DEPARTMENT OF PUBLIC WORKS OVERVIEW

Water & Waste Water

Updated September 2022

Department of Public Works

Mission

We support the health, environment, and economy of our City and the region by providing customers with safe drinking water and keeping neighborhoods and waterways clean.

Vision

To be a strong proponent and protector of our environment and the health and vitality of our communities.

What We Do

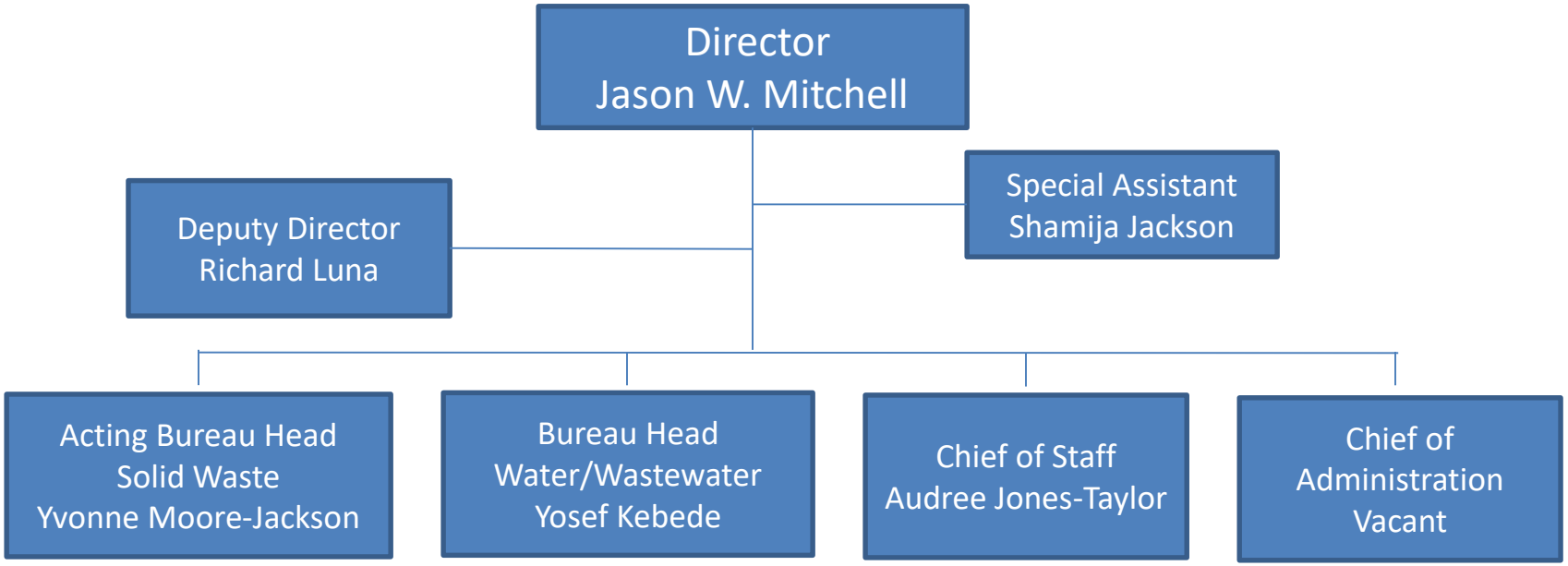
Public Health:

- Protection against waterborne diseases
- Safe source of drinking water
- Rat Abatement
- Wastewater removal and treatment
- Cleaning

Quality Environment:

- Chesapeake Bay protection
- Cleaner streams and Harbor
- Greening and stream restoration
- Healthier communities

Organizational Chart



Total Positions and Budget

- 2,705 Positions
- FY 2021 Operating Budget of $607 Million
- FY 2021-2026 Capital Improvements Budget of $2.6 Billion

Enterprise Funds

The Water, Wastewater, and Stormwater systems are separate enterprise funds which must be operated without profit or loss to other funds of the City.

- Water and sewer bills support the operating and capital programs for water and wastewater.
- The Stormwater Remediation Fee supports the capital and operating programs for infrastructure improvements as well as reducing the polluting and flooding impacts of stormwater runoff.

Solid Waste is supported by General Funds and a portion of CDBG funds.

Water Utility Overview

Water Utility Facts

Baltimore City water system serves 1.8 million people in Baltimore City and 5 counties. The following lists a few facts.

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

Raw Water Reservoir Watersheds

- DPW manages 7,000 acres of reservoirs and 17,580 acres of forest buffers which surround the three drinking water reservoirs.
- The primary role of the reservoir forest buffer is source water protection.
    - City-owned land makes up only 7 percent of the total area of the reservoir watersheds.
    - The majority of impacts to the water supply are coming from watersheds that are not controlled by the City.
- 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 Utility Challenges

The average age of the City's large water mains is approximately 80 years, and some are in excess of 100 years old.

- Deferred maintenance has increased major utility breaks which directly impact public health and safety – this is a national problem.
- New MDE and EPA regulations require investment in new treatment processes either with partial State/federal contributions or without financial assistance.
- Water and sewer rates have increased to meet the demand to fund repairs and mandated improvements.
- The water systems must support and keep pace with the Mayor's priorities for a cleaner, safer, and growing City.

Water Utility Projects

The total DPW 6-Year Capital Improvement Program is estimated to be $1.11 billion. In FY 2021, water projects scheduled total $300 million.

Federal Administrative Order to cover all five (5) of the City's Open Finished Water Reservoirs will provide further health protections for our drinking water.

Plans for a new water treatment facility at Fullerton in Baltimore County are underway.

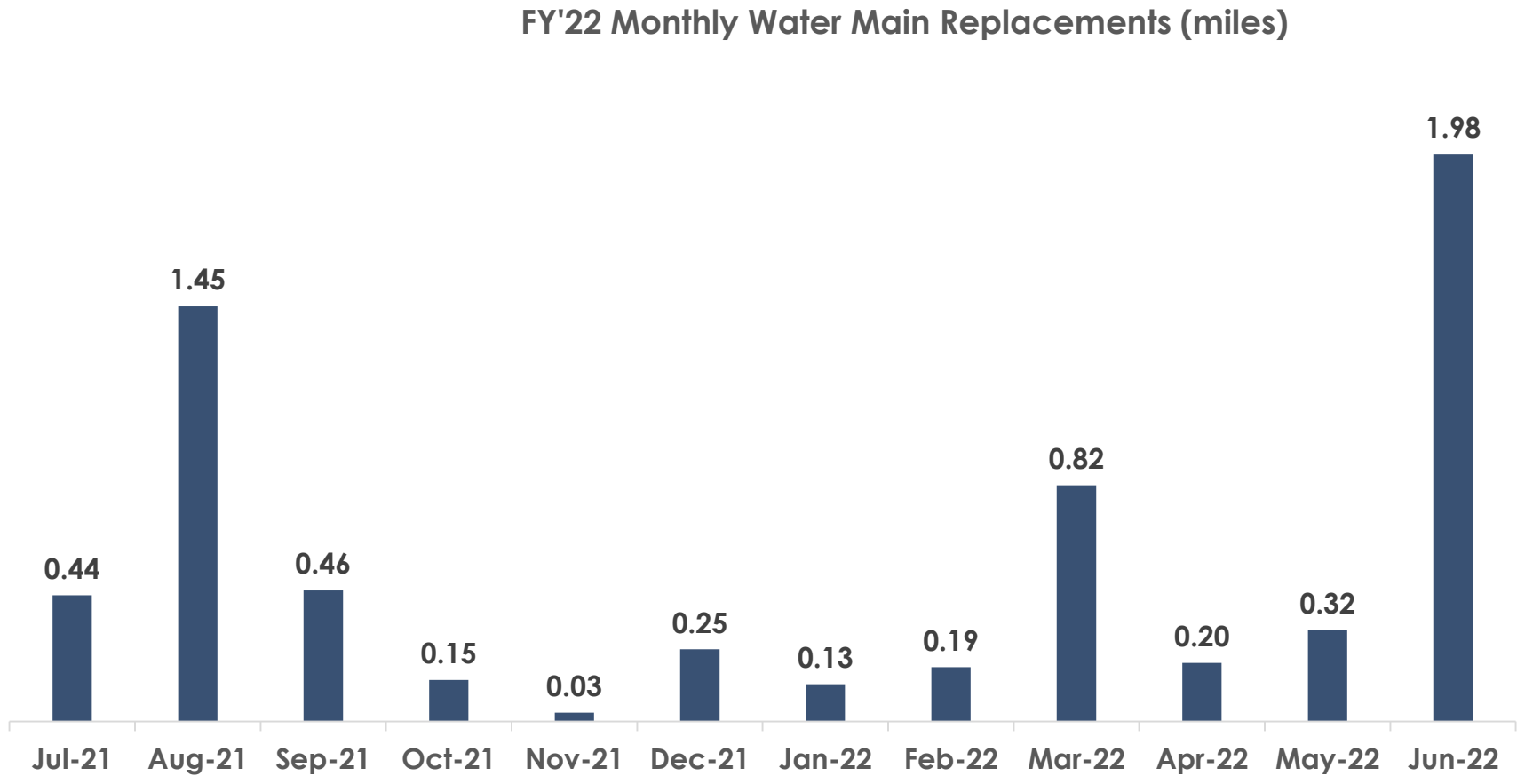
Accelerated water main replacement means a minimum of 15 miles/year of water lines replaced.

Large ferrous mains evaluation.

Completion of the new water meter and billing systems for Baltimore City and County customers.

Guilford Reservoir covered tanks construction underway.

Total Miles Replaced
FY'22: 6.43



B’More WISE

WISE = Water Infrastructure Strategic Education

The B’More WISE Program will provide technical training to individuals interested in a water and wastewater industry career. Participants include high school students, recent high school graduates, previously incarcerated citizens of Baltimore, and those who experienced job loss due to COVID-19.

Through this program, the DPW will build up a talent pipeline of well-trained personnel who can successfully backfill critical positions vacated by DPW’s retiring workforce as well as obtain employment with private sector partners.

The Goal of the B'More WISE Program

- Primary: Succession Planning
  - Equip citizens with technical skills they can apply in the DPW and other workplaces
  - Focus on construction management/inspection and treatment plant operation
  - Generate interest in the exciting career opportunities in the water industry

- Secondary: Local Economic Development
  - Enhance marketability of Baltimore city residents
  - Provide economic benefits, reduce unemployment, and build community resilience

Wastewater Utility Overview

Wastewater Utility Facts

Baltimore City has two of the State's largest Wastewater Treatment Plants:

- Back River in Essex (Baltimore County); and
- Patapsco in the Fairfield area (Baltimore City).

The two plants can collect and treat up to 250 million gallons wastewater daily.

- Back River WWTP: 180 MGD
- Patapsco WWTP: 73 MGD

There are 3,100 miles of sanitary mains in the system.

- DPW maintains the 1,400 miles located within Baltimore City.

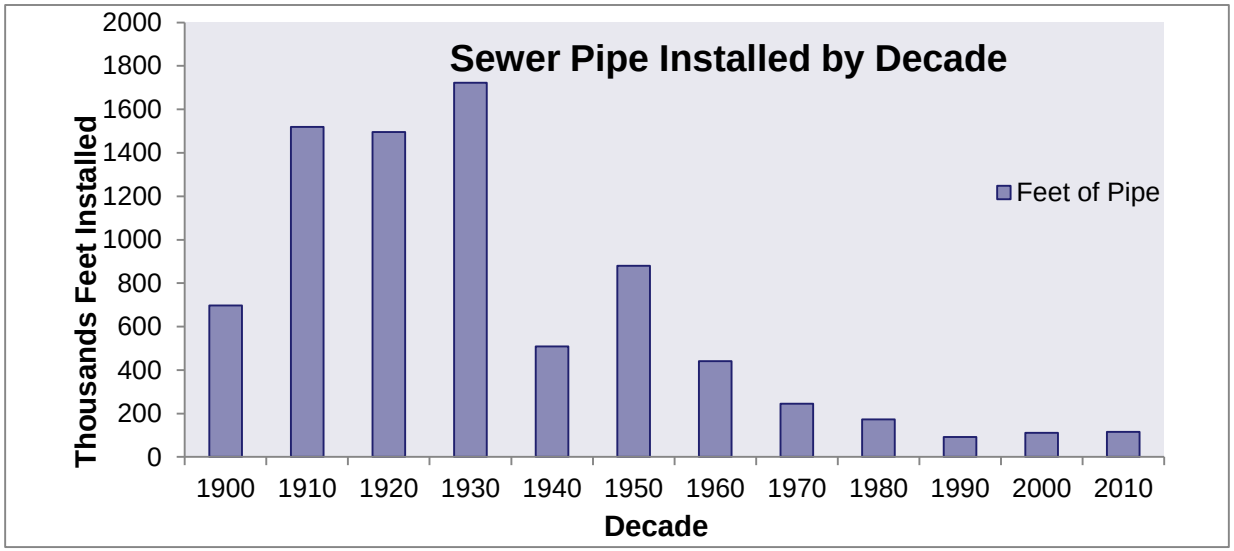
The system includes operating eight (8) major wastewater pumping stations and 10 minor installations.

Wastewater Utility Challenges

Most sanitary sewers were installed from 1910 to 1945, and post 1945 in response to population growth.

The City has a federally mandated consent decree to address sanitary sewer overflows, at an anticipated cost of more than $2.6 billion.

Efforts to meet Chesapeake Bay cleanup goals further require upgrades at the treatment plants to protect the Chesapeake Bay, at an anticipated cost of approximately $1 billion.

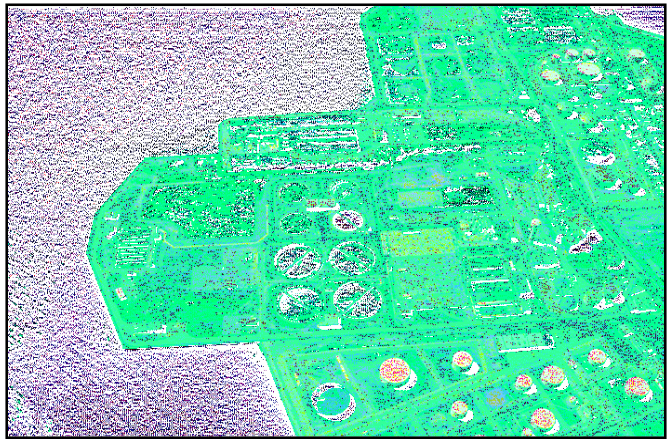


Wastewater Utility Projects

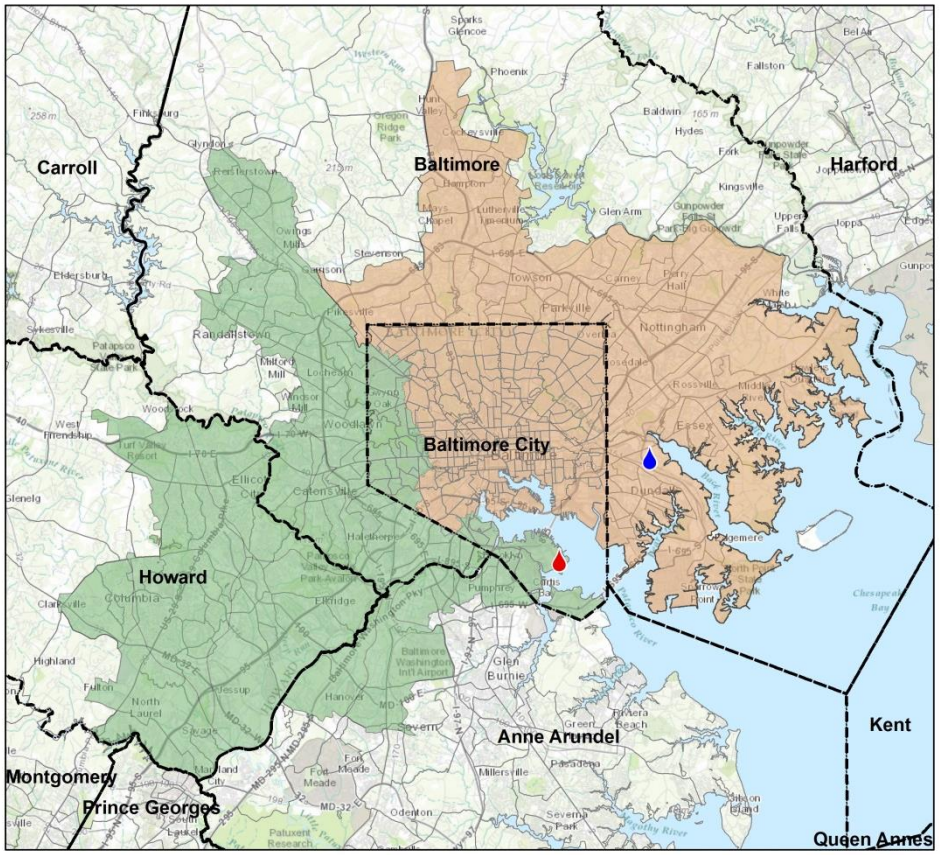
DPW's total 6-Year Capital Improvement Program is estimated to be $1.2 billion.

In FY 2021, Wastewater projects scheduled total $259 million.

The capital program has included regulatory-driven Enhanced Nutrient Removal upgrades at the Back River and Patapsco Wastewater Treatment Plants; Consent Decree infrastructure projects; and, the Headworks improvements at the Back River Wastewater Treatment Plant.



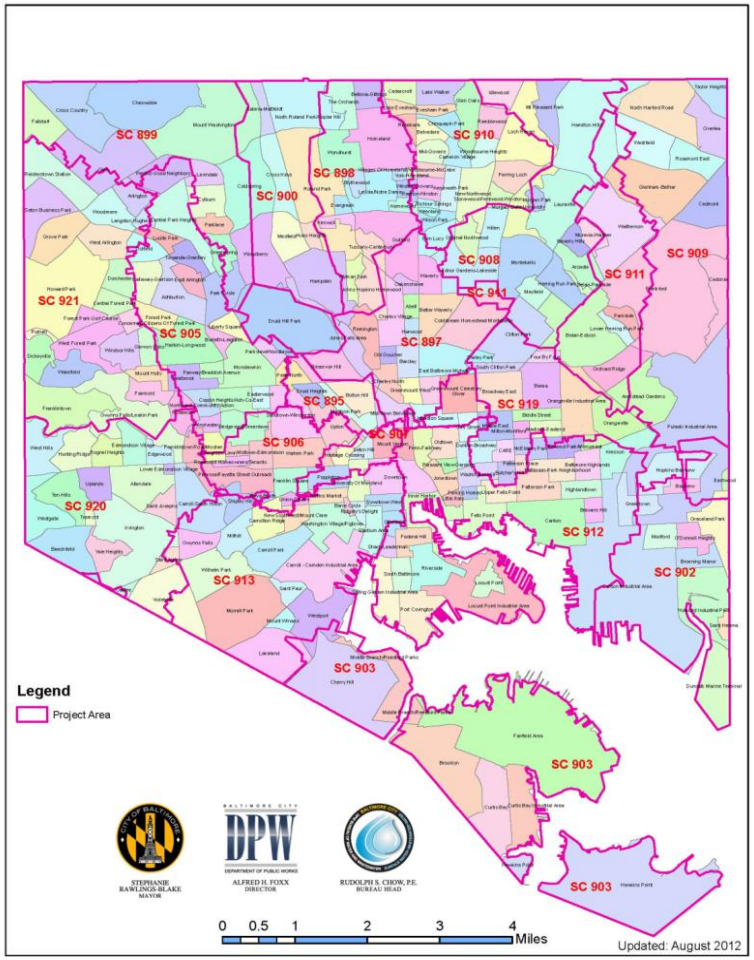
Sanitary Sewer Consent Decree



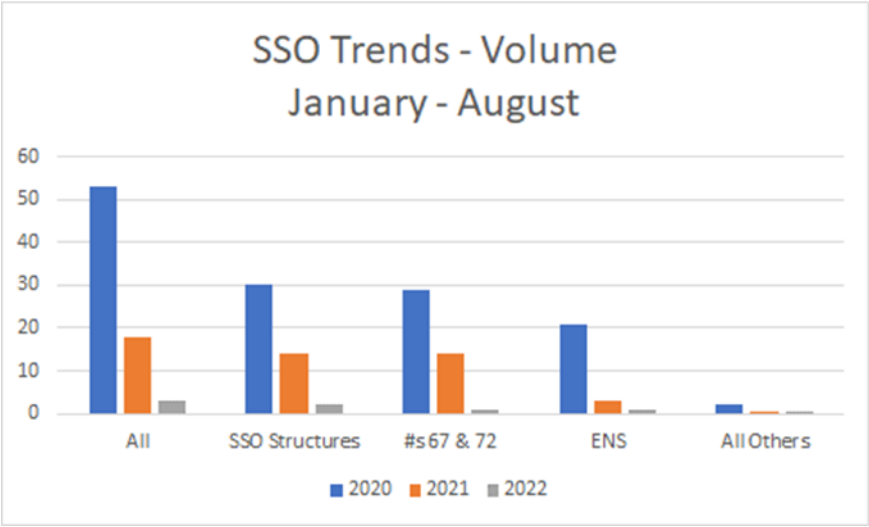
Will require Baltimore City to complete approximately $2.6 Billion in sanitary sewer upgrades by 2030.

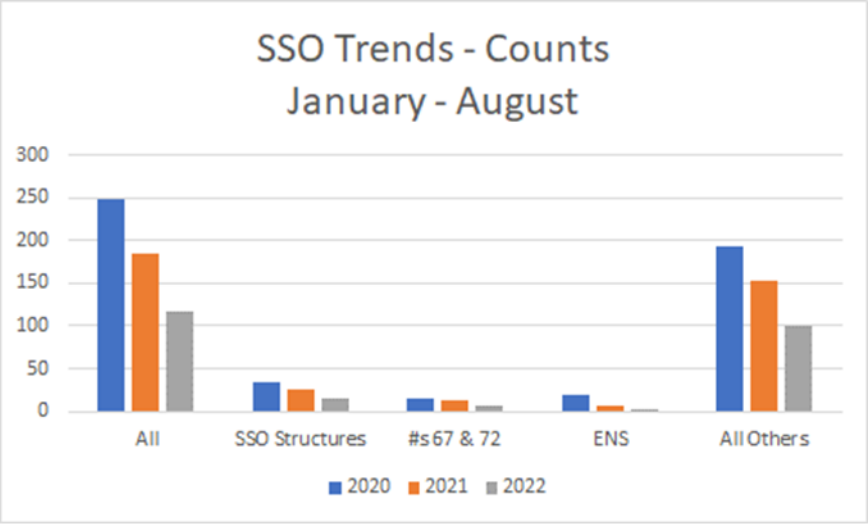
Sanitary Sewer Overflow Consent Decree

The Consent Decree requires the City to eliminate sanitary sewer overflows, conduct a comprehensive evaluation and rehabilitation of its sewer system, and continually upgrade its sewer operations and maintenance programs.



SSO Reduction Trends





Modified Consent Decree (MCD) Status Update – September 2022

- 10 SSO Structures Remaining to be closed
  - #s 135, 138, 139 undergoing post construction flow monitoring (PCFM)
  - #s 67, 72, 152, 154 to be resolve upon completion of downstream interceptor cleaning
  - #s 155, 156, 157 ongoing projects to enable closure

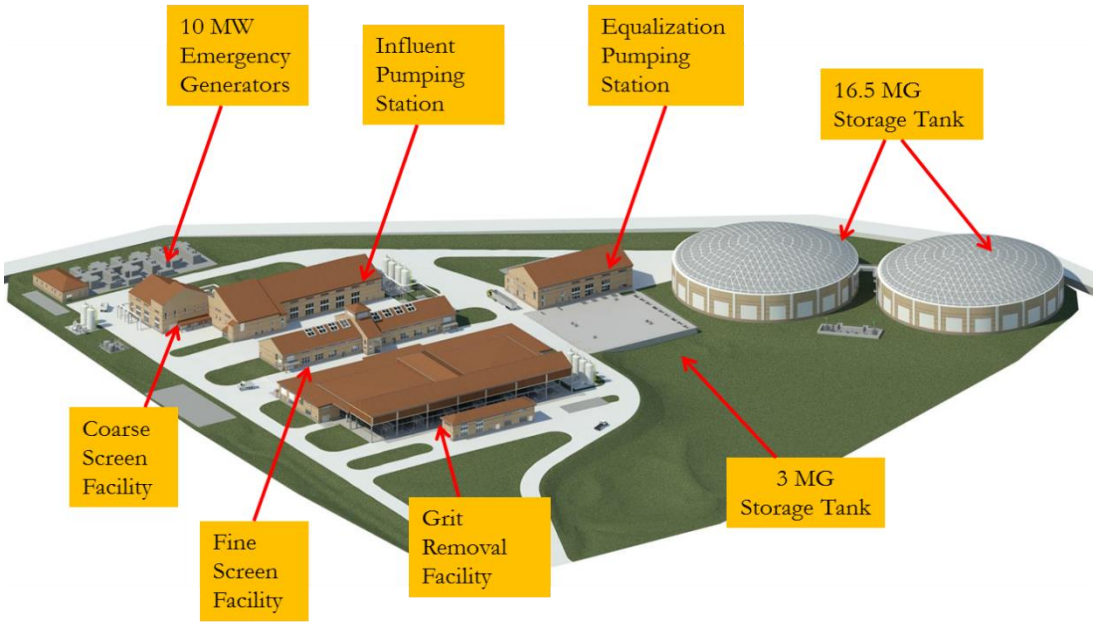
- 2 Phase 1 projects are still in construction: SC 941, SC 963 (998)
- Advance Phase II contracts in procurement : On call CCTV, Design, and Rehab
- Phase II Plan in development – due December 31, 2022

Recent Highlights Small Business Development Program (SBDP) – Fall 2022 Program underway

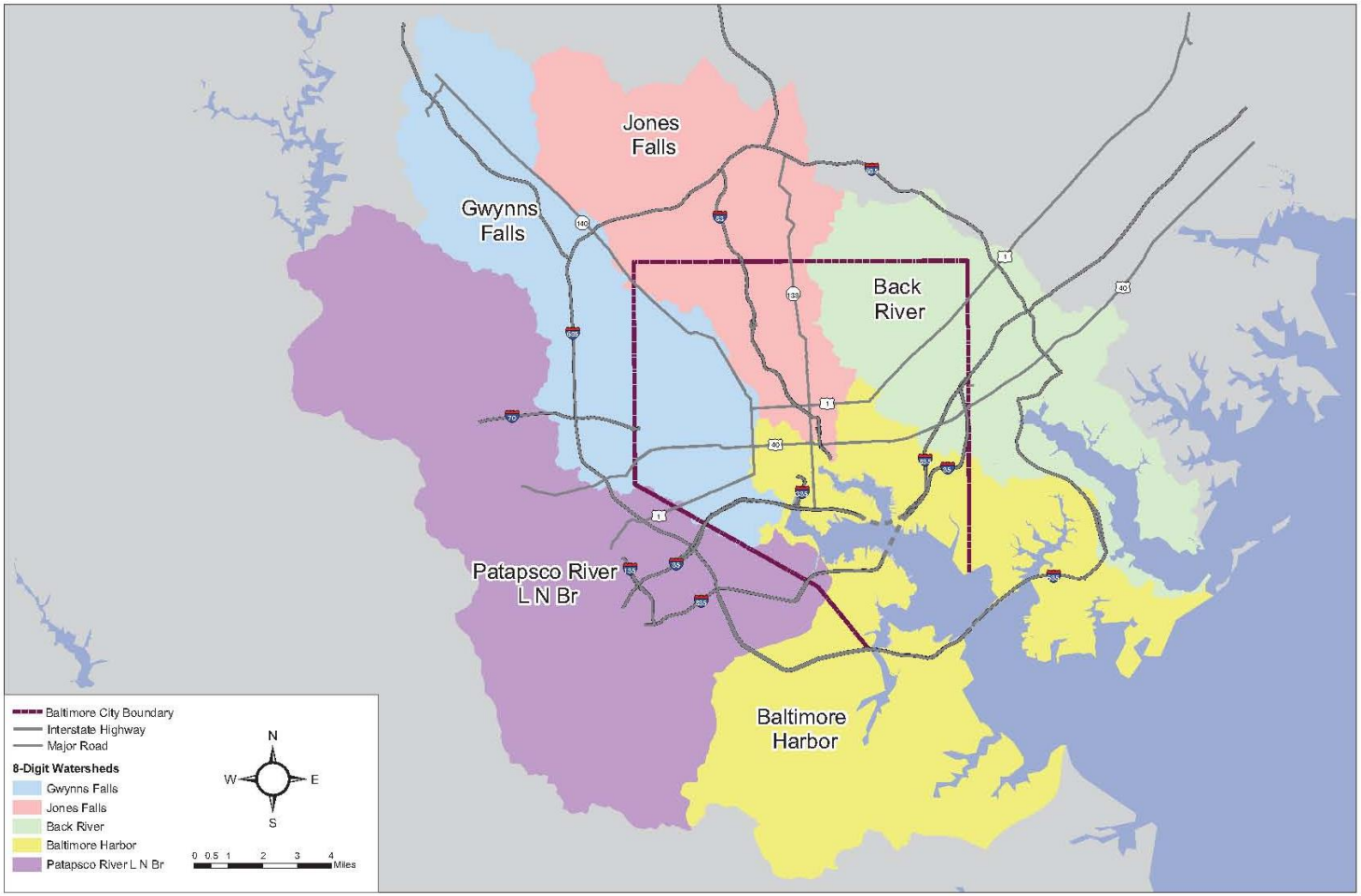
- Projects SC 910, 940, 955, 977 achieved MCD compliance
- SSO Structure 158 closed
- Substantial progress on Phase II Plan

Back River Headworks Project

- Removal of Hydraulic restriction in collection system will prevent backing up sewage within the system, eliminating 2 major sanitary sewer overflow points
- Screen and Grit Facility improvements
- New 800 mgd influent wet weather pumping station
- Peak flow equalization (36 MG storage) to protect downstream treatment processes
- Cost: $430 million



Stormwater Utility Overview



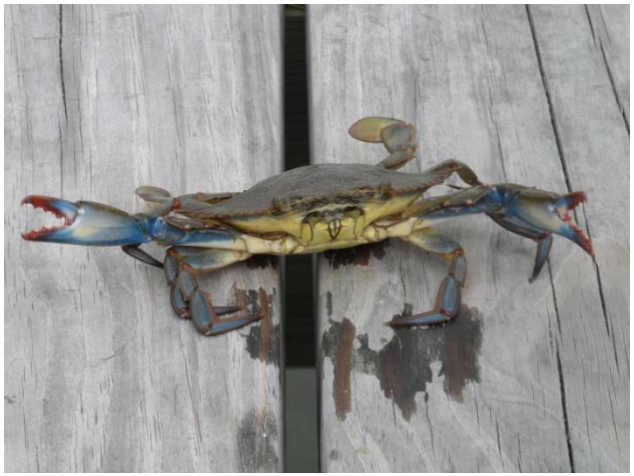
Stormwater Utility Facts

Baltimore City maintains a separate storm drain system:

- 1,146 miles of storm drain pipes;
- 27,561 storm drain manholes; and
- 52,438 storm drain inlets.

The City maintains four (4) pumping stations and uses hundreds of best management practices.

There are 100 miles of streams and open channels within the City that also must be maintained.



Stormwater Utility Challenges

The stormwater drainage system is very old. The majority of the 1,200 miles of storm drain system was constructed prior to 1940, resulting in the pipe materials exceeding useful life. Over 10% of these pipes are larger than 5 ft. in diameter, any pipe failure would result in a sinkhole at least the width of one lane or roadway. If this aging infrastructure were to be completely replaced, it would cost over $5 Billion.

Multiple infrastructure failures have already cost millions of dollars in emergency repairs while creating traffic and business disruptions.

The City has faced intense localized storms, such as Frederick Avenue where over 30 people were evacuated in May 2018, and in the Inner Harbor where 1.25 inches of rain fell in 15 minutes in August, 2019.

The stormwater system does not have a hydraulic model like the sanitary sewer or water distribution system. This model is critical to comprehensively analyzing options for addressing asset replacement and flooding hazards.

Stormwater Utility Projects

The DPW total 6-Year Capital Improvement Program is estimated to be $242 million.

In FY 2021, Stormwater projects scheduled total $50 million.

Stormwater projects include:

- Large stormwater pollution control projects;
- Stream restoration projects;
- Urban environmental site designs;
- Impervious removal/Greening projects; and,
- Catch basin inserts and debris collection systems.

Inlet Screens

- The Stormwater program has resulted in over 400 inlet screens being installed in key locations of the City to test their effectiveness.
- The program focuses on gateways and areas where inlets are continually choked with debris.
- The inlet screens will help the City meet regulatory requirements as well as keep our streams and Harbor clean.

Department of Public Works

QUESTIONS?