MASSACHUSETTS
CLEAN WATER TRUST

2019 ANNUAL REPORT

Massachusetts Clean Water Trust

Office of the State Treasurer
Executive Office for Administration and Finance
Massachusetts Department of Environmental Protection

1 Center Plaza, Suite 430 | Boston, MA 02108 | **p:** (617) 367-9333

In the U.S. alone, an estimated **76%** of the population depends on nearly **15,000** water resource recovery facilities and a vast network of hidden infrastructure for wastewater services. An additional **56 million** people are expected to connect to these centralized systems by **2032.**

American Society of Civil Engineers
2017 Infrastructure Report Card

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LET'S GET IN TOUCH

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Massachusetts Clean Water Trust
mass.gov/orgs/massachusetts-clean-water-trust-mcwt

MESSAGE FROM THE CHAIR

The Massachusetts Clean Water Trust (the Trust) is pleased to submit our Clean Water and Drinking Water State Revolving Fund Annual Report for the 2019 fiscal year. The Trust's loan program is a collaborative effort between the State Treasurer's Office, the Executive Office for Administration and Finance, the Massachusetts Department of Environmental Protection (MassDEP) and communities across the Commonwealth.

To date, approximately $2.5 billion in federal grants and state matching funds have supported nearly $7.3 billion in water infrastructure planning and construction projects through a leveraged financing program.

With its AAA credit rating, the Trust finances vital infrastructure projects that enhance ground and surface water resources, ensures the safety of drinking water, protects public health and develops resilient communities. Access to below-market rate financing makes improvements to water infrastructure more feasible while reducing the overall financial impact on communities and ratepayers.

During 2019, the Trust provided cities and towns approximately $371.1 million in commitments for low interest rate loans, including $21.5 million in loan forgiveness to 31 projects, which will support an estimated 2,227 construction and engineering jobs. Additionally, the Trust launched two new programs to support communities with replacing lead service lines and a grant program to fund asset management planning.

These new programs demonstrate our deep commitment to supporting the Commonwealth's water infrastructure and the health of our residents. By promoting the replacement of lead service lines, it will reduce the chances of lead exposure for residents and do so at a lower cost to communities. Additionally, by funding $2 million of asset management plans, the Trust is assisting communities in creating a plan for asset repairs, replacements, or rehabilitation. This will allow communities to deliver the required level of service, while making informed decisions on where to make vital infrastructure investments.

I would like to sincerely express my appreciation for the staff of the Environmental Protection Agency Region 1 for their efforts during the 2019 fiscal year, and congratulations to the staff of the Trust and MassDEP for a job well done.

Finally, to the cities and towns in Massachusetts, without your commitment and dedication to this vital work, our program would not be a success. Thank you. I look forward to continuing this critical work together.

Sincerely,

Deborah B. Goldberg
Chair
Massachusetts Clean Water Trust
www.mass.gov/treasury

INTRODUCTION

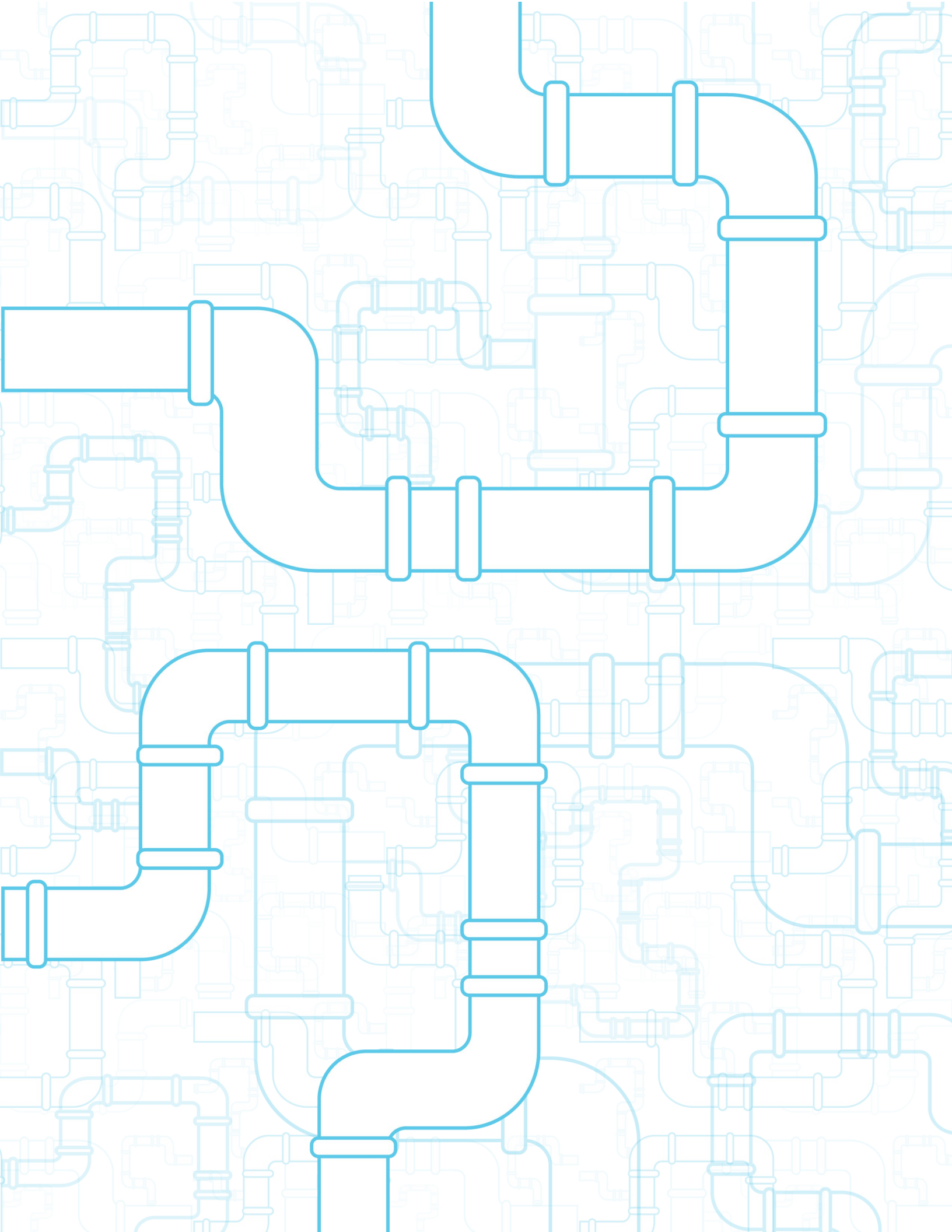
The Massachusetts Clean Water Trust (the Trust), in partnership with the Massachusetts Department of Environmental Protection (MassDEP), provides cities, towns and other eligible borrowers within the Commonwealth of Massachusetts (the Commonwealth) with below market rate loans for water infrastructure projects. MassDEP manages project development and approval while the Trust manages the funds disbursed to communities. Each year, MassDEP prepares the Intended Use Plan (IUP) of projects as required by the Environmental Protection Agency (EPA). Since its inception in 1989, it is estimated that 97% of the Commonwealth's residents have benefited from these essential projects.

The IUPs establish the Trust's project priorities for the upcoming year. This is accomplished through two programs – the Clean Water State Revolving Fund (CWSRF) and the Drinking Water State Revolving Fund (DWSRF). The EPA requires reporting on both programs through the CWSRF Annual Report and the DWSRF Biennial Report. These reports have been combined into this report, which covers the state fiscal year (SFY) ending June 30, 2019.

The Trust receives funding from the EPA in the form of an annual grant, supplemented by state matching funds and the repayment of loans from borrowers. These funds are then loaned to cities, towns and other eligible borrowers at a subsidized interest rate of 2% or less. For projects that remediate specific environmental concerns, such as nutrient enrichment reduction projects, financing is offered at a 0% interest rate. Those projects with extended financing, greater than 20 years, receive a subsidized rate that is higher than 2%. To increase lending capacity, the Trust issues special obligation bonds that receive a AAA rating from all three major rating agencies. The Trust's lending and bond issuance programs are structured to ensure adequate cash flows for funding its loans and repaying its bonds to maturity. The Trust's bonds are secured by a combination of pledged sources, which include loan repayments, contract assistance from the Commonwealth and interest earnings on debt service reserve funds.

ABOUT THIS REPORT

This report is separated into three sections. The first section covers the Financial Reporting for both the CWSRF and DWSRF programs, which covers loans made and financial assistance provided throughout the state fiscal year. The second section is the SRF Financial Summary, which explains how the Trust finances these projects. The third section is Program Specific Reporting, which discusses EPA grant requirements and outlines how the Trust and MassDEP meet those federal requirements. To comply with 40 CFR § 35.3570(a)(4), each section will label reported information by the specific SRF program.



FINANCIAL REPORT

CLEAN WATER AND DRINKING WATER ANNUAL SUMMARY

The Trust continues to provide subsidized financing for projects that focus on the development and rehabilitation of wastewater and drinking water infrastructure with the aim of promoting sustainability, energy efficiency and green infrastructure. The CWSRF and DWSRF programs provide additional subsidies to designated low-income affordability communities. The Trust and MassDEP perform outreach activities to help borrowers realize opportunities to implement energy efficiencies and alternative energy projects. These activities are balanced with the promotion of cost-effective projects that maximize the protection of the environment and public health.

In SFY 2019, the Trust continued to expand its programs by providing binding commitments for 45 clean water projects totaling $299 million and 17 drinking water projects totaling $72.1 million. The total dollar amount for the CWSRF includes the Community Septic Management Program (CSMP). The CSMP provides low interest financing to the Commonwealth's cities and towns to assist homeowners in the repair of failed septic systems.

Binding Commitments

A binding commitment for a project is defined as a legal obligation by the Trust to a borrower that defines the terms and timing for assistance through the SRF program. Please see Appendix B for a complete list of SFY 2019 binding commitments.

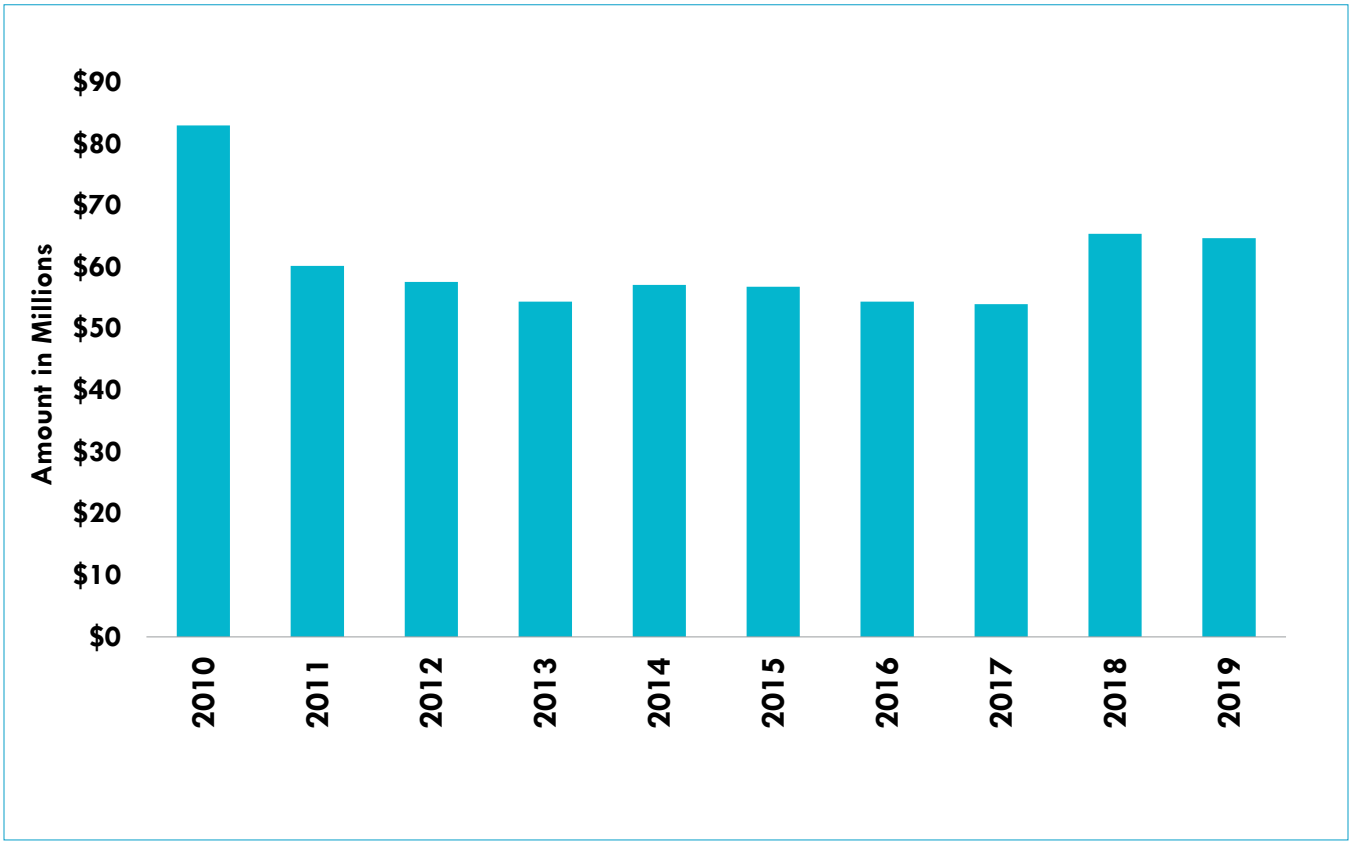
Binding Commitments by Program and SFY

Dollar Amount in Millions

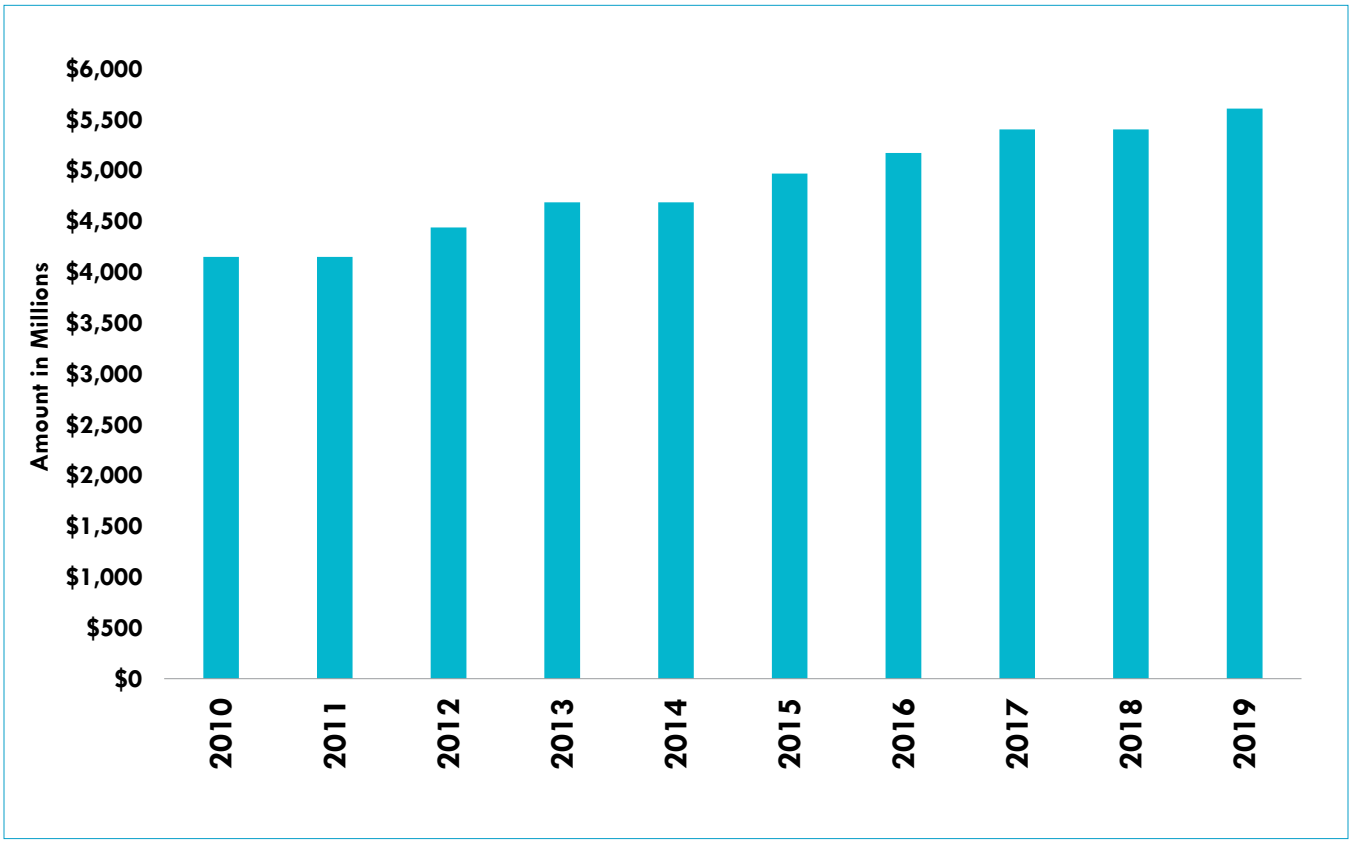
CWSRF			DWSRF	
SFY	Amount	Loans	Amount	Loans
2019	$299.0	45	$72.1	17
2018	98.7	40	133.9	20

Grant Awards

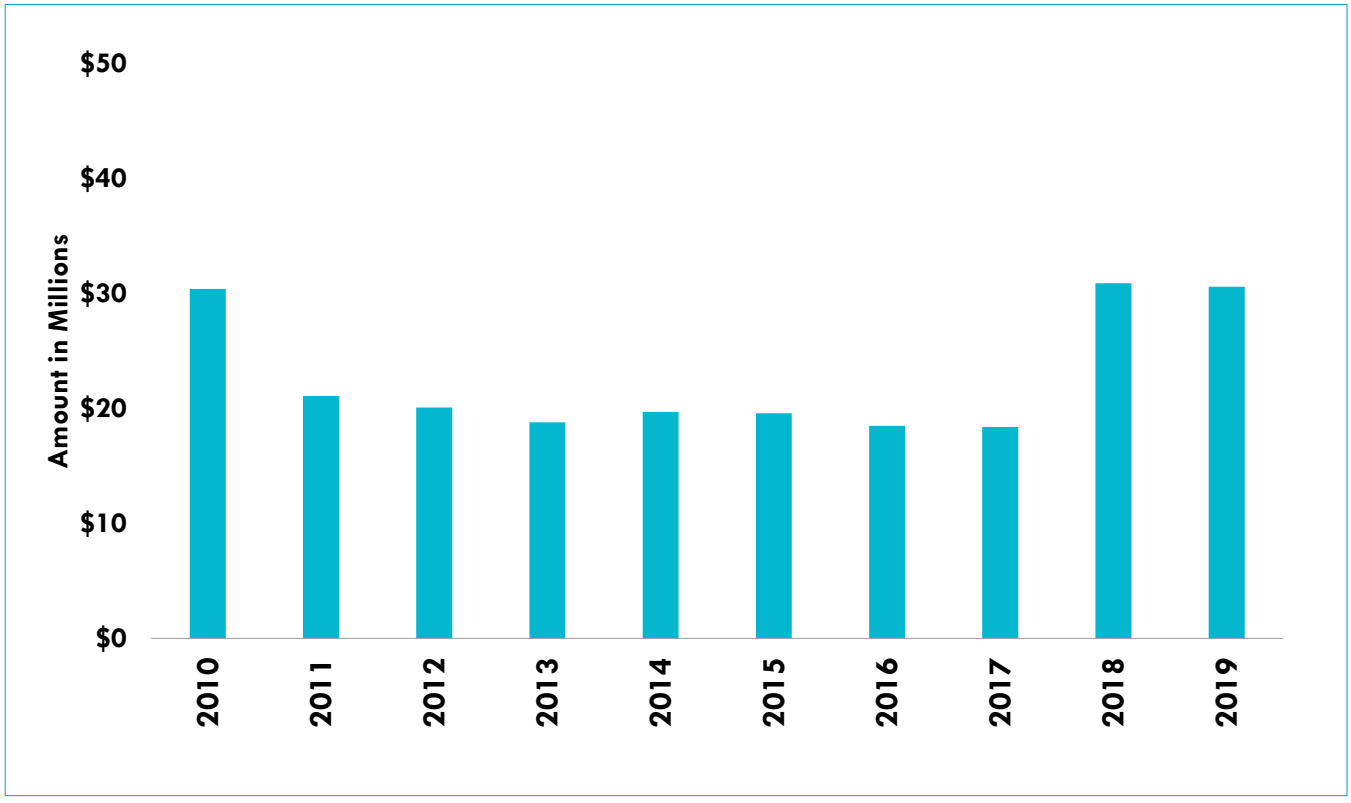
CWSRF Grant Amount by Year



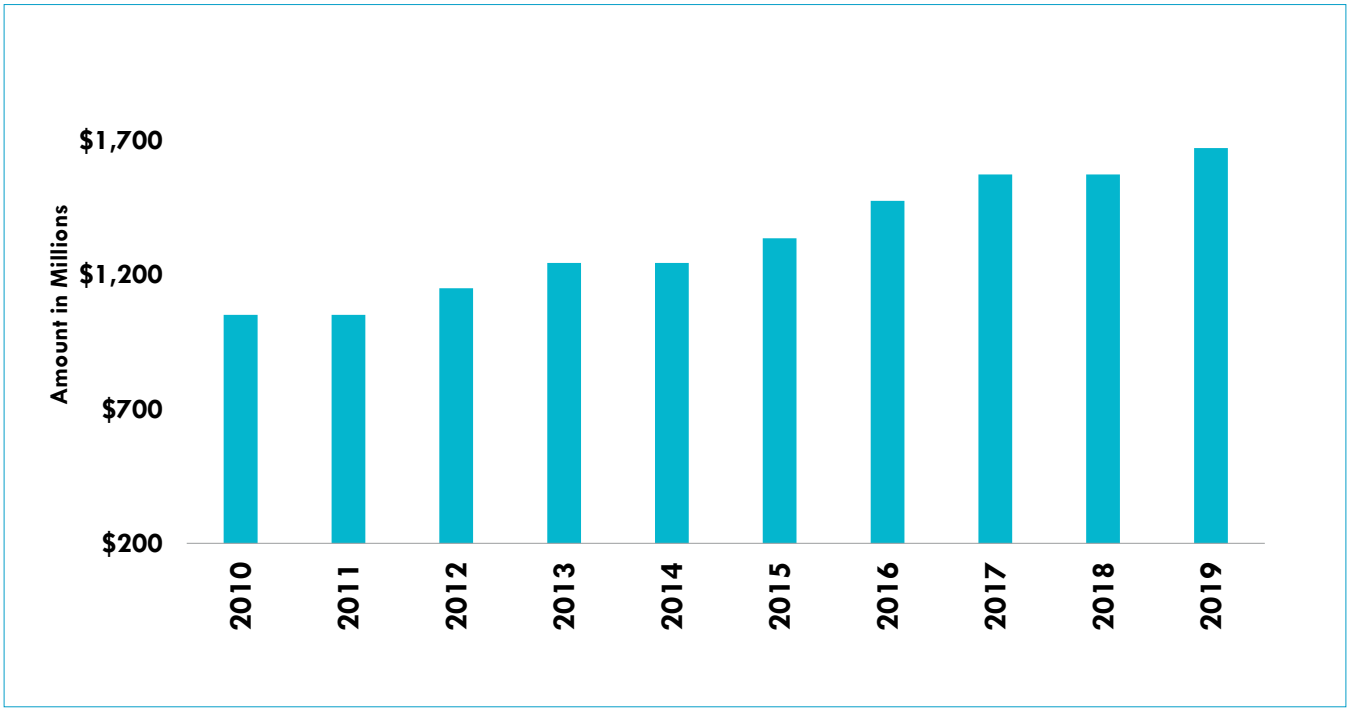
CWSRF Cumulative Loans by Year



DWSRF Grant Amount by Year



DWSRF Cumulative Loans by Year



Disbursements

During SFY 2019, the Trust disbursed the following amounts for projects to borrowers through program project funds and interim loans.

Amount Disbursed and Number of Projects by Program and SFY

Dollar Amount in Millions

CWSRF			DWSRF	
SFY	Amount	Loans	Amount	Loans
2019	$194.0	119	$148.4	46
2018	154.2	100	55.3	36

Interim Loans

Through the Trust's interim loan program, funds are available to projects on the IUPs throughout the year to provide construction financing, like a bond anticipation note. Borrowers can enter a short-term loan that enables projects to proceed prior to a Trust bond sale. The Trust can operate this program by extending the use of funds that have revolved back from loan repayments along with its state and federal grants ("SRF Program Funds") as a source of capital. To make Trust financing even more appealing to borrowers, the Board of Trustees removed the interim loan interest rate and any associated fees in 2016. This change to the program makes interim loans from the Trust the least expensive way for local communities to access capital during construction.

Interim Loan Information by Program and SFY

Dollar Amount in Millions

CWSRF				DWSRF		
SFY	Number of Projects	Amount Drawn in SFY	Total Loan Amounts	Number of Projects	Amount Drawn in SFY	Total Loan Amounts
2019	77	$139.1	$423.9	25	$108.5	$188.8
2018	66	126.1	373.0	21	47.4	167.9

Additional Subsidy

The Trust committed $5.4 million and $5.2 million for the CWSRF and DWSRF, respectively, as additional subsidy in the form of loan forgiveness in compliance with EPA 2018 grant requirements and congressional appropriations. In addition to the additional subsidies mandated from the federal grants, the Trust committed $10.9 million in state contract assistance funds for loan forgiveness to these projects in SFY 2019.

This additional subsidy is dedicated to communities that would not otherwise be able to afford projects. It is being provided as loan forgiveness, which reduces the total principal cost and interest costs paid over the life of the loan. The Trust chose to apply the $21.5 million in total subsidy funds to communities that were deemed affordability communities based upon requirements outlined in the Water Resources Reform and Development Act (WRRDA) of 2014, an amendment to the Clean Water Act. Even though the DWSRF does not have to comply with the Clean Water Act, the Trust used the same methodology for both programs.

Using the methodology outlined in WRRDA, which was approved by EPA Region 1, the Trust's formula considers the per capita income, population trend from 2000-2010 and the employment rate for each community to develop an adjusted per capita income. Each community is then ranked against the state average and communities below the state average are sorted into three tiers. Tier 3 is less than 60% of the state average, tier 2 is 60%-79.99% and tier 1 is 80%-99.99%. Tier 3 communities receive a share and a half of subsidy, tier 2 receives one share and tier 1 receives a half share. The Trust's formula provides the subsidy to communities that are most in need and provides all communities below the state average with an additional incentive to use the Trust.

Number of Eligible Communities by Affordability Tier and SFY

Tier	2019	2018
1	79	74
2	91	95
3	69	69
Not eligible	112	113
Total	351	351

As of June 30, 2019, none of the $21.5 million in additional subsidy from the 2018 grant has been disbursed. The funds should begin to be disbursed within the next few months as the projects begin construction. The process for determining the allocation of this additional subsidy to eligible projects begins on June 30th to coincide with the final date for all contracts to be awarded. Of the $7.6 million of additional subsidy funds from the 2017 grant, $7.4 million have been expended. All additional subsidy funds from the 2016 grant have been expended.

CWSRF Grant Projects Receiving Additional Subsidy					
Borrower	**Tier**	**Loan Number**	**Eligible Project Cost**	**Loan Forgiveness**	**Loan Forgiveness Percentage**
Brockton	3	CWP-18-42	$5,761,750	$348,909	6.06%
Fall River	3	CWP-18-03	5,021,600	304,088	6.06%
Fall River	3	CWP-18-07	6,681,197	404,587	6.06%
Fall River	3	CWP-18-07-A	745,000	45,114	6.06%
Fall River	3	CWP-18-35	1,198,845	72,597	6.06%
Fall River	3	CWP-18-36	3,087,068	186,941	6.06%
Fall River	3	CWP-18-38	22,372,932	1,354,817	6.06%
Goshen	3	CWP-18-11	655,000	39,664	6.06%
Harwich	2	CWP-18-23	14,082,547	568,522	4.04%
Hull	1	CWP-18-29	8,328,254	168,109	2.02%
Lawrence	3	CWP-18-09	9,137,974	553,360	6.06%
Lawrence	3	CWP-18-09-A	4,315,202	261,312	6.06%
Lowell	3	CWP-16-15	13,622,939	824,952	6.06%
Lowell	3	CWP-16-13	6,009,472	363,910	6.06%
Norton	1	CWP-18-43	5,289,438	106,769	2.02%
Pepperell	1	CWP-18-08	4,685,206	94,573	2.02%
Pittsfield	3	CWP-18-12	53,994,451	3,269,691	6.06%
Pittsfield	3	CWP-18-12-A	7,464,332	452,010	6.06%
Revere	3	CWP-18-27	2,000,000	121,112	6.06%
Revere	3	CWP-18-28	4,700,000	284,613	6.06%
Revere	3	CWP-16-17	9,389,955	568,619	6.06%
Revere	3	CWP-16-18	5,192,478	314,436	6.06%
Springfield Water & Sewer Commission	3	CWP-18-18	80,791,549	4,892,418	6.06%
Springfield Water & Sewer Commission	3	CWP-18-18-A	12,341,902	747,377	6.06%
Total			**$286,869,091**	**$16,348,500**	

DWSRF Grant Projects Receiving Additional Subsidy					
Borrower	**Tier**	**Loan Number**	**Eligible Project Cost**	**Loan Forgiveness**	**Loan Forgiveness Percentage**
Adams Fire District	3	DWP-18-04	$950,000	$183,206	19.28%
Barnstable	1	DWP-18-10	10,425,000	670,148	6.43%
Brockton	3	DWP-18-11	3,694,720	712,521	19.28%
Dartmouth	1	DWP-18-05	1,297,895	83,432	6.43%
Fall River	3	DWP-18-15	1,407,170	271,370	19.28%
Gloucester	2	DWP-18-03	2,100,000	269,988	12.86%
Haverhill	2	DWP-18-06	8,547,666	1,098,936	12.86%
Revere	3	DWP-18-09	2,900,000	559,260	19.28%
Southampton	1	DWP-18-12	1,700,000	109,281	6.43%
Spencer	3	DWP-18-13	2,205,175	425,264	19.28%
Taunton	3	DWP-18-07	4,000,000	771,394	19.28%
Total			**$39,227,626**	**$5,154,800**	

STATE REVOLVING FUND

ANNUAL FINANCIAL SUMMARY

The following discussion provides additional details on the financial management activities of the SRF loan program.

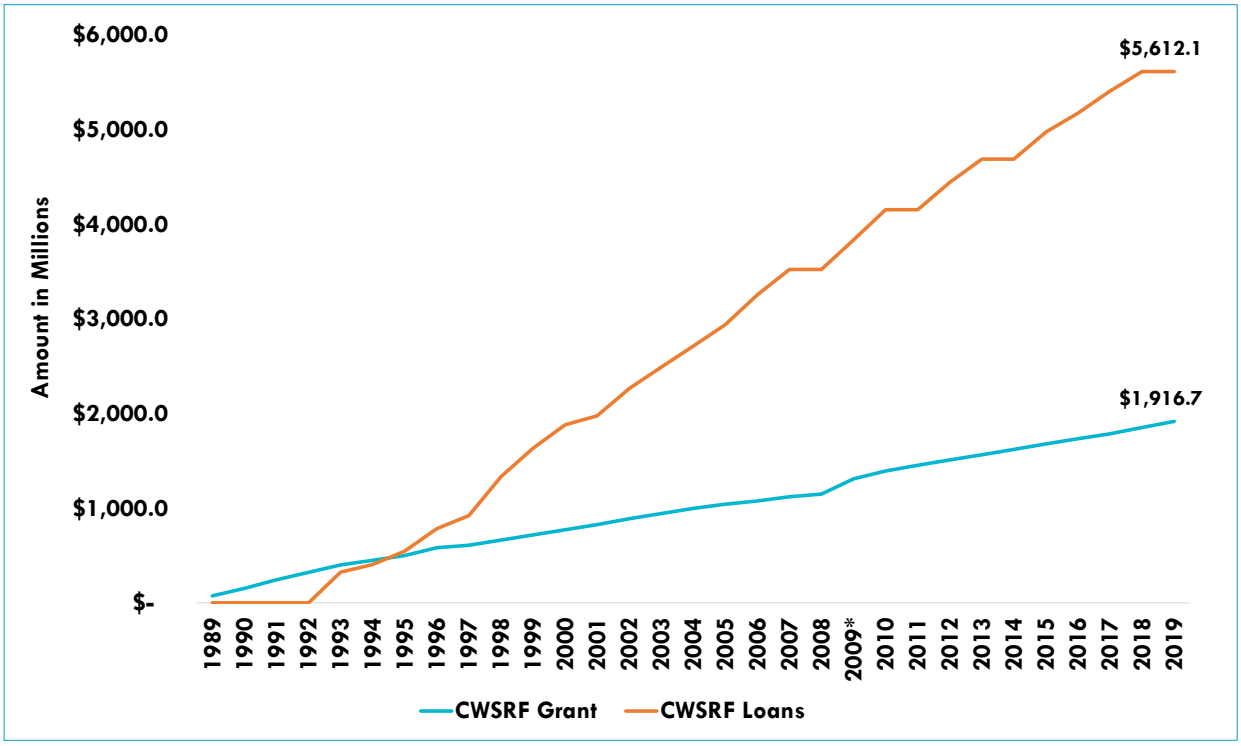
Leveraged Financing Model

The SRF loan program receives funding from the EPA in the form of an annual grant, supplemented by a 20% state matching grant and the repayment of funds from borrowers. The Trust's SRF loan program utilizes a "leveraged" financing model, under which SRF Program Funds are used as a source of security for revenue bonds ("SRF Bonds") issued by the Trust. Proceeds from the SRF Bonds are used to fund loans to local cities, towns and other eligible borrowers for project costs.

The leveraged structure of the Trust's program permits the Trust to substantially increase the amount available to fund eligible project costs across the Commonwealth. Each federal grant and associated state matching grant dollar contributed to the program results in at least three dollars of project cost financing while assuring the perpetual nature

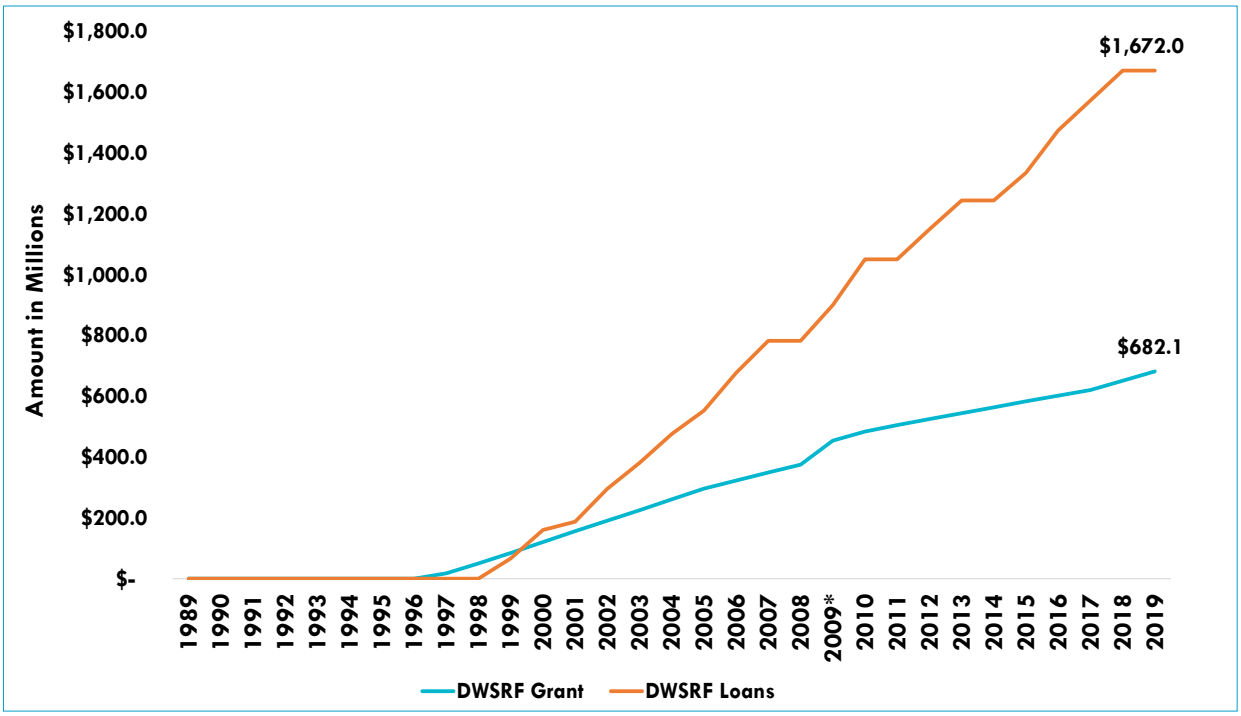
of the revolving fund. The following charts demonstrate the lending ability of the Trust by comparing state and federal grants received, throughout the life of the program to total loans provided.

CWSRF Grant Amount Compared to Cumulative Loan Amounts by SFY



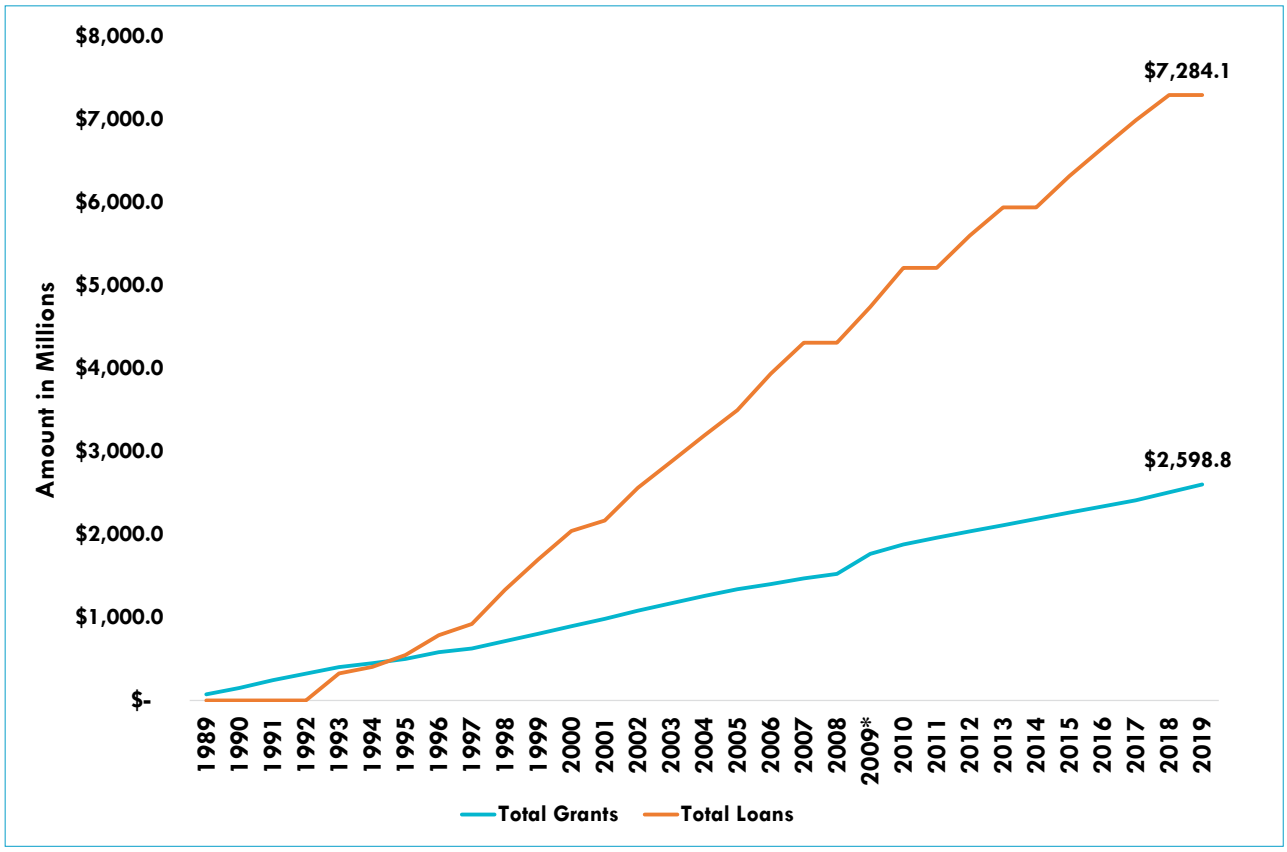
**Additional $133.1 million in federal stimulus grant in 2009*

DWSRF Grant Amount Compared to Cumulative Loan Amounts by SFY



**Additional $52.2 million in federal stimulus grant in 2009*

Cumulative Loan Compared to Cumulative Grants Combined



**Additional $185.3 million in federal stimulus grant in 2009*

The Trust's lending and bond issuance programs are structured to ensure adequate cash flows for funding its loans and repaying bonds to maturity. Depending on the type of projects being financed, the terms of the loans to borrowers, and the subsidy levels to which the borrowers are entitled, the Trust applies its SRF Program Funds to fund either direct loans to borrowers or invests in reserve funds, which are then pledged as a source of payment and security for the SRF Bonds.

SRF Bonds: Sources of Repayment

The sources of repayment for the Trust's SRF Bonds are made from the following sources: (1) loan repayments from borrowers; (2) interest earnings on reserve funds and interest payments on direct loans pledged to secure such bonds; and (3) subsidy payments provided by the Commonwealth, known as contract assistance.

Pledged Direct Loans

The Trust uses its SRF Program Funds to fund certain loans to borrowers rather than bond proceeds. These direct loans are pledged as additional security to SRF Bonds. As the direct loans are repaid, the interest payments on those loans are applied to debt service on the bonds, thus providing a subsidy to the loans funded with bond proceeds. The principal payments of the pledged direct loans are pledged as further security for the related series of SRF Bonds in the case of default on loans funded with bond proceeds. Since 2012, the Trust has used the Pledged Direct Loan approach. As of June 30, 2019, the Trust has $544.1 million in pledged direct loans.

Commonwealth Contract Assistance Payments

The Commonwealth makes assistance payments for borrowers by paying a portion of debt service on the related series of the Trust's SRF Bonds. This reduces the borrower's loan repayment obligation. The contract assistance pays the difference between the market rate of the bonds and the subsidized interest rate on the loans of 2% or less. The obligation of the Commonwealth to make such payments to the Trust is a general obligation of the Commonwealth, for which its full faith and credit are pledged. Contract assistance is appropriated annually in the Commonwealth's operating budget.

CWSRF

To date, the Trust has received $1.1 billion in clean water contract assistance with a future commitment of $192.4 million, for a total cumulative commitment by the Commonwealth of $1.3 billion. Revenue from Commonwealth contract assistance contributed 12.7% toward SFY 2019 debt service, totaling $36.0 million in assistance applied.

DWSRF

To date, the Trust has received $166.6 million in drinking water contract assistance with a future commitment of $49.1 million, for a total cumulative commitment by the Commonwealth of $215.7 million. Revenue from Commonwealth contract assistance contributed 10.6% toward SFY 2019 debt service, totaling $10.5 million in assistance applied.

Deallocation of Funds

As the Trust makes principal payments on its SRF Bonds the amount of its program assets pledged to the bonds are reduced proportionately, or deallocated, according to each bonds' scheduled cash flows. These released funds are available to cure borrower payment defaults, if any. If not needed to cure a default, the deallocated funds are released to the Equity Fund and are then available to be disbursed to new loans, thus assuring the perpetual nature of the revolving fund.

Borrower Repayments

Each borrower is obligated to repay the principal amount of its loan at a subsidized interest rate of 2% or less. Those with extended term financing, greater than 20 years, receive a subsidized interest rate that is higher than 2%. Series 21 which closed in September of 2018, had a subsidized interest rate of 2.4% for extended term financing loans.

CWSRF

In SFY 2019, borrower principal and interest loan repayments accounted for approximately 77.5% of debt service, totaling $219.4 million.

DWSRF

In SFY 2019, borrower principal and interest loan repayments accounted for approximately 82.5% of debt service, totaling $82.0 million.

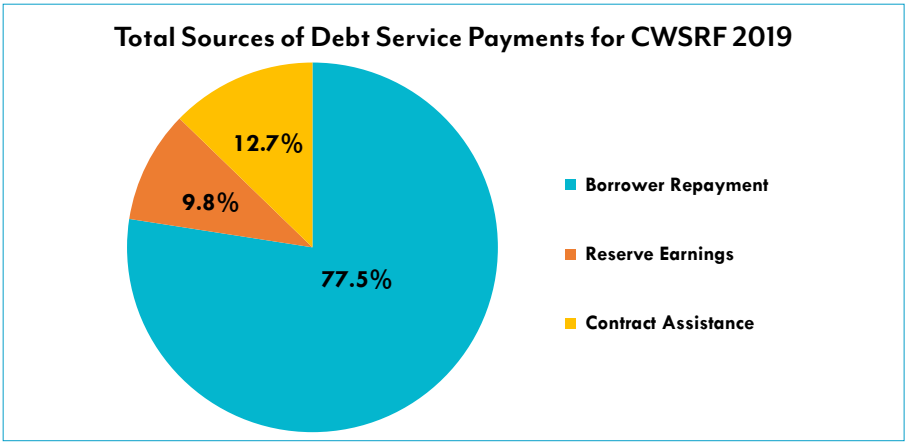
The Trust has always pledged assets as additional security on its bonds. Since 2012, the Trust has pledged certain direct loans funded with SRF Program Funds as additional security for its series of revenue bonds, rather than utilizing a traditional reserve fund. The interest payments the Trust receives from the pledged assets is used to pay a portion of debt service, while the principal payments received are available as additional security and recycled back to SRF Program Funds after debt service obligations have been met.

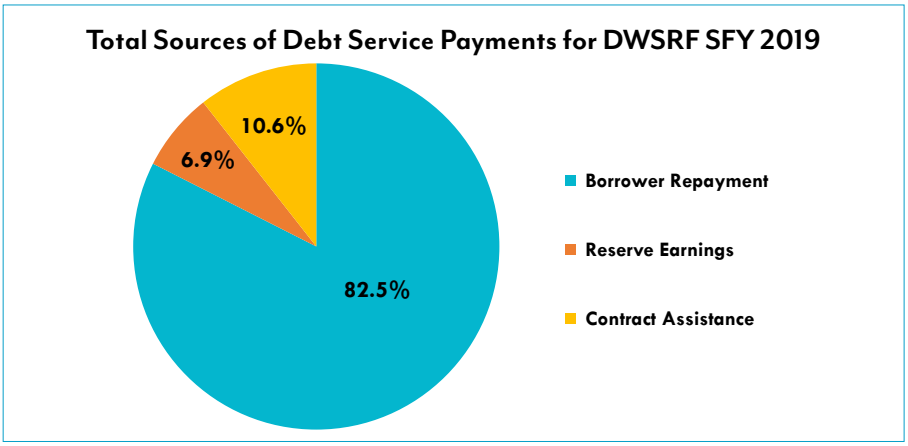
CWSRF

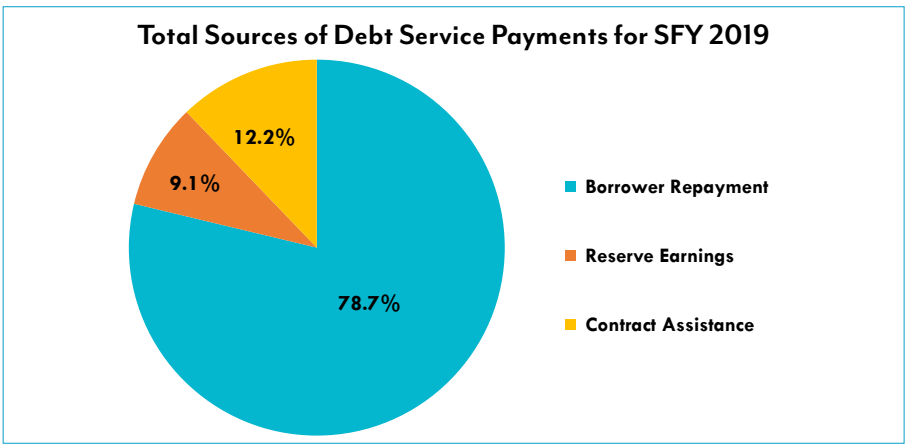
As of June 30, 2019, the Trust has $393.3 million of pledged direct loans outstanding.

DWSRF

As of June 30, 2019, the Trust has $150.8 million of pledged direct loans outstanding.







Reserve Fund

In the past, the Trust has applied a portion of its SRF Program Funds to establish reserve funds to secure a series of its SRF Bonds. Those investment earnings are then applied to pay a portion of the debt service on the related SRF Bonds, thereby supplementing the loan repayment obligation of the borrowers of the leveraged loans funded by such SRF Bonds. As of June 30, 2019, the Trust held the amounts listed below in debt service reserve funds invested in guaranteed investment contracts (GIC), and US Treasury and Agency obligations.

Summary of Debt Service Reserve Fund Balance

Dollar Amount in Millions

	CWSRF	DWSRF	TOTAL
GIC Investments	$321.9	$73.1	$395.0
US Treasury Investments	114.1	39.0	153.1
Total	**$436.0**	**$112.1**	**$548.1**

Interest Earnings

Earnings on these investments are applied to pay a portion of the debt service on the related series of SRF Bonds. In SFY 2019, reserve fund earnings applied to current debt service payments are listed in the table below. As bonds are repaid, reserve funds are released and returned to their respective equity fund. The amount released from program specific equity funds and made available for new loans in SFY 2019 are listed below.

Debt Service Reserve Fund Interest Earnings

Dollar Amount in Millions

CWSRF			DWSRF	
SFY	Percent of Debt Service	Total Amount	Percent of Debt Service	Total Amount
2019	9.8%	$27.8	6.9%	$6.9
2018	11.0%	31.1	7.7%	7.6

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PROGRAM SPECIFIC REPORTING

CLEAN WATER STATE REVOLVING FUND (CWSRF)

The following discussion provides additional details that are specific to the CWSRF program and its related activities.

Administrative Expenses

For SFY 2019, $2.7 million of annual CWSRF grant administration funds were spent by MassDEP. This consisted of $0.4 million in federal funds and $2.3 million in state matching funds. These costs were associated with construction management of the CWSRF program. An additional $3.7 million was spent from the Trust's Administrative Fund to supplement MassDEP administrative costs for both the CWSRF and DWSRF programs.

Green Project Reserve (GPR)

Under the FFY 2016 Omnibus Appropriations Bill, Congress required that at least 10% of the CWSRF grant be used to fund "green infrastructure, water or energy efficiency improvements, or other environmentally innovative activities."

For SFY 2019, this required that $5.4 million be allocated towards seven GPR projects. Most of these projects were not entirely green; therefore, MassDEP had to determine the value of the GPR portions. The total value of these projects was approximately $71.7 million with GPR components being valued at $17.3 million. MassDEP expects these projects to meet the minimum for GPR projects.

Community Septic Management Program

The Community Septic Management Program (CSMP) provides loans to the Commonwealth's communities for assisting homeowners in the repair or replacement of failed septic systems. With the CSMP, the Trust makes low-interest rate loans to communities who, in turn, loan the funds directly to homeowners for up to 20 years. Loans to homeowners are secured through a betterment on the property. This program allows municipalities to provide access to capital for home septic repair or replacement at a subsidized, below market value interest rate.

This program was originally funded through a onetime appropriation by the State Legislature. Those funds have been fully expended, and the program is incorporated as a non-point source program within the CWSRF program as a non-point source project. During SFY 2019, seven loans were made to communities totaling $3.7 million.

Since the program's inception, 174 communities throughout the Commonwealth have participated, with loans totaling $142.3 million.

Transfer of Funds to the Drinking Water State Revolving Fund

Section 302 of the 1996 Safe Drinking Water Act Amendments allows states the flexibility to move funds between CWSRF and DWSRF programs to better address specific state priorities. The EPA allows an equivalent of up to 33% of the DWSRF grant to be transferred between the SRF programs.

The capacity within the CWSRF has consistently allowed the Trust to finance all of the clean water projects on the CWSRF IUP that request financing in a given year. In contrast, one third to one half of the proposed projects go unfunded each year for the DWSRF IUP. The level of federal grant funding of the Massachusetts DWSRF is insufficient to meet the need for project financing.

Transferring a limited amount of funds from the CWSRF to the DWSRF this year and in the future allows for modest increases in the capacity of the DWSRF and reduce this imbalance in the ability to provide financing. The Trust transferred funds $8.5 million from the 2018 CWSRF grant to the DWSRF Program. To date the Trust has transferred $34.7 million to supplement the DWSRF grant.

DRINKING WATER STATE REVOLVING FUND (DWSRF)

The following discussion provides additional details that are specific to the DWSRF program and its related activities

Small Systems

A requirement associated with the DWSRF program establishes that states are required to commit 15% of total available funds for loan assistance to small systems. The EPA defines a small system as a "public water system that regularly serves 10,000 or fewer persons." The total DWSRF funds available for the 2018 IUP was $126.5 million, of which approximately $19 million would be required for small system loan assistance.

As reported in the DWSRF National Information Management System (NIMS), the Trust committed to $4.6 million in small system financing. There was an insufficient number of applications for small system projects to achieve the 15%

requirement. MassDEP elevated all the small system projects to the IUP to come as close to 15% as possible.

Drinking Water Set-Asides

MassDEP continues to use set-aside funds as outlined in the annual IUP. The following sections describe the basic programs and accomplishments.

4% — ADMINISTRATION

MassDEP uses eight fulltime equivalent (FTE) staff members to administer the DWSRF program. These FTEs utilize 4% set-aside funding to accomplish the following tasks: developing program selection criteria, application ranking and rating, project development, construction inspections, invoice payment, data management and administrative support functions.

2% — SMALL SYSTEM TECHNICAL ASSISTANCE

Municipal Services Support. MassDEP uses two FTE staff members to support Municipal Services. These FTEs provide training and technical assistance (compliance and operational issues) to small systems throughout the Commonwealth. During the past year, MassDEP also worked with outside training and technical assistance providers. The Massachusetts Rural Water Association, New England Water Works Association, and EPA's Environmental Finance Center also provided training to public water suppliers.

> The DWSRF program uses significant outreach efforts for small system projects throughout the Commonwealth. The 2% Small Systems Technical Assistance set-aside is used to emphasize the SRF as a low-cost source of financing. Even with these efforts to reach and recruit small system communities, the Trust is concerned about an insufficient number of applications to meet the 15% requirement.

10% — STATE PROGRAM MANAGEMENT

MassDEP used approximately 12 FTE staff members to administer the Commonwealth's Drinking Water program. These FTEs utilized the remaining portion of the 2018 DWSRF grant 10% set-aside in addition to the Trust's administrative funds for public water system support, including the following programs: sanitary survey, source and wellhead protection, emergency response, capacity development, operator certification, consumer confidence report assistance, adoption and implementation of new regulations, evaluation and maintenance of existing federal rules, planning, outreach, MassDEP and data management, engineering and construction supervision, compliance supervision and other DWSRF program activities. Some highlights of the programs in SFY 2019 include:

> **Sanitary Survey Program.** MassDEP Drinking Water staff is responsible for evaluating the technical, financial and managerial capability of community, non-transient non-community and transient non-community public water systems. During the last year the Drinking Water staff has completed 396 evaluations on existing systems.

Sanitary Surveys Completed in SFY 2019	
Type of Public Water System	**Total Number of Surveys Completed**
Community Systems	157
Non-Transient Non-Community Systems	58
Transient Non-Community System	181
Total	**396**

Operator Certification. MassDEP has a very active operator certification program. The program activities have been integrated into daily staff activities. Program activities range from chairing the Board of Certification of Drinking Water Operators to providing general and specialized assistance for drinking water operators at all levels.

Wellhead Protection Program. Technical assistance was provided to water supply systems for wellhead protection compliance, the development of protection plans, and determining monitoring waiver eligibility.

Capacity Development. During the course of conducting sanitary surveys on public water systems, MassDEP staff identified 1,525 technical, financial, or managerial deficiencies and provided corrective action assistance to ensure compliance. MassDEP's capacity development strategy focuses on improving the technical, financial, and managerial operations of both new and existing public managerial operations.

15% — LOCAL ASSISTANCE

MassDEP used 20 FTEs from the 15% local assistance set-aside to support the public water system supervision programs. These programs include sanitary surveys, adoption and implementation of new regulations, registration of new systems, evaluation and maintenance of existing federal rules, planning, outreach, data management, engineering and construction supervision. Some highlights of the programs in 2019 include:

Source Protection Support. The registration of seven new public water systems, along with continuing the implementation and monitoring of the chemical monitoring waiver program has provided the incentive for source protection as well as promoting preparedness and sustainability. Source protection technical assistance was provided during the 396 sanitary surveys that were completed throughout the year.

Registration of New Small Public Water Systems in SFY 2019	
Type of Public Water System	**Number of Systems**
Community Systems	2
Non-Transient Non-Community Systems	1
Transient Non-Community System	4
Total	**7**

PROGRAM CERTIFICATIONS

Extended Term Financing

The Trust continues to offer extended term financing up to 30 years to its borrowers. Extended term financing is available for CWSRF and DWSRF projects that can demonstrate the project's useful life is at least as long as the term of the loan. By offering extended term financing, the Trust provides an equivalent interest rate subsidy for a 30-year loan, as it does for a 20-year loan, based off current market conditions near the time of the loan closing. The interest rate for extended term financing for SFY19 was 2.4%.

American Iron and Steel

MassDEP has incorporated the American Iron and Steel (AIS) requirements into its Loan Application and Plans and Specifications Preparation Package. The necessary language has also been added in the Project Regulatory Agreement and the Financing Agreement for loans. All projects during the reporting period were subject to the AIS requirements because all projects had plans and specifications submitted, or contracts finalized after the AIS effective date of January 17, 2014.

Federal Funding Accountability and Transparency Act

In compliance with the Federal Funding Accountability and Transparency Act (FFATA), the Trust reports recipient or subrecipient awards for any amount equaling $25,000 or greater in the FFATA Subaward Reporting System (FSRS) at www.fsrs.gov. The loans used by the Trust for FFATA Reporting can be found in Appendix B of this report.

Davis Bacon

The amendments to the Clean Water Act, as part of WRRDA, apply the Davis-Bacon Act requirements to all treatment works projects going forward. The Davis-Bacon requirements do not apply to nonpoint source or decentralized wastewater treatment projects. MassDEP ensures that the required Davis Bacon language is included in contracts and conducts field verifications of project compliance with the wage rate requirements.

Disadvantaged Business Enterprise (DBE) Certifications

During 2016 and the first half of 2017, MassDEP and the Trust, completed a DBE review and submitted the results to EPA for approval. On July 27, 2017, EPA Region 1 approved new DBE goals of 4.2% for minority-owned business enterprises (MBE) and 4.5% for women-owned business enterprises (WBE). Projects receiving SRF financing must meet those goals. Proponents unable to meet the targets may seek a waiver for the requirement, if it can be demonstrated that a 'good faith effort' was undertaken to achieve those goals.

Compliance with Federal Cross-Cutters

The loan contract requires that loan recipients comply with applicable federal crosscutting authorities. The state is required to comply with applicable federal crosscutting authorities by the assistance and operating agreements it signs with the EPA and by applicable federal regulations.

Compliance with Grant Conditions

By signing the CWSRF and DWSRF capitalization grants, the Trust agreed to do three things: abide by all conditions of the grant, follow the statutory authorities in the Clean Water Act Title VI and Safe Drinking Water Act Section 1452, and implement regulations in 40 CFR Parts 31 and 35.

APPENDIX A

CLEAN WATER AND DRINKING WATER FINANCIAL TABLES

CWSRF Financial Tables by SFY

CWSRF Financial Tables by SFY	2019	2018
	Annual Grant Awards	
Federal Clean Water SRF Grant	$54,495,000	$45,014,000
State Matching Funds	21,688,200	9,002,800
Total Federal & State Grant Awards	$76,183,200	$54,016,800

Annual Binding Commitments				
Binding Loan Commitments Issued	$299,019,788	45	$98,660,833	40

Annual Disbursements				
Clean Water Interim Loans	$139,056,879	77	$126,061,909	66
Project Loans Financed	54,974,215	42	$28,088,656	34
Total Disbursements	$194,031,094	119	$154,150,565	100

Financial Results from Program Inception		
Federal Clean Water SRF Grant	$1,565,482,761	$1,510,987,761
State Matching Funds	297,274,292	275,586,092
Total Federal & State Grant Awards	$1,862,757,053	$1,786,573,853

Total Clean Water Assets	$4,106,999,519	$4,146,595,589
Total Loans Financed	$5,623,965,263	$5,418,910,721

DWSRF Financial Tables by SFY

DWSRF Financial Tables by SFY	2019	2018
	Annual Grant Awards	
Federal Drinking Water SRF Grant	$25,774,000	$15,319,000
State Matching Funds	10,261,400	3,063,800
Total Federal & State Grant Awards	$36,035,400	$18,382,800

Annual Binding Commitments				
Binding Loan Commitments Issued	$72,116,177	17	$133,920,615	20

Annual Disbursements				
Drinking Water Interim Loans	$108,522,603	25	$47,381,967	21
Project Loans Financed	39,925,327	21	7,912,639	15
Total Disbursements	$148,447,930	46	$55,294,606	36

Financial Results from Program Inception		
Federal Drinking Water SRF Grant	$551,563,100	$525,789,100
State Matching Funds	104,976,020	94,714,620
Total Federal & State Grant Awards	$656,539,120	$620,503,720

Total Drinking Water Assets	$1,275,412,773	$1,259,970,120
Total Loans Financed	$1,673,383,150	$1,575,306,608

APPENDIX B

SRF BINDING COMMITMENTS FOR SFY 2019 BY PROGRAM

CWSRF Binding Commitments for SFY 2019				
PRA No.	**Borrower**	**Agreement Date**	**Project Description**	**Commitment Amount**
CW-17-15-A	Billerica	9/1/2018	Sewer Contract 36	$275,000
CW-17-15	Billerica	7/1/2018	Sewer Contract 36	12,842,593
CWP-18-42	Brockton	6/1/2019	Wastewater Treatment Plant Upgrade	5,761,750
CW-18-25	Easton	5/1/2019	Easton Five Corners Sewer	12,364,853
CWP-18-07-A	Fall River	7/1/2018	Cress Brook Drainage Improvements	745,000
CWP-18-35	Fall River	5/1/2019	Hyacinth Street Drainage Improvements	1,198,845
CWP-18-07*	Fall River	7/1/2018	Cress Brook Drainage Improvements	6,681,197
CWP-17-23	Gardner	9/1/2018	Gardner - Sludge Dewatering Replacement Project	6,822,078
CWP-17-23-A	Gardner	9/1/2018	Gardner - Sludge Dewatering Replacement Project	618,100
CWP-17-24	Gloucester	8/1/2018	Rehab. of DPW & Goose Cove Sewer Pumping Stations	4,656,100
CWP-18-11	Goshen	10/1/2018	Goshen Landfill Cap Repair	655,000
CW-17-18	Grafton	7/1/2018	Pumping Station Improvements	2,908,230
CW-17-14	Haverhill	8/1/2018	Haverhill Wastewater Treatment Facility Improvements	7,408,631
CW-18-21	Hull	5/1/2019	Wastewater Treatment Facility Reliability Centered Assessment	390,500
CW-18-20	Hull	5/1/2019	Facility Plan and Resiliency Plan Update	478,890
CW-14-16-A	Lawrence	5/1/2019	Sewer System Rehabilitation	990,463
CWP-18-09-A	Lawrence	5/1/2019	Sewer and Drainage Improvements	4,315,202
CWP-18-09	Lawrence	5/1/2019	Sewer and Drainage Improvements	9,137,974
CWT-18-34	Marion	11/1/2018	Community Septic Management Program	200,000
CW-18-40	MWRA	12/1/2018	Remote Headworks Upgrade	28,727,859
CW-18-41	MWRA	12/1/2018	Wastewater Treatment Plant and Sewer Improvements	2,971,701
CW-18-39	MWRA	12/1/2018	Facility Asset Protection	1,070,733
CWT-19-02	Millville	2/1/2019	Community Septic Management Program	300,000
CWT-19-01	Nantucket	2/1/2019	Community Septic Management Program	2,000,000
CWP-17-16-A	New Bedford	7/1/2018	Pumping Station Improvements	962,900
CW-18-31	New Bedford	12/31/2018	Wastewater Treatment Plant Facilities Planning	220,000
CWP-17-17	New Bedford	7/1/2018	Wastewater Collection System Improvements	1,614,846
CWP-17-16	New Bedford	7/1/2018	Pumping Station Improvements	7,165,068
CWP-18-08	Pepperell	10/1/2018	Pepperell Wastewater Treatment Facility Upgrade	4,685,206
CWP-18-12-A	Pittsfield	1/1/2019	Wastewater Treatment Plant Nutrient Removal	7,464,332
CWP-18-12*	Pittsfield	1/1/2019	Wastewater Treatment Plant Nutrient Removal	53,994,451
CWT-18-46	Plymouth	12/1/2018	Community Septic Management Program	200,000
CWP-18-27	Revere	6/1/2019	Illicit Connection & Sump Pump Removal Program	1,664,833
CWP-17-27	Revere	7/1/2018	Phase VIII - I/I, IDDE, P.S., & Drainage	2,282,047
CWP-17-26	Revere	7/1/2018	Illicit Connection & Sump Pump Removal Program	911,073
CW-16-09-A	Saugus	9/1/2018	Sewer System and Pump Station Rehab/Improvements	829,583
CWT-18-13	Scituate	10/1/2018	Community Septic Management Program	200,000
CWP-18-18	SWSC	1/1/2019	York St. Pump Station & Connecticut River Crossing	80,791,549
CW-17-19	Taunton	1/1/2019	Main Lift Pump Station Improvements	8,794,800
CWT-18-49	Taunton	1/1/2019	Community Septic Management Program	250,000
CW-18-17	Tyngsborough	6/1/2019	Phase 2 Middlesex Road North	11,242,632
CW-19-03	Tyngsborough	5/1/2019	Phase 2 Infiltration and Inflow Study	500,000
CWP-17-30-A	West Springfield	9/1/2018	Pump Station Improv. And I/I Reduction Project	1,075,769
CW-18-30	Westport	1/1/2019	Integrated Water Resources Management Plan	150,000
CWT-18-33	Westport	11/1/2018	Community Septic Management Program	500,000
			Total Clean Water Binding Commitments SFY 2019	**$299,019,788**

** Loans used for FFATA Reporting*

DWSRF Binding Commitments for SFY 2019				
PRA Number	**Borrower**	**Agreement Date**	**Project Description**	**Commitment Amount**
DWP-18-04	Adams Fire District	12/1/2018	Chemical Feed and SCADA upgrades	$950,000
DWP-18-11*	Brockton	6/1/2019	Water Pump Well and Clearwell Rehabilitation	3,694,720
DW-16-04-A	Chicopee	1/1/2019	Redundant Water Transmission Main	264,649
DWP-18-05	Dartmouth	6/1/2019	Action Plan to Reduce Total Trihalomethane Levels	1,297,895
DWP-17-12	Fall River	7/1/2018	Automatic Meter Reading and Meter Replacement	3,499,887
DWP-18-03*	Gloucester	2/1/2019	Babson Water Treatment Plant Raw Water Systems Improv.	2,100,000
DW-18-16*	MWRA	12/1/2018	Wachusett Aqueduct Pumping Station	5,363,933
DW-16-06-A	MWRA	12/1/2018	SEH Redundancy and Storage	14,355,913
DWP-17-06	New Bedford	7/1/2018	Large Meter & AMI Upgrade Program	5,360,049
DWP-17-07	New Bedford	7/1/2018	High Hill Reservoir Rehabilitation	13,734,899
DW-18-08	Revere	2/1/2019	Oak Island Water Main Improvements Planning Stage	250,000
DWP-17-14	Revere	7/1/2018	Lead Service Replacement	3,120,000
DW-13-09-A	Revere	9/1/2018	Water Meters AMR System	779,057
DWP-18-13	Spencer	6/1/2019	Main Street Looping Water Main	2,205,175
DWP-17-09	Wareham Fire District	7/1/2018	Maple Springs Water Purification Plant	14,000,000
DW-18-01	Wayland	8/1/2018	Wayland 2018 Water Main Improv.	700,000
DW-16-11	Whately	1/1/2019	Manganese Removal	440,000
			Total Drinking Water Binding Commitments SFY 2019	**$72,116,177**

** Loans used for FFATA Reporting*

MASSACHUSETTS
CLEAN WATER TRUST

APPENDIX C

ANNUAL GREEN BONDS REPORT

2019 Annual Green Bonds Report
Massachusetts Clean Water Trust

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MASSACHUSETTS
CLEAN WATER TRUST

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A Note from the Treasurer

The Green Bond market has expanded rapidly since the Commonwealth of Massachusetts issued its first Green Bonds. In 2013, according to Bloomberg New Energy Finance, Green Bonds accounted for $14.7 billion of bonds issued worldwide. In 2018, Green Bonds exploded to $176.6 billion. Current market trends and projections show that growth will continue into 2019 and beyond. As this innovative marketplace continues to mature, issuers must commit to transparency and accurate reporting for the Green Bond label to continue to instill investor confidence.

As Chair of the Massachusetts Clean Water Trust (the Trust) Board of Trustees, I am pleased to continue the Commonwealth's and the Trust's policy of openness and transparency by submitting our second annual Green Bond Report. To date, the Trust has issued over $800 million in Green Bonds to support 195 local water infrastructure projects.

The Trust provides low interest loans to local governments and other eligible entities for water infrastructure projects across the Commonwealth. Since its establishment, the Trust has financed approximately **$7.3 billion** for nearly **three hundred borrowers**, serving **97%** of the Commonwealth's population.

With its AAA credit rating by all three major credit agencies, the Trust finances vital infrastructure projects that enhance ground and surface water resources, ensures the safety of drinking water, protects public health and develops resilient communities. Access to below-market rate financing makes improvements to water infrastructure more feasible while reducing the overall financial impact on communities and ratepayers.

We are pleased to contribute to this innovative marketplace and stay committed to improving our communication and transparency. We ask that you let us know if there are any additional ways that we can meet your needs for information. Your feedback is much appreciated and always welcome.

I am deeply thankful to the dedicated staff of the Trust and our program partners for their tireless work and commitment to the communities of the Commonwealth. While the impact of these investments may not always be visible to the public, it is felt in every glass of water poured, in restored water bodies, and in homes and businesses that receive safe and reliable water.

Sincerely,

Deborah D. Goldberg
Treasurer and Receiver-General
Commonwealth of Massachusetts

Introduction to the Trust

The Massachusetts Clean Water Trust (the Trust), in collaboration with the Massachusetts Department of Environmental Protection (MassDEP), helps communities build or replace water infrastructure that enhances ground and surface water resources, ensures the safety of drinking water, protects public health and develops resilient communities. It accomplishes these objectives by providing low-interest loans and grants to cities, towns and water utilities through the Massachusetts State Revolving Funds (SRFs). The SRF programs are partnerships between the United States Environmental Protection Agency (USEPA) and the Commonwealth. SRFs function like an environmental infrastructure bank by financing water infrastructure projects.

The Trust administers two SRF programs, the Clean Water and Drinking Water SRFs. The Clean Water SRF (CWSRF) was established in 1987 with amendments to the Clean Water Act. The Drinking Water SRF (DWSRF) was established in 1996 under the amended Safe Drinking Water Act. MassDEP manages project development and oversight while the Trust manages the flow of funds to borrowers.

SRFs receive funding from the USEPA in the form of annual capitalization grants, supplemented by state matching grants and the repayment of loans. When loans to local governments are paid back, the funds are then loaned out again, which is how the fund "revolves."

The Trust uses a "leveraged model" to provide funding in excess of the federal and state grants. Bonds are issued in the capital markets and are secured by borrower repayments and reserve funds. The proceeds from bonds are used to provide capital for new, below market rate loans to borrowers for water infrastructure. This model has allowed the Trust to finance approximately $7.3 billion for nearly three hundred borrowers, serving 97% of the Commonwealth's population.

The Trust is administered by a three-member board of trustees that is chaired by the Treasurer of the Commonwealth. The Secretary of the Executive Office for Administration and Finance and the Commissioner of MassDEP serve as trustees. The Board of Trustees approves all financial commitments and program decisions during monthly meetings. Meeting agendas, minutes, and other board materials can be found on the Trust's website.

About this Report

This report is separated into three sections. The first section, the Trust's Green Bond Process, covers program specific project categories, how projects are selected and an overview of how the Trust operates. The second and third sections provide full project descriptions from the Trust's latest issuance (Series 21), organized by the CWSRF and DWSRF programs. The appendices at the end of this report lists all loans by active Green Bond series, and additional information such as the percent of project funding drawn, loan numbers and other relevant information as of July 31, 2019. Readers should note that the main report sections are organized by projects that in some cases were financed by multiple loans spanning multiple series of Green Bonds.

Full project descriptions, in this report, are limited to the Series 21 Green Bonds. For full descriptions of projects financed in Series 18, 19 and 20 please see the 2018 Green Bond Report, the Trust's Annual Reports or the specific bond series official statements. All of these reports and documents may be found on the Trust's website.

WHAT'S THE VALUE OF WATER?

Mornings wouldn't be the same without water.

Most of us never think about how water gets to the tap or where it goes after it swirls down the drain. Luckily, we don't have to. Pumps, treatment plants, and pipes bring us clean water.

But our water systems are aging. They need investment to continue delivering life's most essential resource. We need water to make a cup of coffee and most everything we do in life. All day, every day.

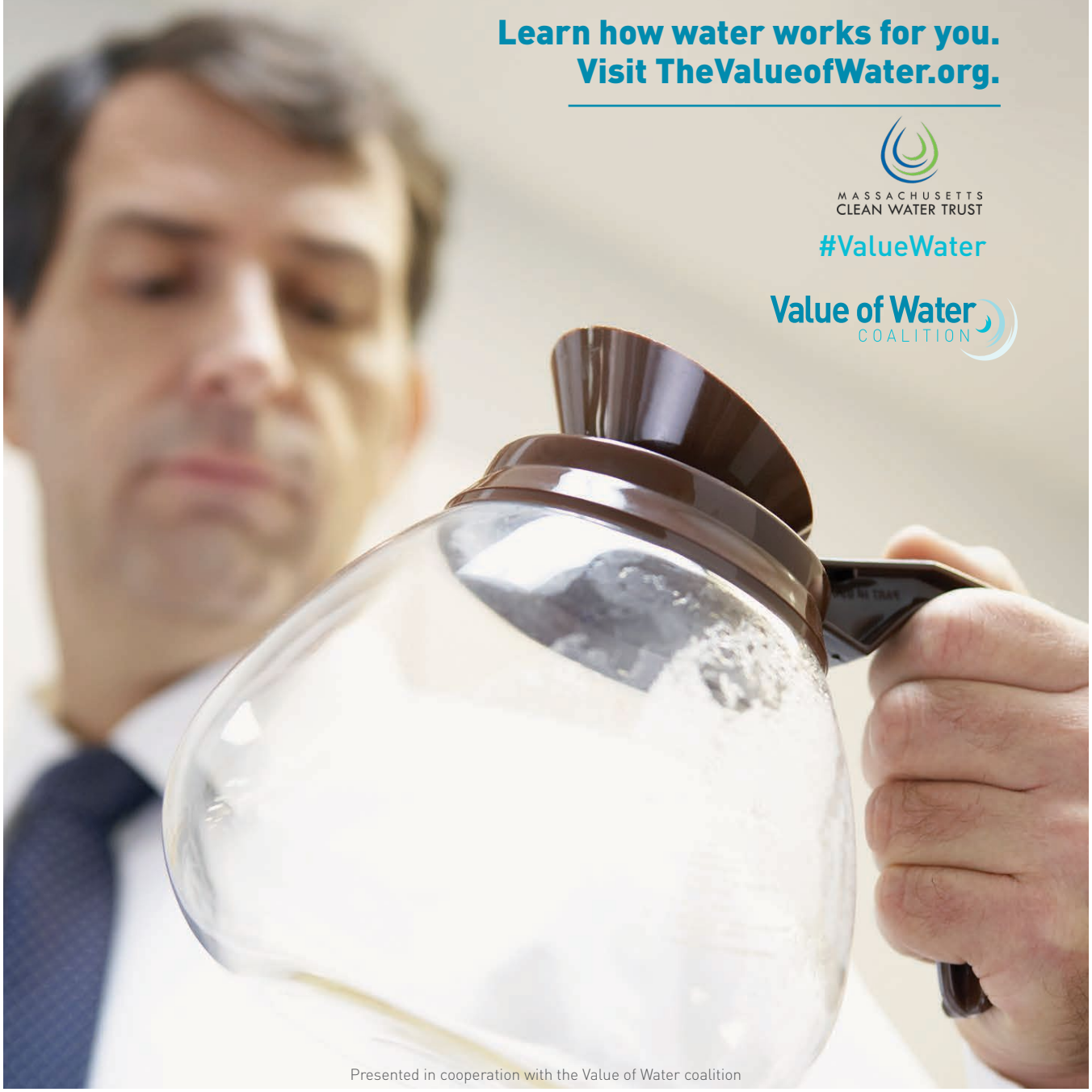
Water—Essential. Reliable. Invaluable.

Learn how water works for you.
Visit TheValueofWater.org.

MASSACHUSETTS CLEAN WATER TRUST

#ValueWater

Value of Water COALITION



Presented in cooperation with the Value of Water coalition

Section 1 | **The Trust's Green Bond Process**

Since 2015, the Trust has issued over $806.8 million of its bonds as Green Bonds in compliance with the federal Clean Water Act and the Safe Drinking Water Act. The Bonds were issued to finance 236 loans for 195 water infrastructure projects through the CWSRF and DWSRF programs. These projects protect public health, protect valuable aquatic resources, and support local businesses while also ensuring that vital infrastructure meets environmental and health standards.

Green Bonds Issued			
Series	**Year**	**Issue Amount**	**Total Loans**
Series 18	2015	$228,155,000	81
Series 19	2016	$207,805,000	66
Series 20	2017	$207,350,000	51
Series 21	2018	$163,460,000	38
	Totals	**$806,770,000**	**236**

Frequently Asked Questions

Q. Are Green Bond Proceeds Separated from Traditional Bond Proceeds?

Yes, all Green Bond proceeds are deposited into segregated Clean Water and Drinking Water accounts within the Project Fund for each individual series of bonds. The accounts are individually tracked for each project internally at the Trust and MassDEP. If it is determined that a project no longer needs loan proceeds that have been permanently financed with bonds, the remaining bond proceeds will be reallocated to additional green projects. Those new projects will be included in the Green Bond reporting.

Q. How Often Will the Trust Prepare Green Bond Reports?

The Trust will track the progress of projects and use of proceeds in its Annual Report along with this Green Bond report. The Trust will report on the bonds until the proceeds have been fully expended.

Q. Where Can I Find Your Green Bond Reports?

You may find this and previous reports in the *Investor Resources* section of the Trust's website. The Trust also posts all annual reports and this report to the MSRB's EMMA website, attached to their associated CUSIPs.

Q. Do You Make Use of Third-Party Opinions or Other "Green Certifications"?

Not at this time. The Trust is in regular dialogue with investors and groups active in the green space. Based on continued and consistent feedback, due to our repeat-issuer status and robust reporting regimen, we have determined that third-party opinions are not necessary for our issuances. The Trust reports on the selection of projects, management of proceeds and use of proceeds following a bond sale. The Trust is committed to full disclosure and will continue to monitor the market and make any necessary changes to our approach as needed.

Project Selection

The Trust's loan process is dictated by an annual list of projects the Trust commits to finance called the Intended Use Plan (IUP). MassDEP compiles two IUPs annually, one for each SRF program.

Project eligibility is determined by the Clean Water Act and Safe Drinking Water Act for the CWSRF and DWSRF respectively. Projects that apply for financing are selected during an annual solicitation process. MassDEP engineers review detailed project specifications and rank them using an established set of criteria that measures the severity of the problem, the sensitivity of the environmental hazard, the public health risk, and the appropriateness of the proposed solution.

For CWSRF projects, the program emphasizes watershed management priorities, stormwater management, green infrastructure, and encourages communities to undertake projects with meaningful water quality and public health benefits. DWSRF projects emphasize compliance with federal and state water requirements to protect the public health while addressing the Commonwealth's drinking water needs. MassDEP compiles the annual IUPs using this rigorous selection process that establish the Commonwealth's priorities for the upcoming year.

Project Categories

The SRF programs fund a wide range of projects. Eleven categories of projects are eligible to receive CWSRF assistance and six categories are eligible to receive DWSRF assistance. For the purposes of this report, the Trust has consolidated similar and related categories and omitted categories with no current projects to streamline the report's contents. Below the Trust has provided an overview of the categories listed within this report.

Wastewater Treatment Projects

These projects involve the maintenance, upgrade or construction of wastewater treatment facilities. A wastewater treatment facility receives all the sewage from a municipality or utility district service area and treats the water before releasing it back into the environment in accordance with National Pollutant Discharge Elimination System permits. The goal of these projects is to reduce or eliminate pollutants and nutrients found in wastewater for cleaner water ways.

Infiltration/Inflow (I/I) and Sewer System Rehabilitation Projects

These projects involve removing infiltration and inflow (i.e. water other than wastewater) from a sewer system, including construction associated with I/I rehabilitation. I/I is when groundwater or stormwater enters a dedicated wastewater or sanitary sewer system either by direct connections or through damaged parts of sewer pipes. I/I increases the flow to wastewater treatment facilities and leads to back-ups or overflows of the system. Sewer system rehabilitation and I/I correction projects are concerned with removing sources of water that are either illicitly being added to a sewer system, or, from sources entering via defective pipes or manholes. Eliminating I/I and replacing sewer systems reduces the occurrences of overflows, meaning less untreated wastewater is released into the environment.

Collector and Interceptor Sewer Projects

These projects involve the physical conveyance of wastewater. Collector sewers gather wastewater from the source, and interceptor sewers convey wastewater to a treatment facility. Extending capacity in an existing sanitary sewer system can help mitigate issues in communities that have insufficient infrastructure to meet local demand. These projects are generally implemented in conjunction with other project categories; such as combined sewer overflow correction which separates stormwater and wastewater collection systems to reduce untreated water being released into surface water bodies.

Combined Sewer Overflow Correction Projects

These projects involve the reduction of untreated water discharged from combined sewer systems. Combined sewer systems are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe. During wet weather events, the combined sewer systems can reach capacity and the excess overflows into surrounding waters, creating a combined sewer overflow (CSO). CSO correction projects work to reduce the amount of untreated water discharged from combined sewer systems. The elimination of CSOs is an EPA and Commonwealth priority goal that will reduce the amount of untreated wastewater that is released into the local environment.

Planning Projects

These projects involve developing plans to address water quality and related public health problems. Infrastructure management tracking, capital investment schedules, and the adoption of best management practices are also objectives. For example, comprehensive wastewater management plans provide strategies for addressing wastewater treatment and disposal issues in a city or town. Integrated municipal stormwater and wastewater resource management planning assists municipalities with meeting requirements that arise from distinct wastewater and stormwater programs. Fiscal sustainability and asset management planning assists communities with maintaining replacement schedules and forecasting capital needs.

Drinking Water Treatment Projects

These projects involve the upgrade, maintenance and construction of water treatment facilities. These projects are meant to improve the overall quality of drinking water and are targeted at removing specific pollutants that are known health risks. Treatment plant upgrades can impact the overall efficiency of a plant's energy consumption. Replacing equipment at the end of its useful life will improve overall system efficiency. New pumping and filtering equipment are designed with energy efficiency in mind.

Drinking Water Transmission and Distribution Projects

These projects involve the infrastructure that brings raw water to treatment facilities and the infrastructure that conveys treated water for consumption. This includes everything from large transmission mains from reservoirs to the service lines that provide treated water to homes and businesses. Lines at the end of their useful life can lead to inefficiency in water transmission. Older pipes, made of lead or cast iron, can be severe health risks when corrosion occurs. Upgrades to pumping and booster stations make the transmission process more energy efficient and improve the overall efficiency of the system.

Drinking Water Source and Storage Projects

These projects involve two different categories. Source water projects are related to untreated water sources – such as rehabilitating surface water in a reservoir or drilling and maintaining wells. Storage projects deal with infrastructure for maintaining and storing treated water before it is distributed into a system.

Drinking Water Planning and Design Projects

These projects involve the activities needed to plan design and/or study drinking water infrastructure. Such projects are essential for maintaining and improving the key infrastructure that protects public health and water quality.

Project Funding

The Trust, MassDEP and EPA have entered into a Revolving Fund Operating Agreement for the CWSRF and the DWSRF. These agreements establish rules, procedures and activities to be followed by the EPA and the Commonwealth in administering federal grants. To date, the Trust has been awarded approximately $1.5 billion in federal grants and $275.6 million in state matching funds for the CWSRF program. Approximately $525.8 million in federal grants and $94.7 million in state matching funds have been awarded to the DWSRF program. Additionally, the Commonwealth appropriated an additional $30 million for funding or securing financing solely for local community septic management programs.

WHAT'S THE VALUE OF WATER?

Splashing in a pool, tossing a water balloon—water is one of life's great pleasures.

Most of us never think about how water gets to us or where it goes when it swirls down the drain. Luckily, we don't have to. Pumps, treatment plants, and pipes bring us clean water and remove wastewater.

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Section 2 | **Clean Water State Revolving Fund Projects**

Wastewater Treatment Projects

Wastewater treatment projects are eligible for SRF assistance under the Clean Water Act for facilities that provide, or are being upgraded to provide, secondary or advanced wastewater treatment. The distinction between secondary and advanced treatment projects is essentially the level of pollutant removal. For example, secondary treatment requires that a 5-day Biochemical Oxygen Demand (BOD5) be less than 30 milligrams per liter (mg/l). BOD5 is the amount of dissolved oxygen needed by organisms to break down organic materials present in a water sample over a period of 5 days and is listed as a pollutant under the Clean Water Act. Advanced treatment requires that the BOD5 level be less than 20mg/l. Advanced treatment facilities also address nitrogen, phosphorous, ammonia, metal and/or synthetic organic removal.

Water treatment facility upgrades or improvements can vary widely depending on the age of the infrastructure in question. These facilities are governed under National Pollutant Discharge Elimination System (NPDES) permits, which determine the level of water treatment required to discharge wastewater. Many of the upgrades financed by the Trust help facilities meet their NPDES requirements. These upgrades could include replacing inefficient mechanical equipment, upgrading pollutant removal systems or updating water storage facilities to reduce odor. Replacing equipment at the end of its useful life will improve overall system efficiency. New pumping and filtering equipment are designed with energy efficiency in mind.

Highlighted Project

Uxbridge | Wastewater Treatment Facility and Infrastructure Upgrade - $17,253,299

The Town of Uxbridge operates a wastewater treatment facility (WWTF) which was constructed in 1979. The only upgrade to the facility was the installation of a lime tower in 2007. Because treatment effluent is discharged to the Blackstone River and the receiving water is the Narragansett Bay, the facility is governed by EPA's NPDES permit. The Town was placed under an EPA consent order in June 2014. Negotiations between Uxbridge, MassDEP and EPA gave the Town until 2020 to come into full compliance with the permit. To meet the 2020 deadline requirements that town has implemented a number of system improvements.

Uxbridge has Added a Multi-Stage Biological Nutrient Removal (BNR) process as an advanced treatment configuration to remove additional nitrogen and phosphorus from discharged water. The physical facility has been renovated and overhauled, including replacing heating, ventilation and air condition (HVAC), electrical components and generators and upgrading the septage receiving building and mechanical equipment to be more efficient. Additionally, this project replaced existing the chlorination system with an ultraviolet (UV) disinfection system, equipment in the sludge holding tank and sludge pumping station, the existing gravity thickener and constructing a new gravity thickener and installing a larger capacity tank.

Borrower	Project Description	Amount
Fitchburg	**FITCHBURG WASTEWATER TREATMENT FACILITY SECONDARY SYSTEMS UPGRADE** The Fitchburg Easterly Wastewater Treatment Facility is a secondary treatment facility with current average annual flows of about 9.8 million gallons a day. This project included elements intended to improve the facility's discharge permit compliance. These included: upgrades to the secondary treatment system with a biological selector zone to increase peak flow capacity, provided biological nutrient removal; replaced existing primary and secondary sludge pumps, aeration blowers, pipes, valves, fine bubble diffuser, clarifier mechanisms, surface repairs to existing concrete aeration and clarifier tanks; installation of two new emergency generators; and instrumentation and electrical improvements; and modifications to the existing flood protection berm.	$9,017,418
MFN Regional Wastewater District	**WATER POLLUTION CONTROL FACILITY UPGRADES AND LANDFILL CLOSURE** From 1986 to 2010, the Town of Mansfield disposed of grit and sludge from the Mansfield, Foxborough, Norton Water Pollution Control Facility (WPCF) at its Fruit Street Landfill site. Grit and sludge were disposed of elsewhere. The District planned to cap and close the landfill site in accordance with applicable MassDEP regulations. Properly capping the landfill reduced leachate generation, reduced odors, and reduced potential storm water runoff contamination. The project included construction for expanding and upgrading the WPCF so that the District could operate at 4.14 million gallons per day capacity and comply with updated National Pollutant Discharge Elimination System (NPDES) limits. The project also ended the Fruit Street Sludge Landfill program.	$17,911,611
Massachusetts Water Resources Authority (MWRA)	**WASTEWATER TREATMENT PLANT AND SEWER IMPROVEMENTS** This project included upgrades to the Deer Island Wastewater Treatment Plant automation and central control systems. In addition, the project improved and upgraded several existing interceptors and pump stations that were in need of replacement and/or modernization. The project extended current asset life and improved system operability.	$6,644,192
MWRA	**CLINTON WASTEWATER TREATMENT PLANT PHOSPHOROUS REMOVAL** After extensive alternative analysis and pilot testing, the MWRA has determined that disk filter technology is the best feasible alternative for meeting the current and upcoming discharge phosphorous concentration limits at the wastewater treatment plant (WWTP) in the Town of Clinton. This project installed a full-scale disk filter phosphorous removal system at the WWTP. This helps ensure compliance with National Pollutant Discharge Elimination System (NPDES) discharge permit limits.	$3,759,927

Borrower	Project Description	Amount
Nantucket	**SURFSIDE WASTEWATER TREATMENT FACILITY IMPROVEMENTS** In 2009, the Surfside Wastewater Treatment Facility underwent major a renovation including a treatment capacity upgrade from 2.24-million gallons per day (MGD) to 3.5-MGD (7.7 MGD peak), rehabilitation and expansion of groundwater disposal beds, and modifications to provide for higher nitrogen removal capacity. This project proposed further enhancements to both equipment operating procedures for providing the following improvements: 1) Reliability: corrosion control, enhanced influent screening to preserve Membrane Bioreactors (MBRs), MBR inspection and replacement, instrumentation and supervisory control and data acquisition (SCADA) improvements. 2) Energy Efficiency: sludge blower cycling, piping modifications, odor control fan variable frequency drive (VFD), and MBR optimization. 3) Capacity: blower addition, nitrified recycle system.	$8,472,975
Upper Blackstone Water Pollution Abatement District	**NUTRIENT REMOVAL IMPROVEMENTS** The Upper Blackstone Water Pollution Abatement District (UBWPAD) is currently under Administrative Order on Consent (AOC) with the EPA to comply with the 2012 National Pollutant Discharge Elimination System (NPDES) permit limits for total nitrogen and total phosphorus levels. The construction project upgraded the treatment facility to meet these nutrient limits, including the construction of a tertiary phosphorus removal system, secondary system improvements, sludge handling and chemical system improvements. There were also numerous ancillary systems and site improvements.	$8,842,079
Uxbridge	**WASTEWATER TREATMENT FACILITY BNR AND INFRASTRUCTURE UPGRADE** *Highlighted Spending Project*	$17,253,299

Infiltration/Inflow (I/I) and Sewer System Rehabilitation Projects

These projects correct sewer system infiltration and inflow problems. Infiltration includes water (usually groundwater) penetrating a sanitary or combined sewer system from the ground through defective pipes or manholes. Inflow includes controlling the penetration of water (usually stormwater) into a system from sump pumps, drains, storm sewers, and other improper entries.

Sewer system rehabilitation projects maintain, reinforce, or reconstruct deteriorating or undersized sewer systems. The corrective actions are necessary to maintain the functional integrity of the system.

Highlighted Project

Quincy | Quincy Point Pump Station Renovation - $3,634,026

The Quincy Point Pump Station was built in 1971 and renovated in 1985. The purpose of this project was to address aging infrastructure which included the replacement of three 100-horse power (HP) two-speed pumps with two new 125-HP pumps controlled by variable frequency drives (VFD). The new VFD pumps are more energy efficient than the two speed pumps they replaced. The station's channel grinder and wet well mixing components were upgraded to reduce the accumulation of fats, oils and grease on the water surface.

A new odor control unit utilizing granular activated carbon was added, as well as a new Supervisory Control and Data Acquisition system. An older underground fuel storage tank was removed, and a new standby generator was added in addition to significant Heating, ventilation, and air conditioning (HVAC) updates. Architectural, wiring and plumbing improvements greatly improved the overall efficiency of the station. New air release valves and corrosion control for the 20-inch ductile iron force main and heavy cleaning of linked sanitary sewers have improved the longevity of this vital facility.

Borrower	Project Description	Amount
Brockton	**SEWER REHABILITATION PROJECT** The Taunton River watershed has water quality impairments during both wet and dry weather conditions due to bacteria pollution. The causes include sewerage exfiltration, stormwater discharges, illicit connections to the drainage system, and failing septic systems. This sewer rehabilitation project included repair of prioritized areas in the City's wastewater collection system to address sources of exfiltration, infiltration, inflow, and sections of undersized pipe. The work included open cut repairs, cured-in-place (CIP) sewer pipelining, and rehabilitation of manholes. These projects were identified based on the Illicit Discharge Detection and Elimination program, the existing sewer system evaluation study and capacity evaluations.	$2,975,722
Montague	**PUMP STATION REPLACEMENTS** The main objective of the Montague Pumping Station Replacement Project was to mitigate the potential environmental impacts and make the Town's wastewater infrastructure safer and more reliable. All eight wastewater pumping stations, some of which dated back to 1962, were replaced. Mechanical components of the pumping stations were beyond their useful life and replacement was the only option. Replacing the pumping stations improved operator safety by eliminating confined space entry. Electrical efficiency was improved by using variable frequency drives, efficient motors and smart controls. Monitoring was improved through connection to the supervisory control and data acquisition (SCADA) system at the wastewater plant. Operating costs were also reduced.	$1,583,047
MWRA	**CARUSO PUMP STATION** The Caruso Pump Station Improvements Project was one of four critical wastewater system improvements projects that the Massachusetts Water Resources Authority (MWRA) had identified. The purpose of the Caruso Pump Station Improvements Project was to replace the standby power generator system and to improve the heating, ventilation, and air conditioning (HVAC), fire detection/suppression, and security systems. This significantly improves the pump station's reliability, operations, safety and efficiency.	$2,194,852
MWRA	**REMOTE HEADWORKS UPGRADE** The Massachusetts Water Resources Authority (MWRA) has three remote headworks - Chelsea Creek, Columbus Park, and Ward Street - which were built and placed into operation in the 1960's. All wastewater flows from the MWRA Northern Service Area, gets collected at the remote headworks, and is then conveyed to the Deer Island Treatment Plant. Preliminary treatment and flow control are performed at the remote headworks facilities. This project addressed aging infrastructure and improved operational reliability by replacing all mechanical, electrical, heating, ventilation, and air conditioning, plumbing, and appurtenant equipment at all three facilities.	$4,786,700

Borrower	Project Description	Amount
Norwood	**UNDERDRAIN AREA SEWER REHABILITATION** The project consisted of a variety of planning measures associated with operation and maintenance of the sanitary sewer and stormwater systems. Work included elements such as infiltration and inflow investigations, sewer system evaluation surveys, development of Capacity, Management, Operation and Maintenance (CMOM) programs, compliance with Phase 2 National Pollutant Discharge Elimination System Stormwater regulations including the implementation of programs, mapping of systems, development of geographic information systems, sampling of outfalls, performing illicit discharge detection programs and all other related work.	$414,356
Quincy	**PUMP STATION RENOVATION** *Highlighted Spending Project*	$3,634,026
Saugus	**SEWER SYSTEM AND PUMP STATION REHAB/IMPROVEMENTS** This project involved the rehabilitation of pipelines, manholes, and the removal of private inflow sources to eliminate infiltration/inflow (I/I) from the sewer system. The project aimed to significantly reduce or eliminate sewer system overflows from occurring at the Lincoln Avenue Pumping Station. Approximately 34,000 feet of 8-inch and 12-inch pipe and 1,500 feet of 15-inch pipe was rehabilitated using cured-in-place pipe lining. Approximately 865 sewer services and 222 manholes were lined as part of the project. The replacement of the existing Morris Place pump station and improvements to the Bristol Street pump station was completed. The equipment within many of the Town's wastewater pump stations was operating beyond its useful life and exhibited signs of failure in some cases. Replacing the existing Morris Place Pump Station was required due to the poor structural conditions, the need to restore useful life and the station's proximity to environmental receptors. Improvements to the Bristow Street Pump Station were required to restore the useful life of the station, improve operator safety, alleviate flooding concerns and improve system reliability.	$3,197,219
Taunton	**SEWER/DRAIN SEPARATION AND INFLOW REMOVAL** The project installed new drains to facilitate sump pump removal, and improvements and repairs to the existing sewer and Stormwater systems. The objective of this project was to further reduce wastewater-related water pollution to the Taunton River and other waterways by removing infiltration and inflow (I/I) from the sanitary collection system, with the ultimate goal of reducing and eliminating Combined Sewer Overflows. This project focused primarily on installing drains necessary to re-route private inflow sources (sump pumps and roof leaders) away from sanitary sewers. In addition, work continued to separate combination manholes, reducing the potential for infiltration to enter the sewer system.	$3,927,054

Collector and Interceptor Sewers Projects

According to the EPA, millions of gallons of human and industrial waste are sent through complex underground collections systems. These systems operate all day, every day and most municipal sewer systems are at least 60 years old. Many communities have sewers that are more than 100 years old. Collection systems consist of pipelines, conduits, pumping stations, force mains and other components to collect wastewater and convey it to treatment facilities before being discharged into the environment. Design, operation and maintenance are critical for system efficiency and public health. System expansions can be used to mitigate issues with combined sewer overflows and septic systems.

New Collector Sewers

These are projects associated with new pipes used to collect and carry wastewater from a sanitary or industrial wastewater source to an interceptor sewer that will convey the wastewater to a treatment facility.

New Interceptor Sewers

These are projects for constructing new interceptor sewers and pumping stations that convey wastewater from collection sewer systems to a treatment facility or to another interceptor sewer. This category includes costs for relief sewers, which are designed to handle the excess capacity of an existing system.

Highlighted Project

Nantucket | Shimmo and PLUS Parcels Sewer Extension – $14,101,765

The town will be sewering the highest rated needs area in the town that will lead to environmental improvements in Nantucket Harbor. These areas are contributing to the nutrient loading in the harbor through the use on-site septic systems. The Massachusetts Estuaries Project (MEP), created to help identify and provide solutions for nutrient loading, provided data to MassDEP to help establish the total maximum daily loads (TMDLs) for the area. In 2006, MEP reported that septic system reduction could greatly reduce nutrient enrichment and degradation of the Nantucket Harbor Watershed and increase the water quality.

A 2014 MassDEP-approved comprehensive wastewater management plan (CWMP) update identified the town areas of Nantucket Harbor Shimmo and Nantucket planning and land use services (PLUS) needs areas as the highest rated needs areas. Both needs areas are within the Nantucket Harbor Watershed and contribute nutrient load to the Harbor via septic systems. The CWMP recommended that the Town collect, treat and discharge the wastewater from these two adjacent needs areas at the Town's Surfside Wastewater Treatment Facility (WWTF).

The project will connect these needs areas with the Surfside WWTF through a hybrid approach of gravity sewers and low-pressure sewers. The entire sewer extension consists of approximately 46,000 linear feet of new gravity, low-pressure, and force main sewers and appurtenances; individual on-lot grinder pumps; and one wastewater pump station. This project will connect 161 properties to the wastewater system.

Borrower	Project Description	Amount
Nantucket	**SHIMMO & PLUS PARCELS SEWER EXTENSION** *Highlighted Spending Project*	$14,101,765

Combined Sewer Overflows Correction Projects

Combined Sewer Overflows (CSO) are events where a combined sewer system fails to collect rainwater, domestic sewage and industrial wastewater in the same pipe as intended. When these systems exceed their capacity, untreated water can discharge directly into a water body. CSOs are a major source of water pollution for approximately 772 cities in the US that have combined sewer systems. CSO Correction projects are associated with measures used to achieve water quality objectives by preventing or controlling periodic discharges that occur when the capacity of a sewer system is exceeded during a wet weather event.

Highlighted Project

Fitchburg | Beech and Hazel Streets Sewer Separation - $2,068,695

The City of Fitchburg owns and operates a 12.4 million gallons per day advanced publicly owned treatment works (POTW) fed by its wastewater collection system incorporating about 130 miles of sewers; fourteen of these miles combine sanitary and storm water flows. In 2012, Fitchburg fell under an EPA Consent Decree (CD) for violating their National Pollutant Discharge Elimination System (NPDES) permit which regulation the discharge of pollutants into surface water. Following the terms of the CD, the City began completing separation projects.

The Hazel Street Separation Project was required after another combined sewer was closed causing the overflow to exceed the capacity of the 12-inch pipe. This project consisted of separating approximately 5,200 linear feet of combined sewers in the Beech Street and Hazel Street areas. This was achieved by installing new storm drains and catch basins; repairing and rehabilitating existing sewers and manholes, removing illicit connections; and general street improvements.

Borrower	Project Description	Amount
Fall River	**COMBINED SEWER OVERFLOW ABATEMENT PROGRAM** The objective of this project was to lessen combined sewer overflows (CSOs) in Fall River to achieve compliance with state and federal CSO regulations and a federal court order. The work involved the construction of CSO controls for the President Avenue CSO outfall and other CSO outfalls to the Taunton River and Mt. Hope Bay. This project was part of a multi-year undertaking. Planned CSO control projects included several additional CSO screening and disinfection facilities along with sewer separation projects. The City of Fall River had a combined system with 19 CSO outfalls that discharged to the Mt. Hope Bay, Taunton River or Quequechan River. These CSO outfalls discharged untreated stormwater runoff and sewage during wet weather into receiving waters.	$487,150
Fall River	**GLOBE STREET SEWER IMPROVEMENTS PROJECT** The Globe Street sewer improvements included upsizing approximately 720 linear feet of combined sewer from 33-inches to 66-inches. The work stretched from Globe Four Corners to the combined sewer overflow (CSO) tunnel junction chamber on Globe Street. Upsizing the sewer to the CSO tunnel junction chamber allowed combined sewage to flow unobstructed to the CSO Tunnel drop shaft, eliminating the conveyance restriction that caused flooding, surcharging and combined sewer backups at Globe Four Corners.	$4,105,174
Fitchburg	**BEECH AND HAZEL STREETS SEWER SEPARATION** *Highlighted Spending Project*	$2,068,695

Planning Projects

Projects in this category are for developing plans to address water quality and water quality-related public health problems. Planning projects can consist of multiple types of investigations. Field investigations are used to view the state of current water infrastructure assets to identify and prioritize design, maintenance and replacement activities. Sensor and field analysis can be used as part of a larger analysis that consists of plans to adopt best management practices and capital improvements. These projects assist municipalities with determining environmental issues that may be affecting local water sources or endangering public health.

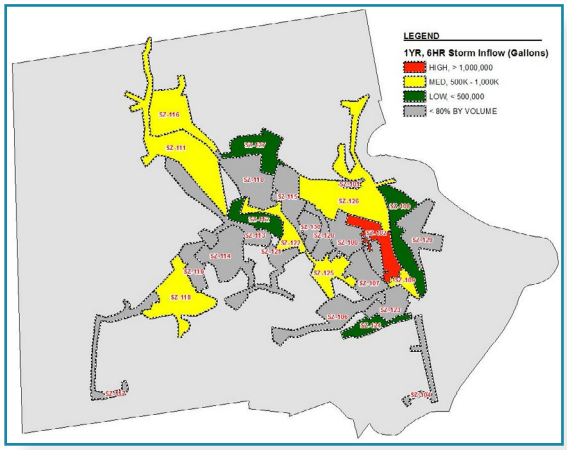
For example, comprehensive wastewater management plans provide strategies for addressing wastewater treatment and disposal issues in a municipality or utility district. Integrated municipal stormwater and wastewater resource management planning assists municipalities with meeting requirements that arise from distinct wastewater and stormwater programs. Fiscal sustainability and asset management planning assists communities with maintaining replacement schedules and forecast capital needs in the future.

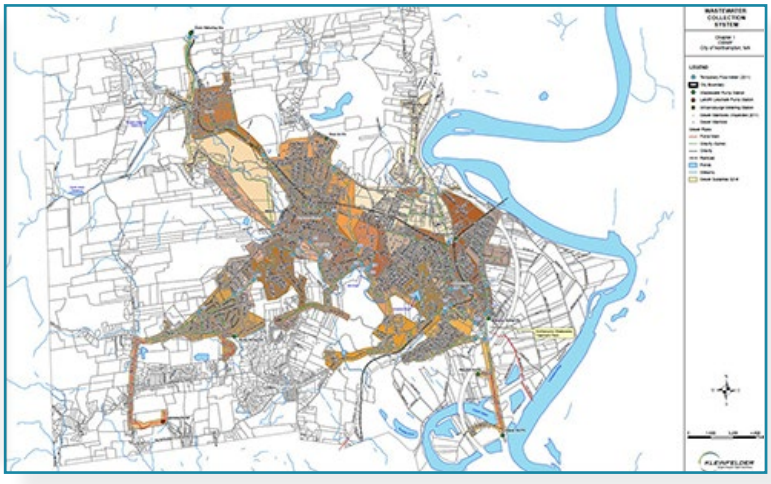
Highlighted Project

Northampton | Comprehensive Wastewater Management Plan - $86,222

In 2012 the City of Northampton commissioned a comprehensive evaluation of needs for its wastewater collection system and wastewater treatment facility (WWTF). This analysis was compiled into a Comprehensive Wastewater Management Plan (CWMP). The Comprehensive Wastewater Management Plan (CWMP) allows the City of Northampton to proactively plan for, fund, and implement necessary capital improvements and/or administrative practices related to their wastewater collection and treatment system. The city has not developed a comprehensive plan to assess and evaluate the condition of its 113 miles of sewers (some of which are more than 100 years old), pumping stations, and treatment facility.

The CWMP included a data management plan, an Infiltration/Inflow study, an hydraulic model simulation to identify existing or potential capacity deficiencies, a wastewater treatment plant evaluation, an alternatives analysis that identifies potential preferred solutions that include energy and environmental goals developed through the 2008 Sustainable Northampton Comprehensive Plan, a sludge/energy efficiency study, a long term operations and maintenance program, and a capital improvement plan. The final plan was delivered in May of 2016.





Borrower	Project Description	Amount
Medway	**INTEGRATED WATER RESOURCE MANAGEMENT PLAN** This project developed a town-wide integrated water resource management plan (IWRMP). The IWRMP allowed the Town to proactively plan, fund, and implement necessary capital improvements and/or administrative practices. These proactive measures ultimately benefited the Town's water treatment & distribution system, wastewater collection & treatment system, and stormwater management system.	$500,000
New Bedford	**SUPPLEMENTAL WASTEWATER AND STORMWATER PLAN** The City is facing many challenges over the next several years related to regulatory compliance associated with stormwater, National Pollutant Discharge Elimination System (NPDES) permitting, and the EPA's Administrative Order (AO). To effectively plan and manage these requirements, the City implemented an integrated wastewater and stormwater management plan. This plan developed a comprehensive approach to managing regulatory and AO requirements in a fiscally responsible manner while meeting the needs of the community, the EPA, and MassDEP. The Supplemental Integrated Wastewater and Stormwater Plan was developed to support ongoing planning efforts in the development of an integrated wastewater and stormwater management plan. Those efforts were necessary to maintain compliance with the AO.	$1,000,000
Northampton	**COMPREHENSIVE WASTEWATER MANAGEMENT PLAN** *Highlighted Spending Project*	$86,222
Revere	**ILLICIT CONNECTIONS & SUMP PUMP DETECTION** The illicit connections and sump pump detection program was and is important for the City's efforts to remove inflow from the sanitary sewer system. This program continued the inspections of private homes and businesses so that sources of inflow from sump pumps, roof leaders, roof drains, driveway drains, yard drains, etc. could be identified.	$850,000
Revere	**PHASE VIII FIELD INVESTIGATIONS - I/I AND IDDE** The Phase VII Field Investigations and illicit discharge detection and elimination (IDDE) was vital for the City to plan and assess wastewater and stormwater systems. The field investigations included IDDE, closed circuit television inspection of drains and sewers, dye testing, smoke testing, and private building inspections. The deficiencies discovered in the system during the investigations will be addressed and corrected by the City in future construction projects.	$1,500,000

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Section 3 | **Drinking Water State Revolving Fund Projects**

Drinking Water Treatment Projects

Treatment projects include the construction, expansion, and rehabilitation of drinking water infrastructure that reduces contamination through various treatment processes. Such processes include conditioning water or removing contaminants. Treatment processes include filtration of surface water, pH adjustment, softening, disinfection, waste handling and other treatment needs (i.e., granular activated carbon which filters out chemicals, particularly organic chemicals, aeration, iron/manganese removal) along with chemical storage tanks.

Upgrades and maintenance to water treatment plants leads to improved water quality and system efficiency. Replacing equipment that has reached the end of the its useful life along with upgrading filtering and purifying equipment makes these facilities less susceptible to failures that could endanger public health. Additionally, system improvements such as corrosion control, help keep the public safe from issues related to older cast iron pipes and lead service lines. Upgraded equipment generally leads to more efficient facilities that consume less power and improves worker safety.

Highlighted Project

Shrewsbury | Home Farm Water Treatment Facility Upgrade - $12,074,031

The Shrewsbury Home Farm Water Treatment Facility, constructed in 1989, receives water from Shrewsbury's 8 wells. Like many New England groundwater sources manganese is present but appears in higher concentrations than guidelines provided the EPA and MassDEP's Office of Research and Standards Guidelines (ORSG) manganese regulations. To this end, the Town of Shrewsbury authorized a number of pilot programs to test filtering options to filter out manganese.

The Town, in September of 2016, voted to build a biological manganese filtration facility and refurbish six of eight groundwater supply wells with new pumps, motors and motor control centers to match the new pump head conditions. In a December 2018 update from the Shrewsbury Water Department noted that, "samples taken throughout the system weekly confirm that manganese levels are at zero or near zero at all sites."

Borrower	Project Description	Amount
Chatham	**NEW WATER TREATMENT FACILITY** This project is for building a drinking water treatment facility and protecting drinking water sources from high levels of iron and manganese. Wells 6, 7, and 9 need treatment for iron and manganese. Chatham has a total of 7 wells. Wells 6 & 7 are run during the summer to meet peak demands. If any wells are offline, the remaining wells are operated on a schedule that is not sustainable.	$9,274,815
Haverhill	**HAVERHILL WATER TREATMENT PLANT UPGRADES** The Haverhill Water Treatment Plant had provided the City with service beyond its useful life. Critical components were aging and approaching obsolescence, with acquisition of replacement parts difficult or impossible. This project upgraded treatment capacity from approximately 10-million gallons per day (MGD) to 12.1 MGD providing much needed redundancy of primary treatment components and replaced outdated systems. The updated plant will meet the needs of the City under a variety of existing and future conditions.	$8,645,659
Shrewsbury	**HOME FARM WATER TREATMENT FACILITY UPGRADE** *Highlighted Spending Project*	$12,074,031

Drinking Water Transmission and Distribution Projects

These projects are for installing, replacing, or rehabilitating transmission lines that carry drinking water from the source to the treatment plant or from the treatment plant to the consumer. Items such as pipes for raw and finished water transmission, service lines, valves, backflow prevention, water meters, and pumping stations may be components of these projects.

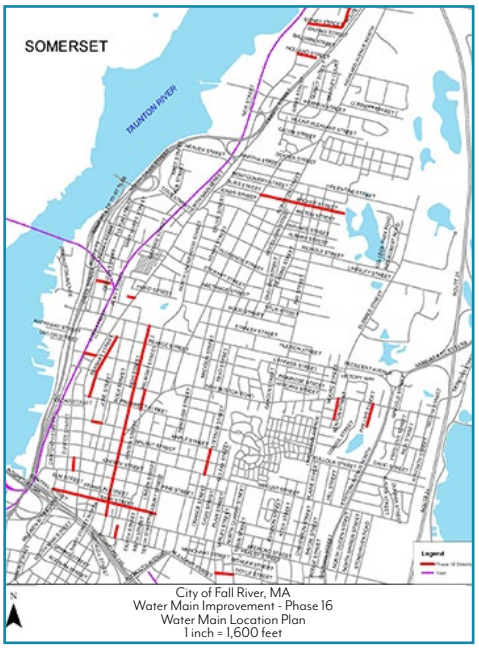
Replacing or repairing transmission lines improve water quality, system pressure and reliability. Additionally, the replacement and relocation of lines may be needed to improve the overall efficiency of a system that was designed for a smaller and less expansive community. The older practice of grouping transmission lines can lead to water distribution issues if one begins to leak and causes physical damage to the surrounding soil and adjacent transmission lines. Replacement of lead service lines reduces the risk of lead exposure and removes a public safety risk.

Highlighted Project

Fall River | Phase 16 Water Main Improvements - $3,512,338

In 2001, the City of Fall River Water Department utilized the Infrastructure Rehabilitation Program and started an aggressive cast iron water main replacement program, with the initial goal of replacing 42 miles of pipe over the course of seven years. In 2006, the City began to focus on replacing lead services along with the cast iron water mains, using the amount of lead services lines in a particular area as part of the selection criteria.

The City entered the sixteenth year of its Replacement Program. Phase 16 water main improvements included the rehabilitation or replacement of approximately 16,500 linear feet of cast iron water mains and 106 lead service lines. The goal was to eliminate potentially serious and preventable health threats such as lead contamination. This project also aimed to provide safe and reliable drinking water to residents.



Existing 12" Cast Iron main on Hartwell Street

Borrower	Project Description	Amount
Adams Fire District	**WELL 4 PUMP STATION REHABILITATION** The goal of this project was to rehabilitate the Well 4 Pump Station, where the pumping, electrical and mechanical equipment had exceeded its useful life. The benefits of this project included increasing safety for workers, reducing the risk of supply interruptions to its customers, and assisting the district in compliance with the Water Management Act. The project involved the following major components: removal and replacement of outdated pumping and chemical feed; updating of heating, ventilation, and air conditioning (HVAC) and electrical equipment; building upgrades to meet current building codes; energy efficiency measures; addition of a supervisory control and data acquisition (SCADA) system; replacement of discharge piping; and the addition of an access vault to the venturi meter.	$538,518
Fall River	**WATER MAIN IMPROVEMENTS AND WATER TREATMENT PLANT RESIDUAL HANDLING** The project included the replacement of approximately 19,000 linear feet of cast iron water mains and 19 lead service lines. A new sanitary grinder pump station was installed for the discharge of domestic sewage from the City's water treatment plant and the replacement of the residuals pump station & associated electrical and control systems.	$139,747
Fall River	**WATER MAIN IMPROVEMENTS - PHASE 16** *Highlighted Spending Project*	$3,512,338
Hadley	**WATER INFRASTRUCTURE IMPROVEMENT** To improve water system reliability, the Town planned to address existing system deficiencies. There was a water main that was approximately 100 years old on the north side of Russell Street. Failures within the project area averaged two per year and created loss of water service and traffic disruptions. Remnants of pipe removed during repairs showed severe tuberculation and customers connected to the main reported low pressure. The project addressed ongoing service interruptions, low pressure complaints, and may have helped to reduce the system's unaccounted water, which exceeded the Water Management Act limit of 10%.	$172,998
Haverhill	**TRANSMISSION MAIN IMPROVEMENTS** This project included improvements for the Kenoza Lake Water Treatment Plant and within the distribution system to provide redundancy to the Gale Hill Storage Tank and the distribution system. The project also included rehabilitating an existing 20-inch transmission main to increase capacity, re-establish isolation control and provide redundancy in the distribution system. Water systems that lack redundancy are at risk for prolonged loss of service if a single critical system element falls out of service.	$2,549,127

Borrower	Project Description	Amount
MWRA	**WACHUSETT AQUEDUCT PUMP STATION** This project was for the construction of an emergency pump station from the Wachusett Aqueduct to the Carroll Water Treatment Plant (CWTP). The pump station provides redundancy in the event of failure at the Cosgrove Tunnel or Intake and for the inspection/rehabilitation of the Cosgrove Tunnel. The pump station can deliver 240 million gallons per day of raw water to the CWTP during a planned or emergency shutdown of the Cosgrove Tunnel. This flow rate represents the full water demand from CWTP during the fall, winter, and spring low-flow seasons and mitigates potential disruption of service to Northborough, Southborough, Marlborough, and Westborough State Hospital.	$28,249,352

Drinking Water Source and Storage

These projects are used for developing or improving sources of water used in public water systems. Project costs include those for constructing or rehabilitating surface water intake structures, drilled wells, wellhead pumps and spring collectors. Having multiple sources of raw water is a standard precaution to make sure that water supplies are not endangered or cut off. Source protection and testing are necessary to confirm that raw water quality can be properly purified at the intended water treatment plant. Excessive amounts of toxins or pollutants in raw water can cause efficiency issues once raw water reaches a water treatment plant. Pumping, well maintenance and water extraction must be monitored to ensure that water quality at the source is not impacted by these activities.

Storage projects in this category aim to provide finished water storage for public water systems. Examples may include systems involving elevated and ground level storage for treated water and covers for existing storage. Storage tanks and the systems they employ are vital components of a water distribution system. Tanks are used to ensure water supply when there may be issues with supply lines or when maintenance is being performed. Upgraded systems that chlorinate water or monitor water quality are more efficient with advanced systems. This means that water quality is more consistent and requires less human maintenance.

Highlighted Project

MWRA | MWRA Low Service Storage - $319,493

Covered distribution storage is vital to large water systems to balance flows during the daily use and to store a reserve supply of treated water to handle unusual or emergency situations such as fires, water main breaks, maintenance activities or other system failures. This project provides improved storage (16-20 million gallons) but will also provide surge relief, protecting MWRA and community mains; allow for more efficient use of the existing MWRA distribution system; and, provide emergency backup to 21 communities in the Northern Intermediate High and Northern High systems.

Borrower	Project Description	Amount
Fall River	**AIRPORT ROAD HIGH SERVICE AREA IMPROVEMENTS** The project aims to create a high service area at the Airport Road Industrial Park. The existing tank will be replaced with a taller tank to improve pressures in the new high service area. A new booster pump station will be constructed. A water main will be replaced and upgraded to connect the new pump station and tank to the existing system.	$428,194
MWRA	**SOUTHERN EXTRA HIGH REDUNDANCY AND STORAGE** The Southern Extra High service area was identified as being deficient in distribution storage and lacking redundant distribution pipelines. Correction of these deficiencies was a majority priority under the Massachusetts Water Resources Authority's (MWRA's) 2006 and 2013 Water System Master plans due to the potential public health threat that could result from a failure in this single transmission main.	$4,045,484
MWRA	**LOW SERVICE STORAGE** *Highlighted Spending Project*	$319,493

Drinking Water Planning and Design Projects

These projects involve the activities needed to plan design and/or study drinking water infrastructure. Planning and design projects are essential for maintaining and improving the key infrastructure that protects public health and water quality. These activities may include using Geographic Information Services (GIS) to map infrastructure, develop asset management plans to better track capital cost and system maintenance. Additionally, these projects may be used to determine system improvement needs related to water loss, emerging contaminants, and numerous other issues that may affect the effectiveness of a system's ability to provide safe drinking water to a community.

Highlighted Project

Revere | GIS Implementation of Automatic Meter Reading Program - $250,000

This project updated the City's geographic information system (GIS) for implementation of an Automatic Meter Reading (AMR) program. This GIS update allows for an efficient digital tracking system to be used during planning and implementation of the program. It will also facilitate the future management of the water utility. In addition, the project implemented a public education program to encourage water conservation, improve customer service and educate the public about the new AMR program.

Borrower	Project Description	Amount
Revere	**GIS IMPLEMENTATION OF AUTOMATIC METER READING PROGRAM** *Highlighted Spending Project*	$250,000

Appendix A - Series 19 Projects

Borrower	Loan No.	Project Name	Amount	Loan Drawn	Program	Category
Andover	CW-11-24	Ledge Road Landfill Closure Planning	$675,000	100%	CW	Planning
Auburn Water District	DW-14-01	West St. Water Treatment Facility Upgrade	$2,688,952	96.4%	DW	Drinking Water Treatment
Barnstable	DWP-13-01	Hyannis Water System Improvements	$2,036,788 [2]	100%	DW	Drinking Water Transmission and Distribution
Bridgewater	CW-14-17	Sewer Inspection, Cleaning and Lining	$781,616 [3]	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Brockton	CWP-14-30	Sewer System Rehabilitation	$1,467,754 [2]	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Cambridge	CWP-13-03-A	Huron B Sewer Separation Project	$14,000,000	93%	CW	Combined Sewer Overflow Correction
Charles River Pollution Control District	CW-13-09-A	Wastewater Treatment Facility Improvements Phase C	$8,741,935	100%	CW	Wastewater Treatment
Chatham	CW-13-10	Collection System Extension and Improvements	$2,881,069 [2]	100%	CW	Collector and Interceptor Sewers
Dracut	CW-13-24	Contract No. 32 Sewer Extensions	$4,693,582	100%	CW	Collector and Interceptor Sewers
Dracut	CWS-08-18-A	Contract 27 Peters Pond West Area Sewers	$19,114	100%	CW	Collector and Interceptor Sewers
Fall River	DWP-13-06	Airport Road High Service Area Improvements	$4,006,171	100%	DW	Drinking Water Transmission and Distribution
Fall River	DWP-14-08	Water Main Improvements and Water Treatment Plant Residual Handling	$3,157,717 [2]	100%	DW	Drinking Water Transmission and Distribution
Fall River	DWP-15-10	Water Main Improvements	$2,219,602 [3]	100%	DW	Drinking Water Transmission and Distribution
Falmouth	CWP-14-23	Sewer Extension and New Recharge Site	$11,140,583	100%	CW	Collector and Interceptor Sewers
Falmouth	DWP-14-04	Long Pond Water Treatment Facility	$16,126,207	100%	DW	Drinking Water Treatment
Falmouth	CWP-14-22	Wastewater Treatment Facility Upgrade	$4,284,956	100%	CW	Wastewater Treatment
Fitchburg	CWP-12-01-A	Combined Sewer Separation	$721,426	100%	CW	Combined Sewer Overflow Correction
Framingham	CW-09-11	Central Street Siphon/Sudbury Interceptor	$2,114,587	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Framingham	CW-09-30-A	Phase 4 Sanitary Sewer Evaluation Survey	$84,190	100%	CW	Planning
Gloucester	DWP-12-02-A	Water Treatment Plant Upgrade	$474,127	100%	DW	Drinking Water Treatment
Great Barrington	CW-12-23	Wastewater Treatment Facility Upgrade and Infiltration/Inflow Removal	$4,210,000	100%	CW	Wastewater Treatment
Harwich	DWP-13-02	Water Treatment Plant	$1,875,541 [2]	100%	DW	Drinking Water Treatment
Holden	DW-13-12	Water Main Installation and SCADA Improvements	$525,000	100%	DW	Drinking Water Transmission and Distribution
Lawrence	DWP-13-05	Water Main Replacement	$9,186,062	100%	DW	Drinking Water Transmission and Distribution
Leominster	CW-10-41	Water Pollution Control Facility Upgrades	$8,000,000	100%	CW	Wastewater Treatment
Leominster	CW-10-41-A	Water Pollution Control Facility Upgrades	$2,500,000	100%	CW	Wastewater Treatment
Lowell	DWP-13-03	Meter Replacement and AMR System	$673,666 [3]	100%	DW	Drinking Water Transmission and Distribution
Lowell	DWP-13-04	Redundant Transmission Main	$3,520,254 [2]	100%	DW	Drinking Water Transmission and Distribution
Ludlow	CW-08-05-A	Combined Sewer Overflow	$503,676	100%	CW	Combined Sewer Overflow Correction
Lunenburg	CW-14-29	Sewer Extension	$1,216,325 [2]	100%	CW	Collector and Interceptor Sewers

Footnotes

[1] Series 19 projects have been fully drawn and will no longer appear in Green Bond reporting. All Amounts and Loan Drawn sections are accurate as of July 31, 2019

[2] Amount was reduced following the completion of the project. Excess funds were reallocated to additional green projects and are listed within the Series 19 table.

[3] Amount reflects Series 19 Bond proceeds reallocated from excess funds of completed Series 19 projects.

Appendix A - Series 19 Projects

Borrower	Loan No.	Project Name	Amount	Loan Drawn	Program	Category
Malden	DWP-13-18	Water Distribution Systems Improvements	$1,811,870 [2]	100%	DW	Drinking Water Transmission and Distribution
Marlborough	DW-14-02	Millham Water Treatment Plant Improvements	$4,809,184	100%	DW	Drinking Water Treatment
Marlborough	CW-11-21-B	Marlborough Easterly Wastewater Treatment Plant Upgrades	$14,626,671 [2]	100%	CW	Wastewater Treatment
Medway	DW-13-13-A	Water Main Replacement	$1,216,667 [2]	100%	DW	Drinking Water Transmission and Distribution
Merrimac	DW-12-14	Water Main Replacement	$860,000	100%	DW	Drinking Water Transmission and Distribution
MFN Regional Wastewater District	CW-10-07-A	MFN Regional Wastewater District Land Treatment	$1,012,310	100%	CW	Wastewater Treatment
MWRA	CW-13-32-F	Combined Sewer Overflow Phase 14	$2,611,847	100%	CW	Combined Sewer Overflow Correction
MWRA	CW-14-37	Deer Island Treatment Plant: Digester and Cryogenics Upgrade	$6,255,873	100%	CW	Wastewater Treatment
MWRA	CW-14-38	Deer Island Treatment Plant: Electrical and Plant Upgrades	$813,700	100%	CW	Wastewater Treatment
MWRA	DW-14-14	Low Service Storage	$3,000,000	100%	DW	Drinking Water Source and Storage
MWRA	DW-14-13	Lower Hultman Aqueduct Rehabilitation	$3,000,000	100%	DW	Drinking Water Transmission and Distribution
MWRA	DW-13-21-B	Southern Spine Distribution Mains	$806,874	100%	DW	Drinking Water Transmission and Distribution
MWRA	DW-14-11	Weston Aqueduct Supply Mains and Sec 36/101	$6,876,818	100%	DW	Drinking Water Transmission and Distribution
Needham	CW-11-11-A	Replacement of Reservoir B Sewer Pump Station	$78,491	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
New Bedford	CWP-14-19	Combined Sewer Overflow Abatement	$8,063,124	100%	CW	Combined Sewer Overflow Correction
New Bedford	CWP-14-19-A	Combined Sewer Overflow Abatement	$691,540 [3]	100%	CW	Combined Sewer Overflow Correction
Norwood	CW-11-12-A	Westover Area Sewer Rehabilitation	$110,127	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Norwood	CWP-13-19	Meadowbrook Area Sewer Rehabilitation	$2,638,952	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Palmer	CWP-13-23	Sewer Replacement	$5,807,217 [2]	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Paxton	DW-14-07	Maple St. Elevated Tank	$1,370,000	100%	DW	Drinking Water Source and Storage
Quincy	DW-09-12-A	Water System Infrastructure Rehabilitation	$233,275	100%	DW	Drinking Water Transmission and Distribution
Quincy	CWP-13-26	Fort Square Pumping Station Rehabilitation	$2,787,004	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Revere	CWP-12-13	Sanitary Sewer Evaluation Survey Investigations	$767,322	100%	CW	Planning
Revere	CW-13-17	Field Investigation and Illicit Connection Detection	$1,500,000	100%	CW	Planning
Revere	CWP-13-16	Collection System Improvements	$7,218,581	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Saugus	CWP-14-08	SSO Reduction Subsystem 5	$1,579,841	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
South Essex Sewerage District	CW-13-33	Marblehead Replacement Crossing Sewer	$9,250,000	100%	CW	Collector and Interceptor Sewers
Springfield Water and Sewer Commission	DWP-13-16	South Water Transmission Main Replacement	$21,353,368 [2]	100%	DW	Drinking Water Transmission and Distribution
Taunton	CWP-11-17-A	Sewer System Separation of Combined Manholes and Upgrade of Vital Pump Stations	$180,526	100%	CW	Collector and Interceptor Sewers
Taunton	DWP-13-07	Pump Station and Water Main Replacement	$6,663,446	100%	DW	Drinking Water Transmission and Distribution

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Appendix A - Series 19 Projects

Borrower	Loan No.	Project Name	Amount	Loan Drawn	Program	Category
Taunton	CWP-13-18	Sanitary Sewer Evaluation Survey Phases 10-12	$6,295,244	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Taunton	CWP-14-26	Sanitary Sewer Evaluation Survey Phases 10-12	$4,021,122	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Turners Falls Fire District	DWP-13-17	Hannegan Brook Well Pump Station	$780,677 [2]	100%	DW	Drinking Water Source and Storage
Webster	DWP-13-15-A	Water Main	$170,246 [2]	100%	DW	Drinking Water Transmission and Distribution
Westborough	CW-07-19	Wastewater Treatment Plant Upgrade	$302,305	100%	CW	Wastewater Treatment
Worcester	CWP-13-20	Lake Ave Sewer Infiltration/Inflow	$1,048,196	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation

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Appendix B - Series 20 Projects

Borrower	Loan No.	Project Name	Amount	Loan Drawn	Program	Category
Barnstable	CW-04-31-R	Nutrient Management Planning Project	$255,941	100%	CW	Planning
Billerica	CW-14-21	Contract 35 Sewers	$9,724,962	90.7%	CW	Collector and Interceptor Sewers
Billerica	CW-14-20	Wastewater Treatment Facility Upgrades	$4,472,511 [2]	100%	CW	Wastewater Treatment
Brockton	CWP-15-22	Sewer Rehabilitation	$1,270,936 [2]	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Charles River Pollution Control District	CW-13-09-B	Wastewater Treatment Facility Improvements Phase C	$1,645,106 [2]	100%	CW	Wastewater Treatment
Chicopee	CW-14-05	Combined Sewer Overflow	$25,478,178	94.3%	CW	Combined Sewer Overflow Correction
Chicopee	CW-13-22	Integrated Municipal Stormwater and Wastewater Resource Management Plan	$996,457 [2]	100%	CW	Planning
Dracut	CW-13-24-A	Contract No. 32 Sewer Extensions	$181,873	100%	CW	Collector and Interceptor Sewers
Eastham	DWP-16-02	Water System Phase I	$10,402,720	96.4%	DW	Drinking Water Source and Storage
Eastham	DWP-15-01-A	Water System Phase I	$2,304,545	97.7%	DW	Drinking Water Transmission and Distribution
Easthampton	CW-14-13	Integrated Wastewater Resource Management Plan	$1,100,000	99.2%	CW	Planning
Everett	CW-08-14-A	Stormwater Illicit Discharge Detection	$61,076	90.8%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Everett	CW-14-24	Storm Water/Sewer Evaluation	$500,000	100%	CW	Planning
Falmouth	CWP-14-23-A	Sewer Extension and New Recharge Site	$15,694,054 [2]	100%	CW	Collector and Interceptor Sewers
Falmouth	DWP-15-02	Long Pond Water Treatment Facility	$15,320,673	100%	DW	Drinking Water Treatment
Fitchburg	CWP-13-01-A	Combined Sewer Separation Area 4D	$1,215,860 [2]	100%	CW	Combined Sewer Overflow Correction
Gardner	CWP-15-21	Wastewater Treatment Plant Upgrade	$4,433,242	98.2%	CW	Wastewater Treatment
Grafton	CW-15-14	Wastewater Treatment Plant Improvements	$14,613,300	100%	CW	Wastewater Treatment
Great Barrington	CWP-15-24	Wastewater Treatment Facility Upgrades and Sewer Improvements	$4,562,663 [2]	100%	CW	Wastewater Treatment
Haverhill	CWP-14-15	Combined Sewer Overflow Improvements, Wastewater Treatment Facility and Sewer System	$8,366,419	98.9%	CW	Combined Sewer Overflow Correction
Lawrence	CW-14-16	Sewer System Rehabilitation	$8,978,897	99.7%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Lawrence	CW-13-13	Capacity Management Operations and Maintenance Program and Sanitary Sewer Evaluation Survey	$3,840,000	100%	CW	Planning
Lowell	DWP-13-03	Meter Replacement and AMR System	$30,610 [3]	100%	DW	Drinking Water Transmission and Distribution
Lynn Water and Sewer Commission	DW-13-19	Low Service Reservior Improvements	$1,297,810	100%	DW	Drinking Water Source and Storage
Manchester by the Sea	DW-14-03	Water System Improvements	$1,440,000	100%	DW	Drinking Water Transmission and Distribution
Manchester by the Sea	CW-14-31	Comprehensive Wastewater Management Plan	$234,450	100%	CW	Planning
Mashpee	CW-00-50-C	Comprehensive Wastewater Management Plan	$78,035 [2]	100%	CW	Planning
Middleborough	CWP-14-32	Wastewater Treatment Facility Upgrades	$24,346,341	100%	CW	Wastewater Treatment
MWRA	CW-15-30	Caruso Pump Station	$2,031,614	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
MWRA	CW-15-32	Clinton Wastewater Treatment Plant Phosphorous Removal	$2,496,267	100%	CW	Wastewater Treatment

Footnotes

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[2] Amount was reduced following the completion of the project. Excess funds were reallocated to additional green projects and are listed within the Series 20 table.

Appendix B - Series 20 Projects

Borrower	Loan No.	Project Name	Amount	Loan Drawn	Program	Category
MWRA	CW-15-27	Combined Sewer Overflow Phase 16	$3,038,178	100%	CW	Combined Sewer Overflow Correction
MWRA	DW-15-13	Low Service Storage	$7,474,691	100%	DW	Drinking Water Source and Storage
MWRA	DW-15-12	Lower Hultman Aqueduct Rehabilitation	$516,897	100%	DW	Drinking Water Transmission and Distribution
MWRA	DW-15-04	Wachusett Aqueduct Pump Station	$12,404,988	100%	DW	Drinking Water Transmission and Distribution
MWRA	DW-15-14	Weston Aqueduct Supply Mains and Sec 36/101	$4,419,689	100%	DW	Drinking Water Transmission and Distribution
New Bedford	DWP-14-05	Transmission Main Improvements	$4,466,812	100%	DW	Drinking Water Transmission and Distribution
Norwood	CWP-15-08	Underdrain Area Sewer Rehabilitation	$2,212,267	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Plainville	DWP-15-09	Tank Rehabilitation	$635,983 [2]	100%	DW	Drinking Water Source and Storage
Revere	CW-13-14	Capacity Management Operations and Maintenance Program Program	$300,000	100%	CW	Planning
Revere	CW-14-25	Illicit Connection Detection Program	$700,000	100%	CW	Planning
Revere	CW-15-19	Illicit Connection Detection Program	$800,000	100%	CW	Planning
Revere	CW-14-11	Comprehensive Wastewater Management Plan/CSMP Supplemental Plan	$1,200,000	100%	CW	Planning
Revere	CW-15-18	Sanitary Sewer Evaluation Survey	$1,700,000	100%	CW	Planning
Revere	DWP-13-09	Water Meters Automatic Meter Reading System	$6,370,373	100%	DW	Drinking Water Transmission and Distribution
Revere	CWP-15-29	Sewer Rehabilitation	$10,902,107	94.5%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Springfield Water and Sewer Commission	CWP-14-27	Dickinson Siphon/Main Interceptor Rehabilitation	$3,054,020 [3]	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Stockbridge	DW-15-08	Water System Improvements	$1,800,000	88.8%	DW	Drinking Water Source and Storage
Taunton	CW-14-26-A	Sanitary Sewer Evaluation Survey Phases 10-12	$4,246,535 [2]	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Taunton	CWP-13-18-A	Sanitary Sewer Evaluation Survey Phases 10-12	$95,249	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Uxbridge	DW-14-12	Rt. 122 Water Main Replacement	$3,186,000	78.4%	DW	Drinking Water Transmission and Distribution
Uxbridge	CW-16-26	Wastewater Treatment Facility - BNR and Infrastructure Upgrade	$2,628,303.00 [3]	100%	CW	Wastewater Treatment

Footnotes

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[2] Amount was reduced following the completion of the project. Excess funds were reallocated to additional green projects and are listed within the Series 20 table.

Appendix C - Series 21 Projects

Borrower	Loan No.	Project Name	Amount	Loan Drawn	Program	Category
Adams Fire District	DW-16-10	Well 4 Pump Station Rehabilitation	$538,518	97.9%	DW	Drinking Water Transmission and Distribution
Brockton	CWP-16-29	Sewer Rehabilitation Project	$2,975,722	88.4%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Chatham	DW-14-06	New Water Treatment Facility	$9,274,815	90.8%	DW	Drinking Water Treatment
Fall River	CW-13-02-A	Combined Sewer Overflow Abatement Program	$487,150	95.1%	CW	Combined Sewer Overflow Correction
Fall River	CWP-16-03	Globe Street Sewer Improvements Project	$4,105,174	90.3%	CW	Combined Sewer Overflow Correction
Fall River	DWP-13-06-A	Airport Road High Service Area Improvements	$428,194	66.2%	DW	Drinking Water Source and Storage
Fall River	DWP-14-08-A	Water Main Improvements and Water Treatment Plan Residual Handling	$139,747	100%	DW	Drinking Water Transmission and Distribution
Fall River	DWP-16-09	Water Main Improvements - Phase 16	$3,512,338	89.2%	DW	Drinking Water Transmission and Distribution
Fitchburg	CWP-16-05	Beech and Hazel Streets Sewer Separation	$2,068,695	93.5%	CW	Combined Sewer Overflow Correction
Fitchburg	CWP-16-10	Fitchburg Wastewater Treatment Facility Secondary Systems Upgrade	$9,017,418	100%	CW	Wastewater Treatment
Hadley	DWP-16-03	Water Infrastructure Improvement	$172,998	100%	DW	Drinking Water Transmission and Distribution
Haverhill	DWP-16-05	Haverhill Water Treatment Plant Upgrades	$8,645,659	100%	DW	Drinking Water Treatment
Haverhill	DWP-16-07	Transmission Main Improvements	$2,549,127	98.6%	DW	Drinking Water Transmission and Distribution
Medway	CW-11-20	Integrated Water Resources Management Plan	$500,000	100%	CW	Planning
MFN Regional Wastewater District	CW-15-25-A	Water Pollution Control Facility Upgrades and Landfill Closure	$17,911,611	100%	CW	Wastewater Treatment
Montague	CWP-14-28	Pump Station Replacements	$1,583,047	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
MWRA	CW-16-42	Caruso Pump Station	$2,194,852	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
MWRA	CW-16-43	Wastewater Treatment Plant and Sewer Improvements	$3,394,837	100%	CW	Wastewater Treatment
MWRA	CW-17-34	Wastewater Treatment Plant and Sewer Improvements	$3,249,355	100%	CW	Wastewater Treatment
MWRA	CW-17-35	Remote Headworks Upgrade	$4,786,700	100%	CW	Infiltration/Inflow and Sewer System Rehabilitation
MWRA	CW-17-36	Clinton Wastewater Treatment Plant Phosphorous Removal	$3,759,927	100%	CW	Wastewater Treatment
MWRA	DW-16-06	Southern Extra High Redundancy and Storage	$4,045,484	100%	DW	Drinking Water Source and Storage
MWRA	DW-16-23	Low Service Storage	$319,493	100%	DW	Drinking Water Source and Storage
MWRA	DW-17-15	Wachusett Aqueduct Pumping Station	$28,249,352	100%	DW	Drinking Water Transmission and Distribution
Nantucket	CW-15-26	Surfside Wastewater Treatment Facility Improvements	$8,472,975	86.6%	CW	Wastewater Treatment
Nantucket	CW-16-36	Shimmo & PLUS Parcels Sewer Extension	$14,101,765	81%	CW	Collector and Interceptor Sewers
New Bedford	CW-16-37	Supplemental Wastewater and Stormwater Plan	$1,000,000	98%	CW	Planning
Northampton	CWP-10-14-R	Pumping Station Improvements	$86,222	84.7%	CW	Planning and Design Only
Norwood	CWP-15-08-A	Underdrain Area Sewer Rehab	$414,356	87.6%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Quincy	CWP-15-06	Pumping Station Renovation	$3,634,026	97.2%	CW	Infiltration/Inflow and Sewer System Rehabilitation

Footnotes

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Appendix C - Series 21 Projects

Borrower	Loan No.	Project Name	Amount	Loan Drawn	Program	Category
Revere	CW-16-19	Phase VIII Field Investigations - I/I and Illicit Discharge Detection and Elimination	$1,500,000	92%	CW	Planning
Revere	CW-16-23	Illicit Connections & Sump Pump Detection	$850,000	95%	CW	Planning
Revere	DW-13-10	GIS Implementation of Automatic Meter Reading Program	$250,000	75.3%	DW	Drinking Water Planning and Design
Saugus	CWP-16-09	Sewer System and Pump Station Rehab/Improvements	$3,197,219	96.5%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Shrewsbury	DW-16-15	Home Farm Water Treatment Facility Upgrade	$12,074,031	96%	DW	Drinking Water Treatment
Taunton	CWP-16-38	Sewer/Drain Separation and Inflow Removal	$3,927,054	97.9%	CW	Infiltration/Inflow and Sewer System Rehabilitation
Upper Blackstone Water Pollution Abatement District	CWP-16-39	Nutrient Removal Improvements	$8,842,079	100%	CW	Wastewater Treatment
Uxbridge	CW-16-26-A	Wastewater Treatment Facility BNR and Infrastructure Upgrade	$17,253,299	100%	CW	Wastewater Treatment

Footnotes

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2019 ANNUAL REPORT

Massachusetts Clean Water Trust

Office of the State Treasurer
Executive Office for Administration and Finance
Massachusetts Department of Environmental Protection

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