DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
Board of Directors

Meeting of the
Environmental Quality and Operations Committee

HQO-125 O Street SE, Washington DC 20003
Thursday, January 16, 2020
9:30 a.m.

	I.	**Call to Order**	Howard Gibbs Vice Chair
9:30 a.m.	II.	**AWTP Status Update**	Aklile Tesfaye
		1. BPAWTP Performance	
9:45 a.m.	III.	**FY20 – FY29 Proposed Capital Improvement Program (CIP) Budget**	Len Benson
10:20 a.m.	IV.	**DC Clean Rivers Project – Green Infrastructure Update**	Seth Charde
10:35 a.m.	V.	**Action Items**	Joel Grosser/Len Benson
		Joint Use	
		1. Contract Number: 19-PR-DIT-10 – Customer Information System Enhancements – Vertex Data Utility Services	
		Non-Joint Use	
		1. Contract Number: 160021 - Small Diameter Water Main Replacement 13A, Fort Myers Construction Corp.	
10:45 a.m.	VI.	**Lead Pipe Replacement Assistance Program**	Gian Cossa
10:55 a.m.	VII.	**Water Distribution**	Maureen Schmelling/Marlee Franzen
		1. Coliform Testing 2. LCR Compliance Testing 3. Fire Hydrant Upgrade Program	
		a. Status Report of Public Fire Hydrants b. Out of Service Fire Hydrant Map	
11:05 a.m.	VIII.	**Other Business / Emerging Issues**	
11:10 a.m.	IX.	**Executive Session***	

11:30 a.m. **X.** **Adjournment** Howard Gibbs
Vice Chair

Follow-up Items from Prior Meetings:

1. EVP, Ops & Engr, DC Water: Provide a briefing to the Committee regarding preventative and corrective maintenance programs on water, storm and sanitary sewer pump stations also including performance of DC Water's SCADA system. **[Target: February 2020]**
2. Manager, Green Infrastructure, DC Water: Conduct a robust discussion with the Committee regarding per/acre costs of developing, operating and maintaining grey vs. green infrastructure. **[On Current Agenda]**
3. Senior Director, Water Operations: Provide an update regarding the total number of Public Fire Hydrants in service. **[On Current Agenda]**
4. Sr. VP, CIP Project Delivery: Provide an update regarding existing bid evaluation process, including Contractor compliance with MBE/WBE participation goals and historical performance meeting the goals. **[Target: March 2020]**
5. Vice President, Information Technology, DC Water: provide a briefing on the Authority's efforts to meet evolving cyber security threats. **[Target: February 2020]**
6. EVP, Customer Experience: Update on the AMI installations e.g. percent of residential customers with replaced meters. **[Target: February 2020]**

* 1 The DC Water Board of Directors may go into executive session at this meeting pursuant to the District of Columbia Open Meetings Act of 2010, if such action is approved by a majority vote of the Board members who constitute a quorum to discuss: matters prohibited from public disclosure pursuant to a court order or law under D.C. Official Code § 2-575(b)(1); contract negotiations under D.C. Official Code § 2-575(b)(2); legal, confidential or privileged matters under D.C. Official Code § 2-575(b)(4)(A); collective bargaining negotiations under D.C. Official Code § 2-575(b)(5); facility security under D.C. Official Code § 2-575(b)(8); disciplinary matters under D.C. Official Code § 2-575(b)(9); personnel matters under D.C. Official Code § 2-575(b)(10); proprietary matters under D.C. Official Code § 2-575(b)(11); train and develop members of a public body and staff under D.C. Official Codes § 2-575(b)(12); decision in an adjudication action under D.C. Official Code § 2-575(b)(13); civil or criminal matters where disclosure to the public may harm the investigation under D.C. Official Code § 2-575(b)(14), and other matters provided in the Act.

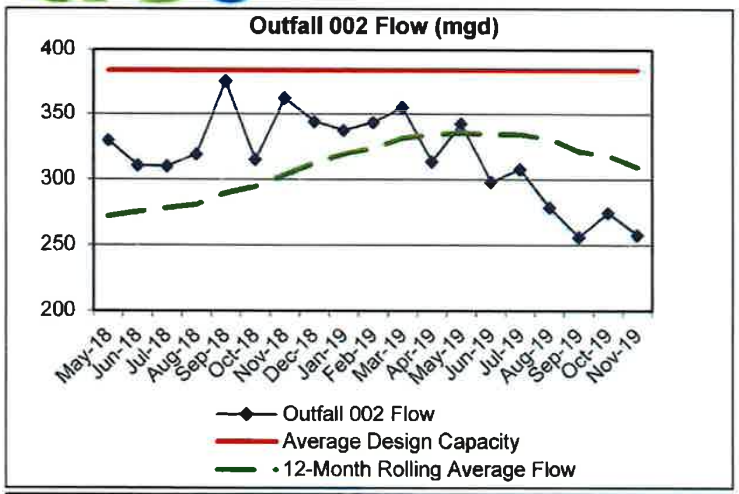
Blue Plains Advanced Wastewater Treatment Plant

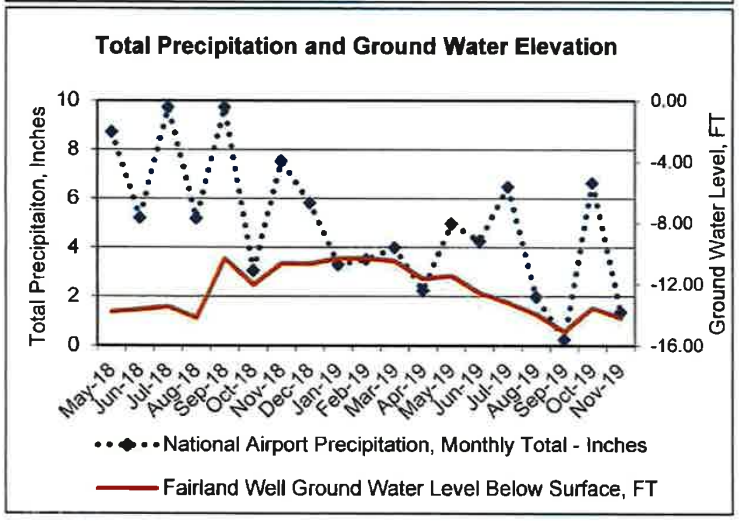
Performance Report

Environmental Quality and Operations Committee

January 16, 2020

Complete Treatment Performance





- Annual Average flow remained above 300 MGD since November 2018
- Plant Influent Flow correlates with long term ground water elevation below surface
- Plant performance was excellent with all effluent quality requirements well below or within the NPDES permit requirements
- The total pounds of nitrogen discharged in the complete treatment effluent - during the current calendar year is on track to remain below the NPDES permit discharge limit of 4,377,580 lbs. /year.

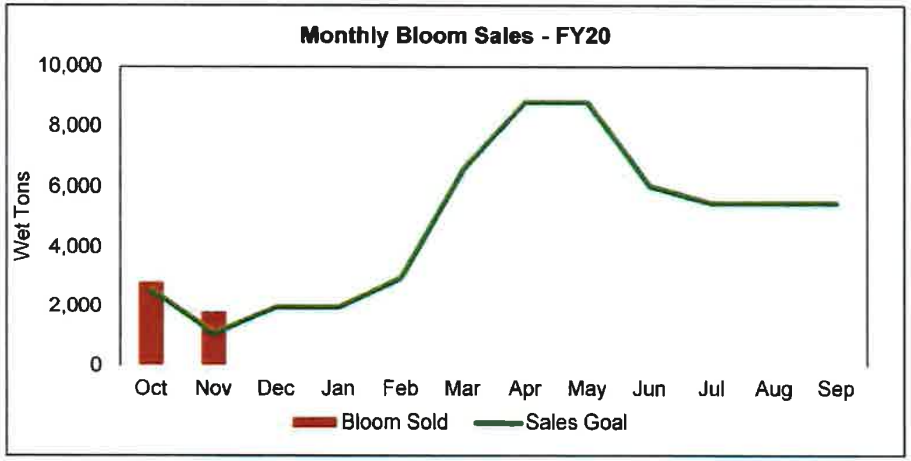
Wet Weather Treatment Facility Performance

	October 2019	November 2019
Total Precipitation, inches	**6.66**	**1.37**
Total Volume Captured and Treated, MG*	**349**	**55**
➢ **Directed to Complete Treatment, MG**	**296**	**45**
➢ **Discharged to Outfall 001, MG**	**53**	**10**
Measured Overflow, MG	**0**	**0**
➢ **Percent Captured, %**	**100**	**100**

***MG = Million Gallons**

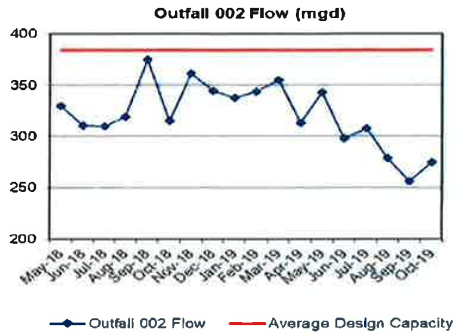
Class A Biosolids Quality & Bloom Marketing

- All biosolids produced met Class A Exceptional Quality (EQ) requirements required by EPA.
- Fecal Coliform values on daily process monitoring samples remained below the 1,000 MPN/gram required for Class A biosolids - consistent with the low levels measured historically
- Bloom Marketing: ~1,800 tons marketed in November 2019
- Marketing goal during fiscal year 2020: 60,000 tons (~40% of production)

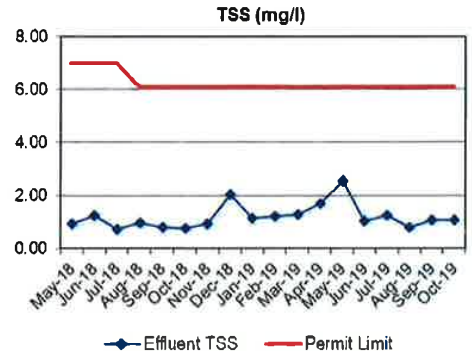


BLUE PLAINS ADVANCED WASTEWATER TREATMENT PLANT
PERFORMANCE REPORT – OCTOBER 2019

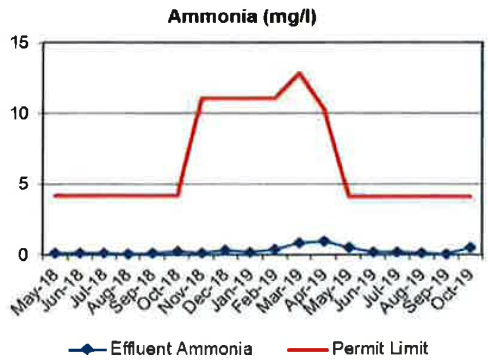
Average plant performance for the month of October 2019 was excellent with all effluent parameters well below the seven-day and monthly NPDES permit requirements. The monthly average flow through complete treatment and discharge to outfall 002, was 275 MGD. There was 53.2 million gallons of treated, captured combined flow directed to Outfall 001 during this period. The following figures compare the plant performance with the corresponding NPDES permit limits.



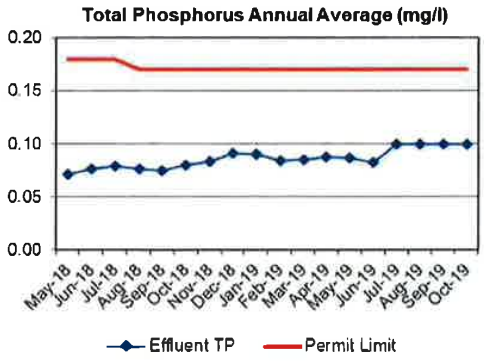
This graph illustrates the monthly average influent flow to the plant. The design average flow is 384 MGD. Blue Plains has a 4-hour peak flow capacity of 555 MGD through complete treatment. Once the plant is at capacity, up to 225 MGD of additional captured combined system flow from the tunnel can be treated through enhanced clarification, disinfection and dechlorination.



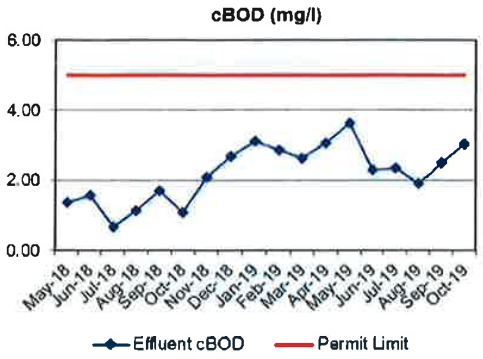
Effluent Total Suspended Solids (TSS) is a measurement of the amount of solid material that remains suspended after treatment. The effluent TSS concentration for the month averaged 1.07 mg/L, which is below the 6.1 mg/L permit limit.



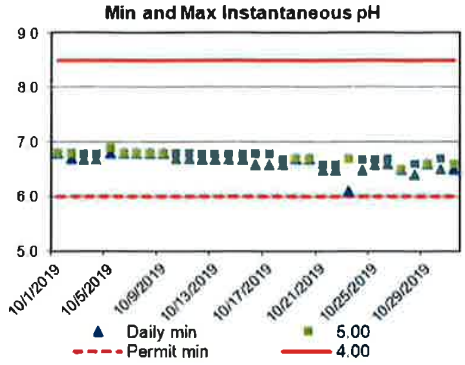
The Ammonia Nitrogen (NH3-N) is a measurement of the nitrogen found in ammonia. For the month, effluent NH3-N concentration averaged 0.49 mg/L and is below the 4.1 mg/L seasonal limit.



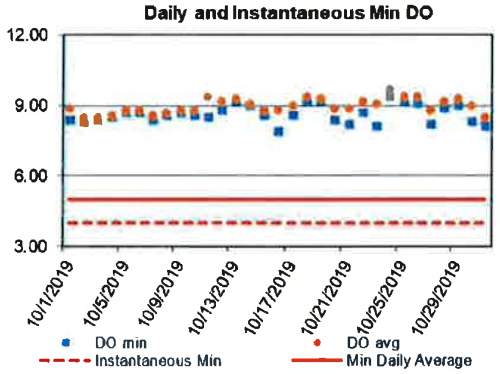
The Total Phosphorus (TP) is a measurement of the particulate and dissolved phosphorus in the effluent. The 12-month rolling average effluent TP concentration is 0.10 mg/L, which is below the 0.17 mg/L limit.



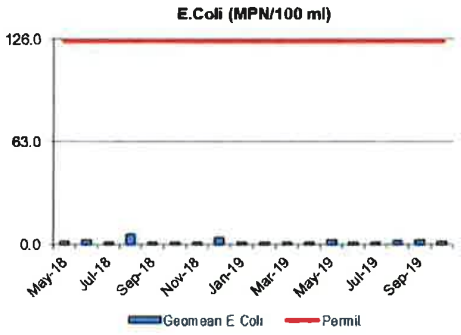
Carbonaceous Biochemical Oxygen Demand (CBOD) is a measurement of the amount of oxygen required for the decomposition of organic materials. The effluent CBOD concentration averaged 3.05 mg/L, which is below the 5.0 mg/L limit.



pH is a measurement of acidity of the effluent. The minimum and maximum pH observed were 6.1 and 6.9 standard units, respectively. The pH was within the permit limits of 6.0 and 8.5 for minimum and maximum respectively.



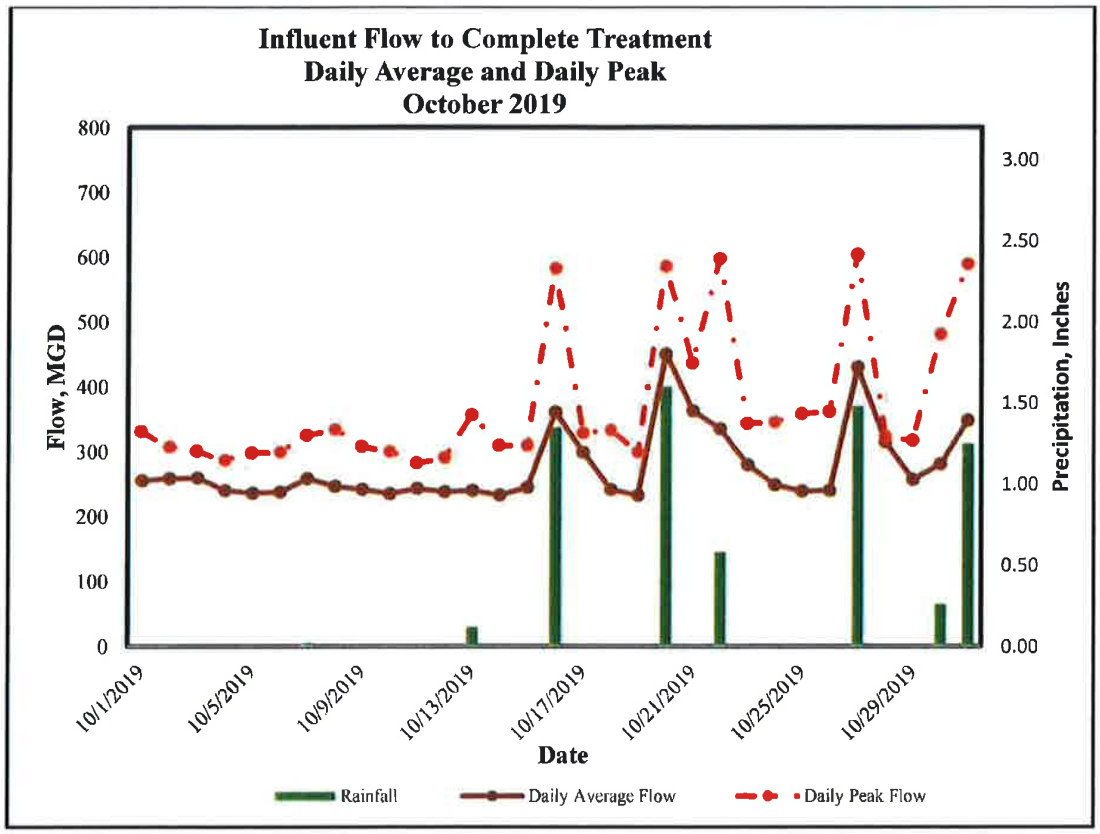
Dissolved Oxygen (DO) is a measure of the atmospheric oxygen dissolved in water. The DO readings for the month are within the permit limits. The minimum daily average is 8.6 mg/L. The minimum instantaneous DO reading is 7.9 mg/L. The minimum daily average and instantaneous permit limits are 5.0 mg/L and 4.0 mg/L, respectively.



E. coli is an indicator of disease causing organisms (pathogens). The E. coli permit limit is 126/100mL. The E coli geometric mean is 1.5 /100mL, and well below the permit limit.

Wet Weather Impact on Plant Performance

During the month of October 2019, the Washington Metropolitan Region received above average precipitation (6.66 inches vs normal of 3.4 inches) as measured at the National Airport. There was 53.2 million gallons of treated, captured combined flow directed to Outfall 001 during this period.



Wet Weather Treatment Facility (WWTF) at Blue Plains

Brief Description

The Wet Weather Treatment Facility at Blue Plains provides treatment for Combined Sewer Overflows (CSO) conveyed through the Long-Term Control Plan (LTCP) tunnel systems to Blue Plains. With a design capacity of 250 MGD, the facility consists of sub systems including- a flow surcharge wet well and coarse screens, upstream of five 3,000 Horse Power (HP) Tunnel Dewatering Pumps (TDPs). The TDPs lift the flow 156 ft to the above ground Enhanced Clarification Facility (ECF), which comprises of fine screening, grit removal, and high rate clarification (HRC). The effluent from HRC is disinfected and dechlorinated before it's discharged through Outfall 001. When flow rates to the main plant are below the permitted peak flow rates of 555 OR 511 MGD, the effluent from the HRC (or a portion of it) is directed to the main plant for complete treatment. On an average year, the facility is designed to receive approximately 2.6 billion gallons of CSOs and provide treatment with The WWTF, along with the first section of the Anacostia Tunnel System were placed in operation, three days in advance of the March 23rd Consent Decree date.

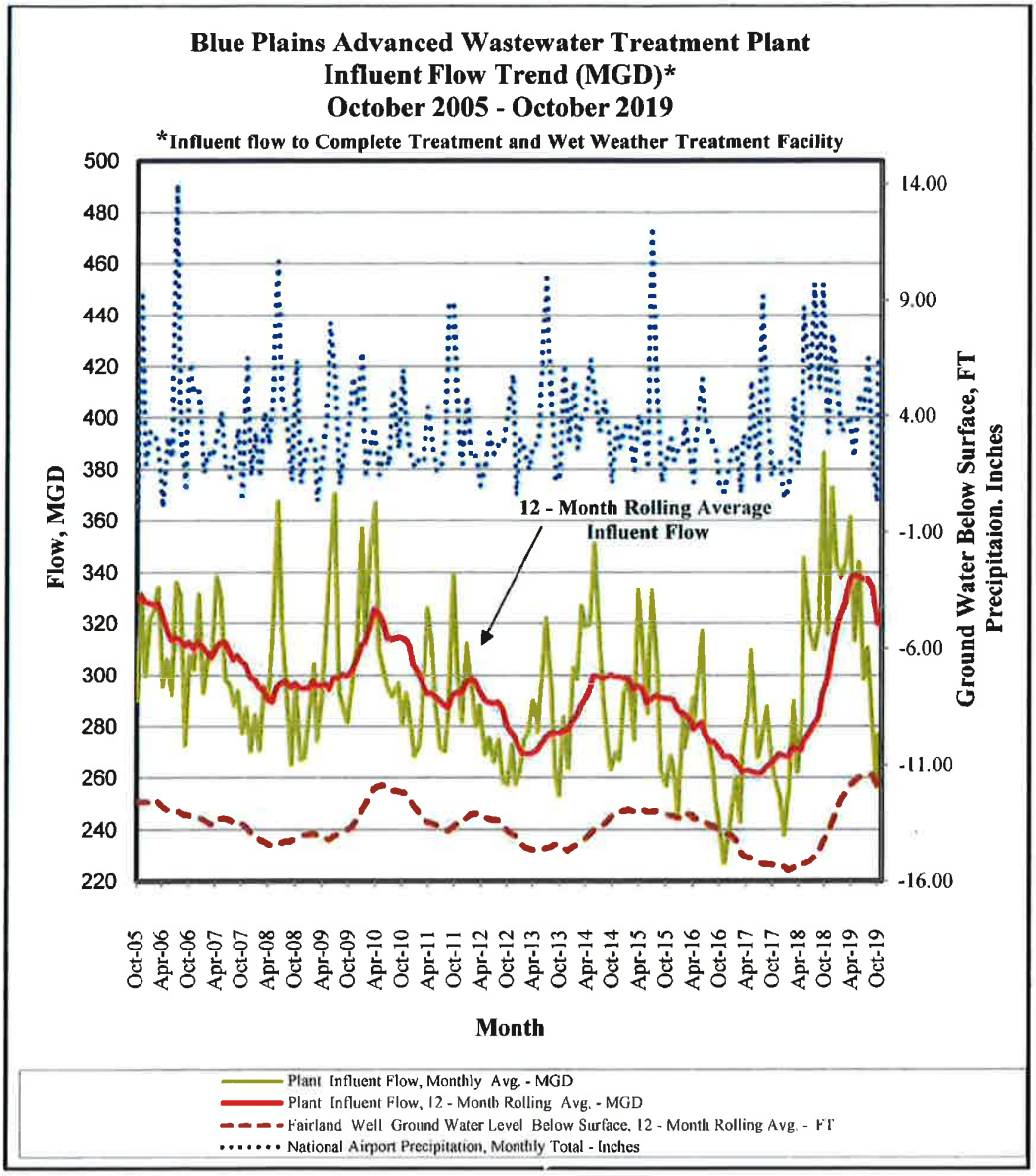
Aerial rendering of the Wet Weather Treatment Facility

Performance

During the month of October, a total of 349 million gallons (MG) of wet weather flow captured in the tunnel system, was pumped, and treated through the Wet Weather Treatment Facility. Part of the treated flow or 295.8 MG was directed to the main plant to maximize complete treatment. The remaining flow or 53.2 MG was disinfected, dechlorinated, and discharged to to Outfall 001. Since the commissioning of the first section of the Anacostia River Tunnel Systems and the WWTF on March 20, 2018 and including the wet weather events that occurred in October 2019, the total volume pumped and treated through the WWTF is 6,683 MG. During the same period, 2,834 wet tons of screenings and grit (trash, debris, sediment) were removed, that would otherwise have been discharged into the Anacostia River.

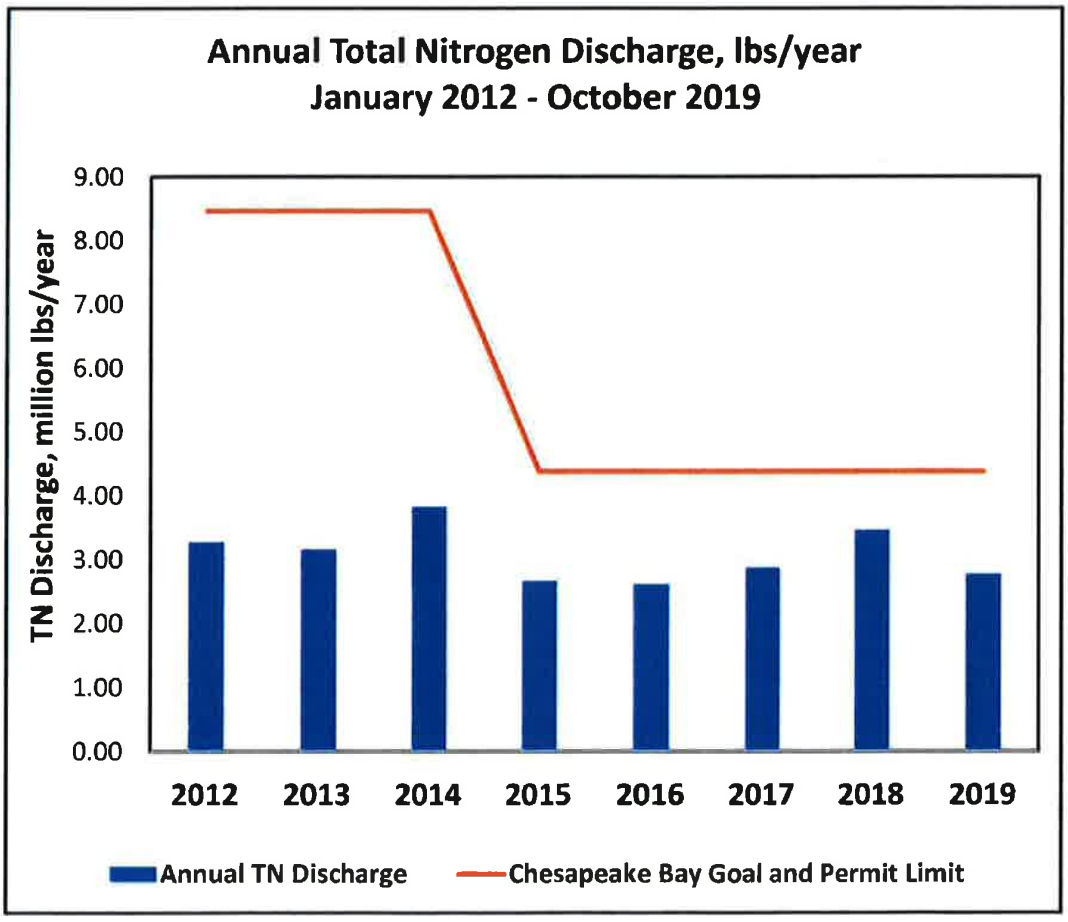
Plant Influent Flow Trend

The graph below shows a long-term influent flow trend to the plant ending October 2019. While for any given month the flow is weather dependent, the 12-month rolling average influent flow exceeded 300 MGD since November 2018.



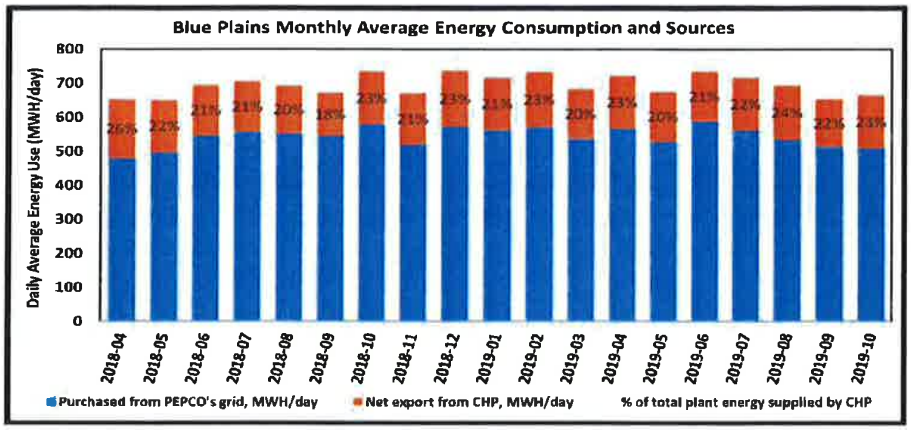
Blue Plains Total Nitrogen (TN) Removal – Performance

The graph below shows total annual nitrogen discharge, in million pounds per year, over an 8-year period ending October 2019. In October 2019, the monthly average TN concentration and total load in the complete treatment effluent were 2.91 mg/L and 222,596 lbs., respectively. The total pounds of nitrogen discharged in the complete treatment effluent during the current calendar year (through October 2019) is 2,773,405 lbs. and on track to remain below the NPDES permit discharge limit of 4,377,580 lbs. /year. The performance corresponds to average flow of 311 MGD, maximum month flow of 355 MGD, and average wastewater temperature above 16°C observed during the period. The Blue Plains Enhanced Nitrogen Removal Facility (ENRF) is designed to meet the TN discharge limits at influent loads corresponding to annual average flows of 370 MGD, maximum month flows of 485 MGD, and operating wastewater temperatures below 12°C.



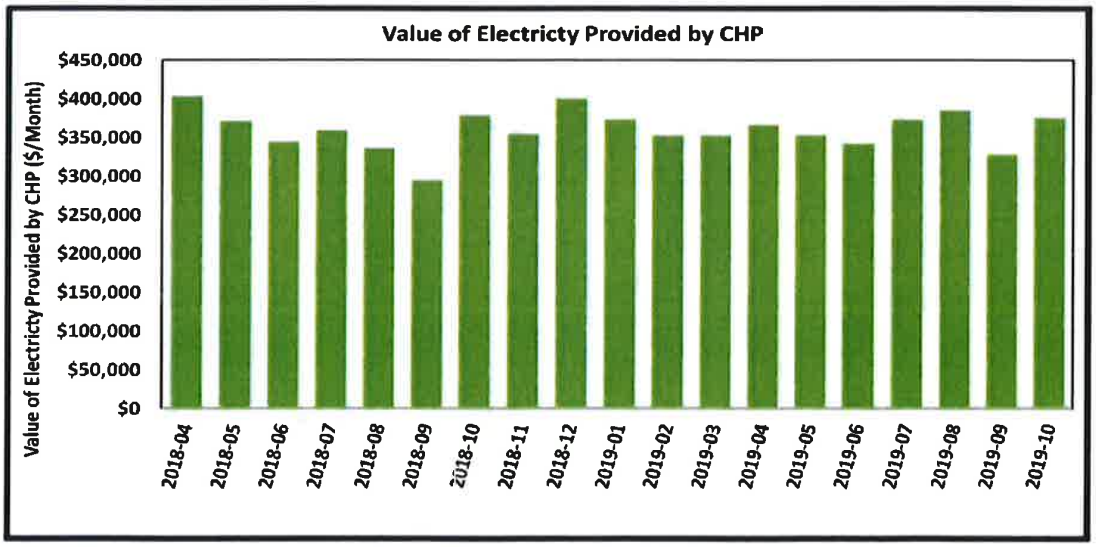
Blue Plains Electricity Generation and Usage

In October 2019, the average energy consumed at Blue Plains was 663 megawatt hours per day (MWH/day) or 2.41 MWH of electricity per million gallons of wastewater processed through complete treatment. The Combined Heat and Power (CHP) facility generated an average of140 MWH/day, making up for 23% of total energy consumed at Blue Plains. The remaining 508 MWH/day was purchased from PEPCO.



The graph above is based on power monitors installed at the Main Substation and CHP, and reflects average energy consumed at Blue Plains in MWH/day. Of the total use, the energy purchased from PEPCO and net energy supplied by CHP are indicated by the blue and orange highlights, respectively.

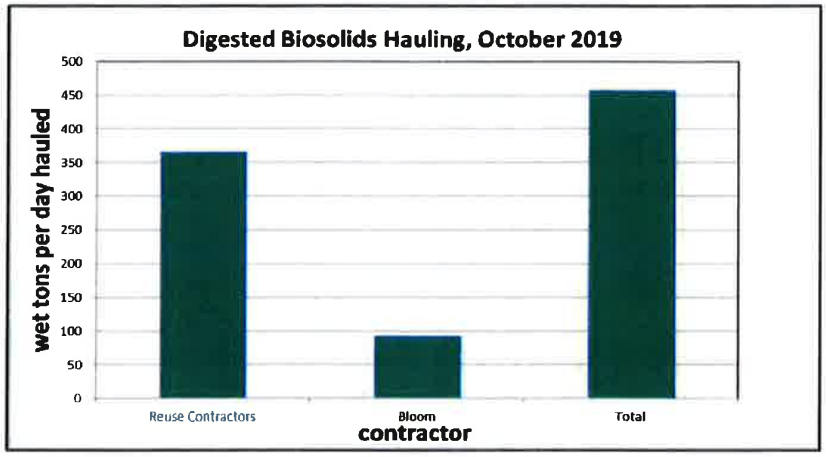
The graph below shows the monthly value of the net electricity generated by CHP by assuming unit price of $78/MWH of electricity.



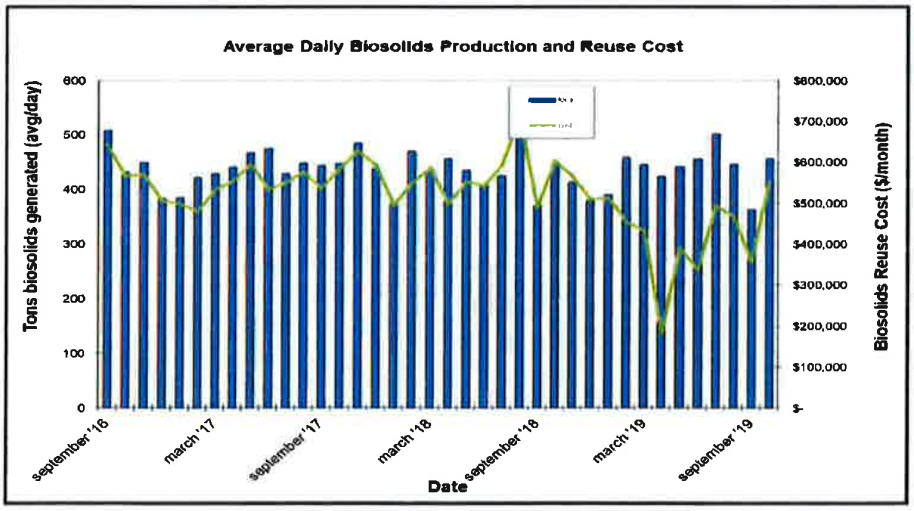
RESOURCE RECOVERY

In October, biosolids hauling averaged wet 454 tons per day (wtpd). The average percent solids for the Class A material was 30.9%.

The average quanities of Class A biosolids transported and applied on farms by the three contracts and the quantites marketed as Bloom are shown on the graph above. In October, 2,837 wet tons of Bloom were distributed to 22 customers.



The graph below shows average daily biosolids produced and the associated monthly cost for reuse (transportation and application cost) for a three-year period ending October 2019. In October, diesel prices averaged $3.23/gallon, and with the contractual fuel surcharge, the weighted average biosolids reuse cost (considering the marketed material) was $38.92 per wet ton.

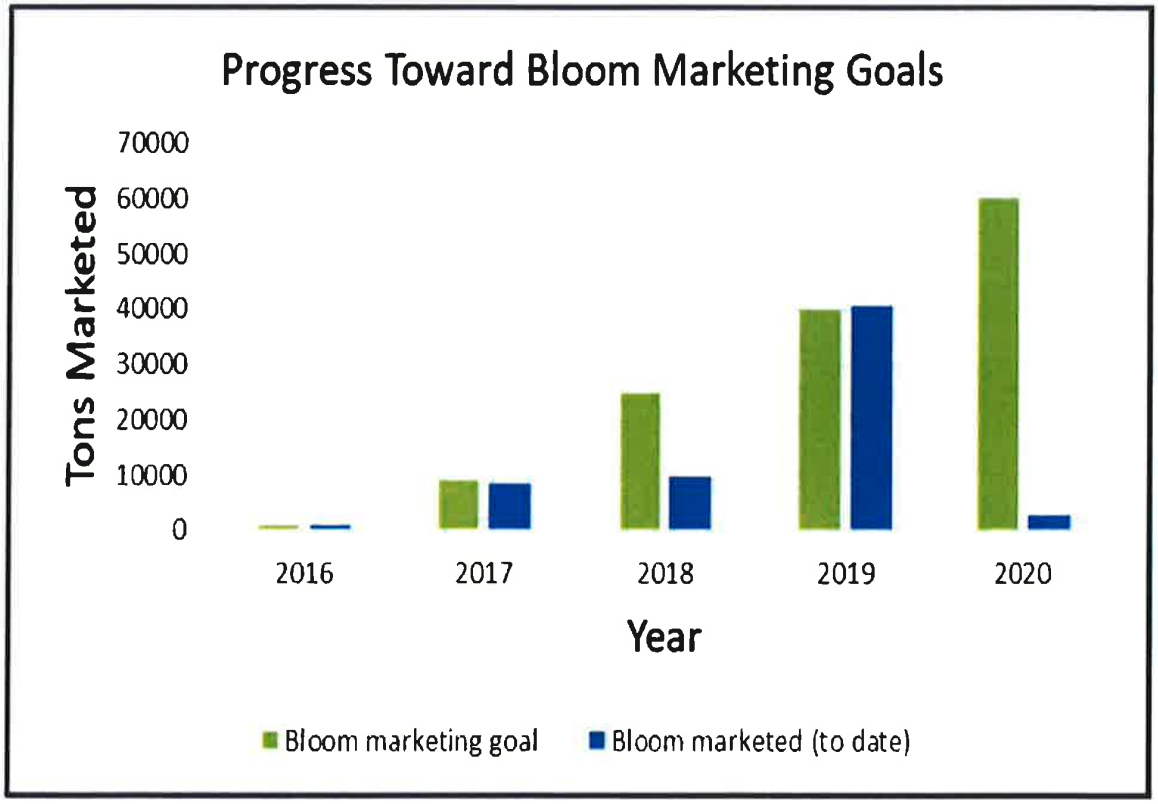


Product Quality

All biosolids produced met Class A Exceptional Quality (EQ) requirements required by EPA. Fecal Coliform values on daily process monitoring samples remained below the 1,000 MPN/gram required for Class A biosolids - consistent with the low levels measured historically

Bloom Marketing

Bloom sales as during October 2019 totaled 2,837 tons for the fiscal year. This represents 5% of the FY20 goal (60,000 tons).



Water Quality & Pretreatment

The Blue Plains Water Quality & Pretreatment group manages the Industrial Pretreatment Program, including temporary dewatering dischargers (construction dewatering, etc.) and dental dischargers, as well as the Hauled Waste Program. Staff also provide specialized sampling and program management support for the Blue Plains NPDES permit, including low level PCB and mercury monitoring as well as storm water management and regulatory compliance support. In addition, staff supported an 8-day collection system sampling program this month to evaluate loadings from one location each in the District and contributing jurisdictions. Staff also participated in a regional pretreatment coordinators meeting at WSSC.

Industrial Pretreatment Program

DC Water currently manages eleven (11) Significant Industrial User (SIU) and sixteen (16) Non-Significant Industrial User (NSIU) wastewater discharge permits. One NSIU permit (Joint Base Anacostia Bolling) was renewed this month. Staff conducted a final inspection at one permitted NSIU this month (Providence Hospital) and is conditionally terminating the NSIU permit due to closure of hospital services. All SIUs and NSIUs are currently in compliance with discharge standards.

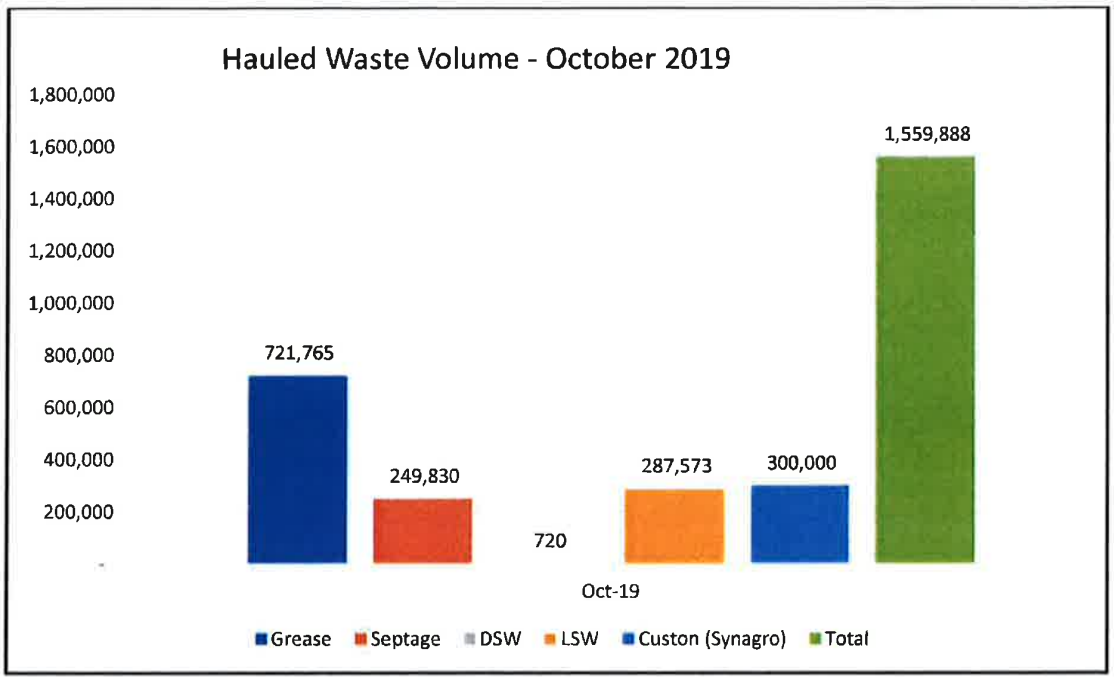
DC Water received the 2018 annual report review from EPA Region III this month and received the highest available overall program rating of 100% for DC Water's pretreatment program.

DC Water currently manages 102 Temporary Discharge Authorization (TDA) permits, primarily for construction site discharges of groundwater and/or surface runoff in the combined sewer area. Five new TDA permits were issued this month. All TDA permittees are currently in compliance with discharge standards.

Hauled Waste Program

DC Water currently manages 36 Waste Hauler permits for discharge of domestic septage, portable toilet waste, grease trap waste, groundwater or surface runoff, and other types of waste (if approved in advance and meet pretreatment standards). Two Waste Hauler permits were renewed, two were terminated, and one new permit was issued this month.

DC Water received 697 hauled waste loads (1,559,888 gallons) from permitted haulers this month. Manifest forms from each truck entering the plant are collected by the security guards and picked up daily by Pretreatment staff and information is manually entered into an access database. Two hauled waste samples were collected this month and results were in-compliance with discharge criteria.



Revenue Generation

The following billing (revenue) and receivables (cash) occurred this month for Groundwater/Retail Sewer (GWRS) billing for disposal fees in accordance with TDA permits issued under the Industrial Pretreatment Program, Industrial User (IU) billing for high strength waste, permitting fees, and annual compliance fees issued under the Industrial Pretreatment Program, and Waste Hauler (WH) billing for permitting and disposal fees issued under the Hauled Waste Program:

Cat. Code	FY 20 (Oct) Revenue Posted	FY 20 (Oct) Cash Received
GWRS	$1,008.00	$321.54
IU	$52,160.79	$6,918.91
WH	$62,710.13	$61,916.06
Total	**$115,878.92**	**$69,156.51**

FY20-29 Proposed CIP Budget

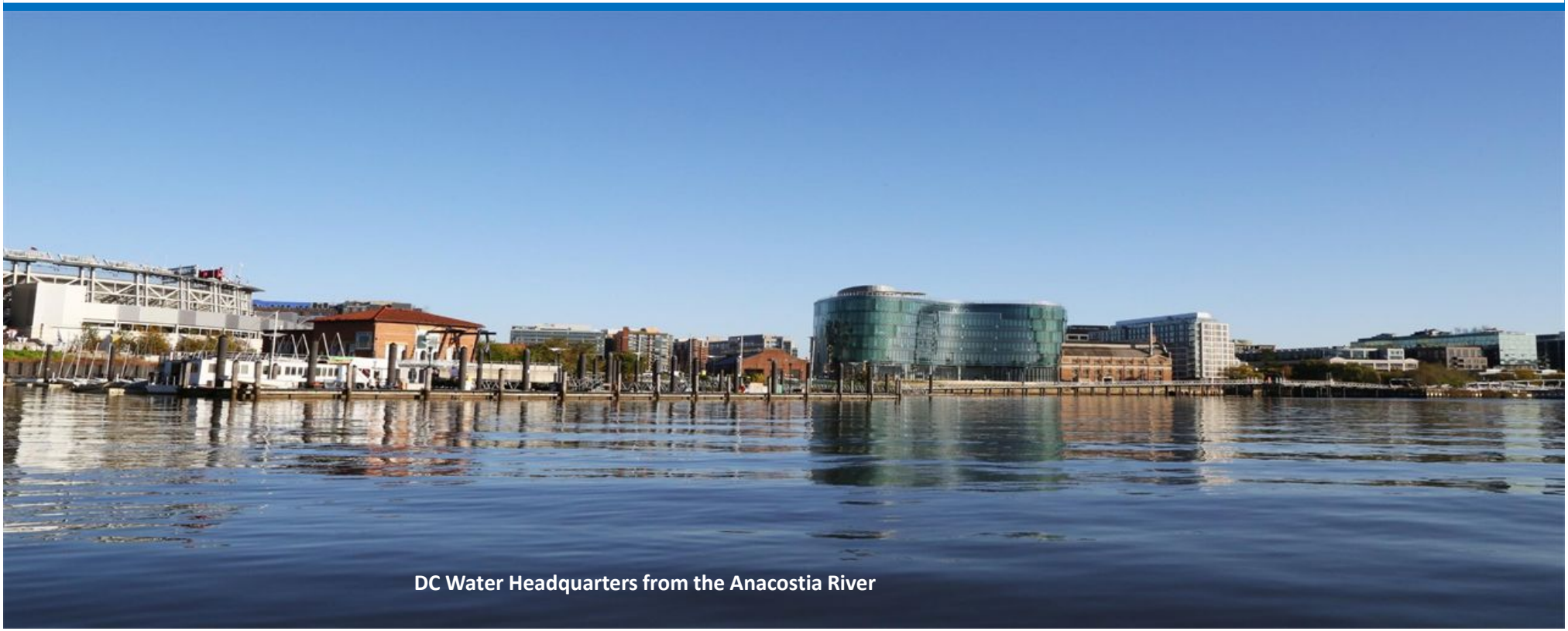
Presentation to the Environmental Quality and Operations Committee

January 16, 2020

Adam Ortiz, Chair

District of Columbia Water and Sewer Authority

Leonard R. Benson, Senior Vice President and Chief Engineer



DC Water Headquarters from the Anacostia River

Proposed Capital Improvement Program
Leonard Benson

Agenda

10-Year Engineering CIP Options Compared

Service Area	Approved Baseline $4.4B (FY19-28)	Proposed Baseline $4.9B (FY20-29)	Asset Management $5.4B (FY19-28)	Fully Funded $5.8B (FY20-29)
Clean Rivers	**Fully funded** to meet Consent Decree	**Fully funded** to meet Consent Decree	**Fully funded** to meet Consent Decree	**Fully funded** to meet Consent Decree
Wastewater	**Fully funded** to meet NPDES Permit and established levels of service	**Fully funded** to meet NPDES Permit and established levels of service	**Fully funded** to meet NPDES Permit and established levels of service	**Fully funded** to meet NPDES Permit and established levels of service
Stormwater	**Fully funded**	**Fully funded**	**Fully funded**	**Fully funded**
Water				
Pump Stations & Storage Facilities	**Generally funded**	**Generally funded**	**Fully Funded**	**Fully Funded**
Small Diameter Water Mains	**Underfunded; (Funded to meet 1%** per year replacement level - **[11 mi/year]**)	**Increased funding** to ramp up to **1.5%** per year replacement level from FY 2027 onwards. **[16.5 mi/year]**	**Fully funded to ramp up to 2%** replacement level **[22 mi/year]**	**Fully funded to ramp up to 2%** replacement level **[22 mi/year]**
Large Diameter Water Mains	**Generally funded**	**Generally funded**	**Generally funded**	**Fully Funded**
Sewer				
Pump Stations	**Fully funded**	**Fully funded**	**Fully funded**	**Fully funded**
Sewer Lines < 60" diameter	**Underfunded (Funded to ramp up to 1.0%** per year rehabilitation level **[17.5 mi/year]** by FY 2023	**Increased funding** to ramp up to **1.5%** per year replacement level from FY 2027 onwards. **[26 mi/year]**	**Fully funded to ramp up to 2.3%** rehabilitation level **[40 mi/year]**	**Fully funded to ramp up to 2.3%** rehabilitation level **[40 mi/year]**
Sewer Lines ≥ 60"	**Generally Funded**	**Generally Funded**	**Generally Funded**	**Fully funded**
Non Process	**Fully funded**	**Fully funded**	**Fully funded**	**Fully funded**

'Generally Funded' = What we know or expect to find can be rehabilitated **'Underfunded'** = What we know or expect to find is not all funded
'Fully Funded' = All needs known or expected are met

4

Proposed FY 20-29 CIP Budget

The10-year capital program Engineering Projects:

- Begins the implementation of the "Modified Baseline" approved last year, and adds additional funds to reach 1.5% replacement plans for water and sewer infrastructure within the ten-year plan, balancing infrastructure renewal and affordability
- Fully funds the **Clean Rivers** program to meet all consent decree deadlines
- Funds **non-process facilities** including the new Fleet and Sewer Facilities, renovations to the Historic Main Pump Station, and restoration of the Main & O campus seawall
- At **Blue Plains** funds upgrades to Screens, Grit and Primary Facilities, and Process Control Computer System, Efficiency Improvements, and Long-term Concrete Rehabilitation projects
- Advances major rehabilitation of **sanitary collection sewers,** upgrades to sewer pump stations, rehabilitation of the Potomac Interceptor and increased funding to ramp up to 1.5% replacements per year starting FY 2027 and onwards for the **small diameter water mains** and **small sewer lines**
- Includes carryover from prior year to complete the Enterprise Resource Planning (ERP) and Advanced Meter Infrastructure (AMI) projects, and increased funding for Fleet, pumps and other equipment

Screens, Grit & Primary Facilities Upgrades

6th St SW

5

Proposed FY 20-29 CIP Budget

Capital Equipment and Washington Aqueduct:

- Capital Equipment – Funded at $333 million for planned equipment spending including the procurement of backhoes, jet-vacs, catch basin trucks and other aged vehicles to meet operational needs
- Washington Aqueduct (WAD) – Total of $195.2 million, an increase of $8.1 million for DC Water's share of WAD's capital program

Jet-Vac

Washington Aqueduct

Proposed FY 20-29 CIP Budget

The CIP balances financial and affordability concerns with additional investment in our assets that begin to address aging water and sewer infrastructure during this 10-year period

- Capital Construction Projects - $4.92 billion, highlights include:
  - $1.2 billion fully funds the DC Clean Rivers' project to meet Consent Decree requirements
  - $57 million increase in the Sewer Service area to ramp up to 1.5% small sewer lines replacement from FY 2027 onwards, ten-year total of $1.2 billion in Sewer
  - $102 million increase in the Water Service area to ramp up to the 1.5% of small diameter water mains replacement per year from FY 2027 onwards, ten-year total of $1.1 billion in Water
  - $55 million for Efficiency Improvement projects FY 2021 and FY 2022
  - $72 million for New Project– Blue Plains Long Term Concrete Rehabilitation, applied asset management principles to prioritize and re-schedule out-year projects to maintain ten-year total of $1.0 billion in Wastewater Treatment

10-Year CIP - Service Area Summary

- The proposed FY 2020 disbursement includes the underspending from FY 2019 to remain congruent with previously approved rate increases
- Ramp-up to the Modified Baseline CIP beginning in FY 2021

Service Area ($000's)	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	10-Yr Total	Last Year's CIP	(Increase) /Decrease
Non-Process Facilities	$ 42,066	$ 31,849	$ 20,665	$ 6,831	$ 11,058	$ 10,396	$ 3,901	$ 3,553	$ 3,560	$ 3,600	$ 137,479	$ 138,067	$ 588
Wastewater Treatment	77,536	102,976	113,378	107,232	107,312	70,680	97,878	101,839	132,256	138,165	1,049,252	978,738	(70,514)
Clean Rivers	162,197	147,565	179,833	129,272	67,536	59,909	148,771	103,265	88,890	115,049	1,202,288	1,262,589	60,301
Combined Sewer	9,239	9,493	12,816	16,553	16,731	8,568	6,699	7,572	8,972	12,435	109,078	79,178	(29,900)
Stormwater	6,869	9,631	7,535	4,170	5,392	4,660	4,201	4,306	6,869	5,057	58,690	68,608	9,918
Sanitary Sewer	44,933	63,926	115,541	88,110	91,562	138,341	159,814	176,789	175,873	174,032	1,228,922	957,135	(271,787)
Water	62,163	88,677	108,878	109,000	92,905	101,765	116,319	146,791	154,916	154,697	1,136,112	945,015	(191,097)
CAPITAL PROJECTS	**405,004**	**454,118**	**558,645**	**461,168**	**392,496**	**394,318**	**537,584**	**544,115**	**571,337**	**603,035**	**4,921,821**	**4,429,330**	**(492,491)**
Capital Equipment	31,703	37,207	33,790	32,315	33,000	33,000	33,000	33,000	33,000	33,000	333,015	340,324	7,309
Washington Aqueduct	15,515	16,266	18,572	37,841	12,699	33,875	9,508	12,863	24,068	13,971	195,178	187,127	(8,051)
ADDITIONAL CAPITAL PROGRAMS	**47,218**	**53,473**	**52,362**	**70,156**	**45,698**	**66,875**	**42,509**	**45,863**	**57,068**	**46,971**	**528,193**	**527,450**	**(743)**
TOTAL CIP	**$ 452,223**	**$ 507,590**	**$ 611,008**	**$ 531,322**	**$ 438,194**	**$ 461,193**	**$ 580,093**	**$ 589,978**	**$ 628,404**	**$ 650,006**	**$ 5,450,013**	**$ 4,956,780**	**$ (493,233)**
Last Years CIP	420,342	467,016	561,724	530,006	422,607	450,358	585,454	535,666	544,490	439,117	4,956,780		
(Increase)/Decrease	(31,880)	(40,574)	(49,284)	(1,317)	(15,587)	(10,835)	5,361	(54,312)	(83,914)	(210,890)	(493,232)		

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Prioritization of Spending – Capital Projects

- Proposed Baseline CIP

Higher Priority → Lower Priority

	1A		2A	2B	2C	2D	3A		3B	
	Mandates Agreements, Regulatory standards, Court orders, Issues and Permits requirements, Stipulated Agreements, Etc.		**Health & Safety** Required to address Public Safety	**Board Policy** Undertaken as a result of the Board's commitment to outside agencies	**Potential Failure** Related to Facilities in danger of failing, or critical to meeting permit requirements	**High Profile Good Neighbor** Address Public concerns	**Good Engineering High Payback** Need to fulfill Mission and upgrade Facilities		**Good Engineering** Need to fulfill Mission and upgrade Facilities (Lower priority Projects)	($000's)
FY 2019	174,384	43%	4,332	63,844	30,328	2,280	69,201	17%	60,636	$405,004
FY 2020	147,209	32%	5,490	72,762	24,593	821	114,837	25%	88,405	$454,118
FY 2021	179,572	32%	12,019	59,755	36,803	5,403	164,558	29%	100,536	$558,645
FY 2022	129,073	28%	9,469	53,835	28,274	2,403	130,057	28%	108,055	$461,168
FY 2023	67,830	17%	18,788	41,514	21,997	190	136,794	35%	105,384	$392,496
FY 2024	60,177	15%	19,009	46,213	22,496	788	169,952	43%	75,684	$394,318
FY 2025	148,771	28%	13,180	49,037	23,766	2,837	191,721	36%	108,272	$537,584
FY 2026	103,265	19%	6,062	83,507	21,349	105	210,855	39%	118,971	$544,115
FY 2027	88,890	16%	717	99,437	21,629	-	209,161	37%	151,501	$571,336
FY 2028	115,049	19%	1,516	104,227	18,768	-	207,451	34%	156,024	$603,035
Total	**$1,214,221**		**$90,582**	**$674,131**	**$250,004**	**$14,826**	**$1,604,588**		**$1,073,468**	**$4,921,820**
% of Total	**24.7%**		**1.8%**	**13.7%**	**5.1%**	**0.3%**	**32.6%**		**21.8%**	

- Cash disbursements basis

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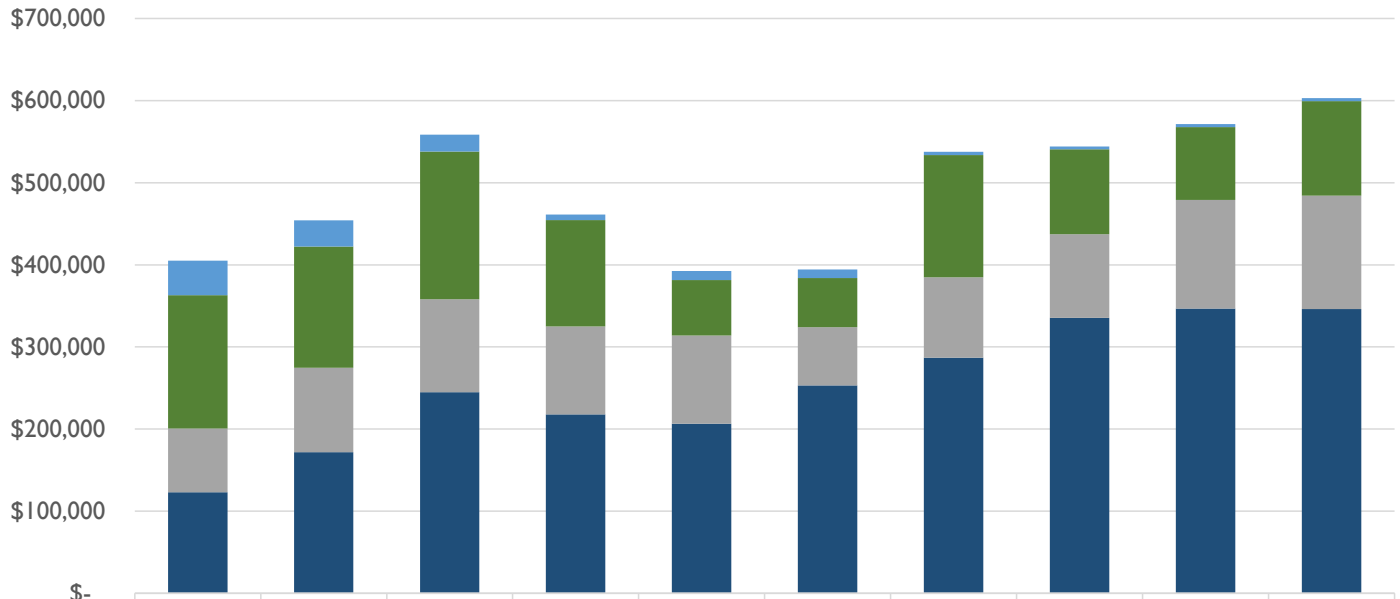
10-Year CIP Disbursement Forecast

$ in thousands



	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29
Non-Process Facilities	$42,066	$31,849	$20,665	$6,831	$11,058	$10,396	$3,901	$3,553	$3,560	$3,600
Clean Rivers	$162,197	$147,565	$179,833	$129,272	$67,536	$59,909	$148,771	$103,265	$88,890	$115,049
Wastewater Treatment	$77,536	$102,976	$113,378	$107,232	$107,312	$70,680	$97,878	$101,839	$132,256	$138,165
Water & Sewer Infrastucture*	$123,205	$171,727	$244,770	$217,833	$206,591	$253,333	$287,034	$335,458	$346,630	$346,221

* Includes the following Service Areas: Water, Sanitary Sewer, Stormwater, and non-Clean Rivers portion of Combined Sewer Overflow

- Cash disbursements basis

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Major Initiatives Funded in Proposed CIP

- DC Clean Rivers ($1,202 million)
  - Anacostia LTCP Projects ($471 million)
  - Potomac LTCP Projects ($510 million)
  - Rock Creek LTCP Projects ($221 million)
- Wastewater Blue Plains ($1,049 million)
  - Enhanced Nitrogen Removal Facilities ($36 million)
  - Liquid Processing ($574 million)
  - Solids Processing ($258 million)
  - Plantwide ($181 million)
- Water Program ($1,136 million)
  - Water Distribution System ($748 million)
  - Water Lead Program ($55 million)
  - Water Ongoing ($165 million)
  - Water Pumping Facilities ($43 million)
  - Water Storage Facilities ($68 million)
  - Water Program Management ($55 million)

PSW Pump - Seal Failures

SDWM unlined Cast Iron pipe

$'s – Projected FY 2020 - FY 2029 Disbursements

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Major Initiatives Funded in Proposed CIP (cont.)

- Sewer Program ($1,229 million)
  - Sanitary Collection Sewers ($370 million)
  - Sewer Ongoing ($141 million)
  - Sanitary Pumping Facilities ($124 million)
  - Sanitary Interceptor/Trunk/Force Sewers ($549 million)
  - Sewer Program Management ($44 million)
- Combined Sewer Overflow ($85 million)
  - Pump Station & Facilities ($63 million)
  - Large Sewers ($22 million)
- Stormwater ($59 million)
  - Local storm drainage & program mgt ($16 million)
  - DSS Stormwater ongoing projects ($9 million)
  - Pump Stations Rehabilitation ($34 million)
- Non-Process ($137 million)
  - New Headquarters Building ($3 million)
  - Main & O Redevelopment Efforts ($43 million)
  - Roof and HVAC Replacements ($26 million)
  - Historic Building Restoration ($17 million)
  - Main & O Seawall Restoration ($12 million)

10th St at Otis St, NE (10"VCP, deformed, broken

Pumps with leaking seal

$'s – Projected FY 2020 - FY 2029 Disbursements

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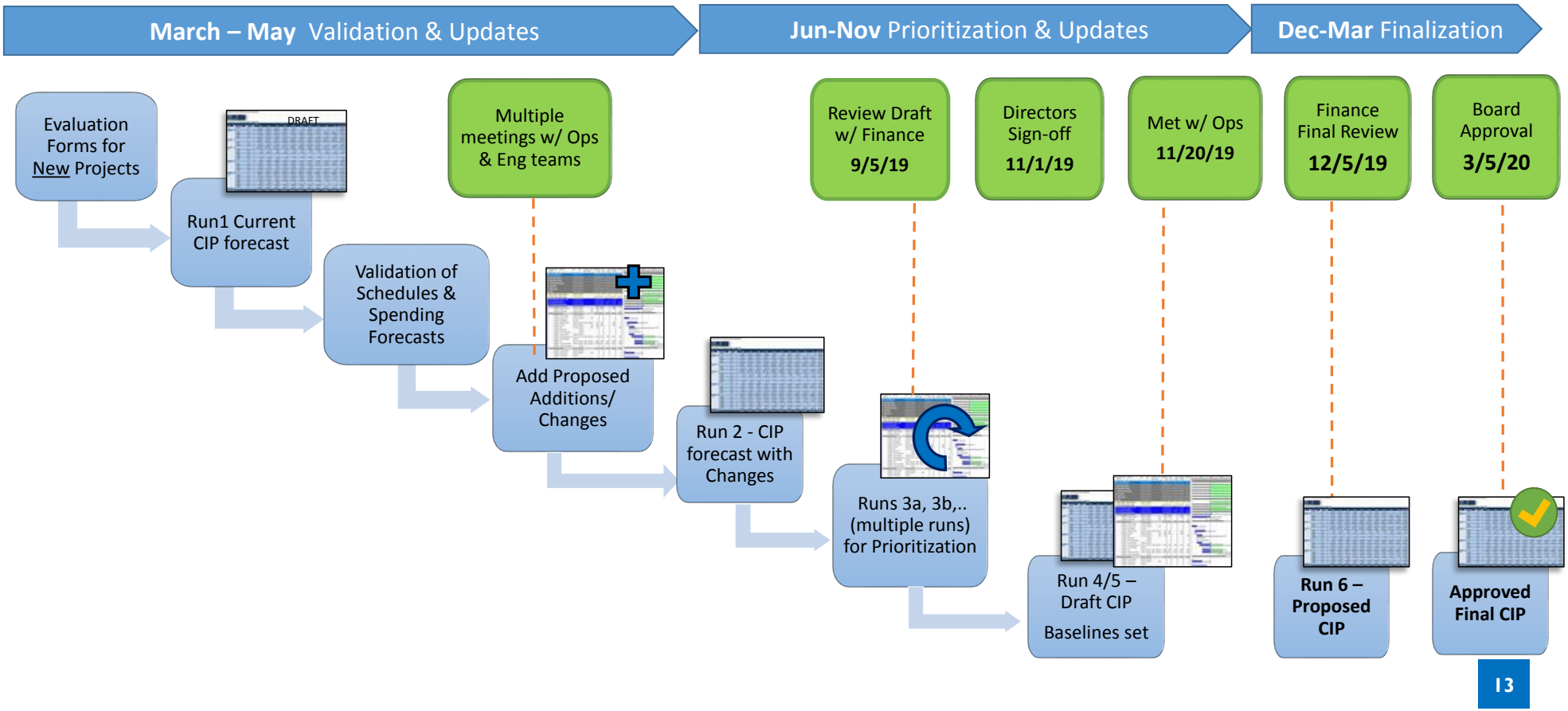
CIP Budget Cycle Overview

FY20-29 10-year Budget Cycle Plan – Engineering



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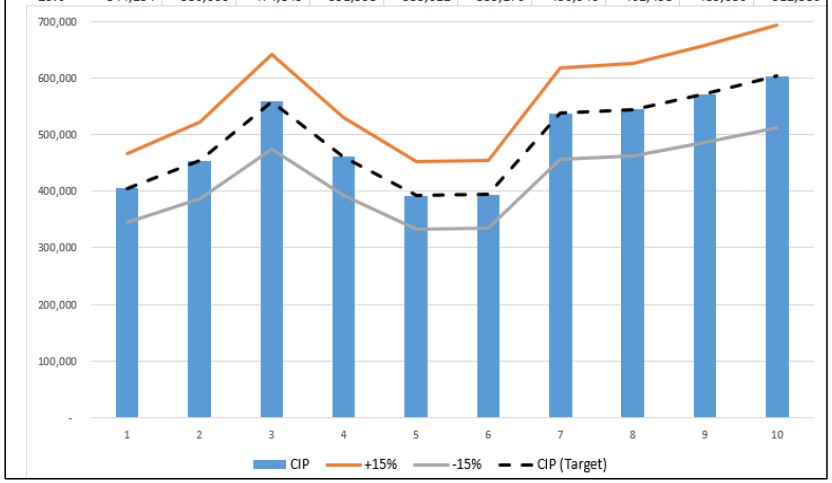
CIP Approach - Target vs Ceiling

- The forecasts for FY19 and FYs onwards are considered not-to-exceed ceilings, rather than targets
- FY19 the Ceiling was $392M, Actual disbursements were $367M (within 6% of Ceiling)
- A margin of error of +/-15% is the expectation set for forecasting one year out based on previous experience

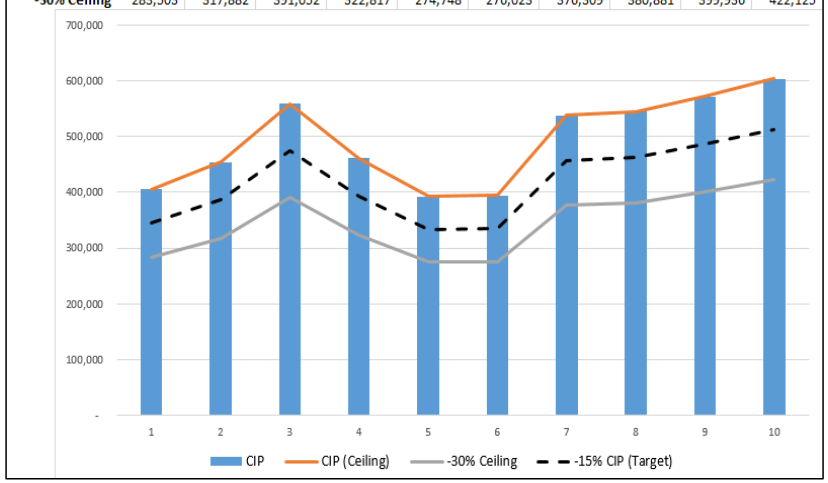
Target (Margin of Error is +/- 15%)

	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29
CIP (Target)	405,004	454,118	558,645	461,168	392,496	394,318	537,584	544,115	571,336	603,035
+15%	465,755	522,235	642,442	530,343	451,371	453,466	618,221	625,732	657,037	693,491
-15%	344,254	386,000	474,849	391,993	333,622	335,170	456,946	462,498	485,636	512,580



Ceiling (Margin of Error is +/- 15%)

	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29
CIP (Ceiling)	405,004	454,118	558,645	461,168	392,496	394,318	537,584	544,115	571,336	603,035
-15% CIP (Target)	344,254	386,000	474,849	391,993	333,622	335,170	456,946	462,498	485,636	512,580
-30% Ceiling	283,503	317,882	391,052	322,817	274,748	276,023	376,309	380,881	399,936	422,125



- Future Performance is measured based on CIP disbursements occurring within this CIP bandwidth

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Proposed FY20 – FY29 CIP

- The overall increase to Capital Projects compared to the FY19-28 plan is $493M
- The increase from the 10-year window shifting accounts for $211M of this overall increase, i.e. FY19 ($391M) vs FY29 ($603M)
- The remaining increase of $281M is mainly from the Water ($98M) & Sewer ($143M) service areas

	Run 6 - FY2020-2029 Proposed Disbursement Plan												Approved Base (FY20-29)	
	FY20*	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	10-Yr Total	**Lifetime	^10-Yr Total	Delta
NON PROCESS FACILITIES														
Facility Land Use	42,066	31,849	20,665	6,831	11,058	10,396	3,901	3,553	3,560	3,600	137,479	221,841	126,358	(11,121)
Subtotal	**42,066**	**31,849**	**20,665**	**6,831**	**11,058**	**10,396**	**3,901**	**3,553**	**3,560**	**3,600**	**137,479**	**221,841**	**126,358**	**(11,121)**
WASTEWATER TREATMENT														-
Liquid Processing	24,516	42,496	43,069	48,748	44,909	31,792	66,989	68,544	99,413	103,740	574,216	1,266,857	635,675	61,459
Plantwide	17,387	32,784	42,213	30,735	37,879	23,127	18,231	25,062	20,506	9,902	257,826	525,997	209,807	(48,019)
Solids Processing	19,847	27,314	27,424	25,852	22,754	15,761	12,658	6,027	10,476	12,858	180,971	924,507	138,068	(42,903)
Enhanced Nitrogen Removal Facilities	15,786	382	672	1,897	1,770	-	-	2,206	1,861	11,665	36,239	980,940	63,374	27,135
Subtotal	**77,536**	**102,976**	**113,378**	**107,232**	**107,312**	**70,680**	**97,878**	**101,839**	**132,256**	**138,165**	**1,049,252**	**3,698,301**	**1,046,924**	**(2,328)**
COMBINED SEWER OVERFLOW														-
DC Clean Rivers Program	162,197	147,565	179,833	129,272	67,536	59,909	148,771	103,265	88,890	115,049	1,202,288	2,764,255	1,189,779	(12,509)
Combined Sewer Program Management	1,287	1,792	2,237	2,972	3,028	2,050	2,629	2,515	3,125	2,519	24,154	77,756	24,327	173
Combined Sewer Overflow Program	7,952	7,701	10,579	13,581	13,703	6,518	4,070	5,057	5,847	9,916	84,924	199,729	59,795	(25,129)
Subtotal	**171,436**	**157,058**	**192,649**	**145,824**	**84,267**	**68,476**	**155,470**	**110,837**	**97,863**	**127,484**	**1,311,366**	**3,041,740**	**1,273,901**	**(37,465)**
STORMWATER														-
Storm Local Drainage Program	12	22	688	594	1,267	1,948	1,164	1,792	1,970	1,709	11,166	18,025	9,749	(1,417)
Storm On-Going Program	1,011	631	1,109	837	866	526	875	843	1,084	1,287	9,069	11,540	7,591	(1,478)
Storm Pumping Facilities	5,310	8,392	4,923	2,259	2,854	1,865	1,698	1,353	3,430	1,755	33,839	61,204	49,311	15,472
Storm DDOT Projects	-	-	-	-	-	-	-	-	-	-	-	3,237	-	-
Stormwater Program Managemet	410	445	582	367	405	321	464	318	385	306	4,003	12,889	2,538	(1,465)
Stormwater Trunk/Force Sewers	126	141	233	113	-	-	-	-	-	-	613	15,510	255	(358)
Subtotal	**6,869**	**9,631**	**7,535**	**4,170**	**5,392**	**4,660**	**4,201**	**4,306**	**6,869**	**5,057**	**58,690**	**122,404**	**69,444**	**10,754**
SANITARY SEWER														-
Sanitary Collection System	4,613	8,134	33,564	18,009	24,312	33,040	52,923	68,745	65,771	61,043	370,154	569,040	297,321	(72,833)
Sanitary On-Going Projectss	12,099	12,327	13,711	13,667	14,185	15,019	15,253	15,111	15,312	14,842	141,529	217,969	143,428	1,899
Sanitary Pumping Facilities	2,570	5,995	6,924	8,240	5,068	10,468	11,639	11,933	27,732	33,628	124,196	270,778	121,119	(3,077)
Sanitary Program Management	4,150	5,464	7,014	5,132	3,913	3,103	3,174	3,900	4,064	4,335	44,250	119,050	42,933	(1,317)
Interceptor/Trunk Force Sewers	21,501	32,006	54,327	43,062	44,084	76,710	76,826	77,100	62,993	60,184	548,794	918,096	481,440	(67,354)
Subtotal	**44,933**	**63,926**	**115,541**	**88,110**	**91,562**	**138,341**	**159,814**	**176,789**	**175,873**	**174,032**	**1,228,922**	**2,094,934**	**1,086,241**	**(142,681)**
WATER														-
Water Distribution Systems	33,872	60,464	62,606	65,093	58,654	64,372	65,350	99,075	117,595	121,131	748,211	1,446,953	669,041	(79,170)
Water Lead Program	4,711	5,408	5,387	5,456	5,627	5,719	5,496	5,744	5,877	5,692	55,117	243,504	64,536	9,419
Water On-Going Projects	10,532	11,075	12,297	13,351	15,199	16,789	18,583	20,447	22,981	23,506	164,761	217,972	163,517	(1,243)
Water Pumping Facilities	1,525	2,650	12,169	6,284	2,567	4,218	7,446	4,163	2,328	-	43,350	85,344	35,794	(7,556)
DDOT Water Projects	1,721	10	8	-	-	-	-	-	-	-	1,739	33,933	84	(1,655)
Water Storage Facilities	6,216	4,318	10,399	13,963	5,610	4,783	11,334	8,985	694	1,360	67,662	155,164	49,158	(18,504)
Water Service Program Management	3,587	4,752	6,012	4,854	5,248	5,884	8,110	8,376	5,441	3,008	55,272	90,944	55,698	426
Subtotal	**62,163**	**88,677**	**108,878**	**109,000**	**92,905**	**101,765**	**116,319**	**146,791**	**154,916**	**154,697**	**1,136,112**	**2,273,813**	**1,037,828**	**(98,284)**
CAPITAL PROJECTS	**405,004**	**454,118**	**558,645**	**461,168**	**392,496**	**394,318**	**537,584**	**544,115**	**571,336**	**603,035**	**4,921,820**	**11,453,033**	**4,640,696**	**(281,124)**

NOTES: * FY20 ceiling includes FY19 carry over of $24,517 M
** Lifetime budget is the total budget, including available budget and the actual spent to date
^ The 10-yr total comparison is calculated for the same period FY20-29, i.e. last years Approved (Run5c) years FY20-28 plus this year's new FY29, compared to this proposed Run 6 FY20-29

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CIP Risks/Sensitivities

Regulatory/Consent Decree/Permitting

- E. Coli Total Maximum Daily Load (TMDL) – lawsuit by environmental groups seeking more restrictive TMDL
- EPA developing new Anacostia River trash TMDL
- MS4 permit – rehabilitation of Stormwater Outfalls, total scope and cost unknown (currently $5 million approved)
- National Parks Service permitting requirements for sewer projects
- Anacostia River Sediment Clean-up
- Chesapeake Bay TMDL – Phase 3 Watershed Implementation Plans being prepared, possible TMDL reassessment in the future
- Potential regulation requirements for contaminants (e.g. Polychlorinated Biphenyls (PCBs)
- Green Infrastructure (GI) Practicability Assessment - Clean Rivers practicability assessment of GI to be performed in 2020. Currently, construction of GI in the District is more expensive than originally estimated
- Sanitary Sewer Overflows (SSO) – Risk of SSO Consent Decree
- Odor control for secondary treatment at Blue Plains

CIP Risks/Sensitivities (cont.)

- Blue Plains Process Optimization & Revenue Opportunities
  - Full Plant Deammonification (>$60 million)
  - Additional capacity for Digesters, Thermal Hydrolysis and Combined Heat and Power
  - Resource Recovery (Hot Water Heating Loop; Sludge Drying)
- Other:
  - Lead Service Replacement Program
  - DDOT and Pepco DC Power Line Undergrounding (DC PLUG) – ($57 million, DC Water Share is 50% = $28 million)
  - Condition assessment of large sewers could lead to additional CIP needs
  - Washington Aqueduct
    - Federally Owned Water Main Repairs ($86 million, all DC Water)
    - Travilah Quarry Acquisition & Outfitting
      (Current discussion in range of $750 million to $1 Billion, cost sharing unknown)
    - Advanced Treatment Facilities ($375 million, DC Water share = $280 million)
    - Transmission and Storage upgrades ($300 million, DC Water Share = $225 million)

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10-Year CIP

- The proposed ten-year CIP comprises of the capital projects and additional capital programs

Service Area ($000's)	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	10-Yr Total	Last Year's CIP	(Increase) /Decrease
Non-Process Facilities	$ 42,066	$ 31,849	$ 20,665	$ 6,831	$ 11,058	$ 10,396	$ 3,901	$ 3,553	$ 3,560	$ 3,600	$ 137,479	$ 138,067	$ 588
Wastewater Treatment	77,536	102,976	113,378	107,232	107,312	70,680	97,878	101,839	132,256	138,165	1,049,252	978,738	(70,514)
Clean Rivers	162,197	147,565	179,833	129,272	67,536	59,909	148,771	103,265	88,890	115,049	1,202,288	1,262,589	60,301
Combined Sewer	9,239	9,493	12,816	16,553	16,731	8,568	6,699	7,572	8,972	12,435	109,078	79,178	(29,900)
Stormwater	6,869	9,631	7,535	4,170	5,392	4,660	4,201	4,306	6,869	5,057	58,690	68,608	9,918
Sanitary Sewer	44,933	63,926	115,541	88,110	91,562	138,341	159,814	176,789	175,873	174,032	1,228,922	957,135	(271,787)
Water	62,163	88,677	108,878	109,000	92,905	101,765	116,319	146,791	154,916	154,697	1,136,112	945,015	(191,097)
CAPITAL PROJECTS	**405,004**	**454,118**	**558,645**	**461,168**	**392,496**	**394,318**	**537,584**	**544,115**	**571,337**	**603,035**	**4,921,821**	**4,429,330**	**(492,491)**
Capital Equipment	31,703	37,207	33,790	32,315	33,000	33,000	33,000	33,000	33,000	33,000	333,015	340,324	7,309
Washington Aqueduct	15,515	16,266	18,572	37,841	12,699	33,875	9,508	12,863	24,068	13,971	195,178	187,127	(8,051)
ADDITIONAL CAPITAL PROGRAMS	**47,218**	**53,473**	**52,362**	**70,156**	**45,698**	**66,875**	**42,509**	**45,863**	**57,068**	**46,971**	**528,193**	**527,450**	**(743)**
TOTAL CIP	**$ 452,223**	**$ 507,590**	**$ 611,008**	**$ 531,322**	**$ 438,194**	**$ 461,193**	**$ 580,093**	**$ 589,978**	**$ 628,404**	**$ 650,006**	**$ 5,450,013**	**$ 4,956,780**	**$ (493,233)**
Last Years CIP	420,342	467,016	561,724	530,006	422,607	450,358	585,454	535,666	544,490	439,117	4,956,780		
(Increase)/Decrease	(31,880)	(40,574)	(49,284)	(1,317)	(15,587)	(10,835)	5,361	(54,312)	(83,914)	(210,890)	(493,232)		

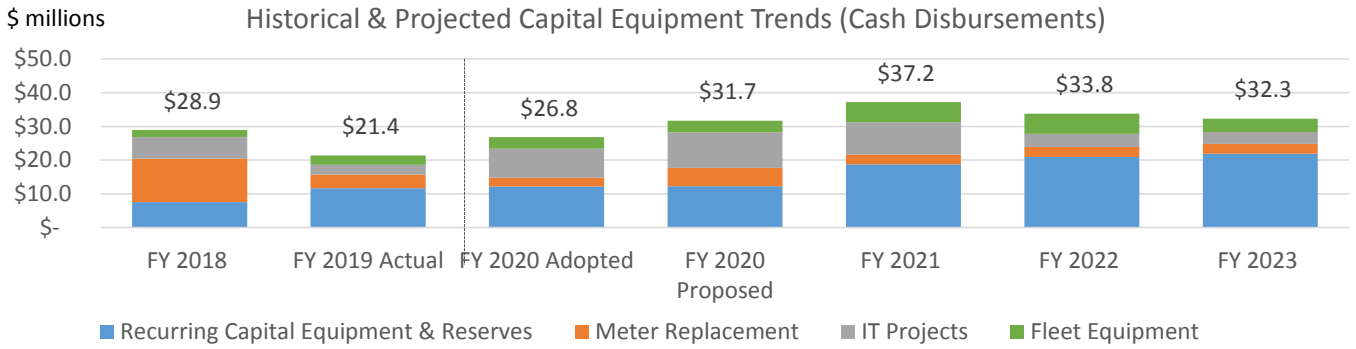
Washington Aqueduct Capital Projects

$000's	Washington Aqueduct	DC Water's Share
FY 2020	$21,095	$15,515
FY 2021	$22,115	$16,266
FY 2022	$25,251	$18,572
FY 2023	$51,449	$37,841
FY 2024	$17,266	$12,699
FY 2025	$46,057	$33,875
FY 2026	$12,927	$9,508
FY 2027	$17,489	$12,863
FY 2028	$32,723	$24,068
FY 2029	$18,995	$13,971
Total	**$265,368**	**$195,178**

- **Washington Aqueduct (WAD)** – Total ten-year budget of $265.4 million
  - Presented a risk-based asset management CIP using decision-making tools to prioritize and grade projects to achieve established service levels
  - Major projects include the Old Conduit Rehabilitation, North Clearwell Replacement, and Dalecarlia Back-up Power Generation
  - Budget proposal excludes the Federally Owned Water Mains, Travilah Quarry Acquisition & Outfitting and Advanced Treatment Facilities
- **DC Water's Share** – Total of $195.2 million represents 73.6% of WAD's capital programs

Capital Equipment

- Ten-year disbursements of $333 million for capital equipment includes
  - The proposed FY 2020 budget includes the carryover of $5 million from prior year for the Enterprise Resource Planning (ERP) and Advanced Meter Infrastructure (AMI) projects
  - Recurring Capital Equipment – This covers the purchase/replacement of pumps, motors, HVACs, roof, labtops, computers, servers, fire hydrants and includes the Authority-wide reserves for future facilities and other equipment needs
  - Meter Replacement – Funding requirement for equipment, labor and installation of small and large meters including completion of the AMI project
  - IT Projects – Funds new and upgrades to various Authority-wide technology systems such as the ERP, Maximo, Vertex One, GIS, Facilities Mobility, and Third Party Portal Enhancements
  - Fleet Equipment – increases funds for procurement of backhoes, jet-vacs, catch basin trucks and other aged vehicles to meet operational needs



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Budget Adoption Calendar

- Board Member Questions & Follow Up
  - Submit budget-related questions to Board Secretary
  - Board Secretary will distribute questions to appropriate staff
- Wholesale Customer Briefing – **January 10**
- Committee Reviews, Recommendations & Actions – **January & February**

	Environmental Quality & Operations	DC Retail Water & Sewer Rates	Finance & Budget
FY 2020 - FY 2029 Capital Budget (Disbursements & Lifetime)	Action Required		Action Required
FY 2021 Operating Budget			Action Required
Intent to Reimburse Capital Expenditures with Proceeds of a Borrowing			Action Required
FY 2020 – FY 2029 Financial Plan		Action Required	Action Required
FY 2021 & 2022 Rates, Charges & Fees		Action Required	

- Board Adoption – **March 5**

21

District of Columbia Water and Sewer Authority
David L. Gadis, CEO and General Manager

Briefing on:

DC Clean Rivers Project
Green Infrastructure Update

Briefing for:

Environmental Quality and Operations Subcommittee

January 16, 2020

DCWATER.COM

Green Infrastructure:
Consent Decree Change for Green Infrastructure

1998 LTCP Started

2002 Final LTCP

2003 LTCP Meets WQS (EPA/DC)

2005 Consent Decree Signed

2007 New Nitrogen Limits Require Changing LTCP

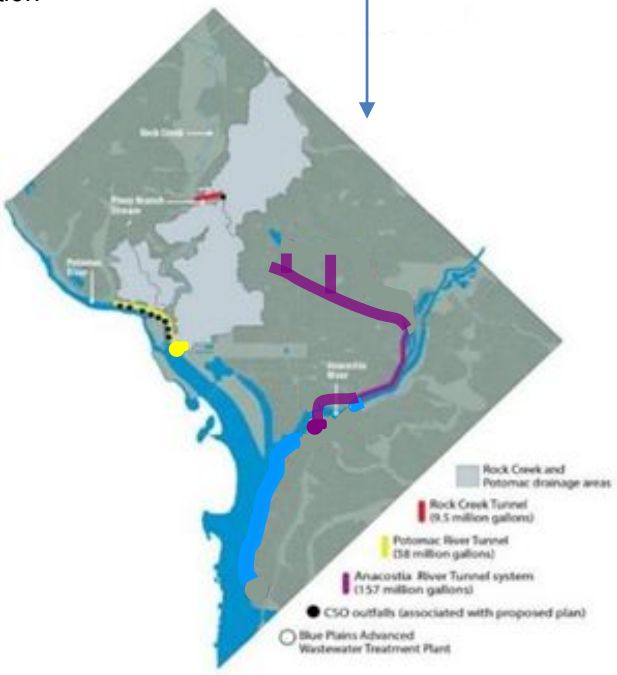
2011 DC Water Evaluates GI for Potomac River and Rock Creek

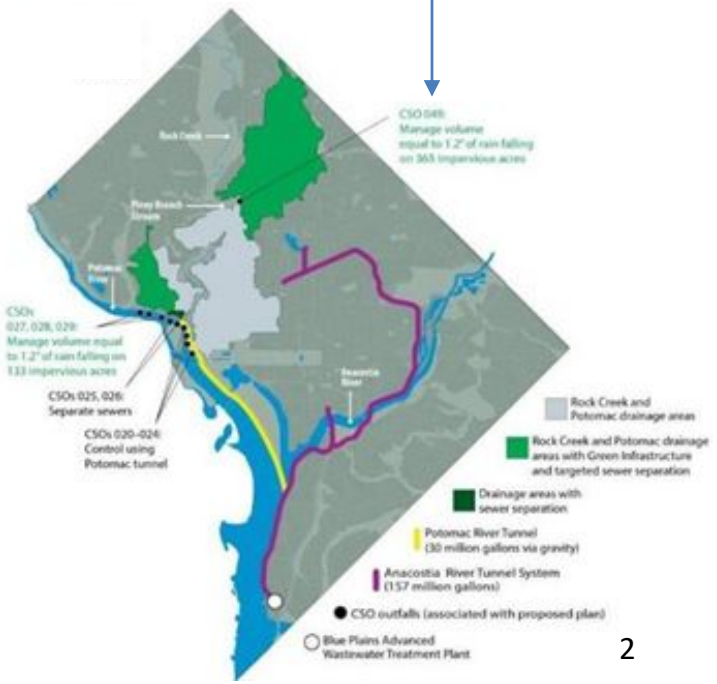
2012 Mayor's Task Force

January 14, 2016 Consent Decree Modification Entered in Federal Court

Public Participation

Public Participation





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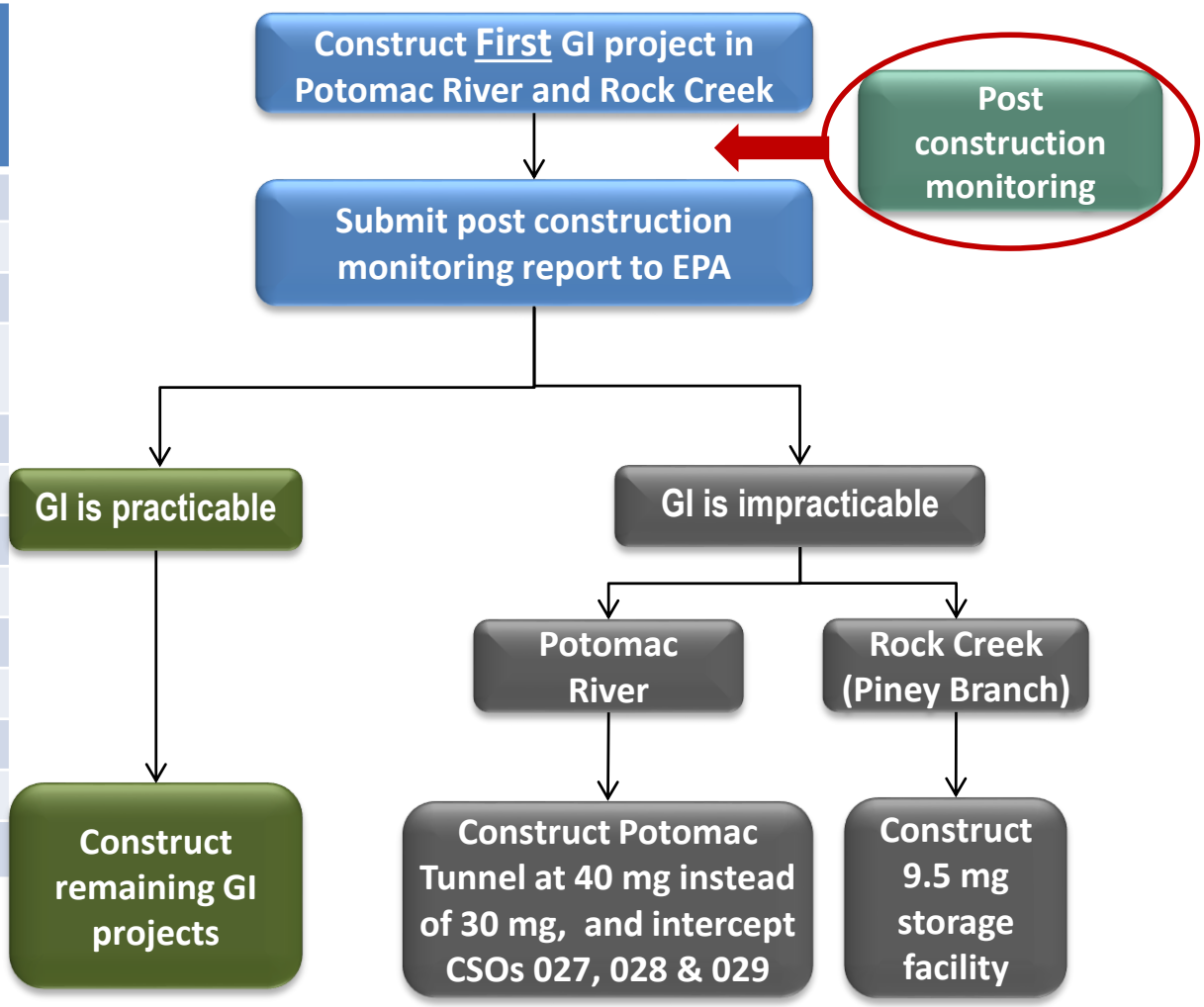
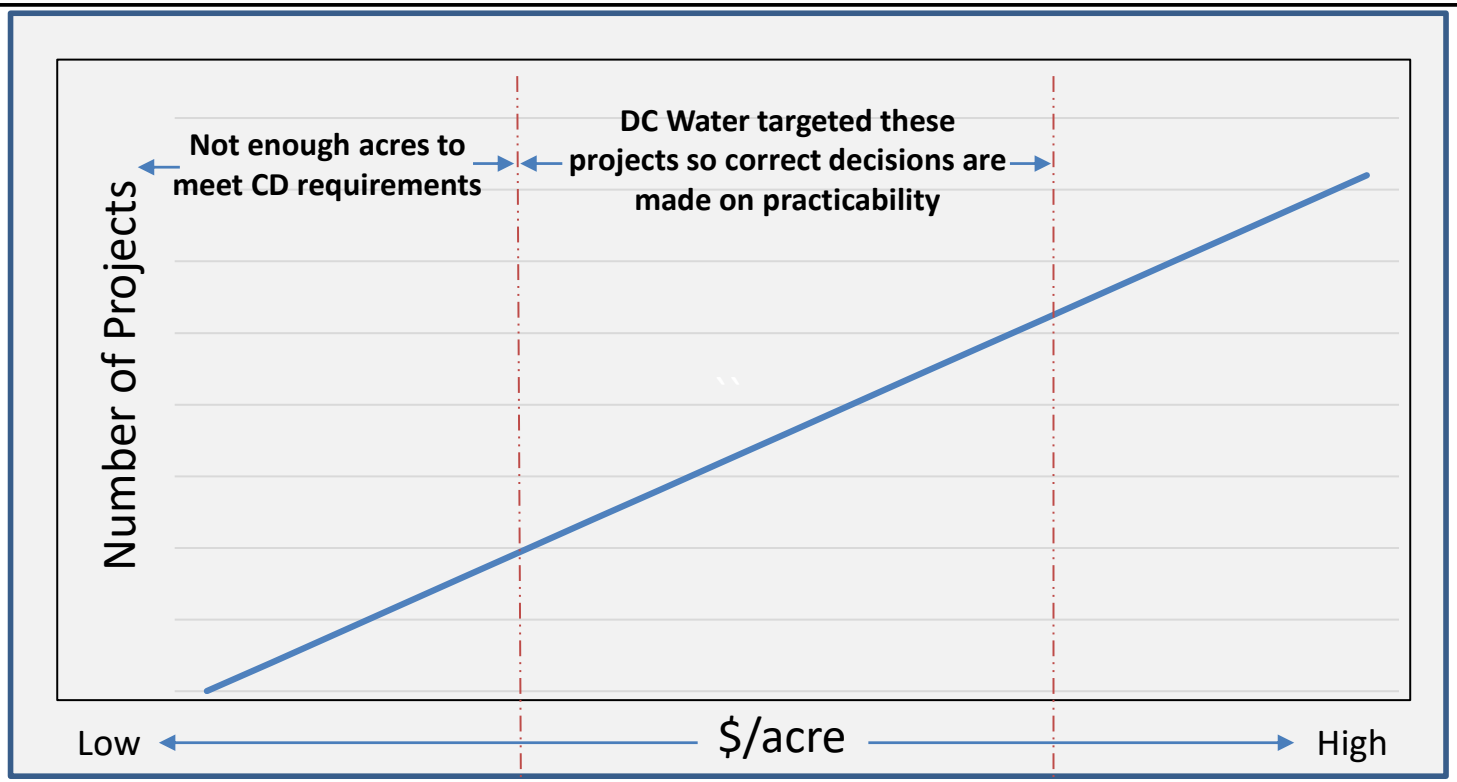
2

DC Water Negotiated a Practicability Assessment in the Consent Degree as a Risk Mitigation

Project	Impervious Acres Managed @ 1.2"	Place in Operation Deadline
Potomac River Project 1	44	2019
Practicability assessment		
Potomac River Project 2	46	2024
Potomac River Project 3	43	2027
Subtotal	**133**	
Rock Creek Project 1	20	2019
Practicability assessment		
Rock Creek Project 2	75	2024
Rock Creek Project 3	90	2027
Rock Creek Project 4	90	2029
Rock Creek Project 5	90	2030
Subtotal	**365**	
Grand Total	**498**	



Green Infrastructure Facility Cost Range



- Greenfield sites
- Redevelopment
- Construct as part of a District Project

- Retrofit in existing space
- Minimal utility relocation
- Representative of a typical city block in Rock Creek or Potomac GI areas

- Change public space / layout
- Utility Relocation

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GI Program Cost Drivers

- Cost Drivers to date include:
  - Initial sites are representative of large scale GI necessary for Consent Decree
  - Lack of GI experience in DC Contractors
  - DDOT requirements for extensive restoration of urban public space
  - Urban vs suburban construction
  - Urban utility density / aging infrastructure
  - District/DC Water Local Hiring/ Business Green Jobs MOU requirements
    - Certified Business Enterprise (51%+)
    - NGICP certified local resident labor hours
    - Apprenticeship
    - Mentor/Internship
    - Job Fairs
    - Contracting Fairs
    - Green Jobs Goal (51% Local New Hires)

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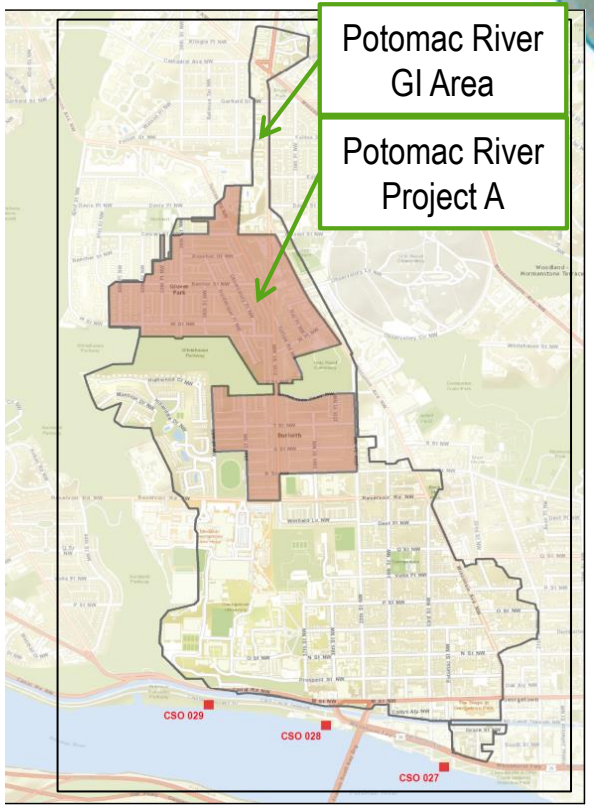
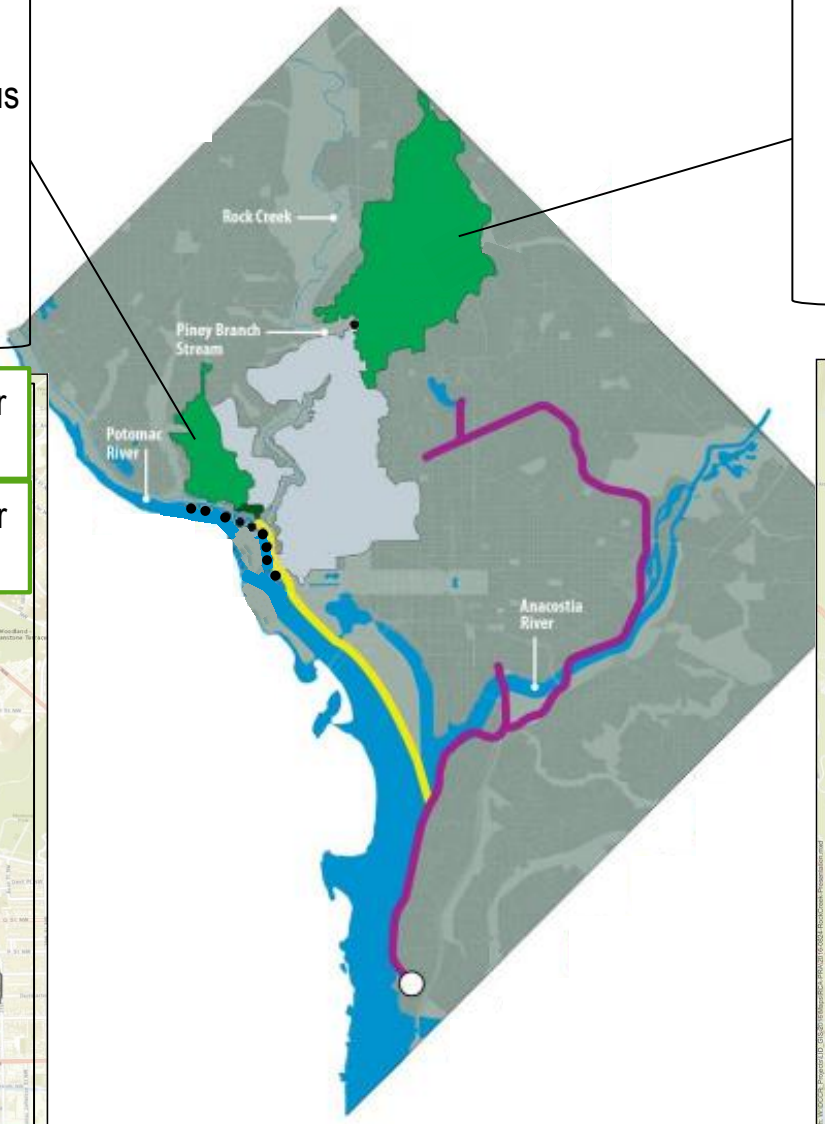
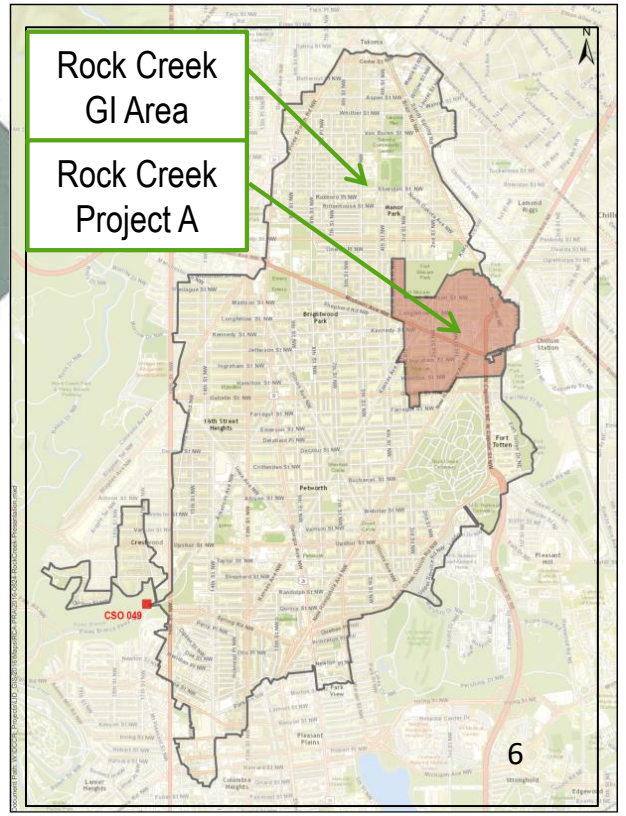
Basis for Practicability Assessment:
Potomac River and Rock Creek Project 1

Potomac River Initial Project:
- 1st of 3 Contracts
- Manages 44 of 133 Impervious Acres (8 w/GI 36 w/sewer separation)
- Substantial Completion April 2019
- Contract Value $6,265,503

Rock Creek Initial Project:
- 1st of 5 contracts
- Manages 22 of 365 Impervious Acres
- Substantial Completion October 2018
- Contract Value of $26,841,394







Basis for Practicability Assessment:
Successful Green Alley Partnership on DDOT's AlleyPalooza

- District initiative to restore 8 alleys in 8 Wards each year
- DDOT and DC Water partnered to incorporate GI for alleys within the Rock Creek and Potomac River sewersheds
- Seven alleys managing 3 acres of runoff for a cost of $1.7M
- Completed September 2018

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Basis for Practicability Assessment:
Downspout Disconnection Program

Drain The Rain	
Homes Visited (2017-2019)	6,471
Downspouts Evaluated	13,200
Downspouts Disconnected	385
Rain Barrels Installed	220
Homes Participating	293
Impervious Roof Acres Disconnected	3.0
Equivalent Acres Managed*	1.2
Gallons of Stormwater Removed* (per 1.2-inch Storm)	38,839
Construction Cost	$574,660

* Applied 40% infiltration and 60% runoff

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8

GI Evolution of Cost Overview:
Progress to Date

Construction Cost

Project / Timeframe	Contracting Method	Construction Cost	Number of Acres Managed	Construction Cost per Acre Managed
Rock Creek Project A (2016)	Design-Build	$18.54 M	18.8	$ 976,000
AlleyPalooza (2017)	IDIQ	$ 1.67 M	3.0	$ 550,000
Potomac River A (2018)	Design-Bid-Build	$ 5.22 M	7.9	$ 654,000
Downspout Disconnect (2017 – 2019)	Non-Profit	$ 0.57 M	1.2	$ 479,000

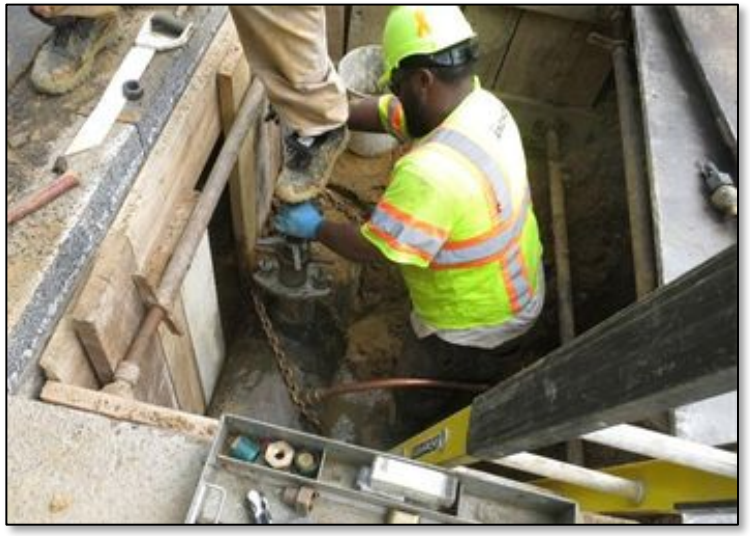
Capital Cost

Project / Timeframe	Contracting Method	Capital Cost	Number of Acres Managed	Capital Cost per Acre Managed
Rock Creek Project A (2016)	Design-Build	$24.1 M	18.8	$1,282,000
AlleyPalooza (2017)	IDIQ	$ 1.99 M	3.0	$ 666,000
Potomac River A (2018)	Design-Bid-Build	$ 6.79 M	7.9	$ 851,000
Downspout Disconnect (2017 – 2019)	Non-Profit	$ 0.69 M	1.2	$ 575,000

- Public-Private Partnerships (P3) - Currently being explored by DCCR

Similar Urban GI Programs:
Construction Cost per Acre

- Cost targets vary based upon:
  - Prevalence of constraints
  - Proximity to other GI systems
  - Neighborhood and CSO reduction needs
  - Opportunities for cost-sharing and achieving multiple objectives
- GI construction costs from $400,000 - $550,000/acre are not uncommon among peer programs such as NYC and Philadelphia.



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Cost Reduction Strategies:
Expected Range of Cost Savings

- **Planning/Site Selection**
  - Reduces restoration costs
  - Larger open space practices

  → **Up to 15% reduction**

- **Standardization + Optimization = Faster Implementation and Simplified Approach**
  - Fast way to incorporate GI into existing contracts/change orders
  - Way for contractors to quickly learn and implement approach
  - Eliminates long lead items
  - Reduces high cost construction items

  → **Up to 20% reduction**

- **Partner Projects = Increased Acreage**
  - Way to leverage District Capitol Improvement Program work that doesn't include GI

  → **Up to 35% reduction**

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= Lower Costs

Cost Reduction Strategies:
Scenarios

- **Cost reduction strategies can be independent or combined with other strategies to maximize cost benefits.**
- **Cost reduction strategies are not necessarily cumulative**

Example Scenarios:

- **Future DC Water GI Construction**
  - Planning/Site Selection
  - Standardization + Optimization

→ **Up to 25% reduction**

- **Future Partner Project GI**
  - Partner Project (AlleyPalooza, SDWMR)
  - Standardization + Optimization

→ **Up to 40% reduction**

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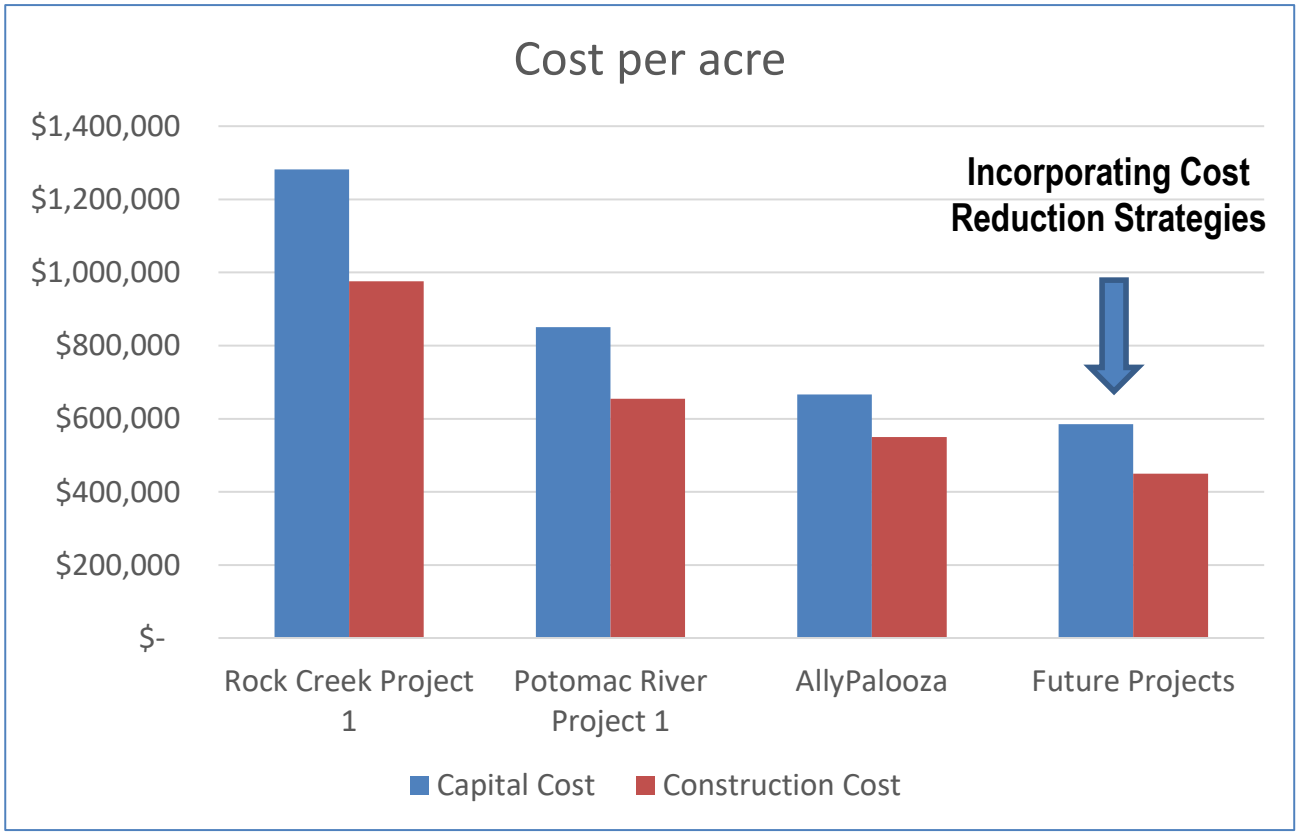
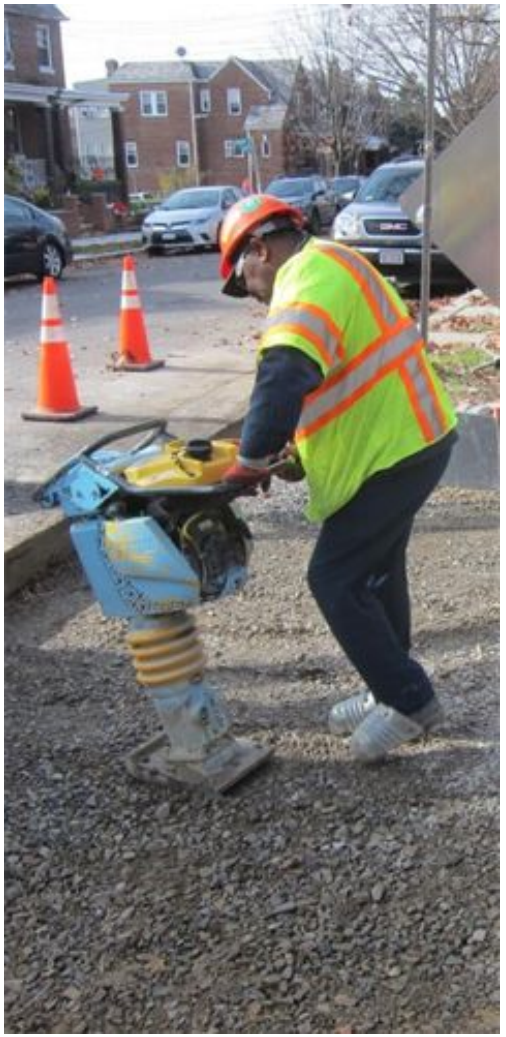
Expected Cost Reduction Over Time





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GI Maintenance

- Current estimated maintenance costs range from $12K - $18K per acre per year
- Estimate is based on limited data
  - Maintenance has been ongoing less than a year (since construction was completed)
  - Limited number of facilities
- DC Water will continue to optimize maintenance processes over time
  - Major part of overall GI adaptive management strategy
  - Determine appropriate frequencies for inspection and maintenance activities
  - Determine appropriate balance of in-house and contracted resources
  - Expectation that maintenance costs go down over time as maintenance is optimized and greater scale is achieved.

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Green vs. Grey Cost Comparison

Project	Cost to Construct Facility (Capital $/gallon of storage provided)	Performance - $/gal of CSO Removed (Capital + O&M)
Grey CSO Controls (Large Programs – Anacostia Tunnel)	$12	To be determined as part of Practicability Evaluation
Grey CSO Controls (Smaller Projects – Ex. Rock Creek Storage)	**$15 - $20**	
Green CSO Controls (Current Projects – PRA-1)	$26	
Green CSO Controls (Est. Future Project Costs)	**$18**	

- Comparable capital costs associated with future Green CSO Project costs and Small (Grey) CSO Project costs

Next Steps

- Consent Decree/Practicability Report
  - Practicability Report due to EPA June 2020 for Rock Creek and September 2020 for Potomac River Project

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS CONTRACTOR FACT SHEET

ACTION REQUESTED

GOODS AND SERVICES CONTRACT OPTION YEAR

Customer Information System (CIS) Enhancements

(Non-Joint Use)

Approval to extend the contract for option years 1-3 in the amount of $1,955,000.00.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Vertex Data Utility Services 501 W. President George Bush HWY Richardson, Texas, 75080	N/A	N/A

DESCRIPTION AND PURPOSE

Base Period Contract Value:	$900,000.00
Original Contract Dates:	02-19-2019 – 02-18-2020
Total Option Years 1-3 Value:	$1,955,00.00
Option Year 1 Dates:	02-19-2020 – 02-18-2021
Option Year 2-3 Dates:	02-19-2021 – 02-18-2023

Purpose of the Contract:

DC Water's Department of Customer Experience requires ongoing enhancements to its Customer Information System (CIS) Vertex One.

Contract Scope:

The scope of the Agreement with Vertex covers both technical and functional activities, changes, and enhancements to the customer-focused systems supported by Vertex. The system was implemented in 2017 and requires on-going enhancements and support to align with changing business priorities and technological requirements. Enhancements, changes and support services encompass but are not limited to:

- Vertex One Customer Information Systems
- Payment processing
- Work Order Management
- Customer Advantage self-service (mobile and web)
- Hardware and network upgrades & enhancements
- Integration among V1 and other DC Water systems
- Data Archiving and auditing requirements
- Billing enhancements/changes

This contract action exercises Option Year 1 through 3 to align this Professional Services agreement with the Vertex One Master Services agreement term. Option Years 2 and 3 are contingent upon budget approval by the Board. Enhancement projects will be funded individually through Purchase Orders specific to the enhancement project.

Spending Previous Year:

Cumulative Contract Value:	02-19-2019 to 02-18-2020: $900,000.00
Cumulative Contract Spending:	02-19-2019 to 12-20-2019: $869,708.00

According to the Customer Service and IT Departments, the supplier's quality of services and timeliness of deliverables, conformance to DC Water's policies, procedures and contract terms, and invoicing; all meet expectations and requirements.

PROCUREMENT INFORMATION

Contract Type:	Fixed Price	**Award Based On:**	Highest Ranking Score
Commodity:	CIS Software	**Contract Number:**	19-PR-DIT-10
Contractor Market:	Open Market		

Funding:	Capital Eq. & Operating	**Department:**	Information Technology
Project Area:	DC Water Wide	**Department Head:**	Thomas Kuczynski

ESTIMATED USER SHARE INFORMATION

User – Capital Equipment	Share %	Dollar Amount
District of Columbia	100.00%	$1,705,000.00
TOTAL ESTIMATED DOLLAR AMOUNT	**100.00%**	**$1,705,000.00**

User – Operating	Share %	Dollar Amount
District of Columbia	100.00%	$250,000.00
TOTAL ESTIMATED DOLLAR AMOUNT	**100.00%**	**$250,000.00**

_____ / 1/7/2020
Armon Curd Date
EVP, Customer Experience

_____ / 1/7/2020
Dan Bae Date
VP of Procurement and Compliance

_____ / 1/9/2020
Matthew T. Brown Date
CFO and EVP of Finance and Procurement

_____ / _____
David L. Gadis Date
CEO and General Manager

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS CONTRACTOR FACT SHEET

ACTION REQUESTED

CONSTRUCTION CONTRACT:

Small Diameter Watermain Replacement 13A (Non-Joint Use)

Approval to execute a construction contract for $5,299,202.50

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:		PARTICIPATION:
Ft. Myer Construction Corp. 2237 33rd Street, NE Washington, DC 20018	S&J Services Hyattsville, MD	MBE	18.8%
	Aves Construction Corporation Temple Hills, MD	MBE	13.1%
	Empower Logistics Bowie, MD	WBE	13.0%

DESCRIPTION AND PURPOSE

Contract Value, Not-To-Exceed:	$5,299,202.50
Contract Time:	296 Days (10 Months)
Anticipated Contract Start Date (NTP):	03-12-2020
Anticipated Contract Completion Date:	01-02-2021
Bid Opening Date:	11-13-2019
Bids Received:	6
Other Bids Received	
Capitol Paving of DC, Inc.	$5,428,400.00
Sagres Construction Corp.	$5,430,711.00
Anchor Constructiion Corp.	$5,699,936.00
Civil Construction, LLC	$6,245,030.00
Garney Companies, Inc.	$7,449,309.00

Purpose of the Contract:

Replacement of small diameter water mains that have experienced failures, or have a history of low water pressure, or water quality issues across various locations in the District of Columbia.

Contract Scope:

- Replace 1.23 miles of water mains ranging from three inch to twelve inches, associated valves and appurtenances.
- Install copper water services 2-inch and smaller in public and private space.
- Install curb stop /curb stop box, meter box and penetration through building wall and connection to first fitting inside the building including installation of a shut-off valve and pressure reducing valve.
- Install permanent pavement and surface restoration.

Federal Grant Status:

- Construction Contract is eligible for Federal grant funding assistance: inclusion in grant is pending availability of grant funds.

PROCUREMENT INFORMATION			
Contract Type:	Unit Price	**Award Based On:**	Lowest responsive, responsible bidder
Commodity:	Construction	**Contract Number:**	160021
Contractor Market:	Open Market		

BUDGET INFORMATION			
Funding:	Capital	**Department:**	Engineering and Technical Services
Service Area:	Water	**Department Head:**	Craig Fricke
Project:	F1, BW		

ESTIMATED USER SHARE INFORMATION		
User	Share %	Dollar Amount
District of Columbia	20.00%	$1,059,840.50
Federal Funds	80.00%	$4,239,362.00
Washington Suburban Sanitary Commission	0.00%	$0.00
Fairfax County	0.00%	$0.00
Loudoun County & Potomac Interceptor	0.00%	$0.00
Total Estimated Dollar Amount	**100.00%**	**$5,299,202.50**

Leonard R. Benson January 10, 2020
Leonard R. Benson Date
SVP and Chief Engineer

Dan Bae January 10, 2020
Dan Bae, VP Date
Procurement and Compliance

Matthew T. Brown January 10, 2020
Matthew T. Brown Date
CFO and EVP
Finance and Procurement

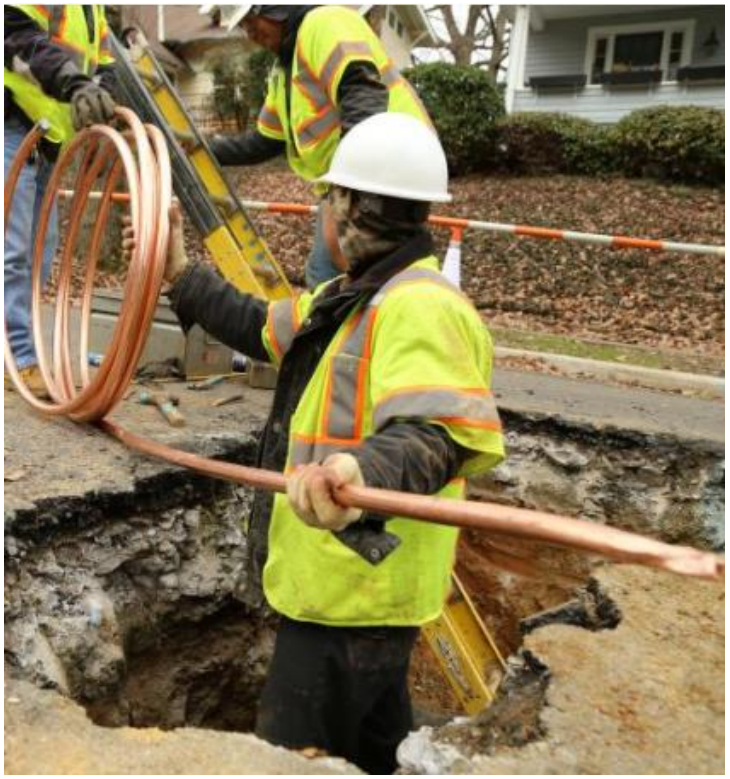
David L. Gadis Date
CEO and General Manager

Lead Free DC: Overview and Future Considerations

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

01/16/2020

LEAD FREE DC



Lead Free DC Vision

- **"My hope is that we can move towards a plan where every inch of lead service line in the city is removed within the next 10 years."**

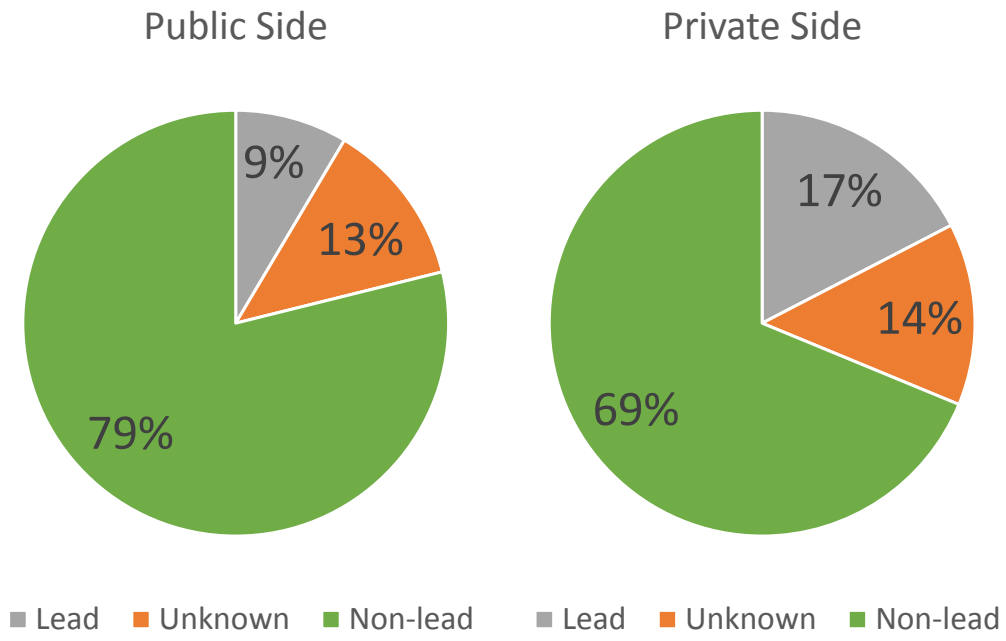
  CEO David Gadis

- Requires optimizing current programs and considering longer-term programmatic approaches

LEAD FREE DC

Material Inventory

- DC Water updated our inventory to minimize unknowns and be conservative in assuming lead



	Public	Private
Lead	10,770	21,952
Unknown	15,886	17,465
Non-lead	99,549	86,788
Total	**126,205**	**126,205**

*Inventory as of 12/4/2019

Today's Lead Program

Continued Efforts

-Water quality reporting and free lead testing

-Material inventory maintenance and unknown reconciliation

-CIP, Emergency Repair & Voluntary Replacement Programs

-Lead profiling program

New Law as of 10/1/2019

-Assistance Fund Replacement Program to redress past partials (LPRAP, $1.8 M)

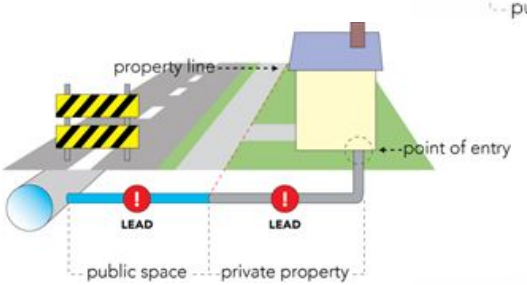
-Funds to cover private-side replacement costs during CIP/Emergency ($1 M)

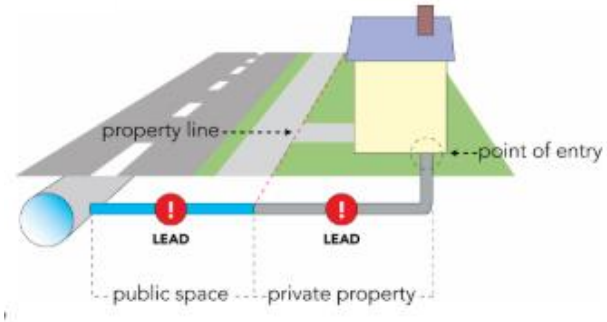
-Provisions on customer education and outreach, testing for commercial customers, tenant and material disclosure

-Governed by MOU between DOEE and DC Water

Program Eligibility

- **Assistance Program to Redress Past Partials (LPRAP)**
  - If non-lead on public-side and lead on private-side, a new program will cover 50-100% of costs of replacement.
  - Application available from DOEE
- **CIP & Emergency Repairs**
  - If any portion of private-side is lead, replacement is free.
- **Voluntary Replacement Program**
  - If both portions are lead and no work is planned, the customer is responsible for costs on private property





Replacement Progress

FY 2020 *(as of 1/7/2020)*	**Full**	**Private Side Only**	**Current Pending**
Assistance Fund	-	1	17 approved, 44 pending
Construction Projects (CIP)	8	22	N/A
Construction Projects (Emergency Repair)	4	1	N/A
Voluntary Replacement	64	0	901 queued
Total	**42**	**24**	**-**

FY 2019 *(as of 9/30/2019)*	**Full**	**Private Side Only**
Construction Projects (CIP)	29	1
Construction Projects (Emergency Repair)	20	0
Voluntary Replacement	355	21
Total	**404**	**22**

Community Engagement & Customer Outreach

- Mailer to approximately 11,000 properties eligible for LPRAP
- Newsletters, bill messages, traditional, and social media
- More than 20 community meetings and events
- Summit with plumbers and contractors
- Plans for targeted digital outreach & advertisements with DOEE

Collaboration With DOEE

Activity	DCW	DOEE
Receive and transfer appropriations through MOU		X
Issue regulations to implement Assistance Fund, including applications and timelines		X
Provide program information to customers (bill messages, inserts, other communication)	X	
Host website for and process applications on a rolling basis		X
Verify income and discounts available to applicants		X
Screen applications for reasonableness of cost estimates	X	
Submit invoices monthly for DC Water work through Program Two	X	
Certify completed Assistance Fund work	X	
Communicate and track communication to customers	X	
Coordinate regularly on project status and funds expended	X	X
Share digital outreach tracking on a quarterly basis	X	X
Develop operating manual and update as necessary	X	X
Community education	X	

Achieving Lead Free DC

- Elimination of lead service lines within the District requires building, funding, and executing a long-term, sustained program with committed partnerships

Considerations

- DC Water can't fund or execute on our own; estimated $200-$400 million to replace all public and private service lines
- Return on investment / public health impact given other sources of lead in sensitive groups (i.e. paint)
- Tradeoffs between addressing other water quality concerns
- Building customer participation is critical

Tools

- Government resources, agency partners, and leadership for coordinated approach
- Medical and academic community to understand risks and sources
- Community leaders, (Stakeholder Alliance, ANCs, and others) for education and growing public demand
- Legislation on disclosure needed to drive action on replacements

Status Report of Public Fire Hydrants for DC Water Services Committee - December 2, 2019

	September Cmte. Report (Sep 03, 2019)	October Cmte. Report (Oct 02, 2019)	November Cmte. Report (Nov 04, 2019)	December Cmte. Report (Dec 02, 2019)
Public Fire Hydrants:	9,772	9,771	9,754	9,688
In Service:	9,723	9,727	9,703	9,634
Marked Out-of-Service (OOS)	49	44	51	54
OOS - defective requiring repair/replacement	38	31	35	38
% OOS requiring repair or replacement (DC Water goal is 1% or less OOS)	**0.39%**	**0.32%**	**0.36%**	**0.39%**
OOS - due to inaccessibility or temp construction work	11	13	16	16

Note: The number of public hydrants in the DC Water system fluctuates; this number fluctuates as hydrants are added and removed during development or construction activities as well as at the request of the Fire Dept.

Breakdown of Public Fire Hydrants Out-of-Service (OOS) as of December 2, 2019 54

Breakdown of Defective

	0-7 Days	8-14 Days	15-30 Days	31-60 Days	61-90 Days	91-120 Days	> 120 Days	Total
Hydrant Needs Repair/Investigation	2	4	1	3	2	1	2	15
Needs Valve Investigation for Low Flow/Pressure or Shut Test for Replacement	0	0	0	0	1	0	5	6
Needs Replacement	0	0	0	4	2	3	8	17

Defective **38**

Breakdown of Others

	0-7 Days	8-14 Days	15-30 Days	31-60 Days	61-90 Days	91-120 Days	> 120 Days	Total
Temporarily OOS as part of operations such as a main repair	0	0	0	3	3	5	2	13
Construction* - OOS	0	0	0	0	0	0	0	0
Obstructed Hydrant – OOS hydrant due to operation impeded by an obstruction.	0	0	0	0	0	0	3	3

Others **16**

**Fire hydrants not accessible due to construction activities. Also includes new hydrants which have not yet been commissioned or old hydrants which will be abandoned as part of ongoing construction projects.*

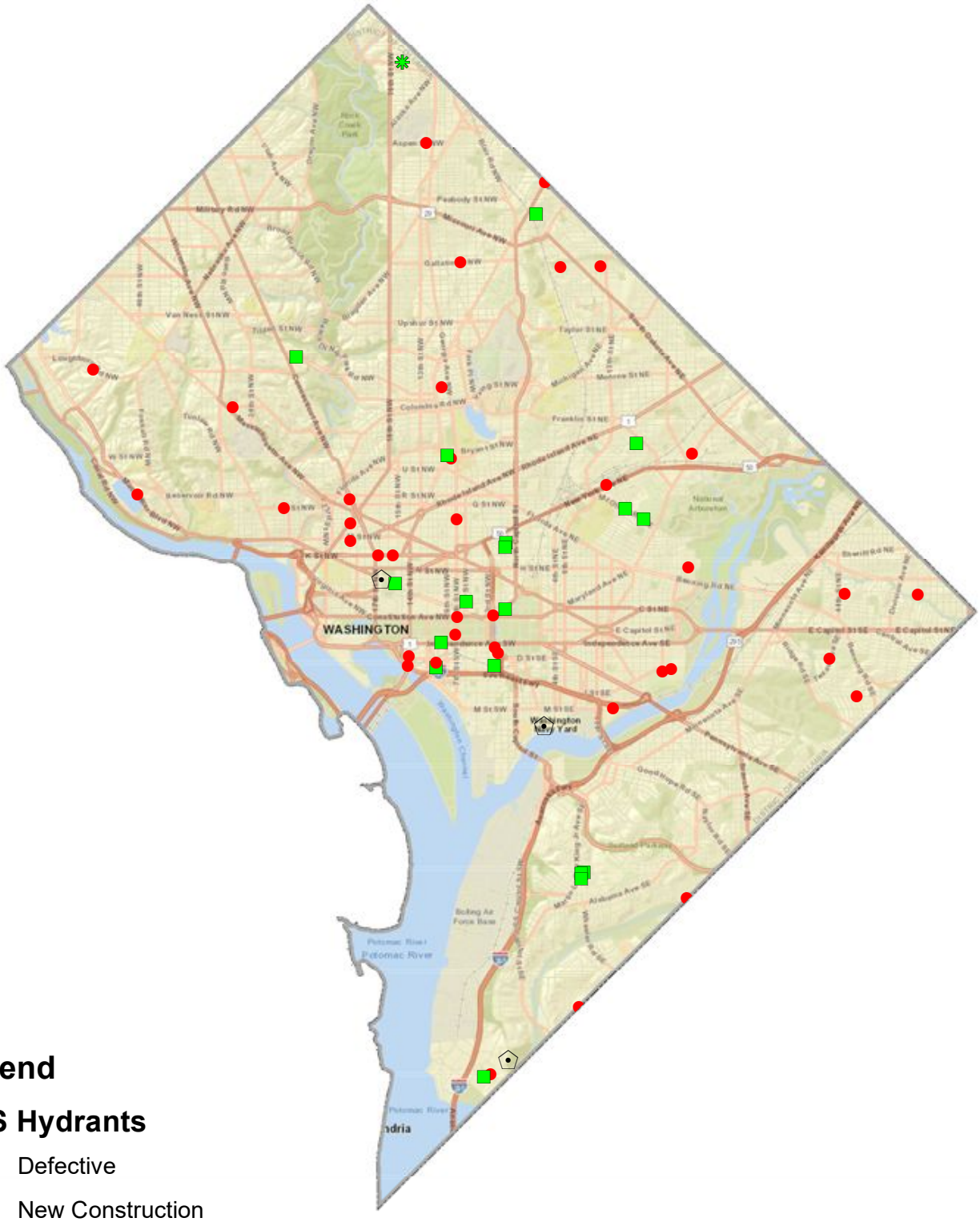
Status of Private Fire Hydrants-Based on FEMS Inspection Reporting

Private Hydrants: **1,298**

- **In Service:** **1,159**
- **Out-of-Service (OOS):** **139**

Map of Public Out-of-Service Hydrants

December 03, 2019



Legend

OOS Hydrants

- Defective
- New Construction
- Obstructed
- Temporary