

The Quarterly Debt Summary Report includes the following:

1. Key Takeaways
2. Look Ahead – Five Year Capital Financing Plan
3. Existing Debt
4. Debt Service Coverage
5. Potential Refinancing Opportunities

Pursuant to leases that became effective on January 1, 2016, the Great Lakes Water Authority (GLWA) assumed possession and control of the regional assets of both the water supply and sewage disposal systems owned by the City of Detroit (City), which were previously operated by the Detroit Water and Sewerage Department (DWSD). GLWA assumed certain liabilities including State Revolving Fund loans and 100% of the revenue bond debt issued by DWSD prior to January 1, 2016, pursuant to terms of bond issues in calendar years 2014 and 2015, along with a bondholder consent solicitation in 2015.

The bonds are repaid by the revenues of the water and sewage systems including the DWSD retail system (local system) revenues which are the exclusive property of GLWA in accordance with Section 5.7 of each lease agreement. The DWSD is GLWA's agent for purposes of billing and collection of the retail system revenues for both the water and sewer system, as set forth in a water and sewer services agreement between the City and GLWA. All revenue receipts are deposited into a trust and administered in compliance with the Master Bond Ordinance, applicable to each system (referred to herein collectively as the "MBO").

The leases also provide that GLWA will finance local system improvements of DWSD. GLWA is the obligor of 100% of the debt payable which is recorded in GLWA's books. An "obligation receivable" is recorded by GLWA which represents the amount related to the DWSD retail system improvements. Accordingly, DWSD records an "obligation payable" for a like amount.

GLWA maintains detailed records of all debt issuances and how that debt is allocated between the regional system and local system, as well as between the water and sewer systems. GLWA and DWSD regularly reconcile interrelated accounts between the entities.

The lease agreements, water and sewer services agreement, and MBO noted above are available on GLWA's website at www.glwater.org. The above explanation is a synopsis of key points and is not intended to fully represent the agreements or any sub-sections thereof.

Key Takeaways

- ✓ This is the inaugural quarterly debt report prepared for the GLWA. The purpose is to provide a resource for stakeholders and to support management decisions as capital financing needs evolve.
- ✓ GLWA continues to enhance transparency by inclusion of the Debt Summary Report in the Audit Committee Binder quarterly.
- ✓ All Bond Reserve Requirements are fully funded as of the most recent valuation.
- ✓ Currently, GLWA has seven open State Revolving Fund (SRF) loans, three for water and four for sewer.
- ✓ Specific key items of interest include the following along with the balance as of March 31, 2019.

Balance of Key Items as of March 31, 2019 (\$ Millions)		
	Water	Sewer
FY 2019 Approved SRF Projects - Table 5	\$157.0	\$10.3
DWSD Obligation Receivable - Table 6	\$476.1	\$420.0
GLWA Outstanding Debt - Table 7	\$2,284.3	\$3,107.4

Look Ahead - Five Year Capital Financing Plan

The following tables summarize the projected Capital Improvement Program (CIP) funding to be provided by proceeds received from the issuance of new revenue bonds and draws on committed SRF loans. *The financing plan is dynamic and changes with the pace of capital spending and alignment with refunding opportunities.* These schedules are based upon the recently approved FY 2020 to FY 2024 Capital Improvement Plan (CIP) for the regional system by the GLWA Board of Directors and for the local system by the DWSD's Board of Water Commissioners. It is important to note the amounts represented in Revenue Bonds reflect the anticipated par amount of the bonds to be issued and not the net proceeds needed to support the capital plan.

Table 1 - GLWA Projected Financing Needs FY 2020 – FY 2024

Projected Funding Needs for Regional System					
	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Water					
Revenue Bonds	\$ -	\$ -	\$ 62,000,000	\$ 56,000,000	\$ 56,000,000
SRF loan draws	5,531,000	18,367,000	24,115,000	29,615,000	29,994,000
Total projected funding Water	\$ 5,531,000	\$ 18,367,000	\$ 86,115,000	\$ 85,615,000	\$ 85,994,000
Sewer					
Revenue Bonds	\$ 84,000,000	\$ 87,000,000	\$ 91,000,000	\$ 69,000,000	\$ 13,000,000
SRF loan draws	29,342,000	8,280,000	1,343,000	-	-
Total projected funding Sewer	\$ 113,342,000	\$ 95,280,000	\$ 92,343,000	\$ 69,000,000	\$ 13,000,000

Table 2 - DWSD Projected Bond Financing Needs FY 2020 – FY 2024

Projected Funding Needs for Local System					
	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Water					
Revenue Bonds	\$ 100,000,000		\$ 50,000,000	\$ -	\$ 50,000,000
SRF loan draws	\$ 4,020,000	\$ 12,040,000	\$ -	\$ -	\$ -
Total projected funding Water	\$ 104,020,000	\$ 12,040,000	\$ 50,000,000	\$ -	\$ 50,000,000
Sewer					
Revenue Bonds	\$ -	\$ -	\$ 50,000,000	\$ -	\$ -
SRF loans draws	\$ -	\$ -	\$ -	\$ -	\$ -
Total projected funding Sewer	\$ -	\$ -	\$ 50,000,000	\$ -	\$ -

Note: Information presented is as of March 31, 2019. Financing plans continue to evolve based on the needs of the system.

Existing Debt

Current Debt Ratings: Bond ratings are a key measure of an organization’s financial strength. Ratings are established by independent agencies that conduct detailed reviews of an organization’s operational and financial performance to assist those seeking to invest in an organization through the purchase of bonds. GLWA actively monitors its debt ratings and continually seeks to make operational and financial improvements to improve its bond ratings. Achieving higher ratings will allow GLWA to finance its capital needs at lower interest rates.

Table 3 – Debt Ratings by System provides a summary of the debt ratings assigned in September 2018, in advance of the most recent bond issuances in October 2018, as well as the ratings assigned to the Junior Lien debt in November 2018.

Current Debt Ratings				
	S&P Global Ratings		Moody's Investors Service	Fitch Ratings
Water Supply System Revenue Bonds				
Senior lien	AA-		A2	A
Second lien	A+		A3	A-
Junior lien	A+		N/A	N/A
Outlook	Stable		Stable	Positive
Sewage Disposal System Revenue Bonds				
Senior lien	A+		A2	A
Second lien	A		A3	A-
Junior lien	A		N/A	N/A
Outlook	Positive		Stable	Positive

Debt Allocation: GLWA has over \$2.2 billion in water system debt and \$3.1 billion in sewer system debt for a combined total of over \$5.3 billion. Debt within each system is prioritized according to its security interest, or lien category, with senior lien debt having the highest security interest, followed by second lien and finally junior lien.

Chart 1 - Debt Type by Lien – Water provides a breakdown of the total water system debt for both the regional and local systems by lien type.

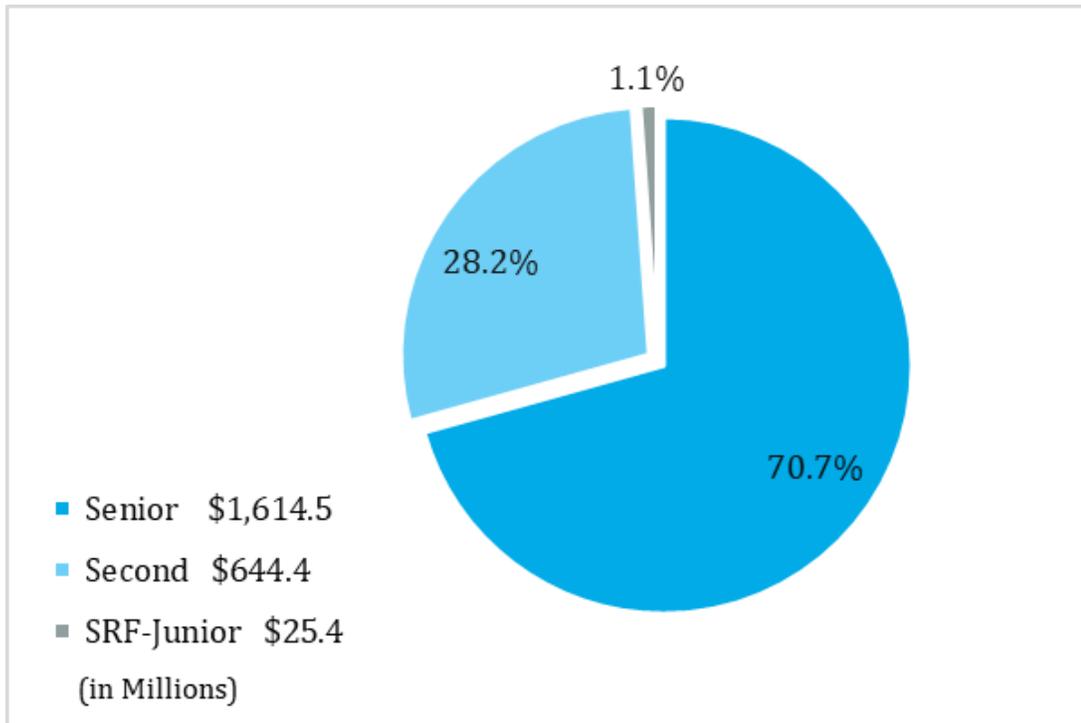


Chart 2 - Debt Type by Lien – Sewer provides a breakdown of the total sewer system debt for both the regional and local systems by lien type.

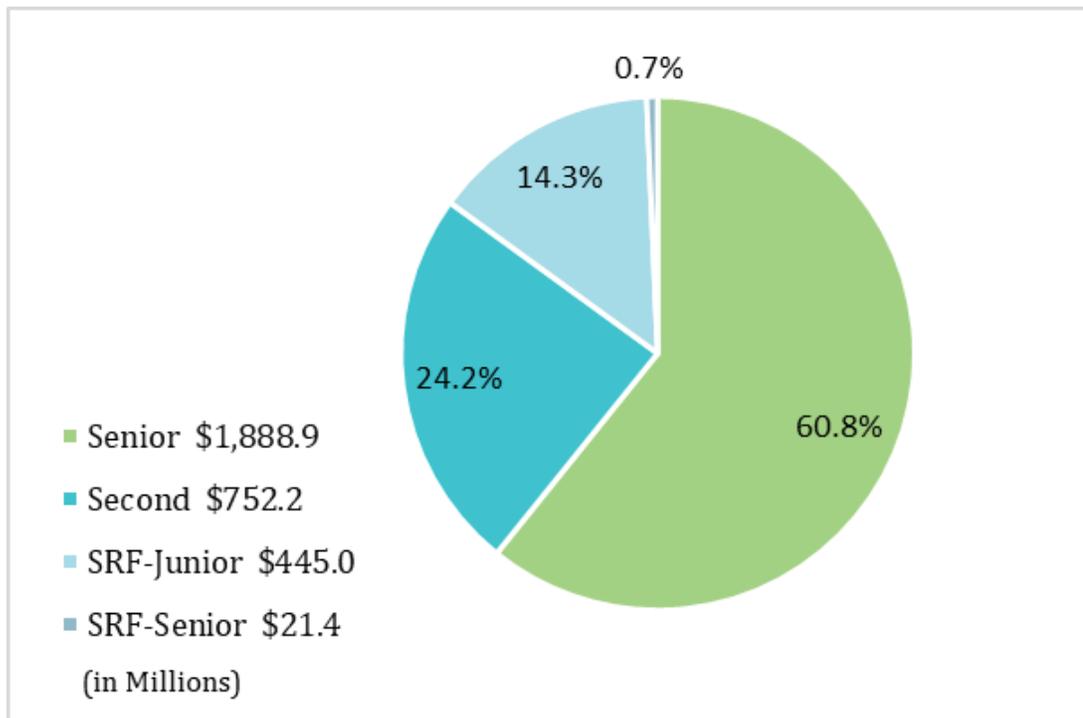


Chart 3 – Annual Debt Service Payments by Lien – Water provides the amortization schedule of combined annual debt service requirements by due dates within the fiscal year.

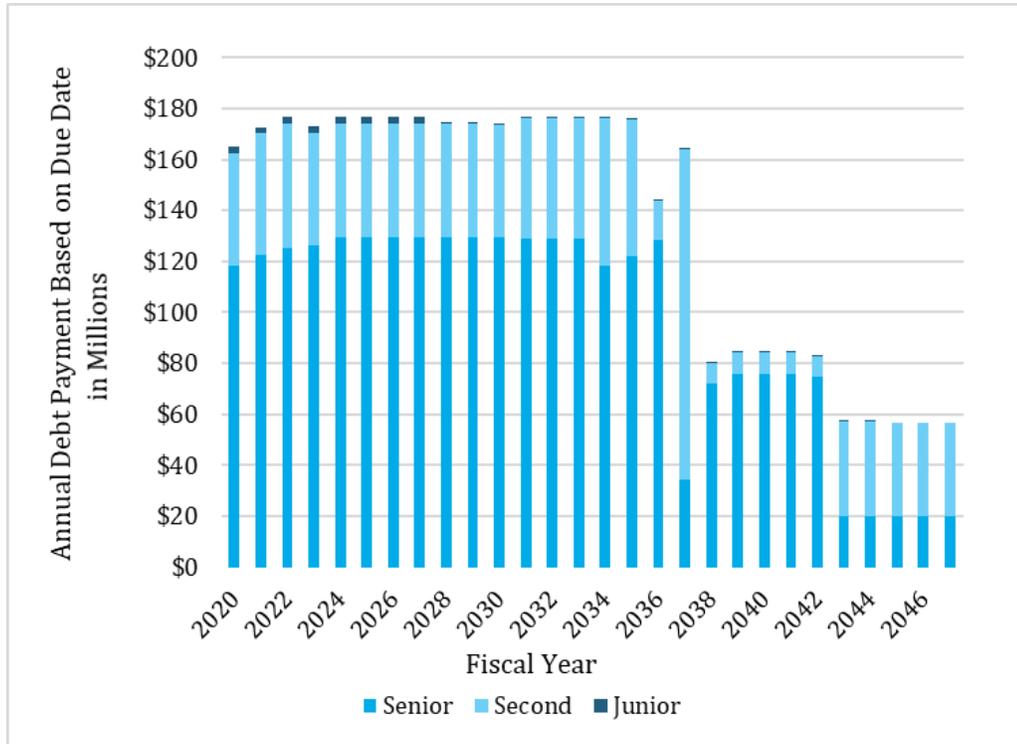
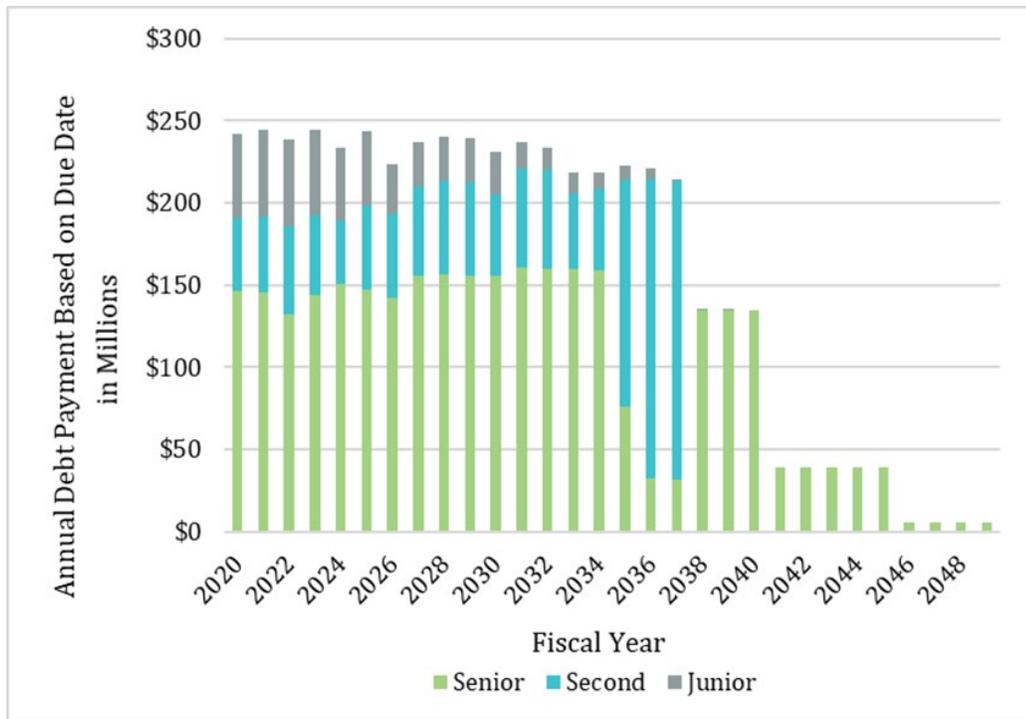


Chart 4 – Annual Debt Service Payments by Lien – Sewer provides the amortization schedule of combined annual debt service requirements by due dates within the fiscal year.



State of Michigan’s State Revolving Fund (SRF) Programs: GLWA participates in the State’s Clean Water Revolving Fund (CWRF) to finance qualified sewage disposal system projects and the State’s Drinking Water Revolving Fund (DWRF) to finance qualified water supply system projects. For the purposes of this report, both water and sewer projects financed through these programs will be referred to as either water or sewer SRF loans.

These loan programs have interest rates that are well below open market interest rates (usually between 2.0% and 2.5%) and are repaid over 20-30 years. Funds are disbursed as construction payments are made. Interest on each loan is based on the amount of funds drawn and not the full loan amount. GLWA must submit project plans to Michigan Department of Environment, Great Lakes, and Energy (“EGLE”, and formerly known as the Michigan Department of Environmental Quality or MDEQ) for each project by the annual submission date (May 1 for DWRF and July 1 for CWRF) in order to be considered for the State’s funding pool for the following fiscal year.

State Revolving Fund Loans: GLWA’s strategy is to maximize its use of SRF loans to finance qualified capital projects. GLWA currently has over \$25.4 million in outstanding water SRF loans and \$466.3 million in outstanding sewer SRF loans.

Table 4 - Active SRF Project Summary provides information regarding each loan including the loan award date which is also referred to as the Order of Approval date by the State of Michigan.

State Loan #	Description	Order of Approval	Project Total (\$ Millions)
SRF Water - DWSD Specific Projects			
7412-01	Water Main Replacement (WS-693A)	8/24/2016	\$10.6
7413-01	Water Main Replacement (WS-697)	8/24/2016	\$5.2
7414-01	Water Main Replacement (WS-698)	6/1/2017	\$8.7
		Total Water	\$24.5
SRF Sewer - GLWA Projects			
5635-01	Aeration System Improvements	8/24/2016	\$19.3
5636-01	Rehab Rectangular Primary Clarifiers, Electrical/Mechanical Buildings and Pipe Gallery	8/24/2016	\$51.3
5651-01	RRO Disinfection (Phase II)	3/13/2015	\$38.5
5655-01	Detroit River Interceptor	8/23/2018	\$17.7
		Total Sewer	\$126.8

Chart 5 - Open State Revolving Fund Loans summarizes all current SRF loans held by GLWA (including financings on behalf of DWSD) that are active (reference Table 4 above for project descriptions). It summarizes the original award amount remaining and the amount drawn down as of March 31, 2019 for each loan.

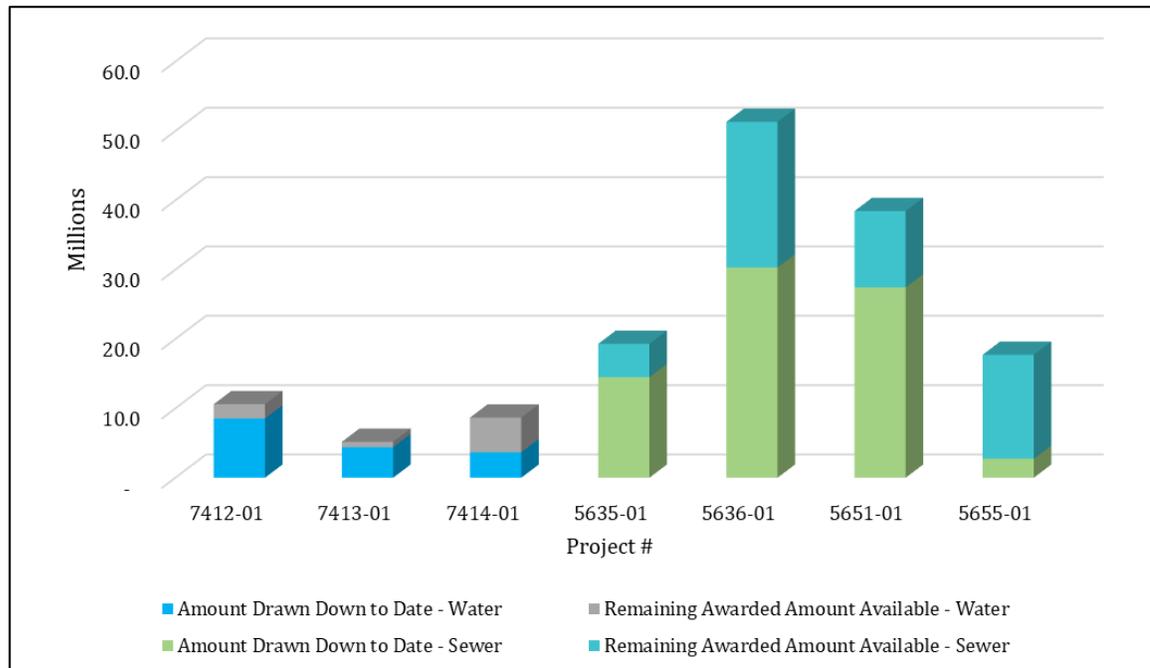


Table 5 - Project Plan Approved by EGLE identifies projects approved by the EGLE but for which applications have not yet been submitted for funding.

Project Owner	Description	Project Total	Anticipated Funding
Water SRF			
GLWA	Water Conveyance System-84" Transmission Main - Segment I "Improvements to Flow Control Station" (1st Loan - FY 19-4th Quarter)	\$ 18,000,000	8/30/2019
GLWA	Water Conveyance System-84" Transmission Main - Segment II+ (2nd loan or more FY 20 - beyond)	115,727,000	8/30/2020
GLWA	Lake Huron Sludge System-Raw Sludge Clarifiers (FY 19-3rd Quarter)	7,241,000	6/7/2019
DWSD	DWSD Water Main Replacement (FY 19-2nd Quarter)	15,982,000	8/30/2019
Total Water SRF		\$ 156,950,000	
Sewer SRF			
GLWA	Ferric Chloride System Rehabilitation (FY 19-4th Quarter)	\$ 10,297,181	3/27/2020
Total Sewer SRF		\$ 10,297,181	

DWSD Obligation Receivable: GLWA holds an obligation receivable from DWSD as an asset to account for the amount due for financing local system capital projects. DWSD carries a like amount of this as an obligation payable on its statement of net assets.

There are three components to the calculation of the DWSD obligation receivable. These are:

- a) an agreed upon amount for pre-January 1, 2016 (i.e. “pre-bifurcation”) debt as documented in a 2018 Memorandum of Understanding (\$455 million for water system and \$370 million for sewer per agreed-upon amortization schedules),
- b) new revenue bonds issued after January 1, 2016 to specifically fund the DWSD local system capital improvement projects which are payable based on the allocable share of the actual bonds debt service schedule, and
- c) SRF loans entered into for specific DWSD capital projects which are payable based on the allocable share of the actual loan payment schedule.

All retail customer revenues are deposited into a trust to fund these financial obligations in accordance with the MBO flow of funds.

Chart 6 - DWSD Obligation Receivable by Type summarizes the total DWSD obligation receivable balance for both Water and Sewer as of March 31, 2019 by pre-bifurcation, revenue bond and SRF component.

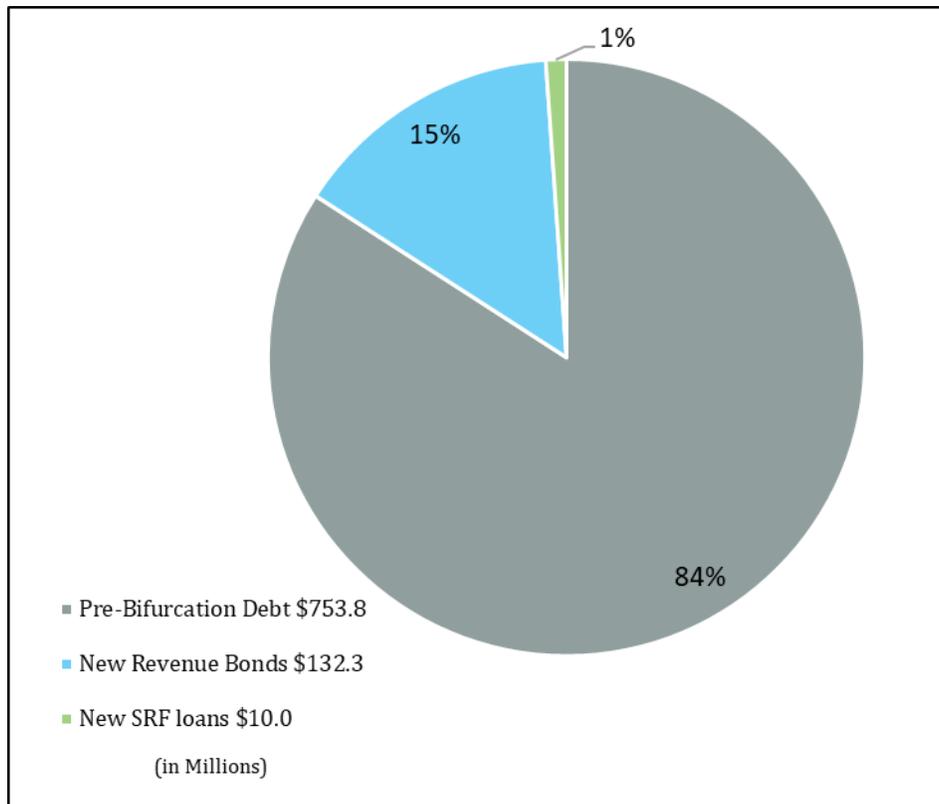
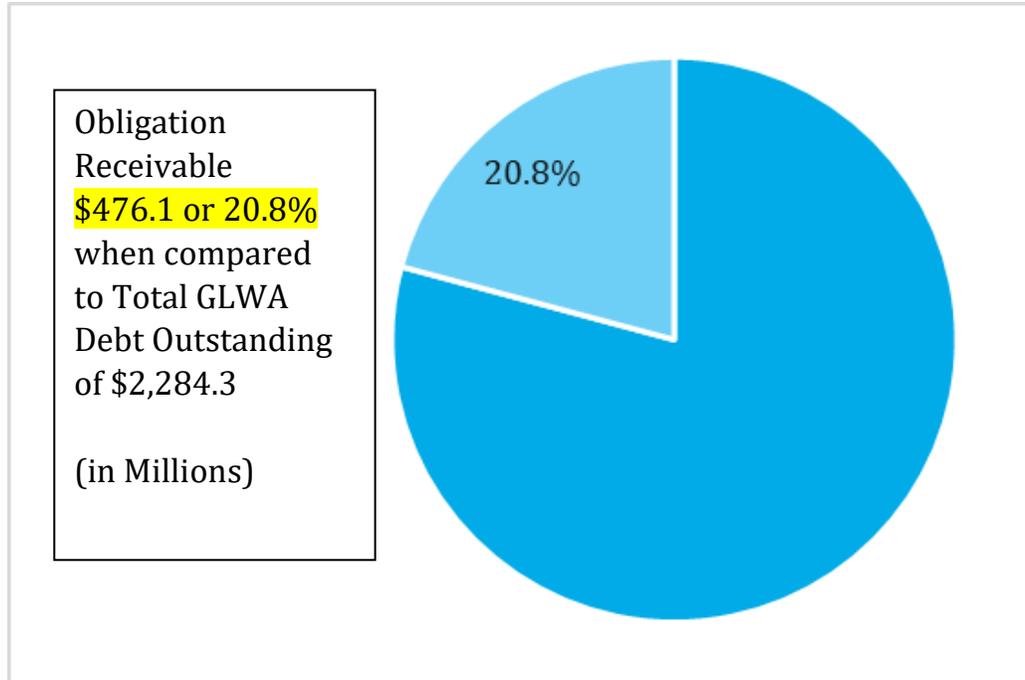


Chart 7 – Obligation Receivable Compared to Total Debt - Water provides context by comparing the Water System Obligation Receivable to the Total Water Debt (excludes unamortized premiums).



Charts #7 & #8 of the Debt Summary Report were updated to properly reflect the Total DWSD Obligations for Water and Sewer shown in Table 6.

Chart 8 – Obligation Receivable Compared to Total Debt - Sewer provides context by comparing the Sewer System Obligation Receivable to the Total Sewer Debt (excludes unamortized premiums).

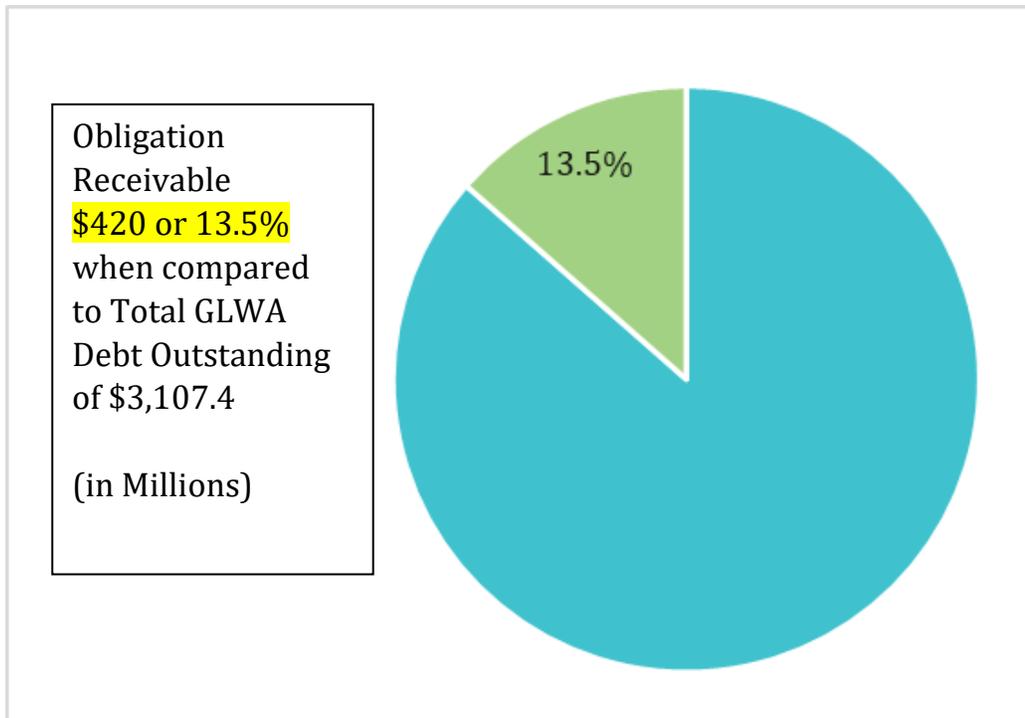


Table 6 - DWSD Obligation Receivable provides obligation receivable detail including fiscal year 2019 beginning balances by debt type and loan issue (for revenue bonds and SRF loans), year-to-date activity and ending balances as of March 31, 2019. Total DWSD debt totals \$930.4 million. This differs slightly from the total in Chart 8 due to the inclusion of unamortized premiums.

(In Thousands)

Debt Type	July 1, 2018			SRF Debt Forgiveness	March 31, 2019 End Balance
	Beg Balance	Increase	Decrease		
DWSD Water					
Pre-Bifurcation Debt	\$ 425,334	\$ -	\$ (9,895)	\$ -	\$ 415,439
Revenue Bond - 2016A	17,725	-	-	-	17,725
Revenue Bond - 2016B	33,015	-	-	-	33,015
SRF 7412-01	4,910	-	-	-	4,910
SRF 7413-01	3,354	40	-	-	3,394
SRF 7414-01	-	1,744	-	(85)	1,658
Total DWSD Obligation	484,337	1,784	(9,895)	(85)	476,141
Unamortized Premiums	6,262		(101)		6,161
Subtotal: Water	490,600	1,784	(9,996)	(85)	482,302
DWSD Sewer					
Pre-Bifurcation Debt	346,828	-	(8,440)	-	338,388
Revenue Bond - 2018A	-	81,595	-	-	81,595
Total DWSD Obligation	346,828	81,595	(8,440)	-	419,983
Unamortized Premiums	-	9,937	(125)	-	9,812
Subtotal: Sewer	346,828	91,532	(8,565)	-	429,795
Total DWSD Debt	\$ 837,428	\$ 93,315	\$ (18,561)	\$ (85)	\$ 912,097

Annual Change in Outstanding Debt: It is the goal of GLWA to ensure the long-term sustainability of the water and sewer systems. One of the best ways to accomplish this is by reducing the debt service payments on existing bonds as well as reducing the amounts of future bond issues using revenue financed capital.

Table 7 - Long-Term Debt Summary provides a detail of GLWA's fiscal year 2019 beginning balances by debt type and loan issues, year-to-date activity, and ending balances as of March 31, 2019. GLWA debt includes financing for both the regional and local share. Most notably is the refunding as shown in the schedule below.

Debt Type	<i>(In Thousands)</i>					
	June 30, 2018 Beg Balance	Increase	Decrease	Refunding	Debt Forgiveness	March 31, 2019 End Balance
Water Fund						
Revenue Bonds	\$ 2,284,825	\$ 155,595	\$ (2,785)	\$ (178,735)	\$ -	\$ 2,258,900
State Revolving Loans	25,436	1,784	(1,775)	-	(85)	25,359
Total Installment Debt	2,310,261	157,379	(4,560)	(178,735)	(85)	2,284,259
Unamortized Premiums / Discounts	255,838	19,731	(12,821)	(12,710)	-	250,039
Subtotal: Water	2,566,099	177,110	(17,381)	(191,445)	(85)	2,534,298
Sewer Fund						
Revenue Bonds	2,584,065	257,465	(7,555)	(207,690)	-	2,626,285
Capital Appreciation bonds	17,250	-	(2,470)	-	-	14,780
State Revolving Loans	475,678	29,413	(38,780)	-	-	466,310
Total Installment Debt	3,076,993	286,878	(48,805)	(207,690)	-	3,107,375
Capital Appreciation Bond Discount	(2,266)	-	864	-	-	(1,402)
Unamortized Premiums / Discounts	155,026	32,322	(11,529)	(22,505)	-	153,313
Subtotal: Sewer	3,229,752	319,200	(59,470)	(230,195)	-	3,259,287
Total Combined, Long Term Debt	\$ 5,795,851	\$ 496,310	\$ (76,851)	\$ (421,640)	\$ (85)	\$ 5,793,585

Debt Service Coverage

GLWA is committed to ensuring the long-term sustainability of the water and sewer systems and has pledged specific revenue streams to secure the repayment of the revenue bonds and SRF loans associated with them. The MBO establishes minimum debt coverage levels at 1.20 for senior lien bonds, 1.10 for second lien bonds and 1.00 for any junior lien bonds, other than second lien bonds. Debt service coverage ratios are inclusive of all debt held on behalf of both GLWA and DWSD.

Table 8: Debt Service Coverage Ratios provides a summary of the debt service coverage ratios for the water and sewer systems as reported in the Comprehensive Annual Financial Report (CAFR) for 2016, 2017 and 2018 as well as ratios based on the adopted FY 2019 Budget and FY 2020 Budget. Debt service coverage is calculated by dividing the Net Revenues for the fiscal year of calculation by the debt service installment requirements on bonds for such fiscal year all for such priority of lien and any higher priority of lien.

Water - Debt Type	MBO	Actual 2016	Actual 2017	Actual 2018	Adopted Budget 2019	Adopted Budget 2020
	Required Minimum					
Senior Lien Bonds	1.20	2.11	2.03	2.03	2.03	1.94
Senior and second lien bonds	1.10	1.59	1.57	1.52	1.44	1.40
All bonds, including SRF junior lien	1.00	1.58	1.56	1.51	1.41	1.38

Sewer - Debt Type	MBO	Actual 2016	Actual 2017	Actual 2018	Adopted Budget 2019	Adopted Budget 2020
	Required Minimum					
Senior Lien Bonds	1.20	2.33	2.32	2.11	2.01	2.11
Senior and second lien bonds	1.10	1.72	1.73	1.61	1.55	1.61
All bonds, including SRF junior lien	1.00	1.43	1.39	1.29	1.23	1.26

Potential Refunding Opportunities

In an effort to reduce the annual water and sewer debt service payments, GLWA monitors its outstanding water and sewer debt portfolios to determine if it has the ability to refund existing bond issues with new, lower interest rate bonds. At least once per year, GLWA's registered municipal advisor, PFM Financial Advisors, LLC (PFM) prepares an analysis of GLWA's bond refunding opportunities based on the current municipal interest rate environment and the existing debt service on GLWA's callable bonds. The latest PFM analysis was presented at GLWA's March 15, 2019 Audit Committee meeting.