WATER 6/13/2023

EXPENDITURE SUMMARY	F	Y23 Budget	F	Y24 Budget	get Difference		ce % Change	
Salaries & Wages	\$	8,567,980	\$	9,267,625	\$	699,645	8.2%	
Other Ordinary Maintenance	\$	4,708,410	\$	5,923,760	\$	1,215,350	25.8%	
Travel & Training	\$	86,580	\$	86,580	\$	-	0.0%	
Extraordinary Expenditures	\$	175,000	\$	225,000	\$	50,000	28.6%	
Total Expenditures	\$	13,537,970	\$	15,502,965	\$	1,964,995	14.5%	

BUDGET OVERVIEW

BUDGET FISCAL YEAR - FY24

FY24 budget represents an increase of \$1,964,995 from the FY23 Adopted Budget.

SW has increased because of COLAs as well as the addition of (1) Laboratory and Administrative Assistant,(1) Watershed Technical Assistant and (2) Water Department Apprentices. The Administrative Assistant has been removed from the FY24 budget.

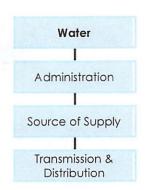
OOM has increased by \$1,215,350 due to increased costs in chemicals \$765,975 and energy \$449,375.

TT remains level funded.

EE has been increased by \$50,000 to cover the anticipated cost of the new crew utility vehicle.

DEPARTMENT OVERVIEW

The Cambridge Water Department (CWD) is a municipally owned and operated water utility servicing approximately 119,000 residents and operating under the general direction of the City Manager. The Cambridge Water Board is comprised of five resident members appointed by the City Manager who serve in an advisory capacity to the City Manager and the Managing Director of the Water Department. The Department's mission is to provide a safe, uninterrupted water supply of the highest quality to the residents of Cambridge.



CWD works to ensure excellent water quality so that Cambridge drinking water

continues to exceed all Federal and State Regulations. Cambridge remains in full compliance with the Massachusetts Department of Environmental Protection (DEP) regulation regarding six (6) Per-and Polyfluoroalkyl Substances (PFAS6) and continues investing in infrastructure and treatment in order to further exceed those standards. In early February, the granular activated carbon (GAC) filter media was changed out for all six filters which is anticipated to reduce PFAS6 concentrations well below the state standards.

Beginning in June 2022, the Secretary of Energy and Environmental Affairs declared that Cambridge had entered a drought that did not end until the beginning of February 2023. This was the second time since 2020 that Cambridge has been in drought conditions. As a result of these frequently reoccurring droughts, the Department has been promoting water conservation on the website, through social media and by including water conservation information in water bills. Additionally, the Department will continue to work with-high volume users as well as City departments to explore water conservation especially through efficient irrigation practices. The Department is also updating the drought management plan to include information learned during the 2016-2017 and two more recent droughts.

CWD continues to offer many educational opportunities for visitors both virtually and around the Fresh Pond Reservation, including tours of the treatment plant; the Monarch Butterfly Release; and a wide array of programs throughout the year encouraging the public to visit and learn about the Reservation and the water system. In FY24, the department will look to increase its social media presence, including creating more educational videos as well as exploring new outlets to reach the public.

The top priorities for FY24 will be to: monitor PFAS6 levels to ensure that the new GAC filter media consistently provides levels superior to state standards; continue to understand and improve the drought management of the City water system as well as inform customers on water conservation techniques via social media, webpage, and bill inserts; continue implementing the Department's Water Main Rehabilitation Program; continue to finalize the design of the Hydroelectric Renewable Energy Project; continue the upgrade of the treatment plant's Supervisory Control and Data Acquisition (SCADA) system which is the software and hardware that enables staff to operate, control, and document the operations of the treatment plant; initiate and complete the Hobbs Brook Dam and Gatehouse repairs; and prepare to implement the proposed new DEP lead and copper rule.

CWD is regulated by federal and state drinking water codes and is comprised of three divisions: Administration, Source of Supply, and Transmission & Distribution. The Cambridge water system is comprised of the watershed and its related facilities such as gatehouses, dams, and spillways; the Hobbs Brook, Stony Brook, and Fresh Pond Reservoirs; the Stony Brook conduit; the treatment plant; the Payson

Park finished water reservoir, including the force and transmission lines; the distribution system; and Massachusetts Water Resources Authority (MWRA) interconnects.

CWD continues to implement a long-term capital strategic plan to maintain the integrity and functionality of the City's water system. This includes routine water main rehabilitation; water treatment plant maintenance and upgrades; upkeep, maintenance and repair of watershed infrastructure, such as dams and gatehouses; water conservation; and continuing energy conservation practices and renewable energy expansions through hydroelectric power generation.

WATER DEPARTMENT FINANCIAL OVERVIEW

FINANCING PLAN BY SOURCE	FY22 Actual	FY23 Projected	FY24 Budget	
CHARGES FOR SERVICES	\$15,737,495	\$18,252,750	\$15,502,965	
TOTAL BUDGETED REVENUE	\$15,737,495	\$18,252,750	\$15,502,965	
EXPENDITURES BY STATUTORY CATEGORY				
SALARIES & WAGES	\$8,399,430	\$8,363,120	\$9,267,625	
OTHER ORDINARY MAINTENANCE	\$4,239,770	\$4,352,280	\$5,923,760	
Travel & Training	\$91,455	\$86,580	\$86,580	
EXTRAORDINARY EXPENDITURES	\$118,960	\$175,000	\$225,000	
TOTAL BUDGETED EXPENDITURES	\$12,849,615	\$12,976,980	\$15,502,965	
FULL-TIME BUDGETED EMPLOYEES	59	60	60	

WATER - ADMINISTRATION

MISSION & SERVICES

The Administration Division is responsible for personnel, financial, metering, cross connection, social media, customer relations, and other administrative functions of the Water Department. The Division assists in the quarterly processing of water bills for approximately 15,000 metered accounts in the City, as well as all other billings. The Division is also responsible for the automated meter reading system, which leads to more accurate billing, allows customers to monitor water usage, and enables early notification of potential leaks through the "high read" notification program. The Division also inspects and resolves leaks, faulty registrations, damaged meters, non-compliant water connections, and other customer service issues. The Engineering team within the Division provides technical services to the Department, plans and provides oversight of capital improvements, maintains maps and records, and coordinates water projects with other City departments.

FY24 OBJECTIVES & PERFORMANCE MEASURES

- Continue implementing an online meter reading system to allow customers to monitor their usage activity and consumption.
- Improve metering and meter reading efficiency by replacing older meters and meter transmitter units. Improve customer service by providing notifications to account owners via email, phone, and/or mail for unusually high meter reads.
- 3. Improve customer relations through public education programs, including webpage updates, social media posts, tours, open houses, and school and community activities.

- 4. Maintain the cross connection program in order to protect public health by performing 100% of DEP requirements.
- 5. Maintain safe drinking water during construction, fire safety, and industrial process activities by reviewing all water-related plans and issuing water construction permits in a timely manner.

		PERFORMANCE MEASURES	FY22 ACTUAL	FY23 Projected	FY24 Target
	4	Number of back flow devices tested	5,619	5,700	5,700

ADMINISTRATION DIVISION FINANCIAL OVERVIEW

EXPENDITURES BY STATUTORY CATEGORY	FY22 Actual	FY23 Projected	FY24 Budget	
SALARIES & WAGES	\$1,865,295	\$2,061,350	\$2,158,165	
OTHER ORDINARY MAINTENANCE	\$373,870	\$413,355	\$413,355	
Travel & Training	\$91,455	\$86,580	\$86,580	
EXTRAORDINARY EXPENDITURES	\$0	\$0	\$0	
TOTAL BUDGETED EXPENDITURES	\$2,330,620	\$2,561,285	\$2,658,100	
FULL-TIME BUDGETED EMPLOYEES	13	13	13	

WATER - SOURCE OF SUPPLY

MISSION & SERVICES

The Source of Supply Division includes the Watershed and Water Treatment Operations (WTO) teams. Together, the teams ensure the delivery of reliable, sustainable and high-quality water to the City of Cambridge in a cost-effective and efficient manner, and work to protect public health and the environment for the community.

The Watershed Team is responsible for the management and operation of the City's three reservoirs. The Team works to develop and implement watershed protection and emergency response plans, conducts environmental and raw water quality monitoring, and works with all watershed stakeholders to ensure long-term protection of the City's drinking water supply. The Watershed Team also manages the grounds at Fresh Pond Reservation (Cambridge's largest open space) and implements Fresh Pond Master Plan recommendations.

The WTO Team consists of licensed drinking water treatment operators responsible for providing high-quality treatment for high-quality water and is primarily responsible for the operation of the Walter J. Sullivan Water Purification Facility. This includes maintaining a certified water quality laboratory, plant process control, regulatory compliance, distribution system monitoring, and performing a variety of customer support services.

The DEP PFAS public drinking water standard of 20 nanograms per liter (ng/L) (or parts per trillion (ppt)), individually or for the sum of the six PFAS compounds (PFAS6), went into effect for large systems such as CWD's in January 2021. The City began voluntarily sampling for PFAS in August 2019, at which time CWD initiated the development of a PFAS reduction plan. With support from DEP, a bench scale pilot study was developed and completed by the end of 2021 to determine the best filtering method to reduce PFAS levels. Results indicated that granular activated carbon (GAC) is the best method for CWD to significantly reduce Cambridge's PFAS concentrations.



One of the water filters with newly replaced granular activated carbon media

In 2022, CWD replaced filter media in all six filters, two at a time. With the new filter media in place, PFAS6 testing results have been consistently well below DEP's 10ppt waiver threshold. If monthly compliance results remain consistently below 10ppt, DEP will put CWD on a quarterly monitoring schedule. 10ppt is the equivalent of a single drop of water in two Olympic-sized swimming pools.

CWD has initiated the purchase a Liquid chromatography mass spectrometer (LCMS) to test PFAS inhouse, with the expected installation date by the end of June. The enhanced testing will help protect Cambridge's 24-square-mile upcountry and Fresh Pond watersheds located in Lexington, Lincoln, Waltham, Weston, and Cambridge, allowing the Department to do extensive PFAS investigation within the watershed and treatment plant. The testing will also determine the GAC filter media changeout schedule to ensure that Cambridge water is continually of the highest standards.

FY24 OBJECTIVES & PERFORMANCE MEASURES

- 1. Continue to implement and update watershed protection, site monitoring, and emergency response plans to protect the City's source water supply.
- 2. Streamline Site Monitoring Program permit review, reporting, and stakeholder communications.
 - 3. Manage watershed and reservoir infrastructure to ensure safe and continuous delivery of water to the treatment facility.
 - 4. Maintain the Source Water Quality Monitoring Program and create an interactive annual report platform.
 - 5. Perform 100% of the required DEP analytical testing.

5



- 6. Continue to implement strategies to reduce energy consumption.
- *
- 7. Update the Drought Management Plan from 2016 to help with risk-based drought management planning.
- 8. Set up the Liquid chromatography mass spectrometer (LCMS) instrument, used to test PFAS levels, as well as training lab staff and receiving state certification for in house PFAS analysis.

SOURCE OF SUPPLY DIVISION FINANCIAL OVERVIEW

EXPENDITURES BY STATUTORY CATEGORY	FY22 ACTUAL	FY23 Projected	FY24 Budget	
SALARIES & WAGES	\$3,450,315	\$3,317,300	\$3,591,460	
OTHER ORDINARY MAINTENANCE	\$3,634,330	\$3,457,350	\$5,019,900	
Travel & Training	\$0	\$0	\$0	
EXTRAORDINARY EXPENDITURES	\$0	\$0	\$0	
TOTAL BUDGETED EXPENDITURES	\$7,084,645	\$6,774,650	\$8,611,360	
FULL-TIME BUDGETED EMPLOYEES	22	23	23	

WATER - TRANSMISSION & DISTRIBUTION

MISSION & SERVICES

The Transmission and Distribution Division is primarily responsible for maintenance of the underground piping systems. The transmission system, which connects the up-country reservoirs to Fresh Pond, consists of 10.5 miles of pipe ranging in size from 30-63 inches in diameter.

The distribution system, which connects purified water to all City users, consists of approximately 185 miles of pipe ranging in size from 4 - 42 inches, 15,260 service connections, 9,494 water main valves, 1,800 fire hydrants, and 26,554 valve/curb boxes.

This Division regularly performs new water main installation; oversees leak detection and preventative maintenance; provides effective emergency response for leaks and low-pressure situations; and provides assistance and support to customers and other City departments. The Division partners with the Fire Department to ensure a high degree of reliability of fire hydrants throughout Cambridge.

CWD's distribution projects completed in FY23 include Gore Street, Avon Hill Street, Huron Ave Phase 1, Broadway, Inman Square, and Oak Street.

FY24 OBJECTIVES & PERFORMANCE MEASURES

- 1. Rehabilitate the water distribution system.
- Ensure the highest degree of fire protection reliability and functionality through hydrant maintenance, including conducting 100% of required fire hydrant tests throughout the city.
- 3. Maintain a percentage rate of 99.9% of in-service hydrants.
 - 4. Expand and enhance the operation and maintenance of the water infrastructure to minimize the duration of water outages as a result of water main breaks and/or planned shutdowns to facilitate construction activities.

Овј.	PERFORMANCE MEASURES	FY22 ACTUAL	FY23 Projected	FY24 Target
2	Number of fire hydrants replaced	73	60	25

TRANSMISSION & DISTRIBUTION DIVISION FINANCIAL OVERVIEW

EXPENDITURES BY STATUTORY CATEGORY	FY22	FY23	FY24
. EXIENDITORES DI STATOTORI CATEGORI	ACTUAL	Projected	BUDGET
SALARIES & WAGES	\$3,083,820	\$2,984,470	\$3,518,000
OTHER ORDINARY MAINTENANCE	\$231,570	\$481,575	\$490,505
Travel & Training	\$0	\$0	\$0
EXTRAORDINARY EXPENDITURES	\$118,960	\$175,000	\$225,000
TOTAL BUDGETED EXPENDITURES	\$3,434,350	\$3,641,045	\$4,233,505
FULL-TIME BUDGETED EMPLOYEES	24	24	24

POSITION LIST

Water	Positions
Administrative & Fiscal Operations Manager	1
Assistant Distribution Manager	2
Construction Inspector	2
Cross Connection Supervisor	1
Customer Service Specialist	1
Director of Administration	1
Director of Distribution & Engineering	1
Director of Water Operations	1
Engineer	1
Facilities Manager	1
Fiscal Coordinator	1
Instrumentation & Maintenance Manager	1
Inventory Control Specialist	1
Laboratory and Administrative Assistant	1
Manager of Engineering	1
Managing Director	1
Meter Technician	1
Meter Technician Supervisor	1
Motor Equipment Operator	4
Motor Equipment Repairperson	2
Plant Operations Team Leader	4
Plant Operator	4
Production Manager	1
Project Administrator	1
Ranger	2
Reservoir Caretaker	2
Reservoir System Manager	1
Water Quality Supervisor	3
Water System Maintenance Craftsperson	8
Watershed Manager	1
Watershed Supervisor	1
Watershed Technical Assistant	1
Working Supervisor	5
Total	60



WATER: FACILITY UPGRADES

FY24 Project Description	CITY COUNCIL GOALS
FY25 funds will be used for remote site security and elevator upgrades.	*

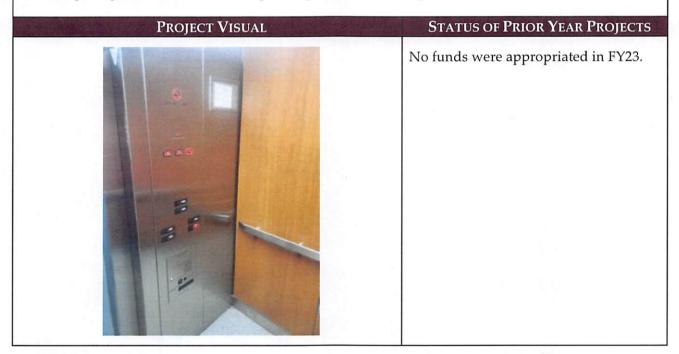
IMPACT ON OPERATING BUDGET

Planned facility upgrades reduce the need for costly emergency repairs.

5-YEAR APPROPRIATION PLAN							
FUNDING SOURCE	FY24	FY25	FY26	FY27	FY28	TOTAL	
Water Service Charges	\$0	\$50,000	\$75,000	\$25,000	\$25,000	\$175,000	
GRAND TOTAL	\$0	\$50,000	\$75,000	\$25,000	\$25,000	\$175,000	

FY25-FY28 FUNDING

Future funding will be used for additional remote site security, continued roof replacement, upcountry barn, carpet replacement, and interior painting of the treatment plant.



WATER: FRESH POND MASTER PLAN IMPLEMENTATION

FY24 Project Description	CITY COUNCIL GOALS
FY24 Funds will be used for various Fresh Pond Reservation Master Plan priorities including Birch Grove seating area permitting, bid, and construction services, and Pine	*
Forest Phase 1 design and permitting services.	1 a

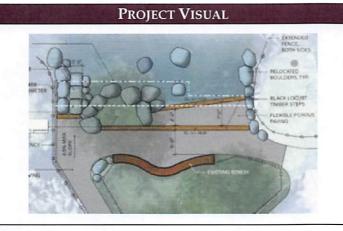
IMPACT ON OPERATING BUDGET

As projects are completed, there is the potential for increased maintenance costs.

5-YEAR APPROPRIATION PLAN								
FUNDING SOURCE	FY24	FY25	FY26	FY27	FY28	TOTAL		
Water Service Charges	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$1,250,000		
GRAND TOTAL	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$1,250,000		

FY25-FY28 FUNDING

Future funds will be used for Fresh Pond Master Plan priorities including the design of Pine Forest Phase 1, and Kingsley Park Phase 2.



STATUS OF PRIOR YEAR PROJECTS

FY23 funds were used for various Fresh Pond Reservation Master Plan priorities, including Birch Grove seating area improvements; Black's Nook design, bid, and Contract Administration; and Resident Engineering services.

WATER: GRANULAR ACTIVATED CARBON (GAC) FILTER MEDIA REPLACEMENT

FY24 Project Description	CITY COUNCIL GOALS
Future funds will be used to replace the Granular Activated Carbon (GAC) used as a fine filter for finished drinking water. Replacing this filtering media will reduce Per-and-Polyfluoroalkyl Substances (PFAS).	*

IMPACT ON OPERATING BUDGET

This project will not have an impact on the Operating Budget.

5-YEAR APPROPRIATION PLAN								
FUNDING SOURCE	FY24	FY25	FY26	FY27	FY28	TOTAL		
Water Service Charges	\$0	\$1,600,000	\$1,600,000	\$1,600,000	\$1,600,000	\$6,400,000		
GRAND TOTAL	\$0	\$1,600,000	\$1,600,000	\$1,600,000	\$1,600,000	\$6,400,000		

FY25-FY28 FUNDING

ARPA funding will be used to fully support this project in FY24 and partially in FY25. It is estimated that the effective life of the new media in the filters is one year. As a result, the media will be replaced annually.

Project Visual



STATUS OF PRIOR YEAR PROJECTS

Prior year funds were used to cover the cost of the bench scale study as required by the Massachusetts Department of Environmental Protection and were used for the first round of GAC replacement in the fall of 2022.

WATER: RESERVOIR GAGING WEATHER STATION MAINTENANCE

FY24 PROJECT DESCRIPTION CITY COUNCIL GOALS FY24 funds will be used to cover the costs of maintenance/reporting for the United States Geological Survey (USGS) reservoir gaging stations located upcountry. These stations are used to monitor near real-time water supply quantity, and quality, and to maintain proper reservoir levels.

IMPACT ON OPERATING BUDGET

USGS will contribute funds for maintenance/reporting on the reservoir gaging stations, reducing operating costs for the Water Department.

5-YEAR APPROPRIATION PLAN							
FUNDING SOURCE	FY24	FY25	FY26	FY27	FY28	TOTAL	
Water Service Charges	\$240,000	\$240,000	\$240,000	\$250,000	\$260,000	\$1,230,000	
GRAND TOTAL	\$240,000	\$240,000	\$240,000	\$250,000	\$260,000	\$1,230,000	

FY25-FY28 FUNDING

Future funds will be used to cover maintenance for the reservoir gaging weather station located upcountry.

PROJECT VISUAL

STATUS OF PRIOR YEAR PROJECTS

Prior year funds were used to cover the costs of maintenance/reporting for the USGS reservoir gaging stations located upcountry.

WATER: RESERVOIR IMPROVEMENTS - UPCOUNTRY

FY24 Project Description	CITY COUNCIL GOALS
FY24 funds will be used to continue the repair of the Hobbs Downstream Slope and remove vegetation from City-owned easements. Additionally, \$334,000 has been	*
allocated for the essential repair work for the Hobbs Brook Gatehouse and Culvert Outlet. The total cost of the repairs is projected to be \$1,334,000 of which, \$1,000,000 will	Ťa
Outlet. The total cost of the repairs is projected to be \$1,334,000 of which, \$1,000,000 will be funded through a grant from the Office of Dam Safety.	14

IMPACT ON OPERATING BUDGET

There is no impact on the operating budget.

5-YEAR APPROPRIATION PLAN							
FUNDING SOURCE	FY24	FY25	FY26	FY27	FY28	TOTAL	
Water Service Charges	\$439,000	\$197,000	\$185,000	\$200,000	\$152,000	\$1,173,000	
GRAND TOTAL	\$439,000	\$197,000	\$185,000	\$200,000	\$152,000	\$1,173,000	

FY25-FY28 FUNDING

Future funds will be used to continue the repair of the Hobbs Downstream Slope, repair of Hobbs Gatehouse/discharge pipe, Downstream removal of vegetation from City-owned easements, Pine Forest Phase 1 improvements, and Stony spillway improvements.

PROJECT VISUAL STATUS OF PRIOR YEAR PROJECTS No funds were appropriated in FY23.

WATER: TREATMENT PLANT EQUIPMENT & SYSTEMS UPGRADES

Future funds will be used for plant instrumentation replacement, backwash pump replacement, and an online turbidimeter replacement. CITY COUNCIL GOALS ** Future funds will be used for plant instrumentation replacement, backwash pump replacement, and an online turbidimeter replacement.

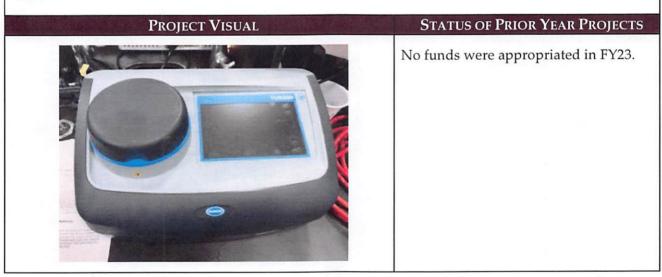
IMPACT ON OPERATING BUDGET

Planned maintenance and replacement of water plant equipment reduces the need for costly emergency repairs and decrease water treatment plant equipment downtime.

5-Year Appropriation Plan							
FUNDING SOURCE	FY24	FY25	FY26	FY27	FY28	TOTAL	
Water Service Charges	\$0	\$300,000	\$287,000	\$212,000	\$250,000	\$1,049,000	
GRAND TOTAL	\$0	\$300,000	\$287,000	\$212,000	\$250,000	\$1,049,000	

FY25-FY28 FUNDING

Future funds will be used for plant instrumentation replacement, facility electrical system preventive maintenance, backwash compressor replacement, high-lift pump rebuild, and replacing chemical feed systems.



WATER: WATER WORKS CONSTRUCTION

FY24 PROJECT DESCRIPTION FY24 funds will be used for waterworks construction projects in coordination with DPW projects, which include repair/replacement of water infrastructure including Inman Street, Willard Street, Chestnut Street, Elm Street, River Street, and Sciarappa Street. Additionally, funds will be used for assistance during emergency repairs and unanticipated needs within the City. This also includes fire hydrant and large valve replacement, police details, and the annual leak detection survey.

IMPACT ON OPERATING BUDGET

Replacement of old water mains reduces the potential of leaks in the system, which in turn reduces potential overtime costs for the Water Department.

5-YEAR APPROPRIATION PLAN							
FUNDING SOURCE	FY24	FY25	FY26	FY27	FY28	TOTAL	
Water Service Charges	\$2,002,000	\$2,000,000	\$2,000,000	\$2,100,000	\$2,100,000	\$10,202,000	
GRAND TOTAL	\$2,002,000	\$2,000,000	\$2,000,000	\$2,100,000	\$2,100,000	\$10,202,000	

FY25-FY28 FUNDING

Future funds will be used for waterworks construction projects and annual leak detection and anticipated rehabilitation of the force main traversing the Huron Avenue Bridge (FY25 to FY28).

PROJECT VISUAL



STATUS OF PRIOR YEAR PROJECTS

Prior year funds were used for water works construction projects coordination with DPW projects, which include repair/replacement of water infrastructure including Winslow Street, Binney Street, Harvard Street, Avon PL, and Huron Avenue. Additionally, these funds were used for assistance during emergency repairs and unanticipated needs within the City. This also includes and large hydrant replacement, police details, and the annual leak detection survey.

WATER: WATERSHED CONSULTING SERVICES

FY24 Project Description			
FY24 funds will be used to support the DEP Source Water Protection Plan, GIS mapping and analysis, specialized site plan review, and an update to the drought management	*		
plan.	Ť.		

IMPACT ON OPERATING BUDGET

Services will have no impact on the operating budget.

5-YEAR APPROPRIATION PLAN							
FUNDING SOURCE	FY24	FY25	FY26	FY27	FY28	TOTAL	
Water Service Charges	\$174,000	\$68,000	\$68,000	\$68,000	\$68,000	\$446,000	
GRAND TOTAL	\$174,000	\$68,000	\$68,000	\$68,000	\$68,000	\$446,000	

FY25-FY28 FUNDING

Future funds will be used to support the DEP Source Water Protection Plan, GIS mapping and analysis, and specialized site plan review.

PROJECT VISUAL STATUS OF PRIOR YEAR PROJECTS No funds were appropriated in FY23 Wayland Wayland