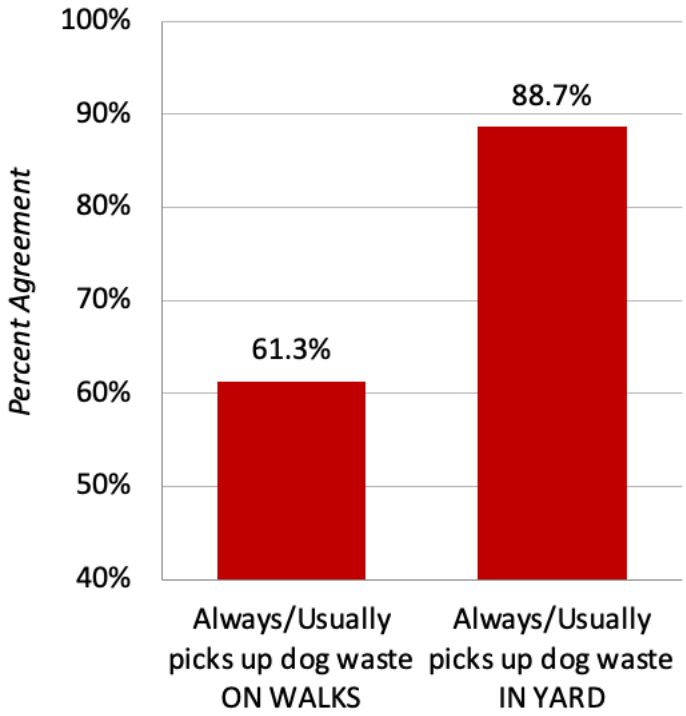
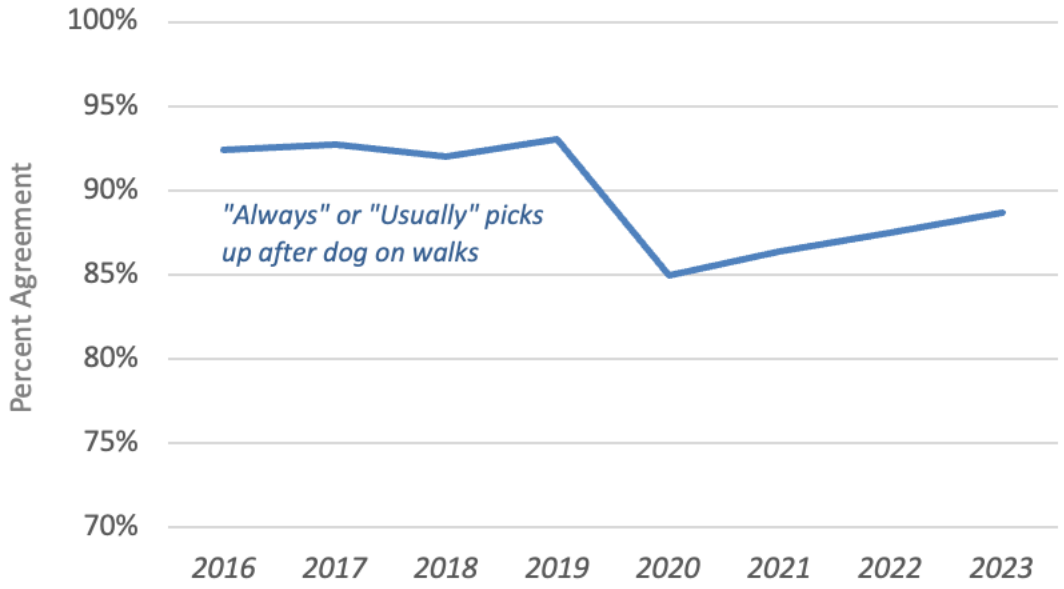


Table 9. Frequency of picking up dog waste across years.

Year of Survey	2016	2017	2018	2019	2020	2021	2022	2023
"Always" or "Usually" picks up after dog on walks	92.4%	92.7%	92.1%	93.0%	85.0%	86.4%	87.5%	88.7%

** Red font indicates that the value significantly differs from the current 2023 value. There are no significant differences from the 2023 value in this table.*

Figure 8. Frequency of picking up dog waste across years.



In comparison, dog owners were also asked how often they (or someone from their household) remove dog waste from their yard. The response options were “Not applicable - dog not allowed to go in the home’s yard”, “Daily”, “Weekly”, “Monthly”, “Less often than once a month”, “Never”, or “Not sure”. When asked about picking up after their dog(s) in their own yard, 61.3% report doing so daily (as shown in *Table 8* and *Figure 7*) and 25.7% report doing so weekly. Men report picking up after their dog(s) in their own yard daily more than women (57.5% of men versus 43.7% of women), whereas 10.1% of women report picking up monthly as compared to 3.2% of men. Individuals from Arlington (89.5%) report higher rates of picking up dog waste in their yard daily more often than people from other localities.

Participants who indicated that they pick up dog waste with any frequency either on walks or in their own yard were asked the most important reason for doing so, the results of which can be seen in *Table 10* and *Figure 9*. The response options were “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”, or “None/No reason to”. In response to this question, 24.9% of dog owners report their most important reason being that it is required by city or county ordinances. Additionally, 19.8% report not wanting to step in it and 16.9% report doing so because it’s what

good people do. Finally, 14.8% report their reason being because it causes water pollution, 19.4% said because it is gross, and 3.4% do so because of the odor. People from Prince William and people who have lived in their residence for under 1 year are most likely to report they pick up dog waste because it is gross (38.9%) when compared to other localities and for longer tenures, respectively.

Table 10. Most important reason for picking up dog waste by demographic group.

Demographic	Sub-category	Reason for Picking Up Dog Waste						
		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
	All Respondents	**24.9%**	**19.8%**	**14.8%**	**19.4%**	**16.9%**	**3.4%**	**0.8%**
Gender	Male	29.7%	18.6%	13.1%	17.2%	17.2%	4.1%	0.0%
	Female	15.7%	22.5%	16.9%	23.6%	16.9%	2.2%	2.2%
Age	21 to 24	22.7%	18.2%	22.7%	20.5%	15.9%	0.0%	0.0%
	25 to 34	22.4%	18.4%	17.1%	23.7%	14.5%	3.9%	0.0%
	35 to 44	28.8%	19.2%	11.0%	20.5%	12.3%	5.5%	2.7%
	45 to 54	32.1%	14.3%	10.7%	10.7%	28.6%	3.6%	0.0%
	55 to 64	8.3%	50.0%	0.0%	8.3%	33.3%	0.0%	0.0%
	65 to 74	25.0%	25.0%	25.0%	0.0%	25.0%	0.0%	0.0%
	75 or older	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Locality	Alexandria	23.1%	19.2%	15.4%	26.9%	11.5%	3.8%	0.0%
	Arlington	42.1%	10.5%	10.5%	15.8%	21.1%	0.0%	0.0%
	Fairfax - Inclusive	19.8%	24.2%	19.8%	11.0%	18.7%	6.6%	0.0%
	Prince William - Inclusive	20.4%	13.0%	13.0%	38.9%	11.1%	0.0%	3.7%
	Leesburg/Loudon	34.0%	23.4%	8.5%	10.6%	21.3%	2.1%	0.0%
Ethnicity	Hispanic/Latino	16.2%	18.9%	21.6%	21.6%	13.5%	8.1%	0.0%
	Not Hispanic/Latino	26.5%	20.0%	13.5%	19.0%	17.5%	2.5%	1.0%
Years of Residence	Less than 1 year	21.1%	5.3%	5.3%	42.1%	26.3%	0.0%	0.0%
	1 to 3 years	23.3%	16.7%	13.3%	25.0%	16.7%	3.3%	1.7%
	4 to 9 years	15.9%	24.4%	19.5%	18.3%	17.1%	4.9%	0.0%
	10 to 19 years	30.8%	20.5%	17.9%	10.3%	17.9%	2.6%	0.0%
	20 or more years	43.2%	21.6%	8.1%	10.8%	10.8%	2.7%	2.7%
Home Ownership	Owned	20.8%	23.8%	16.7%	17.9%	16.1%	3.6%	1.2%
	Rented	36.1%	11.5%	8.2%	24.6%	18.0%	1.6%	0.0%
Household Income	Less than $35,000	27.3%	13.6%	22.7%	9.1%	27.3%	0.0%	0.0%
	$35,000 to $49,999	28.6%	23.8%	19.0%	9.5%	19.0%	0.0%	0.0%
	$50,000 to $74,999	27.9%	14.0%	20.9%	23.3%	7.0%	4.7%	2.3%

Demographic	Sub-category	Reason for Picking Up Dog Waste						
		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
	$75,000 to $99,999	23.8%	19.0%	14.3%	21.4%	19.0%	2.4%	0.0%
	$100,000 to $124,999	14.3%	25.0%	10.7%	28.6%	21.4%	0.0%	0.0%
	$125,000 to $149,999	23.1%	15.4%	7.7%	23.1%	11.5%	19.2%	0.0%
	$150,000 to $174,999	22.2%	38.9%	5.6%	27.8%	5.6%	0.0%	0.0%
	$175,000 to $199,999	43.8%	25.0%	0.0%	6.3%	25.0%	0.0%	0.0%
	$200,000 or greater	19.0%	14.3%	23.8%	14.3%	23.8%	0.0%	4.8%

** Red font indicates significant differences within a demographic subgroup.*

Figure 9. Reason for picking up dog waste.

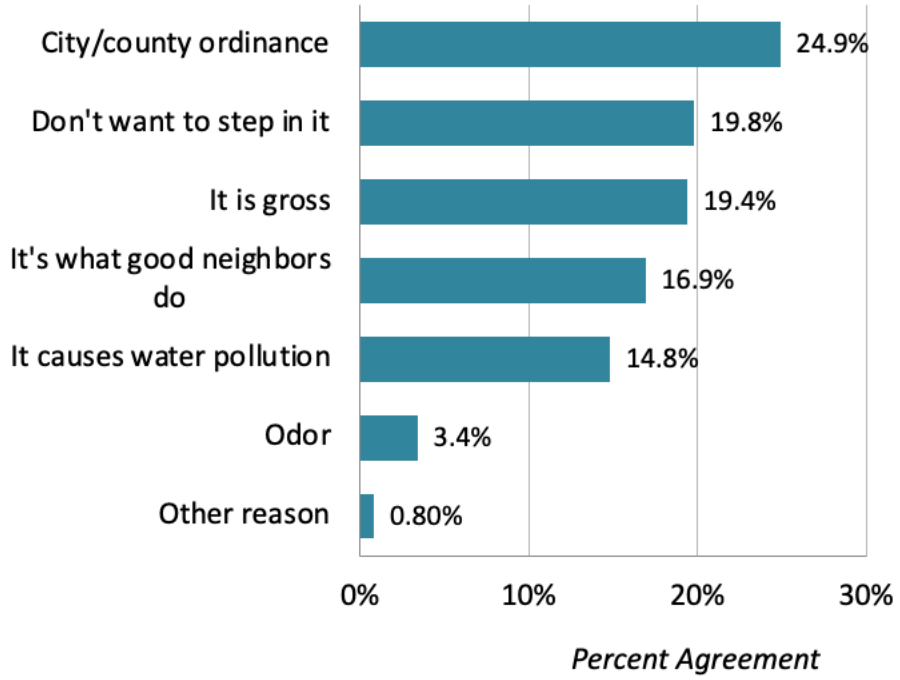
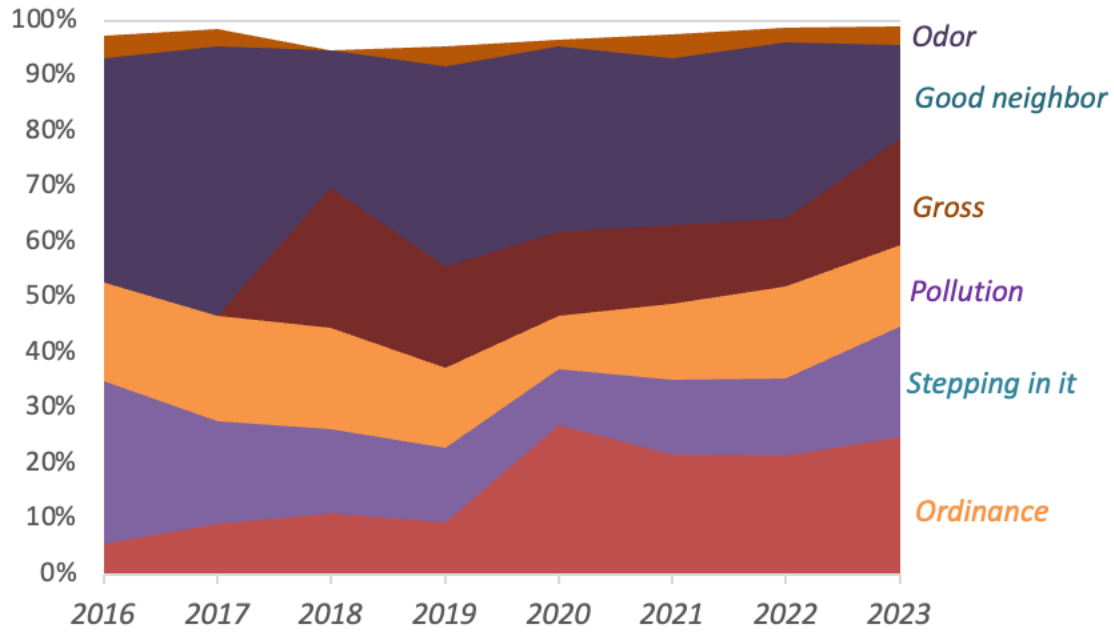


Table 11. Reason for picking up dog waste across years.

Year of Survey								
Reason	2016	2017	2018	2019	2020	2021	2022	2023
City/county ordinance	5.5%	9.2%	11.1%	9.4%	27.0%	21.6%	21.4%	24.9%
Don't want to step in it	**29.5%**	**18.4%**	**15.0%**	**13.5%**	**10.1%**	**13.7%**	**13.9%**	19.8%
It causes water pollution	17.8%	19.1%	18.3%	14.6%	9.6%	13.7%	16.8%	14.8%
It is gross	*	*	25.5%	18.1%	15.2%	14.1%	12.2%	19.4%
It's what good neighbors do	40.4%	48.7%	24.8%	36.3%	33.7%	30.3%	31.9%	16.9%
Odor	4.1%	3.3%		3.5%	1.1%	4.1%	2.5%	3.4%
Other reason	2.7%	1.3%	5.2%	4.7%	3.4%	2.5%	1.3%	0.8%

** Red font indicates that the value significantly differs from the current 2023 value.*
Asterisks (*) indicate that the question did not appear in the survey that year.

Figure 10. Reason for picking up pet waste across years.



Behaviors Related to Vehicles

Respondents were asked if they owned or leased a vehicle, and if so they were asked about their behavior regarding changing motor oil and how the used motor oil is disposed. Because the survey queries knowledge and behaviors regarding changing the motor oil of their personal

vehicles, respondents were first asked if they own a personal vehicle. The majority of respondents (88.3%) report having a personal vehicle that they own or lease, as seen in *Table 12*. Alexandria and Arlington had lower rates of owning or leasing a personal vehicle. People who own their home have higher rates of owning or leasing a vehicle.

Disposing of Motor Oil

Those who own or lease a personal vehicle were then asked about how they dispose of motor oil when their vehicle oil is changed (Table 12 and *Figure 11*). Response options were "I don't change the oil myself/I take it to a garage/oil change service", "Take the 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", "Dump it on the ground", and an option to write-in another method not listed. Most of these respondents (70.0%) report taking their vehicle to a garage or oil changing service when the oil needs to be changed. Alternatively, 17.1% report taking the old motor oil to a gas station or hazmat facility, 4.8% store it in their garage, 3.7% put it in the trash, 2.3% dump it on the ground, 1.0% dump it in the gutter or storm drain, and 0.7% dump it down the sink. Women had higher rates of using a garage or oil change service when compared to men, as did older age groups when compared to younger age groups.

Table 12. Vehicle possession and motor oil handling by demographic group.

Demographic	Sub-category	Own or Lease Vehicle	Vehicle Oil Handling						
			Uses a Garage or Oil Change Service	Gas Station or Hazmat Facility	Store in Garage	Put in the Trash	Dump in Gutter or Storm Sewer	Dump in Sink	Dump on Ground
	All Respondents	**88.3%**	**70.0%**	**17.1%**	**4.8%**	**3.7%**	**1.0%**	**0.7%**	**2.3%**
Gender	Male	91.2%	50.9%	25.1%	10.8%	7.5%	2.2%	2.5%	0.7%
	Female	85.7%	72.4%	15.9%	4.2%	3.3%	1.7%	0.0%	2.1%
Age	21 to 24	84.5%	58.5%	17.1%	9.8%	6.1%	3.7%	2.4%	1.2%
	25 to 34	87.8%	50.7%	22.0%	14.0%	8.7%	1.3%	1.3%	2.0%
	35 to 44	91.0%	54.6%	24.1%	7.1%	7.8%	2.8%	2.1%	1.4%

Demographic	Sub-category	Own or Lease Vehicle	Vehicle Oil Handling						
			Uses a Garage or Oil Change Service	Gas Station or Hazmat Facility	Store in Garage	Put in the Trash	Dump in Gutter or Storm Sewer	Dump in Sink	Dump on Ground
	45 to 54	90.4%	68.2%	25.8%	1.5%	1.5%	1.5%	0.0%	1.5%
	55 to 64	88.7%	87.0%	10.9%	0.0%	0.0%	0.0%	0.0%	0.0%
	65 to 74	84.2%	81.3%	18.8%	0.0%	0.0%	0.0%	0.0%	0.0%
	75 or older	87.5%	85.7%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Locality	Alexandria	83.0%	59.0%	19.2%	11.5%	6.4%	1.3%	1.3%	1.3%
	Arlington	76.4%	53.7%	20.4%	11.1%	14.8%	0.0%	0.0%	0.0%
	Fairfax - Inclusive	91.0%	60.1%	24.1%	5.4%	4.4%	1.5%	2.5%	1.0%
	Prince William - Inclusive	91.3%	63.5%	20.2%	6.7%	4.8%	2.9%	0.0%	1.9%
	Leesburg/Loudon	92.4%	64.7%	16.5%	8.2%	3.5%	3.5%	1.2%	2.4%
Ethnicity	Hispanic/Latino	87.0%	60.6%	22.7%	9.1%	3.0%	1.5%	0.0%	1.5%
	Not Hispanic/Latino	88.4%	60.7%	20.7%	7.4%	6.1%	2.0%	1.5%	1.3%
Years of Residence	Less than 1 year	78.4%	63.2%	24.6%	5.3%	7.0%	0.0%	0.0%	0.0%
	1 to 3 years	85.8%	71.7%	14.5%	7.6%	3.4%	1.4%	0.0%	1.4%
	4 to 9 years	92.3%	50.0%	25.7%	9.0%	7.6%	2.8%	3.5%	0.7%
	10 to 19 years	89.6%	60.0%	14.1%	9.4%	5.9%	4.7%	2.4%	2.4%
	20 or more years	92.1%	59.1%	28.0%	5.4%	5.4%	0.0%	0.0%	2.2%
Home Ownership	Owned	95.3%	55.5%	24.8%	7.7%	6.1%	2.8%	1.5%	1.5%
	Rented	78.1%	71.7%	13.6%	6.5%	4.9%	0.5%	0.5%	1.1%
Household Income	Less than $35,000	58.9%	67.4%	14.0%	7.0%	7.0%	0.0%	0.0%	4.7%
	$35,000 to $49,999	79.7%	56.9%	25.5%	9.8%	7.8%	0.0%	0.0%	0.0%
	$50,000 to $74,999	91.6%	59.3%	24.1%	9.3%	1.9%	2.8%	0.9%	0.9%
	$75,000 to $99,999	87.9%	58.6%	18.4%	8.0%	10.3%	1.1%	2.3%	0.0%
	$100,000 to $124,999	97.0%	67.2%	18.8%	3.1%	6.3%	3.1%	1.6%	0.0%
	$125,000 to $149,999	98.5%	60.0%	21.5%	9.2%	3.1%	0.0%	4.6%	1.5%
	$150,000 to $174,999	97.4%	54.1%	18.9%	8.1%	8.1%	8.1%	0.0%	2.7%
	$175,000 to $199,999	100.0%	52.2%	30.4%	13.0%	0.0%	4.3%	0.0%	0.0%
	$200,000 or greater	97.9%	67.4%	19.6%	2.2%	6.5%	0.0%	0.0%	4.3%

** Red font indicates significant differences within a demographic subgroup.*

Figure 11. Motor oil handling behaviors.

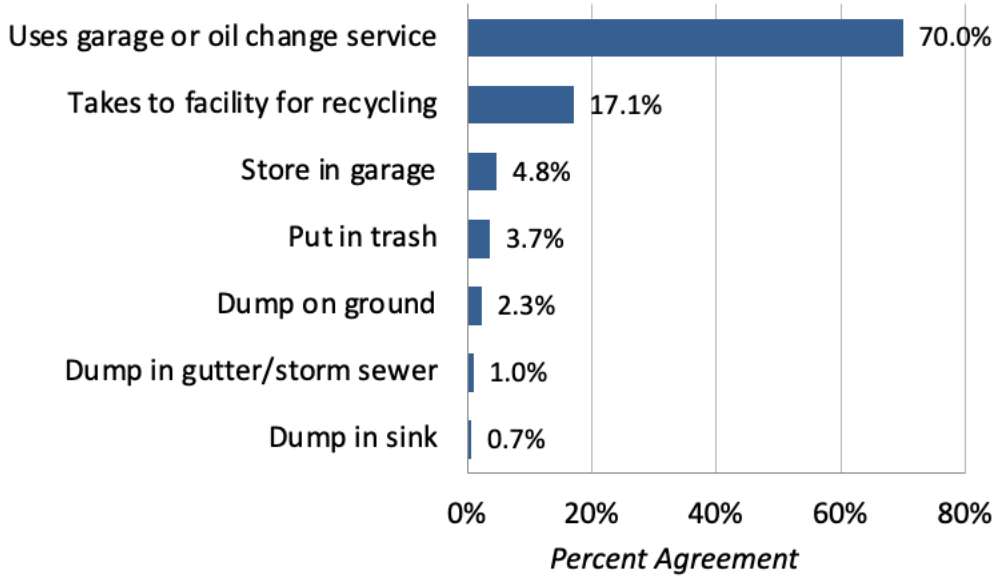
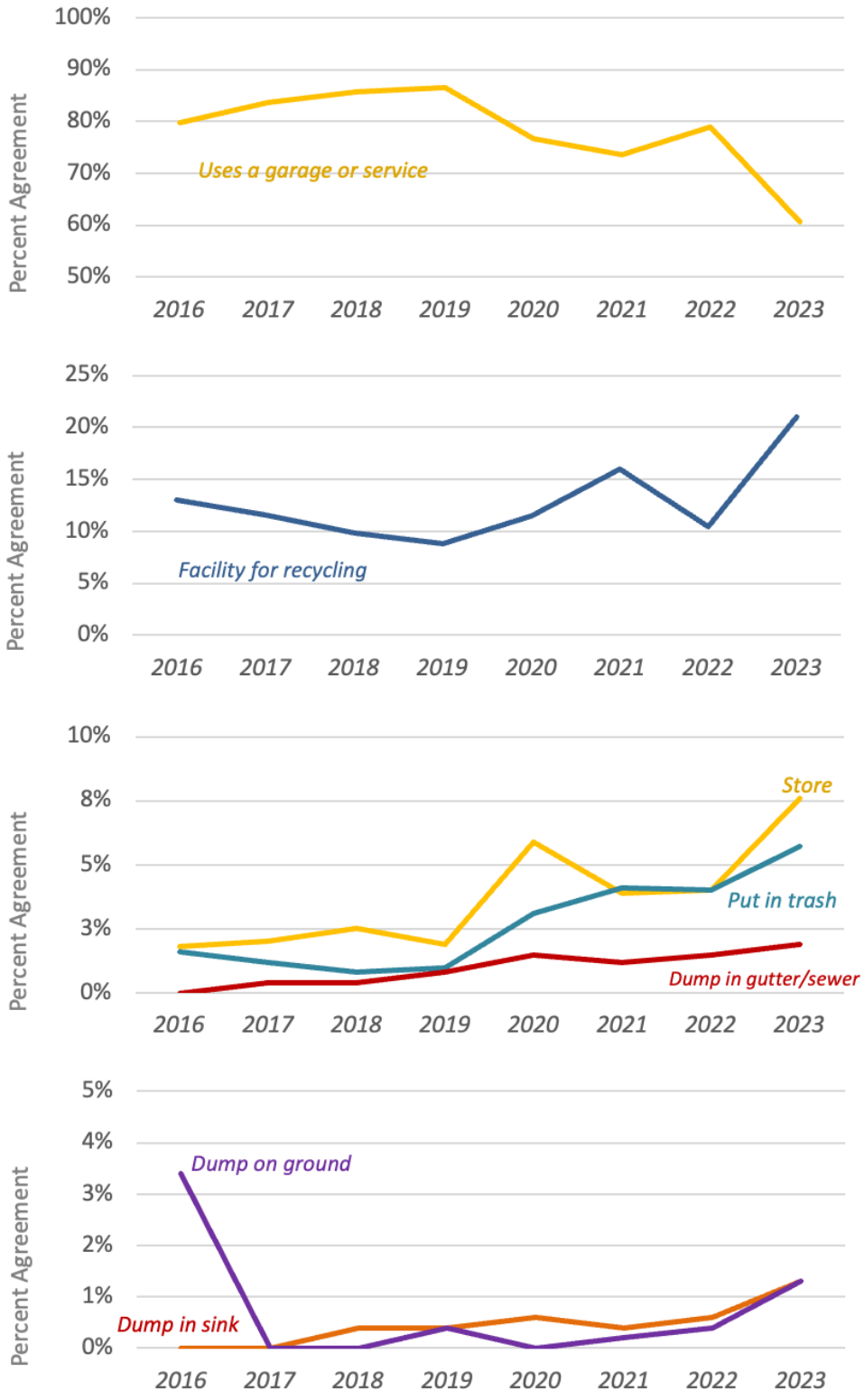


Table 13. Motor oil handling behaviors across years.

Year of Survey								
Motor oil disposal	2016	2017	2018	2019	2020	2021	2022	2023
Uses a Garage or Oil Change Service	79.8%	83.7%	85.7%	86.5%	76.8%	73.7%	78.9%	60.7%
Facility for Recycling	13.0%	11.6%	9.8%	8.8%	11.5%	16.0%	10.5%	21.0%
Store	1.8%	2.0%	2.5%	1.9%	5.9%	3.9%	4.0%	7.6%
Put in the Trash	1.6%	1.2%	0.8%	1.0%	3.1%	4.1%	4.0%	5.7%
Dump in Gutter/Sewer	0.0%	0.4%	0.4%	0.8%	1.5%	1.2%	1.5%	1.9%
Dump in Sink	0.0%	0.0%	0.4%	0.4%	0.6%	0.4%	0.6%	1.3%
Dump on Ground	3.4%	0.0%	0.0%	0.4%	0.0%	0.2%	0.4%	1.3%

** Red font indicates that the value significantly differs from the current 2023 value.*

Figure 12. Motor oil handling behaviors across years.



Vehicle Washing

Participants who reported owning or leasing a vehicle were also asked about their vehicle washing behaviors. Behaviors related to vehicle washing were also probed. Respondents were asked where they have washed their personal vehicle in the past year, with response options being "At my home or someone else's home", "At a commercial car wash", "I haven't washed my vehicle", and the option to write in another response not listed. Of those who own or lease a personal vehicle, 21.0% said they wash their car/truck at home, as shown in Table 14 and Figure 13. Men had higher rates of home car washing than women and as did participants who owned homes.

Table 14. Vehicle washing behaviors by demographic group.

Demographic	Sub-category	Wash Car at Home	Wash Car in Grass, Gravel, or Dirt	Wash Car using Environmentally Friendly Detergent	Wash Car using only Water (No Soap)	Wash Car at Commercial Location	Have not Washed Car in Past Year
	All Respondents	**21.0%**	**52.6%**	**60.3%**	**28.5%**	**63.1%**	**9.3%**
Gender	Male	47.2%	53.8%	66.2%	33.6%	66.0%	9.4%
	Female	29.5%	50.6%	50.0%	20.0%	60.5%	8.9%
Age	21 to 24	49.5%	58.3%	57.4%	24.5%	47.5%	10.1%
	25 to 34	37.0%	60.9%	59.4%	26.6%	64.2%	9.2%
	35 to 44	45.8%	57.7%	67.6%	40.0%	68.4%	10.3%
	45 to 54	26.0%	36.8%	52.6%	31.6%	72.6%	8.2%
	55 to 64	24.5%	15.4%	46.2%	0.0%	66.0%	13.2%
	65 to 74	34.2%	23.1%	61.5%	16.7%	55.3%	0.0%
	75 or older	25.0%	50.0%	50.0%	0.0%	62.5%	12.5%
Locality	Alexandria	36.2%	52.9%	48.5%	26.5%	58.5%	6.4%
	Arlington	25.0%	55.6%	66.7%	16.7%	56.9%	11.1%
	Fairfax - Inclusive	45.1%	51.0%	63.7%	31.7%	58.8%	10.2%
	Prince William - Inclusive	39.1%	34.1%	50.0%	17.8%	67.8%	7.0%
	Leesburg/Loudon	34.8%	81.3%	71.9%	43.3%	77.2%	12.0%
Ethnicity	Hispanic/Latino	35.1%	40.7%	40.7%	18.5%	54.5%	11.7%
	Not Hispanic/Latino	39.1%	54.2%	62.9%	29.9%	64.4%	9.0%
Years of Residence	Less than 1 year	21.6%	60.0%	80.0%	31.3%	58.1%	10.8%
	1 to 3 years	37.1%	50.8%	58.7%	28.6%	62.4%	8.8%
	4 to 9 years	41.4%	50.8%	56.3%	25.4%	68.2%	9.6%
	10 to 19 years	50.0%	60.4%	54.2%	39.6%	56.3%	14.6%

Demographic	Sub-category	Wash Car at Home	Wash Car in Grass, Gravel, or Dirt	Wash Car using Environmentally Friendly Detergent	Wash Car using only Water (No Soap)	Wash Car at Commercial Location	Have not Washed Car in Past Year
	20 or more years	38.2%	46.2%	69.2%	18.4%	66.7%	3.9%
Home Ownership	Owned	46.8%	50.9%	65.6%	31.9%	66.8%	10.4%
	Rented	27.4%	56.9%	47.7%	18.8%	59.9%	5.9%
Household Income	Less than $35,000	19.2%	69.2%	46.2%	21.4%	37.0%	9.6%
	$35,000 to $49,999	33.8%	50.0%	63.6%	28.6%	53.8%	12.3%
	$50,000 to $74,999	37.8%	55.6%	48.9%	20.0%	65.5%	9.2%
	$75,000 to $99,999	43.0%	51.2%	52.4%	27.9%	60.0%	6.0%
	$100,000 to $124,999	35.8%	37.5%	54.2%	8.3%	70.1%	7.5%
	$125,000 to $149,999	48.5%	56.3%	75.0%	33.3%	66.7%	10.6%
	$150,000 to $174,999	47.4%	72.2%	66.7%	50.0%	86.8%	15.8%
	$175,000 to $199,999	43.5%	80.0%	90.0%	60.0%	87.0%	13.0%
	$200,000 or greater	47.9%	26.1%	69.6%	34.8%	70.8%	6.3%

** Red font indicates significant differences within a demographic subgroup.*

Figure 13. Vehicle washing locations.

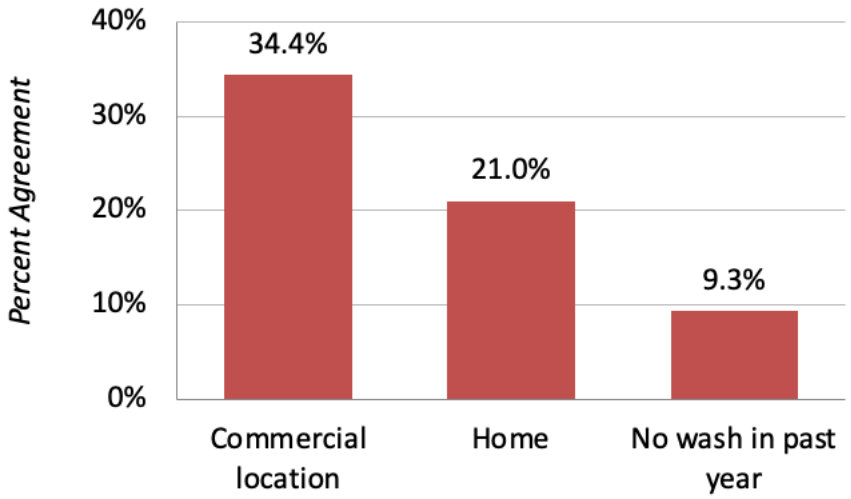


Figure 14. Desirable behaviors associated with vehicle washing.

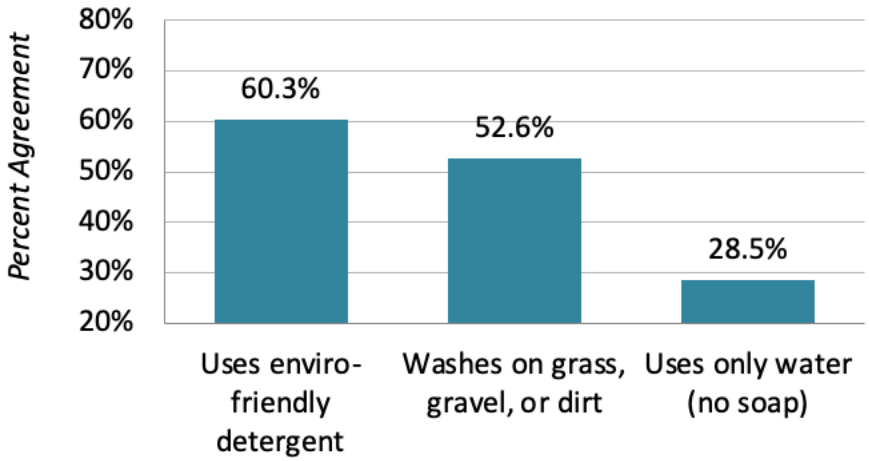
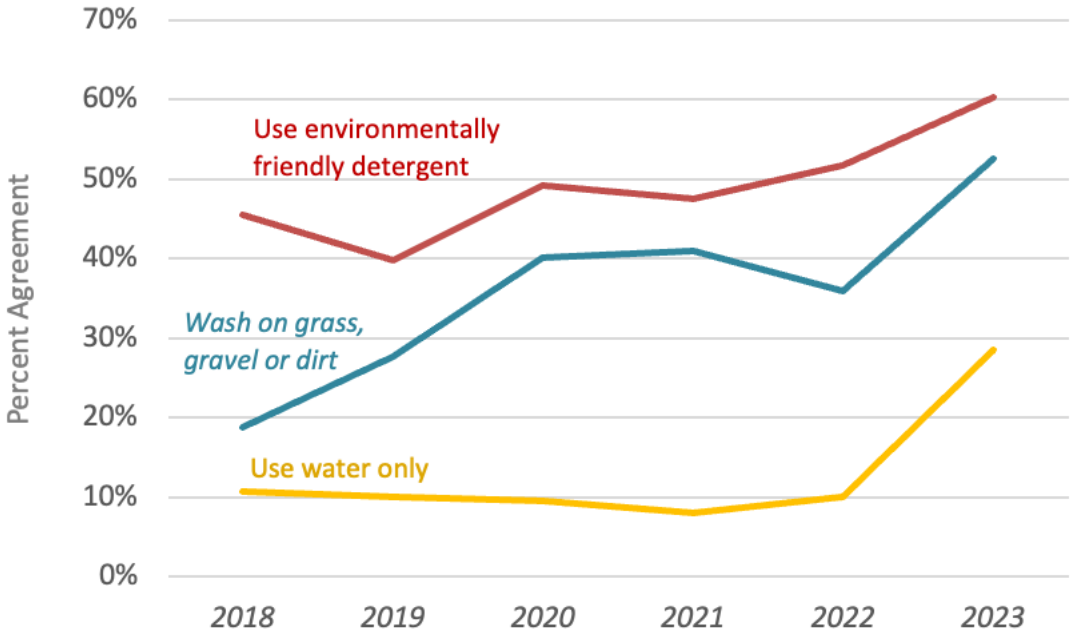


Table 15. Vehicle washing behaviors across years.

Year of Survey						
Vehicle washing behavior	2018	2019	2020	2021	2022	2023
Wash on grass, gravel or dirt	18.8%	27.7%	40.1%	41.0%	36.0%	52.6%
Use environmentally friendly detergent	45.6%	39.9%	49.2%	47.5%	51.7%	60.3%
Use water only	10.7%	10.1%	9.6%	8.0%	10.0%	28.5%

** Red font indicates that the value significantly differs from the current 2023 value.*

Figure 15. Vehicle washing behaviors across years.



Those who reported washing their vehicle at home were asked about their behaviors when washing their car. Response options were "Yes", "No", and "Not sure" for the following statements:

- I wash it on the grass, gravel, or dirt
- I use environmentally friendly detergent
- I use water only (no soap or detergent)

Of the 21.0% of respondents that wash their vehicle at home, 52.6% report washing it on the grass, gravel, or dirt (*Table 14* and *Figure 14*). Additionally, 60.3% report using environmentally friendly detergent. Homeowners had higher rates of using environmentally friendly detergent when compared to renters, as did non-Latino participants when compared to Latino participants, and men when compared to women. Finally, 28.5% report only using water with higher rates for men than women and higher rates for non-Latino than Latino participants. These results suggest that people may wash their vehicle using multiple different methods depending on certain circumstances.

Alternatively, 63.1% report washing their vehicle at a commercial car wash. People from higher income groups have higher rates of washing their car at a commercial location when compared to lower income groups.

Next, those who report washing their vehicle at home were asked how many times per year they do so, with response options being “Less than once a year”, “1-2 times per year”, “3-4 times per year”, “5-6 times per year”, “7-12 times per year”, “12+ times per year”. These response rates can be seen in *Table 16* and *Figure 16*. The most common response, at 26.1%, was 3-4 times per year. Next, 22.6% report washing their vehicle at home 1-2 times per year, and 17.8% do so 5-6 times per year. Less commonly, 16.5% of those who wash their personal vehicle at home report doing so 12+ times per year, 11.7% report doing so 7-12 times per year, and 5.2% do so less than once per year. Latino participants have higher rates of washing their car at home 12+ times per year when compared to non-Latinos, 40.7% compared to 13.3% respectively. There are otherwise no strong demographic trends among frequency of home car washing.

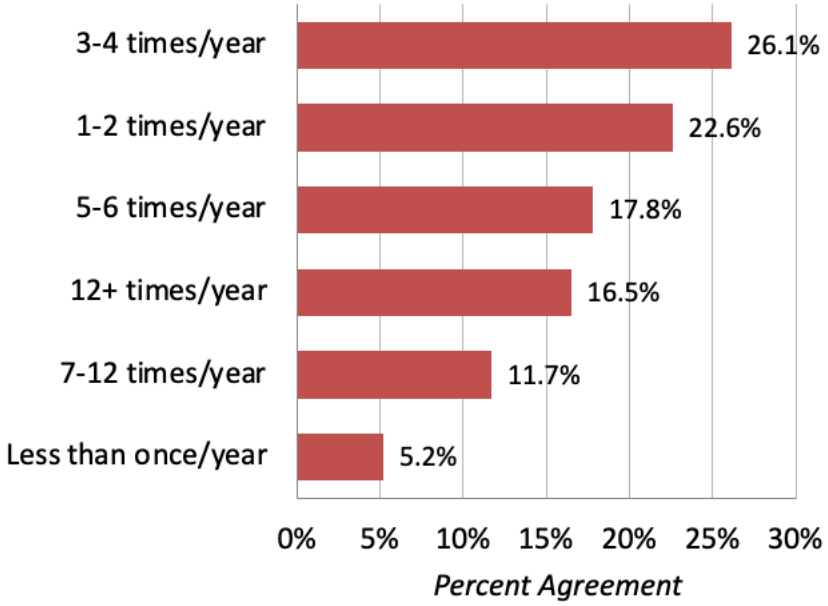
Table 16. Frequency of car washing at home by demographic group.

Demographic	Sub-category	Frequency of Car Washing at Home					
		Less than once a year	1-2 times per year	3-4 times per year	5-6 times per year	7-12 times per year	12+ times per year
	All Respondents	**5.2%**	**22.6%**	**26.1%**	**17.8%**	**11.7%**	**16.5%**
Gender	Male	4.8%	22.1%	25.5%	20.0%	11.0%	16.6%
	Female	6.0%	24.1%	27.7%	14.5%	12.0%	15.7%
Age	21 to 24	8.2%	28.6%	26.5%	12.2%	12.2%	12.2%
	25 to 34	3.1%	25.0%	26.6%	15.6%	9.4%	20.3%
	35 to 44	5.7%	15.7%	22.9%	24.3%	11.4%	20.0%
	45 to 54	10.5%	21.1%	31.6%	10.5%	21.1%	5.3%
	55 to 64	0.0%	23.1%	23.1%	15.4%	15.4%	23.1%
	65 to 74	0.0%	23.1%	38.5%	23.1%	7.7%	7.7%
	75 or older	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%
Locality	Alexandria	8.8%	17.6%	23.5%	11.8%	8.8%	29.4%
	Arlington	11.1%	22.2%	33.3%	11.1%	5.6%	16.7%
	Fairfax - Inclusive	4.9%	26.5%	22.5%	16.7%	11.8%	17.6%

Demographic	Sub-category	Frequency of Car Washing at Home					
		Less than once a year	1-2 times per year	3-4 times per year	5-6 times per year	7-12 times per year	12+ times per year
	Prince William - Inclusive	2.2%	26.7%	35.6%	15.6%	11.1%	8.9%
	Leesburg/Loudon	3.2%	9.7%	22.6%	35.5%	19.4%	9.7%
Ethnicity	Hispanic/Latino	3.7%	14.8%	7.4%	22.2%	11.1%	40.7%
	Not Hispanic/Latino	5.4%	23.6%	28.6%	17.2%	11.8%	13.3%
Years of Residence	Less than 1 year	18.8%	18.8%	18.8%	0.0%	31.3%	12.5%
	1 to 3 years	6.3%	27.0%	27.0%	15.9%	4.8%	19.0%
	4 to 9 years	3.1%	26.2%	27.7%	13.8%	9.2%	20.0%
	10 to 19 years	4.3%	17.0%	19.1%	29.8%	19.1%	10.6%
	20 or more years	2.6%	17.9%	33.3%	20.5%	10.3%	15.4%
Home Ownership	Owned	4.3%	23.6%	26.1%	20.5%	9.9%	15.5%
	Rented	6.2%	20.0%	27.7%	9.2%	16.9%	20.0%
Household Income	Less than $35,000	14.3%	28.6%	35.7%	0.0%	14.3%	7.1%
	$35,000 to $49,999	4.5%	13.6%	27.3%	13.6%	22.7%	18.2%
	$50,000 to $74,999	4.4%	28.9%	11.1%	20.0%	17.8%	17.8%
	$75,000 to $99,999	4.7%	25.6%	23.3%	11.6%	9.3%	25.6%
	$100,000 to $124,999	0.0%	12.5%	50.0%	16.7%	0.0%	20.8%
	$125,000 to $149,999	6.3%	31.3%	28.1%	18.8%	3.1%	12.5%
	$150,000 to $174,999	5.9%	5.9%	35.3%	17.6%	17.6%	17.6%
	$175,000 to $199,999	10.0%	20.0%	10.0%	50.0%	10.0%	0.0%
	$200,000 or greater	4.3%	21.7%	26.1%	26.1%	13.0%	8.7%

** Red font indicates significant differences within a demographic subgroup.*

Figure 16. Frequency of car washing at home.



Home Landscaping Water Conservation

Respondents were asked about their familiarity with and possession of various water conservation methods including rain barrels, rain gardens, and conservation landscaping. Results are summarized in *Table 17* and displayed in *Figure 17*. Survey participants were given a definition of each conservation method and asked "Which of the following statements are true for you?" with response options "Yes", "No", and "Don't know" for the listed statements (using rain barrels as an example):

- I have a rain barrel.
- I am familiar with rain barrels.
- I don't have a rain barrel but I'm interested in getting one.

When asked about rain barrels, 27.7% report having one, 70.7% report being familiar with them, and 44.9% are interested in getting one. Regarding rain gardens, 25.5% have one, 50.5% are familiar with them and 41.6% are interested in getting one. Finally, when asked about their familiarity with conservation landscaping, 37.1% report having it, 59.1% report being familiar with it and 42.0% report being interested in installing it.

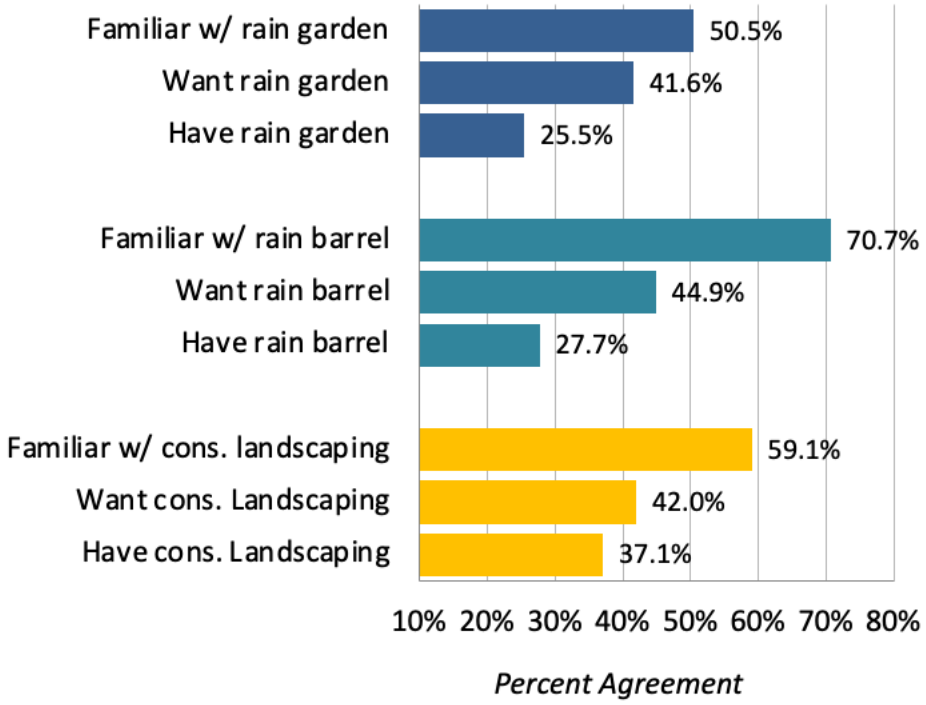
Table 17. Familiarity of home water conservation methods by demographic group.

Demographic	Sub-category	Have Rain Barrel	Familiar with Rain Barrel	Want a Rain Barrel	Have Rain Garden	Familiar with Rain Garden	Want a Rain Garden	Have Conservation Landscaping	Familiar with Conservation Landscaping	Want Conservation Landscaping
	All Respondents	**27.7%**	**70.7%**	**44.9%**	**25.5%**	**50.5%**	**41.6%**	**37.1%**	**59.1%**	**42.0%**
Gender	Male	36.1%	74.2%	45.0%	34.8%	56.1%	43.0%	44.3%	64.0%	42.0%
	Female	18.5%	67.5%	44.8%	15.0%	44.0%	40.0%	29.1%	53.6%	41.2%
Age	21 to 24	29.9%	58.8%	46.9%	30.2%	53.1%	48.4%	43.3%	62.6%	42.7%
	25 to 34	28.1%	68.2%	44.4%	28.7%	54.1%	42.5%	35.7%	58.8%	38.9%
	35 to 44	39.7%	74.7%	53.0%	33.1%	55.3%	48.0%	43.1%	62.5%	54.3%
	45 to 54	21.1%	77.1%	47.1%	17.8%	39.7%	37.5%	30.1%	54.2%	41.7%
	55 to 64	11.5%	69.2%	32.0%	5.9%	40.4%	28.0%	28.0%	51.0%	29.2%
	65 to 74	11.4%	86.5%	27.3%	14.7%	48.6%	21.2%	33.3%	62.9%	25.0%
	75 or older	0.0%	75.0%	12.5%	0.0%	25.0%	25.0%	12.5%	37.5%	12.5%
Locality	Alexandria	30.1%	73.6%	42.9%	26.1%	47.8%	46.7%	33.0%	52.7%	43.5%
	Arlington	26.5%	70.0%	40.3%	28.6%	59.2%	35.7%	36.2%	60.0%	40.6%
	Fairfax - Inclusive	29.2%	68.9%	46.3%	27.1%	51.1%	41.9%	39.0%	58.1%	42.6%
	Prince William - Inclusive	18.4%	67.5%	47.3%	15.8%	47.0%	42.9%	28.8%	58.6%	35.8%
	Leesburg/Loudon	34.1%	76.7%	43.8%	31.1%	49.5%	38.6%	47.3%	68.5%	47.7%
Ethnicity	Hispanic/Latino	24.0%	59.5%	41.9%	22.7%	46.1%	42.5%	36.5%	59.5%	37.5%
	Not Hispanic/Latino	28.2%	72.4%	45.3%	25.9%	51.2%	41.4%	37.2%	59.1%	42.6%
Years of Residence	Less than 1 year	16.7%	61.4%	45.8%	20.5%	45.8%	38.9%	28.2%	54.9%	44.3%
	1 to 3 years	20.5%	67.9%	46.1%	18.1%	48.5%	42.7%	29.2%	60.7%	41.2%
	4 to 9 years	32.1%	72.4%	46.1%	29.0%	55.2%	45.8%	46.8%	64.1%	41.8%
	10 to 19 years	31.1%	69.9%	50.0%	32.2%	48.9%	40.0%	39.1%	54.3%	49.5%
	20 or more years	37.6%	80.0%	35.4%	30.0%	51.5%	36.5%	39.6%	56.1%	34.7%
Home Ownership	Owned	33.9%	75.5%	48.0%	30.1%	52.4%	42.9%	46.3%	63.4%	45.3%
	Rented	16.9%	65.5%	39.2%	18.5%	46.8%	37.9%	24.4%	54.3%	35.2%
Household Income	Less than $35,000	21.1%	63.4%	50.0%	19.7%	39.4%	36.2%	25.7%	41.4%	42.0%
	$35,000 to $49,999	18.5%	61.5%	33.8%	25.0%	48.4%	39.1%	30.8%	55.4%	37.5%
	$50,000 to $74,999	25.0%	69.3%	46.0%	21.9%	46.6%	47.0%	35.1%	51.7%	40.0%
	$75,000 to $99,999	29.2%	70.1%	49.5%	28.9%	58.2%	40.6%	40.8%	70.1%	41.5%

Demographic	Sub-category	Have Rain Barrel	Familiar with Rain Barrel	Want a Rain Barrel	Have Rain Garden	Familiar with Rain Garden	Want a Rain Garden	Have Conservation Landscaping	Familiar with Conservation Landscaping	Want Conservation Landscaping
	$100,000 to $124,999	16.4%	64.6%	37.9%	15.4%	37.9%	36.9%	31.3%	51.5%	37.3%
	$125,000 to $149,999	39.4%	84.4%	51.6%	30.8%	65.6%	55.6%	42.4%	73.8%	58.1%
	$150,000 to $174,999	50.0%	71.1%	43.2%	44.7%	52.6%	33.3%	55.3%	71.1%	41.7%
	$175,000 to $199,999	50.0%	87.0%	52.2%	40.9%	63.6%	36.4%	52.2%	78.3%	56.5%
	$200,000 or greater	25.0%	80.9%	39.1%	20.8%	53.2%	37.8%	38.3%	57.8%	31.8%

** Red font indicates significant differences within a demographic subgroup.*

Figure 17. Familiarity with home water conservation methods.



Men are more likely than women to report having a rain barrel or rain garden or conservation landscaping, as are homeowners when compared to renters. Additionally, younger individuals are more likely to report having a rain barrel or rain garden. There are no differences across age groups when it comes to having conservation landscaping.

Engagement in Water Quality Improvement Activities

Respondents were asked about their awareness of and engagement in community activities that promote better water quality in the past 12 months. Results are summarized in *Table 18* and displayed in *Figure 18*. When asked about their familiarity with water quality activities, 33.2% report being aware of a water quality activity in the past 12 months. There are no trends among demographic subgroups.

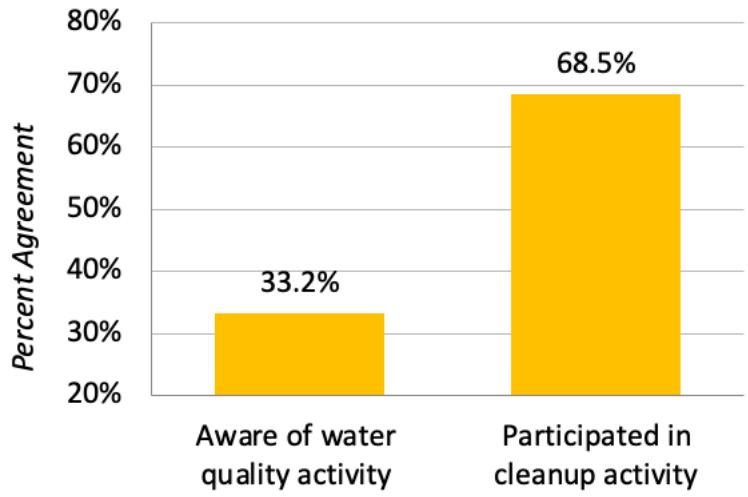
Table 18. Cleanup engagement behaviors by demographic group.

Demographic	Sub-category	Aware of Water Quality Activity in Last 12 Months	Participated in Cleanup Activity in Last 12 Months
	All Respondents	**33.2%**	**68.5%**
Gender	Male	39.4%	76.0%
	Female	26.7%	56.8%
Age	21 to 24	46.9%	64.4%
	25 to 34	32.4%	71.4%
	35 to 44	35.7%	83.6%
	45 to 54	21.9%	68.8%
	55 to 64	28.3%	26.7%
	65 to 74	24.3%	44.4%
	75 or older	12.5%	100.0%
Locality	Alexandria	30.1%	60.7%
	Arlington	38.9%	53.6%
	Fairfax - Inclusive	36.4%	71.6%
	Prince William - Inclusive	25.2%	72.4%
	Leesburg/Loudon	34.1%	77.4%
Ethnicity	Hispanic/Latino	31.2%	73.9%
	Not Hispanic/Latino	33.5%	67.8%
Years of Residence	Less than 1 year	25.7%	47.4%
	1 to 3 years	29.4%	69.4%
	4 to 9 years	34.0%	77.4%
	10 to 19 years	35.8%	67.6%
	20 or more years	41.6%	66.7%
Home Ownership	Owned	38.1%	73.3%
	Rented	26.2%	57.4%
Household Income	Less than $35,000	21.9%	75.0%
	$35,000 to $49,999	33.8%	77.3%
	$50,000 to $74,999	30.3%	66.7%

Demographic	Sub-category	Aware of Water Quality Activity in Last 12 Months	Participated in Cleanup Activity in Last 12 Months
	$75,000 to $99,999	36.4%	68.6%
	$100,000 to $124,999	25.4%	47.1%
	$125,000 to $149,999	42.4%	67.9%
	$150,000 to $174,999	44.7%	76.5%
	$175,000 to $199,999	63.6%	71.4%
	$200,000 or greater	25.5%	66.7%

** Red font indicates significant differences within a demographic subgroup.*

Figure 18. Cleanup activity engagement.



Of those who were aware of an event in the past 12 months, 68.5% report participating in the event. There are no trends among demographic subgroups.

As discussed in the Knowledge Section below, about two-thirds (63.4%) of respondents say they would report a potential source of water pollution. Reporting potential pollution will be discussed in more detail in the next section.

Knowledge

Awareness of "Watersheds"

Respondents were asked a series of questions in order to assess their knowledge about local water systems and stormwater drainage. Participants were asked if they were familiar with the

term “watershed”. Regardless of the response (yes or no), all respondents were then shown this definition of the term:

- A watershed is an area of land that channels rainfall and snowmelt to creeks, streams, and rivers, and eventually to outflow points such as reservoirs, bays, and the ocean.

Of all respondents, 69.2% report that they are familiar with the term “watershed”, as can be seen in Table 19 and * *Red font indicates significant differences within a demographic subgroup.*

Figure 19. Men are more likely to be familiar with the term (75.5%) compared to women (63.2%). Homeowners are also more likely to be familiar with the term (74.8%) compared to renters (61.7%). Respondents whose household income is above $35,000 were more often familiar with the term “watershed” compared to those who make under $35,000 (50.0%).

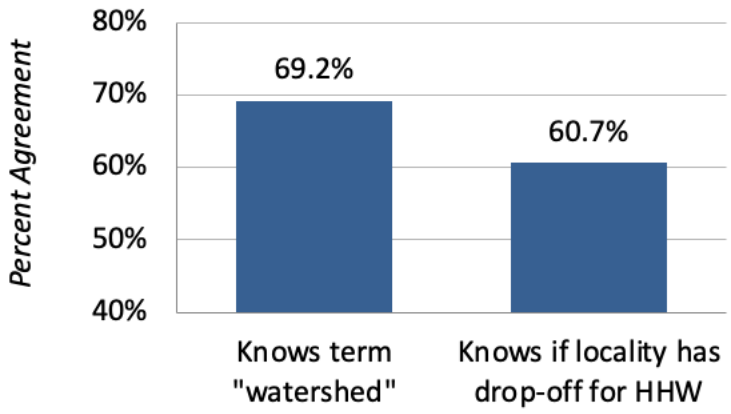
Table 19. Awareness of watersheds and knowledge of stormwater drainage by demographic group.

Demographic	Sub-category	Know term "water shed"	Waste Water Treatment	Chesapeake or Potomac Watershed	Stream Creek Watershed	Knows if Locality has Location for HHW
	All Respondents	**69.2%**	**45.6%**	**61.6%**	**57.1%**	**60.7%**
Gender	Male	75.5%	51.8%	66.2%	55.7%	68.8%
	Female	63.2%	39.2%	56.0%	57.9%	52.7%
Age	21 to 24	77.8%	43.9%	59.6%	56.6%	54.5%
	25 to 34	67.4%	50.3%	64.3%	54.2%	49.7%
	35 to 44	68.6%	51.0%	66.0%	57.8%	67.5%
	45 to 54	58.3%	34.2%	47.2%	52.8%	64.4%
	55 to 64	73.6%	38.0%	58.8%	67.3%	73.6%
	65 to 74	68.4%	41.7%	69.7%	65.7%	68.4%
	75 or older	87.5%	33.3%	62.5%	50.0%	87.5%
Locality	Alexandria	68.1%	51.6%	63.7%	58.9%	51.6%
	Arlington	61.4%	42.6%	67.1%	55.2%	52.8%
	Fairfax - Inclusive	73.2%	45.5%	60.6%	57.1%	63.6%
	Prince William - Inclusive	66.1%	41.6%	60.0%	57.1%	64.9%
	Leesburg/Loudon	70.7%	47.3%	59.6%	56.8%	64.1%
Ethnicity	Hispanic/Latino	69.9%	47.6%	54.7%	52.6%	53.3%

Demographic	Sub-category	Know term "water shed"	Waste Water Treatment	Chesapeake or Potomac Watershed	Stream Creek Watershed	Knows if Locality has Location for HHW
	Not Hispanic/Latino	64.5%	32.0%	62.6%	57.8%	61.8%
Years of Residence	Less than 1 year	66.2%	43.8%	58.9%	52.1%	46.6%
	1 to 3 years	68.6%	39.9%	59.5%	49.1%	50.0%
	4 to 9 years	66.0%	47.4%	61.6%	57.0%	64.5%
	10 to 19 years	68.1%	48.4%	62.6%	67.0%	67.7%
	20 or more years	78.4%	51.6%	66.3%	65.6%	76.5%
Home Ownership	Owned	74.8%	53.9%	67.2%	62.6%	69.6%
	Rented	61.7%	35.8%	55.5%	49.3%	50.2%
Household Income	Less than $35,000	50.0%	39.7%	48.6%	47.1%	45.2%
	$35,000 to $49,999	70.3%	46.8%	64.5%	48.4%	53.1%
	$50,000 to $74,999	67.2%	38.8%	55.7%	49.1%	60.2%
	$75,000 to $99,999	70.7%	41.1%	62.5%	58.9%	61.0%
	$100,000 to $124,999	71.6%	43.3%	62.7%	58.2%	46.3%
	$125,000 to $149,999	75.4%	52.4%	72.7%	62.5%	80.3%
	$150,000 to $174,999	73.7%	60.5%	65.8%	73.7%	71.1%
	$175,000 to $199,999	82.6%	78.3%	47.8%	69.6%	87.0%
	$200,000 or greater	77.1%	45.7%	77.3%	71.1%	68.1%

** Red font indicates significant differences within a demographic subgroup.*

Figure 19. Knowledge of watersheds and HHW.



Understanding of Stormwater Drainage

Participants were asked, “To the best of your knowledge, does storm water eventually end up in…?” and given a list of three destinations as well as an option to write-in another destination not listed. Response options were “Yes”, “No”, and “Don’t know” for the listed destinations:

- A wastewater treatment facility?
- Potomac River or Chesapeake Bay?
- A nearby stream or creek

As seen in *Table 19* nearly a third (30.6%) report believing it goes to a wastewater treatment facility, 61.6% report believing it goes into the Chesapeake Bay or Potomac River and 57.1% report believing it goes into a nearby stream or creek. As reported in Behaviors and Behavioral Drivers, 70.7% of respondents report being familiar with rain barrels, 50.5% report being familiar with rain gardens and 59.1% report being familiar with conservation landscaping.

Figure 20. Stormwater destination beliefs.

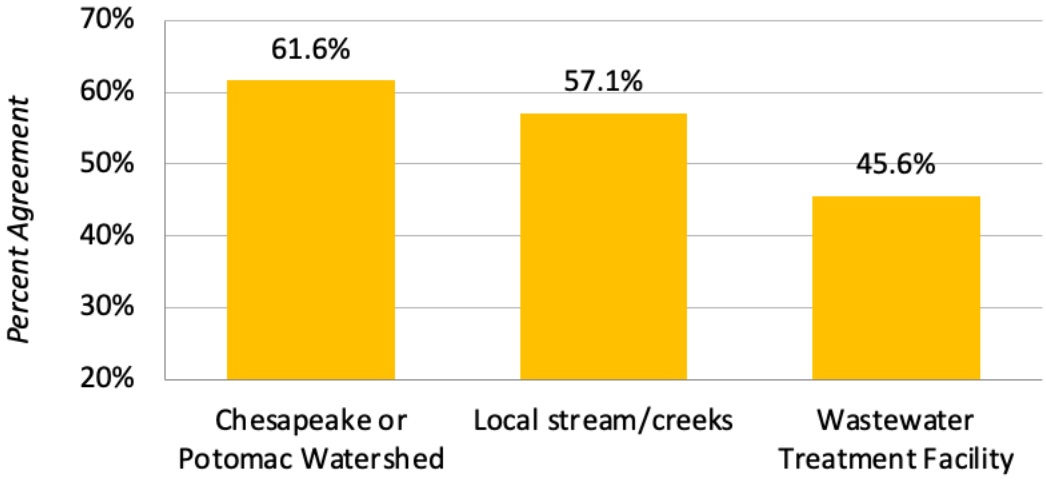
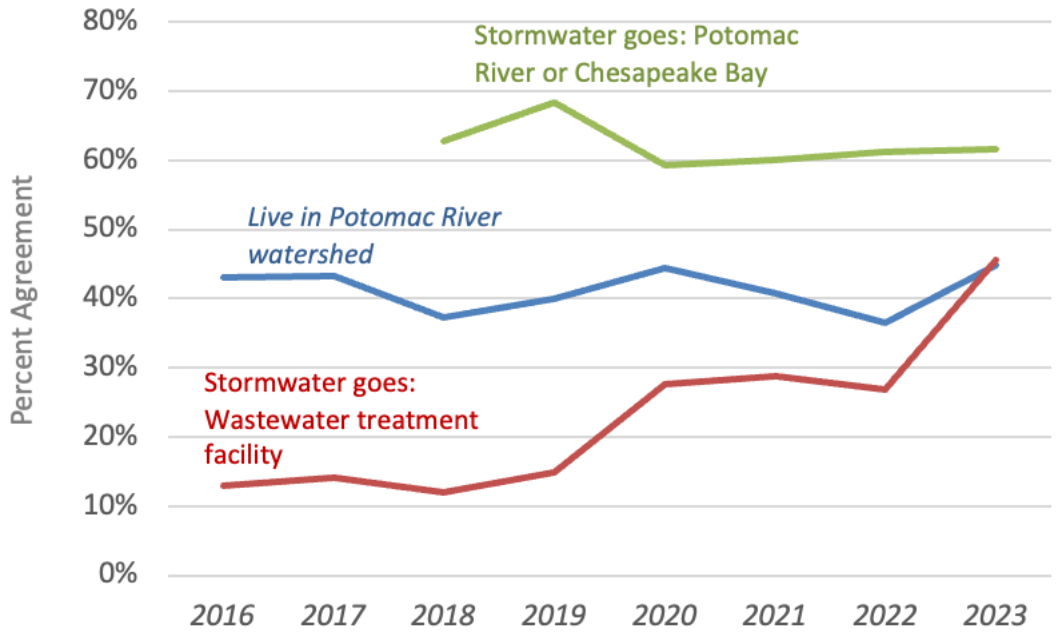


Table 20. Storm water destination beliefs across years.

Year of Survey								
Survey Questions Response	2016	2017	2018	2019	2020	2021	2022	2023
"Yes" to *Do you live in the Potomac River watershed?*	43.0%	43.2%	37.2%	40.0%	44.4%	40.8%	36.6%	44.9%
"A wastewater treatment facility" to *[Where does] storm water eventually end up?*	**13.0%**	**14.2%**	**12.0%**	**14.8%**	**27.6%**	**28.8%**	**26.8%**	45.60%
"Potomac River or Chesapeake Bay" to *[Where does] storm water eventually end up?*	*	*	62.8%	68.4%	59.4%	60.0%	61.2%	61.6%

** Red font indicates that the value significantly differs from the current 2023 value. Asterisks (*) indicate that the question did not appear in the survey that year.*

Figure 21. Storm water destination beliefs across years.



Awareness of Household Hazardous Waste (HHW) Disposal

Participants were also asked whether they knew if their locality has a specific place for residents to drop off Household Hazardous Waste (HHW), with response options being “Yes, I

know whether we have a location for drop-offs" and "No, I'm not sure whether we have a location for drop-offs". When asked about HHW 60.7% of respondents report knowing if their locality has a specific drop off location for it, which can be seen in Table 19 and * *Red font indicates significant differences within a demographic subgroup.*

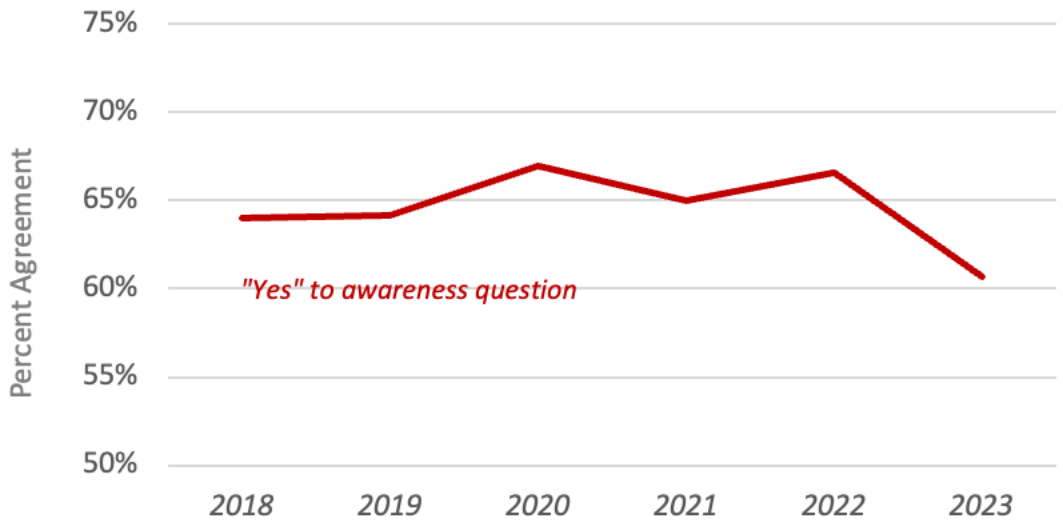
Figure 19. Finally, 33.2% of respondents have heard about water quality activity in the past 12 months. Men (68.8%) are more likely than women (52.7%) to report knowing if their locality has a location for HHW. Older residents and residents who have lived in a locality longer are more likely to report knowing if the locality has a location for HHW. Homeowners (69.6%) are more likely than renters (50.2%) to report knowing about HHW disposal in their community.

Table 21. Awareness of HHW across years.

Year of Survey	2016	2017	2018	2019	2020	2021	2022	2023
"Yes" to awareness question	*	*	64.0%	64.2%	67.0%	65.0%	66.6%	60.7%

** Red font indicates that the value significantly differs from the current 2023 value.*
Asterisks (*) indicate that the question did not appear in the survey that year.

Figure 22. Awareness of HHW across years.



Identifying the Local Watershed

Survey participants were asked "Do live in the…" and given a list of three watershed areas. Response options were "Yes", "No", and "Don't know" for the listed areas:

- Chesapeake Bay watershed?
- Potomac River watershed?
- Another watershed not listed?

As can be seen in *Table 22* and *Figure 23*, almost one-third (29.7%) report that they live in the Chesapeake Bay watershed, 44.0% report that they live in the Potomac River watershed, and 14.5% report that they live in another watershed that was not listed in the survey. Across all areas men had higher rates of reporting that they lived in a watershed, as did those who own their home. Men reported living in the Chesapeake Bay watershed at a rate of 39.1%, the Potomac River watershed at a rate of 52.8%, and another watershed at a rate of 19.4%. These frequencies are compared to women's response rates being 19.4% in the Chesapeake Bay watershed, 35.0% in the Potomac River watershed, and 8.8% in another watershed. When comparing homeowners to renters, as can be seen in *Table 22*, 39.2% of homeowners report living in the Chesapeake Bay watershed while only 16.0% of renters do. Additionally, 50.0% of homeowners report living in the Potomac River watershed compared to 31.8% of renters, and finally 17.4% of owners report living in another watershed as compared to 10.4% of renters. For reference, a map of the Chesapeake Bay watershed and the Potomac River watershed can be seen below in *Figure 24*.

Table 22. Identifying the local watershed by demographic.

Demographic	Sub-category	Chesapeake Bay watershed	Potomac River watershed	Another watershed
	All Respondents	**29.7%**	**44.9%**	**14.5%**
Gender	**Male**	39.1%	52.0%	19.4%
	Female	19.4%	36.8%	8.8%
Age	21 to 24	37.1%	37.8%	13.5%
	25 to 34	30.8%	46.1%	11.7%
	35 to 44	30.3%	54.0%	24.1%
	45 to 54	12.7%	33.8%	9.0%

Demographic	Sub-category	Chesapeake Bay watershed	Potomac River watershed	Another watershed
	55 to 64	26.0%	38.0%	8.9%
	65 to 74	40.5%	50.0%	10.3%
	75 or older	28.6%	62.5%	0.0%
Locality	Alexandria	30.8%	45.6%	13.6%
	Arlington	22.9%	48.5%	12.7%
	Fairfax - Inclusive	33.2%	43.6%	15.6%
	Prince William - Inclusive	23.0%	41.1%	11.0%
	Leesburg/Loudon	33.7%	50.0%	18.8%
Ethnicity	Hispanic/Latino	25.0%	39.4%	11.4%
	Not Hispanic/Latino	30.3%	45.7%	15.0%
Years of Residence	Less than 1 year	14.1%	32.9%	7.9%
	1 to 3 years	24.1%	39.0%	9.9%
	4 to 9 years	28.4%	45.7%	17.4%
	10 to 19 years	41.7%	48.9%	22.7%
	20 or more years	41.1%	58.9%	14.8%
Home Ownership	Owned	39.2%	52.9%	17.4%
	Rented	16.0%	33.3%	10.4%
Household Income	Less than $35,000	19.4%	24.6%	7.4%
	$35,000 to $49,999	21.5%	48.4%	14.8%
	$50,000 to $74,999	19.1%	38.1%	14.0%
	$75,000 to $99,999	30.6%	45.7%	12.1%
	$100,000 to $124,999	30.8%	36.9%	4.6%
	$125,000 to $149,999	41.3%	55.4%	25.0%
	$150,000 to $174,999	43.2%	64.9%	25.7%
	$175,000 to $199,999	56.5%	63.6%	35.0%
	$200,000 or greater	40.0%	57.4%	12.8%

** Red font indicates significant differences within a demographic subgroup.*

Figure 23. Local watershed identification.

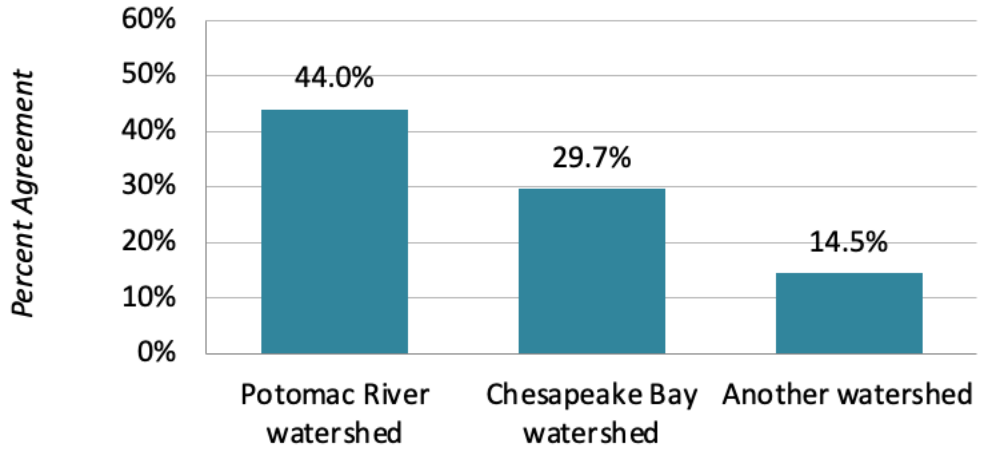
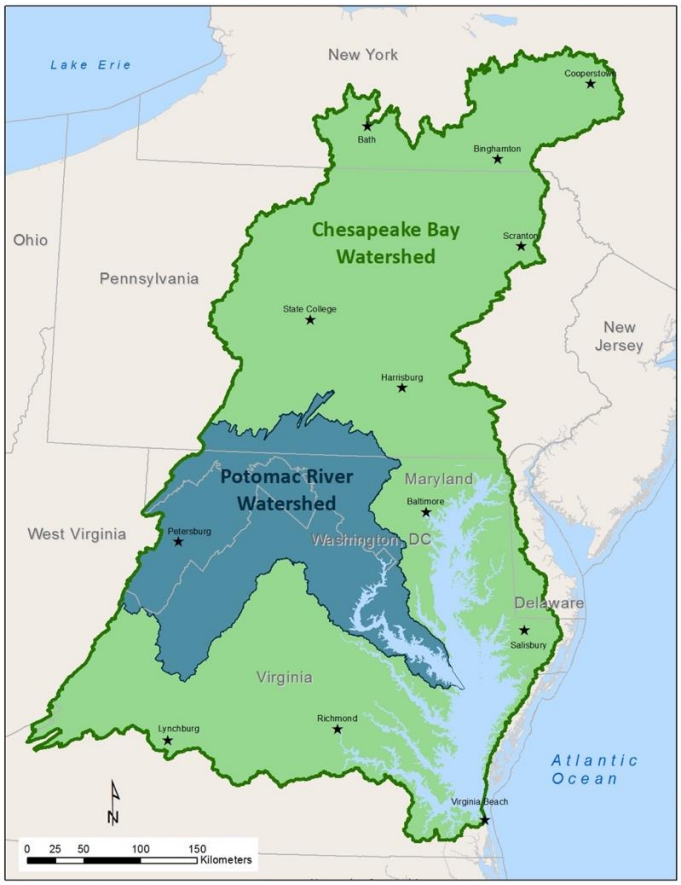


Figure 24. Map of Chesapeake Bay and Potomac River watersheds.[1]



[1] Interstate Commission on the Potomac River Basin. (n.d.). *Potomac River Basin Atlas*. Potomac River Basin Atlas - Subwatersheds. https://www.potomacriver.org/Atlas-Maps/Subwatersheds/

Identification of Pollution

Participants were provided with two images, as seen below (Figure 25), and asked if either photo contains a potential source of water pollution, with response options being “Yes”, “No”, “Not sure”, and “Cannot see image”. The results are summarized in *Table 23* and displayed in *Figure 26*. When asked about the provided images, 72.4% report that yes, they would consider the images to be a potential source of water pollution. Homeowners were more likely to report the photos contained a potential source of water pollution (76.3%) compared to those who rent their residence (66.7%).

Figure 25. Images shown to participants for assessment of knowledge regarding potential sources of water pollution.

Barriers to Reporting Pollution

Participants were asked if they knew who to contact to report potential water pollution with the response options “I definitely know”, “I think I know”, “I don’t think I know”, and “I definitely don’t know”. They were also asked the likelihood that they would call officials to report potential pollution so it could be investigated with the response options being “I

definitely would", "I probably would", "I'm equally likely to call and to not call", "I probably would not", and "I definitely would not". The responses are summarized in *Table 23*.

When asked about who to contact for reporting potential water pollution, 56.5% report knowing who to contact. Men (67.2%) are more likely than women (44.6%) to indicate knowing who to contact in the case of suspected water pollution. 63.4% report that they would contact someone to report a potential source of water pollution. Men (72.2%) are also more likely to indicate they would contact someone to report a potential source of water pollution than women (53.6%).

Those who reported being equally likely to call and not to call and who reported that they would probably or definitely not call were asked what their primary reason is for not calling. Response options given were "I'm too busy", "It's not my responsibility", "It's none of my business", "I prefer not to communicate with officials or authorities", and an option to write-in another reason not listed. Of these respondents, 31.5% report their reason for not calling being that they'd prefer not to communicate with officials or authorities. Additionally, 23.1% report it being none of their business, 17.6% report that they are too busy, and 17.6% report that it is not their responsibility. These results are summarized in *Table 23* and displayed in *Figure 27*.

Table 23. Barriers to reporting water pollution by demographic group.

Demographic	Sub-category	Water Pollution	Know Who to Contact	Would Call Officials	No Contact Reason				
					Too Busy	Not my Responsibility	None of my Business	Don't Want to Communicate with Authorities	Other
	All Respondents	**79.0%**	**56.5%**	**63.4%**	**17.6%**	**17.6%**	**23.1%**	**31.5%**	**10.2%**
Gender	Male	80.6%	67.2%	72.2%	14.1%	20.0%	22.4%	38.8%	4.7%
	Female	77.2%	44.6%	53.6%	20.2%	14.7%	24.0%	27.1%	14.0%
Age	21 to 24	85.7%	55.7%	51.5%	21.3%	21.3%	21.3%	34.0%	2.1%
	25 to 34	77.4%	53.5%	59.6%	21.7%	15.9%	24.6%	26.1%	11.6%
	35 to 44	79.6%	62.6%	69.5%	8.5%	25.5%	23.4%	36.2%	6.4%
	45 to 54	71.4%	56.9%	65.3%	20.0%	4.0%	16.0%	44.0%	16.0%
	55 to 64	75.5%	41.5%	69.8%	18.8%	12.5%	25.0%	12.5%	31.3%

Demographic	Sub-category	Water Pollution	Know Who to Contact	Would Call Officials	No Contact Reason				
					Too Busy	Not my Responsibility	None of my Business	Don't Want to Communicate with Authorities	Other
	65 to 74	83.3%	68.4%	78.9%	14.3%	14.3%	28.6%	28.6%	14.3%
	75 or older	87.5%	50.0%	37.5%	0.0%	20.0%	40.0%	40.0%	0.0%
Locality	Alexandria	72.9%	50.5%	63.8%	9.1%	36.4%	15.2%	27.3%	12.1%
	Arlington	83.6%	66.7%	76.1%	41.2%	17.6%	17.6%	17.6%	5.9%
	Fairfax - Inclusive	80.8%	54.9%	58.7%	16.3%	18.5%	23.9%	30.4%	10.9%
	Prince William - Inclusive	78.0%	57.9%	61.1%	15.9%	6.8%	31.8%	38.6%	6.8%
	Leesburg/Loudoun	78.6%	56.5%	67.4%	20.0%	10.0%	20.0%	36.7%	13.3%
Ethnicity	Hispanic/Latino	78.6%	52.6%	52.0%	13.9%	13.9%	25.0%	33.3%	13.9%
	Not Hispanic/Latino	79.1%	57.0%	65.0%	18.3%	18.3%	22.8%	31.1%	9.4%
Years of Residence	Less than 1 year	83.3%	54.8%	61.6%	28.6%	17.9%	14.3%	28.6%	10.7%
	1 to 3 years	78.9%	52.4%	60.4%	13.4%	19.4%	22.4%	34.3%	10.4%
	4 to 9 years	78.9%	63.9%	64.7%	20.4%	16.7%	20.4%	29.6%	13.0%
	10 to 19 years	80.0%	53.1%	64.2%	14.7%	11.8%	44.1%	26.5%	2.9%
	20 or more years	75.5%	56.4%	66.7%	15.2%	21.2%	15.2%	36.4%	12.1%
Home Ownership	Owned	81.6%	61.8%	67.1%	19.5%	16.8%	21.2%	33.6%	8.8%
	Rented	75.2%	49.6%	59.3%	15.8%	16.8%	23.2%	31.6%	12.6%
Household Income	Less than $35,000	80.9%	49.3%	56.2%	15.6%	28.1%	21.9%	28.1%	6.3%
	$35,000 to $49,999	70.2%	61.5%	58.5%	19.2%	11.5%	23.1%	23.1%	23.1%
	$50,000 to $74,999	70.6%	56.8%	71.2%	8.8%	20.6%	23.5%	38.2%	8.8%
	$75,000 to $99,999	81.3%	52.0%	58.0%	11.9%	16.7%	35.7%	33.3%	2.4%
	$100,000 to $124,999	83.3%	44.8%	58.2%	17.9%	10.7%	21.4%	35.7%	14.3%
	$125,000 to $149,999	78.6%	57.6%	69.7%	25.0%	15.0%	20.0%	25.0%	15.0%
	$150,000 to $174,999	85.7%	63.2%	59.5%	46.7%	6.7%	20.0%	20.0%	6.7%
	$175,000 to $199,999	81.8%	82.6%	78.3%	0.0%	40.0%	0.0%	20.0%	40.0%
	$200,000 or greater	92.7%	66.0%	67.4%	21.4%	21.4%	7.1%	50.0%	0.0%

** Red font indicates significant differences within a demographic subgroup.*

Figure 26. Water pollution identification and knowledge.

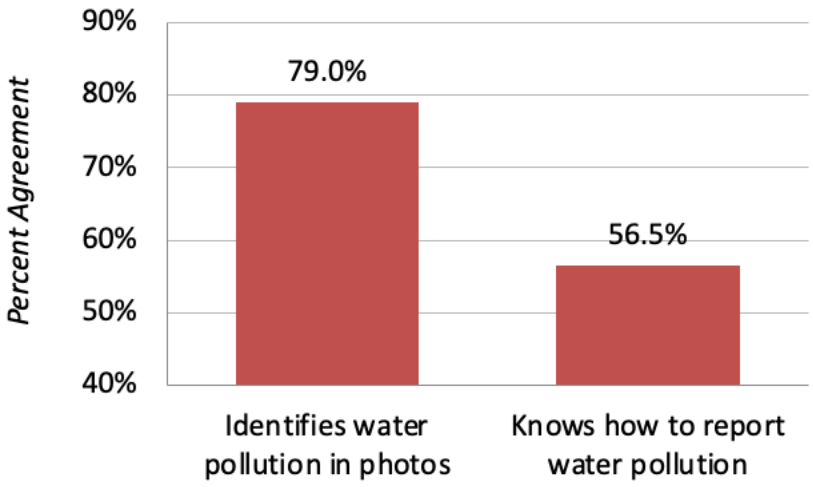


Figure 27. Barriers to reporting water pollution.

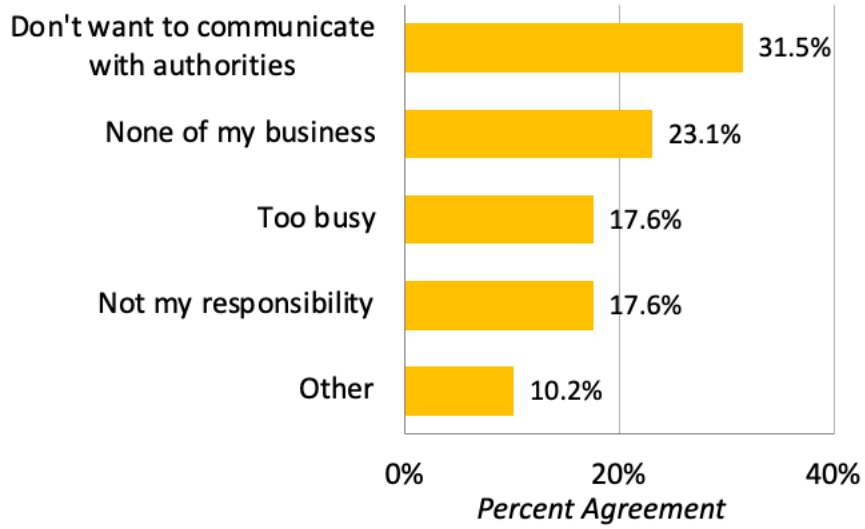
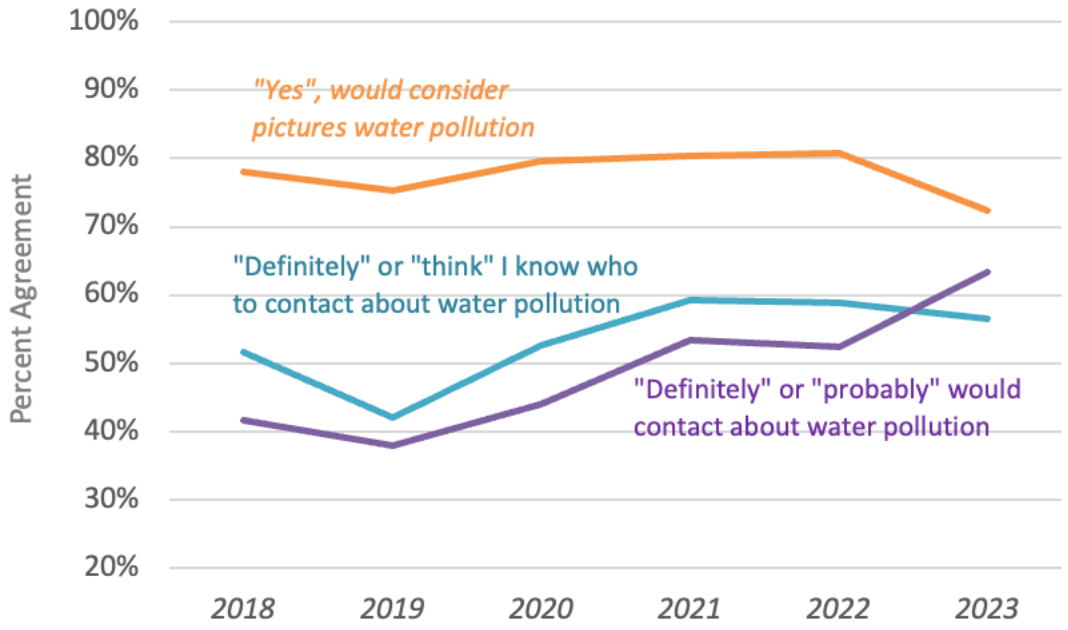


Table 24. Water pollution knowledge across years.

Year of Survey						
Survey Questions Response	2018	2019	2020	2021	2022	2023
"Yes", would consider pictures water pollution	78.0%	75.2%	79.6%	80.4%	80.8%	72.4%
"Definitely" or "think" I know who to contact about water pollution	51.6%	42.0%	52.6%	59.2%	58.8%	56.5%
"Definitely" or "probably" would contact about water pollution	41.6%	38.0%	44.0%	53.4%	52.4%	63.4%

** Red font indicates that the value significantly differs from the current 2023 value.*

Figure 28. Water pollution knowledge across years.



Campaign Perceptions

Campaign Awareness

Figure 29. Logo provided to survey participants.

Survey participants were asked questions to better understand their level of awareness of water pollution campaigns; their responses are below in Table 25 and *Figure 30*. Respondents were provided with the logo depicted in Figure 29 and asked if they had seen the logo before. Of respondents, 60.7% report having previously seen the provided logo. Respondents with a longer tenure in their homes were more likely to have seen the logo previously than people with shorter tenures. Homeowners (69.3%) are more likely to have seen the logo than renters (48.5%).

Table 25. Percentage of respondents who have seen campaigns by demographic group.

Demographic	Sub-category	Seen the Logo Previously	Seen Water Pollution Reduction Campaign
	All Respondents	**60.7%**	**34.1%**
Gender	Male	65.5%	40.2%
	Female	56.1%	27.8%
Age	21 to 24	61.6%	44.4%
	25 to 34	60.1%	35.9%
	35 to 44	63.6%	39.0%
	45 to 54	54.8%	24.7%
	55 to 64	59.6%	19.6%
	65 to 74	68.4%	16.2%
	75 or older	28.6%	37.5%
Locality	Alexandria	56.4%	32.3%
	Arlington	59.7%	40.8%
	Fairfax - Inclusive	66.4%	37.5%
	Prince William - Inclusive	54.8%	29.2%
	Leesburg/Loudon	59.8%	28.6%

Demographic	Sub-category	Seen the Logo Previously	Seen Water Pollution Reduction Campaign
Ethnicity	Hispanic/Latino	55.8%	31.6%
	Not Hispanic/Latino	61.5%	34.5%
Years of Residence	Less than 1 year	56.8%	31.5%
	1 to 3 years	47.6%	30.2%
	4 to 9 years	64.3%	34.8%
	10 to 19 years	67.4%	37.6%
	20 or more years	73.5%	38.2%
Home Ownership	Owned	69.3%	38.3%
	Rented	48.5%	27.4%
Household Income	Less than $35,000	47.2%	28.2%
	$35,000 to $49,999	56.3%	34.9%
	$50,000 to $74,999	53.8%	32.2%
	$75,000 to $99,999	57.6%	35.0%
	$100,000 to $124,999	67.2%	22.7%
	$125,000 to $149,999	69.7%	42.4%
	$150,000 to $174,999	71.1%	47.4%
	$175,000 to $199,999	78.3%	47.8%
	$200,000 or greater	72.9%	31.9%

** Red font indicates significant differences within a demographic subgroup.*

Figure 30. Water pollution reduction campaign awareness.

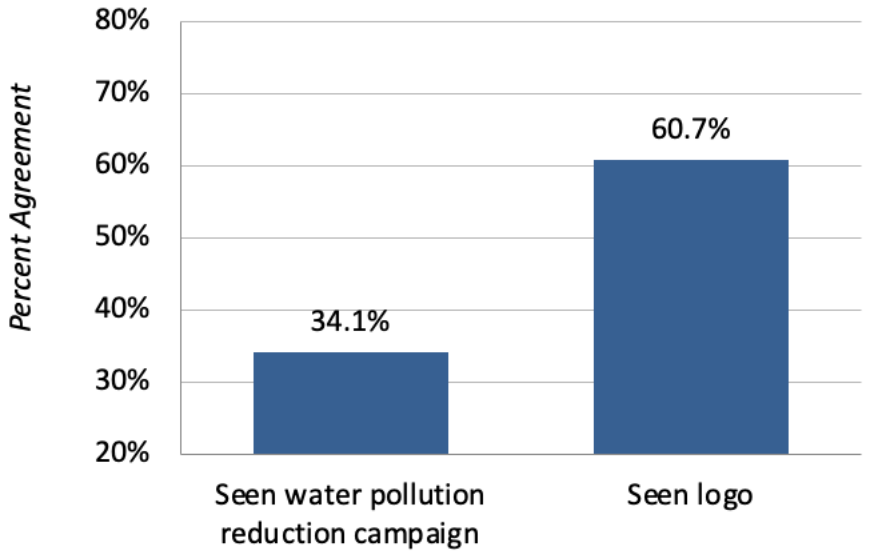
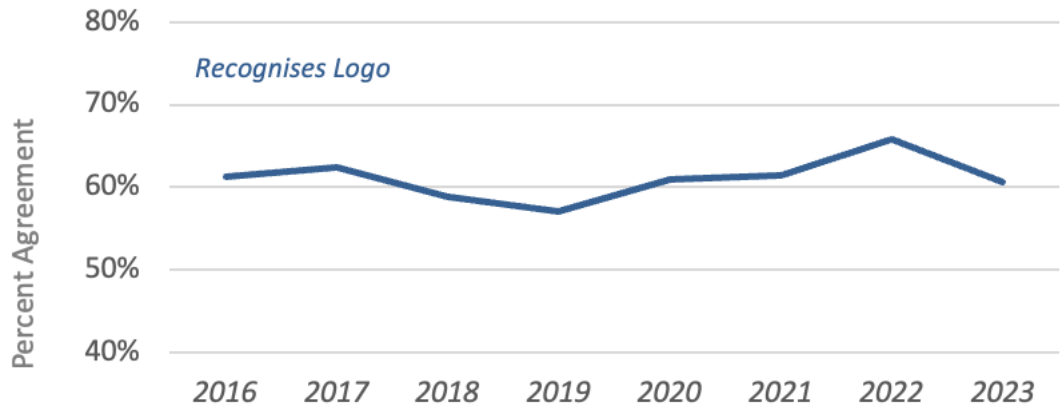


Table 26. Logo recognition across years.

Year of Survey	2016	2017	2018	2019	2020	2021	2022	2023
Recognizes Logo	61.2%	62.4%	58.8%	57.0%	61.0%	61.4%	65.8%	60.7%

** Red font indicates that the value significantly differs from the current 2023 value.*

Figure 31. Logo recognition across years.



Additionally, as described previously, 33.2% report being aware of a water quality activity in the past 12 months. Lastly, respondents were asked if they have seen or received information

about reducing water pollution from any source in the past 12 months, with 34.1% of respondents reporting yes, they have seen or received this kind of information. Men (40.2%) are much more likely to have seen this information than women (27.8%). Homeowners (38.3%) are more likely to have received information about reducing water pollution than renters (27.4%).

Survey participants were shown both the "Only Rain Down the Drain" and "Cleaner Streets Means Cleaner Water" advertisements in a random order and asked questions about both of them. Some participants report not being able to see one or both of the videos, in which case their data was excluded from analysis for these questions.

Only Rain Down the Drain (ORDD)

Participants were shown the advertisement "Only Rain Down the Drain" (ORDD) and asked a series of questions about it. First, participants were asked if they had seen the ad or a similar one on TV, Facebook, or Twitter and given the response options "Yes", "No", "Not sure", and "Video did not play". After seeing the ORDD advertisement, 23.3% of respondents report having seen the ad previously, as can be seen in *Table 27* and *Figure 32*. Men (30.8%) were more likely to have seen the ad previously than women (15.2%). Participants were then asked about their perceptions of the ad by listing a series of statements with the option to "Strongly disagree", "Disagree", "Neither disagree nor agree", "Agree", and "Strongly Agree". The statements were:

- I understand the information in the ad.
- The ad is relevant to me.
- I trust the information in the ad.
- The ad's message is important.
- The ad is persuasive.
- I think the ad would be effective.

In response to these statements, 79.4% report understanding the information in the ad, 70.7% report believing that the ad is relevant, 78.9% report trusting the information in the ad, 84.2%

report thinking the information in the ad is important, 68.5% report believing the ad is persuasive, and 73.0% think the ad is effective. The full results are displayed in *Figure 33*.

Table 27. Perceptions of 'Only Rain Down the Drain' (ORDD) advertisement by demographics.

Demographic	Sub-category	Recognize Ad	Understand Ad	Ad is Relevant	Trust Ad	Ad is Important	Ad is Persuasive	Ad is Effective
	All Respondents	**23.3%**	**79.4%**	**70.7%**	**78.9%**	**84.2%**	**68.5%**	**73.0%**
Gender	Male	30.8%	79.0%	72.8%	81.0%	84.6%	71.9%	76.5%
	Female	15.2%	80.4%	69.7%	76.9%	84.1%	65.5%	69.8%
Age	21 to 24	29.4%	75.3%	65.1%	81.7%	82.7%	75.3%	75.0%
	25 to 34	25.5%	77.6%	74.3%	75.5%	81.1%	60.8%	72.0%
	35 to 44	27.1%	78.4%	71.5%	81.1%	85.7%	74.6%	74.6%
	45 to 54	16.7%	79.7%	69.6%	76.8%	83.9%	64.3%	71.4%
	55 to 64	2.3%	84.8%	65.1%	76.7%	86.0%	60.5%	65.9%
	65 to 74	16.7%	90.0%	71.9%	82.8%	90.0%	76.7%	76.7%
	75 or older	37.5%	100.0%	85.7%	85.7%	100.0%	83.3%	83.3%
Locality	Alexandria	32.9%	78.9%	61.5%	74.7%	85.3%	66.7%	73.3%
	Arlington	14.0%	78.7%	77.2%	80.4%	83.9%	71.4%	75.0%
	Fairfax - Inclusive	26.3%	79.0%	72.9%	78.7%	83.4%	68.8%	69.0%
	Prince William - Inclusive	17.0%	74.5%	65.9%	72.5%	79.1%	68.1%	72.5%
	Leesburg/Loudon	20.5%	87.2%	75.3%	89.6%	90.9%	67.5%	81.6%
Ethnicity	Hispanic/Latino	21.0%	81.5%	65.1%	73.0%	83.6%	59.0%	68.9%
	Not Hispanic/Latino	23.6%	79.1%	71.5%	79.7%	84.2%	69.8%	73.6%
Years of Residence	Less than 1 year	15.3%	66.7%	66.7%	71.7%	76.7%	63.3%	63.3%
	1 to 3 years	17.2%	78.1%	72.2%	77.4%	82.4%	67.9%	74.0%
	4 to 9 years	26.8%	81.7%	67.6%	80.1%	85.3%	66.2%	73.3%
	10 to 19 years	27.3%	79.5%	71.1%	79.7%	85.1%	68.9%	69.9%
	20 or more years	28.6%	86.5%	75.9%	83.3%	89.4%	76.2%	80.7%
Home Ownership	Owned	27.5%	83.9%	76.7%	83.7%	88.7%	73.9%	78.6%
	Rented	15.1%	74.1%	64.8%	74.0%	79.2%	61.5%	66.7%
Household Income	Less than $35,000	16.4%	75.4%	55.0%	66.1%	74.6%	64.4%	60.3%
	$35,000 to $49,999	18.4%	79.2%	68.6%	76.5%	80.4%	64.7%	74.5%
	$50,000 to $74,999	23.2%	75.2%	73.2%	79.4%	85.3%	71.6%	77.7%
	$75,000 to $99,999	23.6%	74.2%	72.1%	79.5%	83.3%	67.5%	72.3%
	$100,000 to $124,999	14.8%	76.3%	70.7%	77.2%	80.7%	61.4%	70.2%
	$125,000 to $149,999	24.1%	91.1%	80.0%	84.9%	92.5%	75.5%	84.6%
	$150,000 to $174,999	46.9%	78.8%	67.7%	77.4%	90.3%	64.5%	74.2%

Demographic	Sub-category	Recognize Ad	Understand Ad	Ad is Relevant	Trust Ad	Ad is Important	Ad is Persuasive	Ad is Effective
	$175,000 to $199,999	36.8%	89.5%	72.2%	88.9%	83.3%	72.2%	72.2%
	$200,000 or greater	24.3%	92.1%	76.9%	89.5%	92.1%	76.3%	68.4%

** Red font indicates significant differences within a demographic subgroup.*

Figure 32. Recognition of 'Cleaner Streets Means Cleaner Water' and 'Only Rain Down the Drain' advertisement.

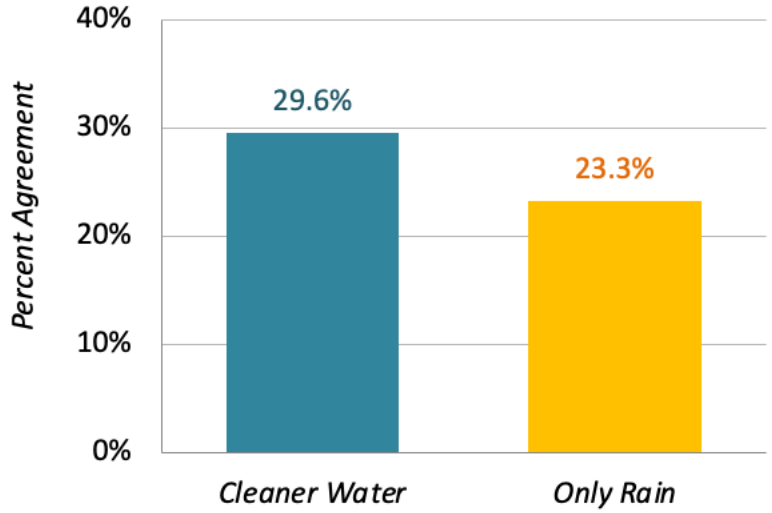
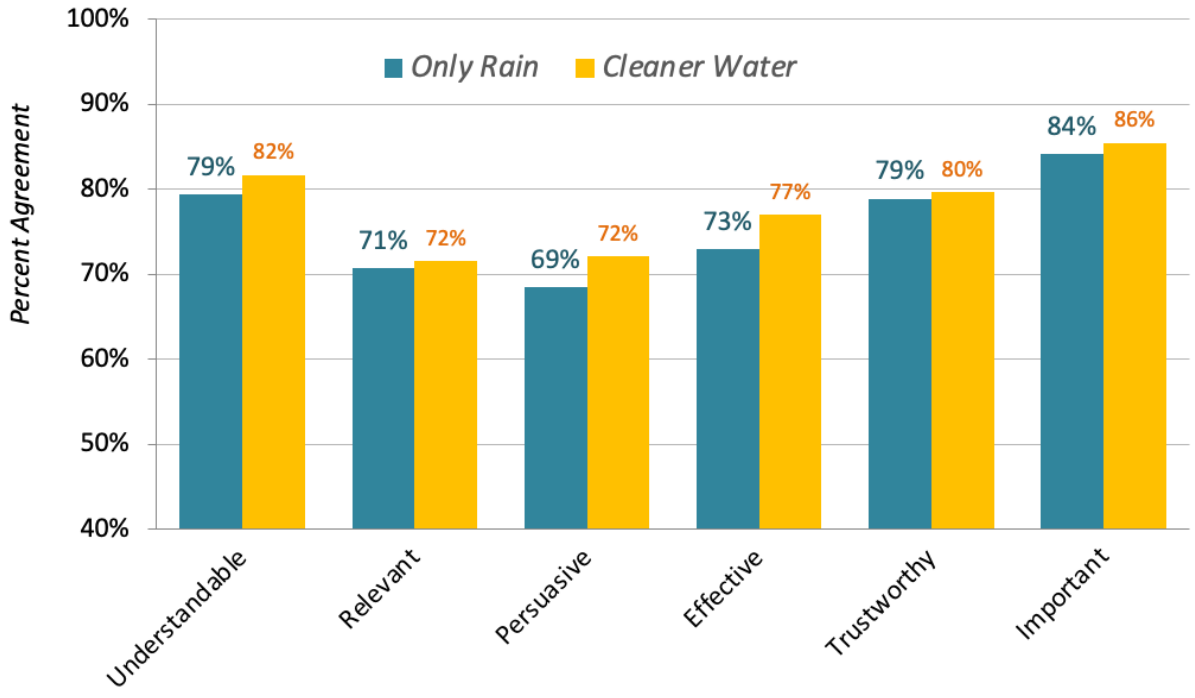


Figure 33.Perceptions of 'Only Rain Down the Drain' and 'Cleaner Streets Means Cleaner Water' advertisement.



Cleaner Streets Means Cleaner Water (CSMCW)

Participants were shown the ad "Cleaner Streets Means Cleaner Water" (CSMCW) and asked a series of questions about it. First, participants were asked if they had seen the ad or a similar one on TV, Facebook, or Twitter and given the response options "Yes", "No", "Not sure", and "Video did not play". After seeing the CSMCW ad, 29.6% of respondents report having seen the ad previously, as shown in *Table 28* and *Figure 32*. Men (36.2%) were more likely to report having seen the ad previously than women (22.8%). Participants were then asked about their perceptions of the ad by listing a series of statements with the option to "Strongly disagree", "Disagree", "Neither disagree nor agree", "Agree", and "Strongly Agree". The statements were:

- I understand the information in the ad.
- The ad is relevant to me.
- I trust the information in the ad.
- The ad's message is important.
- The ad is persuasive.
- I think the ad would be effective.

In response to these statements, 81.7% of respondents report understanding the ad, 71.6% report believing the ad is relevant, 79.7% report trusting the information in the ad, 85.5% report thinking the information in the ad is important and 72.1% report believing the ad is persuasive, and 77.0% report thinking the ad is effective. The full results are displayed in *Figure 33*.

Table 28. Perceptions of 'Cleaner Streets Means Cleaner Water' (CSMCW) advertisement by demographic group.

Demographic	Sub-category	Recognize Ad	Understand Ad	Ad is Relevant	Trust Ad	Ad is Important	Ad is Persuasive	Ad is Effective
	All Respondents	**29.6%**	**81.7%**	**71.6%**	**79.7%**	**85.5%**	**72.1%**	**77.0%**
Gender	Male	36.2%	81.6%	73.8%	80.2%	85.3%	74.6%	80.7%
	Female	22.8%	83.1%	70.0%	80.0%	86.8%	69.8%	73.5%
Age	21 to 24	28.9%	81.2%	60.2%	79.0%	85.4%	65.9%	72.0%
	25 to 34	32.2%	80.4%	72.4%	76.4%	84.7%	68.5%	74.1%
	35 to 44	32.3%	80.2%	71.2%	80.5%	85.1%	74.6%	77.7%
	45 to 54	19.3%	81.3%	74.6%	78.0%	83.1%	74.6%	81.0%
	55 to 64	17.8%	84.4%	75.0%	84.1%	86.4%	79.1%	74.4%
	65 to 74	33.3%	93.9%	87.9%	91.2%	93.9%	83.3%	93.8%
	75 or older	75.0%	75.0%	75.0%	75.0%	87.5%	62.5%	87.5%
Locality	Alexandria	32.9%	74.1%	64.2%	72.0%	80.2%	65.4%	72.8%
	Arlington	32.3%	84.1%	78.3%	80.0%	90.0%	71.9%	80.7%
	Fairfax - Inclusive	37.6%	82.3%	72.0%	82.5%	86.3%	73.5%	75.4%
	Prince William - Inclusive	15.7%	84.2%	69.2%	76.7%	81.1%	70.0%	80.9%
	Leesburg/Loudon	21.3%	83.5%	75.9%	84.6%	91.0%	78.2%	77.9%
Ethnicity	Hispanic/Latino	32.4%	85.9%	67.6%	86.6%	92.5%	67.7%	74.2%
	Not Hispanic/Latino	29.2%	81.0%	72.3%	78.6%	84.4%	72.7%	77.4%
Years of Residence	Less than 1 year	24.6%	77.0%	67.8%	79.7%	82.8%	71.2%	78.0%
	1 to 3 years	23.3%	84.5%	72.1%	80.1%	86.8%	70.9%	73.3%
	4 to 9 years	31.2%	77.5%	67.4%	77.1%	84.1%	72.0%	80.9%
	10 to 19 years	26.6%	81.7%	71.6%	77.5%	83.8%	67.1%	70.9%
	20 or more years	43.5%	87.4%	80.2%	85.1%	89.4%	79.5%	81.9%
Home Ownership	Owned	31.6%	85.7%	76.3%	83.0%	87.9%	77.9%	81.5%
	Rented	27.3%	78.5%	67.0%	77.0%	84.2%	65.6%	72.7%
Household Income	Less than $35,000	32.3%	75.8%	58.6%	72.4%	82.8%	64.9%	75.0%
	$35,000 to $49,999	34.7%	76.4%	72.2%	78.8%	81.1%	71.7%	75.5%
	$50,000 to $74,999	25.5%	86.5%	74.3%	84.2%	88.1%	75.0%	82.0%

Demographic	Sub-category	Recognize Ad	Understand Ad	Ad is Relevant	Trust Ad	Ad is Important	Ad is Persuasive	Ad is Effective
	$75,000 to $99,999	29.1%	75.9%	68.4%	71.8%	79.2%	68.8%	71.8%
	$100,000 to $124,999	16.4%	76.7%	67.2%	79.3%	84.5%	65.5%	72.4%
	$125,000 to $149,999	36.2%	86.2%	78.0%	86.2%	91.2%	73.7%	78.9%
	$150,000 to $174,999	40.0%	83.3%	70.0%	79.3%	86.2%	78.6%	78.6%
	$175,000 to $199,999	44.4%	94.4%	72.2%	72.2%	88.9%	77.8%	83.3%
	$200,000 or greater	25.0%	92.5%	87.5%	90.2%	92.5%	82.1%	79.5%

** Red font indicates significant differences within a demographic subgroup.*

Campaign Impact

Survey participants who reported recognizing one or both advertisements were asked a series of questions about the potential impact of the ad(s) on their behaviors.

Impact of advertisements on pet waste clean-up

Respondents were asked how certain behaviors have changed since they first saw the ad(s), if they had seen the advertisements prior to the current survey. The first set of questions asked about their current pet waste disposal behaviors, the results of which can be seen in Table 29 and

Demographic	Sub-category	Understands Pet Waste	Want Pet Waste	More Pet Waste	Pet Waste Already
	All Respondents	**72.6%**	**42.5%**	**42.4%**	**58.5%**
Gender	Male	74.6%	51.1%	51.5%	63.3%
	Female	71.0%	33.6%	32.3%	53.1%
Age	21 to 24	80.4%	59.4%	51.6%	67.7%
	25 to 34	72.4%	43.9%	44.6%	65.7%
	35 to 44	71.0%	49.7%	53.6%	61.5%
	45 to 54	76.4%	38.0%	38.6%	47.9%
	55 to 64	67.9%	17.0%	17.0%	37.7%
	65 to 74	63.9%	13.9%	11.4%	41.7%
	75 or older	50.0%	12.5%	12.5%	50.0%

Demographic	Sub-category	Understands Pet Waste	Want Pet Waste	More Pet Waste	Pet Waste Already
Locality	Alexandria	74.2%	42.9%	42.9%	56.7%
	Arlington	71.8%	42.3%	46.5%	57.1%
	Fairfax - Inclusive	76.2%	41.7%	42.2%	58.5%
	Prince William - Inclusive	69.9%	42.9%	41.3%	60.0%
	Leesburg/Loudon	65.9%	44.0%	40.7%	59.3%
Ethnicity	Hispanic/Latino	71.6%	43.4%	42.1%	57.2%
	Not Hispanic/Latino	79.7%	36.5%	44.4%	67.6%
Years of Residence	Less than 1 year	72.2%	43.1%	41.7%	60.6%
	1 to 3 years	73.8%	42.3%	43.3%	59.6%
	4 to 9 years	75.2%	42.9%	46.1%	57.0%
	10 to 19 years	68.8%	48.9%	46.1%	62.2%
	20 or more years	70.3%	36.3%	32.7%	54.0%
Home Ownership	Owned	73.9%	44.0%	44.4%	61.2%
	Rented	73.2%	41.5%	40.2%	54.7%
Household Income	Less than $35,000	65.8%	41.1%	41.7%	56.9%
	$35,000 to $49,999	76.9%	36.9%	39.1%	57.1%
	$50,000 to $74,999	78.6%	40.0%	46.5%	58.8%
	$75,000 to $99,999	68.0%	46.8%	43.0%	59.8%
	$100,000 to $124,999	69.7%	38.8%	34.8%	59.1%
	$125,000 to $149,999	77.3%	48.5%	40.0%	56.9%
	$150,000 to $174,999	68.4%	47.4%	47.4%	52.6%
	$175,000 to $199,999	69.6%	60.9%	56.5%	73.9%
	$200,000 or greater	73.9%	34.0%	40.0%	57.8%

** Red font indicates significant differences within a demographic subgroup.*

Figure 34. Participants were provided the following statements with response options being "Yes", "No", or "Does not apply":

- I understand more about the impact of pet waste on water quality.
- I'd like to pick up pet waste more often, though I haven't made any changes yet.
- I now pick up pet waste more often.

- I was already doing what is recommended to reduce water pollution from pet waste.

Of those respondents who had seen the ad prior to completing the current survey, 72.6% report understanding more about pet waste, 42.5% report wanting to pick up pet waste more often despite not having made any changes yet, 42.4% report now picking pet waste up more often and 58.5% report already doing what is recommended.

Table 29. Ad impact on pet waste clean-up behavior by demographic group among participants who had seen the advertisement prior to completing the current survey.

Demographic	Sub-category	Understands Pet Waste	Want Pet Waste	More Pet Waste	Pet Waste Already
	All Respondents	**72.6%**	**42.5%**	**42.4%**	**58.5%**
Gender	Male	74.6%	51.1%	51.5%	63.3%
	Female	71.0%	33.6%	32.3%	53.1%
Age	21 to 24	80.4%	59.4%	51.6%	67.7%
	25 to 34	72.4%	43.9%	44.6%	65.7%
	35 to 44	71.0%	49.7%	53.6%	61.5%
	45 to 54	76.4%	38.0%	38.6%	47.9%
	55 to 64	67.9%	17.0%	17.0%	37.7%
	65 to 74	63.9%	13.9%	11.4%	41.7%
	75 or older	50.0%	12.5%	12.5%	50.0%
Locality	Alexandria	74.2%	42.9%	42.9%	56.7%
	Arlington	71.8%	42.3%	46.5%	57.1%
	Fairfax - Inclusive	76.2%	41.7%	42.2%	58.5%
	Prince William - Inclusive	69.9%	42.9%	41.3%	60.0%
	Leesburg/Loudon	65.9%	44.0%	40.7%	59.3%
Ethnicity	Hispanic/Latino	71.6%	43.4%	42.1%	57.2%
	Not Hispanic/Latino	79.7%	36.5%	44.4%	67.6%
Years of Residence	Less than 1 year	72.2%	43.1%	41.7%	60.6%
	1 to 3 years	73.8%	42.3%	43.3%	59.6%
	4 to 9 years	75.2%	42.9%	46.1%	57.0%
	10 to 19 years	68.8%	48.9%	46.1%	62.2%
	20 or more years	70.3%	36.3%	32.7%	54.0%
Home Ownership	Owned	73.9%	44.0%	44.4%	61.2%
	Rented	73.2%	41.5%	40.2%	54.7%

Demographic	Sub-category	Understands Pet Waste	Want Pet Waste	More Pet Waste	Pet Waste Already
Household Income	Less than $35,000	65.8%	41.1%	41.7%	56.9%
	$35,000 to $49,999	76.9%	36.9%	39.1%	57.1%
	$50,000 to $74,999	78.6%	40.0%	46.5%	58.8%
	$75,000 to $99,999	68.0%	46.8%	43.0%	59.8%
	$100,000 to $124,999	69.7%	38.8%	34.8%	59.1%
	$125,000 to $149,999	77.3%	48.5%	40.0%	56.9%
	$150,000 to $174,999	68.4%	47.4%	47.4%	52.6%
	$175,000 to $199,999	69.6%	60.9%	56.5%	73.9%
	$200,000 or greater	73.9%	34.0%	40.0%	57.8%

** Red font indicates significant differences within a demographic subgroup.*

Figure 34. Ad impact on pet waste behaviors.

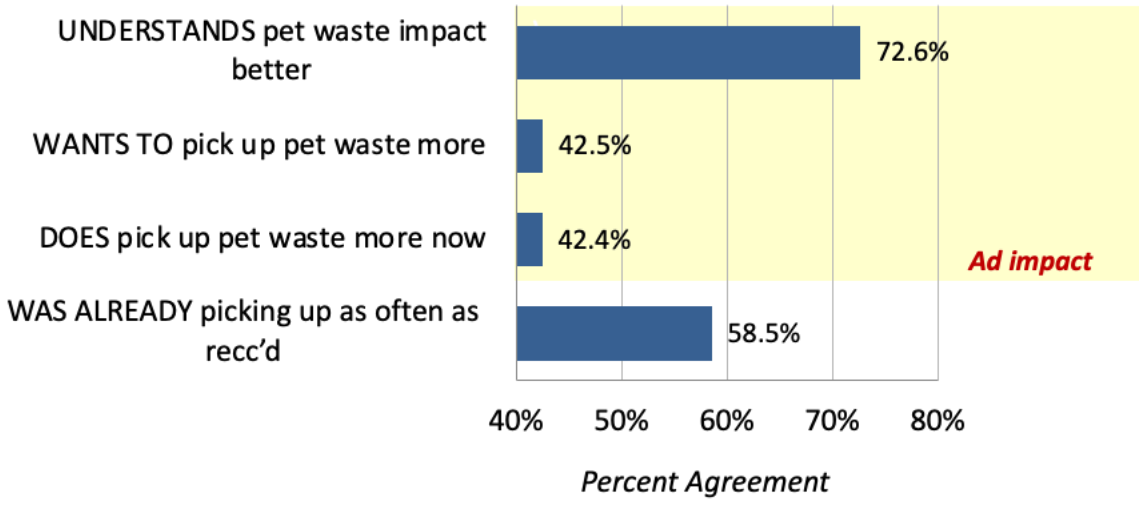
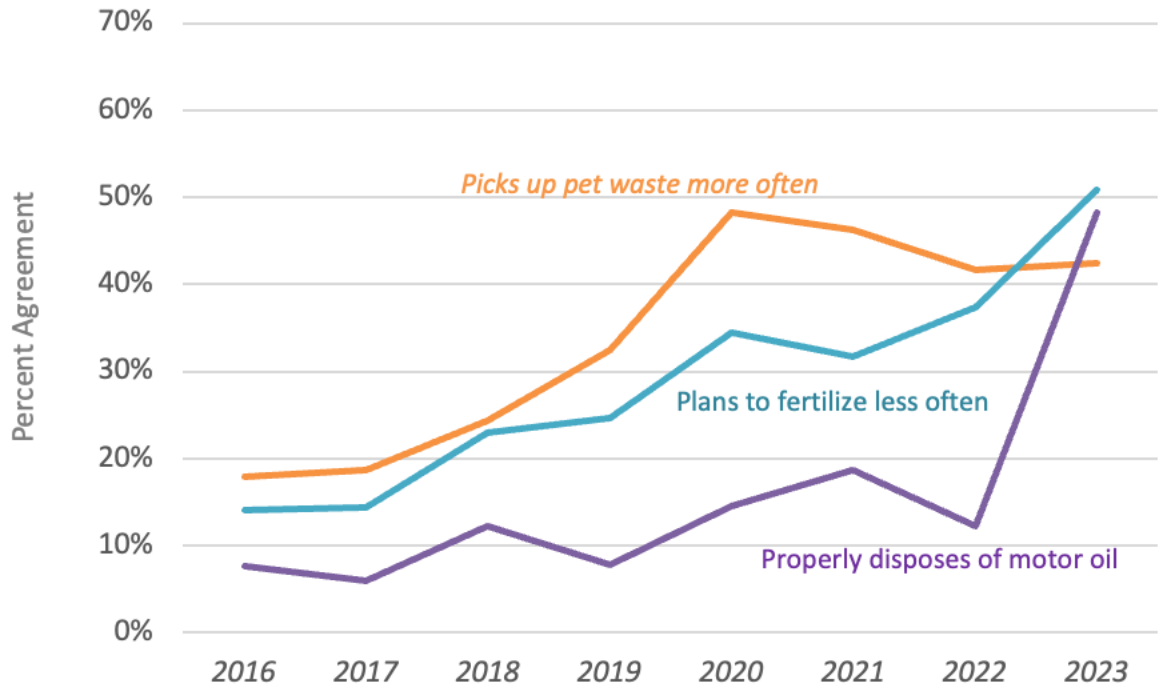


Figure 35. Ad impact across years.

Year of Survey								
Survey Questions Response	2016	2017	2018	2019	2020	2021	2022	2023
Picks up pet waste more often	17.9%	18.6%	24.3%	32.5%	48.2%	46.2%	41.7%	42.4%
Plans to fertilize less often	14.1%	14.4%	23.0%	24.7%	34.5%	31.7%	37.4%	50.8%
Properly disposes of motor oil	7.7%	5.9%	12.2%	7.8%	14.5%	18.6%	12.2%	48.2%

** Red font indicates that the value significantly differs from the current 2023 value.*

Figure 36. Ad impact across years.



Impact of advertisements on lawn/garden fertilization

Next, respondents were asked about their fertilizer behaviors. Participants were provided with the following statements with the response options being "Yes", "No", or "Does not apply":

- I understand more about the impact of fertilizer on water quality.
- I'd like to fertilize fewer time during the year.
- I now plan to fertilize fewer times during the year.
- I was already doing what is recommended to reduce water pollution from fertilizer.

Of respondents who reported seeing the ad(s) previously, 73.2% report understanding more about the impact of fertilizer on water quality, 50.3% report wanted to fertilize fewer times

despite not making any changes yet, 50.8% report now fertilizing less frequently and 52.9% report that they were already doing what is recommended as can be seen in *Table 30* and *Figure 37*.

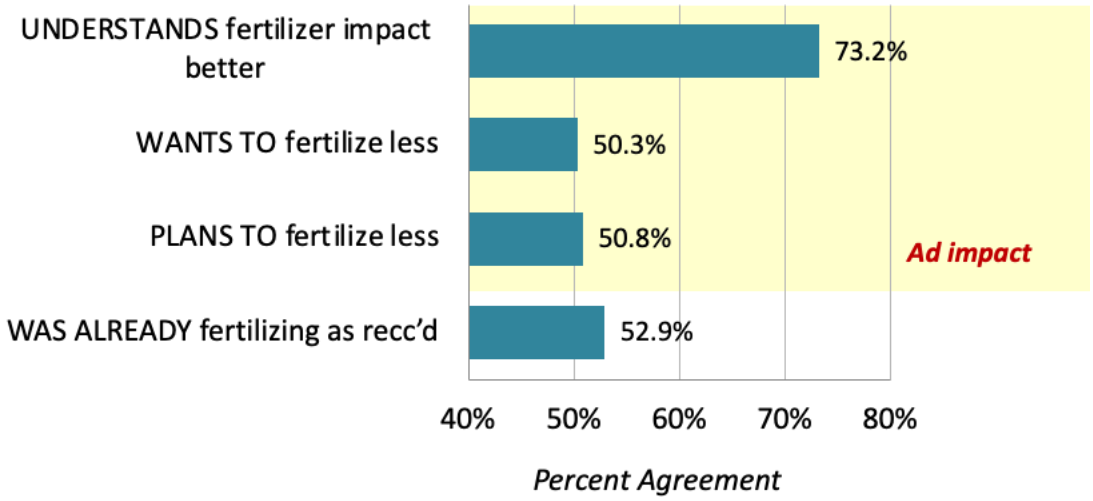
Table 30. Ad impact on fertilizing behavior by demographic group of those who had seen the advertisement prior to completing the survey.

Demographic	Sub-category	Understand Fertilizer	Want Fertilizer	Less Fertilizer	Fertilizer Already
	All Respondents	**73.2%**	**50.3%**	**50.8%**	**52.9%**
Gender	Male	77.5%	57.1%	56.3%	60.5%
	Female	69.3%	42.9%	44.8%	44.2%
Age	21 to 24	76.8%	63.4%	66.0%	57.4%
	25 to 34	72.8%	53.3%	52.7%	47.0%
	35 to 44	76.4%	56.1%	54.1%	61.5%
	45 to 54	74.6%	43.7%	45.1%	52.1%
	55 to 64	58.5%	30.2%	32.1%	36.5%
	65 to 74	71.4%	26.5%	32.4%	52.8%
	75 or older	75.0%	25.0%	25.0%	75.0%
Locality	Alexandria	68.9%	45.6%	47.2%	45.5%
	Arlington	77.1%	48.6%	54.3%	52.9%
	Fairfax - Inclusive	75.2%	53.7%	53.0%	55.5%
	Prince William - Inclusive	72.7%	48.6%	48.2%	51.8%
	Leesburg/Loudon	70.3%	50.5%	49.5%	54.9%
Ethnicity	Hispanic/Latino	73.0%	50.7%	50.9%	53.3%
	Not Hispanic/Latino	75.0%	47.9%	50.0%	50.0%
Years of Residence	Less than 1 year	75.0%	50.0%	45.8%	49.3%
	1 to 3 years	74.1%	44.2%	47.9%	44.8%
	4 to 9 years	69.7%	53.9%	54.6%	55.9%
	10 to 19 years	75.3%	53.9%	59.6%	63.3%
	20 or more years	74.0%	52.0%	45.5%	54.5%
Home Ownership	Owned	76.1%	56.5%	54.8%	59.0%
	Rented	70.4%	43.8%	45.3%	44.0%
Household Income	Less than $35,000	63.9%	43.7%	42.3%	54.9%
	$35,000 to $49,999	71.9%	47.6%	55.6%	49.2%

Demographic	Sub-category	Understand Fertilizer	Want Fertilizer	Less Fertilizer	Fertilizer Already
	$50,000 to $74,999	74.8%	53.5%	48.7%	53.0%
	$75,000 to $99,999	71.4%	61.5%	65.9%	62.0%
	$100,000 to $124,999	63.6%	28.8%	30.3%	24.6%
	$125,000 to $149,999	81.5%	61.5%	60.0%	58.5%
	$150,000 to $174,999	73.7%	55.3%	52.6%	39.5%
	$175,000 to $199,999	87.0%	47.8%	43.5%	65.2%
	$200,000 or greater	84.4%	46.7%	51.1%	73.3%

** Red font indicates significant differences within a demographic subgroup.*

Figure 37. Ad impact on fertilization behaviors.



Impact of advertisements on motor oil disposal

Finally, these survey participants were asked about their behaviors regarding disposing of motor oil after watching the advertisements. Respondents were provided the following statements with the option to respond "Yes", "No", or "Does not apply":

- I understand more about the impact of motor oil on water quality.
- I'd like to dispose of motor oil properly, though I haven't made any changes yet.
- I now properly dispose of motor oil.
- I was already doing what is recommended to reduce water pollution from motor oil.

Of the respondents, 73.8% report understanding more about the impact of motor oil on water quality, 43.7% report wanting to dispose of motor oil properly despite not making any changes yet, 48.2% report now properly disposing of motor oil and 68.8% of respondents were already doing what is recommended as shown in Table 31 and *Figure 38*.

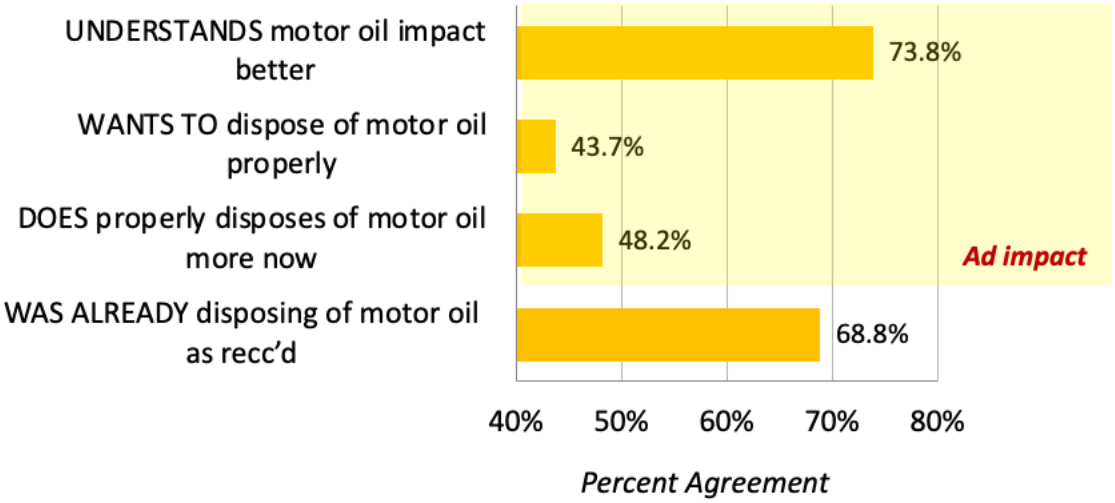
Table 31. Ad impact on motor oil (MO) disposal by demographic group among respondents who had seen the advertisement prior to completing the survey.

Demographic	Sub-category	MO Understand	MO Want	MO Now	MO Already
	All Respondents	**73.8%**	**43.7%**	**48.2%**	**68.8%**
Gender	Male	76.5%	51.3%	56.7%	73.1%
	Female	71.3%	34.7%	38.7%	64.3%
Age	21 to 24	73.4%	67.0%	51.6%	68.1%
	25 to 34	73.8%	47.9%	48.2%	64.5%
	35 to 44	77.0%	48.0%	53.7%	68.7%
	45 to 54	76.1%	29.6%	46.5%	80.0%
	55 to 64	66.0%	15.1%	26.9%	62.3%
	65 to 74	71.4%	17.6%	44.1%	72.2%
	75 or older	62.5%	25.0%	75.0%	100.0%
Locality	Alexandria	76.4%	46.1%	51.7%	69.7%
	Arlington	77.1%	47.1%	53.6%	71.4%
	Fairfax - Inclusive	74.8%	44.2%	47.7%	67.7%
	Prince William - Inclusive	71.8%	41.8%	46.4%	70.0%
	Leesburg/Loudon	68.9%	39.6%	44.0%	67.0%
Ethnicity	Hispanic/Latino	73.9%	44.8%	49.1%	68.9%
	Not Hispanic/Latino	73.6%	36.1%	41.7%	68.1%
Years of Residence	Less than 1 year	70.8%	38.9%	38.9%	70.8%
	1 to 3 years	74.4%	49.7%	47.9%	69.5%
	4 to 9 years	73.0%	44.1%	52.0%	65.8%
	10 to 19 years	76.4%	42.7%	49.4%	67.8%
	20 or more years	74.0%	37.4%	48.5%	71.7%

Demographic	Sub-category	MO Understand	MO Want	MO Now	MO Already
Home Ownership	Owned	76.0%	43.1%	50.8%	70.1%
	Rented	72.0%	45.3%	44.6%	67.5%
Household Income	Less than $35,000	70.4%	39.4%	42.3%	73.2%
	$35,000 to $49,999	71.9%	39.7%	41.9%	59.4%
	$50,000 to $74,999	74.8%	48.7%	53.9%	73.9%
	$75,000 to $99,999	72.5%	45.1%	51.6%	71.4%
	$100,000 to $124,999	70.8%	37.9%	39.4%	60.6%
	$125,000 to $149,999	76.9%	50.8%	51.6%	73.8%
	$150,000 to $174,999	73.7%	47.4%	44.7%	52.6%
	$175,000 to $199,999	87.0%	39.1%	43.5%	65.2%
	$200,000 or greater	75.6%	37.8%	57.8%	77.3%

** Red font indicates significant differences within a demographic subgroup.*

Figure 38. Ad impact on motor oil behaviors.



Perceptions of the Campaign Sponsor (NVCWP)

Survey participants were asked about their perceptions of the campaign sponsor, the Northern Virginia Clean Water Partners, as perceptions of the campaign sponsor are known to impact consumer perceptions of the campaign. Table 32 and *Figure 39* shows the percentage of respondents that indicate that they "Agree" or "Strongly Agree" with statements about NVCWP, on a 5-point scale of "Strongly Disagree", "Disagree", "Neither agree nor Disagree", "Agree" and "Strongly Agree". The statements were:

- I was familiar with the NVCWP before this survey
- I trust information from the NVCWP
- I would contact the NVCWP if I had a question or concern about water quality
- The NVCWP shares my values when it comes to water quality

An unusual proportion of respondents did not answer this series of questions. It may be likely that those who skipped the series of questions are not familiar with NVCWP but it cannot be determined from the current data.

Of those who did respond, 42.2% indicate they are familiar with NVCWP. In addition, 73.5% of participants reported they trust information from NVCWP. Respondents in higher household incomes exhibit greater prevalence of trust, with almost 90% of those with a household income greater than $200,000 voicing trust in the organization. Next, 74.5% of participants reported

believing that they share values about water quality with NVCWP. Finally, 70.9% of respondents stated that they would contact NVCWP if they had questions about water with consistent results across subgroup demographics.

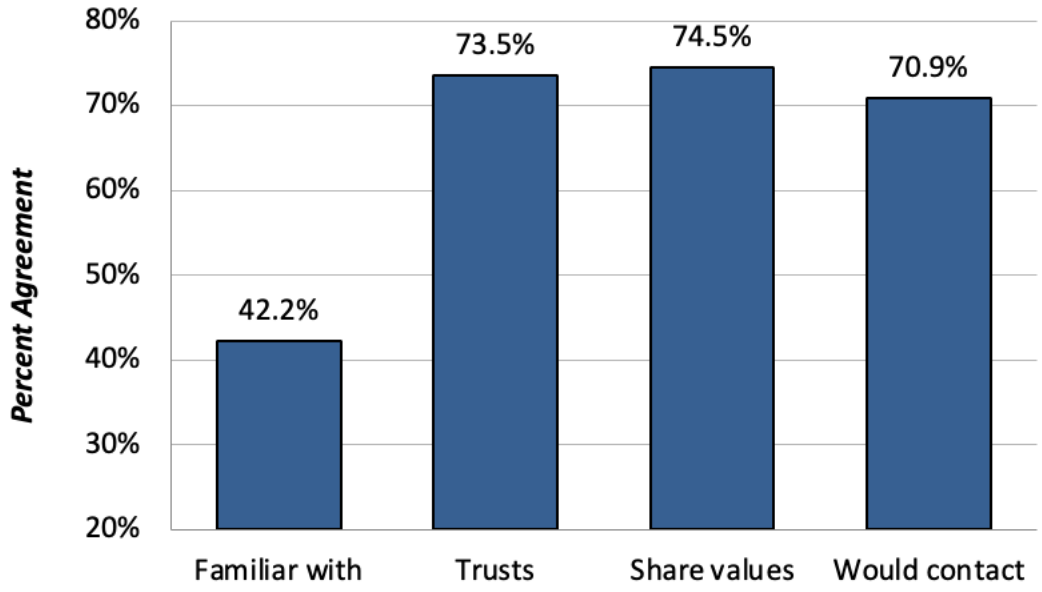
Table 32. Perceptions of the campaign sponsor, NVCWP, by demographic group.

Demographic	Sub-category	Familiar with NCVWP	Trust NCVWP	Share Values with NCVWP	Would Contact NCVWP
		Agree or Strongly Agree	Agree or Strongly Agree	Agree or Strongly Agree	Agree or Strongly Agree
	All Respondents	**42.2%**	**73.5%**	**74.5%**	**70.9%**
Gender	Male	50.0%	75.9%	75.8%	73.9%
	Female	34.2%	71.2%	73.1%	68.2%
Age	21 to 24	33.3%	68.9%	68.9%	57.3%
	25 to 34	38.7%	72.2%	74.7%	72.8%
	35 to 44	53.5%	76.0%	78.8%	75.3%
	45 to 54	49.3%	79.7%	72.5%	72.5%
	55 to 64	31.4%	63.3%	66.0%	62.0%
	65 to 74	35.1%	80.6%	80.6%	83.3%
	75 or older	37.5%	87.5%	100.0%	87.5%
Locality	Alexandria	41.5%	65.2%	71.1%	67.4%
	Arlington	39.4%	77.3%	79.1%	83.8%
	Fairfax - Inclusive	42.8%	76.9%	75.5%	70.3%
	Prince William - Inclusive	40.9%	71.8%	70.9%	71.3%
	Leesburg/Loudon	45.1%	73.3%	76.7%	65.6%
Ethnicity	Hispanic/Latino	32.9%	70.3%	68.9%	68.5%
	Not Hispanic/Latino	43.5%	74.0%	75.4%	71.3%
Years of Residence	Less than 1 year	34.2%	68.6%	71.4%	65.7%
	1 to 3 years	33.9%	71.4%	74.7%	70.8%
	4 to 9 years	48.7%	74.1%	74.0%	75.9%
	10 to 19 years	50.5%	74.7%	72.8%	63.0%
	20 or more years	43.6%	78.6%	78.8%	74.7%
Home Ownership	Owned	48.7%	77.2%	78.0%	73.1%
	Rented	33.8%	69.6%	69.6%	69.1%
Household Income	Less than $35,000	35.2%	60.6%	60.6%	55.4%

Demographic	Sub-category	Familiar with NCVWP	Trust NCVWP	Share Values with NCVWP	Would Contact NCVWP
		Agree or Strongly Agree	Agree or Strongly Agree	Agree or Strongly Agree	Agree or Strongly Agree
	$35,000 to $49,999	51.6%	67.8%	78.0%	73.3%
	$50,000 to $74,999	34.7%	77.6%	76.7%	73.0%
	$75,000 to $99,999	38.8%	72.5%	72.5%	72.5%
	$100,000 to $124,999	29.9%	71.4%	75.4%	72.3%
	$125,000 to $149,999	54.5%	78.5%	76.9%	76.6%
	$150,000 to $174,999	50.0%	64.9%	67.6%	67.6%
	$175,000 to $199,999	65.2%	82.6%	82.6%	69.6%
	$200,000 or greater	47.9%	89.4%	85.1%	74.5%

** Red font indicates significant differences within a demographic subgroup.*

Figure 39. Perceptions of NVCWP.



Message Sources

Survey participants were asked about their TV service provider and which channels they watch in order to get a better understanding of their sources of messaging. Provided options for TV

service provider were “Verizon”, “Comcast”, “Cox”, “Xfinity”, “Do not have cable TV”, “Do not watch TV”, “I don’t know”, and the option to write-in another provider not listed. As shown in *Table 33* and *Figure 40*, 38.6% of participants report using Verizon as their TV service provider, 10.2% report using Cox, 19.6% report using Xfinity and 6.5% report using Comcast. Additionally, 18.6% report not having cable, 2.5% report not watching TV, 2.2% report using some other service not listed, and 1.8% of respondents report not knowing which TV service provider they use. Verizon appears to be the most popular TV service provider among participants in Fairfax, Prince William, Leesburg/Loudon Counties, those who own their homes, those who have longer tenures in their home, and those with higher household incomes.

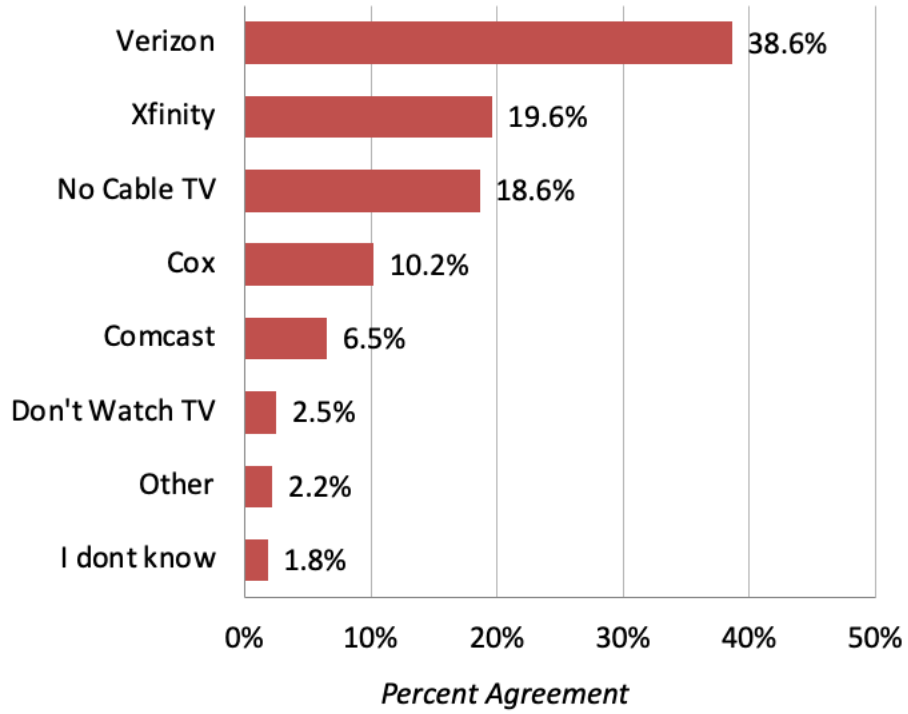
Table 33. TV service providers among respondents by demographic group.

Demographic	Sub-category	TV Service Provider							
		Verizon	Comcast	Cox	Xfinity	No Cable TV	Don't Watch TV	I dont know	Other
	All Respondents	**38.6%**	**6.5%**	**10.2%**	**19.6%**	**18.6%**	**2.5%**	**1.8%**	**2.2%**
Gender	Male	41.2%	6.5%	10.4%	21.4%	13.3%	3.6%	1.6%	1.9%
	Female	35.6%	6.4%	10.0%	17.8%	24.6%	1.1%	2.1%	2.5%
Age	21 to 24	42.9%	4.1%	13.3%	22.4%	10.2%	1.0%	3.1%	3.1%
	25 to 34	34.1%	9.8%	8.1%	22.0%	19.1%	3.5%	2.3%	1.2%
	35 to 44	36.1%	6.5%	9.0%	22.6%	18.1%	3.2%	1.9%	2.6%
	45 to 54	46.6%	6.8%	9.6%	13.7%	21.9%	0.0%	0.0%	1.4%
	55 to 64	35.8%	0.0%	13.2%	13.2%	32.1%	0.0%	1.9%	3.8%
	65 to 74	39.5%	7.9%	10.5%	13.2%	18.4%	7.9%	0.0%	2.6%
	75 or older	75.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Locality	Alexandria	25.5%	7.4%	10.6%	31.9%	17.0%	3.2%	2.1%	2.1%
	Arlington	23.6%	12.5%	5.6%	25.0%	23.6%	5.6%	2.8%	1.4%
	Fairfax - Inclusive	43.4%	4.0%	18.6%	11.5%	16.8%	1.8%	1.3%	2.7%
	Prince William - Inclusive	45.2%	4.3%	3.5%	23.5%	20.9%	0.9%	0.9%	0.9%
	Leesburg/Loudon	44.0%	9.9%	1.1%	17.6%	17.6%	3.3%	3.3%	3.3%
Ethnicity	Hispanic/Latino	45.5%	5.2%	6.5%	15.6%	22.1%	2.6%	1.3%	1.3%
	Not Hispanic/Latino	37.6%	6.7%	10.7%	20.2%	18.0%	2.5%	1.9%	2.3%
Years of Residence	Less than 1 year	17.6%	5.4%	13.5%	24.3%	24.3%	4.1%	6.8%	4.1%
	1 to 3 years	33.5%	9.4%	7.1%	17.6%	26.5%	3.5%	1.2%	1.2%
	4 to 9 years	46.5%	5.1%	10.2%	20.4%	12.1%	1.3%	2.5%	1.9%
	10 to 19 years	42.1%	5.3%	11.6%	22.1%	16.8%	0.0%	0.0%	2.1%
	20 or more years	47.1%	5.9%	11.8%	15.7%	12.7%	3.9%	0.0%	2.9%
	Owned	48.4%	6.4%	8.4%	15.9%	13.9%	2.0%	1.4%	3.5%

Demographic	Sub-category	TV Service Provider							
		Verizon	Comcast	Cox	Xfinity	No Cable TV	Don't Watch TV	I dont know	Other
Home Ownership	Rented	24.9%	5.9%	11.4%	25.7%	26.2%	3.0%	2.5%	0.4%
Household Income	Less than $35,000	20.5%	6.8%	5.5%	24.7%	26.0%	8.2%	6.8%	1.4%
	$35,000 to $49,999	33.8%	9.2%	12.3%	24.6%	15.4%	1.5%	3.1%	0.0%
	$50,000 to $74,999	31.9%	9.2%	11.8%	19.3%	20.2%	3.4%	0.8%	3.4%
	$75,000 to $99,999	40.0%	3.0%	15.0%	23.0%	14.0%	0.0%	3.0%	2.0%
	$100,000 to $124,999	40.3%	9.0%	9.0%	13.4%	22.4%	3.0%	0.0%	3.0%
	$125,000 to $149,999	47.7%	3.1%	6.2%	23.1%	15.4%	1.5%	0.0%	3.1%
	$150,000 to $174,999	55.3%	7.9%	7.9%	10.5%	18.4%	0.0%	0.0%	0.0%
	$175,000 to $199,999	56.5%	4.3%	8.7%	21.7%	8.7%	0.0%	0.0%	0.0%
	$200,000 or greater	50.0%	4.2%	10.4%	8.3%	20.8%	2.1%	0.0%	4.2%

** Red font indicates significant differences within a demographic subgroup.*

Figure 40. TV service providers.



TV channel options provided in the survey were “HLN TV”, “Oxygen”, “Toon”, “ENT”, “Animal Planet”, “CNN”, “ESPN”, “History”, “National Geographic”, “Home and Garden”, and “None of the above”. When asked which TV channels they watched (see *Table 34* and *Figure 41*), 42.9% of participants reported watching ESPN, 42.6% watch CNN, 34.1% watch History, 40.1% watch National Geographic, 26.0% watch Home and Garden, 28.0% watch Animal Planet, 9.2% watch HLN, 12.4% Toon, 16.4% watch Oxygen and 7.7% watch ENT. Finally, 19.5% of respondents report that they do not watch any of the listed channels. Among male participants, ESPN (57.0%) and CNN (50.1%) were reported as the most watched TV channels.

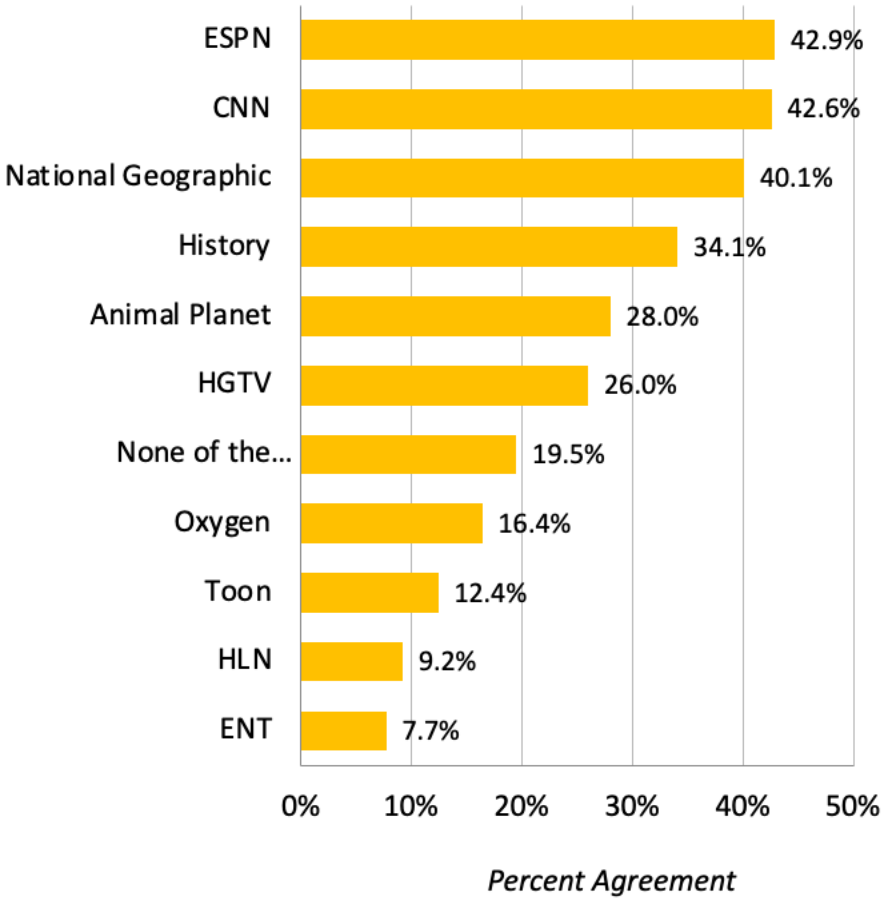
Table 34. TV channels that respondents report watching by demographic group.

Demographic	Sub-category	TV Channels Watched										
		HLN	ENT	ESPN	HGTV	Oxygen	Toon	Animal Planet	History	National Geographic	CNN	None of the Channels Listed
	All Respondents	**9.2%**	**7.7%**	**42.9%**	**26.0%**	**16.4%**	**12.4%**	**28.0%**	**34.1%**	**40.1%**	**42.6%**	**19.5%**
Gender	Male	12.0%	11.3%	57.0%	23.0%	17.5%	16.5%	26.2%	38.8%	40.8%	47.6%	13.3%
	Female	6.4%	3.9%	27.4%	29.2%	15.7%	8.2%	29.9%	29.5%	39.9%	37.7%	26.7%
Age	21 to 24	7.1%	6.1%	47.5%	15.2%	11.1%	14.1%	27.3%	21.2%	29.3%	30.3%	20.2%
	25 to 34	9.2%	8.1%	39.9%	26.0%	20.2%	17.3%	31.8%	32.9%	43.4%	41.0%	17.9%
	35 to 44	11.0%	13.5%	49.0%	27.1%	22.6%	11.6%	26.5%	34.8%	40.0%	49.0%	18.1%
	45 to 54	12.3%	6.8%	47.9%	28.8%	13.7%	11.0%	31.5%	41.1%	39.7%	50.7%	19.2%
	55 to 64	3.8%	0.0%	32.1%	39.6%	5.7%	5.7%	24.5%	43.4%	49.1%	43.4%	22.6%
	65 to 74	5.3%	0.0%	28.9%	26.3%	2.6%	2.6%	18.4%	36.8%	39.5%	39.5%	26.3%
	75 or older	25.0%	0.0%	25.0%	25.0%	37.5%	0.0%	25.0%	62.5%	50.0%	37.5%	25.0%
Locality	Alexandria	12.8%	6.4%	41.5%	24.5%	18.1%	11.7%	22.3%	27.7%	37.2%	44.7%	22.3%
	Arlington	6.9%	2.8%	33.3%	25.0%	13.9%	6.9%	26.4%	31.9%	31.9%	43.1%	22.2%
	Fairfax - Inclusive	11.1%	9.3%	47.8%	26.5%	16.4%	11.1%	29.2%	35.8%	38.9%	46.5%	16.4%
	Prince William - Inclusive	7.0%	7.0%	43.5%	27.0%	16.5%	17.4%	33.9%	35.7%	50.4%	42.6%	15.7%
	Leesburg/Loudon	5.4%	9.8%	39.1%	26.1%	16.3%	14.1%	25.0%	35.9%	39.1%	30.4%	27.2%
Ethnicity	Hispanic/Latino	5.2%	5.2%	39.0%	19.5%	13.0%	10.4%	28.6%	27.3%	29.9%	40.3%	20.8%
	Not Hispanic/Latino	9.8%	8.0%	43.5%	27.0%	16.9%	12.6%	28.0%	35.1%	41.6%	42.9%	19.3%
Years of Residence	Less than 1 year	6.8%	4.1%	32.4%	16.2%	8.1%	5.4%	25.7%	31.1%	35.1%	39.2%	28.4%
	1 to 3 years	7.6%	4.1%	44.1%	23.5%	17.1%	8.8%	30.6%	29.4%	40.6%	44.1%	21.2%
	4 to 9 years	9.6%	8.9%	47.8%	27.4%	15.3%	15.9%	22.9%	33.8%	42.7%	44.6%	14.6%
	10 to 19 years	9.4%	12.5%	38.5%	25.0%	19.8%	13.5%	29.2%	34.4%	35.4%	37.5%	21.9%
	20 or more years	12.7%	9.8%	45.1%	36.3%	19.6%	16.7%	32.4%	44.1%	43.1%	44.1%	15.7%
Home Ownership	Owned	9.8%	8.7%	48.6%	30.3%	16.8%	13.3%	28.6%	35.5%	40.5%	43.6%	15.9%
	Rented	8.0%	5.5%	36.3%	19.8%	15.2%	11.0%	27.4%	31.2%	40.1%	42.2%	24.9%
Household Income	Less than $35,000	8.2%	6.8%	28.8%	19.2%	15.1%	17.8%	21.9%	30.1%	28.8%	31.5%	32.9%
	$35,000 to $49,999	3.1%	3.1%	23.1%	15.4%	16.9%	12.3%	29.2%	29.2%	29.2%	38.5%	30.8%

Demographic	Sub-category	TV Channels Watched										
		HLN	ENT	ESPN	HGTV	Oxygen	Toon	Animal Planet	History	National Geographic	CNN	None of the Channels Listed
	$50,000 to $74,999	7.6%	7.6%	42.9%	20.2%	13.4%	10.9%	31.1%	31.1%	42.0%	42.0%	18.5%
	$75,000 to $99,999	12.0%	8.0%	41.0%	37.0%	21.0%	14.0%	28.0%	32.0%	44.0%	48.0%	15.0%
	$100,000 to $124,999	10.4%	1.5%	53.7%	26.9%	16.4%	10.4%	25.4%	37.3%	47.8%	43.3%	23.9%
	$125,000 to $149,999	6.1%	7.6%	57.6%	30.3%	13.6%	9.1%	27.3%	37.9%	37.9%	59.1%	10.6%
	$150,000 to $174,999	10.5%	10.5%	39.5%	26.3%	15.8%	13.2%	28.9%	42.1%	39.5%	26.3%	13.2%
	$175,000 to $199,999	17.4%	26.1%	69.6%	21.7%	30.4%	13.0%	26.1%	34.8%	43.5%	26.1%	4.3%
	$200,000 or greater	14.6%	12.5%	50.0%	37.5%	12.5%	10.4%	33.3%	41.7%	50.0%	52.1%	14.6%

** Red font indicates significant differences within a demographic subgroup.*

Figure 41. TV channels watched.



APPENDIX

Survey Instrument

2023 Stormwater Survey

Survey Instrument

Programming instructions

- Programming instructions are in [SQUARE BRACKETS].
- Skip/branch logic is in [RED SQUARE BRACKETS].
- All items are single-select unless otherwise noted.
- Retain response option order unless noted.
- Retain grid item order unless noted.
- Allow respondents to go back/forward.
- Respondents may skip any question, but give one prompt if they move forward without a response. Terminate if a screener question is skipped.

Consent and screening

We're conducting this survey to understand opinions related to storm water. Everything you say will be anonymous. You'll watch a couple short videos, so please make sure your sound is on. The survey should take about 10 minutes.

Do you want to proceed?
Yes
No [END SURVEY]

Section	Construct	Q #	Question
Demographics	Sex	S1	First, we'll ask a few questions about you. What is your gender identity? Male Female Non-binary/non-conforming Prefer not to answer
Demographics	Age	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
Demographics	Residence Type	S3	Is your home…? Owned Rented Military housing Transitional housing Other (Please specify): None of the above [END SURVEY]
Demographics	VA Residency	S4	Do you live in the state of Virginia? Yes No [END SURVEY]

Demographics	NoVA Residency	S5	Do you live in one of the following towns, cities, or counties? Please select only one location. Alexandria Arlington Fairfax County: Fairfax City Fairfax County: Herndon Fairfax County: Vienna Fairfax County, but not one of the cities/towns listed Falls Church Henrico County [END SURVEY] Loudoun County: Leesburg Loudoun County, but not Leesburg Prince William County: Dumfries Prince William County: Manassas Prince William County: Manassas Park Prince William County, but not one of the cities/towns listed Richmond [END SURVEY] Virginia Beach [END SURVEY] None of the above [END SURVEY]
Demographics	HH Income	S6	What is your household's annual income? Less than $35,000 $35,000 to $49,999 $50,000 to $74,999 $75,000 to $99,999 $100,000 to $124,999 $125,000 to $149,999 $150,000 to $174,999 $175,000 to $199,999 $200,000 or greater
Demographics	Ethnicity	S7	Which of the following describes your ethnicity? (Please select all that apply) African American/Black American Indian/Native Alaskan Asian Hispanic/Latino Native Hawaiian/Pacific Islander White/Caucasian Other: _____

Demographics	Years in residence	Q1	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
Behavior	Lawn or garden at residence	Q2	Does your home have a lawn or garden, no matter how small? Yes No
Behavior	Lawn care familiarity	Q3	[IF Q2 = YES] Are you familiar with how your garden or lawn is cared for (e.g., fertilizer use, mowing)? Yes No
Behavior	Lawn care use	Q4	[IF Q2 = YES] Do you use a lawn care service at least once a year? Yes No
Behavior	Vehicle owner	Q5	Do you own or lease a personal vehicle? Yes No
Demographics	Own a dog	Q6	Is there one or more dogs in your home that you are at least partially responsible for? Yes No
Knowledge	Watershed	Q7	Are you familiar with the term “watershed”? Yes No [DISPLAY TEXT ON NEXT PAGE AFTER RESPONSE HAS BEEN ENTERED.] A **watershed** is an area of land that channels rainfall and snowmelt to creeks, streams, and rivers, and eventually to outflow points such as reservoirs, bays, and the ocean.

<table>
<tr><td>Demographics</td><td>Reside within watershed</td><td>Q8</td><td>Do you live in the….

<table><tr><td></td><td>YES</td><td>NO</td><td>Don’t Know</td></tr><tr><td>Chesapeake Bay watershed?</td><td></td><td></td><td></td></tr><tr><td>Potomac River watershed?</td><td></td><td></td><td></td></tr><tr><td>Another watershed not listed?</td><td></td><td></td><td></td></tr></table></td></tr>
<tr><td>Perceptions</td><td>Storm water final destination</td><td>Q9</td><td>“Stormwater” is rainwater that flows into the street, along the gutter and into the storm drain. To the best of your knowledge, does storm water eventually end up in…?

<table><tr><td></td><td>YES</td><td>NO</td><td>Don’t Know</td></tr><tr><td>A wastewater treatment facility?</td><td></td><td></td><td></td></tr><tr><td>Potomac River or Chesapeake Bay?</td><td></td><td></td><td></td></tr><tr><td>A nearby stream or creek</td><td></td><td></td><td></td></tr></table>
Other: _____</td></tr>
<tr><td>Behavior</td><td>Dog walk cleanup frequency</td><td>Q10</td><td>[IF Q6= YES]
When taking your dog(s) for a walk, how often do you pick up after your dog(s)?

Always
Usually
Sometimes
Rarely
Never
Not applicable/I don’t take the dog(s) on walks</td></tr>
<tr><td>Behavior</td><td>Dog yard clean up frequency</td><td>Q11</td><td>[IF Q6 = YES AND Q2 = YES]
How often do you (or someone else from your household) remove your dog’s waste from your yard?

Not applicable – dog not allowed to go in the home’s yard
Daily
Weekly
Monthly
Less often than once a month
Never
Not sure</td></tr>
</table>

Belief	Reason for dog clean up	Q12	[IF Q10 = (Always, Usually, Sometimes, Rarely) AND Q11 = (Daily, Weekly, Monthly, Less often than once a month)] 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
Behavior	Grass clippings handling	Q13	[IF Q3 = YES] How are your grass clippings disposed of? Bagged and put in the regular trash Bagged and put in compost/recycling bags for pick up Left on the lawn/garden Put in a compost pile/bin Not sure Other Not applicable/don't have grass clippings
Behavior	Grass clippings on street handling	Q14	[IF Q3 = YES] After your grass has been mown, what is done if grass clippings end up in the street? They are left there. They are swept or blown back into the lawn. They are swept or blown into the storm drain Not applicable/don't have grass clippings Other: _____ Not sure
Behavior	Lawn fertilization frequency	Q15	[IF Q3 = YES] Which of the following best describes how often your lawn is fertilized? 1 time a year 2 times a year 3 times a year 4+ times a year Only if/when if a soil test indicates the grass needs fertilizer Never Not sure

<table>
<tr><td>Knowledge</td><td>Rain barrel familiarity</td><td>Q16</td><td>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 statements are true for you?

<table><tr><td></td><td>YES</td><td>NO</td></tr><tr><td>I have a rain barrel.</td><td></td><td></td></tr><tr><td>I am familiar with rain barrels.</td><td></td><td></td></tr><tr><td>I don’t have a rain barrel but I’m interested in getting one.</td><td></td><td></td></tr></table></td></tr>
<tr><td>Knowledge</td><td>Rain garden familiarity</td><td>Q17</td><td>A rain garden is a bowl-shaped garden area where runoff can collect and soak into the ground. Which of the following statements are true for you?<table><tr><td></td><td>YES</td><td>NO</td></tr><tr><td>I have a rain garden.</td><td></td><td></td></tr><tr><td>I am familiar with rain gardens.</td><td></td><td></td></tr><tr><td>I don’t have a rain garden but I’m interested in installing one.</td><td></td><td></td></tr></table></td></tr>
<tr><td>Knowledge</td><td>Conservation landscaping familiarity</td><td>Q18</td><td>Conservation landscaping is replacing an area of lawn or bare soil in your yard with native plants. Which of the following statements are true for you?

<table><tr><td></td><td>YES</td><td>NO</td></tr><tr><td>I have conservation landscaping in my yard.</td><td></td><td></td></tr><tr><td>I am familiar with conservation landscaping.</td><td></td><td></td></tr><tr><td>I don’t have conservation landscaping but I’m interested in installing it.</td><td></td><td></td></tr></table></td></tr>
<tr><td>Behavior</td><td>Vehicle oil handling</td><td>Q19</td><td>[IF Q5 = YES]
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
Dump it on the ground
Other: _____</td></tr>
</table>

Knowledge	HHW drop off knowledge	Q20	Do you know whether or not 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, I know whether we have a location for drop-offs. No, I'm not sure whether we have a location for drop-offs.
Knowledge	Pollution reporting knowledge	Q21	Do you feel that you know who to contact to report potential water pollution? I definitely know I think I know I don't think I know I definitely don't know
Behavior	Likelihood to report pollution	Q22	What is the likelihood that you would call county or town officials to report potential pollution so they could investigate the cause? I definitely would I probably would I'm equally likely to call and to not call I probably would NOT I definitely would NOT
Behavior	Reason for not reporting pollution	Q23	[IF Q26 = Equally likely, Probably not or Definitely not] What is the primary reason that you would **not** call county or town officials to report potential pollution? I'm too busy It's not my responsibility It's none of my business I prefer not to communicate with officials or authorities Other: _____
Behavior	Wash vehicle at home	Q24	[IF Q5 = YES] In the past year, where have you washed your personal vehicle? Check all that apply. [MULTISELECT] At my home or someone else's home At a commercial car wash I haven't washed my vehicle Other: _____ [please specify]

<table>
<tr><td>Behavior</td><td>Wash vehicle at home frequency</td><td>Q25</td><td>[IF Q24 = At my/someone else's home]
How often do you typically wash your car/truck at home?

Less than once a year
1- 2 times per year
3-4 times per year
5-6 times per year
7-12 times per year
12+ times per year</td></tr>
<tr><td>Behavior</td><td>Wash vehicle method</td><td>Q26</td><td>[If Q24 = At home]
When you wash your car/truck at home, which of the following apply?

<table><tr><th></th><th>YES</th><th>NO</th><th>NOT SURE</th></tr><tr><td>I wash it on the grass, gravel or dirt</td><td></td><td></td><td></td></tr><tr><td>I use environmentally friendly detergent</td><td></td><td></td><td></td></tr><tr><td>I use water only (no soap or detergent)</td><td></td><td></td><td></td></tr></table></td></tr>
<tr><td>Knowledge</td><td>Pollution identification</td><td>Q27</td><td>Looking at the picture below, would you consider either to be a potential source of water pollution?
[MEDIA: SurveyImage_POLLUTION.png]

Yes
No
Not sure
Cannot see image</td></tr>
<tr><td>Sources</td><td>TV service provider</td><td>Q28</td><td>What TV service provider do you use? [RANDOMIZE FIRST FOUR OPTIONS]

Verizon
Comcast
Cox
Xfinity
Do not have cable TV
Do not watch TV
Other: _____
I don't know</td></tr>
</table>

Sources	TV channels	Q29	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
Knowledge	Clean up activity awareness in past 12 months	Q30	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
Behavior	Cleanup activity participation in the past 12 months	Q31	[IF Q30 = YES] 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
Instruction			Please watch the video below, then we'll ask you a couple questions about it. [VIDEO ORDER RANDOMIZED: "Only Rain Down the Drain!", "Cleaner Streets Means Cleaner Water"]
Awareness	Ad familiarity	Q32	Before this survey, had you seen this ad, or a similar one on TV, Facebook, or Twitter? Yes No Not sure Video did not play

<table>
<tr>
<td>Perception</td>
<td>Ad perceptions</td>
<td>Q33</td>
<td>[IF Q32 NOT ‘Video did not play”]
Thinking of the ad video you just saw, indicate whether you agree or disagree with the following statements about it.

<table>
<tr><th></th><th>Strongly Disagree</th><th>Disagree</th><th>Neither disagree or agree</th><th>Agree</th><th>Strongly Agree</th></tr>
<tr><td>I understand the information in the ad.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>The ad is relevant to me.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>I trust the information in the ad.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>The ad’s message is important.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>The ad is persuasive.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>I think the ad would be effective.</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr>
<td>Behavior</td>
<td>Ad impact</td>
<td>Q34</td>
<td>[IF Q32 = YES]
Thinking back to when you first saw the ad(s), please indicate if the following statements are true for you now compared to then? (Select all that apply.)

<table>
<tr><th></th><th>YES</th><th>NO</th><th>DOES NOT APPLY</th></tr>
<tr><td>I understand more about the impact of pet waste on water quality.</td><td></td><td></td><td></td></tr>
<tr><td>I’d like to pick up pet waste more often, though I haven’t made any changes yet.</td><td></td><td></td><td></td></tr>
<tr><td>I now pick up pet waste more often.</td><td></td><td></td><td></td></tr>
<tr><td>I was already doing what is recommended to reduce water pollution from pet waste</td><td></td><td></td><td></td></tr>
</table>

[PAGE BREAK. KEEP QUESTION AND RESPONSE LABELS ON SCREEN
<table>
<tr><th></th><th>YES</th><th>NO</th><th>DOES NOT APPLY</th></tr>
<tr><td>I understand more about the impact of fertilizer on water quality.</td><td></td><td></td><td></td></tr>
<tr><td>I’d like to fertilize fewer times during the year.</td><td></td><td></td><td></td></tr>
<tr><td>I now plan to fertilize fewer times during the year.</td><td></td><td></td><td></td></tr>
<tr><td>I was already doing what is recommended to reduce water pollution from fertilizer.</td><td></td><td></td><td></td></tr>
</table>

[PAGE BREAK. KEEP QUESTION AND RESPONSE LABELS ON SCREEN.]
<table>
<tr><th></th><th>YES</th><th>NO</th><th>DOES NOT APPLY</th></tr>
<tr><td>I understand more about the impact of motor oil on water quality.</td><td></td><td></td><td></td></tr>
<tr><td>I’d like to dispose of motor oil properly, though I haven’t made any changes yet.</td><td></td><td></td><td></td></tr>
<tr><td>I now properly dispose of motor oil.</td><td></td><td></td><td></td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td>I was already doing what is recommended to reduce water pollution.</td><td></td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Instruction</td><td></td><td></td><td>Please watch the video below, then we'll ask you a couple questions about it.
[VIDEO ORDER RANDOMIZED: “Only Rain Down the Drain!”, “Cleaner Streets Means Cleaner Water”]</td></tr>
<tr><td>Awareness</td><td>Ad familiarity</td><td>Q35</td><td>Before this survey, had you seen this ad, or a similar one on TV, Facebook, or Twitter?

Yes
No
Not sure
Video did not play</td></tr>
<tr><td>Perception</td><td>Ad perceptions</td><td>Q36</td><td>[IF Q32 NOT ‘Video did not play”]
Thinking of the ad video you just saw, indicate whether you agree or disagree with the following statements about it.

<table>
<tr><th></th><th>Strongly Disagree</th><th>Disagree</th><th>Neither disagree or agree</th><th>Agree</th><th>Strongly Agree</th></tr>
<tr><td>I understand the information in the ad.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>The ad is relevant to me.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>I trust the information in the ad.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>The ad’s message is important.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>The ad is persuasive.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>I think the ad would be effective.</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
</td></tr>
</table>

<table>
<tr>
<td>Behavior</td>
<td>Ad impact</td>
<td>Q37</td>
<td>[IF Q32 = YES]
Thinking back to when you first saw the ad(s), please indicate if the following statements are true for you now compared to then? (Select all that apply.)

<table>
<tr><th></th><th>YES</th><th>NO</th><th>DOES NOT APPLY</th></tr>
<tr><td>I understand more about the impact of pet waste on water quality.</td><td></td><td></td><td></td></tr>
<tr><td>I’d like to pick up pet waste more often, though I haven’t made any changes yet.</td><td></td><td></td><td></td></tr>
<tr><td>I now pick up pet waste more often.</td><td></td><td></td><td></td></tr>
<tr><td>I was already doing what is recommended to reduce water pollution from pet waste</td><td></td><td></td><td></td></tr>
</table>

[PAGE BREAK. KEEP QUESTION AND RESPONSE LABELS ON SCREEN
<table>
<tr><th></th><th>YES</th><th>NO</th><th>DOES NOT APPLY</th></tr>
<tr><td>I understand more about the impact of fertilizer on water quality.</td><td></td><td></td><td></td></tr>
<tr><td>I’d like to fertilize fewer times during the year.</td><td></td><td></td><td></td></tr>
<tr><td>I now plan to fertilize fewer times during the year.</td><td></td><td></td><td></td></tr>
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</table>

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<table>
<tr><th></th><th>YES</th><th>NO</th><th>DOES NOT APPLY</th></tr>
<tr><td>I understand more about the impact of motor oil on water quality.</td><td></td><td></td><td></td></tr>
<tr><td>I’d like to dispose of motor oil properly, though I haven’t made any changes yet.</td><td></td><td></td><td></td></tr>
<tr><td>I now properly dispose of motor oil.</td><td></td><td></td><td></td></tr>
</table>
</td>
</tr>
</table>

			I was already doing what is recommended to reduce water pollution.			
Awareness	Received info about water pollution	Q38	Have you seen or received information about reducing water pollution from any source in the past 12 months? Yes No Not sure			
Awareness	Rain logo familiarity	Q39	Have you seen the logo below before? [MEDIA: SHOW SURVEYIMAGE_LOGO] Yes No Cannot see image			

<table>
<tr>
<td>Perceptions</td>
<td>Sponsor awareness and perceptions</td>
<td>Q40</td>
<td>[DISPLAY TEXT ON SEPARATE PAGE.]
The Northern Virginia Clean Water Partners is 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.
[PAGE BREAK.]

Indicate whether you agree or disagree with the following statements about the Northern Virginia Clean Water Partners (NVCWP).

<table>
<tr><th></th><th>Strongly Disagree</th><th>Disagree</th><th>Neither disagree or agree</th><th>Agree</th><th>Strongly Agree</th></tr>
<tr><td>I was familiar with the NVCWP before this survey.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>I trust information from the NVCWP.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>I would contact the NVCWP if I had a question or concern about water quality.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>The NVCWP shares my values when it comes to water quality.</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
</td>
</tr>
</table>

[FINAL PAGE]
Thank you for completing the survey! The survey was sponsored by the Northern Virginia Clean Water Partners. To learn about the Northern Virginia Clean Water Partners, visit onlyrain.org.

Appendix C: Clean Water Partners Annual Summary of Results

View online CWP 2023 Annual Summary of Results online:

https://www.onlyrain.org/_files/ugd/200411_a35f9d590ecd406693c1d6730a387b7c.pdf