

Neighborhood College: Sully District

DPWES Stormwater and Wastewater Management
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Department of Public Works and Environmental Services
Working for You!



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Fairfax County Department of Public Works and Environmental Services

DPWES Director

Capital Facilities

Solid Waste

Stormwater and Wastewater

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Wastewater Treatment

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It's all One Water



Stormwater

Water from a storm (rain or snow)

Drinking Water

Water from the tap (faucet)

Wastewater

Dirty water that goes down our drains and toilets

Who Manages that Program?

Wastewater & Stormwater:
Fairfax County DPWES

Drinking Water:
Fairfax Water

One Water in Fairfax County



<https://www.fairfaxcounty.gov/publicworks/stormwater>



<https://www.fairfaxcounty.gov/publicworks/wastewater>

What do you want to hear about today?

Please indicate in the Teams comments area which topics we should skip.

1. Wastewater basics (8 min)
2. Wastewater environmental and community stewardship (8 min)
3. Wastewater website (4 min)
4. Stormwater basics (8 min)
5. Stormwater drainage complaints and infill (5 min)
6. Stormwater website (4 min)

~37 minutes of slides

Wastewater Trivia



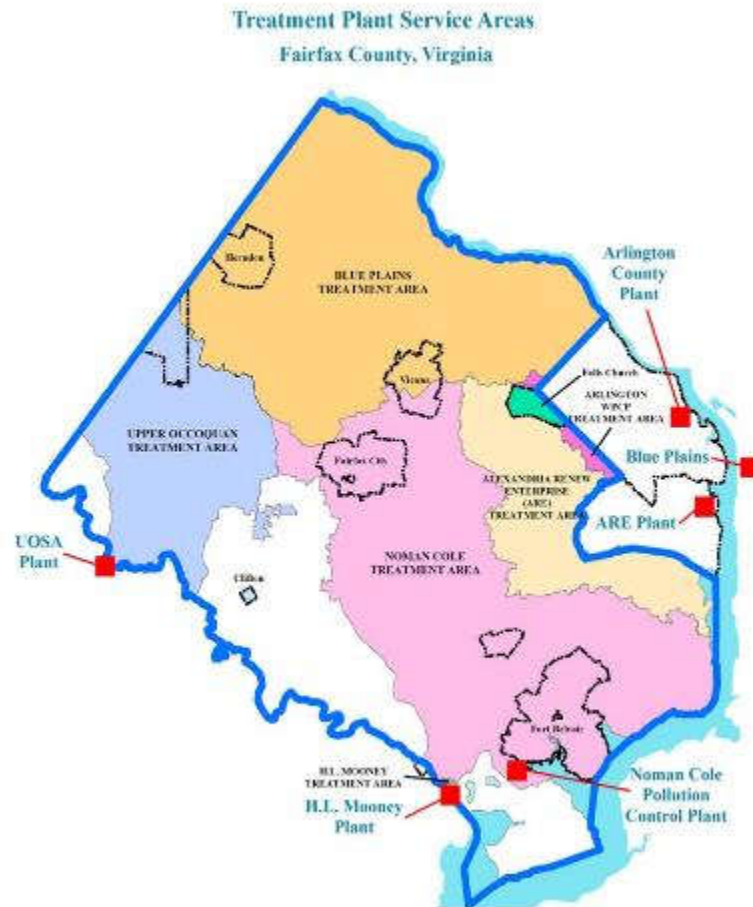
Q1: What percentage of human waste in the world flows back into the ecosystem without being treated?

80% 50% 20% 10%

Q2: How many YEARS do you add to your life expectancy because of wastewater treatment/sanitation?

50 years 20 years
5 years none

Fairfax County Wastewater Management



- 349 employees
- \$2B in infrastructure assets
- \$284 million/year operational, debt and capital budget
- 372,000 residential, industrial, and commercial customers
- 3,300 miles pipes, 65 pump stations
- 100 MGD conveyed

Protect – Restore - Enhance

Noman M. Cole Jr., Pollution Control Plant

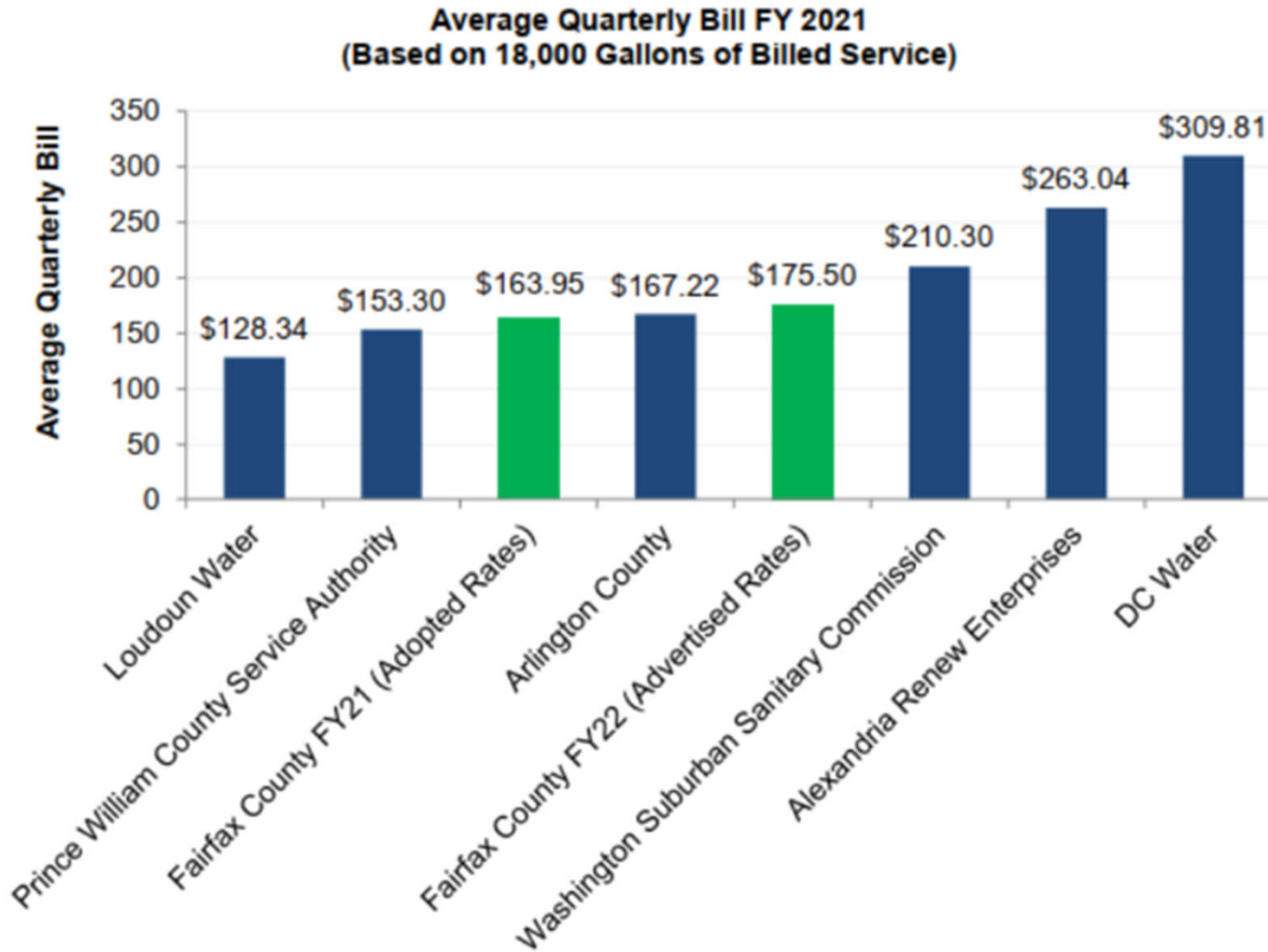


1970 - 18 Million Gallons per Day (MGD)

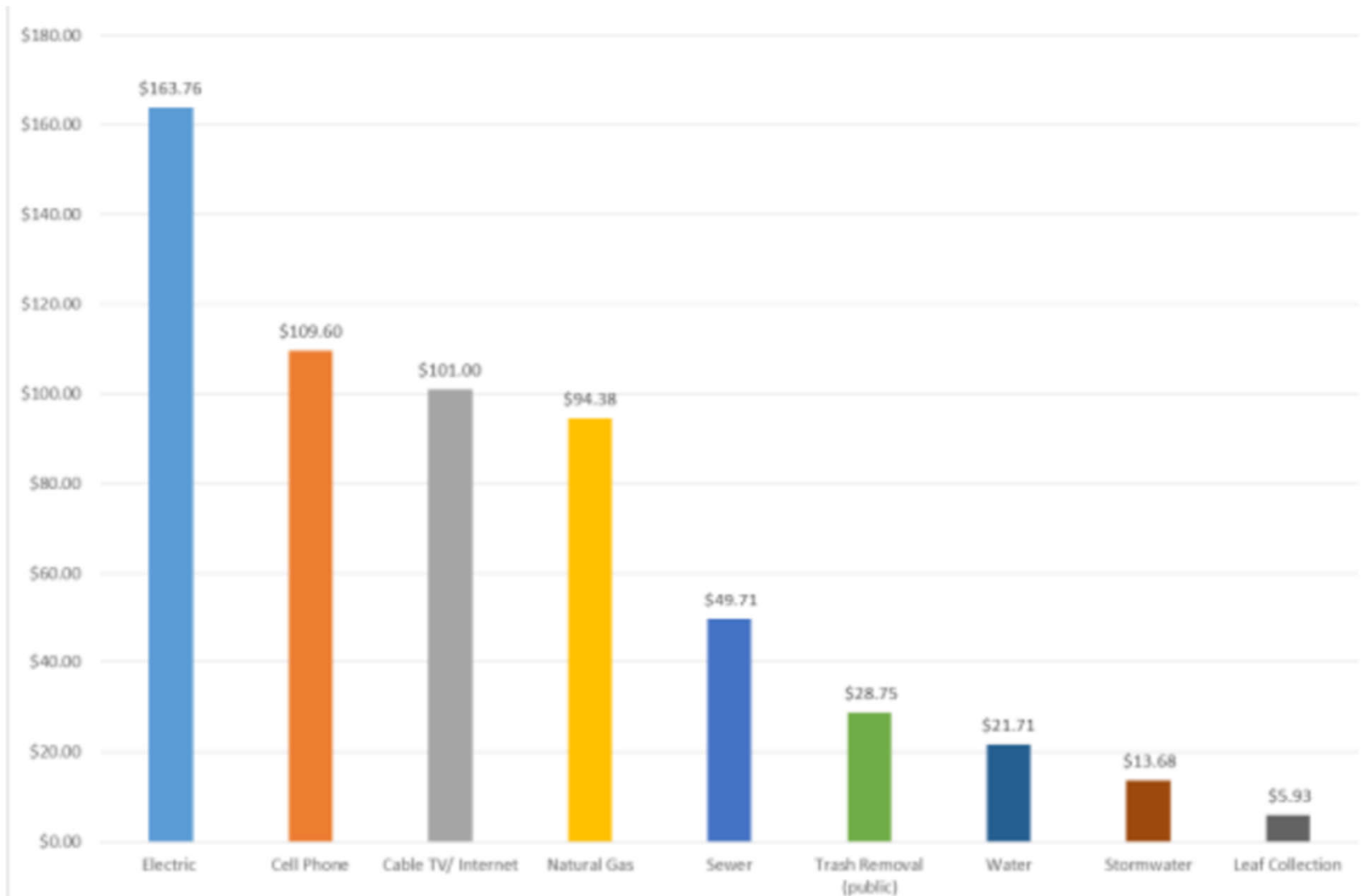


Today - 67 Million Gallons per Day (MGD)

Sewer Rates Compared with Neighboring Communities



2018 Ave Fx Monthly Sewer Rates Compared with Other Utilities



Making Clean Water Every Day



Clogging Culprits – Sewer Backups and Overflows!



Watch out! Here Comes Trouble!

PROTECT YOUR PIPES

GREASE

WIPES



Mitigating Backups and Overflows



Closed Circuit Television Crews:

Performs inspections of gravity sewer pipes to investigate and report potential problems.

Sewer Maintenance Group: Inspect and pressure wash the lines, helping prevent backups or sewer overflows from improperly disposed items.



Pump Station Group:

Mechanics, electrician, and instrumentation personnel maintain operations of pump stations

Trouble Response Center:

Work 24 hours a day to receive calls and dispatch someone to access and correct problems.

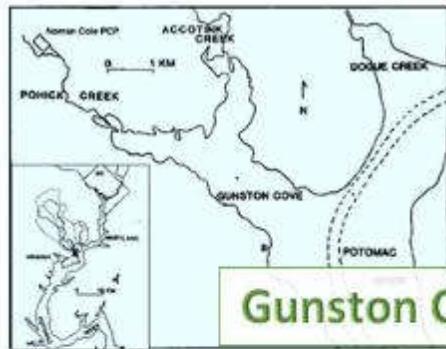
Protecting Water Quality with Continual Improvements

Comprehensive Sanitary Sewer Creek Crossing Inspection Program:

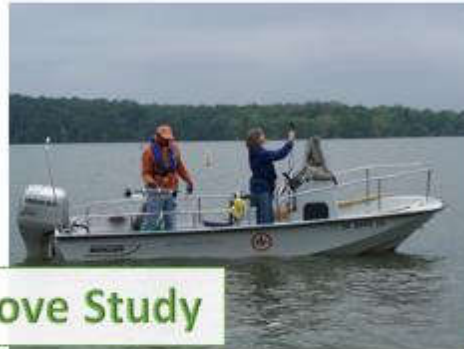
- Over 6,000 location where gravity sewer lines cross creeks or streams.
- Overlapping proximity to waterways and remote locations can lead to more time in detecting and/or controlling problems.
- Concerns increasing with development, climate changes, and recent storm events leading to erosion of creek/stream banks.
- Looks at the potential risk of pipe failures may cause environmental, public health and social ramifications.



Environmental Stewardship and Sustainability



Gunston Cove Study



Plant Tours



Water Reuse



Science of Wastewater



FLUSHED! THE JOURNEY OF WASTEWATER



Watch the video series focused on the different Wastewater Management teams that work to protect our wastewater infrastructure, human health and the environment.

Noman Cole Treatment Plant Tours



Water Quality Science Projects



Laboratory Staff assist High School Students with Water Quality Science Projects

Purpose: to create a pragmatic alternative to activated carbon that can remove organic compounds and heavy metals from wastewater. Activated carbon has poor regeneration capabilities and a new material made from industrial waste products would be more environmentally friendly.

Hypothesis: If oyster shells, a silica-alginate hybrid material, and an oyster-silica-alginate hybrid material were used to remove dyes, heavy metals, and pharmaceuticals from polluted water, then the oyster-silica-alginate hybrid material would be the most effective.

Public Engagement at Local Government Sponsored Events



Earth Day
Events



Town Hall
Meetings



Community Events



Boy Scouts
Events



Girl Scouts
Events



Bring Your Children to Workday

Outgrowth of School Partnership

Trades Internship Program for High School Graduates Pilot Program

Drivers:

- 57% of our workforce is trades and labor positions
- High number of employees retiring in the next 10 years
- Plant Operator position especially hard to fill

Process:

- Partnered with Mt Vernon high school Career Specialist to recruit students
- Participants successfully competed for permanent positions
- Pilot success leads to workshop to expand to 27 high schools



Utility Relief Funds – We are here to help!




**Behind on your water bill?
Your utility can help.**


 Call or email your water utility today – they are standing by!

 Your utility will work with you on payment options or assistance.

 Metropolitan Washington Council of Governments

**¿Atrasado en los pagos
de su factura del agua?
No se preocupe.**

 Su compañía de agua puede ayudarlo.

 Metropolitan Washington Council of Governments

General: <https://www.fairfaxcounty.gov/housing/cares-act-funding-for-affordable-housing-providers>

Water specific: <https://www.fairfaxwater.org/news/payment-assistance-options>

Medication Messaging

3 WAYS TO PROPERLY DISPOSE OF MEDICATION

DRUG TAKE BACK PROGRAMS AND DROPBOXES

PLACE IN TRASH AFTER MIXING WITH UNDESIRABLE SUBSTANCES

DEACTIVATION KITS

Permanent Disposal
Dropbox locations

Winter Salt Smart Messaging – Both Storm and Waste



Be Winter Salt Smart!

SHOVEL EARLY

Remove snow from pavements before it turns to ice. Use salt only after snow has been cleared and only in areas needed for safety.

#WinterSaltSmart



Metropolitan Washington
Council of Governments



Be Effective and Efficient with Salt at Home – Shovel, Treat, Scatter, and Sweep



Shovel early and often, before snow becomes icy.



Treat according to the forecast and temperature. When the pavement is below 15° F, salt won't work.



A little salt goes a long way. Just a 12 oz. coffee mug covers 20 ft of driveway.



Sweep up excess salt and store it in a sealed container for next time.

One Water in Fairfax County



<https://www.fairfaxcounty.gov/publicworks/wastewater>

GET HELP NOW!

24-Hour Trouble Response Center: 703-323-1211 | TTY 711

- | | | |
|----------------------------|---------------------|---|
| Sanitary Sewer Emergencies | Manhole Issues | Sewer Odor Complaints |
| Sanitary Sewer Backups | Cave-Ins, Sinkholes | Call Before You Dig - Miss Utility® |
| Sanitary Sewer Overflows | Grinder Pump Issues | Report Illicit Discharge and Improper Disposal or "Dumping" |
| Sanitary Sewer Line Breaks | | |

Behind on your water bill?
Don't worry.
Apply for assistance at
bit.ly/FWoptions

Fairfax Water

CONSTRUCTION AND MAINTENANCE

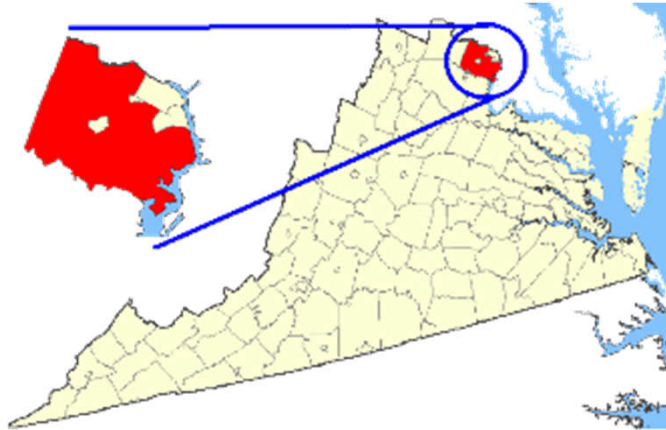


Get Help Now

Why is there a service truck in my neighborhood? | As Built Data | Groundwater Disposal | Sewer Capacity



Stormwater Management in Fairfax County



- Land area ~400-square-miles
- Population of >1.1 million residents
- 30 watersheds, >1,600 miles of streams

Stormwater Facilities

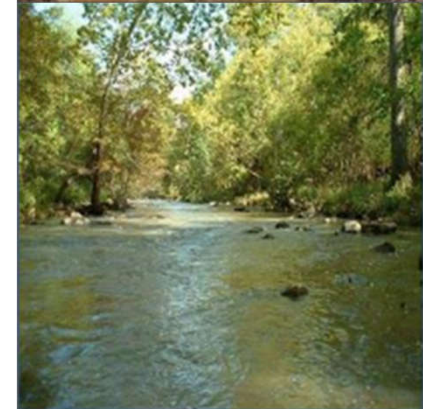
- 2,400 Publicly-Owned SWM facilities
- 5,200 Private SWM facilities

Stormwater Conveyance

- 1,376 miles of pipe
- 69,000 storm structures

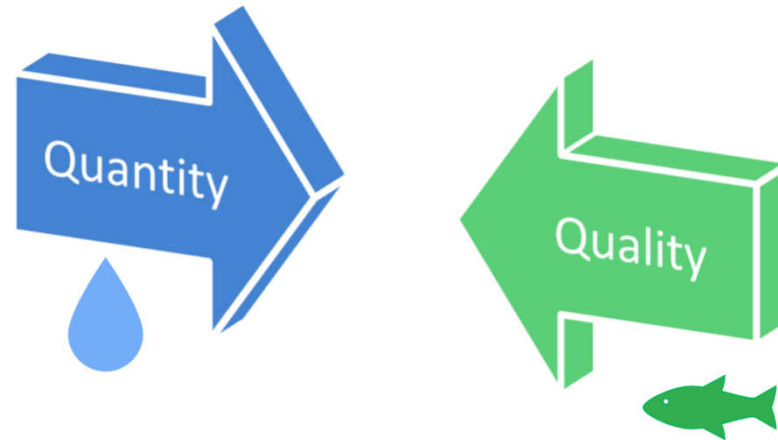
Flood controls















- 20 state regulated dams, three FCPA dams, three low water crossings, one tide gate, and one pump station



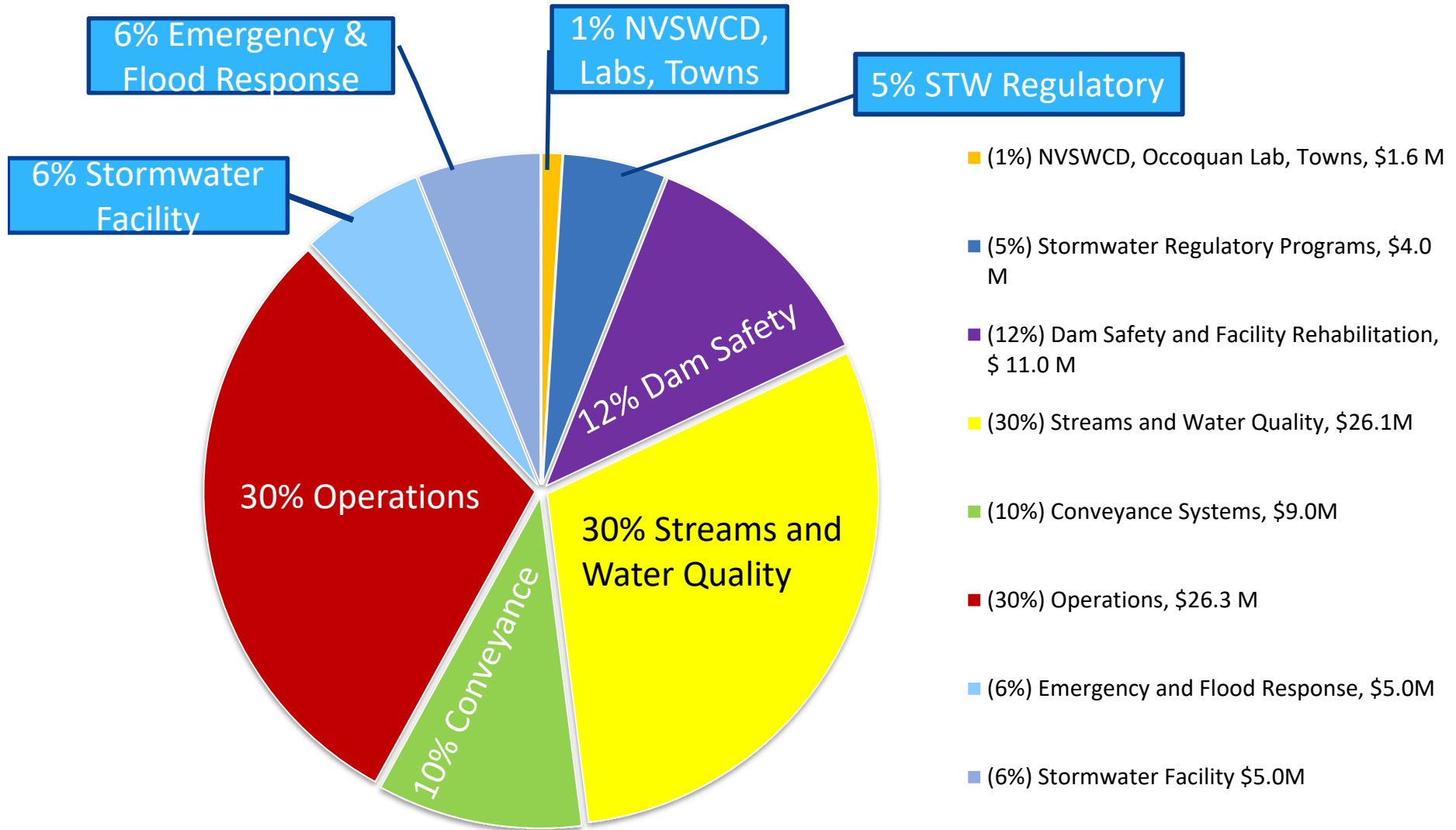


What We Do: Stormwater Management at a Glance



- Flood prevention and emergency response (snow, too)  
- Streams and water quality  
- Stormwater facilities and conveyance: maintenance and capital construction  
- Dam safety  
- Urban forestry management  
- Regulatory efforts  
 - ❖ Comply with federal, state, and local regulations
 - ❖ Enforce our own regulations
- Operations  

Advertised FY 2022 Stormwater Budget





Quality – Nutrient removal, bacteria, other pollutants

Quantity – Peak flow, total flow

Detention – Detaining water for flood control and stream protection

Retention – Retaining for water quality and some stream protection

Erosion – movement of soil from physical force. In stormwater management, the movement of sediment due to rain and increased stream flow.

Design Year Storm, based on long-term statistics from NOAA:

- 100 year storm means 1% chance in every year
- 2-year means 50% chance in every year

Storm duration – 2 hour, 10 hour, 24 hour and other durations

- 2-year, 24-hr storm (3.2") vs. 2 yr 30 min (1.3")
- 10 yr, 2 hr (2.56"), 10 yr, 24-hr (5.2")

BMP – best management practice

Oversimplified STW history in Fairfax County



Post-war 1950's Boom

Sometimes developers thought to get water away from homes and businesses.

Usually these are big concrete channels.

Many older neighborhoods have no stormwater infrastructure.



1970's Quantity Controls

Ponds

Pipes

Get it away from structures and out to the rivers



~2000's Quality Considered, too

Keep quantity control, but where possible, use these for better quality:

Green infrastructure

Infiltration

Low Impact Development

Slow it down, soak it in

Protect streams and rivers

Preserve river corridors

Keep healthy urban forest

Preserve trees and vegetation

Pervious where possible



Drivers for the Stormwater Program

- ❖ Public Safety/Emergency Response
- ❖ MS4 Permit
- ❖ Chesapeake Bay Total Maximum Daily Load (TMDL)
- ❖ Local TMDL's
- ❖ Dam Safety Regulations
- ❖ Maintenance of Existing Facilities



Accotink Tributary @ Oakford Drive
Springfield District
Accotink Creek WS

Conveyance Maintenance and Infrastructure Reinvestment



Stormwater Conveyance Channel
In Kent Gardens Neighborhood
Dranesville District
Pimmit Run WS



Before —↑

After —↓



Crofton Commons Pond 1
Sully District
Cub Run WS

Stream Restoration



Before



2018
4 years after Construction

Snakeden Trib at Lake Audubon
Hunter Mill District
Difficult Run WS

Big Rocky Run
Sully District
Cub Run WS

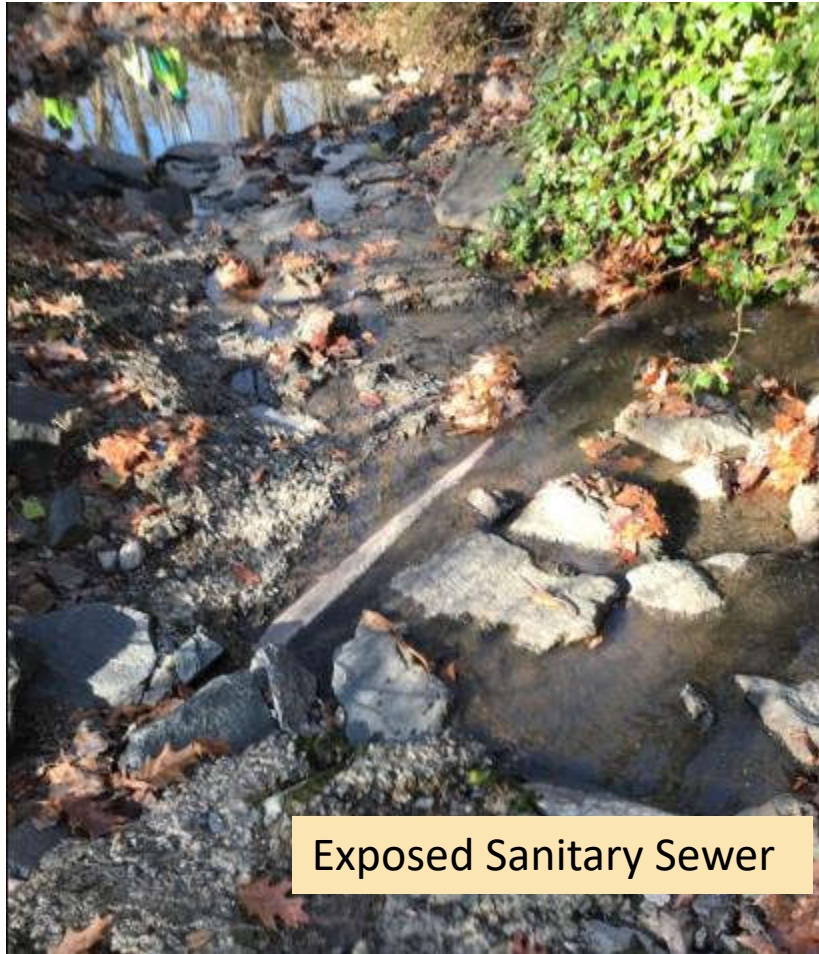


Before

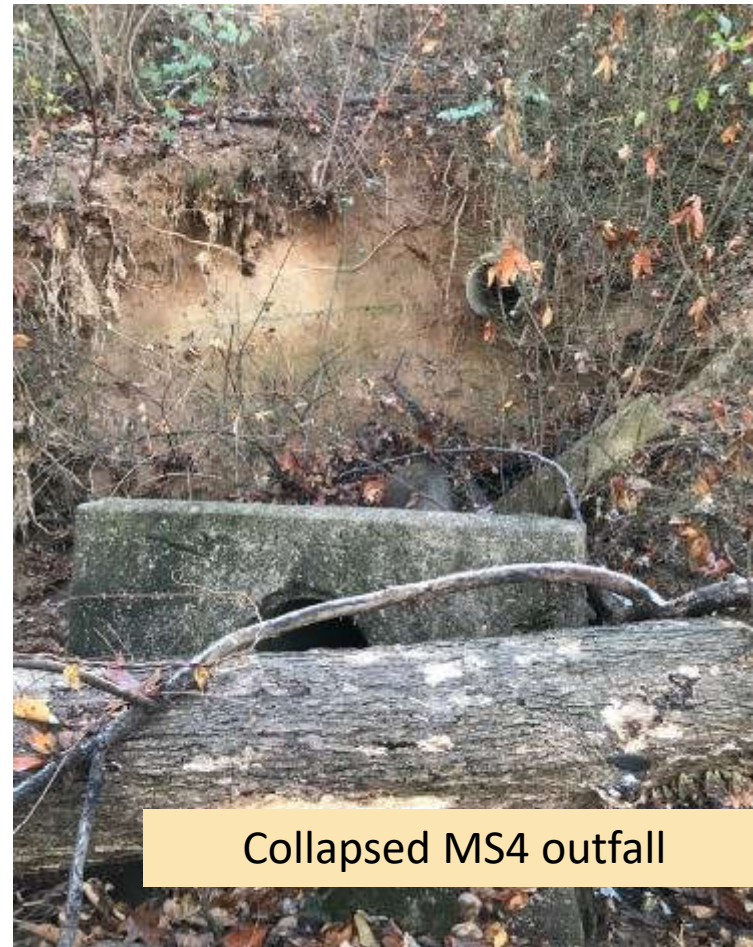


2020
After Construction

Stream Physical Assessment

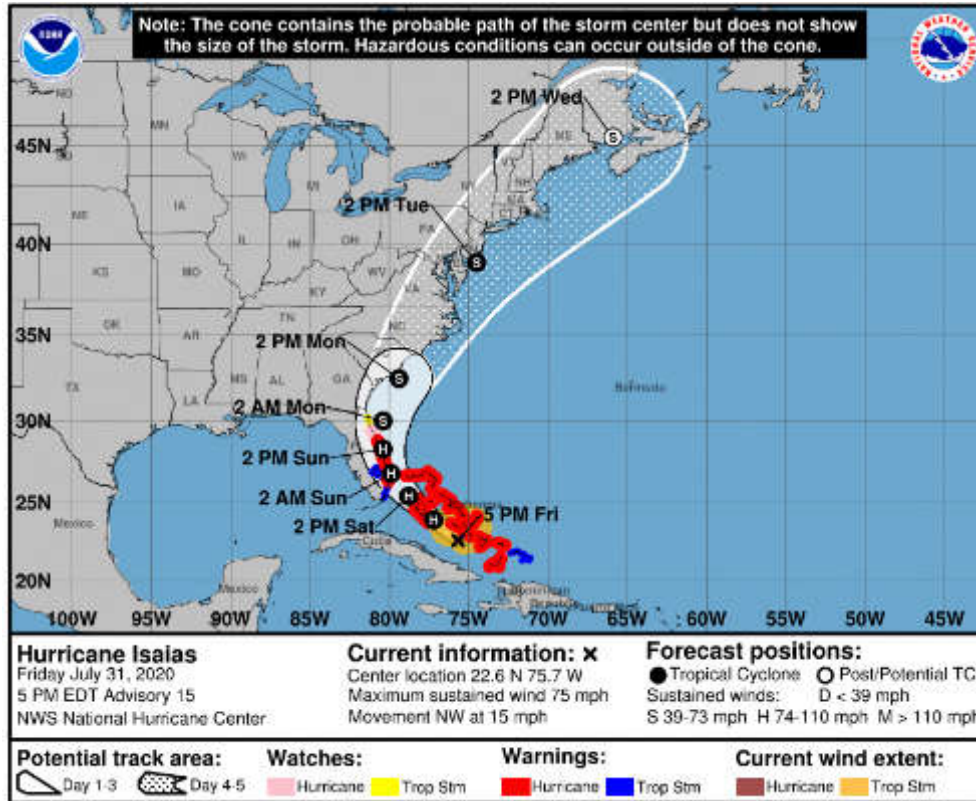


Exposed Sanitary Sewer



Collapsed MS4 outfall

2021 Sully Neighborhood College
Emergency response

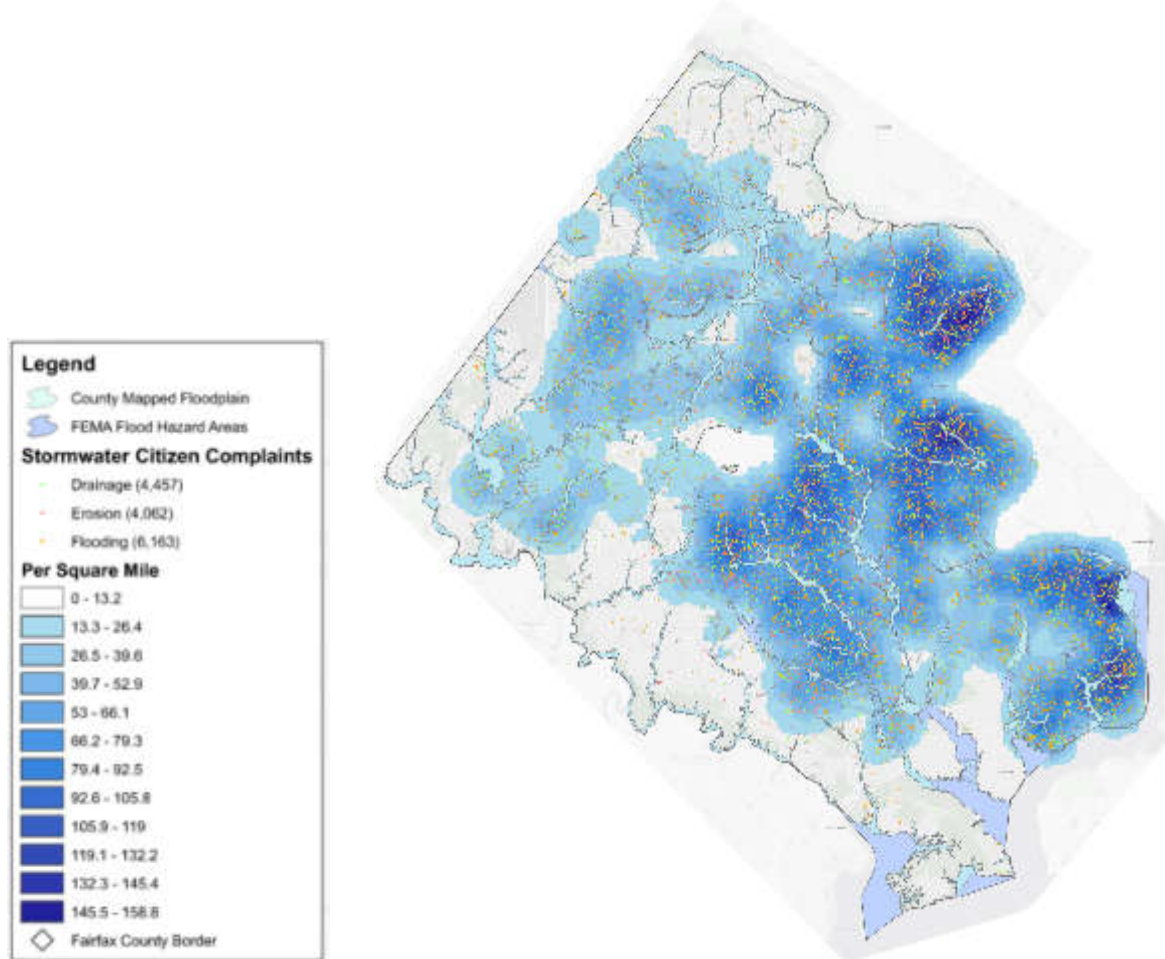


Tropical Storm Isaias
 August 2020



House on Swinks Mill Road
 Dranesville District
 July 8, 2019

Drainage, Erosion and Flooding Related Complaints
January 1984 – February 2020



Stormwater Drainage Issue

[Report a Problem | Public Works and Environmental Services \(fairfaxcounty.gov\)](#)

Private House/Yard Issue

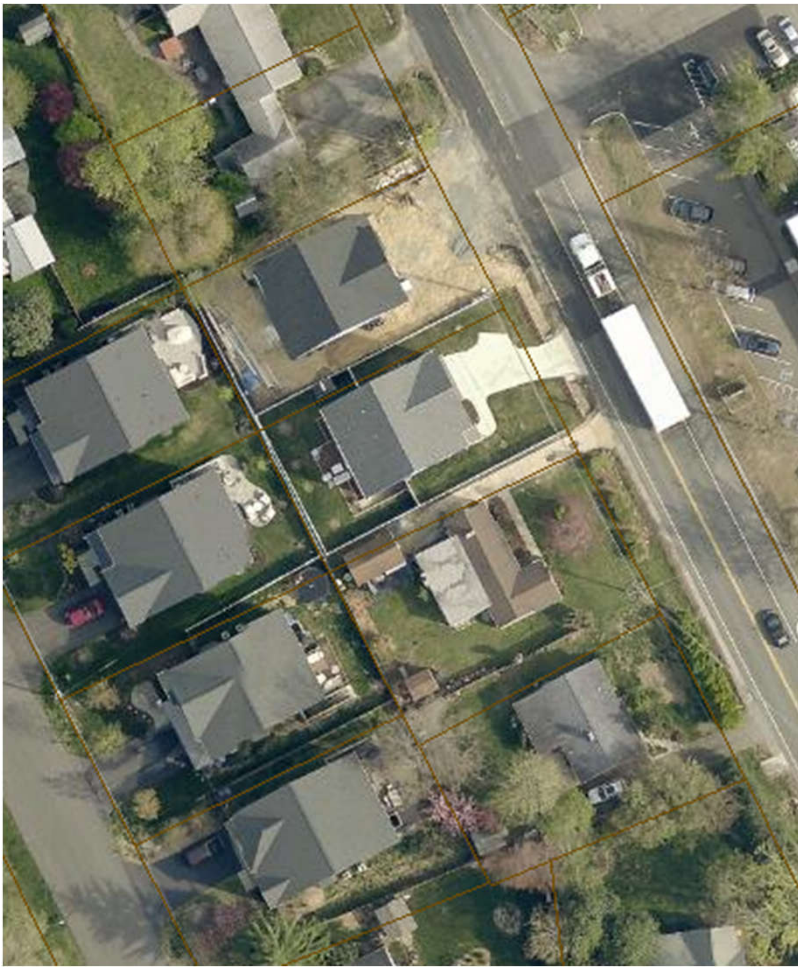
[Solving Drainage and Erosion Problems: A Guide for Homeowners | Northern Virginia Soil and Water Conservation District \(fairfaxcounty.gov\)](#)

Infill Lot Development and Drainage

1997

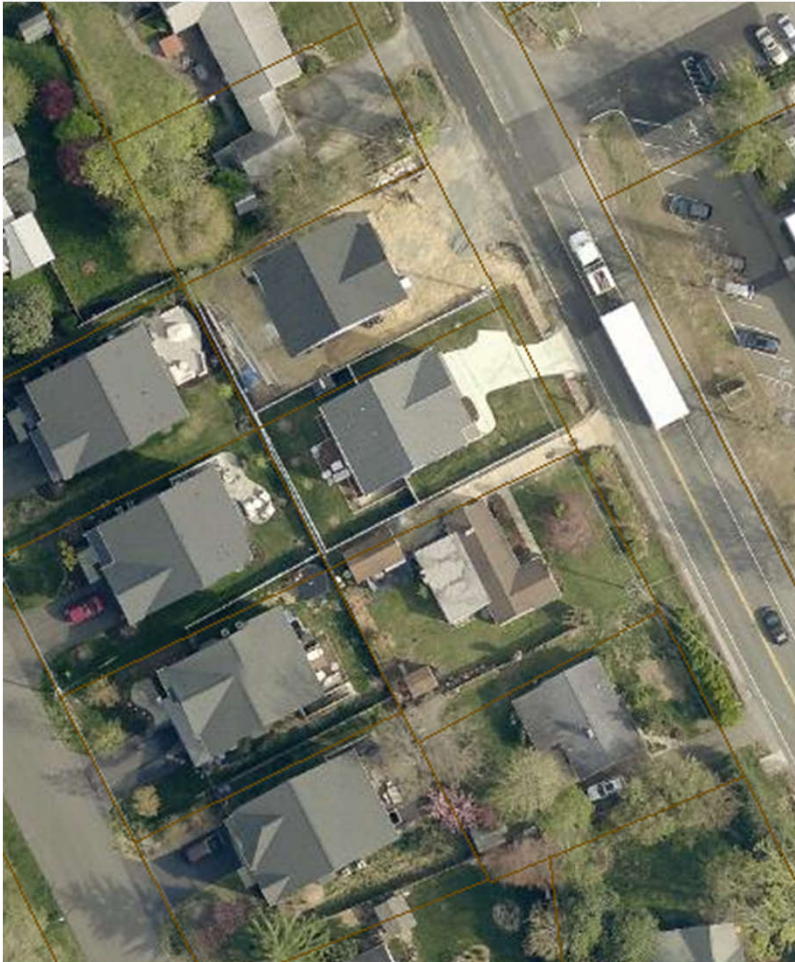


2021



Infill Lot – see the change

1997 to 2021



Tree cover

Space between houses

Pervious area

One house on two lots

These houses are from 1950

- No stormwater infrastructure in this area



How Fairfax County is Helping Our Watersheds

Structural



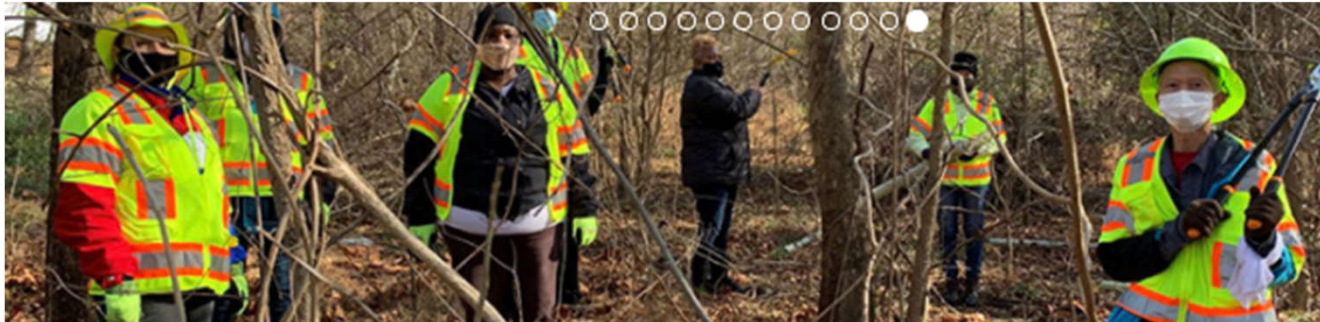
Non-Structural



Operation Stream Shield



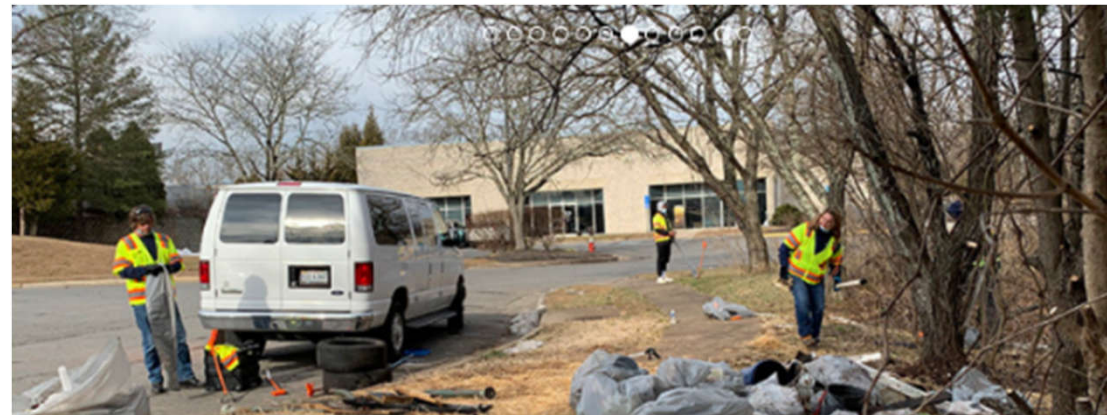
<https://www.fairfaxcounty.gov/publicworks/operation-stream-shield>



"Being able to say, 'I'm going to work today' really lifted my spirits and gave me a sense of accomplishment for the day and the week," said Samuel A. of his participation in the Operation Stream Shield program. "There's no better feeling than saying 'I HAVE A JOB.'"

Partnering with three homeless shelters

- Litter removed
- Invasives removed
- Job history and assistance for individuals experiencing homelessness



One Water in Fairfax County



<https://www.fairfaxcounty.gov/publicworks/stormwater>

FLOODING



MAINTENANCE AND INSPECTIONS



Stormwater Infrastructure Map

Maintenance

Facility Maintenance Request Form
Public Stormwater facilities | Drains,
Pipes, Channels and Ponds

ON MY PROPERTY



Storm Drainage Easements
Private Facility Maintenance
Floodplains and RPAs
Connecting to the Public System
Public Design Standards
Go Green with Hands On Conservation
You Can Help Prevent Pollution
Trapa bispinosa Early Detection and
Eradication

[Learn More →](#)

POLLUTION PREVENTION AND REPORTING



Municipal Separate Storm Sewer
System (MS4) Permit
Polluted Runoff | Litter
Business Inspections
What's that Stuff in the Stream?
You Can Help Prevent Pollution

[Learn More →](#)



Wastewater Outreach
melissa.atwood@fairfaxcounty.gov

Stormwater Outreach
danielle.wynne@fairfaxcounty.gov
watersheds@fairfaxcounty.gov

- Virtual classes
- Scouts support
- Literature
- Information for newsletters
- And more!

