DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
Board of Directors

Meeting of the
Environmental Quality and Operations Committee

5000 Overlook Avenue, SW, Room 407
Thursday, November 15, 2018
9:30 a.m.

	I.	**Call to Order**	James Patteson Chairperson
9:30 a.m.	**II.**	**AWTP Status Update**	Aklile Tesfaye
		1. BPAWTP Performance	
9:45 a.m.	**III.**	**CIP Quarterly Update**	Paul Guttridge
10:00 a.m.	**IV.**	**Action Items**	Dan Bae/ Leonard Benson

Joint Use

1. Contract No. 15-PR-DWT-02 - Industrial Cleaning Service, Charmay, Inc. dba ServiceMaster of Alexandria
2. Contract No. 18-PR-DWT-38 - Biosolids Management, Nutri-Blend Inc.
3. Contract No. WAS-12-066-AA-RE – Pre-Dewatering Polymer, Polydyne, Inc.
4. Contract No. 130280 - Filtration Influent Pumps 1-10 Replacement, Ulliman Schutte Construction, LLC
5. Contract No. 150110 - Miscellaneous Facilities Upgrade – Phase 5, American Contracting & Environmental Services, Inc.
6. Contract No. DCFA- 450 - Tunnel Dewatering Pump Station and Enhanced Clarification Facility (Engineering Services SA2), Arcadis District of Columbia, PC

Non-Joint Use

1. None

10:15 a.m.	**V.**	**Small Diameter Watermain Replacement Program Prioritization Criteria**	Craig Fricke
10:35 a.m.	**VI.**	**Blue Plains Research and Development Overview**	Chris DebarBadillo

10:55 a.m. VII. Executive Session*

11:00 a.m. VIII. Adjournment James Patteson
Chairperson

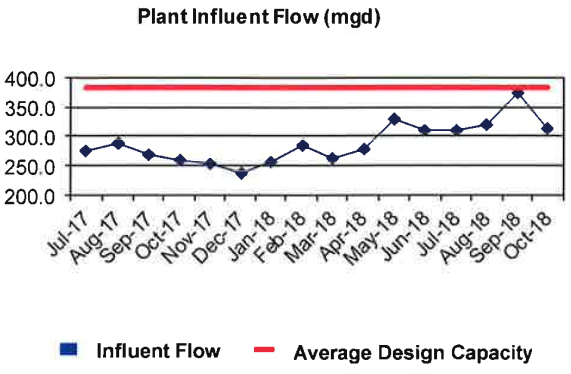
* The DC Water Board of Directors may go into executive session at this meeting pursuant to the District of Columbia Open Meetings Act of 2010, if such action is approved by a majority vote of the Board members who constitute a quorum to discuss: matters prohibited from public disclosure pursuant to a court order or law under D.C. Official Code § 2-575(b)(1); contract negotiations under D.C. Official Code § 2-575(b)(1); legal, confidential or privileged matters under D.C. Official Code § 2-575(b)(4); 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); 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.

Follow-up Items from Prior Meetings:

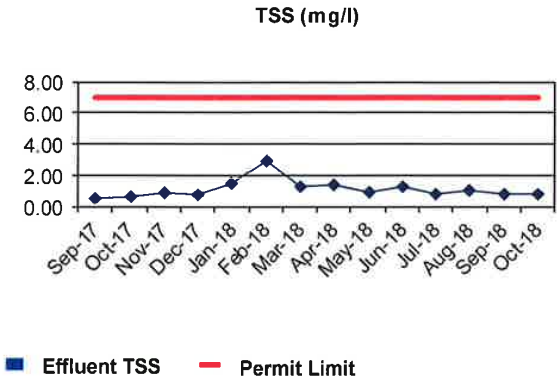
1. The IMA Regional Committee (RC) brief the EQ&Ops Committee on the work of the IMA RC **[Target: February 2019 EQ&Ops Cmte Mtg]**
2. Chief Engineer, DC Water: Provide a presentation on the prioritization criteria for selection of water mains to be replaced each year **[On Current Agenda]**
3. Director, DETS: Provide additional detail regarding specific impacts to sewage pumping stations for both the 100-year and 500-year flood scenarios. **[Target: January 2019 EQ&Ops Cmte Mtg]**
4. Director, Clean Water & Technology: Reschedule presentation on Blue Plains Research & Development Overview and Update for EQ&Ops Committee meeting. **[On Current Agenda]**
5. Chief Engineer, DC Water: Brief the Committee in detail concerning the risk assessment tool, specifically concerning the criteria and scoring used for both likelihood of failure (LOF) and consequence of failure (COF). **[On Current Agenda]**
6. COO, 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: December 2018 EQ&Ops Cmte Mtg]**
7. Chief Engineer, DC Water: Under the Current and Modified Baseline CIP options, Water and Sewer service areas, change from 'Generally Funded' to 'Underfunded. **[Fowarded to BOD Secretary 10/22/18]**

BLUE PLAINS ADVANCED WASTEWATER TREATMENT PLANT
PERFORMANCE REPORT – OCTOBER 2018

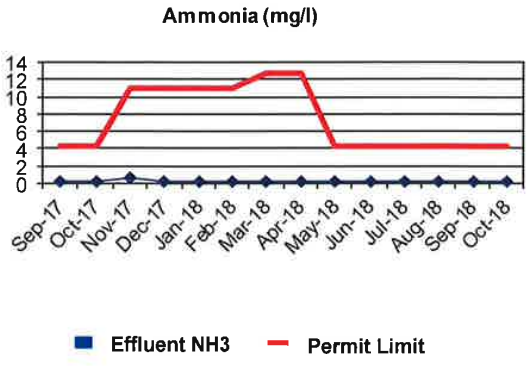
Average plant performance for the month was excellent with all effluent parameters well below the seven-day and monthly NPDES permit requirements. The monthly average influent flow to complete treatment was 316 MGD. There was 27 million gallons of treated captured combined flows directed to Outfall 001 during this period. The following figures compare the plant performance with the corresponding NPDES permit limits.



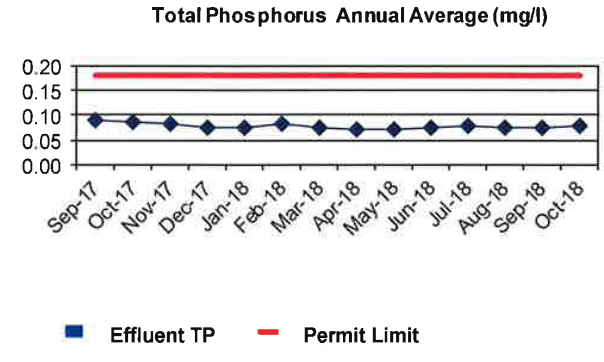
This graph illustrates the monthly average influent flow to the plant. The design average flow is 384 MGD. Blue Plains has a 4-hour peak flow capacity of 555 MGD through complete treatment. Once the plant is at capacity, additional captured combined system flows from the tunnel up to 225 MGD receive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



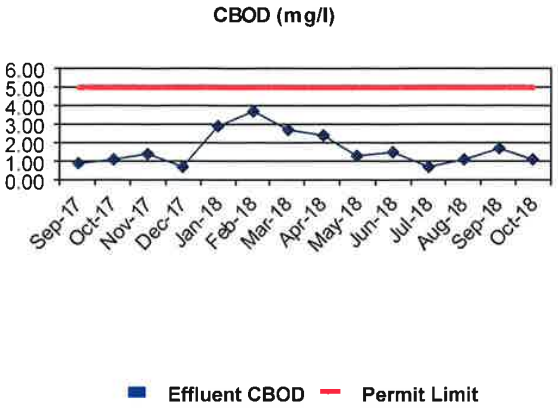
Effluent Total Suspended Solids (TSS) is a measure of the amount of solid material that remains suspended after treatment. The effluent TSS concentration for the month averaged 0.77 mg/L, which is below the 7.0 mg/L permit limit.



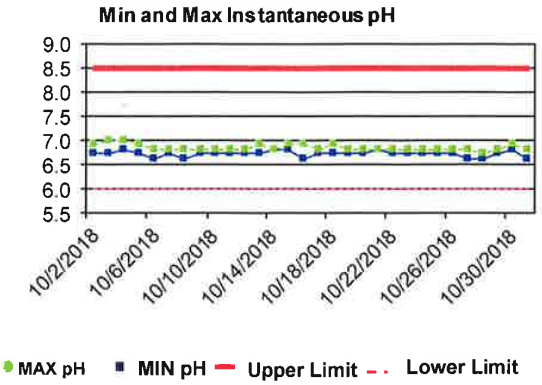
The Ammonia Nitrogen (NH3-N) is a measure of the nitrogen found in ammonia. For the month, effluent NH3-N concentration averaged 0.26 mg/L and is below the average 12.8 mg/L limit.



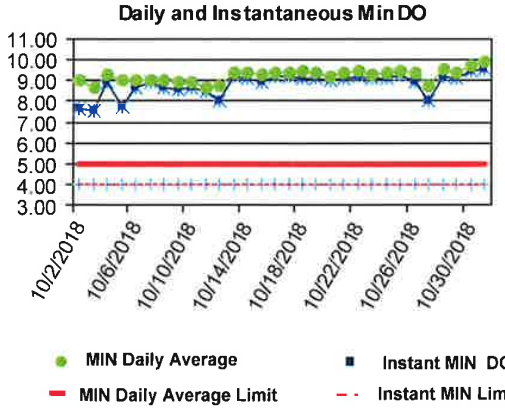
The Total Phosphorus (TP) is a measure of the particulate and dissolved phosphorus in the effluent. The annual average effluent TP concentration is 0.08 mg/L, which is below the 0.18 mg/L annual average limit.



Carbonaceous Biochemical Oxygen Demand (CBOD) is a measure of the amount of dissolved oxygen required for the decomposition of organic materials. The effluent CBOD concentration averaged 1.08 mg/L (partial month), which is below the 5.0 mg/L limit.

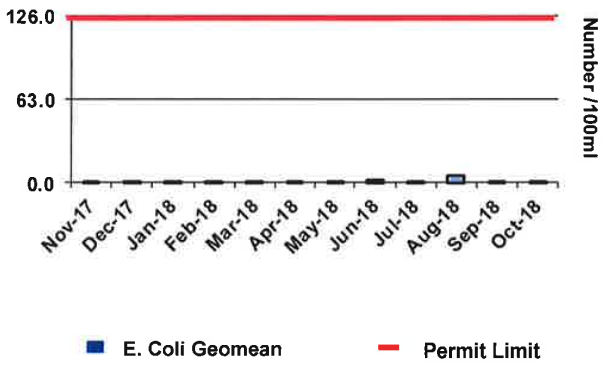


pH is a measure of the intensity of the alkalinity or acidity of the effluent. The minimum and maximum pH observed were 6.6 and 7.0 standard units, respectively. The pH was within the permit limits of 6.0 and 8.5 for minimum and maximum respectively.



Dissolved Oxygen (DO) is a measure of the atmospheric oxygen dissolved in wastewater. The DO readings for the month are within the permit limits. The minimum daily average is 8.7 mg/L. The minimum instantaneous DO reading is 7.6 mg/L. The minimum permit limits are 5.0 mg/L and 4.0 mg/L respectively.

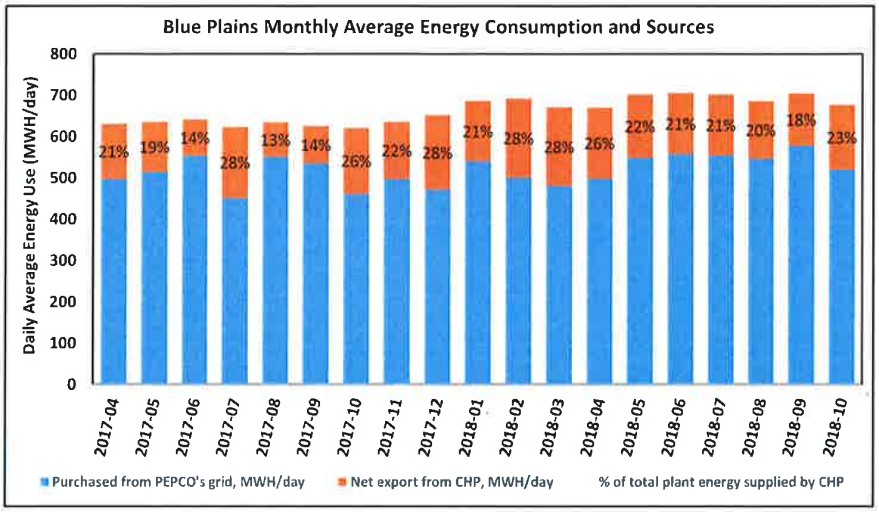
E. coli



E.coli is an indicator of disease causing organisms (pathogens). The E.coli permit limit is 126/100mL. The E coli geometric mean is 1.01 /100mL, and well below the permit limit.

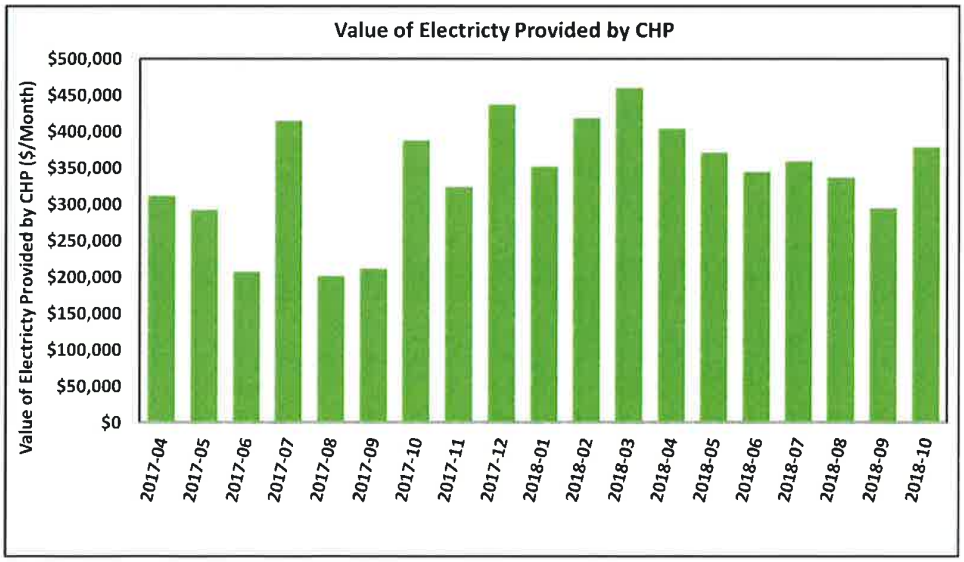
Blue Plains Electricity Generation and Usage

In October 2018, the average energy consumed at Blue Plains was 677 megawatt hours per day (MWH/day) or 2.15 MWH of electricity per million gallons of wastewater processed through complete treatment. The Combined Heat and Power (CHP) facility generated an average of 156.5 MWH/day, making up for 23% of total energy consumed at Blue Plains. The remaining 520.5 MWH/day was purchased from PEPCO.



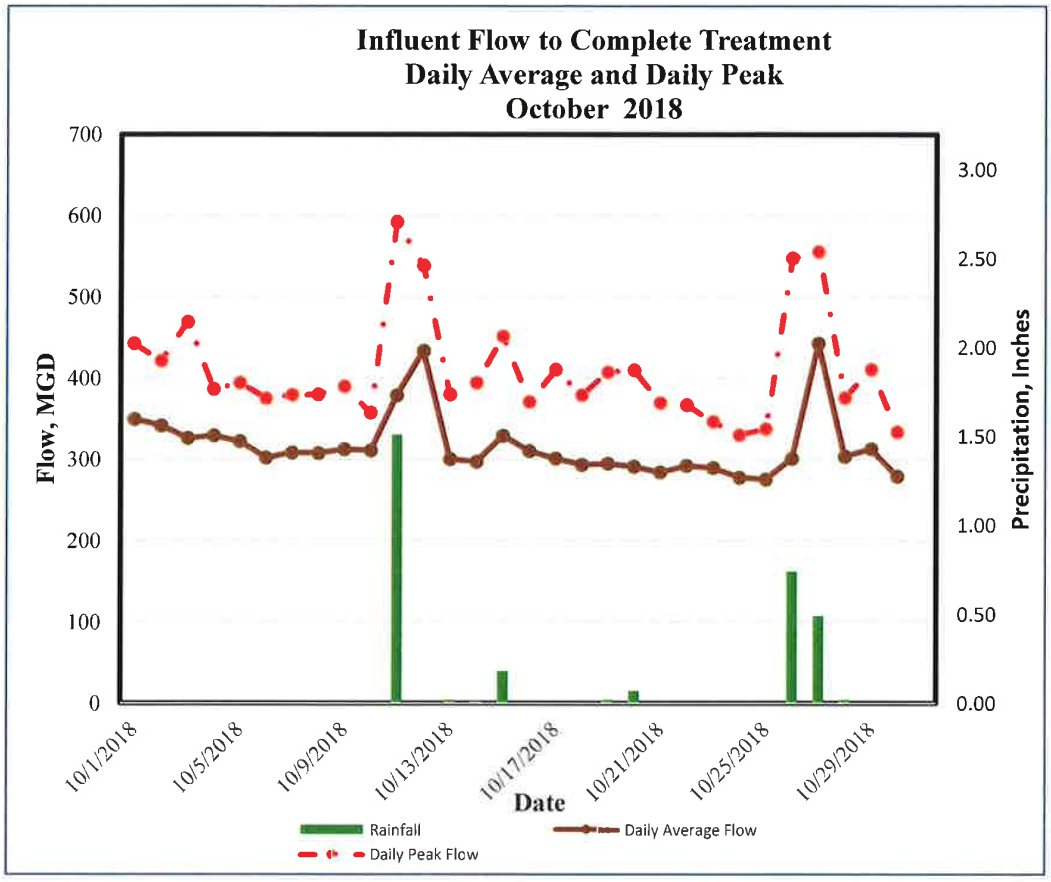
The graph above is based on power monitors installed at the Main Substation and CHP, and reflects average energy consumed at Blue Plains in MWH/day. Of the total use, the energy purchased from PEPCO and net energy supplied by CHP are indicated by the blue and orange highlights, respectively.

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



Wet Weather Impact on Plant Performance

During the month of October 2018, the Washington Metropolitan Region received below normal total rainfall (3.06 inches vs normal of 3.40 inches) as measured at the National Airport. The wet weather event that occurred during the second week of October resulted in peak flows through complete treatment exceeding 590 MGD. The plant's performance was excellent and the event had minimal impact on the quality of the effluent discharge through the complete treatment outfall. All effluent quality parameters were below the weekly and monthly average NPDES permit limits.



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 effluent total suspended solids quality comparable to that of Secondary Treatment effluent. 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.

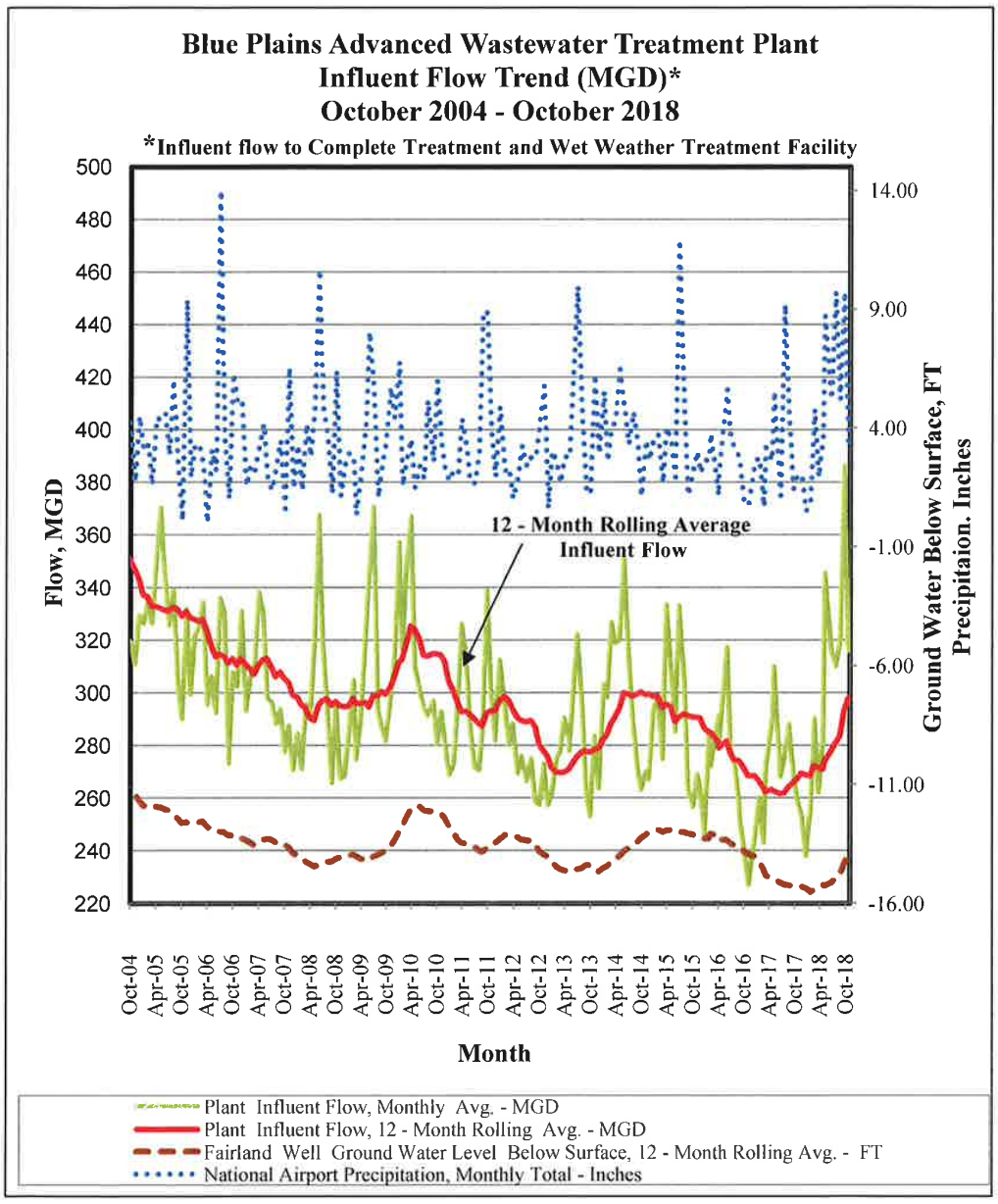
Aerial rendering of the Wet Weather Treatmentt Facility

Performance

During the month, a total of 146 million gallons (MG) of CSO captured in the tunnel system, was pumped, and treated using the ECF. A portion of the treated flow or 119 MG was directed to the main plant to maximize complete treatment and the remaining portion of the treated captured combined flow, or 27 MG, was disinfected, dechlorinated and discharged through Outfall 001. The quality of the effluent discharged was within anticipated ranges. 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 2018, the total volume pumped and treated through the WWTF is 3,400 MG. Since commissioning of the systems, over 500 wet tons of screenings and grit (trash, debris, sediment) were removed, that would have been discharge in the Ancostia River.

Plant Influent Flow Trend

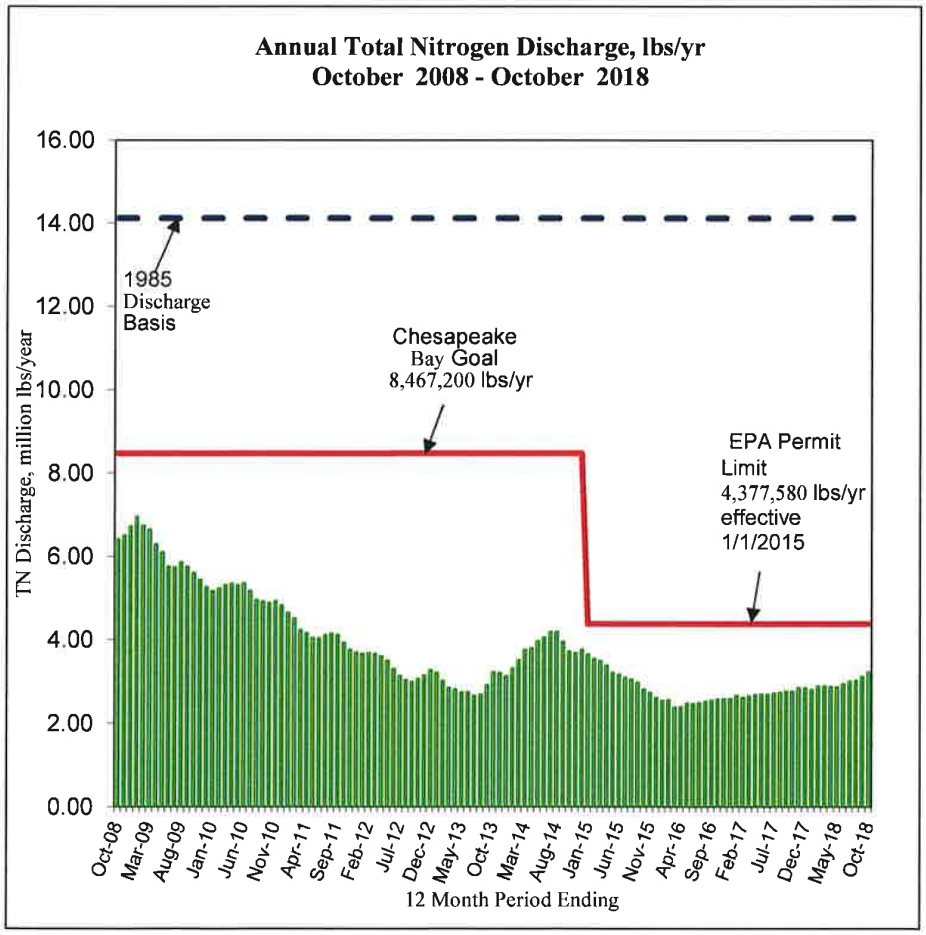
The graph below shows a long-term influent flow trend to the plant ending October 2018. While for any given month the flow is weather dependent, the 12-month rolling average influent flow has remained at or below 300 MGD since February 2011.



Blue Plains Total Nitrogen (TN) Removal – Performance

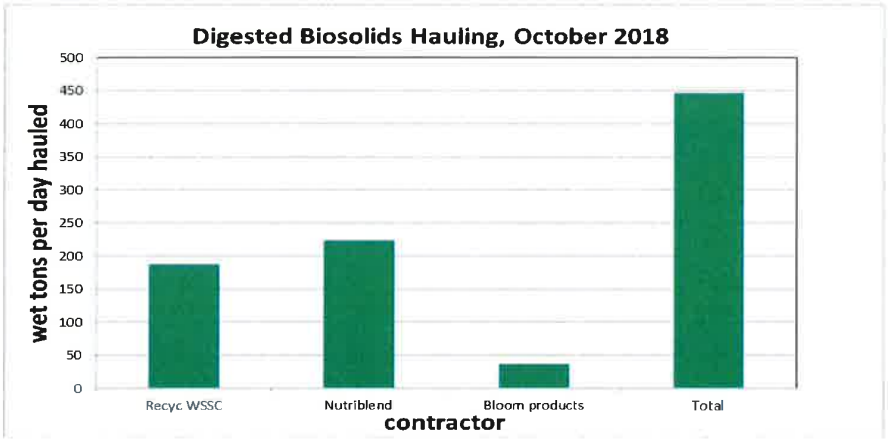
The graph below shows 12-month rolling TN discharge, in million pounds per year, over a 10-year period ending October 2018. In October 2018, the monthly average TN concentration and total load in the complete treatment effluent were 3.71 mg/L and 302,564 lbs., respectively.

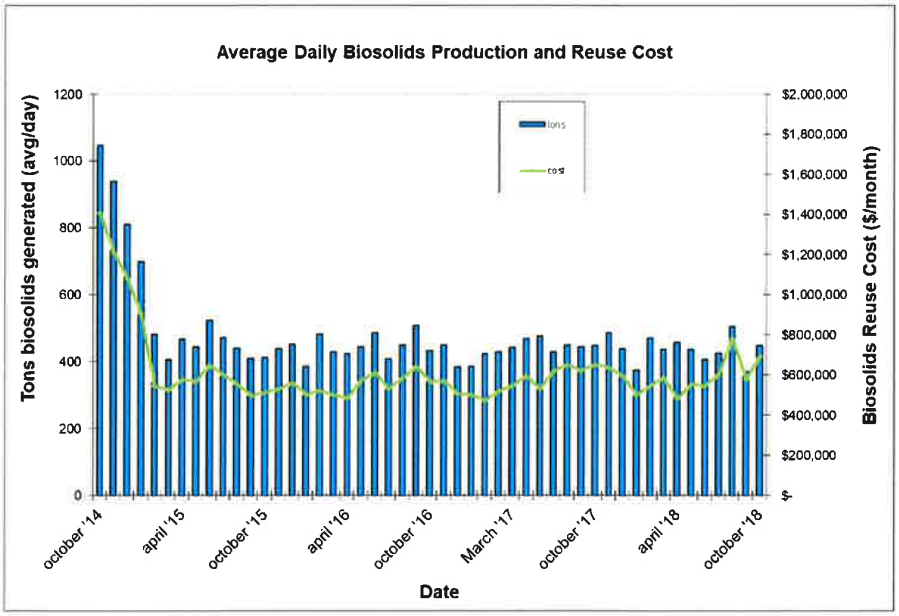
The total pounds of nitrogen discharged in the complete treatment effluent during the current calendar year (through October 31, 2018, 2018) is 2,740,000 lbs and on track to remain below the NPDES permit discharge limit of 4,377,580 lbs. /year. The performance corresponds to average flow of 304 MGD, maximum month flow of 375 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.



RESOURCE RECOVERY

In October, biosolids hauling averaged 447 wet tons per day (wtpd). The average percent solids for the Class A material was 34.5%. 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 2018. In October, diesel prices averaged $3.52/gallon, and with the contractual fuel surcharge, the weighted average biosolids reuse cost (considering the marketed material) was $43.36 per wet ton.

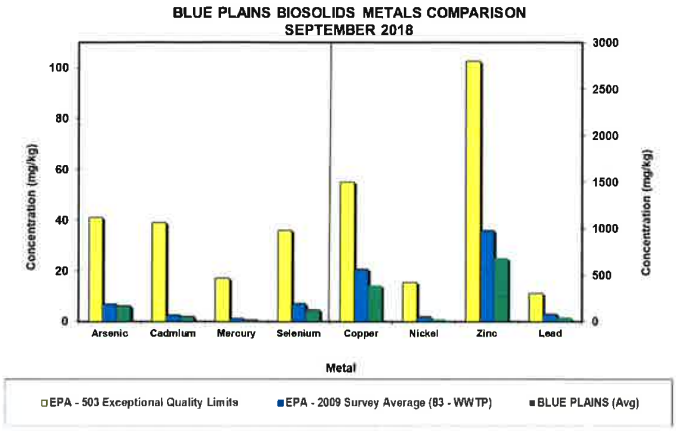




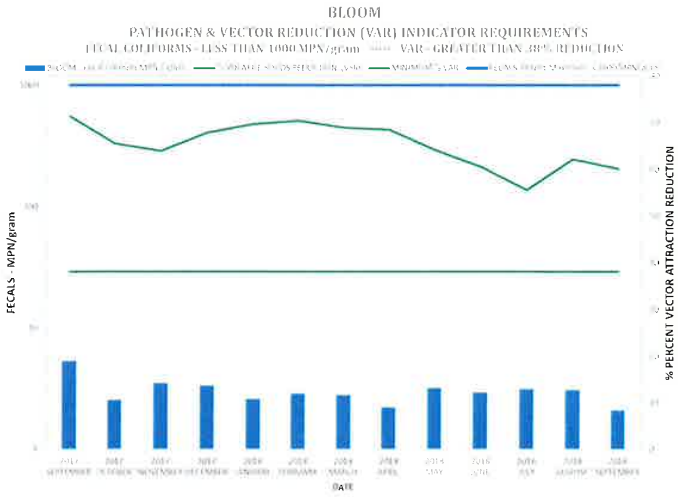
The average quanities of Class A biosolids transported and applied on farms by the two major contracts (WSSC's Recyc and DC Water's Nutriblend) and the quantites marketed as Bloom are shown on the graph above. In October, 1133 wet tons of Bloom were distributed to 18 customers.

Product Quality

All biosolids produced during the month of September met Class A Exceptional Quality (EQ) requirements required by EPA. The graph below shows the EPA regulated heavy metals average concentrations in the Class A biosolids. The concentrations are considerably below the regulated exceptional quality limits (EPA-503 Exceptional Quality Limits) and the national average (EPA-2009 Survey Average).

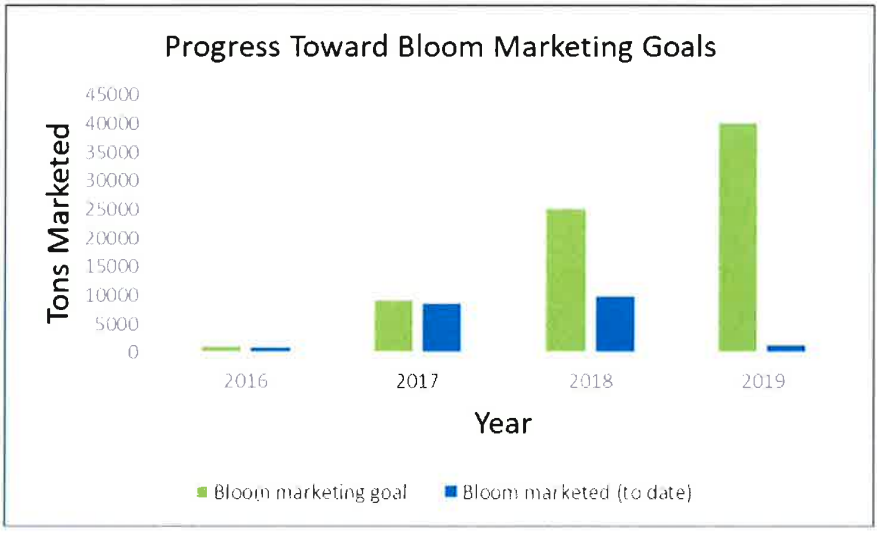


The graph below shows both Vector Attraction Reduction (VAR) and Fecal Coliform (FC) results in the Class A product, both of which are required to maintain the Class A Exceptional Quality (EQ) status. Vector Attrraction Reduction is measured by the reduction in Volatile Solids (VS) or organic compounds that are odorous and attract nuisance vectors such as flies and rodent. DC Water anaerobic digesters reduced VS by over 65 percent, well above the required 38 percent minimum. In addition, the graph shows fecal coliforms levels in the Class A product. Fecal coliforms are indicators of disease causing organisim (pathogens), and must be below 1,000 MPN/g to meet Class A standards. The FC levels in the Class A product are two orders of magnitude less than the maximum allowable level.



Bloom Marketing

Bloom sales as of November 1st total 1,138 tons for the fiscal year. This represents 3% of the goal 40,000 tons. As of October 1st, Blue Drop hired a soil amendment sales specialist, Doug Miller, who knows the market in the region. In addition, we have an agreement for commission based sales in Virginia and are working on an agreement with another firm that specializes in soil amendment marketing.

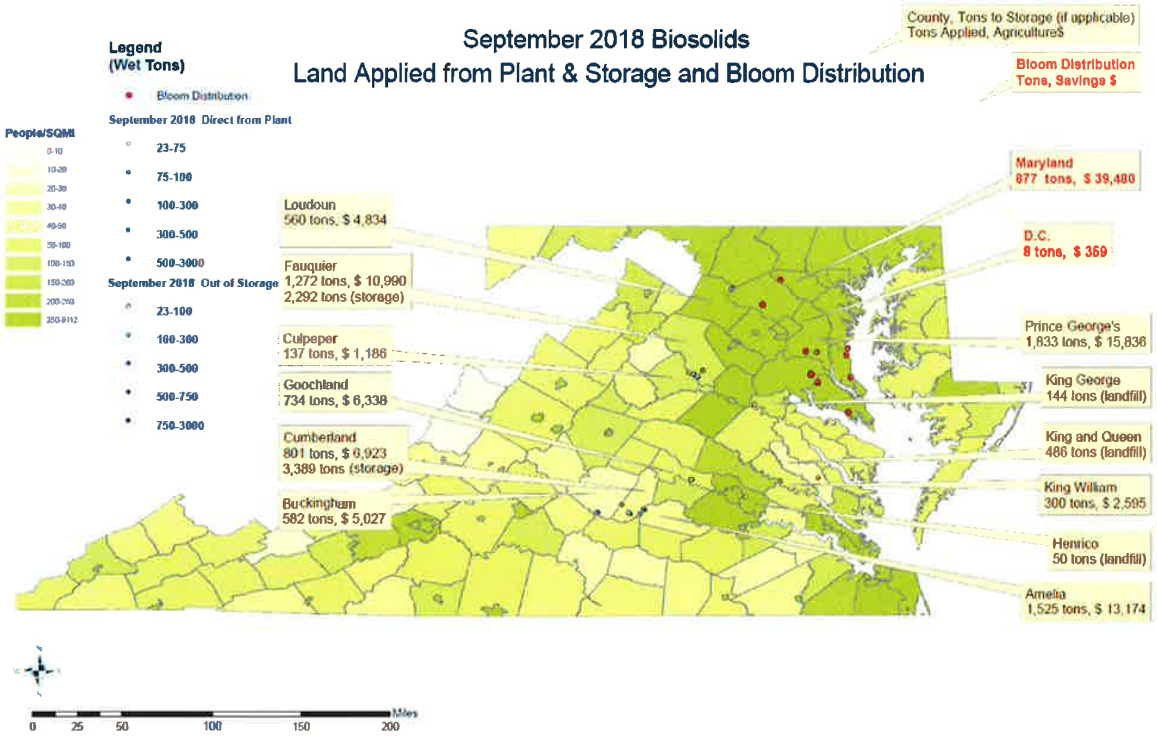


Resource Recovery Highlights

Bloom honey, entered in the DC 2018 state fair, garnered a judges choice award for "Best Tasting Honey", proving that Blue Plains is the sweetest spot in DC. Beekeeper Bill Brower, along with a few intrepid DC Water employees, tended the hives all year and harvested the honey this fall. Small bear bottles were made avaiallbe for all DWT employees at the recent all-hands meeting as a small token of appreciation for their kindess toward the bees.

Bloom Reuse and Value Map

This map shows where Bloom was reused on agricultural land and sold into the market as a soil amendment product. The numbers represent the value of the product applied in each county, which accounts for the nitrogen value in the biosolids.



District of Columbia Water and Sewer Authority

Capital Improvement Program Report

FY-2018 4th Quarter
July 1st through Sept 30th, 2018

Board of Directors
Environmental Quality and Operations Committee

David L. Gadis CEO & General Manager
Leonard R. Benson, Chief Engineer

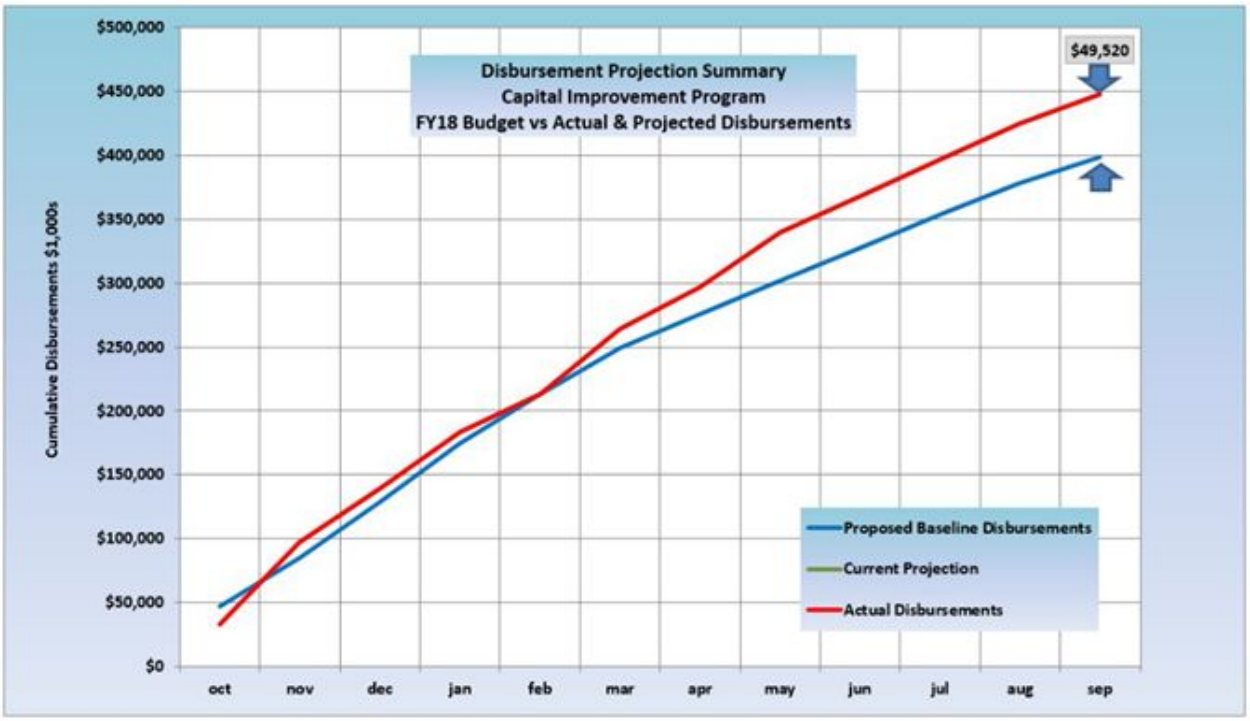
November 2018

Capital Improvement Program Report
4th Quarter FY2018

CIP Disbursement Performance

Actual program disbursements through the end of the fiscal year compared with the FY18 baseline are shown in the chart below:

Disbursement Summary



The approved capital disbursement plan as agreed by the DC Water Board of Directors on March 1 2018, included a FY18 disbursements projection of $398,285,000.

The actual disbursements for fiscal year 2018 CIP were $447,805,000 through the end of September 2018, which was 12.4% above the baseline disbursement projection of $398,285,000.

Actual disbursements within the service areas are as follows:

Non Process Facilities
Baseline Disbursements $31,678,000
Actual Disbursements $35,527,000 ($3.8M above baseline projection)
Significant project variances are listed below:

- *Non-Process Facilities Program – (3.8M above baseline)*
  - The disbursement delta in the Non-Process Facilities Program area is due to having a larger balance of committed contracts to uncommitted projects in the program area, leading to a slightly higher than anticipated execution performance and subsequent under-forecasting for the program area.

Wastewater Treatment Service Area
Baseline Disbursements $95,520,000
Actual Disbursements $106,104,000 ($10.6M above baseline projection)
Significant project variances are listed below:

- *Plantwide Projects Program Area – ($5.6M above baseline)*
  - The disbursements for various projects were higher than the baseline due to expedited equipment purchases, faster than expected execution and payments accounted for in FY17 that were disbursed in FY18
- *ENR Facilities Program Area – ($4.6M above baseline)*
  - The disbursements for project E8 - Enhanced Clarification Facilities were higher than the baseline due to an early retention release and a payment accounted for in FY17 that were disbursed in FY18.
  - The disbursements for project EE – Filtrate Treatment Facilities were higher than the baseline due to underestimation in the retainage release projection for FY18.

CSO Service Area
Baseline Disbursements $181,897,000
Actual Disbursements $188,294,000 ($6.4M above baseline projection)
There are no significant project variances for this service area.

Stormwater Service Area
Baseline Disbursements $944,000
Actual Disbursements $1,988,000 ($1.0M above baseline projection)

- *Storm Pumping Facilities Area ($706k above baseline projection)*
  - The disbursement delta in the Stormwater service area is due to this year's performance outstripping prior years' historical performance and subsequent under-forecasting for the program area.

Sanitary Sewer Service Area
Baseline Disbursements $30,191,000
Actual Disbursements $46,887,000 ($16.7M above baseline projection)
Significant project variances are listed below:

- *Sanitary Collection Sewers Program Area – ($7.7M above baseline)*

- The disbursements for project J3 – Sewer Upgrade City Wide were greater than anticipated in the baseline, this is mainly due to the work progressing faster than anticipated .
- The disbursements for project G1 – Small Local Sewer Rehab were greater than anticipated in the baseline, this is mainly due to the work progressing faster than anticipated .

- *Sewer Ongoing Program Area ($3.9M above baseline projection)*
  - The disbursements for SOG were greater than anticipated in the baseline. This is mainly due to the higher than anticipated repair work.
- *Sanitary Trunk Sewers Program Area – ($5.5M above baseline)*
  The disbursements for project IL - Creekbed Sewer Rehabilitation 2 were greater than anticipated in the baseline. This is mainly due to the work progressing faster than anticipated.

Water Service Area
Baseline Disbursements $58,054,000
Projected Disbursements $69,005,000 ($11.0M above baseline projection)
Significant project variances are listed below:

- *Water Storage Facilities Program Area – ($5.0M above baseline)*
  - The disbursements for project MA - St. Elizabeth Water Tank were greater than anticipated in the baseline. This is mainly due to an incorrect entry into the database, we have since improved the process and procedure.
- *Water Ongoing Program Area – ($3.4M above baseline)*
  - The disbursements for WOG were greater than anticipated in the baseline. This was mainly due to the higher than anticipated repair work.

Capital Improvement Program Report
4th Quarter FY2018

Priority 1 Projects (Court Ordered, Stipulated Agreements, etc.)

All priority 1 projects are on schedule and within budget.

Significant Contract Actions Anticipated – 6 Month Look-Ahead

Project	Name	Contract Type	Joint Use?	Cost Range	Committee	BOD
UC	Upgrades to FIPS 1-10	Construction	Yes	$15M - $20M	EQ & Ops Nov	Dec
Multiple	Misc. Facilities Upgrades (MFU) 6	Construction	Yes	$25M - $30M	EQ & Ops Jan	Feb
BX	Gravity Thickener Upgrades Phase II	Construction	Yes	$40M - $45M	EQ & Ops Feb	Mar
Multiple	Misc. Facilities Upgrades (MFU) 7	Construction	Yes	$20M - $30M	EQ & Ops Apr	May
Multiple	OMAP V	Professional Services	Yes	$5M - $10M	EQ & Ops May	Jun
Multiple	Water Program Manager	Professional Services	No	$30M -35M	EQ & Ops Mar	Apr
Multiple	Wastewater Program Manager	Professional Services	Yes	$40M - $45M	EQ & Ops Jun	Jul

Capital Improvement Program Report
4th Quarter FY2018

Schedule - Key Performance Indicators
Capital Improvement Program

Summary:
Through the 4th Quarter, 22 of the 27 Key Performance Indicators (KPIs) completed this period were achieved within 90 days of their target date.

#	Performance
22	KPIs completed within threshold
5	KPIs completed outside threshold
22	Total KPIs completed to date
27	Total KPIs due this year

Reasons for any KPIs not meeting the 90-day threshold this period:
There were 5 incomplete KPIs in FY18, currently anticipated to be completed outside the 90-day window due to the following:

- MA01 - St. Elizabeth Water Tank Construction Substantial Completion was delayed due to Fly ash analysis, disposal and handling delay and abnormal weather delays. The tank was brought online August 27th 2018.
- I801 - Large Valve Replacements 11R Construction Substantial Completion has not been reached due to additional scope being added to the project and extensive coordination with Washington Gas & PEPCO at multiple locations.
- LZ04 - PI Phase 2 Pipe Rehab at Potomac Crossing Design start was delayed due to technicalities related to the complicated nature of the project and revised estimates being higher than the approved budget.
- O302 - Small Diameter Watermain Repl. 11b Construction Substantial Completion was delayed due to additional scope being added to the project.
- UC06 - Upgrades to FIPS 1-10 – Construction start was delayed due to a late and extended period required to address design review comments, which delayed the bid advertisement date

The table below provides a detailed breakdown of each KPI due date grouped by Quarter as of September 30th 2018:

Quarter	Job Code	Job Name	Activity Name	Due Date (Baseline)	Estimated Complete Date	Actual Complete Date	Variance (positive is early)	Met within 90 days
Q1	F203	Small Diameter Water Main Repl 14C C&L	Design Start	30-Oct-17		20-Oct-17	10	✓
Q1	DE02	Small Diameter Water Main Repl 12B	Construction Start	5-Nov-17		03-Nov-17	2	✓

dc water is life

Capital Improvement Program Report
4th Quarter FY2018

Quarter	Job Code	Job Name	Activity Name	Due Date (Baseline)	Estimated Complete Date	Actual Complete Date	Variance (positive is early)	Met within 90 days
Q2	EE01	Biosolids Filtrate Treatment Facilities	Construction Substantial Completion	4-Jan-18		19-Dec-17	16	✓
Q2	IY03	High & Low PSW Pumps Evaluation and Replacement	Design Start	15-Jan-18		09-Jan-18	6	✓
Q2	GR01	Small Diameter Water Main Rehab. 15A	Design Start	1-Feb-18		07-Feb-18	-6	✓
Q2	LZ03	PI Phase 1 Pipe Rehab at Clara Barton Pkwy	Design Start	2-Feb-18		06-Feb-18	-4	✓
Q2	BI01	Enhanced Nitrogen Removal (ENR) North	Construction Substantial Completion	8-Mar-18		09-Feb-18	27	✓
Q2	CY04	Div E - CSO 015-017 Structures/Diversions	Project Consent Decree Place In Operation (PIO)	23-Mar-18		20-Mar-18	3	✓
Q2	CY06	Div G - CSO 005/007 Structures and Diversions	Project Consent Decree PIO	23-Mar-18		20-Mar-18	3	✓
Q2	CY12	Div H - Anacostia River Tunnel	Project Consent Decree PIO	23-Mar-18		20-Mar-18	3	✓
Q2	CY12	Div H - Anacostia River Tunnel	Construction Substantial Completion	23-Mar-18		08-Mar-18	15	✓
Q2	CY13	Div I - Main Pumping Sta. Diversions and Outfall Sewer Diversion	Project Consent Decree PIO	23-Mar-18		15-Feb-18	36	✓
Q2	CY18	Div Y - BP Tunnel Dewatering Pump Station	Project Consent Decree PIO	23-Mar-18		20-Mar-18	3	✓
Q2	CY21	Div Z - Poplar Point Pumping Sta. Replacement	Project Consent Decree PIO	23-Mar-18		20-Mar-18	3	✓
Q2	CY31	Div U - Advance Utility Relocations for NEBT	Design Build Substantial Completion	23-Mar-18		27-Nov-17	116	✓
Q2	E801	Enhanced Clarification Facilities	Project Consent Decree PIO	23-Mar-18		20-Mar-18	3	✓
Q2	FS01	Div D - JBAB Overflow and Diversion Structures	Project Consent Decree PIO	23-Mar-18		15-Feb-18	36	✓
Q3	J001	B Street/New Jersey Ave. Trunk Sewer Rehab and Cleaning Phase 1	Construction Start	4-Apr-18		21-May-18	-47	✓
Q3	MA01	St. Elizabeth Water Tank	Construction Substantial Completion	10-Apr-18	01-Dec-18		-235	

Capital Improvement Program Report
4th Quarter FY2018

Quarter	Job Code	Job Name	Activity Name	Due Date (Baseline)	Estimated Complete Date	Actual Complete Date	Variance (positive is early)	Met within 90 days
Q3	**G100**	**Lining & Repair of Local Sewers**	**Construction Substantial Completion**	**31-May-18**		**26-Jul-18**	**-56**	✓
Q3	**GR02**	**Small Diameter Water Main Rehab 15B**	**Design Start**	**1-Jun-18**		**14-May-18**	**18**	✓
Q3	I801	Large Valve Replacements 11R	Construction Substantial Completion	30-Jun-18	31-Dec-18		-184	
Q4	**C904**	**66" Low Service Steel Main at 8th St NE & SE**	**Construction Start**	**3-Jul-18**		**23-Jul-18**	**-20**	✓
Q4	LZ04	PI Phase 2 Pipe Rehab at Potomac Crossing	Design Start	5-Jul-18	01-Dec-18		-149	
Q4	**DR02**	**Low Area Trunk Sewer - Rehabilitation**	**Construction Start**	**12-Jul-18**		**12-Jul-18**	**0**	✓
Q4	O302	Small Diameter Watermain Repl 11b	Construction Substantial Completion	27-Jul-18	30-Nov-18		-126	
Q4	UC06	Upgrades to FIPS 1-10	Construction Start	29-Sep-18	13-Feb-19		-137	

Table Key: Positive variance = Finishing earlier than baseline plan Bold = Actual Date achieved

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

ACTION REQUESTED

GOODS AND SERVICES CONTRACT OPTION YEAR

Industrial Cleaning Service
(Joint Use)

Approval to add funding for option year 3 for the Industrial Cleaning Service contract in the amount of $500,000.00.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Charmay, Inc. dba ServiceMaster of Alexandria 7551 Fordson Road Alexandria, VA 22306 LSBE	N/A	100%

DESCRIPTION AND PURPOSE

Base Period Contract Value:	$520,690.34
Original Contract Dates:	10-19-2015 – 10-18-2016
No. of Option Years in Contract:	4
Modification Value:	$74,349.04
Modification Dates:	02-15-2016 – 10-18-2016
Option Year 1 Value:	$612,915.87
Option Year 1 Dates:	10-19-2016 – 10-18-2017
Option Year 2 Value:	$600,000.00
Option Year 2 Dates:	10-19-2017 – 10-18-2018
Option Year 3 Value:	$100,000.00
Option Year 3 Dates:	10-19-2018 – 10-18-2019
Option Year 3 Additional Funding:	**$500,000.00**
Option Year 3 Modification Dates:	**12-06-2018 – 10-18-2019**

Purpose of the Contract:

To provide a team of professional industrial cleaning crew to do thorough routine cleaning of our wastewater treatment field areas, which house our processing equipment and systems.

Contract Scope:

The areas of Industrial Cleaning Service are above and below ground. It covers many different areas of process stations, galleries, labeled piping systems, pumps and associated equipment, conveyance systems and stairwells throughout Blue Plains Wastewater Treatment. If these areas are not serviced, the performance of the process units at Blue Plains will be impacted significantly and could result in equipment damage and disruption of the wastewater treatment process.

Spending Previous Year:

Cumulative Contract Value:	10-19-2015 to 10-18-2018: $1,907,955.15
Cumulative Contract Spending:	10-19-2015 to 08-07-2018: $1,746,624.34

Contractor's Past Performance:

According to the COTR, the Contractor's quality of products and services, 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:	Services	**Contract Number:**	15-PR-DWT-02
Contractor Market:	Open Market with Preference Points for LBE and LSBE Participation		

BUDGET INFORMATION

Funding:	Operating	**Department:**	Wastewater Treatment
Project Area:	Blue Plains AWTP	**Department Head:**	Salil Kharkar

ESTIMATED USER SHARE INFORMATION

User - Operating	Share %	Dollar Amount
District of Columbia	41.90%	$209,500.00
Washington Suburban Sanitary Commission	43.10%	$215,500.00
Fairfax County	9.59%	$47,950.00
Loudoun Water	4.64%	$23,200.00
Potomac Interceptor	0.77%	$3,850.00
TOTAL ESTIMATED DOLLAR AMOUNT	**100.00%**	**$500,000.00**

Aklile Tesfaye / 11/2/18
Assistant General Manager, Blue Plains
Date

Dan Bae / 11/6/2018 for Dan Bae
Director of Procurement
Date

Matthew T. Brown / 11/6/2018
Chief Financial Officer
Date

David Gadis / _____
General Manager
Date

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

ACTION REQUESTED

GOODS AND SERVICES CONTRACT AWARD
BIOSOLIDS MANAGEMENT
(Joint Use)

Approval to execute a contract award for the Biosolids Management in the amount of $2,000,000.00.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Nutri-Blend Inc. P.O. Box 38060 Richmond, VA 23231	N/A	N/A

DESCRIPTION AND PURPOSE

Base Year Contract Value:	$2,000,000.00
Option Years:	2
Anticipated Contract Start Date:	01-01-2019
Anticipated Base Year End Date:	12-31-2019
Proposals Received:	5
Quote Range:	$3,974,203.00 - $5,497,651.00
Preference Price Reduction Awarded	$0.00

Purpose of the Contract:

The purpose of this contract is to purchase biosolids management services. The proposed awardee, Nutri-Blend, would remove biosolids from the Dewatered Biosolids Loading Facility, and manage its disposition.

Contract Scope:

DC Water will purchase biosolids management services under this contract. These services include: removing biosolids from the Dewatered Biosolids Loading Facility; transporting biosolids to designated agricultural applications such as farms, compost facilities, and reclamation sites in the mid-Atlantic region; managing nutrient loading as well as land permits; and submitting required reports to DC Water as well as other regulatory agencies.

Firms quoted on the basis of managing the full biosolids production volume for which DC Water is responsible. Our goal is to sell 40% of that volume. This request will cover slightly less than the remaining volume, and equals the FY19 budget. We will assess monthly, and, if necessary, request to modify contract funding after the spring growing season.

Supplier Selection:

DC Water contacted 47 potential contractors during the solicitation process. Five firms submitted proposals, four of which met DC Water's technical requirements. Those firms entered in to price negotiations. The table below ranks scoring of the four firms. In the results listed, Nutri-Blend has offered DC Water the best score among the firms that were technically capable of performing the required services.

	Nutri-Blend	Kiser Lawn	Material Matters	Synagro
Final Scoring Rank	1	2	3	4

Savings:

For the base year of the contract, Procurement negotiated a unit price reduction amounting to about $430,000 based on expected volume.

No LBE/LSBE participation.

PROCUREMENT INFORMATION

Contract Type:	Firm Fixed	**Award Based On:**	Best Value
Commodity:	Biosolids	**Contract Number:**	18-PR-DWT-38
Contractor Market:	Open Market with Preference Points for Local and Small Businesses		

BUDGET INFORMATION

Funding:	Operating	**Department:**	Department of Wastewater Treatment
Service Area:	Blue Plains AWTP	**Department Head:**	Chris Peot

ESTIMATED USER SHARE INFORMATION

User	Share %	Dollar Amount
District of Columbia	41.90%	$838,000.00
Washington Suburban Sanitary Commission	43.10%	$862,000.00
Fairfax County	9.59%	$191,800.00
Loudoun County	4.64%	$92,800.00
Other (PI)	0.77%	$15,400.00
TOTAL ESTIMATED DOLLAR AMOUNT	**100.00%**	**$2,000,000.00**

Aklile Tesfaye / 11/5/18
Assistant General Manager, Date
Blue Plains

Dan Bae / 11/6/2018 for Dan Bae
Director of Procurement Date

Matthew T. Brown / 11/6/2018
Chief Financial Officer Date

David L. Gadis /
CEO and General Manager Date

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

ACTION REQUESTED

GOODS AND SERVICES CONTRACT OPTION YEAR

PRE-DEWATERING POLYMER
(Joint Use)

This contract action is to extend option year 2 of the contract and add additional funding of $1,000,000.00.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:	PARTICIPATION:
Polydyne, Inc. One Chemical Plant Road Riceboro, GA 31323	N/A	N/A

DESCRIPTION AND PURPOSE

Original Contract Value:	$1,803,739.00
Original Contract Dates:	01-01-2013—12-31-2013
No. of Option Years in Contract:	2
Option Year 1 Value:	$1,420,000.00
Option Year 1 Dates:	01-01-2014—12-31-2014
Option Year 2 Value:	$1,420,000.00
Option Year 2 Dates:	03-02-2015—03-01-2016
Prior Modifications Value:	$4,282,255.00
Prior Modifications Dates:	01-01-2015—12-31-2018
Requested Modification Value:	**$1,000,000.00**
Requested Modification Dates:	**01-01-2019—06-30-2019**

Purpose of the Contract:

The purpose of this contract is to supply and deliver pre-dewatering dry polymer to DC Water's Blue Plains Advanced Wastewater Treatment Facility. This polymer conditions biosolids to help remove water in the centrifuge process.

Reason for this Request

DC Water periodically re-evaluates its polymers to ensure usage of the best products at the optimal dosing rate. The polymer in this application has been performing exceptionally well and until recently pricing has been low, so retesting had been postponed. With market cost drivers now forcing prices higher, testing has been rescheduled to attempt to reduce costs while maintaining performance. This contract extension provides continuity of supply while we conduct full-scale plant testing, data evaluation, and contract negotiations.

The funding request covers six months at the current spending rate plus a 10% contingency.

Spending Previous Year:

Cumulative Contract Value:	01-01-2013 to 12-31-2018: $8,925,994.00
Cumulative Contract Spending:	01-01-2013 to 10-15-2018: $8,535,994.00

Contractor's Past Performance:

According to the COTR, the Contractor's quality of product and services; timeliness of deliverables; conformance to DC Water's policies, procedures and contract terms; and invoicing, all meet expectations and requirements.

No LBE/LSBE participation

PROCUREMENT INFORMATION

Contract Type:	Good and Services	**Award Based On:**	Best Value
Commodity:	Pre-Dewatering Polymer	**Contract Number:**	WAS-12-066-AA-RE
Contractor Market:	Open Market with Preference Points for LBE and LSBE Participation		

BUDGET INFORMATION

Funding:	Operating	**Department:**	Wastewater Treatment
Project Area:	Blue Plains	**Department Head:**	Salil M. Kharkar

ESTIMATED USER SHARE INFORMATION

User - Operating	Share %	Dollar Amount
District of Columbia	41.90%	$419,000.00
Washington Suburban Sanitary Commission	43.10%	$431,000.00
Fairfax County	9.59%	$95,900.00
Loudoun Water	4.64%	$46,400.00
Other (PI)	0.77%	$7,700.00
TOTAL ESTIMATED DOLLAR AMOUNT	**100.00%**	**$1,000,000.00**

Aklile Tesfaye / 11/5/18
Assistant General Manager, Date
Blue Plains

Dan Bae / 11/6/2018 for Dan Bae
Director of Procurement Date

Matthew T. Brown / 11/6/2018
Chief Financial Officer Date

David L. Gadis /
CEO and General Manager Date

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

ACTION REQUESTED

CONSTRUCTION CONTRACT:

Filtration Influent Pumps 1-10 Replacement (Joint Use)

Approval to execute a construction contract for $18,267,000.00

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:		PARTICIPATION:
Ulliman Schutte Construction, LLC 14420 Albemarle Point Place, Suite 110, Chantilly, VA 20151 Headquarters Miamisburg, OH 45342	Hi-Mark Construction Group, Inc. Middletown, OH	MBE	29.4%
	GE Frisco Co. Inc. Upper Marlboro, MD	MBE	4.7%
	Ideal Electric Supply Washington, DC	WBE	6.4%

DESCRIPTION AND PURPOSE

Contract Value, Not-To-Exceed:	$18,267,000.00	
Contract Time:	1043 Days	(2 Years, 10 Months)
Anticipated Contract Start Date (NTP):	02-13-2019	
Anticipated Contract Completion Date:	12-22-2021	
Bid Opening Date:	09-19-2018	
Bids Received:	5	
Other Bids Received		
American Contracting & Environmental Svs.	$19,633,000	
W. M. Schlosser Co., Inc.	$20,466,000	
Corman Kokosing Construction Co.	$20,993,643	
Norair Engineering Corp.	$21,209,643	

Purpose of the Contract:

Upgrades to major mechanical equipment serving the Filtration and Disinfection Facility.

Contract Scope:

- Demolition of ten existing Filtration Influent Pumps, motors, eddy current drives, and discharge valves.
- Installation of ten new Filtration Influent Pumps, motors, and discharge valves; four new medium voltage variable frequency drives; fiberglass reinforced plastic (FRP) baffle/curtain walls and vortex suppression baskets in the pump wetwells.
- Replacement of existing low voltage motor control centers in the Control Tower; lighting and power panelboards throughout the Filtration Facility; ten bearing water control panels; and two sewage ejectors.
- Miscellaneous Filtration Facility improvements.

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:	Fixed Price	**Award Based On:**	Lowest responsive, responsible bidder
Commodity:	Construction	**Contract Number:**	130280
Contractor Market:	Open Market		

BUDGET INFORMATION			
Funding:	Capital	**Department:**	Wastewater Engineering
Service Area:	Wastewater	**Department Head:**	Diala Dandach
Project:	UC		

ESTIMATED USER SHARE INFORMATION		
User	Share %	Dollar Amount
District of Columbia	41.22%	$ 7,529,657.40
Federal Funds*	0.00%	$
Washington Suburban Sanitary Commission	45.84%	$ 8,373,592.80
Fairfax County	8.38%	$ 1,530,774.60
Loudoun County & Potomac Interceptor	4.56%	$ 832,975.20
Total Estimated Dollar Amount	**100.00%**	**$18,267,000.00**

* Eligible for Federal Grant Funding at 55% of the District of Columbia share. Grant funding is insufficient to fund all eligible contracts. Federal Grant Funding may be used if additional funding becomes available or if other eligible projects are postponed.

11-7-18
Leonard R. Benson — Date
Chief Engineer

11/8/18
Dan Bae — Date
Director of Procurement

11/8/18
Matthew T. Brown — Date
Chief Financial Officer

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 CHANGE ORDER:

Miscellaneous Facilities Upgrade – Phase 5 (Joint Use)

Approval to execute Change Order No.02 for $3,150,000.00. The modification will exceed the General Manager's approval authority.

CONTRACTOR/SUB/VENDOR NFORMATION

PRIME:	SUBS:	PARTICIPATION:
American Contracting & Environmental Services, Inc. 10330 Old Columbia Rd. Columbia, MD 21046	*MBE/WBE Planned Goals: MBE $ 1,008,000.00 WBE $ 126,000.00	32.0% 4.0%

*Specific names of firms and final sub contracts will be finalized when work packages are negotiated.

DESCRIPTION AND PURPOSE

Original Contract Value:	$ 28,580,367.00
Value of this Change Order:	$ 3,150,000.00
Cumulative CO Value, including this CO:	$ 3,629,500.00
Current Contract Value, including this CO:	$ 32,209,867.00
Original Contract Time:	1600 Days (4 Years, 5 Months)
Time extension, this CO:	0 Days
Total CO contract time extension:	0 Days
Contract Start Date (NTP):	09-07-2016
Contract Completion Date:	01-25-2021
Cumulative CO % of Original Contract:	12%
Contract completion %:	49%

Purpose of the Contract:

This contract was established to have a contractor available to perform emergency and non-emergency repairs on existing process equipment which is beyond routine, preventive and corrective maintenance.

Original Contract Scope:

- Install Grit Facilities Basin Coating and Covers.
- Plantwide UPS Upgrade for Process Control System.
- COF Cafeteria Renovation.
- Biosolids Blending Facility upgrades.
- Install Emergency Equipment and Materials.
- Process Facilities – Various Tasks.
- Perform Specialized Services as per Task Scope.
- Time and Material Work on Emergency Task Work Order.
- Maintenance Support Work related to Sewage Treatment plant processes.

Previous Change Order Scope:

A new pump seal water system is needed at the Potomac Pumping Station because the existing seal water system has exceeded its useful life. The five sewage pumps at this station require seal water for lubrication and cooling. Without this seal water system, the entire pumping station will shut down, resulting in an uncontrolled release of combined sewage to the Potomac River, and a violation of the NPDES permit and the terms of the Consent Decree.

Current Change Order Scope:

Electric upgrades and Related Infrastructure Work at Five Stormwater Pumping Stations

- These improvements are necessary to increase the reliability and remaining useful life of these facilities, and includes provisions for portable emergency generators, electrical equipment, pumps, piping, valves, instrumentation and controls, and related equipment.
- The work is partially funded by a grant from the Federal Emergency Management Agency (FEMA). This grant has a completion deadline that requires an aggressive approach to execute the work.
- To fast-track the work, two change orders will be processed to this contract to purchase the long lead time equipment, and then to install/construct the work, such that commissioning may be complete by the FEMA grant deadline of September 2019.
- This initial change order is for purchase of long lead-time equipment including electrical gear, pumps and valves, and Supervisory Control and Data Acquisition (SCADA) equipment, with remaining funds after purchases to be applied to installation.
- The second change order will be implemented after the FY19 CIP funds are available, anticipated in March 2019, to complete the installation and commissioning.

PROCUREMENT INFORMATION

Contract Type:	**Fixed Price**	**Award Based On:**	Lowest responsive, responsible bidder
Commodity:	Construction	**Contract Number:**	150110
Contractor Market:	Open Market		

BUDGET INFORMATION

Funding:	Capital	**Department:**	Wastewater Engineering
Service Area:	Stormwater	**Department Head:**	Dlala Dandach
Project:	PM		

ESTIMATED USER SHARE INFORMATION

User	Share	Dollar Amount
District of Columbia	68.34%	$ 2,152,793.00
Federal Funds	31.66%	$ 997,207.00
Washington Suburban Sanitary Commission	0.00%	$
Fairfax County	0.00%	$
Loudoun County	0.00%	$
Total Estimated Dollar Amount	**100.00%**	**$ 3,150,000.00**

Leonard R. Benson
Chief Engineer
11-7-18
Date

Matthew T. Brown
Chief Financial Officer
11/8/18
Date

Dan Bae
Director of Procurement
11/8/18
Date

David L. Gadis
CEO and General Manager
Date

150110 Misc Facilities Upgrade Phase 5 CO2.FACT SHEET

Prepared October 29, 2018

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

ACTION REQUESTED

ENGINEERING SERVICES SUPPLEMENTAL AGREEMENT:

Tunnel Dewatering Pump Station and Enhanced Clarification Facility - CM (Joint Use)

Approval to execute Supplemental Agreement No. 02 for $2,600,000.00. The modification exceeds the General Manager's approval authority.

CONTRACTOR/SUB/VENDOR INFORMATION

PRIME:	SUBS:		PARTICIPATION:
Arcadis District of Columbia, PC 7550 Teague Road Suite 210 Hanover, MD 21076 Headquarters Highlands Ranch, CO 80129	Delon Hampton & Associates Washington, DC	MBE	17.2%
	Cube Root Corporation Washington, DC	MBE	3.1%
	Environ-Civil Engineering Columbia, MD	MBE	2.7%
	URS (AECOM) Washington, DC		7.7%
	Atane Engineers, Inc. New York, NY		6.8%
	CWD Consulting, LLC Westminster, MD		1.5%

DESCRIPTION AND PURPOSE

Original Contract Value:	$20,698,656.00	
Value of this Supplemental Agreement:	$ 2,600,000.00	
Cumulative SA Value, including this SA:	$ 8,124,383.00	
Current Contract Value, Including this SA:	$28,823,039.00	
Original Contract Time:	1,890 Days	(5 Years, 2 Months)
Time extension, this SA:	180 Days	
Total SA contract time extension:	180 Days	(0 Years, 6 Months)
Contract Start Date:	06-28-2013	
Contract Completion Date:	04-28-2019	

Purpose of the Contract:

To provide onsite Construction Management Services for the Tunnel Dewatering Pump Station and Enhanced Clarification Facility (TDPS-ECF)

This work is required by Consent Decree.

Original Contract Scope:

To provide construction management and related engineering services for the construction of a Tunnel Dewatering Pump Station and Enhanced Clarification Facility at the District of Columbia's Advanced Water Treatment Plant at Blue Plains.

Previous Supplemental Agreement Scope:

The scope remains the same as the original agreement; to provide construction management and related engineering services for the construction of a Tunnel Dewatering Pump Station and Enhanced Clarification Facility. At the time of the Agreement, the available budget could only support the required level of services through Fiscal Year 2017 and not the fully anticipated services required through the completion of the project.

Current Supplemental Agreement Scope:

The scope remains the same as the original agreement; to provide construction management and related engineering services for the construction of a Tunnel Dewatering Pump Station and Enhanced Clarification Facility. Due to Contractor time extensions, the construction management scope is extended through April 28, 2019.

Future Supplemental Agreement Scope:
No future supplemental agreement is anticipated.

PROCUREMENT INFORMATION			
Contract Type:	Cost Plus Fixed Fee	**Award Based On:**	Highest Ranking Score
Commodity:	Engineering Services	**Contract Number:**	DCFA #450-WSA
Contractor Market:	Open Market		

BUDGET INFORMATION			
Funding:	Capital	**Department:**	Wastewater Engineering
Service Area:	Wastewater, Combined Sewer	**Department Head:**	Diala Dandach
Project:	E8, FR, CY		

ESTIMATED USER SHARE INFORMATION

CY – Anacostia LTCP Allocation

User	Share %	Dollar Amount
District of Columbia	92.90%	$ 801,671.26
Federal Funds	0.00%	$
Washington Suburban Sanitary Commission	5.54%	$ 47,806.88
Fairfax County	1.01%	$ 8,715.69
Loudoun County & Potomac Interceptor	0.55%	$ 4,746.17
Total Estimated Dollar Amount	**100.00%**	**$ 862,940.00**

E8, FR – Wastewater Treatment Allocation

User	Share %	Dollar Amount
District of Columbia	41.22%	$ 716,016.13
Federal Funds	0.00%	$
Washington Suburban Sanitary Commission	45.84%	$ 796,268.30
Fairfax County	8.38%	$ 145,565.63
Loudoun County & Potomac Interceptor	4.56%	$ 79,209.94
Total Estimated Dollar Amount	**100.00%**	**$1,737,060.00**

Combined Allocation

User	Share %	Dollar Amount
District of Columbia	58.37%	$1,517,687.39
Federal Funds	0.00%	$
Washington Suburban Sanitary Commission	32.47%	$ 844,075.18
Fairfax County	5.93%	$ 154,281.32
Loudoun County & Potomac Interceptor	3.23%	$ 83,956.11
Total Estimated Dollar Amount	**100.00%**	**$2,600,000.00**

Leonard R. Benson, 11-07-18
Chief Engineer — Date

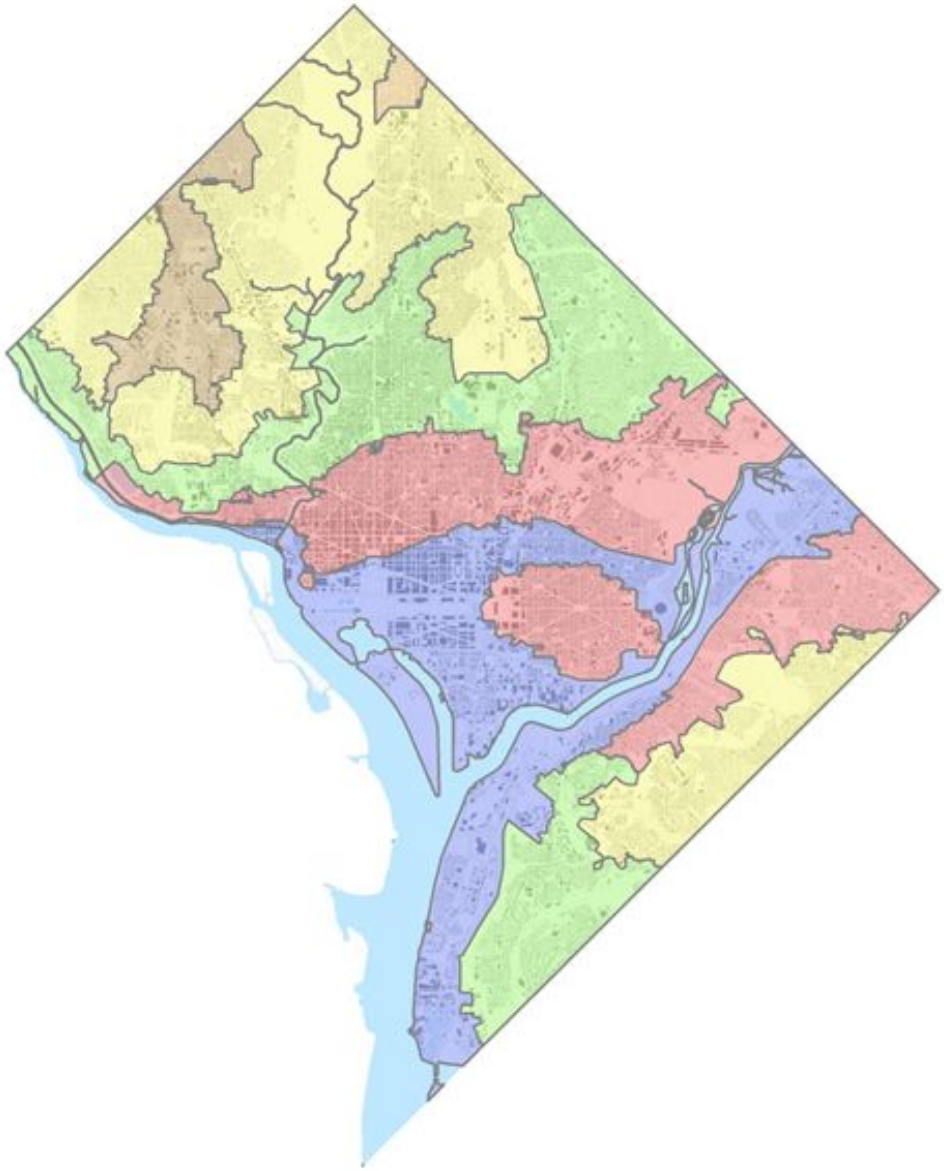
Matthew T. Brown, 11/8/18
Chief Financial Officer — Date

Dan Bae, 11/8/18
Director of Procurement — Date

David L. Gadis, /
CEO and General Manager — Date

dc water is life

Small Diameter Water Mains: Prioritization



Presented to:

Environmental Quality and Operations Committee

November 15, 2018

water is life

Outline:

- Water distribution system overview
- SDWM Renewal Process Timeline
- SDWM Prioritization for Renewal – Past Approach
- SDWM Prioritization for Renewal – Enterprise Asset Management Framework Approach

Water Distribution System Overview

Characteristic		Quantity
Length of Water Mains (miles)	Small Diameter (Size ≤ 12 inch)	1,073
	Large and Very Large Diameter (Size ≥ 16 inch)	226
Number of Valves		43,570
Number of Fire Hydrants	Private	1,244
	Public	10,072
Number of Storage Facilities	Elevated Tanks	4
	Reservoirs	5
Number of Pumping Stations		4
System Service Connections		127,423
Meters		124,211
System Interconnections with WSSC and WA		16

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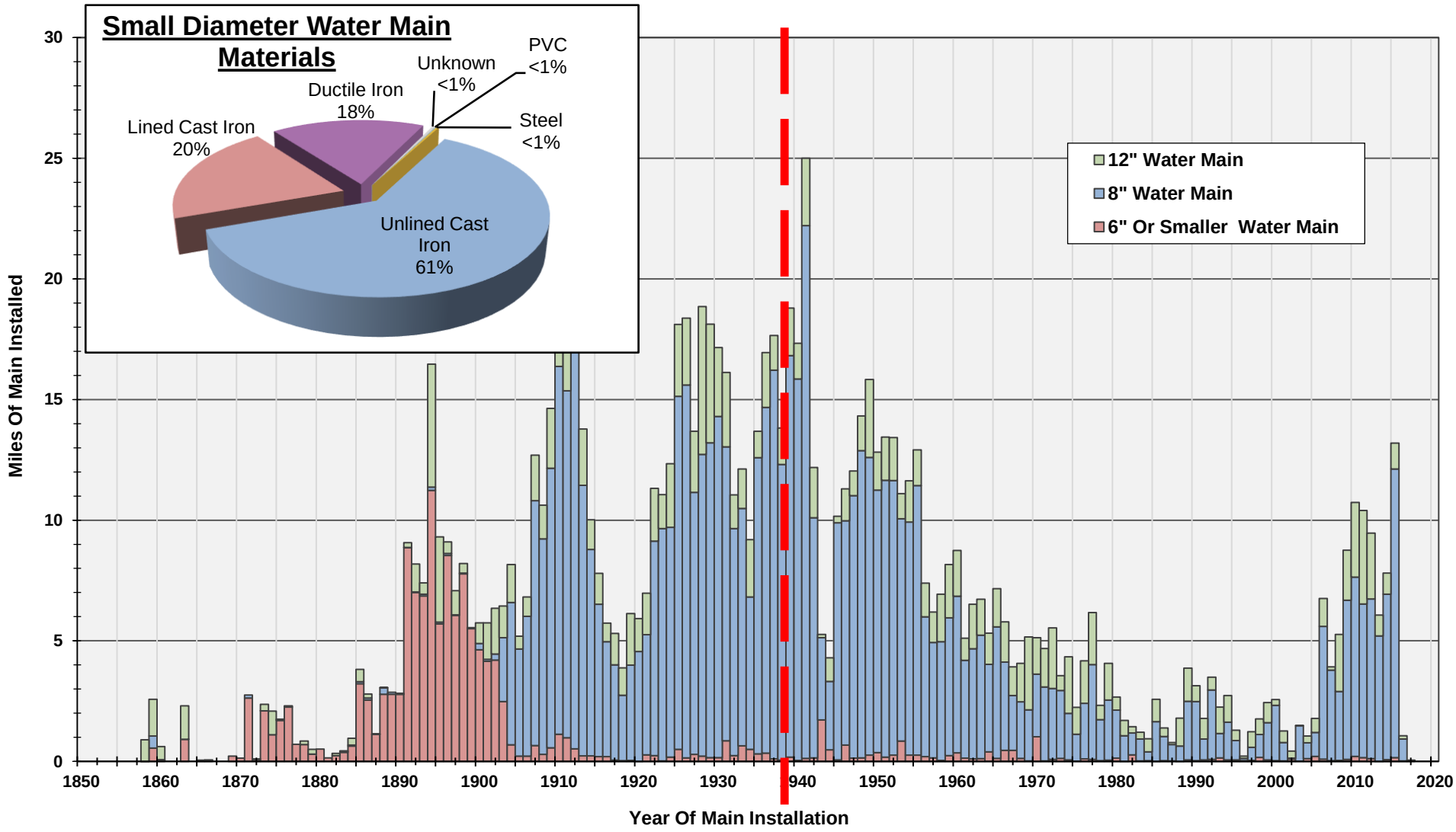
Small Diameter Water Mains



1,073 Miles, Median Age: 79 Years

SDWMs Prioritization for Renewal – Process Timeline

- Past years, prioritization of SDWM using GIS-based scoring criteria mainly based on Likelihood Of Failure
- Yr. 2016, completion of the *Enterprise Asset Management Plan* to determine infrastructure investment needs based on Risk analysis, with common scoring across Enterprise assets
- Yr. 2018, transitioning annual selection of SDWM using combination of prior scores and Enterprise scores
- Yr. 2018, migration of the *Asset Management Framework* into Innovyze's InfoMaster – an asset integrity management and capital planning software
- Starting in 2019, prioritization of water mains using InfoMaster with embedded *Asset Management Framework*

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SDWMs Prioritization for Renewal GIS-Based Scores

- Past Approach -

SDWM Prioritization for Renewal

- Many water main candidates vying for selection
  - ~660 miles of unlined cast iron
  - ~300 miles older than 100 years
  - ~95 miles of identified Water Quality concern areas
- Identify water mains most in need of renewal based on DC Water's specific needs and issues
- Weighting & Criteria based on DC Water high priority initiatives

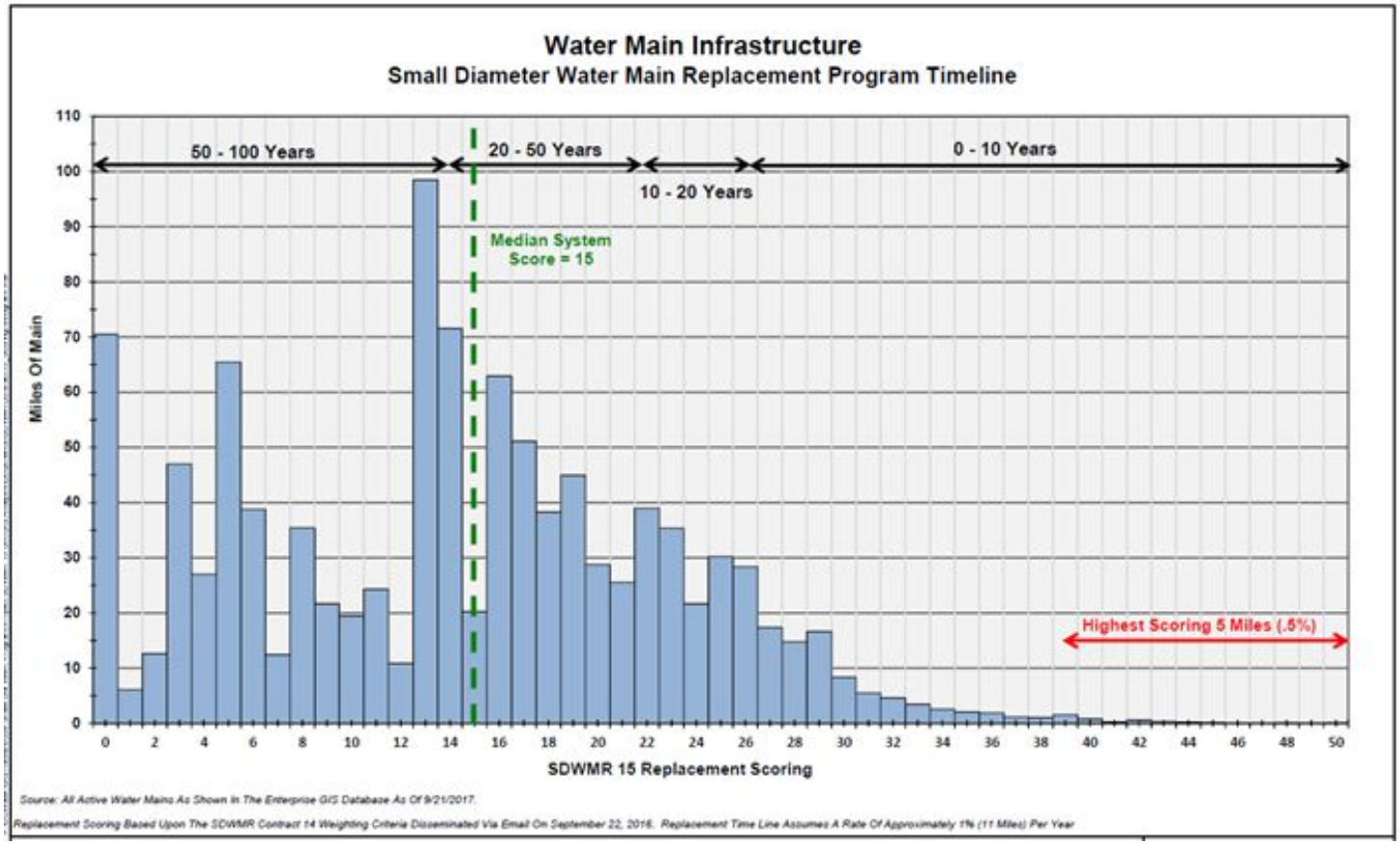
SDWMs Prioritization for Replacement

- Criteria for pipe scoring is broken down into 4 categories:
  - Performance Criteria – 55%
  - Likelihood Of Failure Criteria– 30%
  - Consequence Of Failure – 7%
  - Coordination – 8%
- Calculated for each pipe to determine the final weighted score (out of 100)
  - Score >32 further considered for replacement

SDWMs Prioritization for Replacement

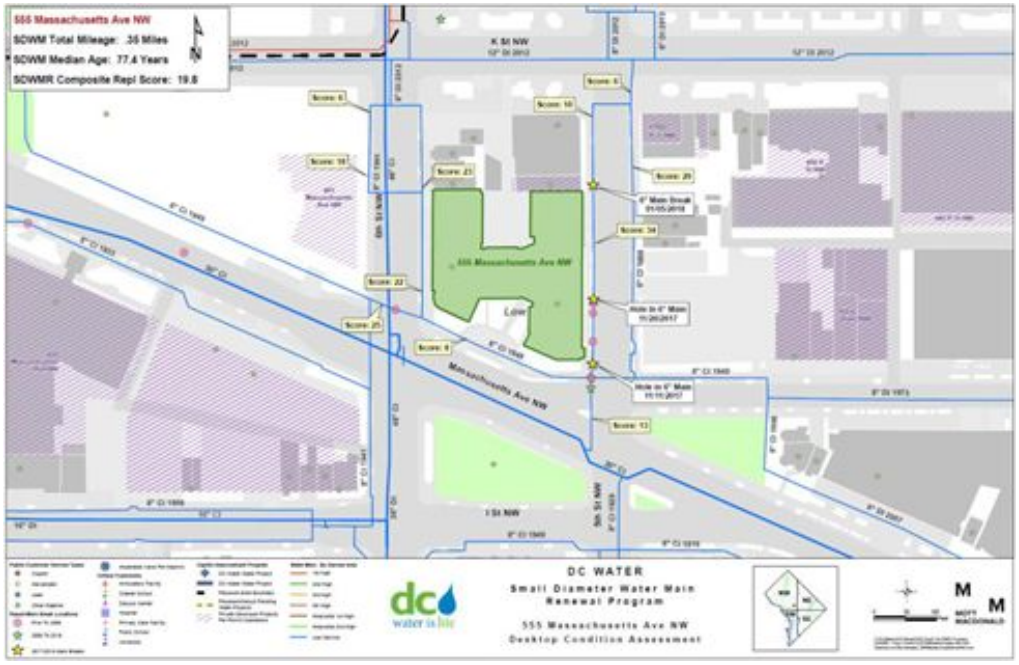
Final Weighted Scoring

- Use GIS to spatially relate criteria to all DC Water pipe
- All 12” & smaller pipes scored & ranked



SDWMs Prioritization for Replacement – Example 1

- Multiple pipe breaks on a 1898, 6-inch main - affecting a building with 350 residents
- Pipe scored 34 and was recommended for immediate replacement



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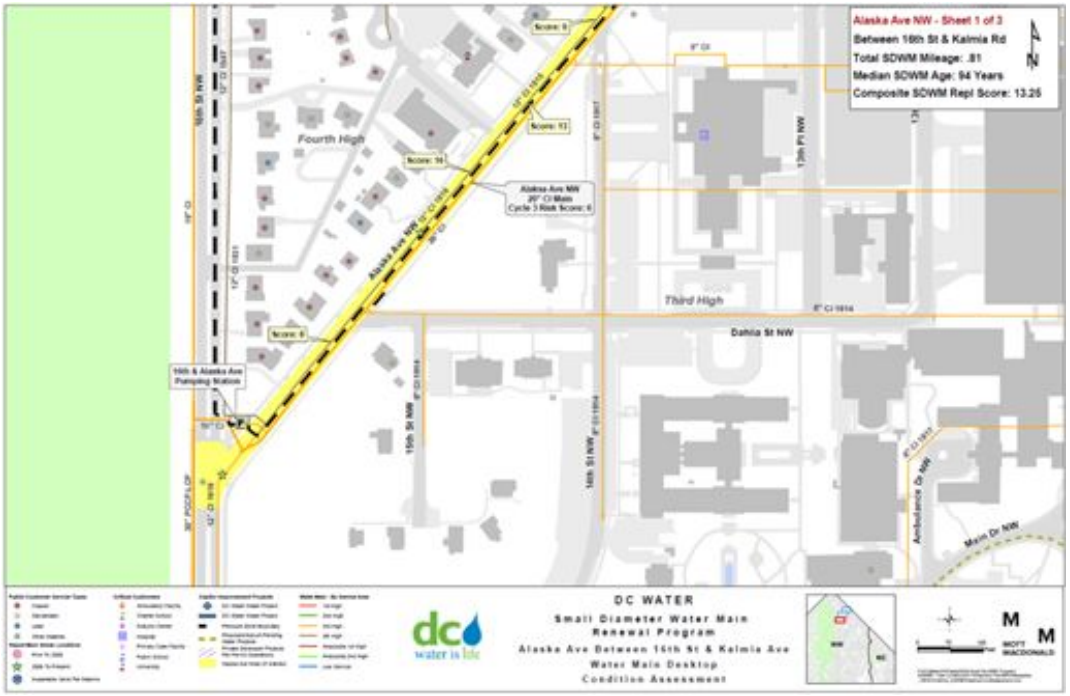
SDWMs Prioritization for Replacement – Example 2

- Should 1920's 12-inch water main be replaced ahead of DDOT's road restoration
- Pipeline scored 17; 50 years out from replacement



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SDWMs Prioritization for Renewal Based on EAM Framework and the Use of InfoMaster
- Implementation In-Progress -

Enterprise AM Plan

- Risk assessment serves as the basis for minimizing lifecycle costs while maintaining established LOS for customers and other stakeholders.
- Risk analysis is a major building block for determining infrastructure investment needs.
- Risk = COF x LOF
  - Consequence of Failure (COF)
    - Health and Safety – 25%
    - Public Confidence – 15%
    - System Reliability – 20%
    - Regulatory Compliance and Environmental Impact – 25%
    - Fiscal Impact – 15%
  - Likelihood of Failure (LOF)
    - Physical Condition – 55%
    - Performance – 35%
    - Maintenance History – 10%

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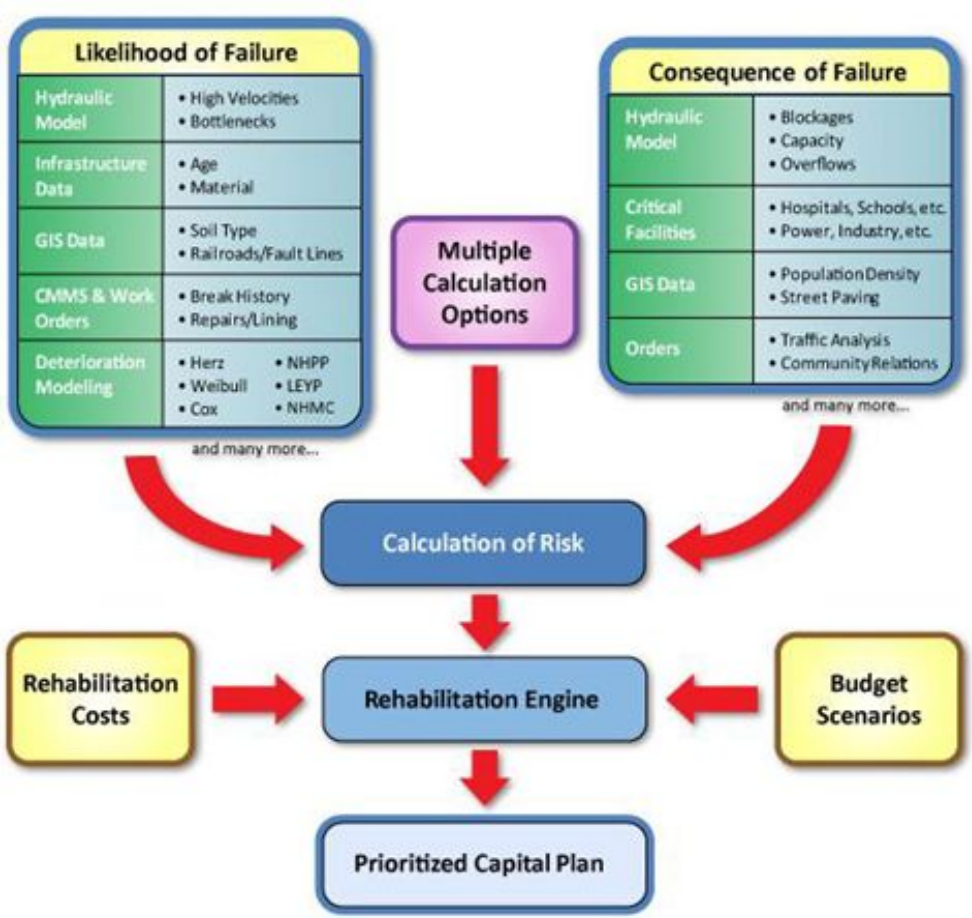
Innovyze's InfoMaster



- InfoMaster will help us manage the prioritization of assets
- Risk is defined per DC Water's Asset Management Framework
- Capital costs based on real, local data
- Anticipated to be fully implemented in 2019 and to be used in selection of pipes for SDWMR 16

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Summary

- Enterprise Asset Management Plan implementation in progress
- Migration of Asset Management Framework to InfoMaster in progress
- Main goal - Prioritization of assets and planning of capital needs

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Department of Clean Water Quality and Technology Research and Development Overview

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Challenges Blue Plains AWTP

DO more

- Growth
- More Stringent Regulations – Now and in the Future
  - Eliminate CSOs (370 – 1076 mgd and higher),
  - Nutrients (TN<3 & TP<0.18),
  - Class A Biosolids (pathogen re-growth / reactivation)
  - Future – PCBs, EDCs, secondary treatment for CSO by-pass

IN less

- Space constraints
- Aging infrastructure
- Urban environment – visual impact, odour, noise

WITH less

- Sustainability Vision
  - Energy Neutrality
  - Resource Recovery – Energy, Biosolids, Nutrients, Water
- Cost – long term rate impacts

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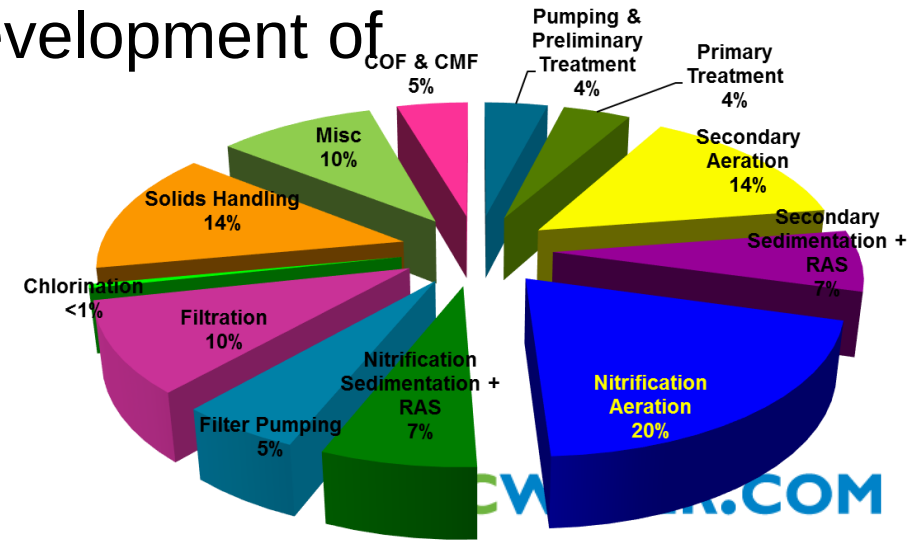
Drivers/Goals

- Support Operations
  - Process related operational issues
  - Optimization and process development
- Support CIP Planning
  - Future permits
  - Due diligence for application of new processes
  - Process evaluations and development of design criteria



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Team and Facilities

- Team
  - 4 DC Water full-time staff
    - Ahmed Al-Omari, Haydee De Clippeleir, Norman Dockett, Bipin Pathak
  - Research Associates/Interns
  - Collaboration partners
- Research Laboratories
  - 3 Locations
  - Bench scale testing
  - Analytical equipment
- Pilot Processes
  - Carbon removal
  - Nitrogen removal
  - Thermal Hydrolysis
  - Anaerobic Digestion

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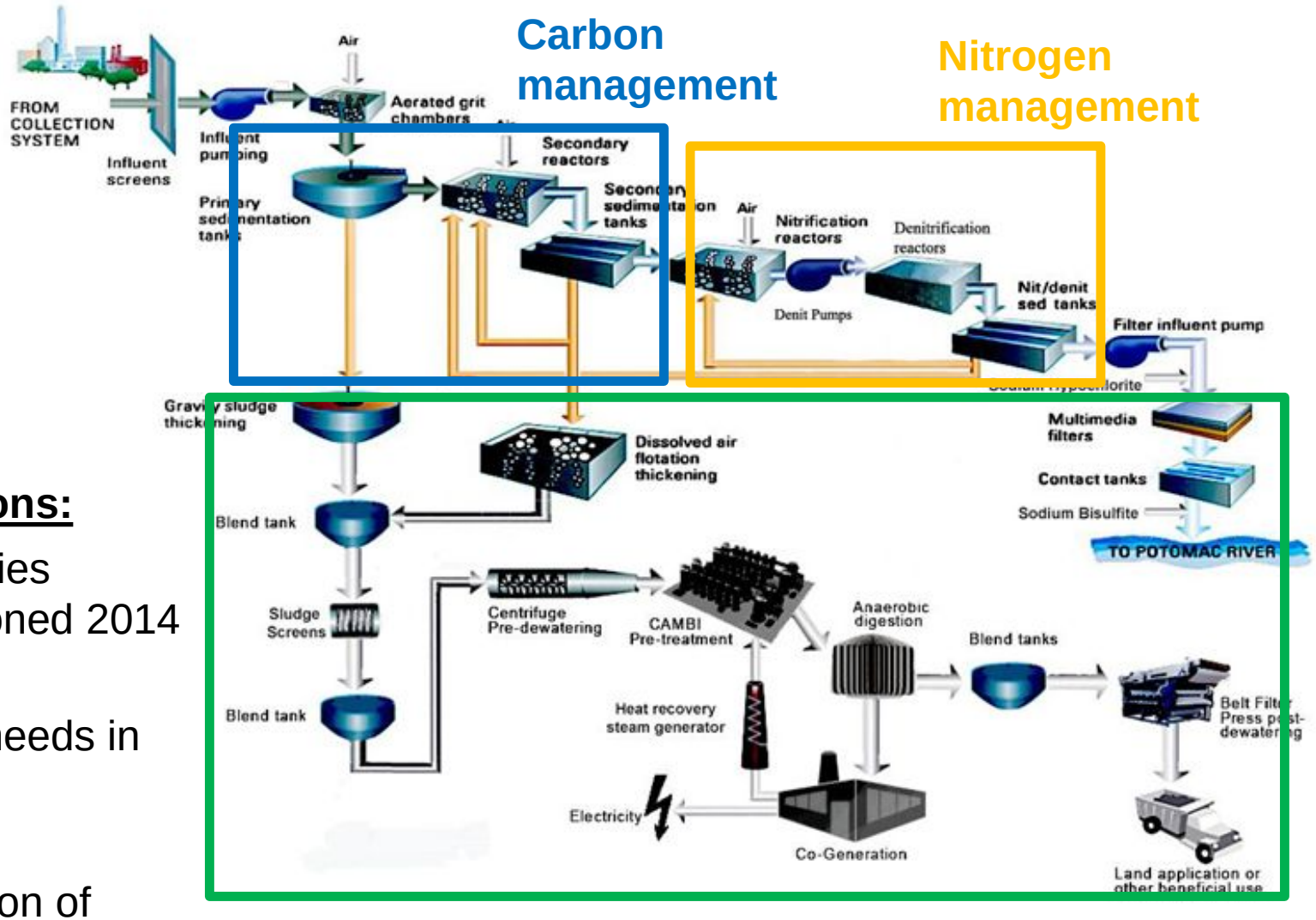
R&D Focus Areas



Considerations:

- New facilities commissioned 2014 thru 2018
- Capacity needs in out years
- Minimize consumption of energy and chemicals

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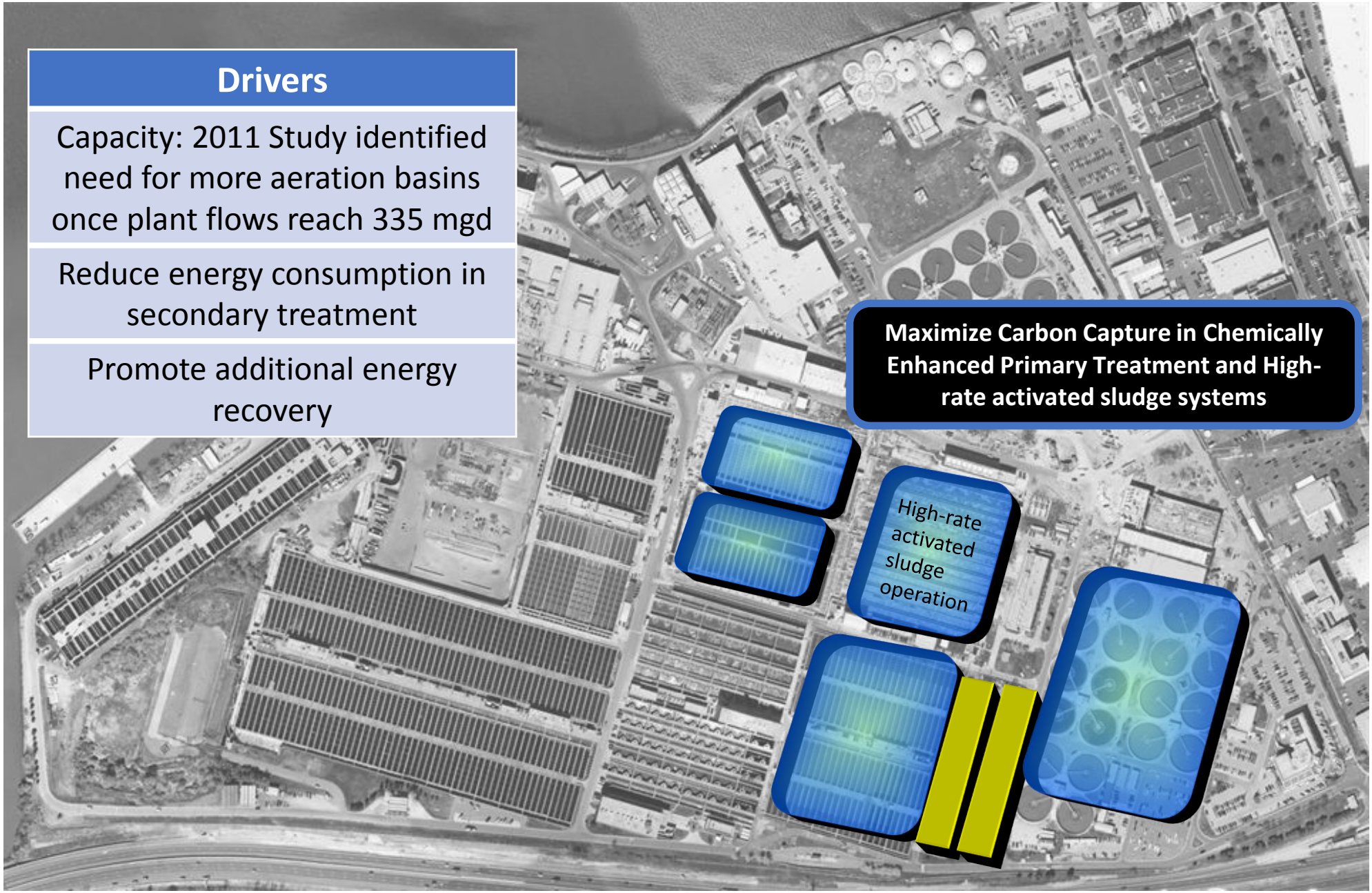
1. Carbon Management



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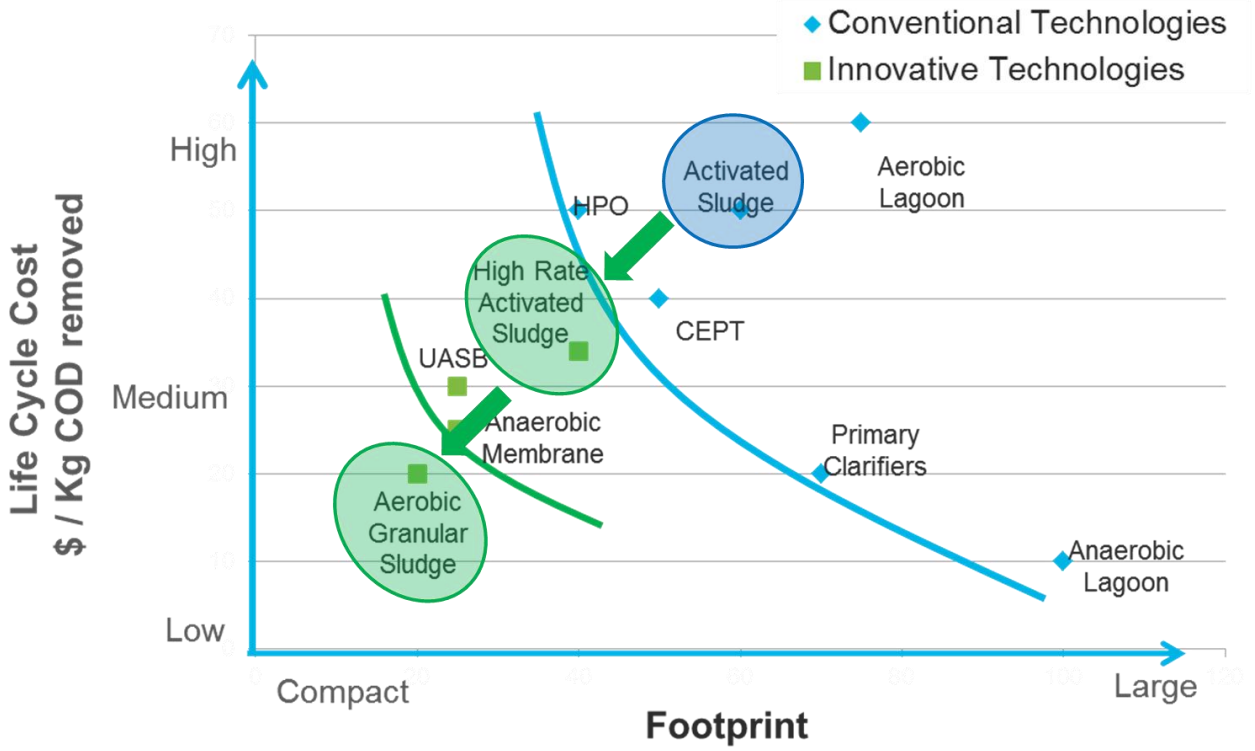
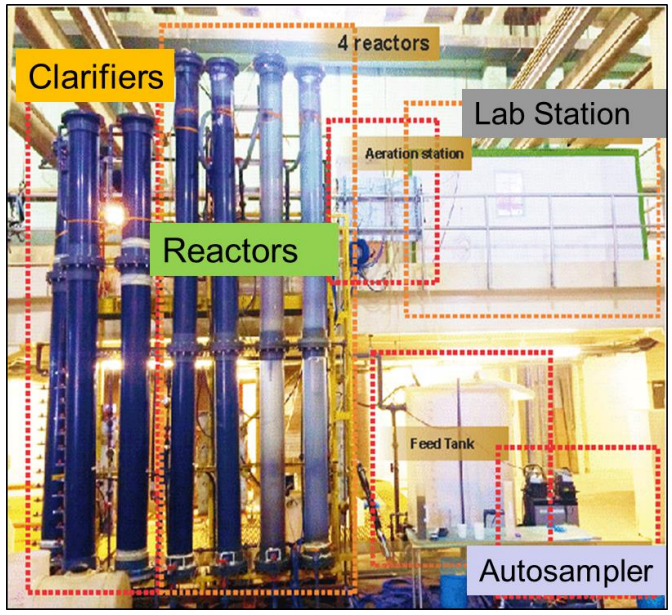
Carbon Removal
(Secondary Treatment)

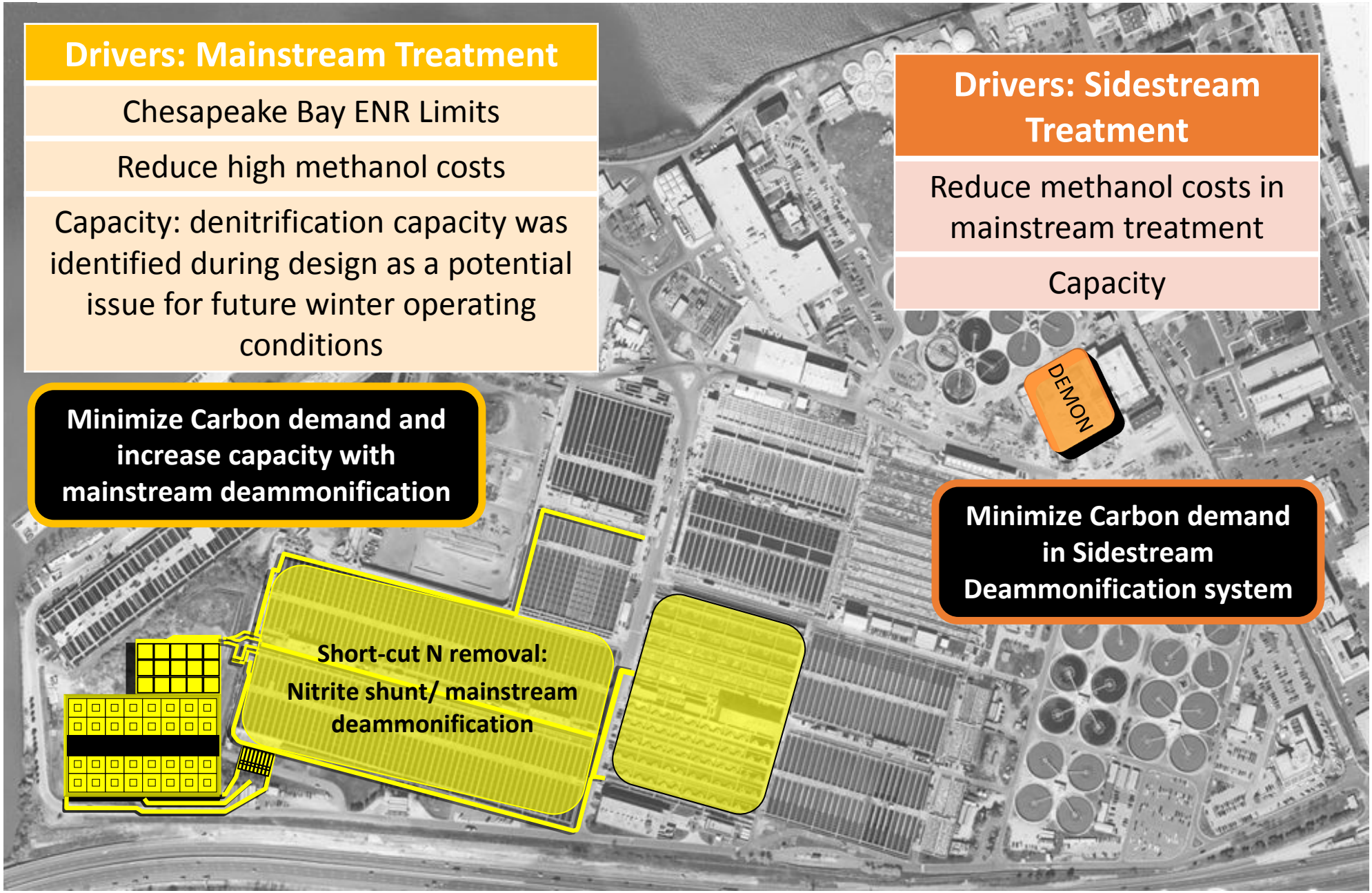


Keys to success:

- Faster solids settling
- Promote adsorption of organic material and storage in biomass rather than oxidation
- Advanced process controls



2. Nitrogen Management



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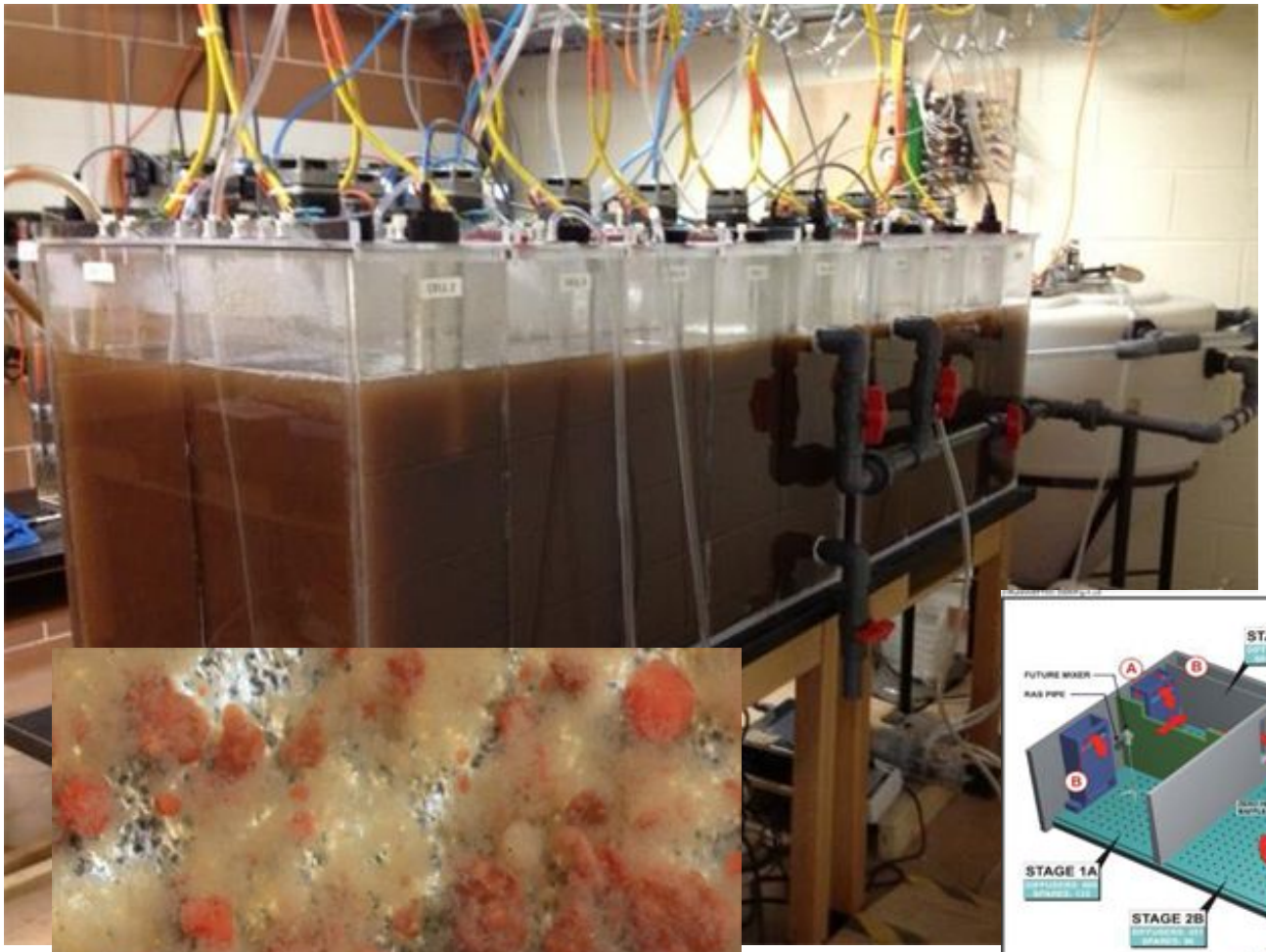
Mainstream N Removal (ENR Facilities)



Keys to success:

- Avoid full nitrification to NO_3-N
- Anammox retention
- Anammox polishing to low TN levels
- Faster solids settling
- Advanced controls

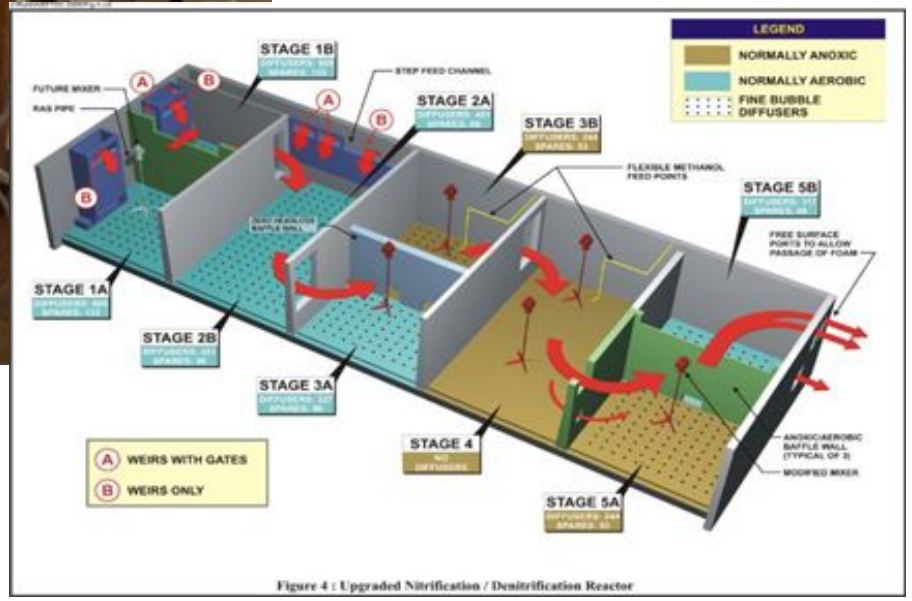


Figure 4 : Upgraded Nitrification / Denitrification Reactor

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Sidestream N Removal (Filtrate Treatment Facility)

Keys to success:

- Identify and mitigate impacts of inhibitory compounds
- Manage filtrate quality
- Anammox retention
- Continuous flow vs. batch process (future capacity)

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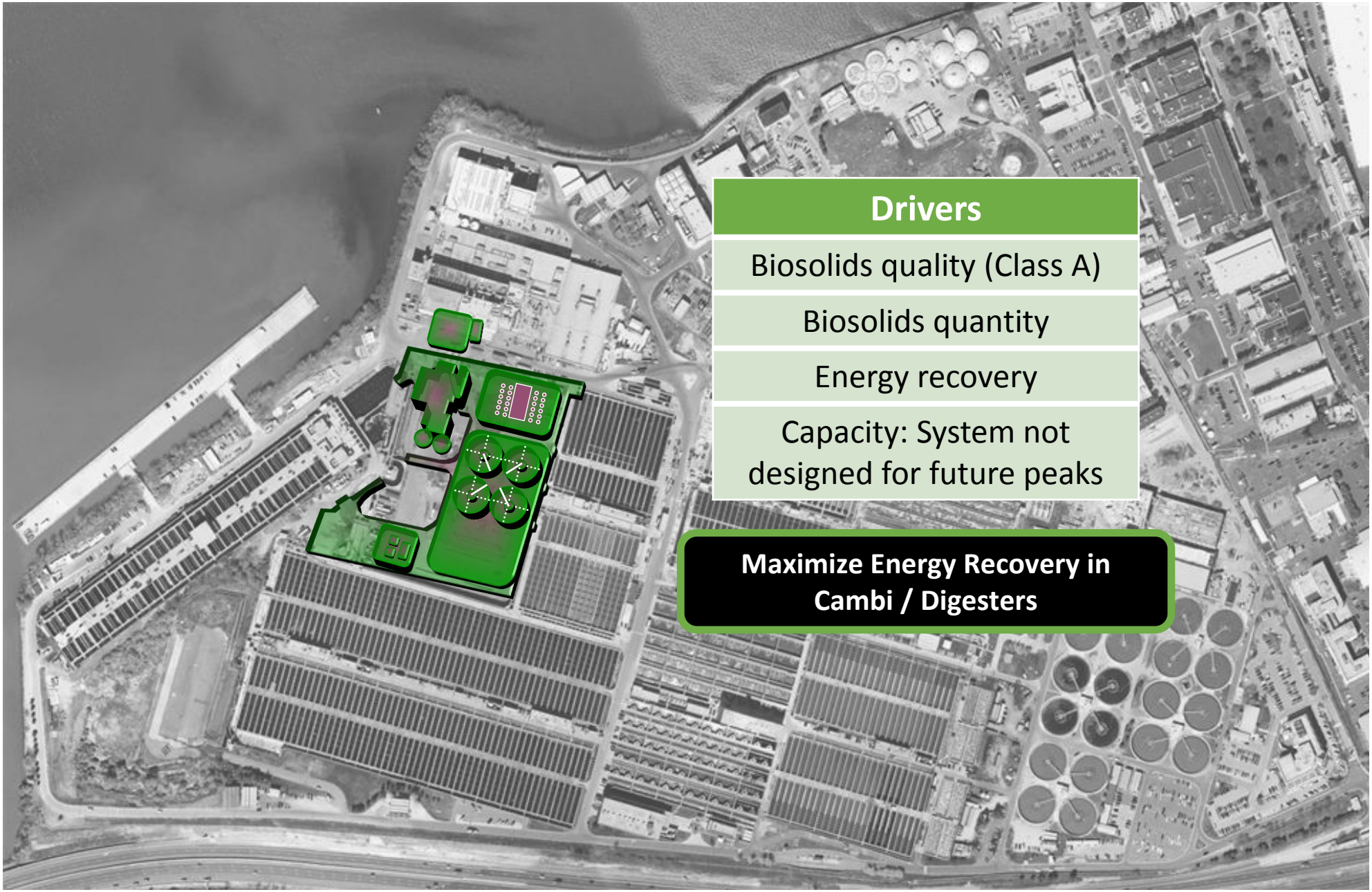
3. Biosolids Management



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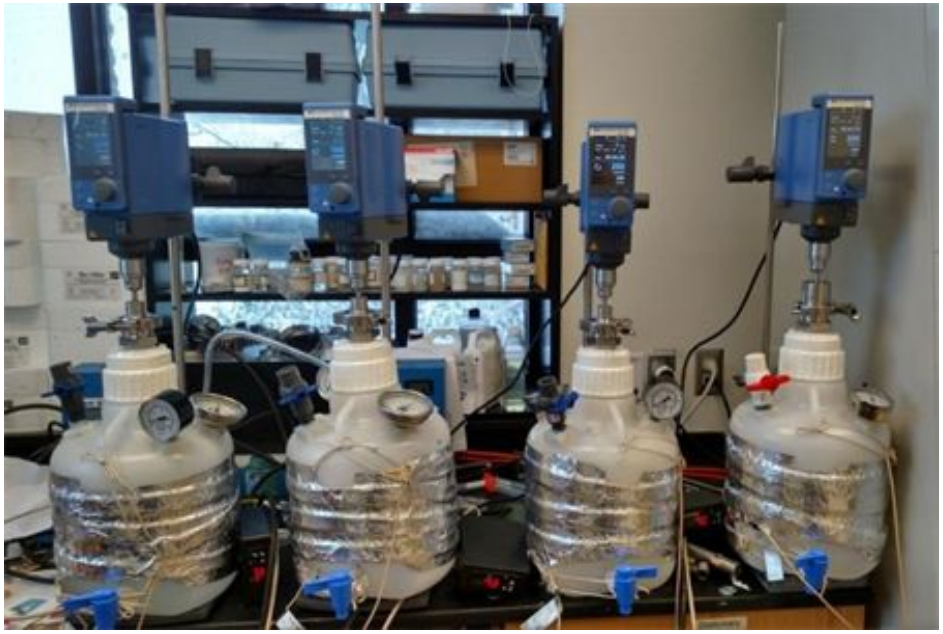
THP, Digestion, Dewatering

Keys to success:

- Solids dewaterability
- Hydrolysis in digesters
- Solids destruction and gas production
- Advanced controls



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