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October 31, 2025

Todd Borci
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5 Post Office Square, Suite 100
Boston, MA 02109-3912

Susannah King
Massachusetts Department of
Environmental Protection
Northeast Regional Office
150 Presidential Way,
Woburn, MA 01801

RE: NPDES Permit Number MA0103284
O&M Annual Report/Status Sheets

Dear Mr. Borci and Ms. King:

Enclosed please find the MWRA's annual status sheets on plant performance and maintenance for the period covering July 2024 – June 2025. This submittal fulfills the requirements of MWRA's NPDES Permit MA0103284 - Section 1.18.f and 1.18.g that states in part:

> …The permittee shall report on the [operations and maintenance] plan's implementation and results to EPA and the MADEP on a yearly basis…An annual maintenance update shall be published in the MWRA's Annual Report. The MWRA shall submit an annual status sheet to EPA and the MADEP on plant performance, using key indicators for maintenance and providing detailed information on any necessary equipment replacement. The annual status sheet shall be placed on the MWRA web page for public information purposes.

If you have questions or need additional information, please feel free to email David Wu at David.Wu@mwra.com.

Sincerely,

Stephen Cullen
Deputy Chief Operating Officer

Enclosures:

- Annual Report on Operations and Maintenance, FY2025
- Status Sheets with key indicators of maintenance, FY2025
  - Deer Island Treatment Plant
  - Wastewater Transport System
  - Fore River Pellet Plant

cc:

Whitney Fenwick, MassDEP
Areeg Abd-Alla, MassDEP

MWRA Annual Report on Operation & Maintenance

July 2024 - June 2025

1. INTRODUCTION/ PURPOSE

This report fulfills the requirements of MWRA's NPDES Permit MA0103284, Section 1.18.f, which states:

> "Within ninety (90) days of the effective date of this permit, the permittee shall develop and implement a long-range operations and maintenance plan that will maximize the life of the treatment facility. The permittee shall report on the plan's implementation and results to EPA and the MADEP on a yearly basis."

Also included with this submittal are the annual status sheets on plant performance and maintenance required in section I.18.g.

2. SYSTEM OVERVIEW

MWRA's Metropolitan Boston wastewater system consists of the Deer Island Sewage Treatment Plant, the wastewater collection system, and the Pelletizing Plant, described below.

Deer Island Sewage Treatment Plant

The Deer Island Sewage Treatment Plant (DITP) is the centerpiece of MWRA's $3.8 billion program to protect Boston Harbor against pollution from Metropolitan Boston's sewer systems. The purpose of DITP is to remove human, household, business, and industrial pollutants from the wastewater collected and transported through 5,400 miles of pipes, community-owned sewer lines, and approximately 240 miles of Authority-owned interceptors and tunnels.

DITP is a state-of-the-art wastewater treatment facility and one of the most automated in the country. MWRA has made considerable capital investment in DITP and is ensuring that the authority maintains this valuable public asset in the best possible manner. MWRA's Board of Directors, Executive Director, management team, and staff are dedicated to providing the highest quality of asset management. MWRA has assembled a highly skilled and qualified staff that operates and maintains the treatment plant to meet the satisfaction of regulatory agencies and the public.

Wastewater Transport System

The Wastewater Operations Department operates and maintains MWRA's wastewater transport system, which transports wastewater from MWRA member communities to the Deer Island Treatment Plant. This system includes a network of 240 miles of interceptor sewer lines and related appurtenances, a screen house, 13 pumping stations, four remote headwork facilities, three combined sewer overflow (CSO) treatment facilities and two CSO storage facilities. The primary goal of the Wastewater Transport system is to provide uninterrupted wastewater transport service in a safe, cost-effective, and environmentally sound manner.

Fore River Pelletizing Plant

The operation and output of the Fore River Pelletizing Plant is regulated, in part, by the terms of the federal NPDES permit, 40 CFR 503 regulations, and state sludge regulations in Massachusetts (310 CMR 32.00) and the states to which the pelletized product is shipped. Other external factors that influence the operation of the Fore River Pelletizing Plant include an extensive Residuals Management Facilities Plan developed as part of the permitting process and MWRA's commitment to local communities.

Under the terms of the current operating agreement between New England Fertilizer Company (NEFCO), a wholly-owned, indirect subsidiary of Synagro Technologies, Inc., and MWRA, NEFCO budgets for and performs all necessary predictive, preventive, and routine maintenance at the pellet plant. NEFCO's agreement contains a facility plan for the maintenance, repair, and operation. Currently, NEFCO's performance meets the standard for proper operation and maintenance. Since the inception of the second contract, S345 in March of 2001, there has not been any incident requiring an interruption in service. That continues in the current contract S592 which started on January 1, 2024.

The operating agreement requires NEFCO to provide a letter of credit for $1,000,000 (adjusted for inflation) that MWRA might draw on in the event that there is a material breach of the operating agreement, such as inadequate maintenance of the facility.

3. PERMIT VIOLATIONS

There were no violations at MWRA facilities due to inadequate maintenance efforts.

4. FACILITIES ASSET MANAGEMENT PROGRAM

The goals of MWRA multi-year maintenance plan include coordinated, consistent asset inventory, condition assessment, maintenance scheduling and long-term replacement planning. MWRA has developed and implemented the Facilities Asset Management Program (FAMP). This asset management program addresses the goal of becoming more efficient by developing consistent best practices and cost- effective operations, and maintenance procedures.

MWRA had been conducting its maintenance on a calendar-based schedule in accordance with the original equipment manufacturers' (OEM) recommendations. Contractual obligations of the OEM warranties primarily drove this approach to maintenance. MWRA's management team believed that it was important to modify its existing program to achieve a more rational approach to maintenance management. MWRA management acknowledges the importance of asset management and developed FAMP to meet the long-term demands of facility maintenance. The main objective of FAMP was to develop a sound maintenance strategy that would ultimately lead to better overall asset management, extended equipment life and increased reliability.

MWRA expanded its condition-monitoring program utilizing Reliability Centered Maintenance (RCM). This program prioritizes asset replacement, capital improvements, and staff training. Since the upgrade from Maximo 5.2 to the 7.6 platform in 2018, DITP has continued to build the program with the addition of the Clinton site, and continuing to use the methodology of RCM, consolidating the tool database into Maximo, expanding a condition monitoring oil analyses by using on-site testing equipment, and continuously reviewing our metrics to ensure we are at or above industry benchmarks.

5. COMPUTERIZED MAINTENANCE MANAGEMENT SOFTWARE

MWRA uses Maximo, an Enterprise Asset Management (EAM) software program. Maximo EAM includes job and safety plan modules allowing MWRA to document hazardous areas and materials at DITP. Maximo can develop Lock-Out Tag-Out (LOTO) tasks and generate associated work orders for field personnel. Maximo's document management function streamlines maintenance and regulatory functions and workflow capabilities for synchronizing operations. Maximo applications can be fine-tuned to suit specific work processes or interface with other software programs.

Maximo helps operations and maintenance staff plan, prioritize and assign work based on labor and availability of required spare parts. Maximo's data analytic and reporting tools analyze failure trends in equipment, enabling staff to optimize preventive maintenance tasks to better plan asset replacement projects.

Maximo 7.6 added functionality to track labor, material, service, service contract, spare part costs and usage for over 143,500 assets.

Maximo 7.6 provides MWRA with updated technology, increasing functionality for maintenance and improved reporting capabilities. MWRA has transitioned to a consistent version of Maximo agency-wide, with Deer Island, Field Operations, Information Technology (IT) (formerly Management Information Systems (MIS) group), Laboratory asset tracking, and Vehicle Maintenance accessible in a single- organization, multi-site application. This increases productivity and limits the number of software systems needed to perform asset management functions. In addition, Maximo 7.6 add-ons include Maximo Calibration for instrumentation, SCADA assets and Maximo Spatial for buried assets and pipelines.

Operations and Maintenance continue to collaborate with IT to enhance Maximo's automation capabilities, data display and reporting efficiencies, and end-user usability. Contract 7649 Lawson / Maximo Interface Enhancements was completed in the last quarter of FY24 enhancing the existing interface between Lawson (Infor), MWRA's Enterprise Resource Planning (ERP) system and Maximo by adding additional functionality for the IT site while reducing data errors between the two systems. The contract also upgraded MWRA's Maximo version to 7.6.1.3. Operations and IT are now starting preparation to migrate both Lawson and Maximo to the cloud as Lawson is in the process of being upgraded to version 11 and Maximo will be upgraded to Maximo Application Suite (MAS) version 9 at a later date.

NEFCO utilizes its own computerized maintenance management software, "E-maint." E-maint is used for work order management including preventive and corrective maintenance work.

6. SERVICE CONTRACTS

A series of service contracts supplements MWRA's maintenance program. These contracts aim to provide specialized services beyond the resources of MWRA maintenance staff. Tables 1, 2 and 3 below show the service contracts currently used by MWRA.

TABLE 1 DEER ISLAND CURRENT SERVICE CONTRACTS
Laser alignment
Boiler maintenance
CCTV maintenance
Centrifuge maintenance
Combustion Turbine Generator maintenance
Continuous emissions monitoring
Catch Basin Contract
Copier/fax maintenance
Crane maintenance
Cryogenics facility maintenance
Digester Mixer overhauls
Electrical testing
Elevator maintenance
Facilities coatings
HVAC chemical treatment (Legionella testing)
Fire Sprinkler Repair Contract
Hydro turbine generator maintenance
Hydraulic maintenance
Janitorial services
Lab hood certification
Locksmith services
Lube oil analysis
Oil/water separator cleaning
Overhead door maintenance
Pest control
Plant and Public access landscape services
Plant instrumentation and control system (PICS) maintenance
Pratt Whitney (CTG OEM) Preferred service
Reactor Mixer gearbox rebuild
Recycle contract (Scrap/Paper)
Security
Steam turbine generator maintenance
Trash removal
Vibration analysis

TABLE 2 FIELD OPERATIONS CURRENT SERVICE CONTRACTS
Elevator Maintenance
Crane Maintenance
Hydraulic Equipment Maintenance
Instrumentation Maintenance
Fuel Storage Tanks
Fire Alarm and Sprinkler
Air Compressor Service
Boiler and Water Heater
Pest Control Services
Trash Removal
Electrical Testing
Grounds keeping
Lube Oil Analysis
Union Park Station Operation and Maintenance
Generator Maintenance
Overhead Door Maintenance
Vibration Monitoring

TABLE 3 FORE RIVER PELLETIZING PLANT CURRENT SERVICE CONTRACTS
Elevator Maintenance
Crane Maintenance
Fire Alarm and Sprinkler
Air Compressor Service
Boiler and Water Heater
Pest Control Services
Trash Removal
Electrical Testing
Fenwal Explosion Suppression System

7. ANNUAL STATUS SHEETS

The attached pages constitute the annual status sheets on plant performance, using key indicators for maintenance. There are status sheets for Deer Island, Wastewater Transport (Field Operations), and the Fore River Pelletizing Plant.

Status Sheets
Deer Island Treatment Plant
July 2024 - June 2025

Deer Island Maintenance reports on Key Performance Indicators for FY25.

- Preventive Maintenance (PM) – The maintenance goal is to complete 100% of all PM work orders. PM completion rate for FY25 was 99.9%. Maintenance initiated 21,928 PM work orders this year. This year's completion rate was slightly under our goal.

- Work Order Kitting - The first step to increase wrench time is to have all parts available for work orders. Kitting is a task where the maintenance planner identifies the specific parts required for a task on the work order and electronically sends the information to warehouse personnel to assemble the parts in one location (kit) for the technician. Deer Island met its goal of 57% in FY25.

- Predictive Maintenance (PdM) Extending the useful life of equipment, by monitoring and trending equipment characteristics, allows for better planning for equipment replacement**.** Deer Island's FY25 predictive maintenance goal was 100%. DITP completed 99% of all PdM work orders. 9,863 work orders were completed for vibration, acoustic ultrasonic, ultrasonic thickness, and oil analysis. Deer Island met its goal of 25% in FY25 of all work orders being cataloged as predictive maintenance.

- Maintenance Backlog in Hours - Backlog is determined by totaling the planned craft hours on open work orders and comparing them to available craft resources. The average backlog in FY25 was 17,232 hours, equaling six weeks of work for the entire Maintenance workforce. This backlog is slightly below the industry standard of 8,730 - 17,460 hours or 4 - 6 weeks. To ensure the backlog does not adversely affect equipment availability, DITP monitors these metrics closely.

- Maintenance Overtime - The goal is to maintain maintenance overtime at or below 5% of total wages and salaries. DITP was below the benchmark at 4.0%.

- In an effort to free up Maintenance staff to complete more detailed and complex maintenance, Operations staff have been committed to completing a number of the routine monthly preventative maintenance duties. The goal for Deer Island Operations staff is to complete 100% of the Preventative Maintenance work orders. In FY25, Deer Island Operations staff completed 100% of the work orders.

Critical Equipment Availability: 12-Month Average — 99%

An equipment availability report is generated daily that details the critical equipment required to treat the maximum flow of approximately 1.3 billion gallons per day. Higher maintenance priority is given to critical equipment that drops below the number of units required to treat the maximum flow. The difference between 99% (FY25) versus 100% (FY24) equipment availability has not impacted operations over the past year, as the plant typically operates at about one-quarter of its design flow capacity.

Average Craft Hours and Work Orders per Month:

Preventative Maintenance	2,905 hours	28%	1794 work orders	58%
Predictive Maintenance	167 hours	1%	667 work orders	22%
Corrective Maintenance	7,173 hours	65%	321 work orders	9%
Emergency Maintenance	82 hours	1%	3 work orders	1%
Project Work	110 hours	1%	6 work orders	1%
Other (SERV, CBM, NPL, NE, EVT, STND.)	672 hours	8%	275 work orders	9%
Total	11,109 hours	100%	3,066 work orders	100%

Total Work Orders:

36,724 work orders initiated in FY25
34,849 work orders completed/closed in FY25

Maintenance Projects and Equipment Replacement:

- Boiler, STG, Wind Turbine and Hydro Plant Maintenance: $6,143,217
  A maintenance contract was established for annual boiler preventive maintenance including necessary repairs. This contract was combined with similar contracts for the Hydroelectric plant, Wind Turbines and steam turbine generator (STG). The intention of combining the four contracts under one was to save money on equipment and mobilization costs. Maintenance spending focused on scheduled annual outage tasks. In addition, the Hydro facility wicker gates required extensive refurbishment.

- Reactor Aerator/Mixer Gearbox Rebuilds: $294,269.
  Secondary Reactor Batteries A, B, and C contain nine aerator trains, each train has four aerators and four mixers. In total, there are 72 gearbox drives with 36 aerators and 36 mixers. Each aerator and mixer have a triple reduction gearbox and mixing blade. When condition-monitoring techniques (oil analysis, vibration data and physical inspections) indicate a potential for failure, staff remove and ship out gearboxes to be refurbished back to original operational specifications. Three gearboxes were refurbished with new bearings, gears, seals and shafts.

- Disinfection Sim Loop $61,500
  The Disinfection Facility has a sample loop that continuously analyzes the chlorine residual that calculates the need for de-chlorination prior to plant effluent being discharged into Massachusetts Bay via the Outfall tunnel. Electrical staff replaced one SIM Loop Sample Pump variable frequency drive (VFD) and added a second pump and VFD for redundancy to the sample system.

- Grinder Rebuilds: $225,975
  Deer Island has small Muffin Monster grinders installed "in-line" to provide continuous grinding of screenings and sludge into uniform, homogenized slurry. Screenings removed from the Winthrop Terminal Facility are dewatered, compressed, and ejected into a hopper for offsite disposal. In addition, sludge, which travels through these in-line grinders, is transported from Primary and Secondary treatment processes. The in-line grinders in Residuals are used after pre-treatment where solids and rags are removed. Normal wear

and tear to the grinders caused by constant operation wear the gears and seals, requiring periodic service to rebuild the grinders or cutter blocks. Maintenance has noticed an increase in grinder rebuilds due to rags/wipes entering the plant. Staff replace grinder cartridges with on-site to minimize downtime.

- Electric Vehicles: $96,240
  Deer Island Treatment Plant staff perform multiple job-related activities and tasks all around the large expanse of DITP's numerous buildings and facilities daily. The expansive nature of DITP's terrain requires the use of electric vehicles to ensure efficient transport of staff, tools, equipment, and supplies. Electric Vehicles save countless staff hours throughout the year. Utilizing these smaller electric vehicles is less costly than conventional vehicles and is significantly more environmentally friendly. Deer Island purchased six long-bed electric vehicles for maintenance staff this year.

- Digester Mixer Rebuilds: $319,944
  There are twelve egg-shaped anaerobic sludge digesters at DITP, which have been in operation for more than 25 years. DITP operates eight mixers concurrently and continuously. A key operational component common to all the digesters is the central mixer assembly. Routine maintenance is performed on the mixer assembly along with Predictive Maintenance. Acoustic and vibration monitoring tasks help assess asset health and can indicate impending failures before the failure becomes catastrophic and costly. When an impending failure is detected, staff removes and ships the mixer assembly to the manufacturer for refurbishment to original equipment manufacturers (OEM) specifications. Digester Module 1 Mixer Assembly 2, 3, and 4 were refurbished and installed.

- Polymer System Upgrade: $50,279
  There are 25 Polymer pumps that add Polymer to the Centrifuges to aid in the thickening of sludge. The control system was installed under the Boston Harbor Project and is obsolete. Deer Island electrical and instrumentation staff purchased upgraded variable frequency drives (VFD) and other appurtenant equipment for upgrading the system to a factory supported system. This is a multiyear project.

- Residual Odor Control Fan # 5 replacement $199,929
  Deer Island operates wet scrubbers and carbon adsorption systems to remove odorous compounds from process air. Residuals Odor Control Fan 5 was installed under the Boston Harbor Project in 1998. Staff removed and replaced the odor control fan, electrical motor and associated flexible ductwork.

- Digester Mod-1 Valve Replacement $252,112
  Deer Island's Recirculated Sludge System (RES) supports the sludge digestion process by recirculating sludge pumps, which pump the sludge through sludge grinders and heat exchangers to maintain sludge consistency and at the optimal temperature of 98°F for healthy microorganism growth and sludge digestion. The RES valves were installed under the Boston Harbor Project's Construction Package 301 (CP-301) in 1995. Overtime, grit and other inorganic material can wear away the glass lining, valve body and valve plug causing leaks and / or failure to provide for a leak-free isolation. Digester Module 1 was offline for long-term maintenance and DITP Maintenance staff identified forty-six valves requiring replacement. Maintenance staff replaced all forty-six valves before Digester Module 1 was placed back online.

- Central Plant Heating System Valve Replacements: $68,472.
  The Deer Island On-Site Thermal Power Plant generates electricity and heat using both steam boilers and combustion turbine generators. Heat produced by the steam boilers is transferred through local heat exchangers to the secondary side of the Central Plant Heating System and used throughout Deer Island in various treatment processes and building heating systems. As an ongoing yearly project, Deer Island HVAC staff identifies isolation valves that are failing and marks these valves for replacement during the annual Thermal Plant Maintenance Outage. This year HVAC staff replaced ten valves on the Central Plant Heating System.

- Deionized Water System Upgrade: $19,077
  The Deer Island Laboratory uses Deionized water for testing processes. The Laboratory's Deionized Water System was installed in 1994 and was obsolete. The Laboratory purchased a new Deionized Water system and Deer Island Maintenance assisted the Laboratory's contractor with electrical and plumbing upgrades to the system.

Capital Projects

In addition to the maintenance projects listed above, the following Capital Improvement projects included work for Deer Island in FY25:

- Eastern Seawall Design/ESDC Contract 6723
- Fire Alarm System Replacement Design Contract 6904
- Combined Heat and Power Energy Alternatives Contract 6963
- South System Pump Station VFD Replacement Design/ESDC/Resident Inspection Contract 7126
- Radio Repeater System Upgrade Contract 7134
- Clarifier Rehab Phase 2 Design/ESDC Contract 7394
- Clarifier Rehab Phase 2 Construction Contract 7395
- As-Needed Design Phase 8-1 Contract 7501
- As-Needed Design Phase 9-1 Contract 7644
- As-Needed Design Phase 9-2 Contract 7645
- Replace Odor Control Damper Contract 7913

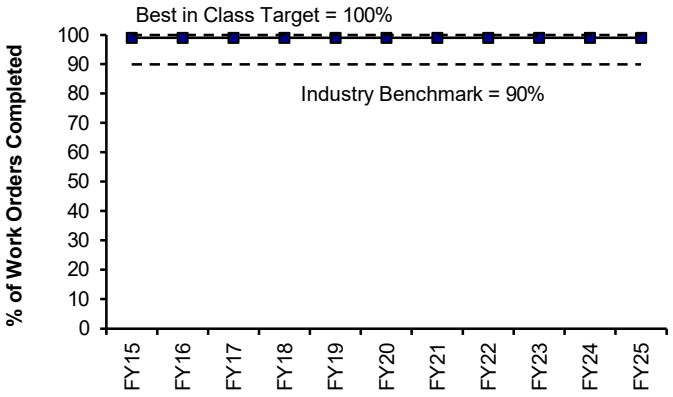
The following pages adapted from MWRA's quarterly performance report to the Board of Directors, the "Orange Notebook", summarize key indicators relating to Deer Island maintenance. The full Orange Notebook can be found at: https://www.mwra.com/about-mwra/reports-publications/board-directors-quarterly-report-key-indicators-mwra-performance

Deer Island Yearly Maintenance Metrics

FY25

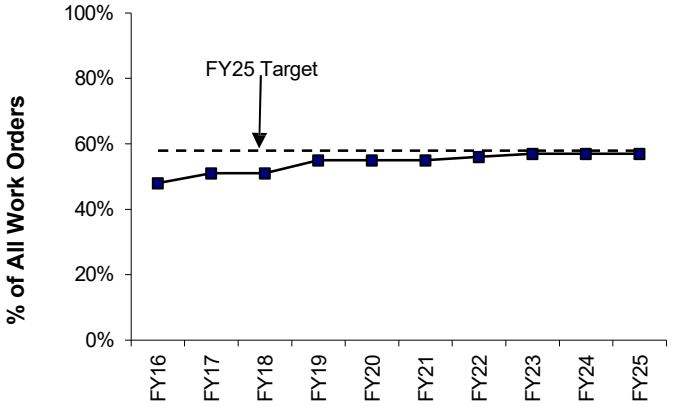
Proactive and Productivity Measures

Preventative Maintenance



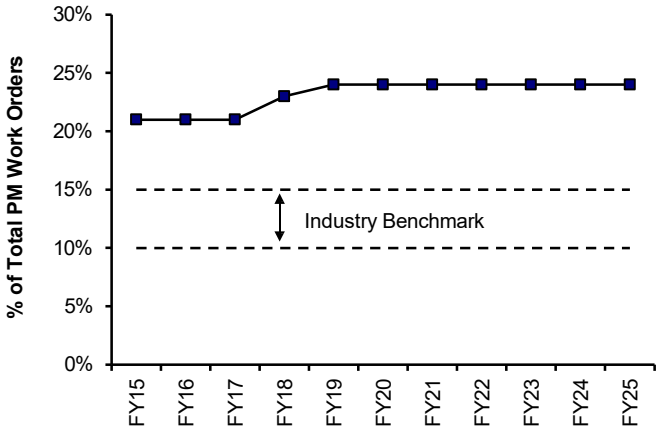
The industry benchmark is 90% for Preventative Maintenance (PM) completion. Upon reaching the 90% goal in FY05, the target goal was increased to the "Best in Class" Target of 100% PM completion. Reliability-Centered Maintenance (RCM) and PM optimization efforts have continued. PM completion rate was 99% in FY25.

Maintenance Kitting



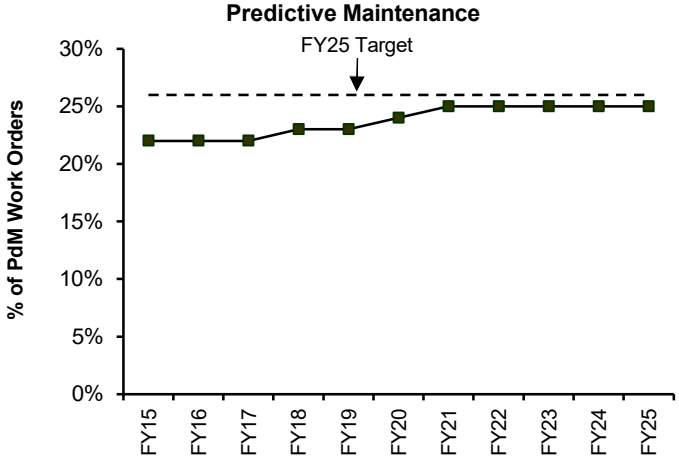
Preventive Maintenance (PM) inventory items were loaded into Maximo to assign spare parts for equipment to PM work orders. DITP reached the PM kitting goal of 100%. In FY12 a new graph was developed to track kitting of all maintenance work orders in an effort to increase wrench time. Staff continues to fine-tune the process to "kit" all maintenance work orders. Kitting is considered a best practice by maintenance and reliability professionals. It entails staging parts necessary to complete maintenance work. Kitting allows maintenance staff to spend more time "turning the wrench" and less time waiting for parts at the stockroom window. Kitting for FY25 was 57%, slightly under DITP new goal of 58%.

Operations Light Maintenance PMs



The percentage of preventive maintenance work orders completed by Operations staff (non maintenance staff) increased from less than 1% in January 2002 to the current level of 24% in FY25. DITP reached the industry benchmark range of 15% and has exceeded the goal through FY25.

Predictive Maintenance

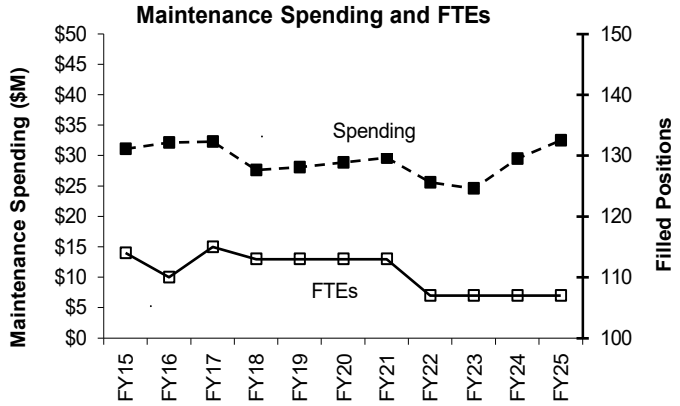


Predictive maintenance has steadily increased from 2% in FY03 to 25% in FY25, DITP was slightly below our new goal of 26%. This percentage in predictive maintenance was achieved through the expanded use of lubrication, vibration, thermography, and acoustic ultrasonic testing techniques. The Condition Monitoring Group continually reviews and investigates new opportunities and initiatives to expand condition monitoring testing and analysis.

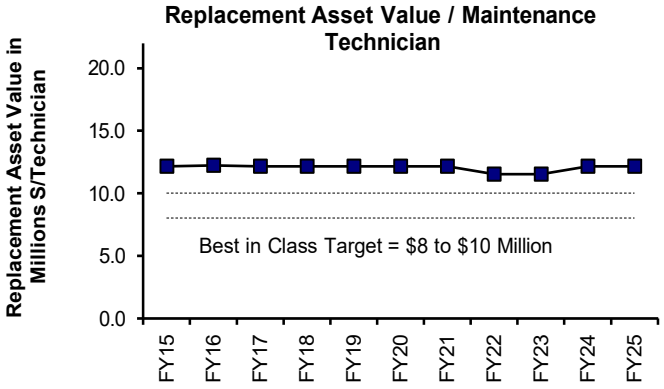
Deer Island Yearly Maintenance Metrics

FY25

Overall Maintenance Program Measures

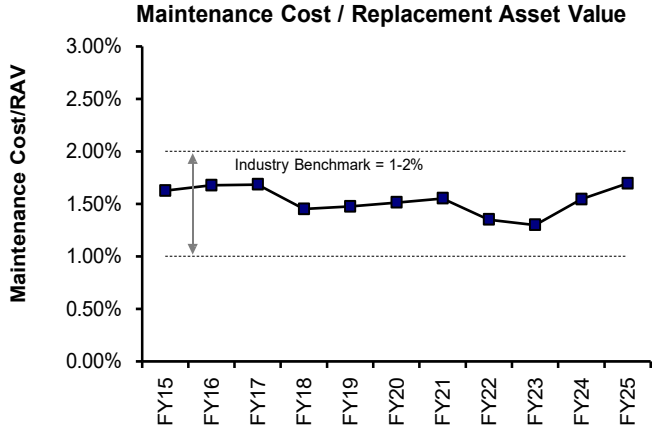


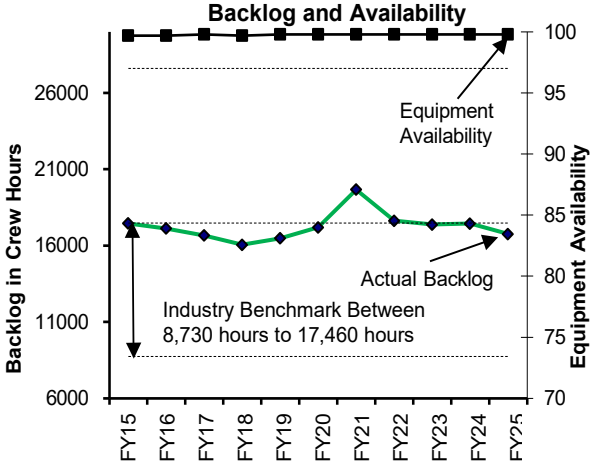
DITP's Maintenance staff is currently at 107 FTE's. Maintenance staff levels ended at 107 due to retirements and hiring challenges for trades personnel. Maintenance has worked to meet our goals though implementation of numerous maintenance efficiencies including: Operations performing light maintenance, cross-functional training and flexibility, and Reliability-Centered Maintenance. This year's overall Maintenance spending has increased.



DITP adopted a "best in class" target of $8-$10 Million/Technician for maintenance staffing. DITP remains above this Best in Class. However, as the plant ages and additional equipment replacements are expected, DITP management will reassess staffing as needed.

The Maintenance Spending graph shows actual annual maintenance spending and CIP asset replacements (equipment costs only). Maintenance staff continues to evaluate plant assets and requirements for replacement of obsolete equipment to ensure the plant operates at maximum efficiency. In FY25, overall spending increased from FY24 due to the CIP Clarifier Rehab Project Spending. Maintenance staff replaced electrical conduits in the Primary Clarifier area. Plumbers removed and installed plug valves and piping in association for the Mod-1 start-up. Power and Pump staff replaced one odor control fan in the North Main Pump Station. Instrument staff replaced speed controllers for the Polymer Pump system in Centrifuge Facility. HVAC staff changed out one R-410a 10-ton chiller and for the Primary Operations Control Room and ten valves on the Central Plant Heating System (H1S/H1S).



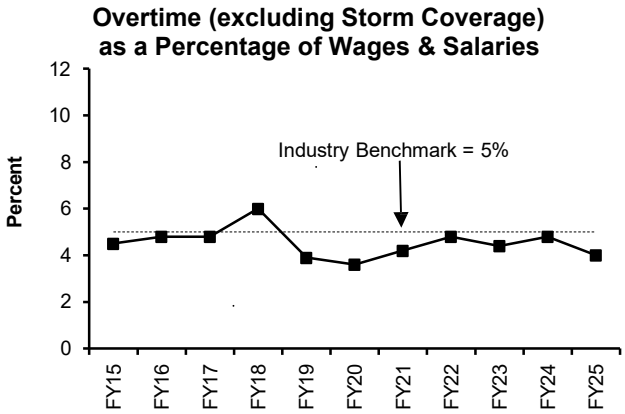


The industry benchmark for annual maintenance spending is between 1% to 2% of replacement asset value, currently DITP is at 1.70%. The plant's replacement asset value is calculated at approximately $2.6 billion dollars. DITP's current maintenance spending is the industry benchmark. Overall maintenance spending has increased from last year. DITP Maintenance CEB spending is $28.95 million. CIP spending was $3.7 million (equipment costs only). CIP/CEB Spending totaled $32.52 million in FY25.

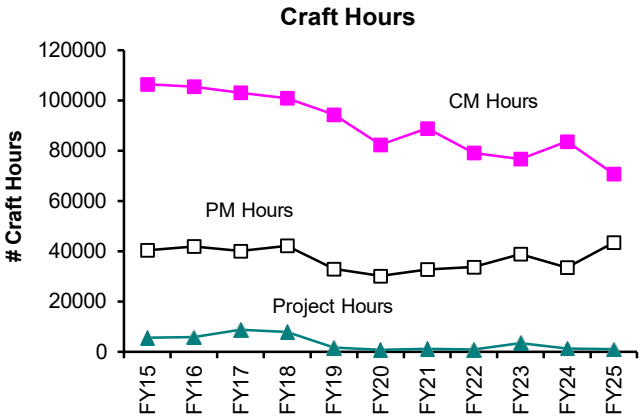
Deer Island Yearly Maintenance Metrics

FY25

Overall Maintenance Program Measures (cont.)



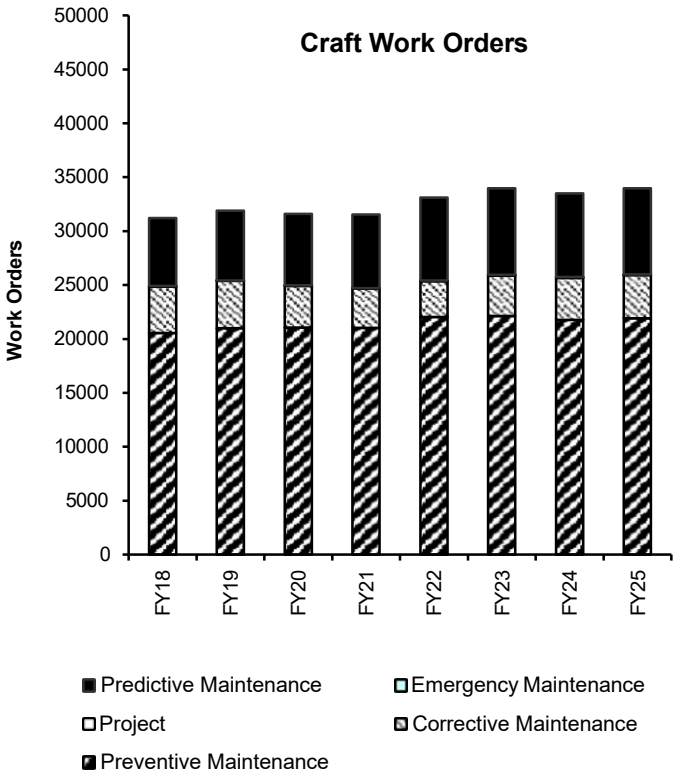
Management continues its effort to keep overtime below the industry benchmark. DITP maintenance overtime was 4.0% for FY25. Management has taken steps to reduce overtime spending by limiting overtime to repair critical equipment and systems only. DITP has been under the Industry Benchmark every year except FY17, due to the increase in overtime for the Eversource Cable Outage.



This year's decreased in Corrective Maintenance (CM) hours was due to staff prioritizing and working preventative maintenance.

This year's slight increase in Preventive Maintenance (PM) was due to adjusting PM frequencies to meet plant needs. Staff continued to work on optimization of the Preventive Maintenance (PM) program.

Maintenance did complete some significant maintenance work in FY25: Staff replaced ten valves on the Central Plant Heating System (H1S/H1R). The original valves were installed under the Boston Harbor Project and were failing and no longer provided a leak-free seal. Residuals staff removed and replaced four digester mixers. The mixers were recommended for refurbishment based upon impeller and bearing wear, which was identified by vibration analyses. Mixers are critical to plant performance. It provides the driving force for mixing the digester content and ensuring a uniform temperature within the sludge mass.
Mechanical staff changed out numerous in-line grinders due to the additional clogging due to wipes in the system. Power and Pump staff replaced one Odor Control Fan in North Main Pump Station. The fan was installed under the Boston Harbor Project and was showing trends to failure.



During FY25, the overall number of work orders slightly increased from the previous year. The Work Coordination department is continuously modifying PM, PdM, and CM Job Plans to ensure maintenance is being performed efficiently and effectively, while ensuring reliability and availability of DITP's Assets.

Status Sheets
Wastewater Transport System
July 2024 - June 2025

The Field Operations Department Equipment Maintenance reports on key performance indicators for FY25. Monthly maintenance data are tracked under six headings.

- Operations Light Maintenance Hours– In an effort to free up Maintenance staff to complete more detailed and complex maintenance, Operations staff have been committed to completing a number of the routine monthly preventative maintenance (PM) tasks. These tasks generally consist of observation and light maintenance tasks. The industry benchmark is 10% - 15% of the total preventative maintenance hours. In FY25, Operations staff completed on average 412 hours per month, which accounted for 14% of the total preventative maintenance hours.

- Operations Light Maintenance % PM Completion – In an effort to free up Maintenance staff to complete more detailed and complex maintenance, Operations staff have been committed to completing the routine monthly preventative maintenance duties. The goal for Operations staff is to complete 100% of the Preventative Maintenance work orders. In FY25, Operations staff completed 100% of the work orders.

- Overall Preventive Maintenance – Both Operation and Maintenance staff complete the preventive maintenance work orders. The goal for FY25 was to complete 100% of all preventative maintenance work orders. The PM completion for FY25 was 100%.

- Work Order Kitting – In an effort to more efficiently complete work, maintenance staff and work coordination center staff have utilized the Lawson/Maximo interface to better kit stock and non-stock material. The goal is to kit 60% of all work orders. The average for FY25 was 63% kitting of all work orders.

- Maintenance Backlog in Crew Hours - Backlog is determined by totaling the planned craft hours in open work orders and comparing them to craft resources available. The FY25 backlog average was 13,790 hours. This backlog is just above the industry standard of 6,636 to 13,275 hours or 4 to 6 weeks. Metro Maintenance monitors these metrics closely to ensure the backlog does not adversely impact equipment availability.

- Maintenance Overtime – Maintenance overtime spending was $73,645 under budget for FY25. Overtime was used to support call-ins for emergency maintenance and planned overtime. It was also used for maintenance coverage related to weather events.

Facilities Operational Statement

During FY25, Wastewater Transport facilities operated at full capacity. All required equipment to maintain the flow and processing of wastewater was available. The CSO facilities operated with sufficient chlorination and de-chlorination, though some NPDES exceedances were reported. The required number of pumps in each gravity and pumping CSO was available throughout the year.

Critical Equipment Availability

An equipment availability report is generated daily. It details the critical equipment required to collect and transport the wastewater flow at the facility design capacity. Higher maintenance priority is given to equipment that drops below the required number. Because of the high daily equipment availability, no operational impact has occurred in the past year.

SCADA Program

MWRA Supervisory Control and Data Acquisition (SCADA) system provides a means ofmonitoring and controlling facilities and equipment from a remote centralized location, as well as providing a continuous record of facility operations. The SCADA System has been in place at all field facilities since FY10. SCADA staff perform minor and medium updates on the system throughout the year. As Capital Improvement Projects are planned at each facility, SCADA improvements are included as part of the facility upgrade.

MWRA SCADA staff perform the required maintenance and upgrades to the majority of the field instrumentation and control panel equipment to ensure accurate measurements and continued operation throughout MWRA's field facilities. These efforts are supplemented by an Instrumentation Service Contractor who is primarily responsible for performing calibrations and corrective service to the gas monitoring systems within facilities. SCADA staff also maintain, upgrade, program, and patch the computers and hardware used in collecting, controlling, transmitting and displaying facility data. Continued emphasis is placed on improving MWRA's cyber security posture. This included the expansion of the SCADA communications network "Domain" architecture, where user accounts and policies are centrally managed via a "Domain Controller."

Facility Maintenance and Equipment Replacement Projects

Equipment replacement is part of the overall maintenance strategy that ensures compliance with permit requirements. Projects and initiatives are completed during each fiscal year to maintain redundancy and continued reliability. Many projects are extensive, requiring significant in-house resources and the use of specialty/service contractors. Some examples of key improvements, equipment replacement, or significant repair work during the past fiscal year include in-house and outsourced projects.

- DeLauri Pump Station: MWRA Plumbing staff replaced the dewatering sump pump at the facility.
- Quincy Pump Station: MWRA Mechanical staff replaced the bearings on Raw Wastewater Pump No. 1.

- Quincy Pump Station: MWRA Electrical staff replaced the Variable Frequency Drive (VFD) on Wastewater Pump No. 3.
- Hingham Pump Station: MWRA Mechanical staff replaced the grinder at the facility.
- Alewife Pump Station: MWRA Mechanical staff replaced the grinder at the facility.
- New Neponset Pump Station: MWRA Electrical staff replaced the explosion proof lighting in the wet well of the facility.
- Braintree Weymouth Intermediate Pump Station: MWRA Mechanical staff replaced the belt on the No. 2 screenings conveyor.
- Ward Street Headworks: MWRA Plumbing staff replaced the floor drains in the odor control containment area.
- Ward Street Headworks: MWRA Mechanical staff fabricated and installed new safety cages over the grit collector drives.
- Columbus Park Headworks: MWRA Mechanical staff replaced the flights, chains, sprockets, bearings, and wear strips of Grit Collector No. 2
- Columbus Park Headworks: MWRA Mechanical staff fabricated and installed new safety cages over the grit collector drives.

Capital Projects

In addition to the maintenance projects listed above, the following are Construction and Design Capital Improvement Projects started or ongoing during FY25:

Construction:

- Nut Island Headworks Odor Control & HVAC Improvements –Contract 7548 substantially complete 9/2023
- Braintree-Weymouth Pump Station Improvements - Contract 7366 substantially completed 5/2025
- Hayes Pump Station Rehabilitation Contract 7375
- Somerville Marginal New Pipe Connection – Contract 7985
- West Roxbury Tunnel Inspection – Contract 6898

Design:

- Ward Street & Columbus Park Headworks Design/ESDC – Contract 7429
- Siphon Structure Rehabilitation Design/CA – Contract 6224
- Interceptor Renewal No. 7 Malden-Melrose Design/ESDC – Contract 7216
- Cottage Farm CSO Facility PCB Abatement – Contract 7392
- Repackaging of the Fuel Storage Tank Replacement Project Contract No. 7692
  - DeLauri and Framingham Pump Stations, and Cottage Farm CSO Facility Fuel Storage Tank Replacements – Final Design and Bidding
  - Caruso and New Neponset Pump Stations Fuel Storage Tank Replacements - Siting Evaluation, Final Design and Bidding
- Ward Street Headworks Make-Up Air Handling Units – Contract 7991 Task Order 14

Pipeline Inspection and Maintenance Projects

The Technical Inspection Unit oversees all sewer inspections and reporting. By analyzing pipeline inspection results and wastewater flow data, the unit schedules maintenance activities to ensure reliable system performance and reduce the risk of blockages or structural failures. Below are examples of key inspection programs and rehabilitation projects carried out during the past fiscal year:

Manhole Inspection and Rehabilitation Program

The Technical Inspections Unit (TIU) of the Wastewater Operations Department conducts manhole inspections. These inspections facilitated the beginning of the manhole rehabilitation program. Specialized equipment and training are the essential elements of the program. Pipeline maintenance crews perform manhole renovations and repairs that result in reduced I/I. The manholes are coated using cementitious material applied with spinning equipment and then covered with special coatings to resist corrosion from hydrogen sulfide.

In FY25, TIU staff inspected 661 manholes. In-house staff rehabilitated approximately 45 manholes. The rehabilitation work included frame and cover replacement, external repairs to raised manholes, internal repairs using the spin-cast application, and other miscellaneous repair work.

Pipeline Inspection and Cleaning Projects

To efficiently and consistently maintain the wastewater collection system, the Technical Inspection and Wastewater Pipeline Maintenance groups were merged. The work performed by the inspection staff is an important element in the planning and execution of pipeline maintenance work. The inspection tasks are shared by the entire staff, and the maintenance workload is prioritized based on inspection data and information.

TIU conducts internal inspections of MWRA structures and pipelines to reveal potential problem areas and identify locations requiring maintenance. Pipeline inspections average about 67% of the workload followed by inspections of other structures and manholes. Approximately 29 miles of pipelines were TV inspected in FY25.

Pipeline maintenance crews perform a variety of maintenance activities for MWRA's Wastewater Transport system. The Transport collection system includes 240 miles of interceptor sewer lines. Approximately 42.63 miles of pipeline were cleaned. In FY25, 42 siphon barrels were inspected, and 71 siphon barrels were cleaned.

In addition to general pipeline and manhole repair work performed under this program, the following are other activities pipeline crews perform during the year:

- Pipeline spot repair work in shallow excavations
- Snow plowing and removal during winter months
- NPDES inspections and best management practice activities
- Emergency pumping activities for communities during major wet weather events
- By-pass pumping for contracted pipeline rehabilitation or repairs
- Emergency response and overflow monitoring during wet weather events
- Response to odor complaints in the system

Pipeline Rehabilitation Projects

Pipeline Rehabilitation projects are first identified by the TIU during routine inspections of

the pipelines and interceptors. MWRA engineers review these projects and perform or coordinate all necessary design and construction contracting. The following are the pipeline construction/rehabilitation projects under design & construction in FY25:

- Siphon Structure Rehab Design/CA – Contract 6224 (100% design)
- Interceptor Renewal No. 7 Malden-Melrose Design/CS – Contract 7216 (100% design)

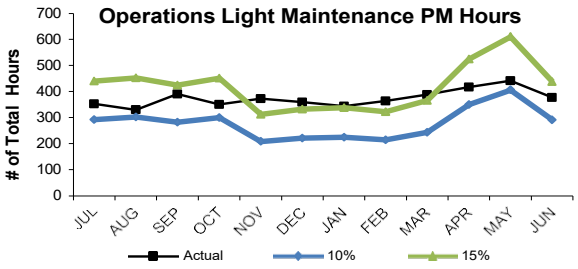
The following pages adapted from MWRA's quarterly performance report to the Board of Directors, the "Orange Notebook", summarize key indicators relating to Wastewater Transport Pipeline Maintenance and Equipment/Facility Maintenance. The full Orange Notebook can be found at: https://www.mwra.com/about-mwra/reports-publications/board-directors-quarterly-report-key-indicators-mwra-performance

Wastewater Transport

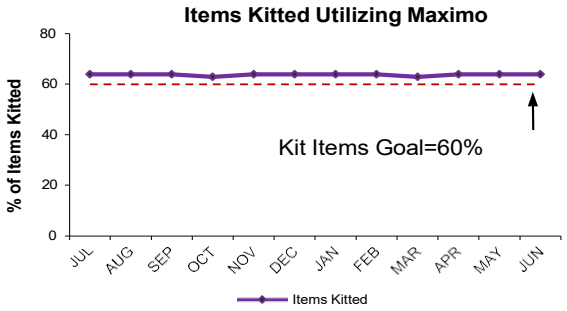
Overall, Field Operations' Metropolitan Equipment & Facility Maintenance

FY25

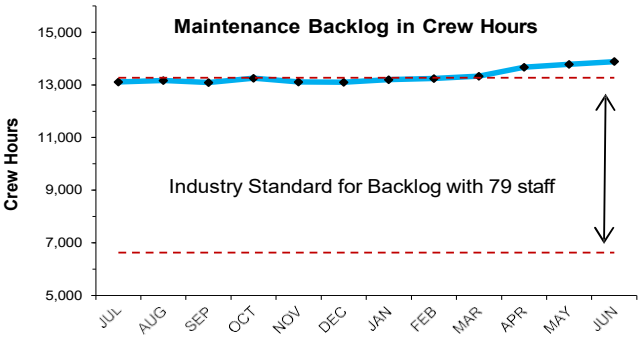
Several maintenance and productivity initiatives are in progress. The goal for the Overall PM completion and the Operator PM completion is 100%. The Operator PM and kitting initiatives frees up maintenance staff to perform corrective maintenance and project work, thus reducing maintenance spending. Backlog and overtime metrics monitor the success of these maintenance initiatives.



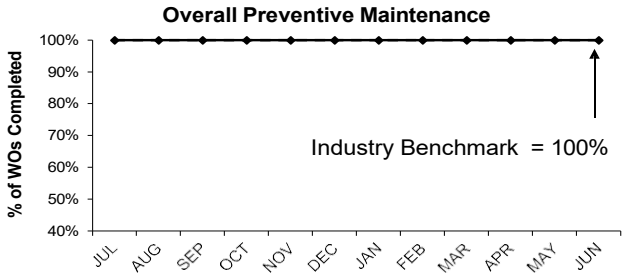
Operations staff averaged 412 hours per month of preventive maintenance during the 4th Quarter of FY25, an average of 12% of the total PM hours for the 4th Quarter, which is within the industry benchmark of 10% to 15%.



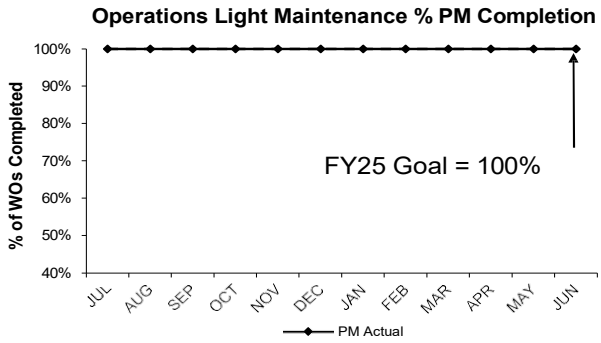
Operations' FY25 maintenance kitting goal has been set at 60% of all work orders to be kitted. Kitting is the staging of parts or material neccesary to complete maintenance work. In the 4th Quarter of FY25, 64% of all applicable work orders were kitted. This resulted in more wrench time and increased productivity.



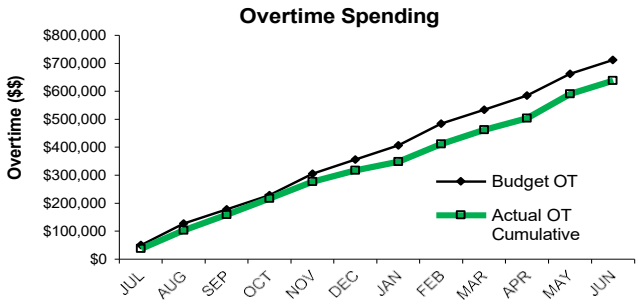
The 4th Quarter of FY25 backlog average is 13,790 hours. Which is above the industry benchmark of 6,636 to 13,275 hours.The current backlog is due to vacancies and several large maintenance projects.



The Field Operations Department (FOD) preventive maintenance goal for FY25 is 100% of all PM work orders. Staff completed 100% of all PM work orders in the 4th Quarter of FY25.



Wastewater Operations complete light maintenance PM's which frees up maintenance staff to perform corrective maintenance. Operations' FY25 PM goal is completion of 100% of all PM work orders assigned. Operations completed 100% of PM work orders in the 4th Quarter of FY25.



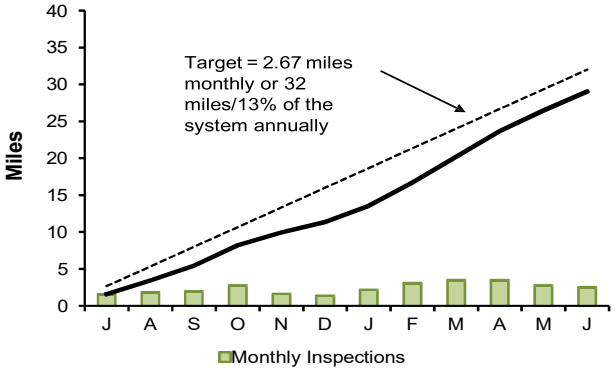
Maintenance overtime was $580 under budget on average, per month, for the 4th Quarter of FY25. Overtime is used for critical maintenance repairs and wet weather events. The overtime budget through the 4th Quarter of FY25 is $712,460 Overtime spending was $638,815 which is $73,645 under budget for the fiscal year.

Wastewater Transport

Wastewater Pipeline and Structure Inspection and Maintenance FY25

Inspections

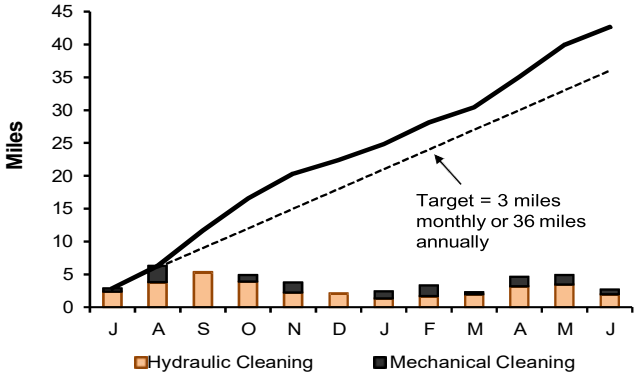
Pipeline Inspections



Staff internally inspected 2.56 miles of MWRA sewer pipe during this month.The year to date total is 29.03 miles. No Community Assistance was provided.

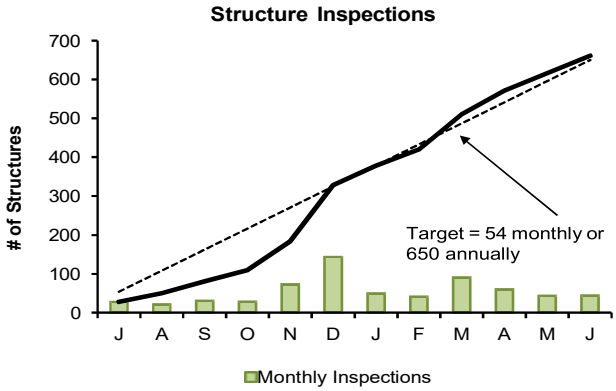
Maintenance

Pipeline Cleaning



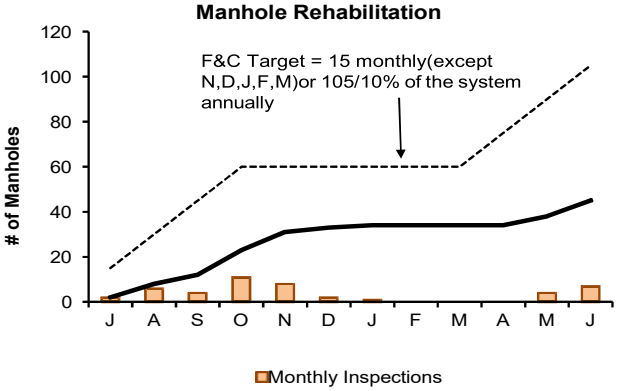
Staff cleaned 2.67 miles of MWRA sewer pipe, and removed 4.50 yards of grit. The year to date total is 42.63 miles of pipe cleaned. No Community Assistance was provided this month.

Structure Inspections



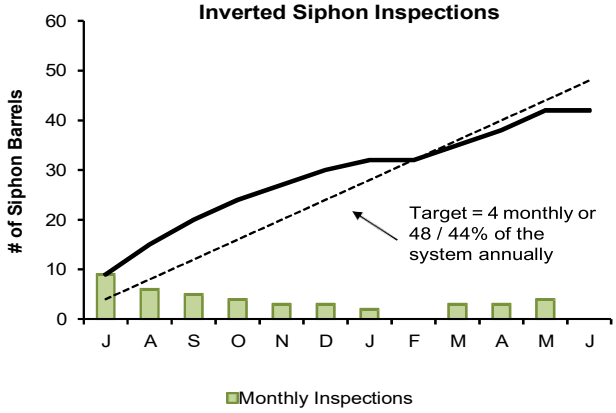
Staff inspected the 12 CSO structures and performed other additional 45 manhole/structure inspections during this month. The year to date total is 661 inspections.

Manhole Rehabilitation



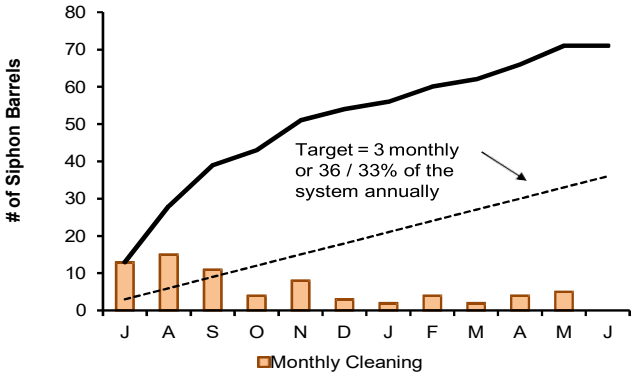
Staff replaced 7 frames and covers this month.The year to date total is 45.

Inverted Siphon Inspections



Staff inspected 0 siphon barrels this month. The year total is 42 siphon barrels inspected.

Inverted Siphon Cleaning



Staff cleaned 0 siphon barrels this month. The year total is 71 barrels cleaned.

Status Sheet
Fore River Pelletizing Plant
July 2024 – June 2025

Fore River Maintenance reports on Key Performance Indicators for FY25.

Critical Equipment Availability: 83.33%

Operating logs indicate that out of 2,190 machine days in FY25, centrifuges were available for 1,825 days, resulting in an availability rate of 83.33%. Two rotating assemblies were at the OEM repair shop for a total of 124 days. The centrifuges and ancillary equipment are considered critical components at the Pelletizing Plant, as dewatered sludge can either be processed through the dryers or diverted via a bypass system to trucks for landfill disposal.

The primary cause of downtime was the disassembly and cleaning of the rotating assemblies. Currently, 10 out of 12 centrifuges are operational, providing the plant with more than enough capacity to handle flows from Deer Island. The facility operates on a five-day work week, with operations typically paused on weekends.

Maintenance Work Orders and Backlog:

In FY25, a total of 1,851 work orders were created in the eMaint CMMS. Of these:

- 1,137 were preventive maintenance (PM) tasks,
- 242 were planned,
- 406 were unplanned, and
- 66 were safety-related work orders.

As of July 1, 2025, there were 45 open work orders, representing a 97.6% completion rate. Of the 45 open orders, 30 were entered within the previous 30 days and are still within the self-established 30-day window for completion.

The preventive maintenance system is continuously being updated to reflect equipment changes, revised lubrication schedules, and new inspection and cleaning practices. Additionally, operations staff are using the system to track non-routine cleaning tasks, helping to determine optimal cleaning frequencies and enabling these tasks to be scheduled as preventive rather than corrective actions.

Maintenance:

Over $1.44 million was spent on replacement parts and maintenance-related items in FY25, including:

- Initiation of the grit cleaning project
- Centrifuge repairs: two complete rotating assemblies were returned to the manufacturer and overhauled to OEM specifications
- Replacement of ceramic media in one of four RTOs
- Purchase of replacement trunnions for Trains 2 and 4
- Replacement of Train 3 Mixer B due to corrosion-related failure
- Replacement of two heat exchanger gasket sets

- Replacement of the north and south pit pumps
- Purchase of two sets of replacement packed tower media
- Replacement of silo thermocouple rope