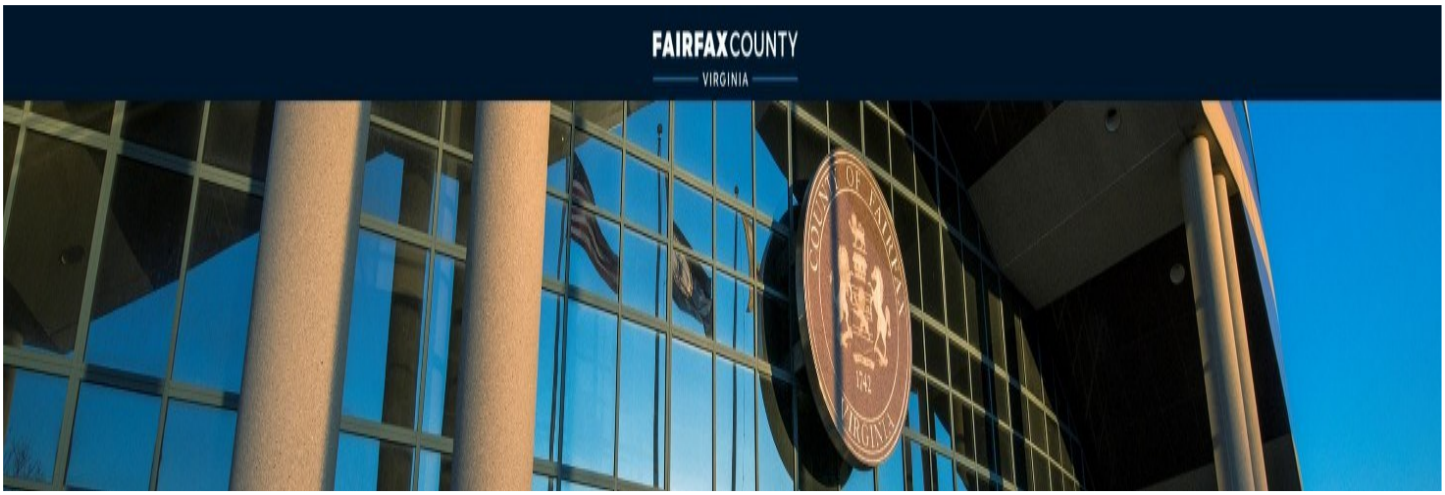

Sanitary Sewer Lateral Evaluation

Land Use Policy Committee

September 1, 2026

Christopher Herrington, Director, Department of Public Works & Environmental Services
Eleanor Ku Codding, Deputy Director, Department of Public Works & Environmental Services
William Barrack II, Director, Wastewater Planning & Monitoring Division
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Sanitary Sewer Lateral Evaluation

Wastewater Planning & Monitoring Division

This supplement to the Land Use Policy Committee presentation provides information in response to the December 9, 2025, Board of Supervisors request for information (Attachment 5) related to sanitary sewer laterals within the Virginia Department of Transportation (VDOT) right-of-way (ROW). Per County Ordinance 65-6-5 (*Ownership of building sewer*), sanitary sewer laterals are privately owned, and the County is not responsible for their operation or maintenance. Recently, customers have faced costly, time-consuming repairs on laterals within the VDOT ROW.

Scale of the problem:

As sanitary sewer laterals are privately-owned, the Department of Public Works and Environmental Services (DPWES) has no documentation for lateral locations. DPWES used Geographic Information System data to approximate lateral locations compared to the ROW (Attachment 4). Out of approximately 257,600 sanitary customer connections, an estimated 125,000 (49%) have portions of their lateral within the VDOT ROW totaling about 700 miles of pipe. Single-family detached homes are the most common customer type, representing 62% of sanitary customer connections by count yet 97% of customers with laterals located in the VDOT ROW. Only 10% of connections in the VDOT ROW are in areas of high or very high vulnerability as defined by the County's Vulnerability Index.

Neighboring Jurisdictions Approach:

Of the 21 utilities that DPWES contacted, most offer limited support for laterals within the ROW. Approaches for lateral support generally fall into three categories:

1. **Partial Reimbursement:** Customer retains ownership and maintenance responsibility of entire lateral. Utility provides partial reimbursement support for lateral repairs in the ROW. Note: in this case, the jurisdiction owns the secondary streets.
    - Ex: City of Fairfax
2. **Structural Support:** Customers retain ownership of entire lateral and are responsible for clearing all blockages. Utility is responsible for any structural repairs within the VDOT ROW, which are generally more time-intensive and costly.
    - Ex: Loudoun Water, Prince William Water, Fauquier County Water and Sanitation Authority
3. **Ownership:** Utility owns a portion of the lateral within the public ROW and is responsible for operation and maintenance. More common for utilities whose jurisdictions own their own roads and are responsible for operation and maintenance.
    - Ex: Manassas Park, City of Manassas, City of Richmond, Washington Suburban Sanitary Commission (MD), DC Water (DC).
    - Note: This option is prohibitively expensive for the County to implement, with an estimated 10-year program cost of 1.5 billion.

Funding Considerations:
Current Fairfax County legal authority does not allow County General Funds or Wastewater Enterprise funds to be used directly for repairs to privately owned sewer laterals. General Fund assistance could be provided through a third-party nonprofit which has not been identified at this time. It is important to note that State regulations do not allow the County to place conditions on how funds are used by nonprofits.

Evaluated Alternatives:
DPWES evaluated two alternatives which model the approaches taken by neighboring utilities. Due to the scale of the issue and funding considerations, the Board could consider a pilot program to inform future policy decisions by evaluating program demand, costs, administrative requirements, and customer outcomes.

Details	Estimated # of Benefited Customers $250,000 Pilot + <1 FTE	Estimated # of Benefited Customers $500,000 Pilot + <1 FTE	Full Implementation
Partial Reimbursement[1]	25	50	$45M over 10yrs
Structural Support	5	10	$90M over 10yrs

[1]Estimated using a $10,000 maximum reimbursement. Final amount to be determined by the BOS.

DPWES Action and Potential Alternatives:
DPWES will implement an educational campaign to increase customer awareness of their responsibility for private sanitary sewer laterals and availability of private insurance options. In addition, the Board could consider a targeted pilot program for partial reimbursement or structural support using County general funds to provide need-based assistance for eligible private sewer lateral repairs. Either option would require careful consideration of State law limitations and may require additional authority from the State. If a funding pathway were identified, staff would request the Board advise of desired pilot program details - including eligibility criteria, assistance levels, funding limits, and potential expansion beyond laterals within the VDOT right-of-way.

Staff estimate approximately 250 person hours were expended developing this research and proposal. For more information, please contact William Barrack II, Division Director, DPWES.

Attachments:
1. Responses to Supervisor Lusk's Questions
2. Equity Assessment
3. Cost and Funding Considerations
4. One Fairfax Memo
5. Board Matter - December 9, 2025

Responses to Supervisor Lusk's Questions

1. **Estimate the scale of the problem in which privately owned sewer laterals are located within the VDOT right-of-way (ROW)**

Response:

Sanitary sewer laterals in Fairfax County are privately-owned and therefore not mapped in the County's geographic information system (GIS) database. DPWES does not retain records of all lateral locations, so the precise location of laterals can only be determined through field investigation.

For the purposes of this Board of Supervisor's request, DPWES completed a GIS exercise to estimate approximate lateral locations. This analysis involved drawing a straight line from known Fairfax County sanitary sewer customer addresses to the nearest Fairfax County sanitary sewer main. While this approach does not provide exact lateral locations, it offers a reliable approximation to understand the overall magnitude of this situation. A visual representation of this analysis is shown below compared to recorded lateral information from a Subdivision Plan.

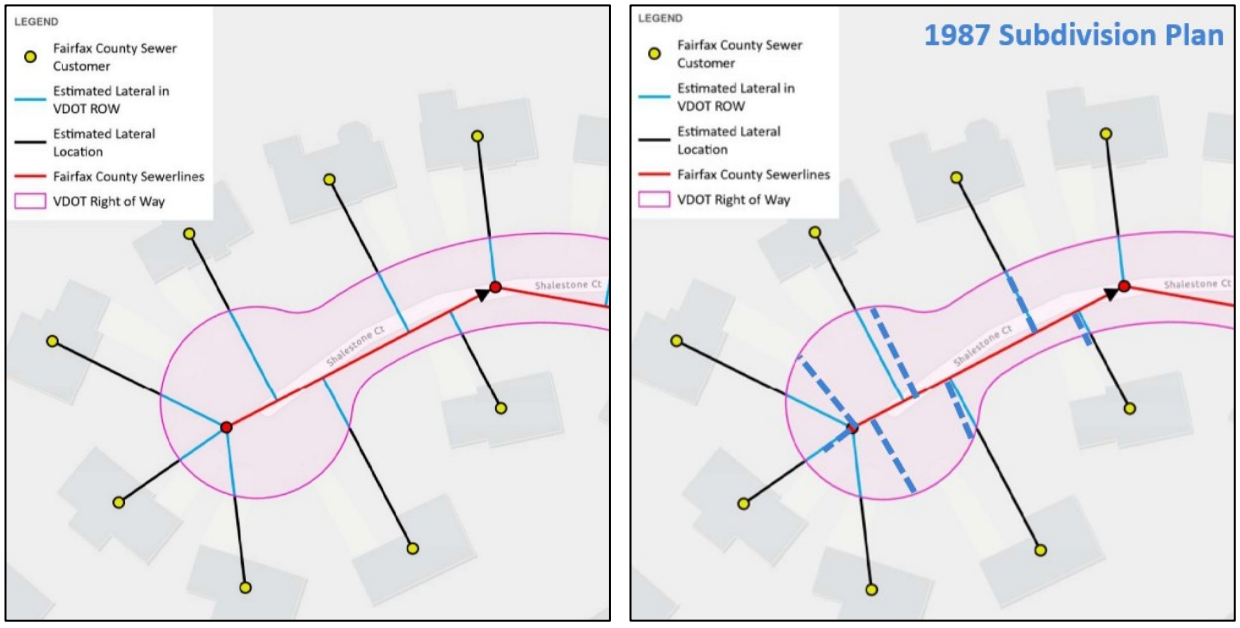

Figure 1 (Left): GIS Mapping Exercise to Estimate Lateral Locations.
Figure 2 (Right): Exact Lateral Locations per 1987 Subdivision Plan.

Fairfax Water is responsible for billing sanitary sewer customers on behalf of Fairfax County. The Fairfax Water database identified 257,605 unique sanitary sewer customer addresses. The GIS mapping exercise estimates 124,852 connection addresses have a portion of their lateral in the VDOT ROW, representing nearly 50% of all sanitary sewer connections. The total lateral length within the ROW is estimated at 700 miles, with an average length of 30 feet in the VDOT ROW. This analysis only considers roads maintained by VDOT. This analysis does not take into

consideration privately-owned roads. An additional 70,000 lateral connections are estimated to intersect privately owned roads.

Breakdown by Magisterial District

An analysis of sanitary sewer lateral connections within the VDOT ROW by Supervisor District is presented in the table below. These laterals with portions within the VDOT ROW account for approximately 49% of all sanitary sewer laterals countywide. In general, this situation is widespread throughout the county, with an average of 14,000 connections within each District estimated to be impacted by the VDOT ROW. Hunter Mill and Providence have less connections impacted, while Braddock and Mount Vernon are estimated to have the highest number of connections impacted.

Table 1: Sanitary Sewer Lateral Connections within the VDOT ROW by Magisterial District

District	Number of Estimated Sewer Connections in VDOT ROW
Braddock	17,431
Dranesville	15,196
Franconia	15,204
Hunter Mill	7,934
Mason	16,007
Mount Vernon	16,308
Providence	9,216
Springfield	14,638
Sully	12,916
Total	**124,850**

Breakdown by Customer Type

An analysis was completed looking at customer types impacted by this situation. The analysis found that single-family, detached homes are most likely to have a portion of their private sanitary lateral in the VDOT ROW. A more detailed assessment can be found in Attachment 2: Equity Assessment

Breakdown by Sanitary Sewer Lateral Age

An analysis was completed looking at the estimated age of laterals within the VDOT ROW. There are many factors that can impact the useful life of a lateral including lateral material, construction quality, soil conditions, tree intrusion, etc. The analysis estimates that currently only 5% of laterals exceed 75 years of age. Over the next 20 years, this share is expected to increase to 50% of laterals exceeding 75 years of age. This rapid increase in age aligns with the age of our integrated sewer system, which experienced signification growth in the 1950s-1970s.

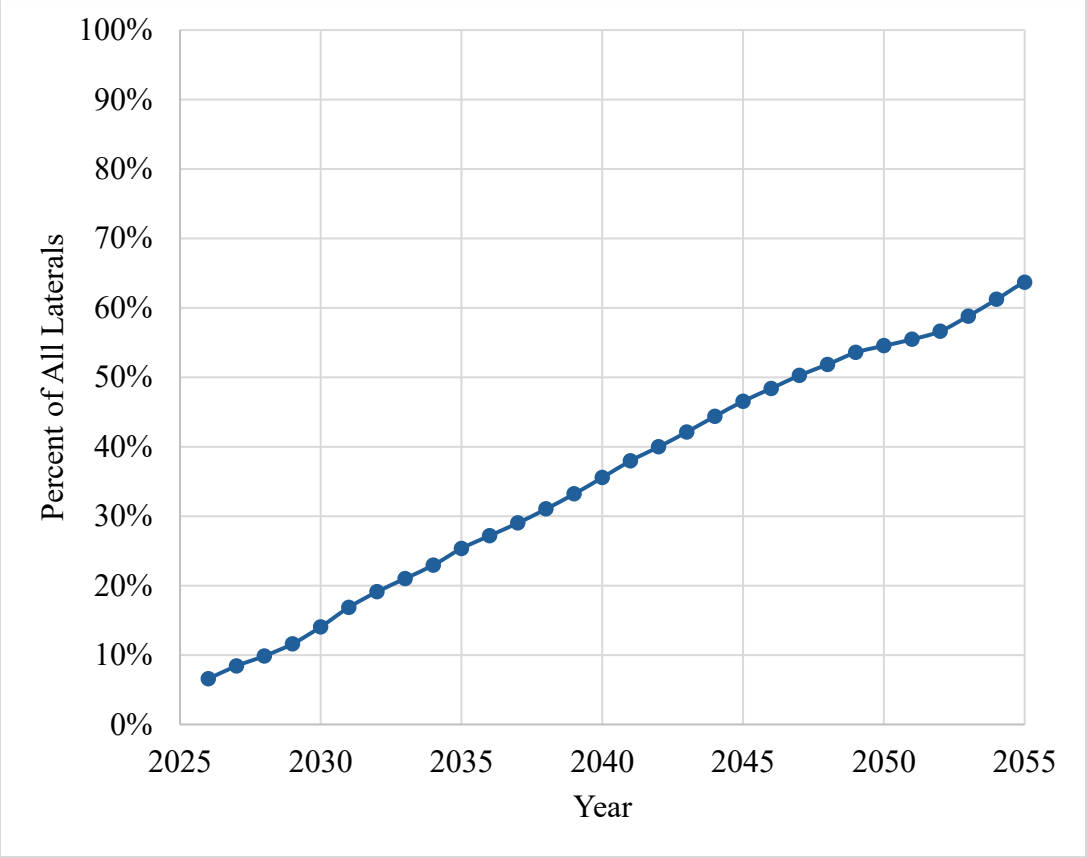

Figure 3: Estimated Percent of Laterals Exceeding 75 Years in Age

2. **Research how neighboring jurisdictions have addressed this problem.**

Response:

Fairfax County wastewater staff engaged with 21 utilities throughout Virginia and the Greater Washington DC area, including 12 neighboring jurisdictions. An established list of 12 questions were asked. A summary of findings for each utility is presented in the table below. Key takeaways include:

- Fairfax County is by far the largest northern Viriginia sanitary sewer utility based on number of lateral connections.
- The majority of neighboring area utilities do not rely on state Department of Transportation (DOT) for road maintenance. Utility ownership of sanitary sewer laterals within the ROW up to the property line is not common practice for northern Virginia utilities.
- Nearly all the contacted sanitary utilities who rely on Virgina Department of Transportation (VDOT) for road maintenance provide sanitary lateral support to their customers. Support varies from utility ownership, utility responsibility for maintenance, or utility reimbursement of sanitary lateral repair costs.
- Lateral ownership within the ROW up to the property line is common practice for the contacted Virginia utilities outside of Northern Virginia, as well as the larger utilities contacted in Maryland and the District. Taking ownership of laterals within the VDOT ROW would be prohibitively expensive for the County to implement. Staff estimate a 10-year program cost of 1.5 billion dollars.
- Neighboring utilities that rely on VDOT for road maintenance include Prince William Water, Loudoun Water, and Fauquier County. All three utilities are responsible for structural fixes within the VDOT ROW, while lateral ownership resides with the homeowner.
- None of the surveyed sewer utilities offered lateral support programs based on financial need.
- Utilities that provide lateral support reported that repairs costs can vary widely, typically ranging from approximately $9,000 to $100,000.

Table 2: Comparison of Neighboring Sewer Utilities: Connections, Ownership, and Maintenance Responsibilities

Sewer Utility	Estimated Number of Sewer Connections	State Maintenance for Local Roads	Sanitary Sewer Lateral Ownership	Utility Responsibility Details
Fairfax County	260,000	Yes	None	
Prince William Water	95,000	Yes	None	Utility responsible for structural issues in the ROW
Loudoun Water	85,000	Yes	None	Utility responsible for structural issues in the ROW
Arlington County	37,000	No	None	
City of Alexandria	36,000	No	Varies	For buildings built before 1955, City of Alexandria owns from mainline to the curb
City of Manassas	14,000	No	In Street ROW	Utility responsible for all maintenance within public street ROW
Fauquier County	8,000	Yes	None	Utility responsible for structural issues in the ROW
Town of Vienna	6,100	No	None	
Town of Herndon	6,000	No	None	Utility responsible for structural issues in the ROW
City of Falls Church	4,300	No	None	
City of Fairfax	3,300	No	None	Partial reimbursement available
Manassas Park	4,000	No	Property Line to Sewer Main	Utility responsible for all maintenance outside of the owner's property

Table 3: Comparison of Non-Neighboring / Non-Virginia Sewer Utilities: Connections, Ownership, and Maintenance Responsibilities

Sewer Utility	Estimated Number of Sewer Connections	State Maintenance for Local Roads	Sanitary Sewer Lateral Ownership	Utility Responsibility Details
WSSC[1]	500,000	Varies	Property Line to Sewer Main	Utility responsible for all maintenance outside of the owner's property
City of Virginia Beach	135,000	No	Property Line to Sewer Main	Utility responsible for all maintenance outside of the owner's property
DC Water[2]	127,000	Yes	Property Line to Sewer Main	Utility responsible for all maintenance outside of the owner's property
Henrico County	98,000	No	Property Line to Sewer Main	Utility responsible for all maintenance outside of the owner's property
Howard County[1]	78,000	No	Property Line to Sewer Main	Utility responsible for all maintenance outside of the owner's property
City of Richmond	70,000	No	Property Line to Sewer Main	Utility responsible for all maintenance outside of the owner's property
Roanoke	28,000	No	Property Line to Sewer Main	Utility responsible for all maintenance outside of the owner's property
James City	25,000	Yes	Property Line to Sewer Main	Utility responsible for all maintenance outside of the owner's property
Bedford	6,500	Varies	Property Line to Sewer Main	Utility responsible for all maintenance outside of the owner's property

[1]Utility located in Maryland

[2]Utility located in Washington, DC

3. **Identify alternatives available to the County to assist residents in these situations along with the potential benefits, implementation timeline, and costs, including additional employee resources necessary for each alternative**

Staff will immediately implement a multilingual customer education campaign to increase awareness of private sanitary sewer lateral ownership responsibilities, common maintenance issues, and the availability of private sewer lateral insurance. This approach can be implemented quickly through outreach events, mailers, and newsletters. This will help reduce unexpected financial impacts through improved awareness.

In addition, the Board could consider its legal authority related to establishing a targeted pilot program using County general funds to provide need-based assistance for eligible private sewer lateral repairs. The pilot would help inform future policy decisions by evaluating program demand, costs, administrative requirements, and customer outcomes. If a funding pathway were identified, staff would request desired pilot program details, including eligibility criteria, assistance levels, funding limits, and potential expansion beyond laterals within the VDOT right-of-way. Table 4 outlines two potential pilot approaches. Partial reimbursement would provide assistance to the greatest number of eligible customers.

Table 4: Summary of Evaluated Alternatives

Details	Estimated # of Benefited Customers $250,000 Pilot	Estimated # of Benefited Customers $500,000 Pilot	Full Implementation
Partial Reimbursement	25	50	$45M over 10yrs
Structural Support within the ROW	5	10	$90M over 10yrs

If selected, the Board would have to establish desired funding criteria including: eligibility, application process, pilot length, funding amount, maximum reimbursement amount. The Board should also consider whether the pilot should include all private sewer laterals, rather than limited eligibility to laterals within the VDOT ROW. Staff estimates an additional 70,000 sewer customers that have a portion of their lateral passing under a private road.

This proposed pilot would not provide financial assistance related to blockage removal.

Equity Assessment

Customer Type:

The Fairfax Water dataset classifies installation types into apartment, commercial, municipal, single-family, and townhouse customers. A brief overview of each category is provided below.

- Apartment – Apartments and condominium buildings served by a single water meter
- Commercial – Commercial properties including retail, office, industrial, hotels, etc.
- Municipal – Government buildings and churches
- Single family –Single family detached (SFD) homes
- Townhouse -Attached single-family homes and individually metered condominiums

Based on the mapping analysis completed as described in Attachment 1, the customer type most impacted by having a portion of their lateral in the VDOT ROW is Single Family (Detached) homes.

Single family, detached homes represent:

- 97% of customers estimated to have a portion of their lateral in the VDOT ROW
- 62% of sewer connections by count
- 42% of sewer revenue

Table 5: Laterals Within the VDOT ROW by Installation Type:

Installation Type	Total Number of Sewer Connections	Number of Sewer Connections in VDOT ROW
Single Family	160,192	120,662
Townhouse	85,635	2,038
Commercial	7,062	1,674
Apartment	4,042	242
Municipal	674	236

Vulnerability Index

Fairfax County publishes a geographic Vulnerability Index based on factors including race, language, income, education, housing, transportation, and health insurance. Vulnerability Index ranges from Very High (most vulnerable) to Very Low (least vulnerable). As shown in the table below, only 10% of customers with laterals located in the VDOT ROW fall within the High or Very High vulnerability index groups. Nearly 90% of customers' connections impacted by a portion of their lateral in the VDOT ROW are in the Average, Low, or Very Low vulnerability index groups.

Table 6: Laterals Within the VDOT ROW by Vulnerability Index:

Index Description	Number Laterals in the VDOT ROW	% of Connections in ROW
Very High	3,119	2%
High	10,901	9%
Average	25,397	20%
Low	36,882	30%
Very Low	48,551	39%

Magisterial District

The table below presents the percent of sanitary sewer customers within each Magisterial District that are estimated to have a portion of their lateral in the VDOT ROW. Dranesville has the highest ratio of sewer customers with 64% of sanitary sewer customer connections estimated to have a portion of their lateral in the VDOT ROW. Hunter Mill has the lowest ratio of customers with only 32% of connections estimated to have a portion of their lateral in the VDOT ROW.

Table 7: Breakdown of Sanitary Sewer Lateral by District

District	% of Sewer Connections in ROW
Braddock	54%
Dranesville	64%
Franconia	46%
Hunter Mill	32%
Mason	62%
Mount Vernon	53%
Providence	42%
Springfield	47%
Sully	37%
Average	**48%**

Costs:

The cost of each implementation option is driven by two factors: (1) the estimated number of sanitary sewer lateral repair and replacements (R&R) required annually, and (2) the unit cost per repair or replacement. Benchmark data was obtained by peer utilities with established programs supporting sanitary laterals in the ROW.

Reported annual sanitary lateral R&R rates ranged from 0.03% to 0.29% of the total lateral inventory. Older systems, such as the City of Richmond with an average sewer main age of 114 years, had R&R rates at the higher end, while newer systems, such as Prince William Water with an average sewer main age of 32 years, had R&R rate at the lower end. For purposes of this analysis, Fairfax County assumed an initial replacement rate of 0.10%, consistent with the rate at Washington Suburban Sanitary Commission (WSSC), a similar system in age to Fairfax County.

The cost to repair a portion of the sanitary sewer lateral can vary significantly depending on factors such as location, soil conditions, lateral depth, whether work is performed by contractors or in-house staff, and the extent of pavement restoration required. Based on information provided by peer utilities, the cost for repair can range from $9,000 to $100,000. Staff assumes an average cost of $50,000 per lateral repair to budget the potential number of benefited customers under a pilot program.

Funding:

Current Fairfax County legal authority does not allow the County to directly use General or Wastewater Enterprise funds on privately owned assets, which include sewer laterals. As a result, any financial assistance program would require an alternative funding mechanism.

General fund options include appropriating funds to a qualified nonprofit or charitable third-party organization to administer a program that provides a defined public benefit. It is important to note that the County would be unable to condition the use of funds once donated to a nonprofit.

Lateral Memo

Local governments must intentionally review their regulations and everyday practices to understand how they may be maintaining unfair systems. This includes looking closely at how neighborhoods and infrastructure are built and maintained, and how these policies, practices, and procedures may create or worsen gaps in opportunity for marginalized communities.

The sewer lateral system review offers a clear opportunity to reexamine specific practices and move toward a more equitable distribution of public goods.

Governments across the country administer sewer lateral repair, assessment, and rebate programs. There are notable best practices we can learn from and adapt as we decide how to support the cost of lateral maintenance and improvements—for example:

- Private Sewer Lateral Cost Sharing Program | San Mateo, CA - Official Website
- Equitable Water Management: A Practical Guide for Utilities | RAND;
- Mayors Innovation Project – A peer learning network for mayors and city leaders. – UW–Madison
- Private Sewer Lateral Rebate Program | Pinellas County, FL - Official Website
- Lateral Reimbursement Opportunity Program | Castro Valley, CA - Official Website

These best practices address a core public responsibility: protecting public health and environmental quality through reliable infrastructure that serves the entire community. Sewer laterals are buried and largely unseen, yet they are essential components of our wastewater system. When they fail, the impacts extend beyond the individual property owner to groundwater quality, public health, neighborhood stability, and long-term infrastructure costs. Because the consequences of failure are shared, the responsibility for maintaining these systems—and the benefits of doing so—are also shared.

Public goods such as wastewater infrastructure are collectively used and collectively relied upon. An equity-centered approach recognizes that the cost burden of maintaining these systems should be broadly distributed.

Applying an equity lens to sewer lateral programs means acknowledging:

- Some households face greater financial and structural barriers to maintaining laterals due to income, age and condition of housing, and historic patterns of disinvestment and exclusion.
- Past harms, including inequitable infrastructure investment, discriminatory policies, and uneven code enforcement have contributed to higher risk of failure in some communities.

- Government has a responsibility to help address these disparities through program design, including subsidies, cost-sharing, county-managed repairs, and targeted support for higher-risk areas.
- Even when a resident does not receive direct repairs or rebates, they still benefit from reduced contamination, fewer backups, and improved overall system reliability.

Positioning sewer laterals as public good and their maintenance as a shared responsibility supports the principle that no community should bear disproportionate costs simply because of historic disinvestment or fewer household resources. Equitable cost-sharing, transparent communication, and prioritization of communities with the greatest needs are central to fulfilling government's role in correcting past inequities and preventing future ones.

Framing sewer lateral programs as collective investments rather than individual transactions strengthens public trust. It reinforces that government works not only when people receive direct services, but when the community is healthier, safer, and more resilient. Shared costs for shared infrastructure reflect the principle that no one should be left behind simply because their home or neighborhood has fewer resources.

By treating sewer laterals as shared infrastructure with cost burden shared by all and designing programs to account for both current needs and historic harms, governments can help ensure that these essential systems function reliably and equitably for everyone.

Commonwealth of Virginia

RODNEY L. LUSK

Fairfax County, Franconia District Supervisor
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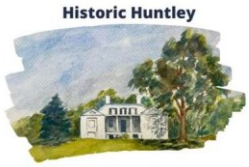

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December 9, 2025

Sanitary Sewer Lateral Board Matter

Franconia District Supervisor Rodney L. Lusk

Mr. Chairman –

Many of our residents have privately-owned sanitary sewer laterals that extend from their home into the VDOT right-of- way before connecting to the publicly maintained sanitary sewer. When such private laterals are damaged or require replacement, homeowners are often surprised to learn that the financial responsibility is theirs and that repairing pipes located within VDOT right-of-way can be difficult to permit and expensive to construct. Residents within the Franconia District have shared that the County Code provisions of Prince William and Loudoun County are such that the local government either owns or manages the laterals when located within the VDOT right-of-way thereby, potentially reducing the cost burden to their individual homeowners.

Since earlier this year, staff from the Department of Public Works and Environmental Services, staff from Land Development Services, have been working very closely with two affected property owners in my District and the staff from my office on this issue.

DPWES staff notes that Fairfax County Code Section 65-6-5 (*Ownership of building sewer*) explicitly establishes that the County does not own or maintain these private laterals even under

public rights-of-way. The County currently manages more than 3,300 miles of public sanitary sewer. Significant expansion of County maintenance responsibilities to include all private laterals would be prohibitively expensive to County sewer customers, although an intermediate solution to address unique situations where property owners at no fault of their own become disproportionately impacted should be explored.

As such, I move that the County Executive direct staff in the Department of Public Works and Environmental Services in coordination with Land Development Services and the Office of the County Attorney to do the following:

- Estimate the scale of the problem in which privately-owned sewer laterals are located within the VDOT right-of-way;
- Research how neighbor jurisdictions have addressed this problem.
- Identify alternatives available to the County to assist residents in these situations along with the potential benefits, implementation timeline, and costs including additional employee resources necessary for each alternative; and,
- Provide a summary report of staff findings including their recommendations to the Board of Supervisors.

I further move that after staff have provided their summary report to the Board of Supervisors, that the County Executive direct staff to initiate the minimum necessary amendments to County Code that would not have a substantial adverse impact on County sewer charges in order to implement the staff recommendation.