

Department of Public Works Quarterly Oversight Hearing



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PARTMENT OF PUBLIC WORKS BALTIMORE CITY DEPARTMENT OF PUBLIC



Bureau of Water & Wastewater Agenda

- 1. Bureau of Water and Wastewater Overview**
 - a. Organization Chart
 - b. Key responsibilities
 - c. Facilities Map
 - d. Budget and HR Overview

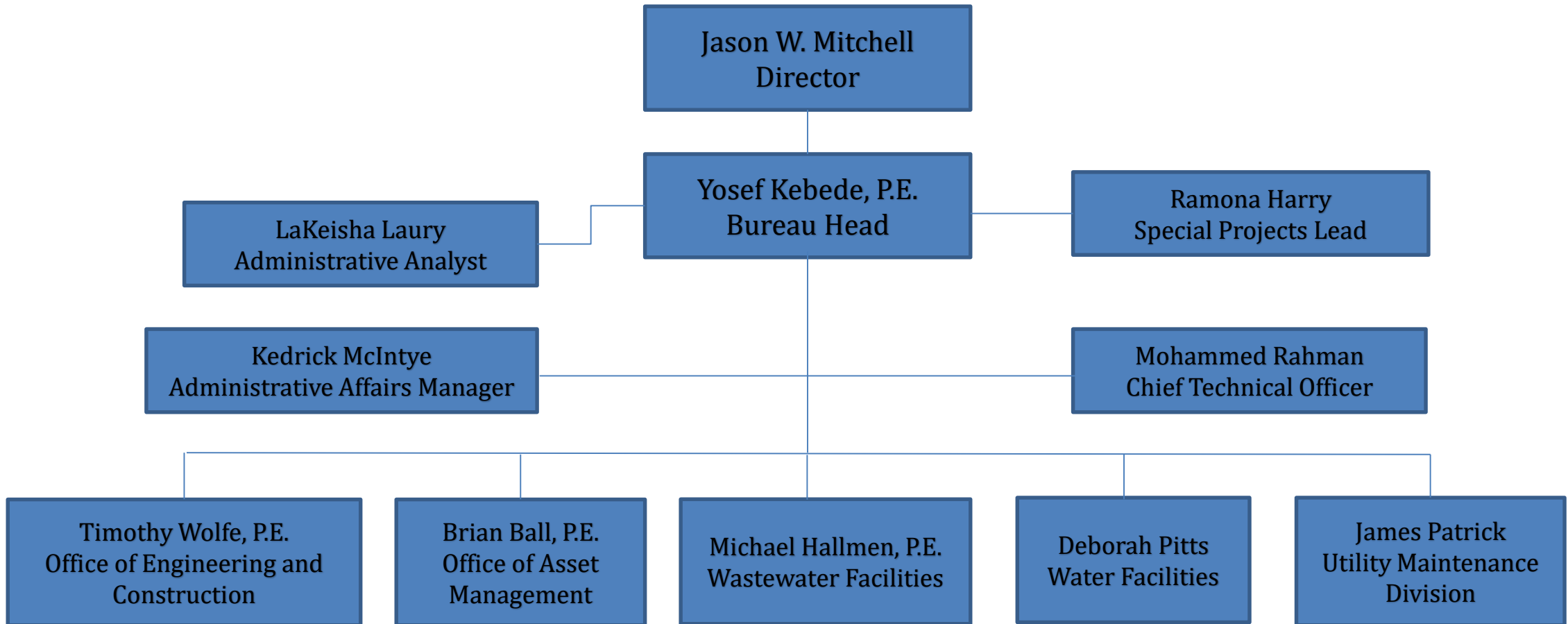
- 2. Bureau-wide Initiatives**

- 3. Division Breakdown**
 - a. Water Facilities Division
 - b. Wastewater Facilities Division
 - c. Office of Engineering and Construction
 - d. Office of Asset Management
 - e. Utility Maintenance Division



Bureau of Water and Wastewater Staff

ORGANIZATION CHART AS OF MAY 2022



Core Principles and Values

Core Principles:

Business Process Improvement

Succession Planning

Technology & Innovation

Sustainability & Resilience

Community Engagement

Core Values:

Safety, Integrity, Servant Leadership



Bureau Overview

Key Bureau Head responsibilities:

- Craft and communicate the strategy, vision and direction for the Bureau
- Focus on the well-being and engagement of all employees
- Model servant leadership
- Measure performance against industry benchmarks
- Drive change management
- Work with the leadership team to provide professional development opportunities for employees

Key Bureau Head Administration team responsibilities:

- Measure employee engagement
- Provide external and internal customer service
- Drive technology adoption and business process improvement
- Oversee mandated programs (e.g. Consent Decree, Lead and Copper Rule Revisions)
- Lead B'More WISE, workforce development program
- Administer programs such as Basement Backup Reimbursement Program, Sewage Onsite Support, and Homeserve

Bureau-wide Challenges

- Human capital
- Procurement
- Training



City Charter

The Bureau of Water and Wastewater is required to provide the following services per the City Charter and City Code:

Art. VI,

Water: § 18 of the City Charter; and Art. 7 and 24 of the City Code

Wastewater: Art. VI, § 18 of the City Charter; and Art. 7 and 25 of the City Code

Stormwater: Art. VI, § 18 of the City Charter; and Art. 7 and 27 of the City Code

Article VII

§ 33. Department of Public Works: Water supply.

The Department shall have charge of the water supply of the City and of all the properties, reservoirs, streams, pumping and filtration stations, pipes, apparatus and equipment appurtenant thereto and shall exercise all the powers and perform all the duties connected with the operation thereof and the supplying of water to the City.

§ 34. Department of Public Works: Sewage.

The Department shall have charge of the construction, operation and maintenance of all drains, sewers, and sewage disposal facilities, of the inspection or supervision of sewer or drain construction and repair work, and of waste disposal.



Sourcing our Water

- DPW manages 7,000 acres of reservoirs and 17,580 acres of forest buffers which surround the **three raw water reservoirs – Pretty Boy, Loch Raven, and Liberty**
- The primary role of the reservoir forest buffer is source water protection.
- The City relies on partnerships with local governments, the State of Maryland, the regional soil conservation districts and local community associations to promote land-use policies which limit development within the reservoir watersheds.
- **These efforts have resulted in some of the best drinking water quality in the region.**



Water System

Overview

Baltimore City water system serves 1.8 million people in Baltimore City and 4 counties.

- 3 reservoir watersheds: Loch Raven, Liberty and Prettyboy.
- 3 water filtration plants: Montebello I, Montebello II, and Ashburton.
- Filters and distributes an average of 190 million gallons of drinking water daily.
- Operates 20 finished water pumping stations and one raw water pumping station.
- Operates 28 finished water towers, tanks and reservoirs.
- Operates 2 major chlorinators and 16 remote chlorinators.
- Maintains 3,800 miles of water mains and 700 miles of public water connections in the City and Baltimore County.
- Maintains 9,100 fire hydrants (City); 13,750 fire hydrants (County).



Wastewater System

Baltimore City wastewater system collects and treats wastewater from throughout Baltimore City and parts of Baltimore, Anne Arundel, and Howard Counties.

- 2 of the state's largest wastewater treatment plants – Back River and Patapsco.
- Back River is designed to treat 180 million gallons per day (MGD) and sits on 466 acres in Baltimore County.
- Patapsco is designed to treat 73 MGD and sits on 69 acres in South Baltimore
- Both Back River and Patapsco plants are advanced treatment facilities, regulated by the Maryland Department of the Environment (MDE). Effluent must meet standards set by the National Pollution Discharge Elimination System (NPDES).
- 9 major pumping stations and 5 minor pumping stations.
- Approximately 1,500 miles of sanitary sewer pipes.



Stormwater System

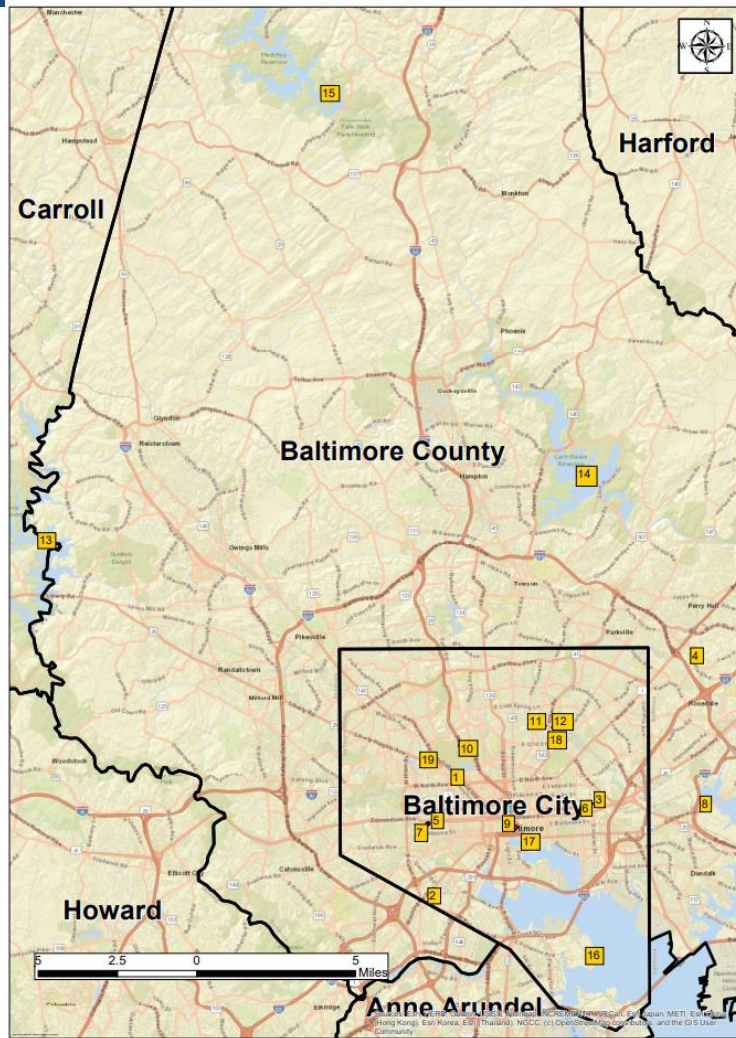
Baltimore City stormwater system collects and conveys stormwater within the City:

- 4 stormwater pumping stations
- 1,200 miles of stormwater pipes in the City
- 52,000 inlets; 27,000 manholes



Bureau Manned Facilities

Bureau of Water and Wastewater Facilities and Offices



1. Park Terminal
2. Water West City/County
3. Water East City
4. Water East County
5. Sewer West
6. Sewer/Storm East
7. Storm West
8. Back River WWTP
9. Control One
10. Jones Falls
11. Montebello II
12. Montebello I
13. Liberty Reservoir
14. Loch Raven Reservoir
15. Prettyboy Reservoir
16. Patapsco WWTP
17. Eastern Ave PS
18. Hillen Pumping Station
19. Ashburton WTP



Budget Overview

Operations Budget Summary

Program	FY 22 Budget (\$ in Millions)
670 - Administration	\$49.5
671 - Water	\$89.1
673-Wastewater Management	\$130.1
674 - Surface Water Management	\$26.9
675 - Engineering and Construction Management	\$222.1
TOTAL	\$517.7

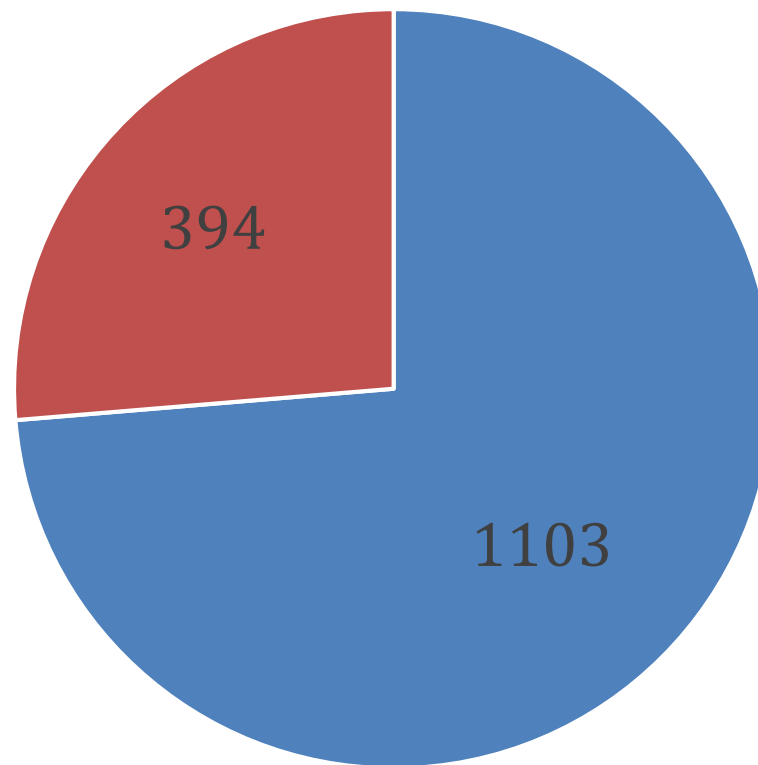
FY 2022 Capital Improvement Program Summary

CIP#	Program	(\$ in Millions)
520	Storm Water	\$1.5
	Wastewater	\$96.0
	Utilities	\$58.9
551	Facilities	\$37.6
	Water	\$171.0
	Utilities	\$91.5
557	Facilities	\$80.2

FY 2022 Total = \$269 Million



Bureau Staffing Overview



Total Funded Positions: 1497
Vacancy Rate: 29%

■ Filled Positions ■ Vacant Positions



Bureau-Wide Initiatives



Sewer Modified Consent Decree Program

- Entered by the U.S. District Court on October 6, 2017

Phase I deadline – January 1, 2021 – **MOSTLY COMPLETE**

Phase I included rehabilitation of collection system and reduction/mitigation of Sanitary Sewer Overflows (SSOs)

Phase II deadline – December 31, 2030

Reducing infiltration/inflow and upgrading hydraulic capacity of the collection system citywide

✓ Spent to Date: \$1.6 Billion

- **Current Status:**

Some CD compliance Deadlines are extended because:

1. Extenuating circumstances
2. The City is embarking on selected Phase II activity in advance of finalizing Phase II Plan (due Dec 31, 2022)



Expedited Reimbursement Program

Scope:

- 3-year pilot program established under the Modified Consent Decree in 2018
- Provides expedited reimbursement for cleaning and sanitizing costs for a sewer building backup
- The eligibility is limited to Wet-weather capacity related events
- Customer needs to submit the application within 90 days
- Eligible for residential customers only
- Applications processed within 60 days

Current Status:

- The Pilot period has now ended, but DPW is continuing to implement the program
- DPW has submitted a long-term plan to MDE which is currently under review by MDE.



SOS Program

Scope:

- 1-year pilot program established in March 2021
- Provides proactive cleaning and sanitizing services for a sewer building backup event
- The eligibility is limited to Wet-weather capacity related events
- Residents need to call 311 to report a building backup for qualification
- Eligible for residential customers only
- On-call contractors dispatched within 24 hours for addressing qualified events

Current Status:

- The Pilot period has now ended, but DPW is continuing to implement the program
- DPW has submitted a long-term plan to MDE which is currently under review by MDE.

The image shows two documents related to the SOS program. The top document is a 'Frequently Asked Questions (FAQs)' page. It features the SOS logo and DPW logo at the top. The text includes:

SOS SEWAGE ONSITE SUPPORT CLEANUP PROGRAM

Frequently Asked Questions (FAQs)

- 1. What does this program cover?**
As part of the new Sewage Onsite Support (SOS) Program, DPW will clean the affected area after a wet weather event that led to sewage backup inside reported properties. DPW provides cleaning and disinfection services at no additional cost to the homeowner. DPW on-call cleaning contractors will be responsible for:
 1. Drying out the affected room(s)
 2. Disinfecting and sanitizing the affected area
 3. Disposing of and removing soiled carpet, flooring, furniture, and other items.
- 2. Who is eligible for this program?**
The SOS Cleanup Program is available to owners, residents and tenants of properties in Baltimore City impacted by a sewage backup caused by a wet weather event.
- 3. Does this include multi-family residential properties as well as single family residential properties?**
Yes, DPW's SOS Cleanup Program is available to both multi-family residential and single-family residential properties owners and tenants in Baltimore City.
- 4. Can this program be used for a flooded basement due to a water main break?**
No, this program is designed to support sewer water flooding impacts, not a water main break.
- 5. How quickly will the cleanup be scheduled and completed after reporting?**
Once the cause has been determined, the inspector will provide information on the program and what it includes. The on-call cleaning contractor will contact the customer within 24 hours of notification about the affected address. Cleaning schedules are dependent on availability for service as contractors offer cleanup appointments from 8 a.m. to 5 p.m., Monday through Friday.
- 6. Is there a statute of limitations for reporting an issue and getting cleanup services?**
Customers are encouraged to contact 311 as soon as the sewage water damage is discovered. In the event of an extended period between the backup and its discovery, customers should contact DPW's Expedited Reimbursement Program to seek funds to assist with disinfection and cleanup costs.
- 7. If my insurance company handles cleanup at my property due to a sewage backup event, can my deductible be reimbursed by DPW?**
Yes, if the damage is due to a wet weather event. The customer can apply for the Expedited Reimbursement Program for reimbursement of the insurance deductible.

The bottom document is a promotional flyer. It features the SOS logo and DPW logo at the top. The text includes:

SOS SEWAGE ONSITE SUPPORT CLEANUP PROGRAM

Professional sewage backup cleaning... at no cost to you.

To report a sewage backup, call 311 or go to 311.baltimorecity.gov



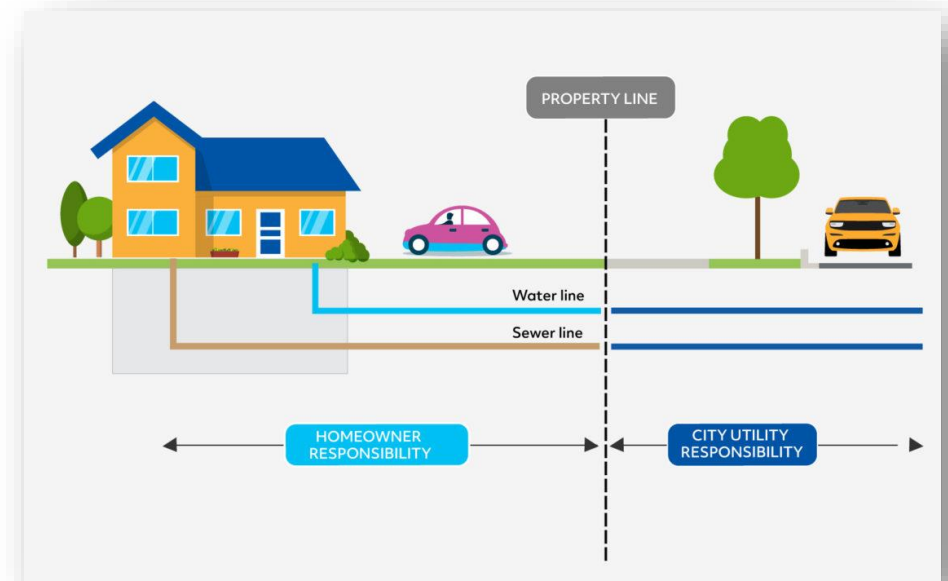
Service line protection Program/HomeServe

Scope:

- Provide Water and Wastewater Service line protection to the residents at a reasonable cost
- Current cost of protection is
 - \$4.39 per month for Water service line coverage
 - \$5.99 per month for Sewer/Septic line coverage
 - \$9.29 per month for both Water and Wastewater line coverage.
- DPW has access to Hardship funds that can be utilized to provide relief to customers who do not have coverage and cannot afford the repair costs
- Water-for-ALL and BH20/BH20+ list used for qualification under hardship funds

Current Status:

- The current contract ends in May 2022. A 6-month time extension is in process
- Replacement contract will be advertised soon



Lead and Copper Rule Revisions (LCRR)

Regulation:

- New regulations released in December 2021
- DPW to finalize a Lead inventory on both the Public side and the private side of the utility
- Test water quality for all schools and Child-care facilities
- Additional 100 test sites needs to be established for water quality testing
- Finalize a replacement program and comply with the regulation by October 2024
- Public education and outreach
- Provide necessary corrosion control treatment as necessary

Current Status:

- DPW is currently coordinating with all the relevant agencies in the City and the County to finalize an inventory
- City has no lead pipes in the distribution mains
- Potential lead in the service lines (Both public and private side)



Technology Adoption and Business Process Improvement



Technology Approval Group (TAG)

Scope:

- Assess new technologies in the industry
- Pilot technologies
- Facilitate training and education

Accomplishments:

- Implementing two new technologies that came out of this program:
 - Greasezilla at BR WWTP for FOG removal
 - Daupler - Tool for Community engagement
- Assessed multiple technologies and attended quarterly conferences with neighboring utilities for knowledge sharing
- Partnership with ISLE utilities



Scope:

- Initiative to develop a methodology based on systems thinking. WISE is a program to improve utility management.

Accomplishments:

- Participated in rolling out assessment tools across the US and Canada for the following:
 - Workforce
 - Origination and Culture
 - Capital Planning and Technology
- In 2021 - DPW presented on the importance of a Change Management (CM) tool specific to the Water Industry for the purpose of CM Readiness, Assessment, and Implementation at the WEFTEC Conference in Chicago.
- In 2022 DPW is leading the development of the CM Readiness, Assessment, and Implementation Tool kit designed specifically for the Water Industry to DEFINE, DISCERN, DECIDE, and DEPLOY change.



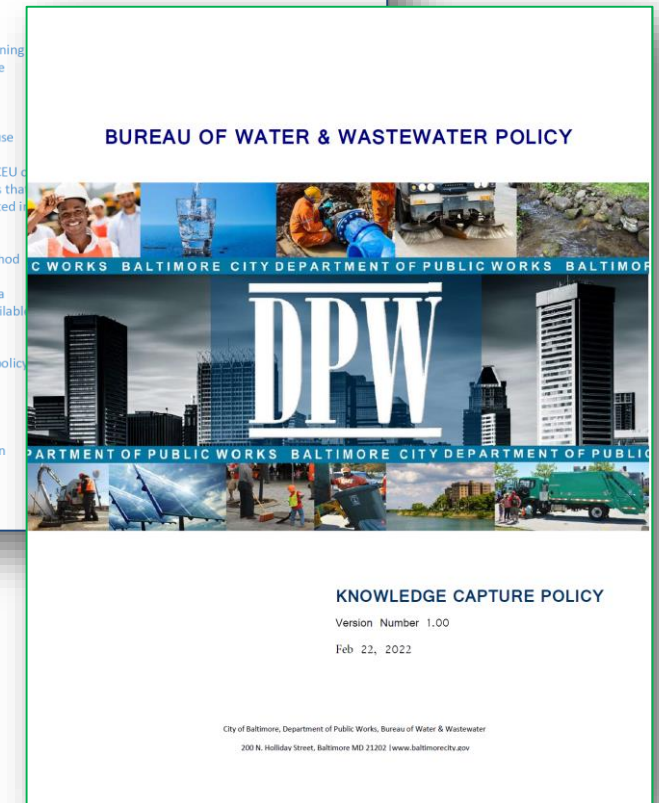
Learning and Development Program (Internal)

Internal Workforce Development:

- Training Curriculums being developed and implemented
- Knowledge management
- Succession planning
- Career roadmaps

Accomplishments:

- 18 DPW courses are currently State TRE certified (first time in the City)
- Bureau finalized a Knowledge Capture policy for departing employees
- Knowledge Capture implemented for 10+ high profile employees with 30+ years of experience each



Learning and Development Program (External)

B'MORE WISE Framework

Public Agencies

Value proposition: Succession planning, access to talent pipeline, alignment with Mayoral goals of prioritization of youth and equitable neighborhood development

Department of Public Works

Mayor's Office Of Employment Development

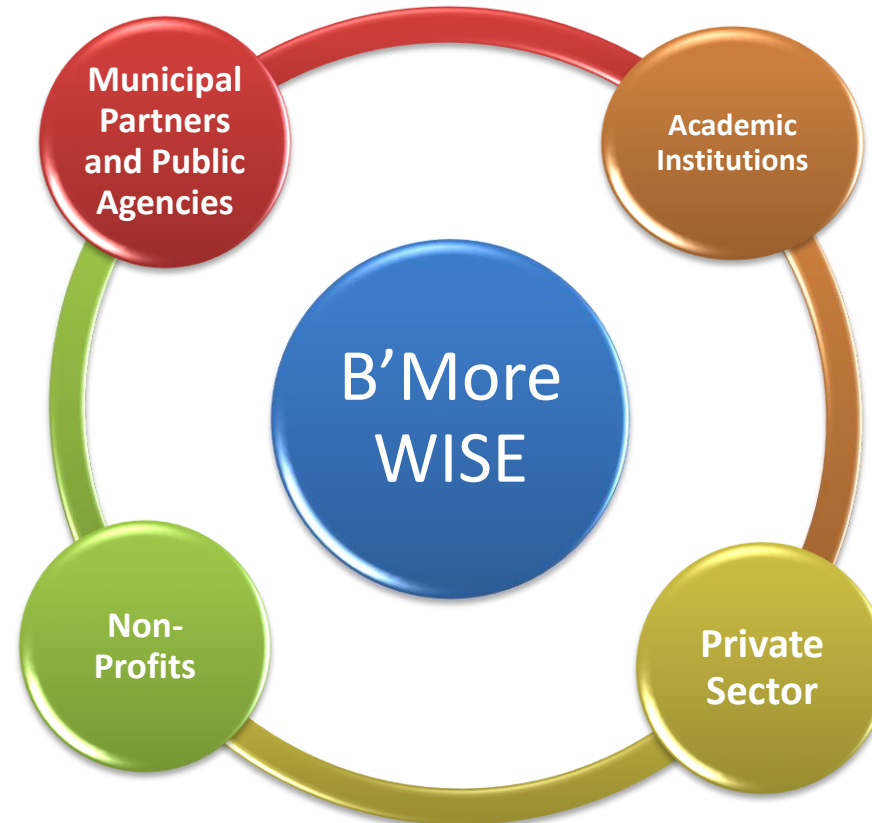
Maryland Department of Labor, Licensing & Regulation

Non-Profit Groups

Value proposition: Placement of clients into good careers and fulfillment of mandates

Park Heights Renaissance

ROCA Baltimore



Academic Institutions

Value proposition: Placement of students into good careers and contribution to local economic development.

Baltimore City Public Schools

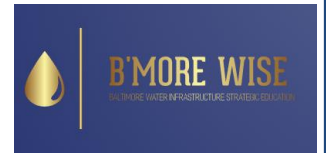
Morgan State University

Coppin State University

Private Sector

Value proposition: Access to local talent for employment and contribution to local economic development

RE Harrington; KCI Technologies; Rummel Klepper & Kahl; Hazen and Sawyer; Juxtopia; Greely & Hansen



Community Engagement

Construction projects in the community

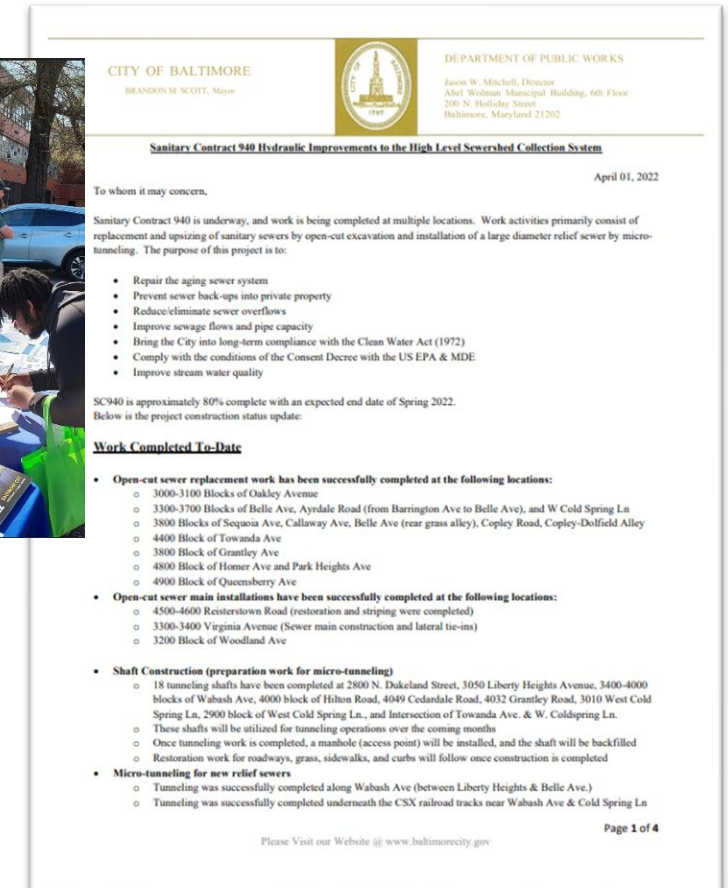
- Monthly update letters shared with the affected community
- Updates are emailed, posted on addresses directly impacted and hosted on DPW website
- These letters are also shared at the community meetings

Educational program brochures for Basement Backup Expedited Reimbursement Program, HomeServe and SOS Programs

- The program brochures are sent to the residents along with Water bill
- Hosted on the website
- Mailed to residents as needed

Other educational flyers

- Trash the Wipes flyer
- Fats-Oils and Grease flyer



Division Breakdown

1. Water Facilities Division (WFD)
2. Wastewater Facilities Division (WWFD)
3. Office of Engineering and Construction (OEC)
 4. Office of Asset Management (OAM)
 5. Utility Maintenance Division (UMD)



Water Facilities Division Overview



Responsibilities

- Treat and supply quality drinking water to 1.8 Million consumers
- Maintain source water protection
- Meet state and federal Safe Drinking Water regulations

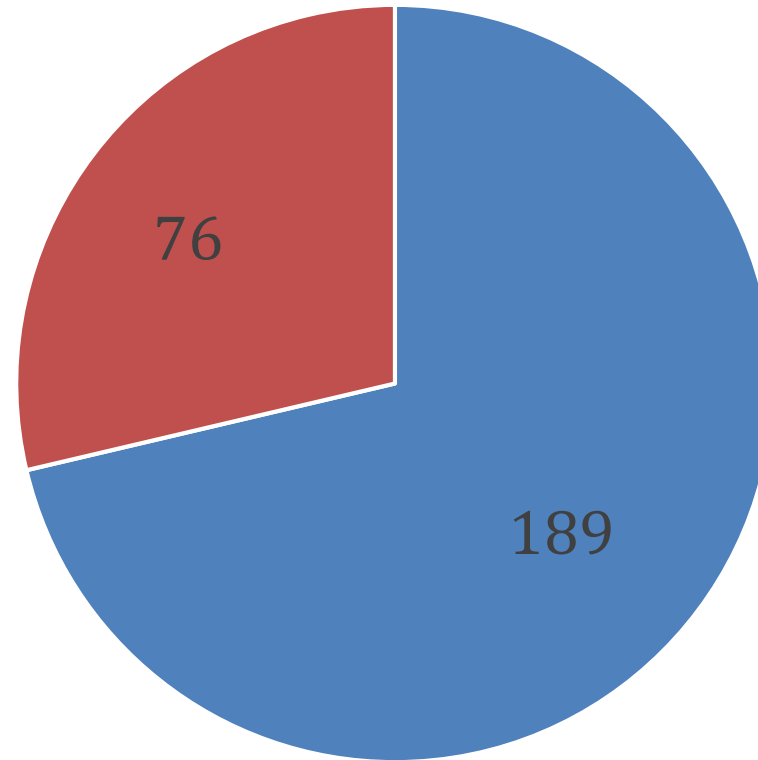
Accomplishments

- Maintained level of service and quality control during Covid-19 pandemic

Challenges

- Elevated vacancy rate
- Outstanding procurement issues
- Training

Water Facilities Division Human Capital



Total Funded Positions: 265
Vacancy Rate: 29%

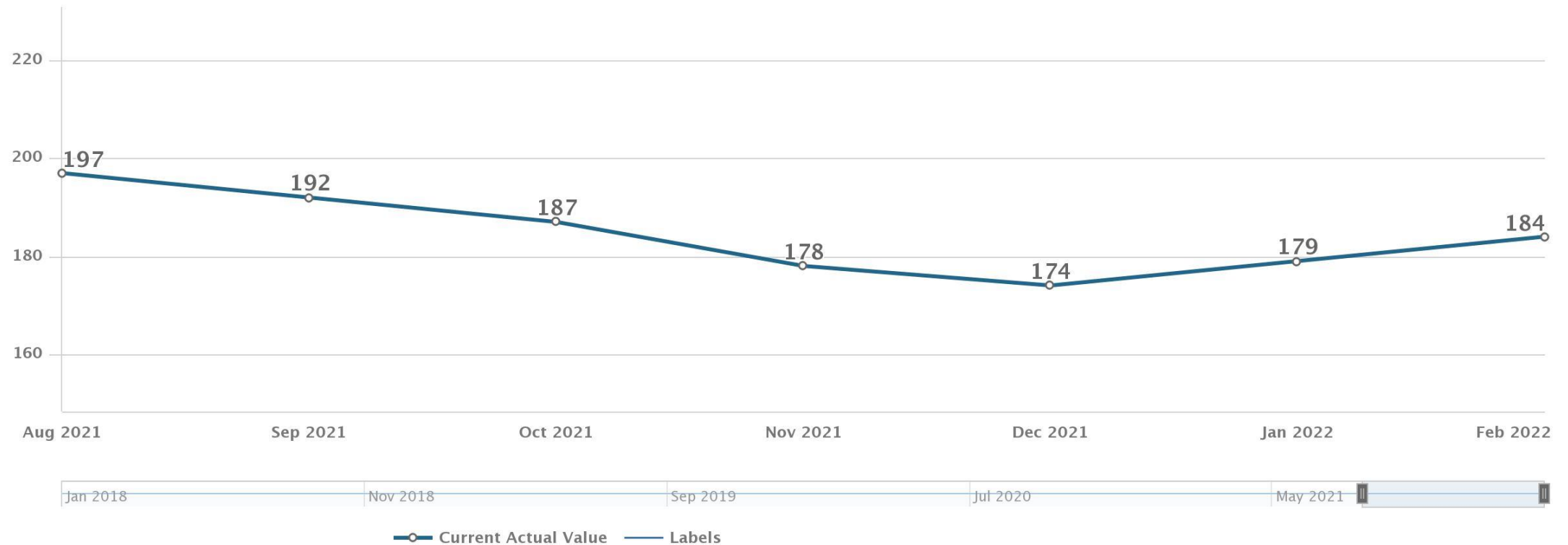
■ Filled Positions ■ Vacant Positions



Water Facilities Division - Key Performance Indicator (KPI)

Million gallons of water treated per day, on average (MGD) (MOSS)

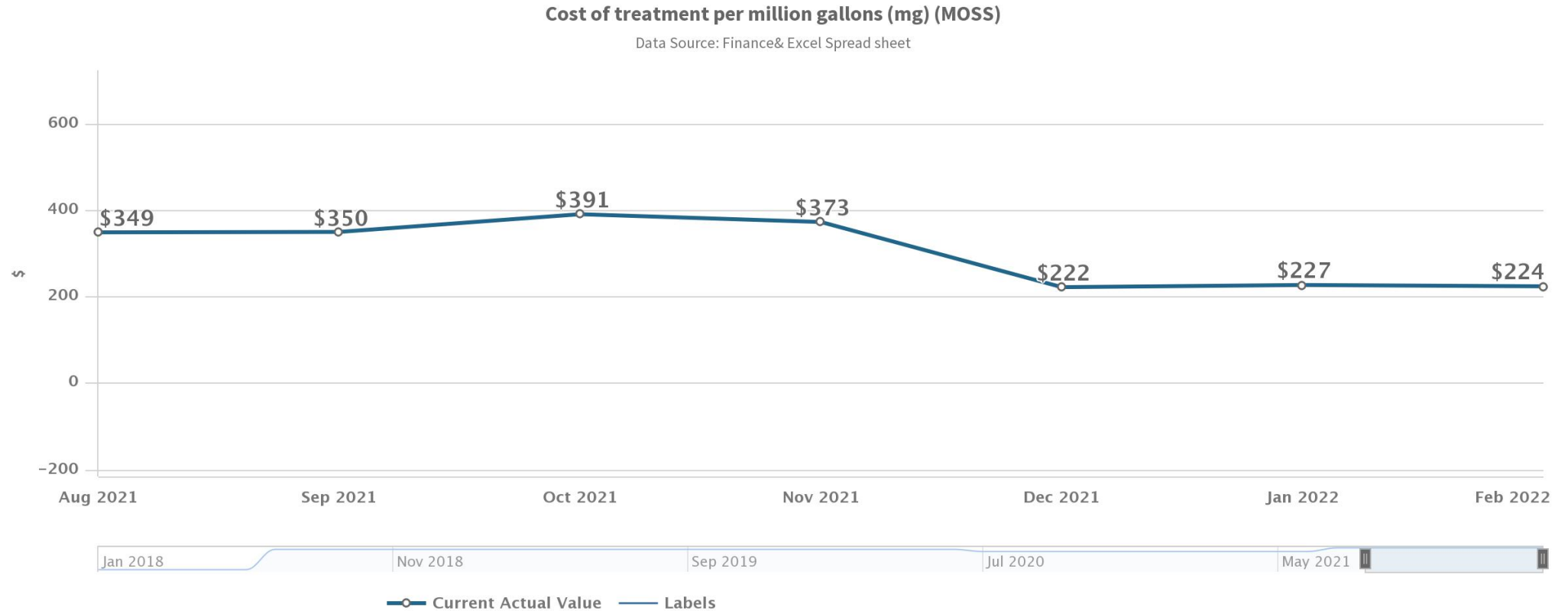
Data Source: Finance & Excel Spreadsheet



ClearImpact.com



Water Facilities Division – KPI, cont.

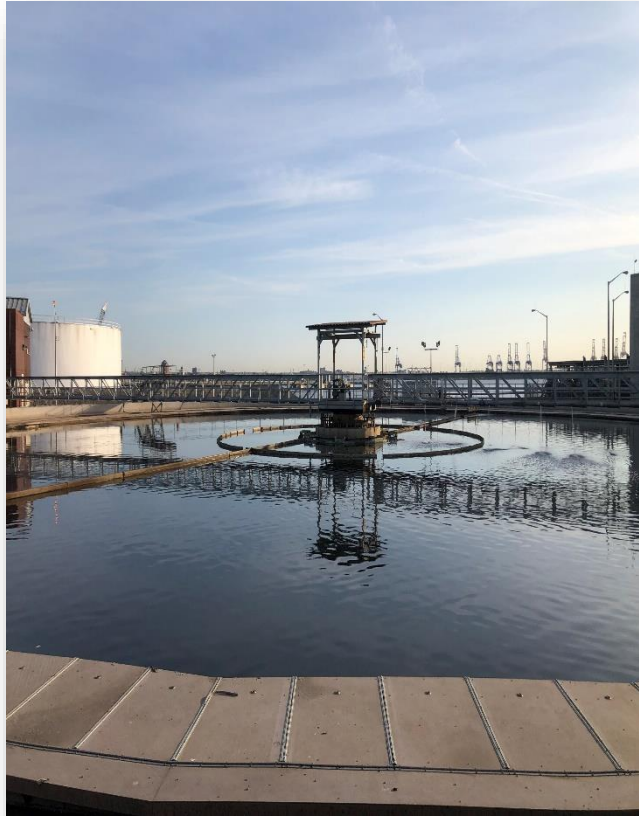


ClearImpact.com

*Monthly expenditures divided by millions of gallons treated in a month



Wastewater Facilities Division Overview



Responsibilities

- Permit Effluent Compliance
- Treat 250 Million Gallons of sewage Daily
- Stewards of the Environment

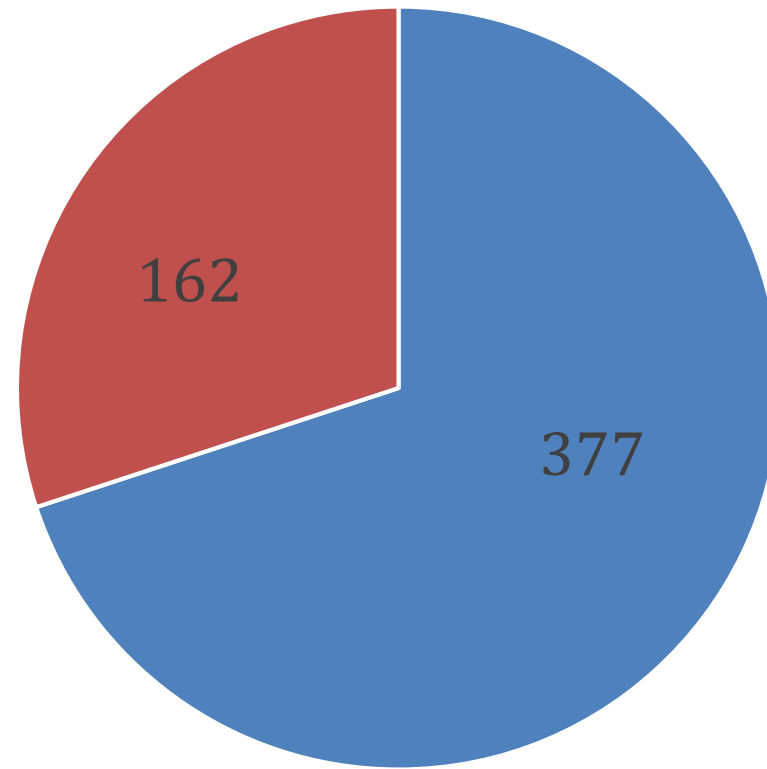
Accomplishments

- Preparation of Wastewater Labs to be under permit

Challenges

- Biosolids Storage and Removal
- Staffing (Both Operational and Maintenance)
- Training (Both Operational and Maintenance)

Wastewater Facilities Division Human Capital



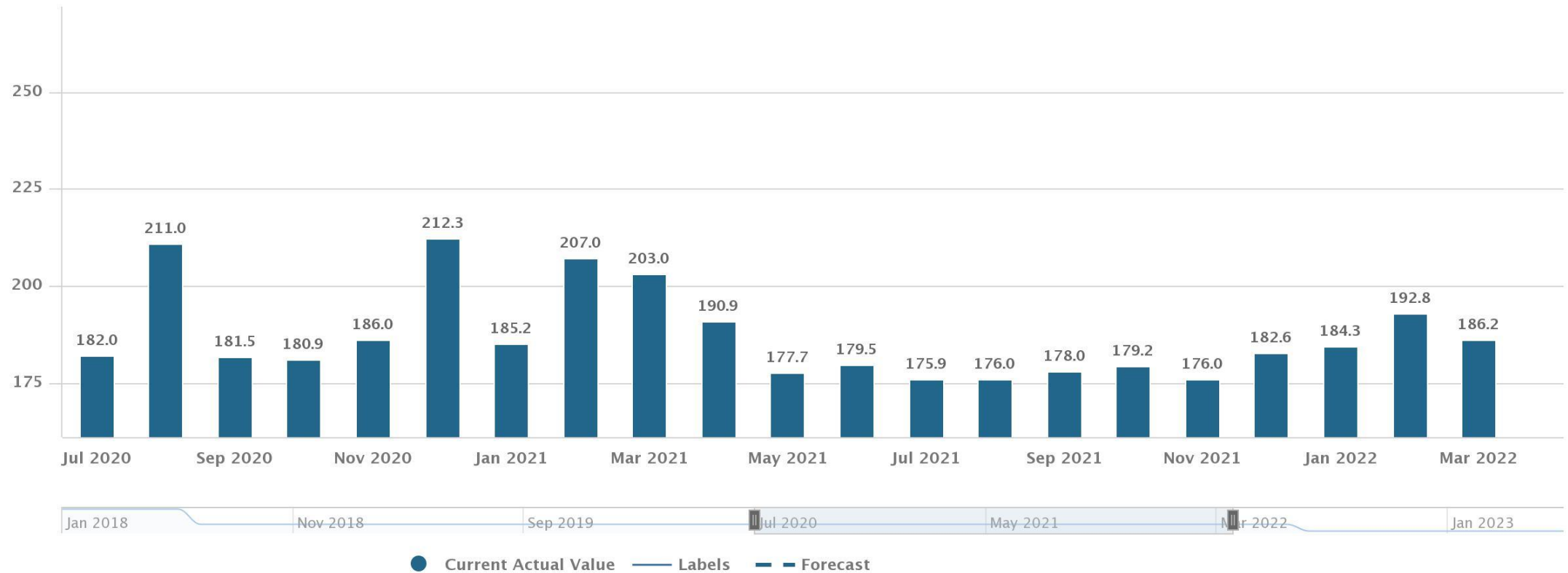
Total Funded Positions: 539
Vacancy Rate: 30%

■ Filled Positions ■ Vacant Positions



Wastewater Facilities Division- KPI

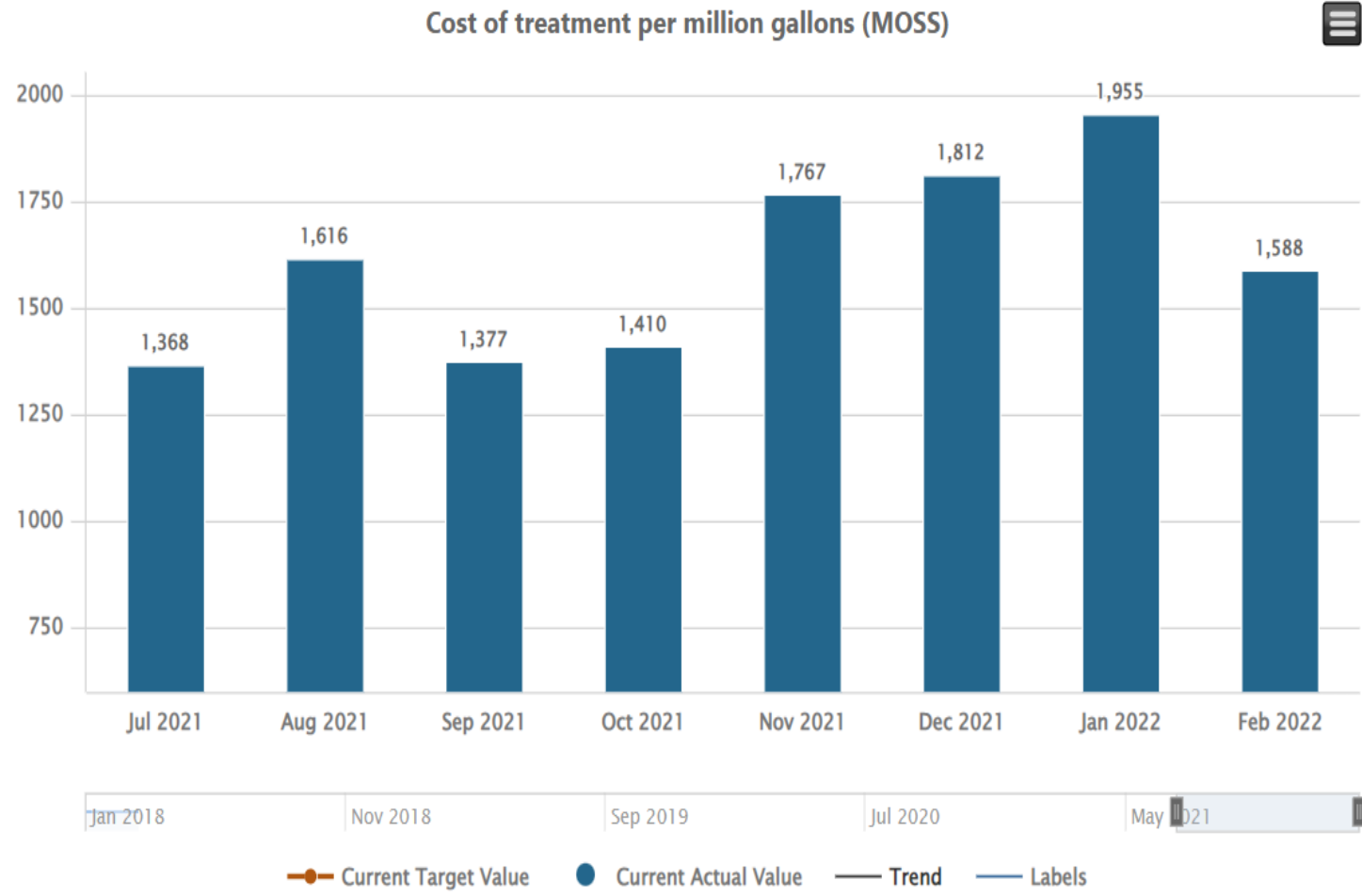
Million gallons of wastewater treated per day (MGD) (MOSS)



ClearImpact.com



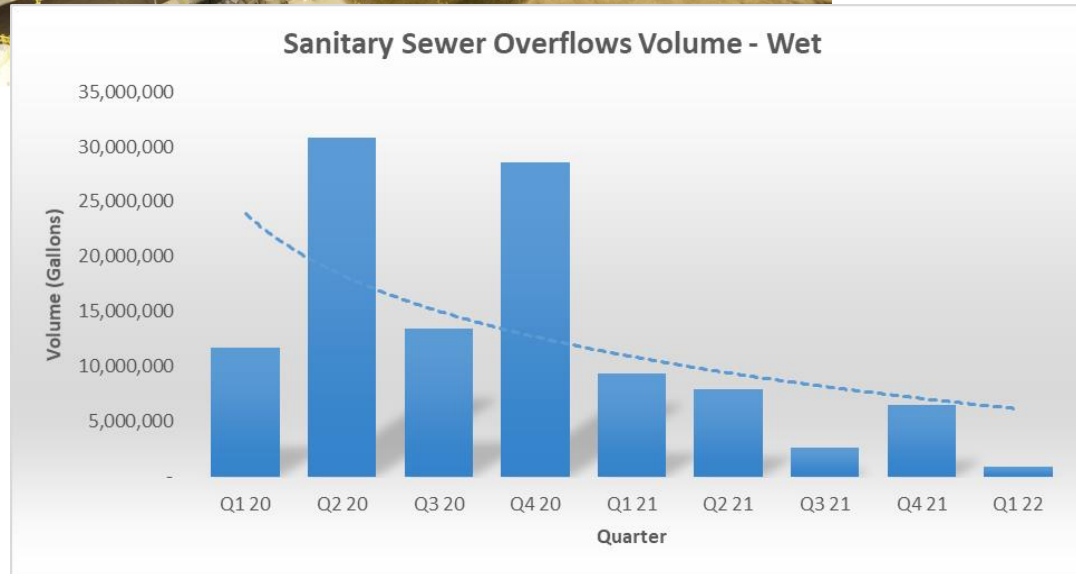
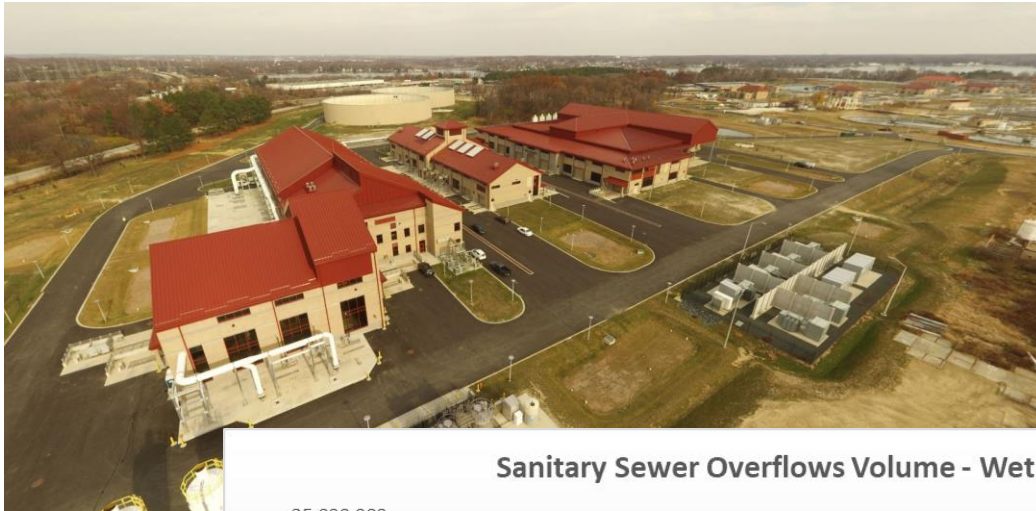
Wastewater Facilities Division – KPI, cont.



*Monthly expenditures divided by millions of gallons treated in a month



Office of Engineering and Construction Overview



Responsibilities

- Manage & Implement CIP for Water; Wastewater & Stormwater CIP (Utilities & Facilities)
 - ✓ FY23-28: \$2.3 Billion
 - ✓ FY23: \$361 Million
- Goal: Install 15-miles Water Mains/year
- Manage & Implement: MS4 Permit (2022)
- Water, Sewer & Storm Water Modeling

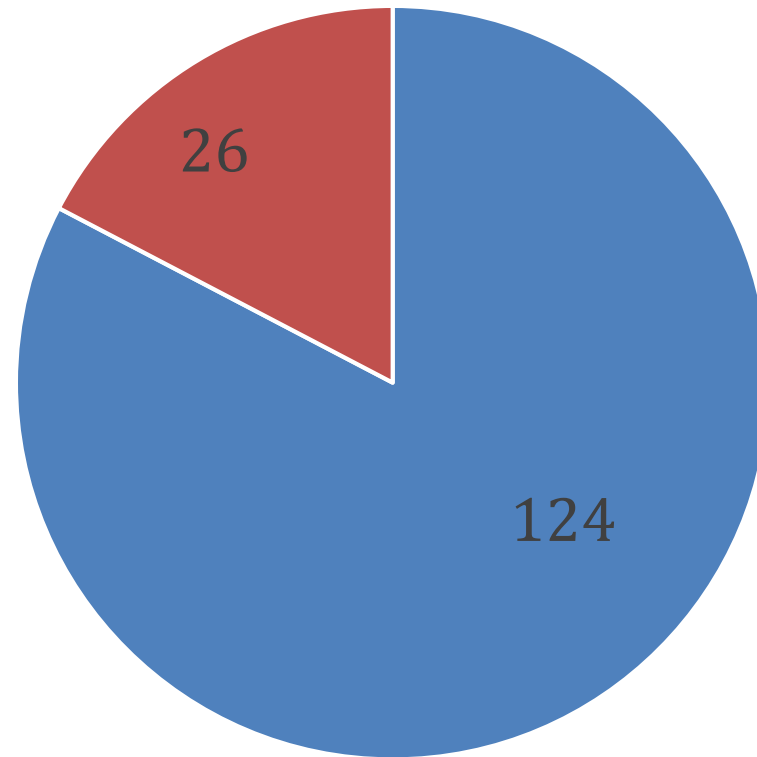
Accomplishments

- BRWWTP Headworks – In Operation since Dec 2020
 - ✓ 69% Reduction in Wet-weather SSO Volume
 - ✓ Mitigate Impacts to plant operations during storm events.
- Modified Consent Decree(MCD) – Phase I Projects (40) - 36 Achieved MCD Compliance

Challenges

- Staffing - Attract & Retain Staff
- Procurement – Improve timeline for Awards/NTP

Office of Engineering and Construction Human Capital



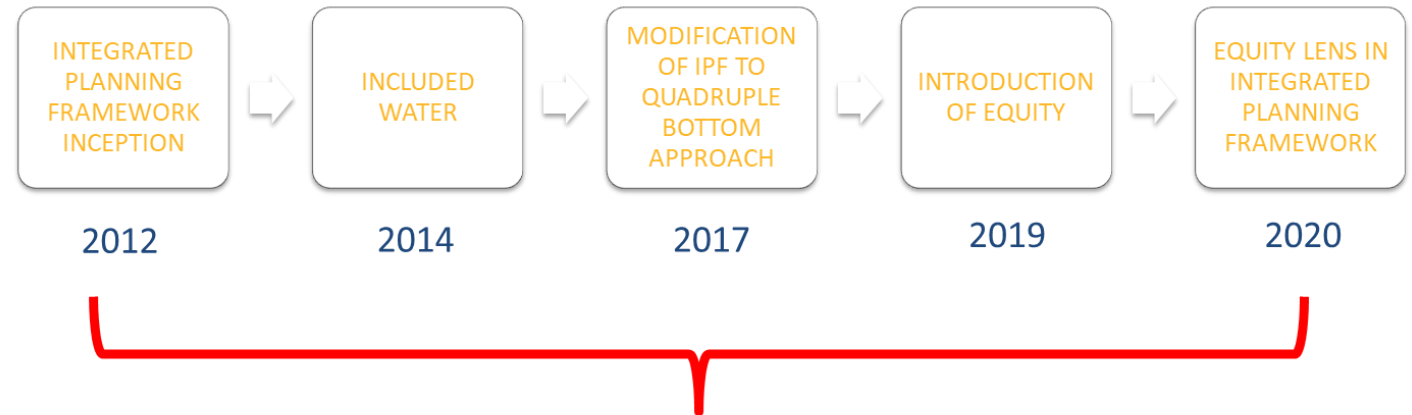
Total Funded Positions: 150
Vacancy Rate: 17%

■ Filled Positions ■ Vacant Positions



Integrated Planning Framework (IPF)

- One of the 1st municipalities in the country to implement IPF in capital investment
- Quadruple bottom approach
- Addresses Project Implementation, Economic, Social and Environmental (including regulatory) impacts
- Framework expanded to storm water, wastewater and water projects
- **All projects compete in each enterprise (water, wastewater and storm water)**
- Applicable to facilities and utilities

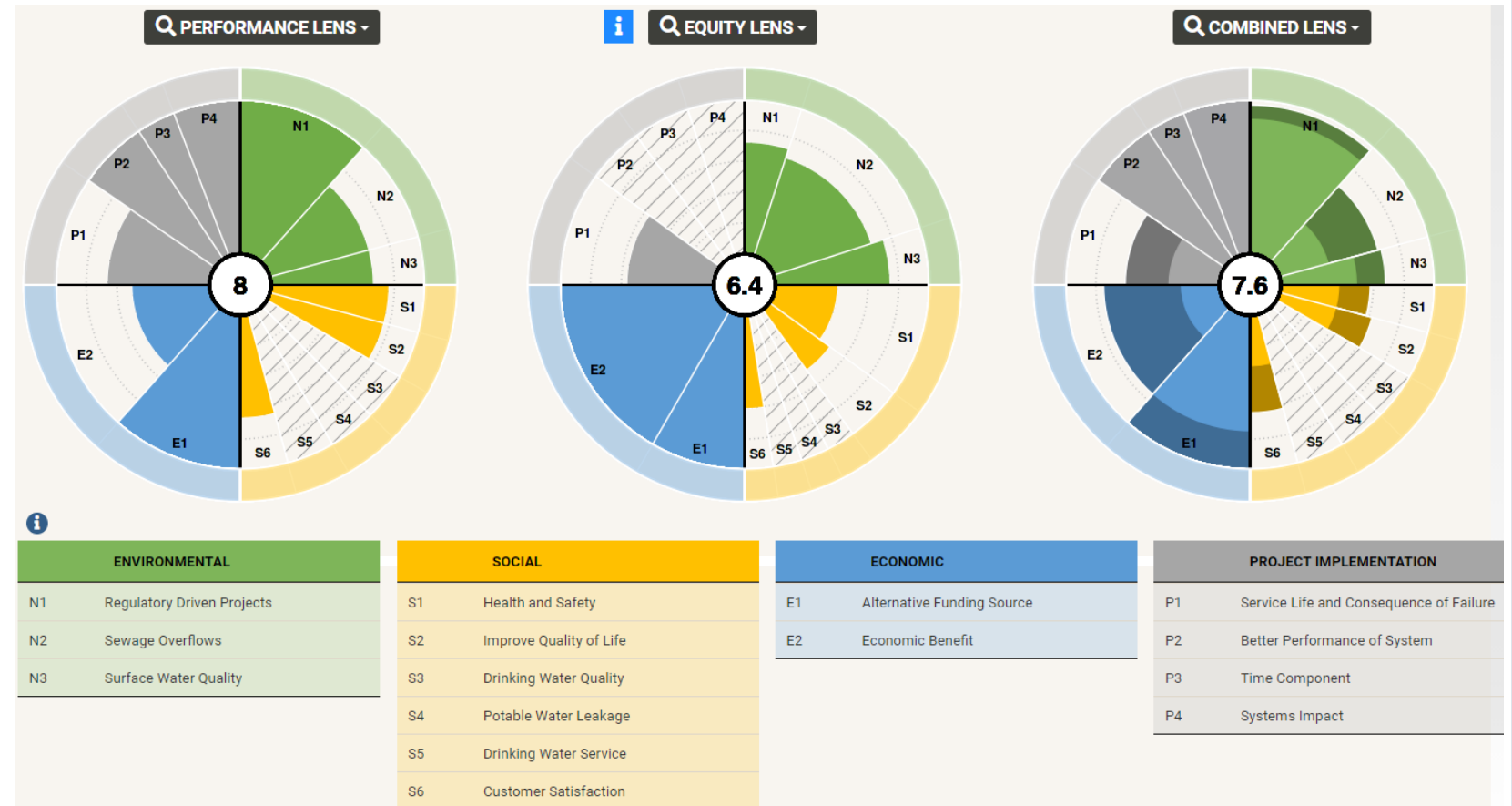


Integrated Planning Framework (IPF)

EQUITY LENS IN INTEGRATED PLANNING FRAMEWORK

- Equity lens is a tool used to improve planning, decision-making and resource allocation leading to more racially equitable policies and programs. Improved prioritization is achieved by conducting equity assessments of existing and proposed projects and policies.

THREE LENS SCORE CARD



Office of Engineering and Construction - KPI

Key Performance Indicator (KPI) Measurements

Water Main Replacement Program

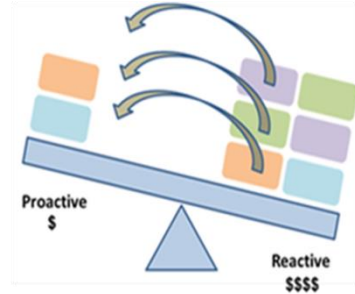
- Miles of Water Mains Replaced/Year
 - ✓ Goal: 15 Miles/Year

MS4 Regulatory Compliance

- Acres of Impervious Area Removed
- Credits - Stream Restoration Projects



Office of Asset Management Overview



Responsibilities

- The Office of Asset Management is responsible for optimizing the service life of the water and sewer infrastructure through the development and implementation of proactive inspection and preventative maintenance programs.

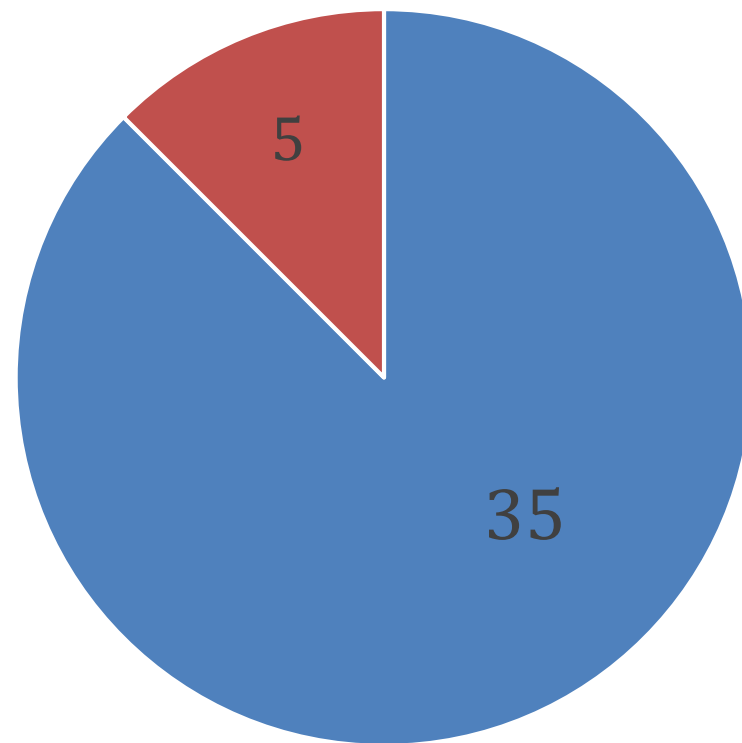
Accomplishments

- Inspection of over 15 miles of Water Transmission Mains
- Inspection of Water Valves
- Inspection and Inventory of Assets at Back River and Patapsco WWTPs

Challenges

- Staffing Limitations
- Missing and Incomplete Data on water and wastewater assets

Office of Asset Management Human Capital



Total Funded Positions: 40
Vacancy Rate: 13%

■ Filled Positions ■ Vacant Positions



Office of Asset Management Sections

- **Planning and Analysis Division (PAD)**

- Team of Engineers
- Manage risk-based programs including asset prioritization for inspection, renewal and replacement
- Focus on enhancing system service level and reliability
- Make informed recommendations about asset maintenance, renewal and replacement strategies

- **Data Management Division (DMD)**

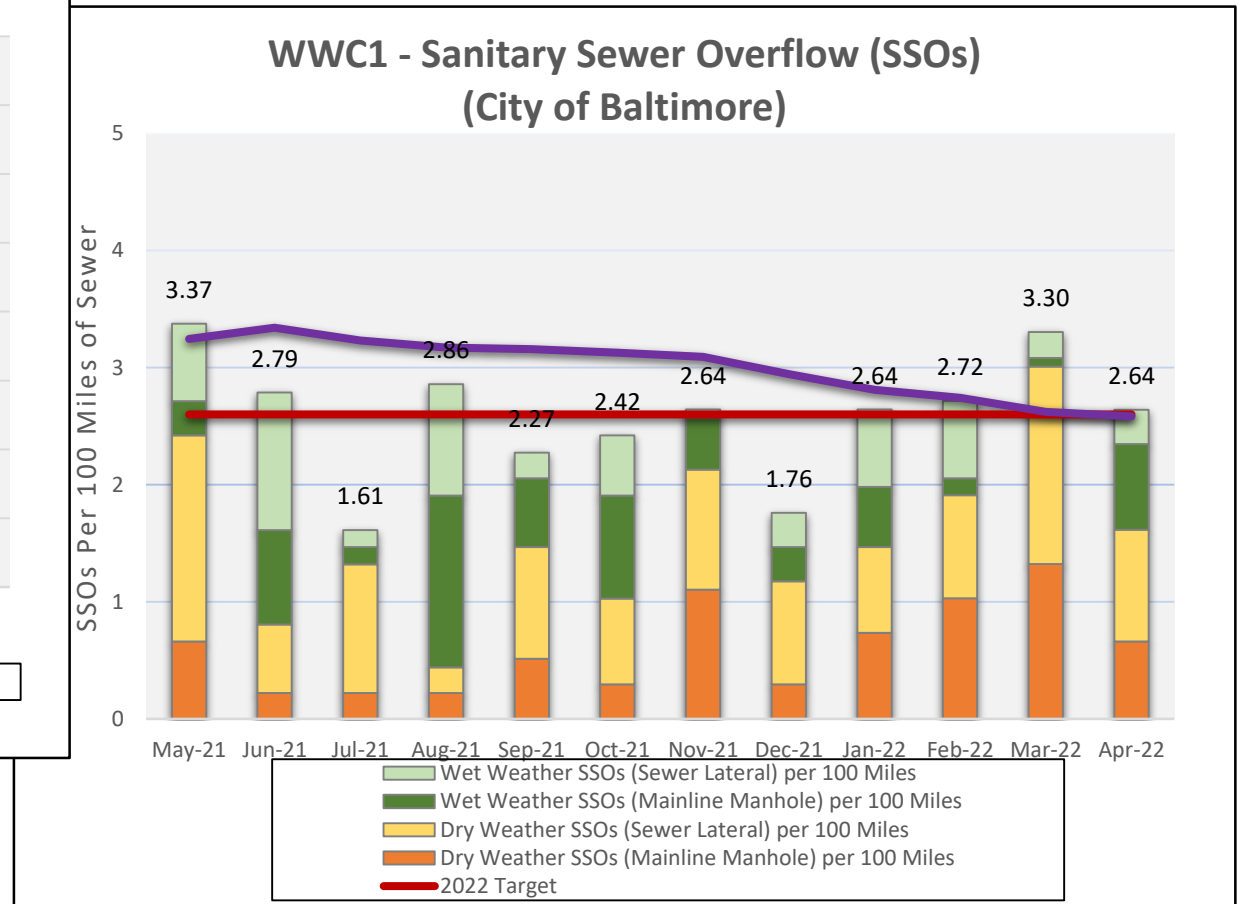
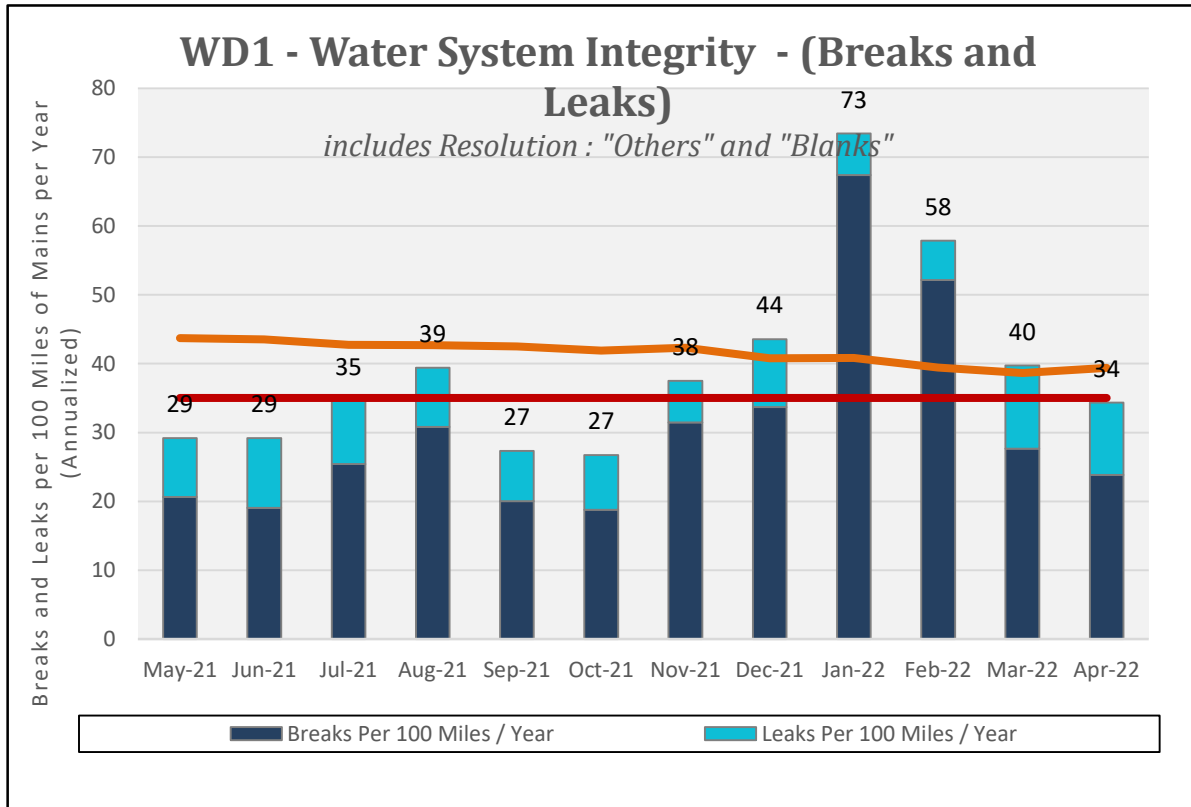
- Team of GIS and Data Analysts
- Manage and enhance operational data and IT system functionality
 - Support PAD section
 - Perform spatial and model analysis
 - Map Creations, Cityworks assistance
- Supports other Divisions and offices within DPW

- **Preventative Maintenance Division (PMO)**

- Team of Office and Field Personnel
- Focuses on critical preventative maintenance activities
 - Asset field inspections
 - Routine Maintenance
 - Fire flow and C-factor tests
 - Leak Detection on Water mains
- Assist Utility Maintenance Division and Office of Engineering and Construction
- Maintaining regulatory compliance



Office of Asset Management – KPIs Measured



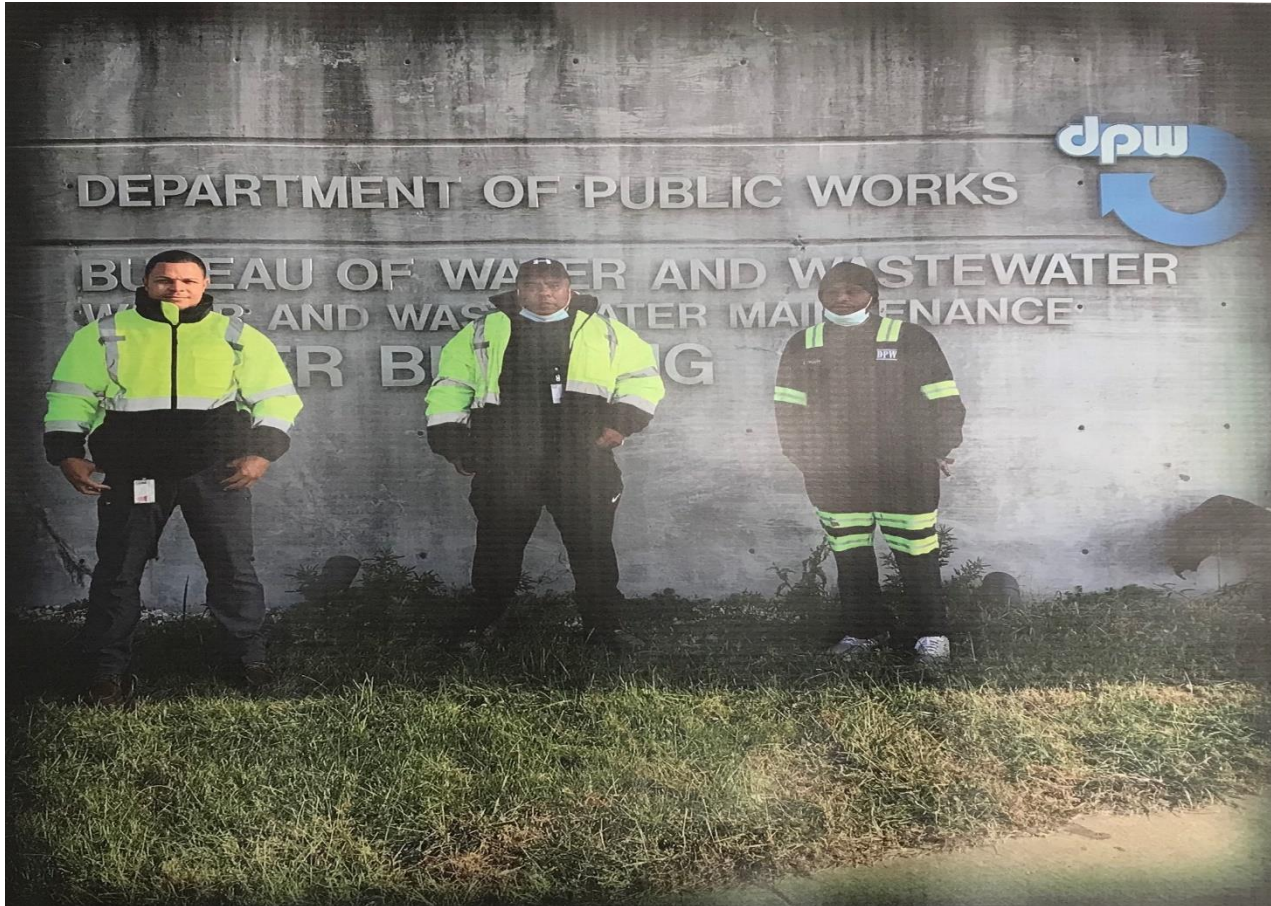
Utility Maintenance Division Overview

Responsibilities

- **Sewer Maintenance**
 - Focus on sewer overflows mainline, house connection and mainline cleaning.
 - Excavating and repairing broken house connection and broke down main lines
- **Storm Maintenance**
 - Focus on cleaning Inlets, repairing damaged inlets, and proactive cleaning on sump areas, flooding on major gateways entering and leaving the city limits.
 - Inlet cleaning on I83 and I295
 - Cleaning of the debris collector inside the city limits
- **Water Maintenance**
 - Focus on water main breaks, water service repairs, no water complaints
 - Repairing and replacing valves, meter vaults, etc
 - Isolation the water main for repairs on (main breaks, no water complaints and water service repairs)
 - Conservation focus on house connection back flushing, discolored water complaints, assist with water turn on and off.
- **Investigation Unit** –
 - Focus on investigating, possible main breaks, water complaints, possible broken services, sewer overflow clogged inlets, sewer overflows possible mainline cleaning
- **Control 1**
 - Dispatching, creating work orders for water, sewer, and storm, contacting Miss Utility, documenting pertinent information, correctly composing the broken water main spread sheet, correctly composing the water/wastewater call out sheet & maintaining professionalism.



Utility Maintenance Division Overview, cont.



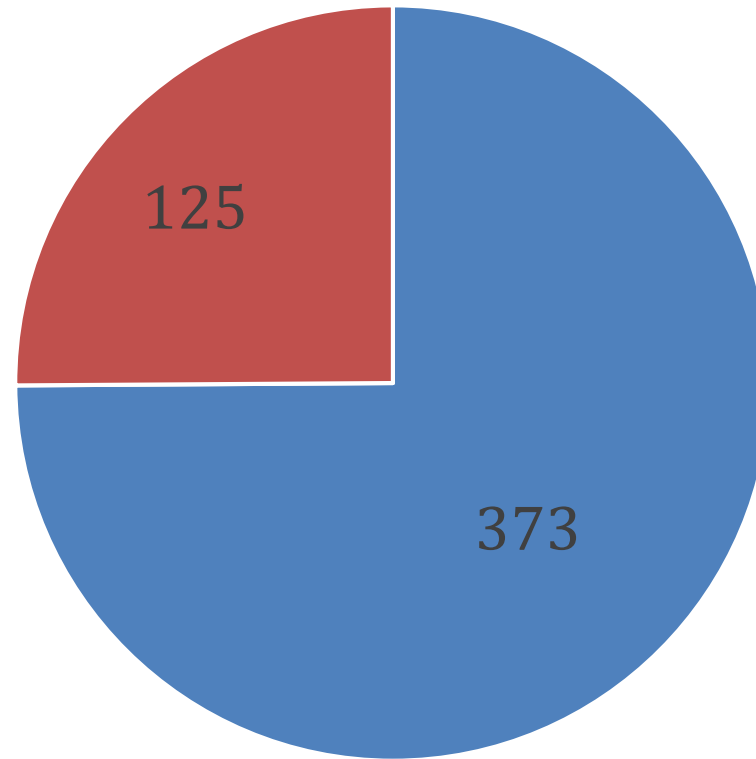
Accomplishments

- During the pandemic maintained 24/7 operations
- Adjusted vehicle use to reduce number of staff within a vehicle to transport staff safely to work sites

Challenges

- Covid-19 – daily adjustments with work force impacted since March of 2020
- Vacancy impact on operations
- Procurement of Supplies to complete the work

Utility Maintenance Division Human Capital



Total Funded Positions: 498
Vacancy Rate: 25%

■ Filled Positions ■ Vacant Positions



Utility Maintenance Division Dashboards

SELECT DATE RANGE

1/1/2021 12/31/2021

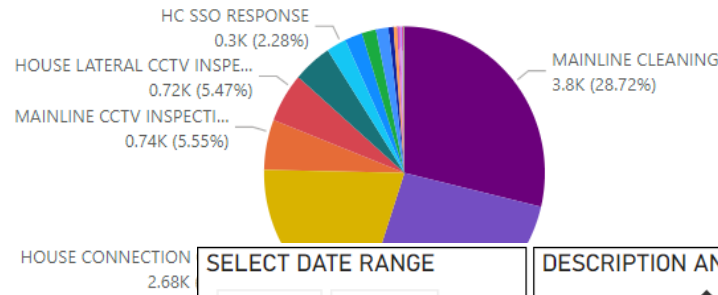


SELECT GROUP

- Error
- SEWER EAST
- SEWER WEST
- STORM EAST
- STORM WEST
- WATER CONSERVATION
- WATER EAST
- WATER WEST

DESCRIPTION AND PERCENTAGE OF WORK

- HOUSE CONNECTION CLEANING
- HOUSE CONNECTION CHOKE
- MAINLINE CCTV INSPECTION
- HOUSE LATERAL CCTV INSPECTI...
- MAIN CHOKE
- HC SSO RESPONSE
- REPAIR SANITARY CONNECTION
- BY PASS PUMPING



SELECT DATE RANGE

1/1/2021 12/31/2021

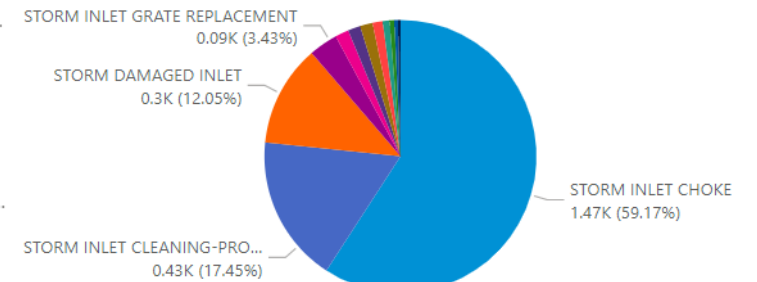


SELECT GROUP

- Error
- SEWER EAST
- SEWER WEST

DESCRIPTION AND PERCENTAGE OF WORK

- STORM INLET CLEANING-PROAC...
- STORM DAMAGED INLET
- STORM INLET GRATE REPLACEM...
- STORM CONNECTION CHOKE
- STORM DEBRIS PICKUP
- STORM MANHOLE COVER REPLA...



SELECT DATE RANGE

1/1/2021 12/31/2021

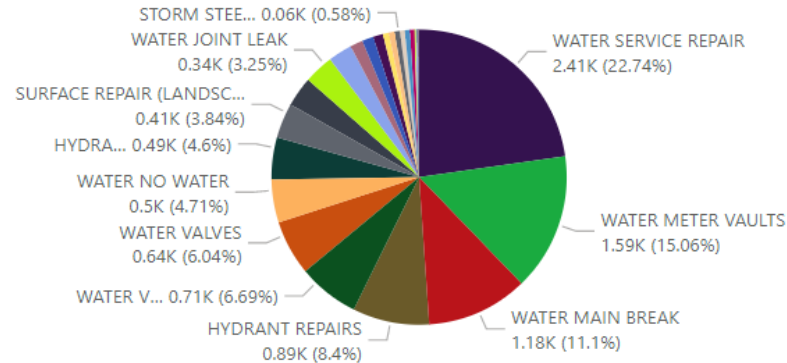


SELECT GROUP

- Error
- SEWER EAST
- SEWER WEST
- STORM EAST
- STORM WEST
- WATER CONSERVATION
- WATER EAST
- WATER WEST

DESCRIPTION AND PERCENTAGE OF WORK

- WATER METER VAULTS
- WATER MAIN BREAK
- HYDRANT REPAIRS
- WATER VALVES REPAIR
- WATER VALVES
- WATER NO WATER
- HYDRANT OUT OF SERVICE
- SURFACE REPAIR (LANDSCAPE)



Thank You

Q & A

