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Testimony for the Record

by

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Wentworth Green Strategies

concerning the

Oversight of DC Water

before the

Committee on Transportation and the Environment

District of Columba City Council

Submitted

March 12, 2022

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Chairperson Cheh and Members of the Committee:

Thank you for the opportunity to submit this testimony for the record of the hearing on February 28, 2022 concerning the oversight of DC Water before the Committee on Transportation and the Environment.

Executive Summary

1. **Aging sewers are leaking sewage into our rivers, creeks and streams and pose a health risk to all who come in contact with this water.**
2. **DC Water management has proposed to dramatically increase the budget for rehabilitating creekbed sewers and the DC Water Board of Directors must move promptly to approve these budget increases. Work on the Luzon Trunk Sewer, as part of the Creekbed Sewer Rehabilitation program should be accelerated to curtail pollution to Rock Creek.**
3. **DC Water should integrate possible water quality improvements in the priority setting process as part of the Capital Improvement Program (CIP) and institute a comprehensive water quality monitoring program to buttress the existing efforts from DOEE and the Anacostia RiverKeeper. The data generated from this program can be used to help better prioritize creekbed sewer rehabilitation efforts and better inform the public to make good recreating choices.**

Aging sewers are leaking sewage into our rivers, creeks and streams and pose a health risk to all who come in contact with this water.

Overall, DC Water has done an admirable job operating the world's largest advanced wastewater treatment at Blue Plains and coaxing our aged water and sewer system to continue to serve the ratepayers of the District, as well as sections of suburban Maryland and Virginia.

But in many parts of the city, aging infrastructure has vastly exceeded its useful service life. For example, the vitrified clay sewer pipes in the Soapstone Valley, now leaking sewage into Rock Creek, were typically expected to last 50-75 years. These sewers were constructed in 1908 – over 120 years ago -- and are only now undergoing urgently needed rehabilitation.

There are dozens, perhaps hundreds of miles of similarly aged sewer pipes in and around Rock Creek and other rivers and creeks throughout the city. To estimate the extent of the problem, DC Water has evaluated the condition of the 43 major sewers in the system and, in a map of the system, rated each of the various segments of every major sewer line on a scale of 1-5 with 1 in good condition and 5 being poor. (See Table A). In addition to evaluating the soundness of each major sewer line, DC Water computed the average risk score for each of the systems and ranked them by average risk (See Table B: Major Sewers Ranking Based on Average Risk Score as of 11/2019). The results were revealing. For example, looking first at the map of the major sewer systems in the city in Table A, we find that most of the segments of the major sewers received a condition ranking of only "4" meaning that they were close to poor condition. This category included such sewers as the entire Luzon Trunk Sewer,[1] and portions of the Rock Creek Main Interceptor (RCMI) although the portion of the RCMI from Boundary to Joyce Road received a rank of "2." Two segments were in serious condition and received a "5" – one segment of Broad Branch Trunk Sewer and one portion of the Oxon Run Trunk Sewer.

[1] The Luzon Trunk Sewer is adjacent to Joyce Road in Rock Creek Park. It is included in Project #3 in DC Water's Creekbed Sewer Rehabilitation Program. Because of what we believe to be sewage leaking from this sewer into Luzon Branch and Rock Creek, we are recommending accelerating the timetable for rehabilitation from 2027 to an earlier date of 2022.

Despite recent sewer breaks, the mammoth 8 foot diameter Potomac Interceptor received a "3" indicating that it appears to be generally in satisfactory condition. And the large Potomac Force Main was one of the few sewer pipes receiving the highest "1" rating.

Because the rest of the sewer system generally receives a "4", this may indicate a strong need to increase funding to replace these aging sewers. In the past few years, DC Water has generally conformed to the industry norm of replacing 1 percent of the system pipes per year. More recently, staff has suggested raising this to 1.5 percent of the pipes be replaced each year. We applaud this effort. We further suggest that aging pipes near waterways be given priority because of the threat that leaks in these pipes might pose to the water quality in adjacent streams.

Looking next at the risk posed by each sewer system, DC Water averaged the risks of all the segments in a particular system and ranked them by risk score (Table B). The Easby Point Trunk Sewer had the highest risk average 60.32 meaning that this sewer was in serious need of rehabilitation. Notably, the RCMI, of concern due its proximity to Rock Creek, received a risk average score of 37.34, ranking it only fourteenth – about in the middle of the list.

Another attempt to evaluate the condition of sewers, the Rock Creek Stem Sewer Assessment, has been under review for months. Hopefully it will be released soon to provide much-need guidance as to how to prioritize sewer rehabilitation work in this sensitive National Park.

But even with the data we already have, we know that these aged sewers contaminate our rivers, creeks and streams. For example, in 2021, the Department of Energy and Environment (DOEE) conducted monthly E. coli samples at the mouths of several Rock Creek tributaries, including Luzon Branch alongside Joyce Road in Rock Creek. The results of those samples are presented in Table C.

In order to test the idea that leaking sewers were one of the causes of contamination of our rivers, creeks and streams, we looked at a specific test case: Luzon Branch adjacent to the Luzon Trunk Sewer along Joyce Road in Rock Creek Park. We correlated periods of rainfall measured at Washington National Airport, to E. coli levels in Luzon Branch. (See Table C). While we found that E. coli levels increased with rainfall, we also found something even more striking: at the mouth of Luzon, the DOEE samples showed several instances of high, even astronomical, levels of E. coli readings beyond the capabilities of the instruments to measure, **during dry periods without any rainfall.** To us, this pointed to another source of sewage contamination – most likely from sewage leaks in the Luzon Trunk Sewer.

Looking at the E. coli data from the mouth of Luzon Branch in Table C, we see that two-thirds of the twelve monthly readings in 2021 indicate the presence of E. coli during periods of no rain on the day of the reading or the day before.[2] Two of the samples, on March 21 and April 6, were off the charts, in excess of 2420 Most Probable Number per 100 ml (MPN/100 ml), indicating serious gross contamination of the stream. Only one-third of the twelve samples at the mouth of Luzon Branch met the DC Water Quality Standard single sample value of 410 MPN/100 ml.

High E. coli levels have been detected at the mouth of other Rock Creek tributaries in the upper stem of Rock Creek upstream of Piney Branch (See Table D) making Luzon Branch fairly typical. For example, Table D shows us that over the seven-year period between 2015-2021, according to DOEE water quality data, Luzon was the dirtiest of Rock Creek tributaries studied with over 16 gross exceedances of E. coli greater than 2420 MPN/100 ml – far exceeding the DC Water Quality Standard of 410 MPN/100 ml per single sample. But Melvin Hazen (a.k.a. Federal Reservation 608) was not far behind with 11 gross exceedances followed by Normanstone with 9 and Broad Branch with 6.

[2] We looked at the data for the day before to account for any possible lag in the response in the sewer system.

But what makes Luzon important is these exceedances over the years show that Luzon may be one of the largest sources of contamination of Rock Creek upstream from Piney Branch. Thankfully, work on other upstream sources such at Pinehurst and Fenwick are on-going. But work on the Luzon Trunk Sewer is lagging.

DC Water management has proposed to dramatically increase the budget for rehabilitating creekbed sewers and the DC Water Board of Directors must move to approve these increases. Work on the Luzon Trunk Sewer, as part of the Creekbed Sewer Rehabilitation program should be accelerated to curtail pollution to Rock Creek.

Thankfully, DC Water's management has proposed dramatic increases in the budgets for creekbed sewer rehabilitation. For example, we calculate that the proposed creekbed sewer rehabilitation budgets for creekbed projects 1-3 have increased from $4.6 million in FY21 to $10.9 million in FY 23, -- a 130 percent increase. (see Table E.)

Unfortunately, a glance at the funding levels indicates that under the current funding schedule, the preliminary design work for the Luzon Trunk Sewer as part of Project #3 has been delayed until 2024 with rehabilitation not likely till 2026. This is too late. It means subsequent water quality improvements to Luzon Branch and Rock Creek won't happen for at least four years or more. This is unacceptable, as the area around Joyce Rd and Beach Drive is a known recreation spot and the possibility of contact with this polluted water by unknowing waders is high.

Although we have centered our discussion on the need for more rapid rehabilitation of the pipes in Rock Creek, these are not the only pipes that are in urgent need of rehabilitation. For example, recent inspection by DC Water indicates that corrosion inside of the reinforced concrete pipe of the Potomac Interceptor that stretches all the way from Georgetown to Dulles Airport is worse than expected and may imperil the integrity of the Interceptor. Making the needed repairs will cost millions.

DC Water should integrate possible water quality improvements in the priority setting process as part of the Capital Improvement Program (CIP) and institute a comprehensive water quality monitoring program to buttress the existing efforts from DOEE and the Anacostia RiverKeeper. The data generated from this program can be used to help better prioritize creekbed sewer rehabilitation efforts and better inform the public to make good recreating choices.

Unfortunately, in reviewing the process that DC Water uses to set priorities in the Capital Improvement Program (CIP), it is unclear precisely how or if potential water quality improvements are considered in the process. Projects that might rank low in good engineering practice, for example, could achieve significant improvements in water quality in adjacent streams. But these possible improvements appear not be considered in the priority setting process.

One way to help insert water quality concerns into the CIP prioritization process could be to institute a comprehensive water quality sampling program that would buttress the data already available from DOEE and the Anacostia RiverKeeper. DOEE samples are generally only taken once a month although additional samples might be taken after storm events at selected areas. Similarly, the DC Citizen Science Water Monitoring Network led by Anacostia RiverKeeper[3] samples only 22 sites between the months of May to September when water recreation is at its peak. Additional water quality sampling from DC Water could fill in these data gaps and help DC Water staff better prioritize CIP Projects while helping the public make informed recreational choices.

This concludes my written statement.

[3] Funded by the DOEE, the Network is composed of Rock Creek Conservancy, Audubon Naturalist Society, Potomac Riverkeeper and the Alliance for the Chesapeake Bay training over 300 volunteers. Copies of their most recent report are on my website: www.Wentworthgreenstrategies.com

Appendix

Table A. Major Sewers Prioritization

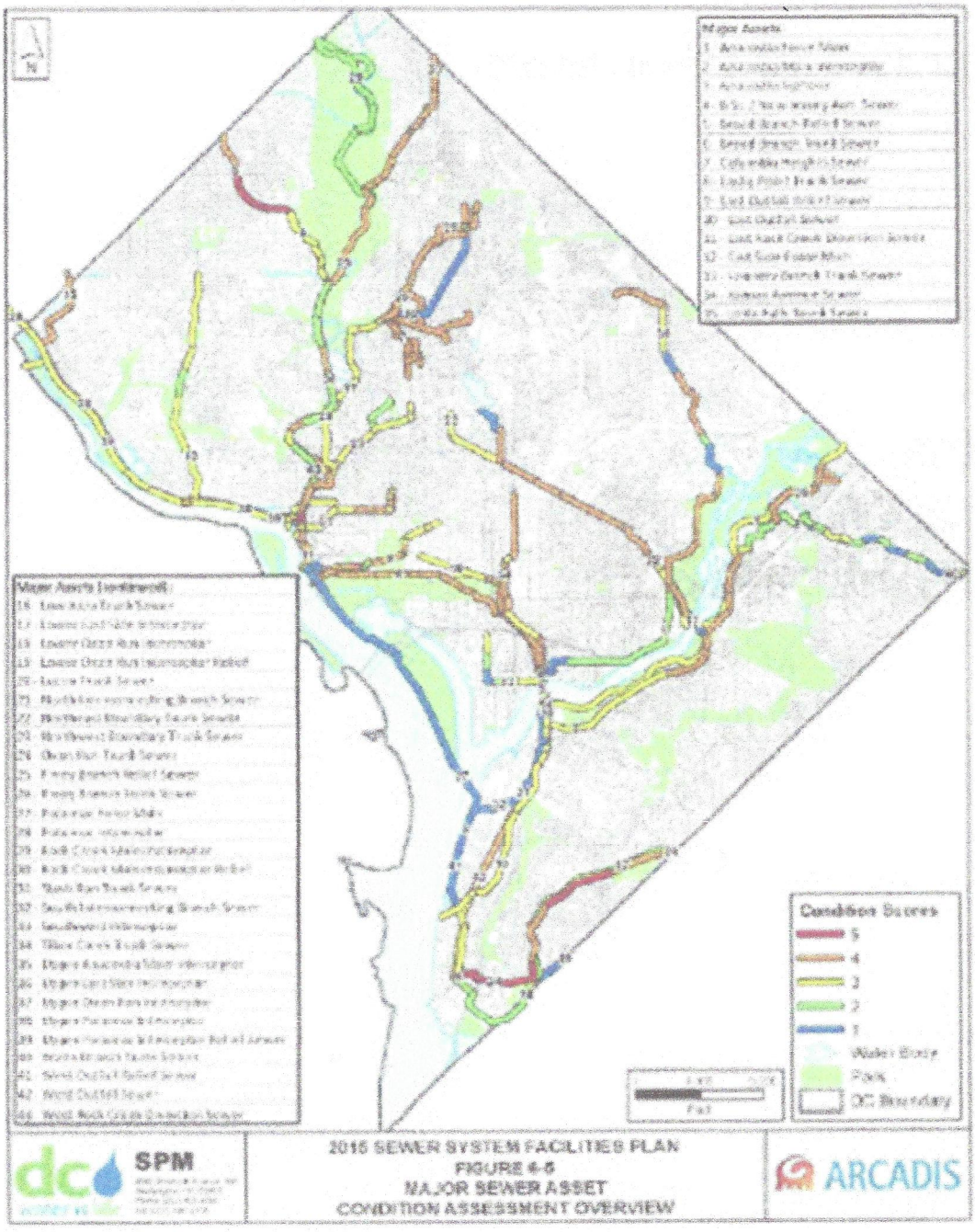


Table B. Major Sewers Ranking Based on Average Risk Score as of November 2019.

Major Sewer	Risk Average
Easby Point Trunk	60.32
B Street/New Jersey Avenue	50.47
Lower East Side	47.56
Northwest Boundary	44.20
Tiber	43.90
Northeast Boundary	42.40
East Rock Creek Diversion	41.86
East Outfall	39.88
Potomac Interceptor Relief	39.22
Slash Run	39.03
West Rock Creek Diversion	38.90
West Outfall Sewer	38.79
Anacostia Main Interceptor	38.28
Rock Creek Main Interceptor	37.34
Potomac Interceptor non-DC	35.28
Low Area Trunk	35.08
Upper Potomac Relief Sewer	34.77
Upper Potomac Interceptor	34.11
Piney Branch	31.40
Siphons	31.28
North Interconnecting Branch	29.75
Watts Branch	29.49
South Connecting	29.17
Upper East Side Interceptor	28.27
Little Falls	27.59
First Street Tunnel	27.28
Rock Creek Interceptor Relief	26.90
South West Interceptor	25.10
Lower Oxon Run Interceptor	23.35
Blue Plains Tunnel	23.14
Broad Branch Relief	21.74
Lower Oxon Run Relief	19.71
Oxon Run Trunk	19.33
Luzon Trunk	19.13
Broad Branch Trunk	18.83
Upper Oxon Run Interceptor	17.64

Table C. Luzon Branch E. coli (MPN/100 ml) monthly readings 2021

E. coli samples at the mouth of Luzon Branch 2021 correlated with rainfall

Date of Sample	E.Coli MPN/100ml	Rainfall Date	Rainfall inches
5-Jan	867	4-Jan	0
		5-Jan	0
23-Feb	1733	22-Feb	0.41
		23-Feb	0
21-Mar	2420	20-Mar	0
		21-Mar	0
6-Apr	2420	5-Apr	0
		6-Apr	0
4-May	770	3-May	0.06
		4-May	0.48
15-Jun	2420	14-Jun	1.83
		15-Jun	0
19-Jul	519	18-Jul	0
		19-Jul	0
3-Aug	276	2-Aug	0
		3-Aug	0
20-Sep	387	19-Sep	0
		20-Sep	0
5-Oct	1141	4-Oct	0
		5-Oct	0
2-Nov	149	1-Nov	0
		2-Nov	0.1
		13-Dec	0
14-Dec	201	14-Dec	0

Notes: The 2013 DC Water Quality Standard for E. coli is <410 Most Probably Number per 100 ml (MPN/100 ml) for a single sample value.

Values of 2420 are actually >2420 and beyond the capability of the instrument.

These data were generously supplied by Roque Hernandez, Environmental Protection Specialist, District of Columbia Department of Energy and the Environment. Rain data were derived from the Monthly Operating Report of the Combined Sewer System, DC Water.

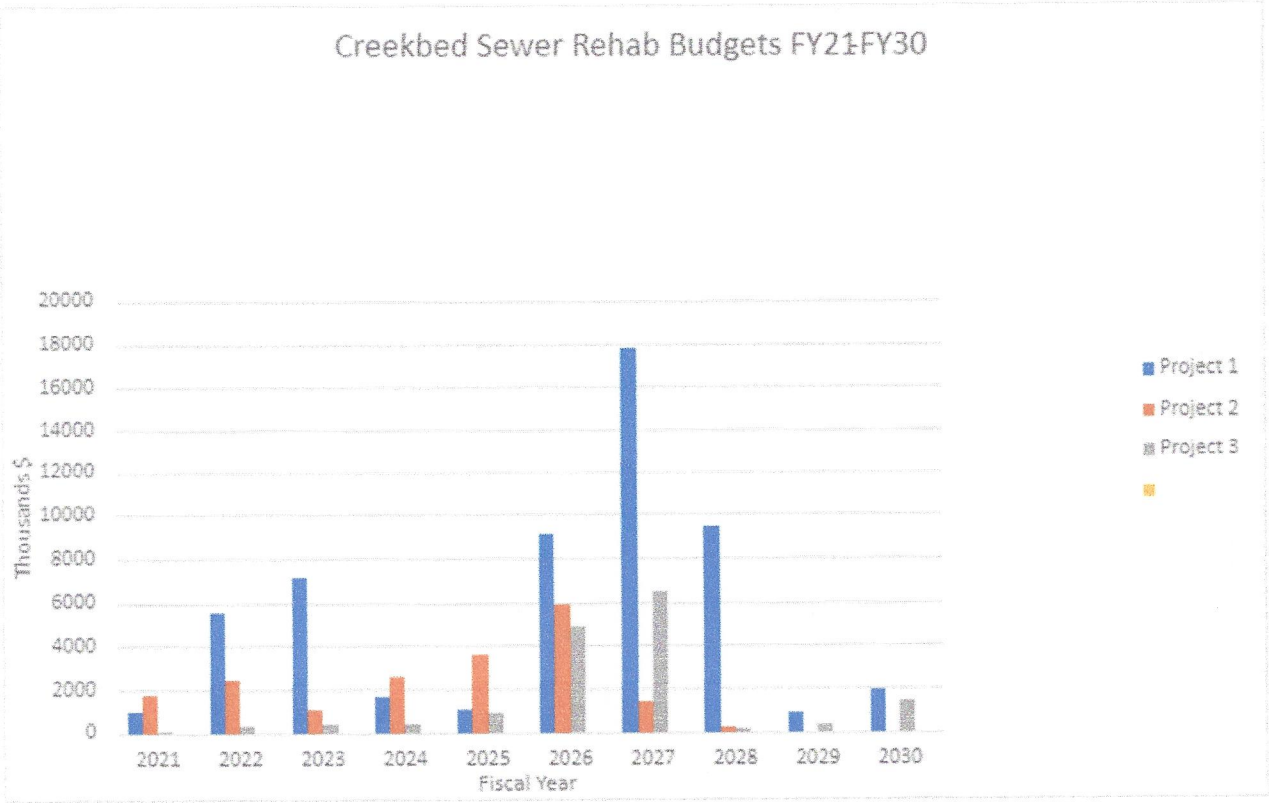
Table D. E. coli Gross Exceedances >2420 MPN/100 ml at Ten Rock Creek Tributaries 2015-2021

Tributary	2015	2016	2017	2018	2019	2020	2021	Totals
Luzon	1	1	2	2	4	2	4	16
Melvin Hazen*	0	1	1	2	3	0	4	11
Normanstone	0	0	2	2	0	1	4	9
Broad Branch	0	0	0	1	2	1	2	6
Portal	0	0	0	1	1	0	3	5
Soapstone	1	0	1	2	0	0	0	4
Pinehurst	1	0	0	1	1	1	1	4
Piney Branch	1	0	1	1	0	0	1	3
Klingle	0	0	1	1	0	1	0	3
Fenwick	1	0	0	0	0	0	0	1

* Melvin Hazen has been renamed Federal Reservation 608.

Table E. Funding for Creekbed Sewer Rehabilitation Projects FY 21-30 (thousands $)

year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Project 1	1004	5554	7156	1710	1091	9128	17764	9429	953	1896
Project 2	1792	2424	1097	2640	3632	5909	1462	200	0	0
Project 3	64	343	407	402	925	4857	6483	193	318	1451



Note: Project #1 includes Glover Archbold, Soapstone, Foundry, Klingle Valley, Normanstone, Sheila's Tributary and multiple jobs located throughout the District.

Project #2 includes Pinehurst, Dumbarton Oakes, Sherrill Drive, Fenwick, Oregon Ave.,and multiple jobs through the District.

Project #3 includes Oregon Ave. at St. John's, and Joyce Rd./Morrow Dr. (Luzon Trunk Sewer).