



Audit Committee

Friday, January 18, 2019 at 8:00 a.m.

5th Floor Board Room, Water Board Building
735 Randolph Street, Detroit, Michigan 48226
GLWater.org

AGENDA

1. CALL TO ORDER
2. ROLL CALL
3. APPROVAL OF AGENDA
4. APPROVAL OF MINUTES
 - A. December 21, 2018 (Page 1)
 - B. January 4, 2019 (Page 6)
5. PUBLIC PARTICIPATION
6. OLD BUSINESS
 - A. Proposed Amendment Oakland Macomb Interceptor Drainage (Page 8) District Agreement
 - B. Review FY 2020-2021 Biennial Budget and Five-Year Plan (Page 10)
 - C. Update: GLWA and DWSD Shared Services True-Up Status FY 2017 (Page 25)
7. NEW BUSINESS
 - A. Proposed FY 2020 Charges (Page 28)
 - B. General Retirement System Financial Report for Year-end (Page 58) June 30, 2018
 - C. Proposed Audit Fee Change Order for the FY 2018 Audit and Other (Page 240) Technical Services
8. REPORTS
 - A. Monthly Financial Report for October 2018 (Page 242)
 - B. CFO Update
9. LOOK AHEAD

Next Audit Committee Meetings

 - A. February 15, 2019 at 8 am
10. INFORMATION
11. OTHER MATTERS
12. ADJOURNMENT

Note: Binders 1-4 are combined in agenda order and document was renumbered.



Great Lakes Water Authority

735 Randolph Street
Detroit, Michigan 48226
glwater.legistar.com

Meeting Minutes - Draft

Audit Committee

Friday, December 21, 2018

8:00 AM

Water Board Building 5th Floor

1. Call To Order

Chairman Baker called the meeting to order at 8:05 a.m.

2. Quorum Call

Present: 3 - Chairman Brian Baker, Director Gary Brown, and Director Robert Daddow

3. Approval of Agenda

Chairman Baker requested a Motion to approve the Agenda.

Motion By: Robert Daddow

Support By: Gary Brown

Action: Approved

The motion carried by a unanimous vote.

4. Approval of Minutes

A. [2019-016](#) Approval of Minutes-November 16, 2018

Sponsors: Nicolette Bateson

Indexes: Finance

Attachments: [Audit Committee Meeting Minutes 11.16.2018.pdf](#)

Chairman Baker requested a Motion to approve the November 16, 2018 Audit Committee Meeting Minutes.

Motion By: Robert Daddow

Support By: Gary Brown

Action: Approved

The motion carried by a unanimous vote.

5. Public Comment

None

6. Old Business

A. 2018-1090 Presentation of FY 2018 Year-end Audited Financial Report

Sponsors: Nicolette Bateson

Indexes: Finance

Attachments: [FY 2018 Audited Financial Statement Review.pdf](#)

[Cash Held fbo DWSD Memo.pdf](#)

[GLWA - CAFR 6-30-18 \(Final\).pdf](#)

[GLWA - SA 6-30-18 \(Final\).pdf](#)

[GLWA - SAS Ltr 6-30-18 \(Final\).pdf](#)

Motion By: Gary Brown

Support By: Robert Daddow

Action: Received and Filed

The motion carried by a unanimous vote.

B. 2018-1091 Update: FY 2017 and FY 2018 Shared Services True-up

Sponsors: Nicolette Bateson

Indexes: Finance

Attachments: [Shared Services Agreement FY17, FY18, beyond Update](#)

[12.21.2018.pdf](#)

[Memo Termination Schedule 1 - ITS 001 ITS 002 and ITS 003.pdf](#)

[Memo Termination Schedule 2 - ITS 009 Phase One.pdf](#)

[Extension of Services Request No.1 for ITS 001 and ITS 003.pdf](#)

[Extension of Service Request No. 2 - for ITS-001.pdf](#)

Motion By: Gary Brown

Support By: Robert Daddow

Action: Received and Filed

The motion carried by a unanimous vote.

C. 2018-1092 Status Update: 2018 Contract Alignment Process and Wholesale Water Contract Reopeners Status

Sponsors: Nicolette Bateson

Indexes: Finance

Attachments: [Audit Committee Communication- Contract Reopeners- 12.21.18](#)

[Update v2.pdf](#)

[CAP Status Table 1 12.19.18.pdf](#)

Motion By: Gary Brown

Support By: Robert Daddow

Action: Received and Filed

The motion carried by a unanimous vote.

7. New Business

A [2018-1098](#) Discussion Draft: FY 2020-2021 Biennial Budget and Five-Year Plan

Sponsors: Nicolette Bateson

Indexes: Finance

Attachments: [Budget Discussion Draft 12.21.2018.pdf](#)

Nicolette Bateson, Chief Financial Officer/Treasurer, provided an overview regarding the Draft FY 2020-2021 Biennial Budget and Five-Year Plan.

Motion By: Gary Brown

Support By: Robert Daddow

Action: Received and Filed

The motion carried by a unanimous vote.

Note: Director Daddow supported the Motion to Receive and File the FY 2020-2021 Biennial Budget and Five-Year Plan, subject to further review by the Audit Committee at its January 4, 2019 meeting.

8. Reports

A. [2018-1094](#) Monthly Financial Report for September 2018

Sponsors: Nicolette Bateson

Indexes: Finance

Attachments: [Monthly Financial Report for September 2018 for 12.21.2018.pdf](#)

Motion By: Gary Brown

Support By: Robert Daddow

Action: Received and Filed

The motion carried by a unanimous vote.

B. [2018-1095](#) Quarterly Construction Work-in-Progress Report

Sponsors: Nicolette Bateson

Indexes: Finance

Attachments: [Quarterly CWIP Report.pdf](#)

Motion By: Gary Brown

Support By: Robert Daddow

Action: Received and Filed

The motion carried by a unanimous vote.

C. [2018-1096](#) Status Report: FY2019 Continuous Improvement Report

Sponsors: Nicolette Bateson

Indexes: Finance

Attachments: [Memo Projects Dashboard.pdf](#)

[FRA FY19 Continuous Improvement Report Q1.pdf](#)

Motion By: Robert Daddow

Support By: Gary Brown

Action: Received and Filed

The motion carried by a unanimous vote.

D. [2018-1097](#) Detroit Water & Sewerage Department Financial Statements

Sponsors: Nicolette Bateson

Indexes: Finance

Attachments: [DWSD Financial Statements FYE 6.30.2018.pdf](#)

[DWSD Audited Financial Report 06.2018-Audit-Final.pdf](#)

[DWSD Summary of Audit Findings 06.2018-AU 260 Ltr-Final.pdf](#)

Motion By: Robert Daddow

Support By: Gary Brown

Action: Received and Filed

The motion carried by a unanimous vote.

E. CFO Update Topics (verbal)

Nicolette Bateson, Chief Financial Officer/Treasurer, gave an update regarding Legacy Pension; Charges Rollout Meeting #3 (Revenue Requirement), scheduled to be held January 10, 2019 at 10:30 a.m.; and Charges Rollout Meeting #4 (Service Charges), scheduled to be held January 24, 2019 at 10:30 a.m.

9. Look Ahead

The next Audit Committee Meetings are scheduled as follows:

- Special Audit Committee Meeting (Budget Review) - January 4, 2019 at 8:00 a.m.
- Regular Audit Committee Meeting (Charges Review) - January 18, 2019 at 8:00 a.m.

10. Information

None

11. Other Matters

Director Brown stated he will attend the January 4, 2019, 8:00 a.m. Special Audit Committee Meeting via teleconference.

12. Adjournment

Chairman Baker requested a Motion to Adjourn.

Motion By: Gary Brown

Support By: Brian Baker

Action: Approved

The motion carried by a unanimous vote.

There being no further business, the meeting was adjourned at 10:17 a.m.



Great Lakes Water Authority

Meeting Minutes - Draft

735 Randolph Street
Detroit, Michigan 48226
glwater.legistar.com

Audit Committee

Friday, January 4, 2019

8:00 AM

Water Board Building 5th Floor

Special Meeting

1. Call To Order

Chairman Daddow called the meeting to order at 8:00 a.m.

2. Quorum Call

Present: 3 - Brian Baker, Gary Brown, and Robert Daddow

3. Approval of Agenda

Chairman Daddow requested a Motion to approve the Agenda.

Motion By: Brian Baker

Support By: Gary Brown

Action: Approved

The motion carried by a unanimous vote.

4. Approval of Minutes

None

5. Public Comment

None

6. Old Business

None

A. 2018-1089 Discussion: FY 2020 & 2021 Biennial Budget and Five-Year Plan

Sponsors: Nicolette Bateson

Indexes: Finance

Attachments: [FY 2020 & 2021 Biennial Budget and Five-Year Plan](#)

Nicolette Bateson, Chief Financial Officer/Treasurer, provided an overview regarding the FY 2020 & 2021 Biennial Budget and Five-Year Plan.

Motion By: Brian Baker

Support By: Gary Brown

Action: Received and Filed

The motion carried by a unanimous vote.

7. New Business

None

8. Reports

None

9. Look Ahead

The next regular Audit Committee Meeting is scheduled for January 18, 2019 at 8:00 a.m.

10. Information

None

11. Other Matters

None

12. Adjournment

Chairman Daddow requested a Motion to adjourn.

Motion By: Robert Daddow

Support By: Gary Brown

Action: Approved

The motion carried by a unanimous vote.

There being no further business, the meeting was adjourned at 10:04 a.m.



Financial Services Audit Committee Communication

Date: January 18, 2019

To: Great Lakes Water Authority Audit Committee

From: Nicolette N. Bateson, CPA, Chief Financial Officer/Treasurer

Re: Proposed Amendment Oakland Macomb Interceptor Drainage District Agreement

Background: The Great Lakes Water Authority (GLWA) provides wastewater disposal services to the Oakland Macomb Interceptor Drainage District (OMIDD). The Authority's Northeast Sewer Pump Station (NESPS) serves only OMIDD yet it is also a key component in the continuing development of GLWA's comprehensive regional wastewater master planning efforts.

The 2009 OMIDD services agreement provided for sewage disposal services and contemplated further collaboration in the future, including the NESPS. Since 2017, representatives of OMIDD and GLWA have been meeting to explore those collaboration opportunities.

Analysis: On January 14, 2019, OMIDD and GLWA staff representatives reached an agreement on terms that both agreed to present to their respective boards before proceeding with a proposed amendment to the 2009 agreement. The next steps are for the outline of the terms to be brought forward to both the GLWA and OMIDD Boards for review.

Key aspects of the proposal address: 1) operations (control maintained by GLWA), 2) maintenance (OMIDD provides maintenance), 3) capital funding (OMIDD has authority to construct and finance), 4) annual fees, and 5) payout of debt associated with NESPS.

Attached is a simplified table that outlines the financial terms agreed to by the staff representatives of each entity. This information was pertinent to GLWA in calculating the FY 2020 charges for all member partners for next week's charges rollout meeting #4. This information will be referenced in other Audit Committee agenda items.

The next action is a review by the Board at a date to be determined by General Counsel.

Proposed Action: Receive and file.

DRAFT

Summary of OMID Cost Elements - Initial 5-year Contract Amendment Period
FY 2020 to FY 2024

	Baseline Amount	Annual Index after FY 2020	Initial 5-year Agreement Period Cost Responsibility						Basis
			FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
1 Utility Charges For NEPS	750,000	NA - pass thru	750,000	750,000	750,000	750,000	750,000	3,750,000	Estimated direct pass through - Budget includes utilities only
2 GLWA Operating Expense									Limited to proportional operational support activities - 25% of operating expenses allocated to lift stations
3 GLWA Legacy Pension Obligation	756,700	4.0%	756,700	787,000	818,500	851,200	885,200	4,098,600	Estimated Personnel cost allocation from legacy period - 1.75% of assigned sewer operating and non-operating pension obligations.
4 Transfer to WRAP Fund	392,800	0.0%	392,800	392,800	392,800	392,800	392,800	1,964,000	0.5% applied to annual elements
5 Lease Payment	10,400		10,400	10,600	10,700	10,900	11,000	53,600	6/30/18 asset review - NESPS = 0.66% of Sewer capital assets.
6 Subtotal "Annual" Elements	181,500	0.0%	181,500	181,500	181,500	181,500	181,500	907,500	
	2,091,400		2,091,400	2,121,900	2,153,500	2,186,400	2,220,500	10,773,700	
7 Capital Contribution	11,920,000	NA - pass thru	11,920,000					11,920,000	6/30/2019 Net Book Value of NESPS Assets
8 TOTAL	14,011,400		14,011,400	2,121,900	2,153,500	2,186,400	2,220,500	22,693,700	
9 Total less Pass thru Utility Charges	13,261,400		13,261,400	1,371,900	1,403,500	1,436,400	1,470,500	18,943,700	

Dated: January 14, 2019



Financial Services Audit Committee Communication

Date: January 18, 2019

To: Great Lakes Water Authority Audit Committee

From: Nicolette N. Bateson, CPA, Chief Financial Officer/Treasurer

Re: Discussion: FY 2020 & 2021 Biennial Budget and Five-Year Plan

Background: In accordance with service agreements with Great Lakes Water Authority (GLWA) member partners, charges for the next fiscal year are annually presented at the end of January each year. To accommodate that schedule, the budget process for the GLWA begins early in the fiscal year.

Analysis: At the Audit Committee meeting on a December 21, 2018, staff presented a discussion draft of the FY 2020 & 2021 Biennial Budget and Five-Year Plan. This draft focused on a) overall strategy of key budget elements including system-wide service charges and b) proposed operating group budgets.

Additional analysis was provided at the January 4, 2018 Audit Committee meeting. Since that time, staff has focused on efforts to close open issues that could impact timely approval of budget and charges that are interdependent on resolution with GLWA's member partners.

For continued discussion at today's meeting, the following are attached.

1. Memo for consideration from The Foster Group (TFG) dated January 17, 2019
regarding GLWA Sewer Facilities Served Directly by GLWA Transmission Mains
2. Personnel Budget
3. Other Budget Analysis for Discussion

Departmental Reviews – Area Chiefs asked to focus on two questions

1. Requests for budget increases in light of projected spending this year and actual amounts spent last year
2. Actions taken to save money, increase efficiencies, etc.

Proposed Action: Receive for further review and discussion at the next Audit Committee meeting on February 15, 2019 at 8 am.

TFG
THE FOSTER GROUP

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MEMORANDUM

GLWA Sewer Facilities Served Directly by GLWA
Transmission Mains

January 17, 2019

To: Nicolette Bateson

From: Bart Foster

This memorandum has been prepared to introduce how the above referenced topic has been addressed in the proposed GLWA FY 2020 Budget and service charge analysis. The accompanying exhibit assists in the explanation below.

The facilities in question are part of the Water Resource Recovery Facility (WRRF) and currently classified as retail water customers of DWSD. Traditional DWSD policy has been to not bill WRRF facilities for sewer service, given that they are providing that service to the region on property. Currently, these facilities are served as six DWSD retail water accounts and billed approximately \$3.6 million annually for water service.

Since the facilities are directly served via GLWA transmission mains, and do not receive any direct benefit of DWSD retail activities, GLWA proposes to change the structure of the accounts. It is our understanding that effective July 1, 2019, GLWA proposes to bill these facilities directly, rather than have them treated as DWSD retail customer accounts. GLWA (Water) will establish a mechanism to directly bill GLWA (Sewer) for wholesale water service. In essence, GLWA Sewer will become a new “internal” Customer of GLWA Water. The task at hand is to illustrate the various impacts of the proposed new approach GLWA is proposing these accounts. is new business arrangement.

Let’s start with the impact on the GLWA Budget, as summarized on Lines 1 through 3 of the exhibit. Initially, the GLWA Sewer operating expenses will experience a \$3.6 million reduction as the purchased retail water costs from DWSD are removed. These savings will be offset by the replaced purchased wholesale water costs from GLWA Water. We have established a reasonable wholesale price for this water (\$9.89/Mcf) that is designed to implement the new business arrangement in a manner that does not impact Suburban Wholesale Water Customers. *See Line 6.* This produces an annual wholesale water expense of approximately \$1.4 million. So the net budget impact on GLWA Sewer is an operating expense savings of approximately \$2.2 million.

Next let's evaluate the impact on GLWA cost of service allocations, as shown on Lines 4 through 9. On Line 4, we illustrate the preliminary allocation of the FY 2020 Water BUDGET to the Detroit and Suburban Wholesale customer classes *prior to recognizing the new structure*¹. Since the facilities in question will no longer be categorized as retail DWSD customers, it is appropriate to remove the volumes and demands in question from Detroit's water units of service. We removed those volumes and demands from our cost of service analysis and assigned them to a new "Internal GLWA" Customer. The resulting reallocated cost of service is shown on Line 5, and compared to the prior allocation on Line 6. The water system in total, and the Suburban Wholesale class, are unaffected by this change. In effect, the amount allocated to the new internal GLWA Customer results in a reduced water cost of service allocation to the Detroit customer class.

A similar comparison for the Sewer cost of service impacts is shown on Lines 7 through 9. We have verified that the sales volumes to the facilities in question were not included in determining the current SHAREs, since they were not billed for sewer service. Therefore there is no need to adjust Sewer units of service. Rather, the sewer operating budget savings are allocated proportionally to the Detroit and Suburban customer classes based on their existing SHAREs, as shown on Line 9. *The internal GLWA amount on Line 9 is actually related to reduced industrial surcharges as a result of the adjustment.*

The consolidated impact of these adjustments is shown for the Detroit customer class on Lines 10 through 15. The wholesale water cost allocation savings of \$1.4 million are offset by the \$3.6 million loss of retail water revenue, resulting in a net increase of \$2.2 million to be recovered from the "remaining" DWSD water customers. This equates to a 2.2% increase, all else being equal, as shown on Line 15. Detroit's \$782,000 share of the sewer savings equates to an overall reduction, all else being equal, of 0.3%. The combined water and sewer impact of this adjustment is a net cost to DWSD of \$1.4 million, or 0.3% of total DWSD retail revenues, as shown on Lines 13 and 15.

Finally, Lines 16 through 19 present a similar analysis for the Suburban Wholesale customer classes. There is no impact of this adjustment on Suburban Wholesale water customers. The Suburban Wholesale \$1.4 million share of the sewer savings equates to an overall reduction, all else being equal, of 0.5% of annual revenue requirements.

We are prepared to discuss this matter at your convenience.

¹ There are other, concurrent modifications to the cost of service analyses and the final impacts may not match these calculations precisely. The differences will not be material.

Illustration of Potential Impact of Reassigning GLWA Sewer Facilities as GLWA Water Customers

DWSD Impact Illustration

GLWA Internal price for Water =

9.89 \$/Mcf

	<u>Water</u>	<u>Sewer</u>	<u>Total</u>	<u>Note</u>
<u>GLWA Budget Impact</u>				
1 Initial "Savings" for purchased water		(3,626,500)	(3,626,500)	DWSD no longer bills GLWA facilities served off of Transmission mains
2 Replacement internal GLWA budget		1,438,000	1,438,000	GLWA Water charges GLWA Sewer for internal wholesale water purchases
3 Net Impact	0	(2,188,500)	(2,188,500)	(1) - (2)
<u>GLWA WATER Cost of Service Impact</u>				
4 <i>Preliminary</i> Allocated Water BUDGET	335,144,300	21,698,100	313,446,200	0 Preliminary "Status Quo" FY 2020 cost of service analysis
5 <i>Adjusted</i> Allocated Water BUDGET	335,142,400	20,258,200	313,446,200	1,438,000 GLWA Sewer becomes an internal Water Customer and assumes the units of service associated with purchased wholesale water from Line (1)
6 Impact of Adjustment	(1,900)	(1,439,900)	0	1,438,000 Minor rounding variance
<u>GLWA SEWER Cost of Service Impact</u>				
7 Preliminary Allocated Sewer BUDGET	477,881,200	188,891,800	288,989,400	0 Preliminary "Status Quo" FY 2020 cost of service analysis
8 Adjusted Allocated Sewer BUDGET	475,692,700	188,110,000	287,582,700	0
9 Impact of Adjustment	(2,188,500)	(781,800)	(1,378,900)	(27,800) GLWA Sewer budget reduction from Line (3) allocated ~ SHARES **
<u>Detroit Customer Impact</u>				
10 Baseline Revenue Impact	3,626,500	0	3,626,500	See Line (1) - Initially a revenue loss to DWSD
<u>less: GLWA Wholesale Rev Req't Impact</u>				
11 Water Supply System	(1,439,900)		(1,439,900)	From Line (6) - results from DWSD's reduced units of service
12 Sewage Disposal System		(781,800)	(781,800)	From Line (9) - DWSD shares in lower Sewer BUDGET
13 Net Increase in Charge Requirements	2,186,600	(781,800)	1,404,800	Net Impact - Line (10) revenue impact less lines (11) and (12)
14 Revenue Base (after "lost" revenue)	97,963,500	307,737,200	405,700,700	Preliminary DWSD Revenue Base, Net of GLWA Transmission Served Facilities
15 Impact on Revenue Base	2.2%	-0.3%	0.3%	Line (13) / Line (14)
<u>Suburban Wholesale Customer Impact</u>				
<u>GLWA Wholesale Rev Req't Impact</u>				
16 Water Supply System	0		0	From Line (6) - Zero Impact
17 Sewage Disposal System		(1,378,900)	(1,378,900)	From Line (9) - Suburban Customers share in lower Sewer BUDGET
18 Net Increase in Charge Requirements	0	(1,378,900)	(1,378,900)	Net Impact
19 Revenue Base	313,446,200	288,989,400	602,435,600	From Lines (4) and (7)
20 Impact on Revenue Base	0.0%	-0.5%	-0.2%	Line (18) / Line (19)

TFG

THE FOSTER GROUP

Personnel Budget

Achieving the GLWA's initiatives is dependent on the ability to attract, retain, and develop highly qualified and effective team members.

As shown in the following **Personnel Budget** tables, the entity-wide personnel budget increases \$2.6 million, or 2.6%, between FY 2019 and FY 2020.

While specific reasons for the variances in the personnel budget are addressed in other sections of financial plan document, the following highlights some of the key factors.

Salaries & Wages – The increase in budget is due to several components.

- An increase in number of staffing positions to support key initiatives
- The filling of vacant positions with GLWA staff
- A change in the classification of positions to those with a higher level of knowledge, skillset, and abilities as existing staff advance and the needs of teams are evaluated.

Salaries & Wages – Workforce Development – The increase in budget is due to the continuation and expansion of the apprenticeship program.

Overtime – The overall decrease to overtime is due to the review of prior year's actuals as well as the plan to fill vacant positions thereby reducing or eliminating the need for overtime in a number of areas.

Personnel Transition Adjustment – The use of this account has been discontinued in FY 2020 as GLWA continues its recruitment efforts to fill vacant positions instead of utilizing individuals on a contractual basis.

Contractual Transition Services – The reduction in the Contractual Transition Services budget is the result of transitioning positions previously filled by individuals on a contract basis to GLWA employees.

Biennial Personnel Budget by Operating Area

Operating Area and Expense Category	FY 2018 Amended Budget	FY 2018 Activity thru 6.30.2018	FY 2019 Current Amended-to-date	FY 2020 Department Requested	FY 2020 Percent Variance	FY 2020 Dollar Variance	FY 2021 Department Requested
Chief Operating Officer Water Operations	\$ 29,000,100	\$ 29,979,600	\$ 32,466,600	\$ 31,301,200	-3.6%	\$ (1,165,400)	\$ 31,443,500
Salaries & Wages	18,268,500	17,692,200	19,417,900	21,056,200	8.4%	1,638,300	21,056,200
Salaries & Wages - Workforce Development	328,300	272,100	325,300	384,100	18.1%	58,800	384,100
Overtime	2,756,000	2,743,000	2,945,000	2,741,900	-6.9%	(203,100)	2,741,900
Employee Benefits	6,680,000	6,477,500	7,013,400	7,119,000	1.5%	105,600	7,261,300
Personnel Transition Adjustment	(1,546,000)	-	(245,000)	-	-100.0%	245,000	-
Contractual Transition Services	2,513,300	2,794,800	3,010,000	-	-100.0%	(3,010,000)	-
Chief Operating Officer Wastewater Operations	37,301,900	35,353,900	35,145,000	36,219,200	3.1%	1,074,200	36,096,000
Salaries & Wages	19,752,200	18,303,600	20,924,200	21,131,900	1.0%	207,700	21,718,900
Salaries & Wages - Workforce Development	201,600	201,600	196,000	386,100	97.0%	190,100	386,100
Overtime	3,380,400	3,026,300	3,521,200	3,043,400	-13.6%	(477,800)	3,146,000
Employee Benefits	8,100,600	7,897,800	7,865,900	7,858,700	-0.1%	(7,200)	8,266,300
Personnel Transition Adjustment	(11,200)	-	(1,575,700)	-	-100.0%	1,575,700	-
Contractual Transition Services	5,878,300	5,924,600	4,213,400	3,799,100	-9.8%	(414,300)	2,578,700
Chief Planning Officer	4,940,900	4,062,500	5,152,700	6,272,400	21.7%	1,119,700	6,659,500
Salaries & Wages	2,400,900	2,400,000	3,400,200	3,981,100	17.1%	580,900	4,255,300
Salaries & Wages - Workforce Development	131,600	131,200	206,100	231,000	12.1%	24,900	231,000
Overtime	82,300	82,800	85,400	86,800	1.6%	1,400	91,000
Employee Benefits	759,100	760,300	1,114,600	1,297,300	16.4%	182,700	1,409,000
Personnel Transition Adjustment	-	-	(659,400)	-	-100.0%	659,400	-
Contractual Transition Services	1,567,000	688,200	1,005,800	676,200	-32.8%	(329,600)	673,200
Chief Administrative & Compliance Officer	9,856,100	9,868,500	12,772,200	12,581,100	-1.5%	(191,100)	12,812,000
Salaries & Wages	7,230,300	7,325,800	9,384,900	9,784,300	4.3%	399,400	9,920,500
Overtime	-	7,400	-	-	N/A	-	-
Employee Benefits	2,061,300	1,891,400	2,677,600	2,796,800	4.5%	119,200	2,891,500
Personnel Transition Adjustment	-	-	(106,100)	-	-100.0%	106,100	-
Contractual Transition Services	564,500	643,900	815,800	-	-100.0%	(815,800)	-
Chief Financial Officer	10,502,800	10,262,800	10,728,800	12,016,200	12.0%	1,287,400	12,148,400
Salaries & Wages	5,429,500	5,420,100	6,597,500	7,552,200	14.5%	954,700	7,640,100
Salaries & Wages - Workforce Development	-	-	12,800	12,800	0.0%	-	12,800
Overtime	8,200	12,300	11,200	8,000	-28.6%	(3,200)	8,000
Employee Benefits	1,723,100	1,729,100	2,062,000	2,288,200	11.0%	226,200	2,332,500
Personnel Transition Adjustment	-	-	(484,300)	-	-100.0%	484,300	-
Contractual Transition Services	3,342,000	3,101,300	2,529,600	2,155,000	-14.8%	(374,600)	2,155,000
Chief Executive Officer	5,996,900	5,998,500	6,208,100	6,700,700	7.9%	492,600	6,758,300
Salaries & Wages	4,032,400	4,032,700	4,435,700	4,795,700	8.1%	360,000	4,821,100
Overtime	289,700	289,800	250,500	259,700	3.7%	9,200	259,700
Employee Benefits	1,674,800	1,676,000	1,521,900	1,645,300	8.1%	123,400	1,677,500
Grand Total	\$ 97,598,700	\$ 95,525,800	\$ 102,473,400	\$ 105,090,800	2.6%	\$ 2,617,400	\$ 105,917,700

Five Year Financial Plan

Operating Area and Expense Category	FY 2019 Current Amended-to-date	FY 2020 Department Requested	FY 2020 Percent Variance	FY 2020 Dollar Variance	FY 2021 Department Requested	FY 2022 Department Requested	FY 2023 Department Requested	FY 2024 Department Requested
Chief Operating Officer Water Operations	\$ 32,466,600	\$ 31,301,200	-3.6%	(\$ 1,165,400)	\$ 31,443,500	\$ 31,588,700	\$ 31,736,900	\$ 31,888,000
Salaries & Wages	19,417,900	21,056,200	8.4%	1,638,300	21,056,200	21,056,200	21,056,200	21,056,200
Salaries & Wages - Workforce Development	325,300	384,100	18.1%	58,800	384,100	384,100	384,100	384,100
Overtime	2,945,000	2,741,900	-6.9%	(203,100)	2,741,900	2,741,900	2,741,900	2,741,900
Employee Benefits	7,013,400	7,119,000	1.5%	105,600	7,261,300	7,406,500	7,554,700	7,705,800
Personnel Transition Adjustment	(245,000)	-	-100.0%	245,000	-	-	-	-
Contractual Transition Services	3,010,000	-	-100.0%	(3,010,000)	-	-	-	-
Chief Operating Officer Wastewater Operations	35,145,000	36,219,200	3.1%	1,074,200	36,096,000	36,637,900	36,773,000	36,957,700
Salaries & Wages	20,924,200	21,131,900	1.0%	207,700	21,718,900	22,221,700	22,221,700	22,221,700
Salaries & Wages - Workforce Development	196,000	386,100	97.0%	190,100	386,100	386,100	386,100	386,100
Overtime	3,521,200	3,043,400	-13.6%	(477,800)	3,146,000	3,172,700	3,172,700	3,172,700
Employee Benefits	7,865,900	7,858,700	-0.1%	(7,200)	8,266,300	8,563,900	8,699,000	8,883,700
Personnel Transition Adjustment	(1,575,700)	-	-100.0%	1,575,700	-	-	-	-
Contractual Transition Services	4,213,400	3,799,100	-9.8%	(414,300)	2,578,700	2,293,500	2,293,500	2,293,500
Chief Planning Officer	5,152,700	6,272,400	21.7%	1,119,700	6,659,500	6,827,700	6,962,000	6,990,200
Salaries & Wages	3,400,200	3,981,100	17.1%	580,900	4,255,300	4,361,500	4,444,600	4,444,600
Salaries & Wages - Workforce Development	206,100	231,000	12.1%	24,900	231,000	231,000	231,000	231,000
Overtime	85,400	86,800	1.6%	1,400	91,000	94,100	94,700	94,700
Employee Benefits	1,114,600	1,297,300	16.4%	182,700	1,409,000	1,467,900	1,518,500	1,546,700
Personnel Transition Adjustment	(659,400)	-	-100.0%	659,400	-	-	-	-
Contractual Transition Services	1,005,800	676,200	-32.8%	(329,600)	673,200	673,200	673,200	673,200
Chief Administrative & Compliance Officer	12,772,200	12,581,100	-1.5%	(191,100)	12,812,000	12,867,500	12,923,200	12,978,800
Salaries & Wages	9,384,900	9,784,300	4.3%	399,400	9,920,500	9,920,500	9,920,500	9,920,500
Overtime	-	-	N/A	-	-	-	-	-
Employee Benefits	2,677,600	2,796,800	4.5%	119,200	2,891,500	2,947,000	3,002,700	3,058,300
Personnel Transition Adjustment	(106,100)	-	-100.0%	106,100	-	-	-	-
Contractual Transition Services	815,800	-	-100.0%	(815,800)	-	-	-	-
Chief Financial Officer	10,728,800	12,016,200	12.0%	1,287,400	12,148,400	12,193,100	12,237,400	12,281,800
Salaries & Wages	6,597,500	7,552,200	14.5%	954,700	7,640,100	7,640,100	7,640,100	7,640,100
Salaries & Wages - Workforce Development	12,800	12,800	0.0%	-	12,800	12,800	12,800	12,800
Overtime	11,200	8,000	-28.6%	(3,200)	8,000	8,000	8,000	8,000
Employee Benefits	2,062,000	2,288,200	11.0%	226,200	2,332,500	2,377,200	2,421,500	2,465,900
Personnel Transition Adjustment	(484,300)	-	-100.0%	484,300	-	-	-	-
Contractual Transition Services	2,529,600	2,155,000	-14.8%	(374,600)	2,155,000	2,155,000	2,155,000	2,155,000
Chief Executive Officer	6,208,100	6,700,700	7.9%	492,600	6,758,300	6,793,700	6,829,100	6,864,800
Salaries & Wages	4,435,700	4,795,700	8.1%	360,000	4,821,100	4,824,300	4,827,500	4,830,800
Overtime	250,500	259,700	3.7%	9,200	259,700	259,700	259,700	259,700
Employee Benefits	1,521,900	1,645,300	8.1%	123,400	1,677,500	1,709,700	1,741,900	1,774,300
Grand Total	\$ 102,473,400	\$ 105,090,800	2.6%	\$ 2,617,400	\$ 105,917,700	\$ 106,908,600	\$ 107,461,600	\$ 107,961,300

Capital Program Allocation

The amounts in the following **Capital Program Allocation** tables are shown as negative amounts because they are “contra” accounts which represent an offset to the Personnel Costs section of the Operations & Maintenance (O&M) budget. The Capital Program Allocation activity supports project delivery of the Capital Improvement Plan (CIP). As previously described, the decrease represents a realignment between O&M costs and Capital Program expenses as a strategy to build financial sustainability. This is achieved by ensuring that an appropriately conservative policy is in place for charging personnel costs to projects.

In an effort to improve on the process of capturing time charged to capital projects by GLWA employees, a new time tracking software, BigTime, was implemented and rolled out towards the end of FY 2018. The increase in the Capital Program Allocation for FY 2019 is due, in part, to the results of improved time tracking as well as an increase in construction activity for FY 2019 and FY 2020.

Capital Program Allocation Biennial Budget

Operating Area and Expense Category	FY 2018 Amended Budget	FY 2018 Activity thru 6.30.2018	FY 2019 Current	FY 2020 Department Requested	FY 2020 Percent Variance	FY 2020 Dollar Variance	FY 2021 Department Requested
Chief Operating Officer Water Operations	\$ (1,053,500)	\$ (664,400)	\$ (1,070,400)	\$ (2,265,400)	111.6%	\$ (1,195,000)	\$ (2,279,100)
Capital Program: Employee Benefits	(218,300)	(189,100)	(218,300)	(547,600)	150.8%	(329,300)	(549,800)
Capital Program: Salaries & Wages-Direct	(789,600)	(475,300)	(806,500)	(1,671,300)	107.2%	(864,800)	(1,681,900)
Capital Program: Salaries & Wages-Indire	(45,600)	-	(45,600)	(46,500)	2.0%	(900)	(47,400)
Chief Operating Officer Wastewater Operations	(890,800)	(969,600)	(921,500)	(1,239,400)	34.5%	(317,900)	(1,244,900)
Capital Program: Employee Benefits	(248,900)	(276,300)	(252,300)	-	-100.0%	252,300	-
Capital Program: Salaries & Wages-Direct	(641,900)	(693,300)	(669,200)	(1,239,400)	85.2%	(570,200)	(1,244,900)
Chief Planning Officer	-	-	(189,600)	-	-100.0%	189,600	-
Capital Program: Employee Benefits	-	-	-	-	N/A	-	-
Capital Program: Salaries & Wages-Direct	-	-	(189,600)	-	-100.0%	189,600	-
Chief Administrative & Compliance Officer	(8,600)	-	-	-	N/A	-	-
Capital Program: Salaries & Wages-Direct	(8,600)	-	-	-	N/A	-	-
Chief Financial Officer	(6,300)	(5,700)	-	(78,500)	N/A	(78,500)	(78,900)
Capital Program: Employee Benefits	(1,800)	(1,600)	-	-	N/A	-	-
Capital Program: Salaries & Wages-Direct	(4,500)	(4,100)	-	(78,500)	N/A	(78,500)	(78,900)
Chief Executive Officer	-	-	(23,400)	-	-100.0%	23,400	-
Capital Program: Salaries & Wages-Direct	-	-	(23,400)	-	-100.0%	23,400	-
Grand Total	\$ (1,959,200)	\$ (1,639,700)	\$ (2,204,900)	\$ (3,583,300)	62.5%	\$ (1,378,400)	\$ (3,602,900)

Capital Program Allocation Five Year Plan

Operating Area and Expense Category	FY 2019 Current	FY 2020 Department Requested	FY 2020 Percent Variance	FY 2020 Dollar Variance	FY 2021 Department Requested	FY 2022 Department Requested	FY 2023 Department Requested	FY 2024 Department Requested
	Amended-to-date							
Chief Operating Officer Water Operations	\$ (1,070,400)	\$ (2,265,400)	111.6%	\$ (1,195,000)	\$ (2,279,100)	\$ (2,293,500)	\$ (2,307,600)	\$ (2,315,800)
Capital Program: Employee Benefits	(218,300)	(547,600)	150.8%	(329,300)	(549,800)	(552,000)	(554,300)	(556,600)
Capital Program: Salaries & Wages-Direct	(806,500)	(1,671,300)	107.2%	(864,800)	(1,681,900)	(1,693,100)	(1,703,900)	(1,709,800)
Capital Program: Salaries & Wages-Indire	(45,600)	(46,500)	2.0%	(900)	(47,400)	(48,400)	(49,400)	(49,400)
Chief Operating Officer Wastewater Operations	(921,500)	(1,239,400)	34.5%	(317,900)	(1,244,900)	(1,250,400)	(1,256,000)	(1,261,500)
Capital Program: Employee Benefits	(252,300)	-	-100.0%	252,300	-	-	-	-
Capital Program: Salaries & Wages-Direct	(669,200)	(1,239,400)	85.2%	(570,200)	(1,244,900)	(1,250,400)	(1,256,000)	(1,261,500)
Chief Planning Officer	(189,600)	-	-100.0%	189,600	-	-	-	-
Capital Program: Employee Benefits	-	-	N/A	-	-	-	-	-
Capital Program: Salaries & Wages-Direct	(189,600)	-	-100.0%	189,600	-	-	-	-
Chief Administrative & Compliance Officer	-	-	N/A	-	-	-	-	-
Capital Program: Salaries & Wages-Direct	-	-	N/A	-	-	-	-	-
Chief Financial Officer	-	(78,500)	N/A	(78,500)	(78,900)	(79,200)	(79,500)	(79,800)
Capital Program: Employee Benefits	-	-	N/A	-	-	-	-	-
Capital Program: Salaries & Wages-Direct	-	-	(78,500)	N/A	(78,500)	(78,900)	(79,200)	(79,500)
Chief Executive Officer	(23,400)	-	-100.0%	23,400	-	-	-	-
Capital Program: Salaries & Wages-Direct	(23,400)	-	-100.0%	23,400	-	-	-	-
Grand Total	\$ (2,204,900)	\$ (3,583,300)	62.5%	\$ (1,378,400)	\$ (3,602,900)	\$ (3,623,100)	\$ (3,643,100)	\$ (3,657,100)

Staffing Plan

The table on the next page presents both a “Staffing Plan” reflecting the *number* of positions and a “Staffing Budget” based on *full-time equivalents* (FTEs). In the Staffing Plan each position has a value of one. The position count does not distinguish between a position that is filled 100% (2,080 hours per year), filled for a number of hours less than 2,080 per year, or one that is vacant. The FTE staffing is based on the number of hours that the positions is filled, or budgeted for, in each year based upon a standard of 2,080 hours per year.

The increase in the staffing plan from 1,184 to 1,207 positions is explained in detail in other sections of the financial plan document. The Staffing Plan and FTE counts level out beginning in FY 2021 as the organization reaches an optimal staffing level and vacancies are filled. The goal of the staffing plan is to provide the organization with an appropriate level of personnel to achieve operational reliability, to ensure a safe environment, maintain compliance and efficient capital delivery, and to provide reliable and quality services to our customer communities.

Staffing Plan and Full-time Equivalents

Operating Area and Cost Center	Prior Year		Current Year		Biennial Budget			Forecast						
	FY 2018 Staffing Plan	FY 2018 FTEs	FY 2019 Staffing Plan	FY 2019 FTEs	FY 2020 Staffing Plan	FY 2020 FTEs	FY 2021 Staffing Plan	FY 2021 FTEs	FY 2022 Staffing Plan	FY 2022 FTEs	FY 2023 Staffing Plan	FY 2023 FTEs	FY 2024 Staffing Plan	FY 2024 FTEs
Chief Operating Officer Water Operations	354.00	354.00	360.00	360.00	363.00	363.00								
COO - Water Operations & Field Services	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Energy, Research & Innovation	0.00	0.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Facility Operations	22.00	22.00	22.00	22.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Field Service Operations	44.00	44.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00	65.00
Lake Huron Water Plant	31.00	31.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Northeast Water Plant	32.00	32.00	32.00	32.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Southwest Water Plant	29.00	29.00	29.00	29.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Springwells Water Plant	35.00	35.00	35.00	35.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00
Systems Operations Control	79.00	79.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00
Water Director	7.00	7.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Water Engineering	19.00	19.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
Water Quality	18.00	18.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
Water Works Park	36.00	36.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00
Chief Operating Officer Wastewater Operations	436.00	432.50	440.00	434.50	440.00	432.25	440.00	438.25	440.00	439.50	440.00	439.50	440.00	439.50
BDF, COF & Hauling	0.00	0.00	12.00	11.00	12.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
Chief Operating Officer Wastewater	18.00	18.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
Combined Sewer Overflow	18.00	18.00	33.00	32.00	36.00	34.25	36.00	35.25	36.00	35.50	36.00	35.50	36.00	35.50
Industrial Waste Control	31.00	31.00	30.00	30.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00
Wastewater Dewatering Process	0.00	0.00	54.00	52.00	50.00	49.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Wastewater Director	0.00	0.00	46.00	46.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00	47.00
Wastewater Engineering	32.00	32.00	26.00	26.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
Wastewater Incineration Process	0.00	0.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00	52.00
Wastewater Laboratories	25.00	25.00	33.00	33.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00	38.00
Wastewater Operations	312.00	308.50	16.00	15.50	15.00	12.00	15.00	14.00	15.00	15.00	15.00	15.00	15.00	15.00
Wastewater Primary Process	0.00	0.00	51.00	50.50	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Wastewater Process Control	0.00	0.00	27.00	27.00	27.00	26.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Wastewater Secondary Process	0.00	0.00	46.00	45.50	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00	46.00
Chief Planning Officer	68.00	63.50	62.00	60.25	70.00	64.25	71.00	68.50	71.00	70.00	71.00	71.00	71.00	71.00
Asset Management	9.00	8.00	7.00	7.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Capital Improvement Planning	8.00	6.00	8.00	6.25	8.00	4.25	8.00	6.50	8.00	7.75	8.00	8.00	8.00	8.00
Chief Planning Officer	5.00	4.50	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Energy Management	3.00	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Systems Analytics	39.00	39.00	40.00	40.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00
Systems Planning	4.00	3.25	4.00	4.00	7.00	6.00	8.00	7.00	8.00	7.25	8.00	8.00	8.00	8.00
Chief Administration & Compliance Officer	111.00	110.75	119.00	119.00	122.00	120.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00
Chief Administrative Officer	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Enterprise Risk Management and Safety	4.00	4.00	8.00	8.00	8.00	6.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
General Counsel	6.00	6.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Info Technology Business Applications	12.00	12.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Info Technology Enterprise Applications	14.00	14.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Info Technology Infrastructure	14.00	14.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Info Technology Security & Risk	2.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Info Technology Service Delivery	12.00	12.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
InfoTechnology Project Management Office	10.00	9.75	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Office of the CIO	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Organizational Development	28.00	28.00	28.00	28.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Chief Financial Officer	110.00	109.50	118.00	114.25	123.00	119.25	123.00	121.00	123.00	121.00	123.00	121.00	123.00	121.00
Chief Financial Officer	2.00	2.00	3.00	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Data Analytics & Internal Audit	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Financial Planning & Analysis	6.00	6.00	8.00	8.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Financial Reporting & Accounting	27.00	26.50	27.00	25.00	27.00	26.00	27.00	26.00	27.00	26.00	27.00	26.00	27.00	26.00
Logistics and Materials	22.00	22.00	23.00	23.00	24.00	23.25	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
Owners' Representative	5.00	5.00	5.00	4.25	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Procurement (Enterprise Services)	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Procurement (Wastewater)	12.00	12.00	12.00	11.50	11.00	10.00	11.00	10.50	11.00	10.50	11.00	10.50	11.00	10.50
Procurement (Water & Field Services)	9.00	9.00	9.00	8.75	8.00	7.50	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Procurement Director	1.00	1.00	1.00	1.00	2.00	1.50	2.00	1.50	2.00	1.50	2.00	1.50	2.00	1.50
Public Finance	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Reporting and Compliance	0.00	0.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Transformation	6.00	6.00	7.00	6.75	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Treasury	4.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Chief Executive Officer	98.00	97.50	85.00	84.50	89.00	88.50	89.00	89.00	89.00	89.00	89.00	89.00	89.00	89.00
Chief Executive Officer	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
HazMat	0.00	0.00	17.00	17.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00
Public Affairs	7.00	7.00	7.00	7.00	8.00	7.50	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Security and Integrity	89.00	88.50	59.00	58.50	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
Grand Total	1,177.00	1,167.75	1,184.00</b											

Other Budget Analysis for Discussion

Employee benefits costs are accumulated in none cost center with an offsetting account to the other funds ("Transfers – Employee Benefits"). The rates charged to cost centers is a combination of fixed per person (i.e. medical plan premiums, net of employee premium copay) and variable rate based on payroll dollars (such as payroll taxes at 7.65% of pay). This is an area of the budget that may be subject to amendment if medical plan costs (fixed and self-insured) increase or decrease from modest estimates.

DESCRIPTION	Activity	FY 2019						FY 2020		FY 2021	
		FY 2017	FY 2018	Amended Budget	Annualized		Department Requested	Department Requested			
					FY 2019	FY 2019 Activity thru 11.30.2018		11.30.2018 Close			
Employer Health	11,036,000	10,394,600	7,956,500	4,907,700	11,778,480	7,992,000	7,992,000				
Employer FICA	4,062,400	4,524,600	5,593,000	2,049,700	4,919,280	5,630,300	5,630,400				
Employer 401 Contribution	3,986,800	4,278,100	6,580,000	2,050,700	4,921,680	6,623,900	6,624,100				
Employer Retiree Healthcare Savings Fund	1,661,400	1,878,200	2,331,700	833,300	1,999,920	2,342,100	2,342,100				
Life, AD&D, STD, LTD	461,900	545,400	511,700	308,200	739,680	515,200	515,200				
Employer Workers Compensation	339,700	470,100	584,900	199,500	478,800	588,800	588,800				
Employer Unemployment	111,700	(21,500)	621,400	20,700	49,680	625,600	625,600				
Employer Vision	51,500	52,000	46,900	29,600	71,040	47,100	47,100				
Employer EAP	9,300	10,300	12,800	5,900	14,160	12,800	12,800				
Employer Flexible Spending	6,700	10,900	37,000	5,600	13,440	37,200	37,200				
Transition Makeup Pension Benefit	-	791,100	-	-	-	-	-				
Personnel Transition Adjustment	-	-	(823,300)	-	-	-	-				
Unallocated Reserve	-	-	-	-	-	-	168,200	617,700			
Employer Dental	-	-	504,300	-	-	-	506,600	506,600			
Other Refunds and Contributions	(284,600)	(418,000)	-	(120,900)	(290,160)	-	-	-			
Medical Plan Costs	(1,787,800)	(2,147,100)	(1,701,500)	(1,045,400)	(2,508,960)	(1,709,100)	(1,709,100)				
Transfers-Employee Benefits	(19,655,000)	(20,368,600)	(22,255,400)	(10,460,400)	(25,104,960)	(23,380,700)	(23,830,500)				
Fund Sum	-	100	-	(1,215,800)	-	-	-				

FY 2019 Actuals Update based upon October 2018 in the December 21, 2018 draft budget vs. November 2018 actual expenses annualized is shown below. The budget document is presently being updated for the November 2018 amounts.

Great Lakes Water Authority Actual Expense by Group January 18, 2019						
Grouping	Activity	FY 2017	FY 2018	FY 2019	FY 2019	FY 2020
		Activity	Activity thru 10.31.2018	Activity thru 11.30.2018	Department Requested	Department Requested
■ A Water Operations	\$ 58,962,800	\$ 61,673,700	\$ 23,466,291	\$ 27,847,100	\$ 67,928,100	\$ 69,286,700
■ B Wastewater Operations	107,908,700	110,030,900	37,041,842	44,111,300	120,685,300	123,099,000
■ C Centralized Services	67,551,400	81,637,600	28,927,183	36,021,800	106,913,600	108,816,100
■ D Administrative Services	18,478,200	31,964,300	8,216,226	10,264,000	29,627,800	30,151,200
Grand Total	\$ 252,901,100	\$ 285,306,500	\$ 97,651,542	\$ 118,244,200	\$ 325,154,800	\$ 331,353,000
Annualized			\$ 292,954,626	\$ 283,786,080		

Top ten increases and decreases by expense account type and by cost center (department) are attached.

Great Lakes Water Authority

Account Categories with the Highest and Lowest Difference

FY 2020 Requested vs. FY 2018 Actual

As of 1.17.2019

DESCRIPTION	FY 2017 Activity	FY 2018 Activity	FY 2019 Annualized Based on 11.30.2018 Close	FY 2020 Department Requested	FY 2020 Requested Less FY 2018 Actual	FY 2021 Department Requested
Salaries & Wages	46,042,700	55,174,400	59,505,600	68,301,400	13,127,000	69,412,100
Contractual Operating Services	53,827,700	60,256,400	64,385,280	68,819,800	8,563,400	69,680,300
Contractual Professional Services	4,062,700	11,630,800	16,189,680	19,000,700	7,369,900	18,972,300
Unallocated Reserve	-	-	-	6,912,300	6,912,300	8,619,200
Capital Outlay over \$5k(O&M-NonCapitlzd)	888,200	1,812,500	4,060,560	4,890,500	3,078,000	4,470,300
Operating Supplies-Chemicals	14,765,300	12,877,700	13,755,840	15,698,600	2,820,900	16,030,900
Shared Services Reimbursement	(7,666,200)	(6,867,300)	(5,633,760)	(4,177,000)	2,690,300	(1,623,000)
Employee Benefits	19,654,800	20,432,100	25,028,880	23,005,300	2,573,200	23,838,100
Contract Services-Information Technology	7,463,000	5,781,700	4,250,160	7,389,300	1,607,600	6,627,600
Shared Services : Salaries & Wages Reimb	(3,010,300)	(2,194,800)	(1,240,080)	(877,900)	1,316,900	(414,600)
Repairs & Maintenance-Facilities	1,223,600	4,424,400	2,628,720	5,662,600	1,238,200	5,527,600
Telecom, Managed Security & Network Svcs	16,787,200	12,840,400	12,522,480	14,013,400	1,173,000	14,289,300
Repairs & Maintenance-Hardware	2,058,400	1,585,000	780,480	2,410,000	825,000	2,424,700
Shared Services: Employee Benefit Reimb	(1,027,900)	(846,000)	(473,760)	(351,200)	494,800	(166,000)
Repairs & Maintenance-Equipment	10,036,200	8,581,900	7,146,960	9,026,200	444,300	9,494,200
Repairs & Maintenance-Software	2,404,300	2,586,900	1,142,160	3,026,600	439,700	2,832,700
Salaries & Wages - Workforce Development	-	604,900	724,800	1,014,000	409,100	1,014,000
Auditing	733,200	57,900	324,240	450,000	392,100	450,000
Training and Internal Meetings	621,800	819,000	600,000	1,157,600	338,600	1,157,500
Utilities-Gas	6,449,600	6,611,500	4,769,280	6,943,600	332,100	7,058,600
Utilities-Water	5,469,400	4,493,100	4,169,040	4,757,800	264,700	4,843,000
Utilities-Sewage	2,230,300	1,715,600	1,914,960	1,946,600	231,000	1,962,800
Operating Supplies	1,976,500	2,490,500	2,260,320	2,708,900	218,400	2,740,600
Travel	121,500	208,700	367,680	417,100	208,400	436,200
Advertising	72,600	55,800	35,520	263,800	208,000	269,800
Penalties	129,600	31,200	-	200,000	168,800	200,000
Memberships, Licenses & Subscriptions	263,500	705,000	618,240	841,900	136,900	835,100
Utilities-Electricity	41,512,600	40,873,800	42,444,960	40,985,700	111,900	41,428,600
Printing	38,600	37,600	4,800	149,400	111,800	157,200
Office Supplies	340,800	433,900	561,840	528,200	94,300	528,800
Repairs & Maintenance-Buildings & Ground	136,900	459,300	229,920	542,700	83,400	551,600
Uniforms, Laundry, Cleaning	86,000	73,100	106,080	154,200	81,100	157,400
Employee Uniform Expense	171,100	197,200	188,880	272,200	75,000	276,900
Contractual Buildings & Grounds Maint	4,416,400	4,767,000	3,090,720	4,841,300	74,300	4,830,600
Inspection and Permit Fees	407,100	396,700	1,680	451,200	54,500	456,100
Postage	312,100	19,500	27,120	60,400	40,900	63,500
Mileage and Parking	84,900	110,600	118,800	145,200	34,600	148,200
Rentals-Miscellaneous	2,200	18,100	173,280	48,100	30,000	48,100
Repairs & Maintenance-Automotive	4,800	49,900	18,000	76,500	26,600	78,000
Repairs & Maintenance-Miscellaneous	76,500	24,300	5,760	50,200	25,900	50,700
Operating Supplies-Janitorial	41,900	49,900	78,480	72,200	22,300	72,700
Tuition Refund	38,100	32,800	53,040	49,500	16,700	49,700
Operating Supplies-Automotive	2,400	10,000	23,040	25,000	15,000	25,000
Contractual Security Services	122,100	-	-	10,200	10,200	10,400
Miscellaneous Expense	2,500	1,700	-	7,300	5,600	7,400
Repairs & Maintenance-Damage Recovery	1,753,200	-	84,240	-	-	-
Contract Services-Building Maintenance	618,400	517,500	438,000	508,000	(9,500)	518,100
Overtime	7,242,800	6,161,600	7,454,400	6,139,800	(21,800)	6,246,600
Capital Program: Salaries & Wages-Indire	-	-	-	(46,500)	(46,500)	(47,400)
Operating Supplies – Fuel	199,400	509,700	444,720	447,000	(62,700)	455,800
Capital Program: Employee Benefits	(469,000)	(467,000)	(929,520)	(547,600)	(80,600)	(549,800)
Property Taxes	139,400	391,300	7,920	275,700	(115,600)	280,900
Rentals-Buildings	490,100	484,400	556,080	285,500	(198,900)	61,100
Capital Outlay over \$5k(O&M-Capitalized)	-	411,000	-	-	(411,000)	-
Capital Outlay less than \$5,000	1,309,200	2,834,300	1,769,280	2,286,300	(548,000)	1,813,800
Capital Program: Nonpersonnel	(486,800)	(43,600)	(56,640)	(1,831,000)	(1,787,400)	(1,867,600)
Capital Program: Salaries & Wages-Direct	(1,172,100)	(1,172,700)	(2,309,280)	(2,989,200)	(1,816,500)	(3,005,700)
Legal	2,104,900	4,025,300	1,420,080	2,075,100	(1,950,200)	2,116,100
Damage Claims	(5,418,900)	5,103,900	-	-	(5,103,900)	-
Contractual Transition Services	13,216,000	13,152,800	7,947,840	6,630,300	(6,522,500)	5,406,900
Grand Total	252,901,300	285,333,200	283,786,800	325,154,800	39,821,600	331,353,000

Great Lakes Water Authority

Cost Center Categories with the Highest and Lowest Difference

FY 2020 Requested vs. FY 2018 Actual

As of 1.10.2019

Department Description	FY 2017 Activity	FY 2018 Activity	FY 2019 Annualized Based on 11.30.2018 Close	FY 2020 Department Requested	FY 2020 Requested Less FY 2018 Actual	FY 2021 Department Requested
Field Service Operations	4,732,900	11,989,700	22,298,640	20,493,100	8,503,400	20,732,500
Info Technology Infrastructure	19,984,300	14,264,300	16,469,760	19,432,400	5,168,100	21,640,600
Wastewater Secondary Process	5,376,100	6,198,500	9,646,320	11,099,900	4,901,400	11,107,000
Wastewater Primary Process	3,290,700	2,615,700	6,732,720	7,463,600	4,847,900	7,480,000
Wastewater Process Control	306,500	1,081,200	3,959,280	4,944,700	3,863,500	4,507,200
Wastewater Dewatering Process	2,118,300	1,990,000	4,730,640	5,636,700	3,646,700	5,851,200
Wastewater Incineration Process	2,058,000	1,812,100	4,275,840	5,274,000	3,461,900	5,190,500
Combined Sewer Overflow	1,623,700	2,396,700	3,332,400	5,846,900	3,450,200	6,130,800
Asset Management	710,100	1,711,200	2,320,800	4,990,100	3,278,900	4,766,000
Wastewater System Operations Unallocated	-	-	-	3,264,900	3,264,900	3,976,300
Wastewater Laboratories	753,800	884,300	4,179,360	4,148,900	3,264,600	3,812,000
Info Technology Enterprise Applications	839,600	1,074,900	1,505,280	4,098,700	3,023,800	4,063,700
BDF, COF & Hauling	15,706,000	18,782,100	19,755,600	21,766,000	2,983,900	22,277,100
Systems Analytics	3,756,800	6,497,400	6,678,480	9,385,500	2,888,100	8,299,200
Wastewater Director	2,032,800	2,384,200	3,498,240	5,242,300	2,858,100	5,422,600
Water System Operations Unallocated	-	-	-	2,644,200	2,644,200	3,624,900
Chief Operating Officer Wastewater	-	400	1,375,440	2,511,100	2,510,700	2,538,200
Springwells Water Plant	9,620,900	10,047,600	15,088,560	12,413,800	2,366,200	12,572,400
Capital Improvement Planning	-	-	34,320	1,943,900	1,943,900	2,171,700
Baby Creek Combined Sewer Overflow	628,200	1,067,400	3,035,760	2,974,900	1,907,500	2,905,900
Organizational Development	2,172,100	2,615,300	2,800,080	4,366,400	1,751,100	4,402,400
Info Technology Service Delivery	3,406,900	2,136,300	1,607,760	3,807,700	1,671,400	3,854,200
Energy, Research & Innovation	-	613,300	2,470,800	2,040,000	1,426,700	1,808,400
HazMat	-	410,100	1,672,800	1,545,500	1,135,400	1,622,300
Info Technology Business Applications	2,565,500	4,980,200	4,209,840	5,914,000	933,800	6,408,200
Facility Operations	4,765,600	7,774,100	4,839,600	8,538,200	764,100	8,593,300
Centralized Services Unallocated Reserve	-	-	-	653,100	653,100	660,900
Water Quality	1,146,200	1,239,500	1,157,760	1,856,600	617,100	1,864,500
Lake Huron Water Plant	11,023,800	11,542,600	12,079,440	12,126,200	583,600	12,153,900
Procurement (Enterprise Services)	-	104,600	667,440	664,000	559,400	667,100
Office of the CIO	1,874,700	437,700	494,160	975,800	538,100	592,500
Owners' Representative	-	97,000	410,160	629,100	532,100	620,500
InfoTechnology Project Management Office	929,400	1,102,400	952,800	1,622,600	520,200	1,634,700
Financial Reporting & Accounting	5,155,000	3,011,400	3,075,600	3,511,800	500,400	3,524,000
Transformation	1,165,100	946,200	814,560	1,414,900	468,700	1,415,400
Water Works Park	8,618,700	8,618,600	8,043,600	9,043,400	424,800	9,086,600
Reporting and Compliance	-	-	482,880	395,200	395,200	397,000
Logistics and Materials	-	1,341,500	1,681,440	1,723,900	382,400	1,771,100
Chief Administrative Officer	471,100	561,400	712,800	936,600	375,200	944,400
Public Affairs	929,300	1,028,700	1,047,120	1,386,100	357,400	1,414,700
Administrative Services Unallocated Res	-	-	-	350,100	350,100	357,100
Chief Financial Officer	326,200	563,000	668,640	840,400	277,400	843,000
Water Engineering	1,535,300	1,402,000	1,693,920	1,672,300	270,300	1,681,700
Enterprise Risk Management and Safety	333,100	1,552,800	912,240	1,819,800	267,000	1,998,400
Water Director	728,800	1,375,500	1,434,960	1,617,800	242,300	1,628,600
Systems Operations Control	14,223,300	11,748,100	9,402,720	11,939,700	191,600	11,983,700
Northeast Water Plant	8,875,500	9,400,300	9,551,760	9,576,600	176,300	9,644,700
Financial Planning & Analysis	507,000	1,095,100	1,045,440	1,239,200	144,100	1,243,900

Great Lakes Water Authority

Cost Center Categories with the Highest and Lowest Difference

FY 2020 Requested vs. FY 2018 Actual

As of 1.10.2019

Department Description	FY 2017 Activity	FY 2018 Activity	FY 2019 Annualized Based on 11.30.2018 Close	FY 2020 Department Requested	FY 2020 Requested Less FY 2018 Actual	FY 2021 Department Requested
Data Analytics & Internal Audit	308,900	403,400	615,600	544,000	140,600	546,900
Chief Executive Officer	458,000	501,100	535,920	632,700	131,600	639,300
Procurement (Wastewater)	-	758,500	743,280	852,700	94,200	889,900
Info Technology Security & Risk	109,200	326,600	(1,315,200)	403,200	76,600	436,500
Board of Directors	2,300	129,100	103,920	202,400	73,300	206,500
Conner Pumping Station	613,000	831,900	829,440	899,400	67,500	916,900
Fairview Pumping Station	460,700	616,100	333,120	680,200	64,100	690,400
Haggerty Road Pumping Station	249,400	211,300	143,760	271,100	59,800	276,200
Freud Pumping Station	273,300	223,300	260,400	281,600	58,300	282,200
Northeast Pumping Station	-	792,200	950,880	850,000	57,800	850,000
Puritan Fenkell Combined Sewer Overflow	138,500	242,900	352,320	293,000	50,100	287,400
Schoolcraft Pumping Station	424,000	408,900	418,560	451,300	42,400	451,600
Rochester Pumping Station	183,000	182,400	360,480	224,200	41,800	228,400
North Service Center Pumping Station	2,064,100	2,094,500	2,297,280	2,127,000	32,500	2,129,000
Oakwood Pumping Station	2,700	165,900	161,760	196,900	31,000	200,700
COO - Water Operations & Field Services	285,200	332,100	299,760	359,600	27,500	362,100
West Service Center Pumping Station	839,100	745,600	836,640	770,000	24,400	785,000
Michigan Ave Pumping Station	87,500	83,500	90,960	100,800	17,300	102,800
Fox Creek Pumping Station	13,900	1,500	960	18,500	17,000	18,900
Electric Ave Pumping Station	24,000	18,700	9,360	35,500	16,800	36,000
Wick Road Pumping Station	465,100	558,200	727,440	571,000	12,800	581,500
West Chicago Rd Pumping Station	25,100	50,500	27,840	61,000	10,500	62,000
Roseville Pumping Station	4,000	-	-	10,300	10,300	10,400
Orion Township Pumping Station	61,500	71,200	56,640	81,500	10,300	83,000
Eastside Pumping Station	37,500	34,200	37,680	43,000	8,800	43,100
Northwest Pumping Station	5,400	8,300	13,920	17,000	8,700	17,000
Newburgh Pumping Station	358,000	375,800	400,080	382,300	6,500	389,600
Belle Isle Combined Sewer Overflow	82,500	(200)	108,720	-	200	100
Transition	1,275,100	-	-	-	-	-
Belle Isle Pumping Station	-	-	160,560	-	-	-
Blue Hill Pumping Station	13,900	-	32,880	-	-	-
Woodmere Pumping Station	200	-	143,760	-	-	-
Fischer Pumping Station	400	-	9,360	-	-	-
Wastewater Fire Damage	1,753,200	-	84,240	-	-	-
Joy Road Pumping Station	436,800	592,400	520,560	592,300	(100)	592,700
Ford Rd Pumping Station	281,700	401,000	429,360	394,600	(6,400)	402,300
System Analytics	-	10,300	-	-	(10,300)	-
Franklin Road Pumping Station	810,100	845,100	866,880	830,600	(14,500)	831,200
Ypsilanti Pumping Station	308,900	375,000	347,040	353,300	(21,700)	360,200
7 Mile Combined Sewer Overflow	121,800	154,000	172,800	130,300	(23,700)	131,600
Adams Road Pumping Station	541,800	545,100	485,760	520,000	(25,100)	520,000
Fleet Operations	2,361,700	2,085,800	2,631,840	2,034,500	(51,300)	2,074,800
Oakwood Combined Sewer Overflow	1,447,500	1,364,400	1,175,520	1,306,300	(58,100)	1,343,800
St Aubin Combined Sewer Overflow	90,100	232,200	433,920	165,900	(66,300)	148,400
Leib Combined Sewer Overflow	122,900	230,400	414,720	145,800	(84,600)	148,300
Treasury	465,900	687,000	741,360	591,200	(95,800)	598,200
Hubble Southfield CSO	383,000	572,800	439,440	472,400	(100,400)	475,200
Energy Management	365,600	196,200	-	-	(196,200)	-

Great Lakes Water Authority

Cost Center Categories with the Highest and Lowest Difference

FY 2020 Requested vs. FY 2018 Actual

As of 1.10.2019

Department Description	FY 2017 Activity	FY 2018 Activity	FY 2019 Annualized Based on 11.30.2018 Close	FY 2020 Department Requested	FY 2020 Requested Less FY 2018 Actual	FY 2021 Department Requested
Enterprise Risk Mgt. Insurance Fund	2,704,000	2,624,400	2,807,760	2,411,300	(213,100)	2,459,500
Connor Creek Combined Sewer Overflow	1,560,600	1,483,700	1,467,600	1,250,100	(233,600)	1,255,000
Wastewater Engineering	1,704,200	2,537,900	2,180,880	2,262,000	(275,900)	1,965,300
Imlay Pumping Station	1,899,400	2,091,300	3,472,080	1,805,300	(286,000)	1,840,600
Security and Integrity	4,034,100	4,551,000	4,411,440	4,253,600	(297,400)	4,289,700
Public Finance	1,000,400	1,255,900	1,168,560	878,400	(377,500)	884,900
Procurement (Water & Field Services)	-	1,161,800	875,280	737,200	(424,600)	760,400
Chief Planning Officer	438,400	886,700	378,480	408,900	(477,800)	525,000
Field Engineering	1,018,500	899,100	-	-	(899,100)	-
Southwest Water Plant	8,022,000	8,022,500	5,940,960	6,975,500	(1,047,000)	6,924,700
Procurement Director	4,064,600	1,661,300	474,720	461,500	(1,199,800)	482,100
General Counsel	2,559,200	4,761,000	2,248,800	3,038,900	(1,722,100)	3,084,500
Systems Planning	1,308,600	4,286,600	5,388,720	2,433,100	(1,853,500)	2,658,200
Industrial Waste Control	4,887,800	5,162,600	2,693,520	2,407,100	(2,755,500)	2,443,700
Field Services Director	126,200	3,682,200	-	-	(3,682,200)	-
Legal Settlement & Claims - Operating	(5,418,900)	5,103,900	-	-	(5,103,900)	-
Wastewater Operations	60,344,400	56,206,700	28,938,720	29,151,900	(27,054,800)	30,742,300
Grand Total	252,901,300	285,333,200	283,786,800	325,154,800	39,821,600	331,353,000



Financial Services Audit Committee Communication

Date: January 17, 2019

To: Great Lakes Water Authority Audit Committee

From: Alicia Haskin, Management Professional – Intergovernmental Relations

Re: Update: GLWA and DWSD Shared Services True-Up Status FY 2017

Background: The Great Lakes Water Authority (GLWA) and the Detroit Water and Sewerage Department (DWSD) are parties to a Shared Services Agreement (the Agreement) dated December 1, 2015. This agreement provides the framework for shared services for the efficient operation of both entities.

On a monthly basis, an invoice is prepared based on an agreed upon annual budget. While the intent is for the monthly invoice to represent actual costs, the reality is that the timing of certain vendor invoices and accumulation of internal charges requires a “true-up” process. That being said, the intent is to condense the true-up timeline each fiscal year.

The Shared Service Agreement (Section 5.1) states that:

“Each invoice, whether for Services provided regularly or “as-needed,” shall itemize the costs and charges by Services provided under each Service Delivery Schedule, and shall provide sufficient detail to the Subscribing Party to identify the Services performed and the basis for the charges. A Performing Party may only charge the Service Costs for Services provided.”

In addition, the parties have come to realize that an exact itemization generates a level of detailed analysis that is not cost-effective to produce. The data and experience garnered from the first three years of the program are leading to a more efficient method of calculating costs while staying true to the intent of Section 5.1 above.

Analysis: The following is an update of the FY 2017 True-Up status.

Fiscal Year 2017

The table on the next page lists the current amount to be billed for each Shared Service based upon DWSD's and GLWA's staff analyses. There are still ongoing reviews and discussions regarding the True-Up calculations provided to each other.

DWSD and GLWA Shared Services Teams are having meetings every two weeks to bring the FY 2017 Shared Services True Up to a resolution.

The highlighted Shared Services True-Ups have not been received from City of Detroit. The amounts reported are the annualized amounts paid in FY2016 for these Shared Services.

Legend for Percentage of Review Completed

100%	True up data has been exchanged. Both parties agree.
75%	True up data has been exchanged and discussions have started.
50%	True up data exchanged but review not started.
25%	Staff in process of getting final approval from respective Executive Leadership Team to transmit. True up data not exchanged yet.
0%	No true up data available at this time.

Proposed Action: Receive and file report.

[Type here]

Schedule of True Up Billings

As of January 16, 2019

GLWA Provider Shared Service Description	Percentage of Review Completed by DWSD	GLWA Total Billings to DWSD	DWSD/City of Detroit Provider Shared Service Description	Percentage of Review Completed by GLWA	DWSD Total Billings to GLWA
OPS-002 Miss Dig	75%	12,470	OPS-001 Fleet	75%	\$ 1,366,498
OPS-004 Water Quality	75%	140,933	OPS-002 Miss Dig	50%	54,506
OPS-005 Security	75%	810,863	OPS-003 As Needed Field Services	50%	113,584
OPS-005 Security Training	75%	7,990	OPS-006 Facilities	75%	2,249,678
OPS-006 Facilities	25%	4,337	DoIT-001 Financial Information Services	0%	150,000
OPS-008 Systems Control Center	50%	984,242	DoIT-002 Radios	0%	150,000
ITS-001 Retail AMR	25%	387,408	DoIT-003 Customer Service Technology Suite	0%	44,000
ITS-002 Customer Service Tech Suite	25%	41,179			
ITS-003 See Click Fix	25%	200,789			
ITS-004 WAM	25%	1,473,943			
ITS-005 Mobile Work Force	25%	320,994			
ITS-006 ESRI-GIS	25%	1,201,056			
ITS-007 DADS	25%	94,754			
ITS-008 TIBCO	25%	122,874			
ITS-009 IT Infrastructure	25%	6,897,958			
LS-001-A Joint Litigation and Defense, LS-001-B Environment, LS-002 Environment, LS-003 Contract Drafting	50%	8,043			
Subtotals		12,709,831	Subtotals		\$ 4,128,266
Other items to bill not a defined shared service code			Other items to bill not a defined shared service code		
DWSD-R Staff Training by GLWA	25%	6,717	Fuel	50%	\$ 88,211
Bank Fees	50%	907,832	WAM Invoices	50%	290,347
Lakeshore Invoices	50%	676,875			
Public Finance	25%	12,723			
Subtotal		1,604,146	Subtotal		378,558
Grand Total		14,313,978	Grand Total		\$ 4,506,824



Financial Services Audit Committee Communication

Date: January 18, 2019

To: Great Lakes Water Authority Audit Committee

From: Nicolette N. Bateson, CPA, Chief Financial Officer/Treasurer

Re: Proposed FY 2020 Service Charges

Background: The annual financial planning cycle encompasses development of the capital improvement plan, the revenue requirement (in the form of a biennial budget), and the resulting schedule of service charges. The Audit Committee has received information over the past 30 days related to the budget and the capital financing plan. Today, the Audit Committee will also receive a presentation related to the Schedule of Service Charges.

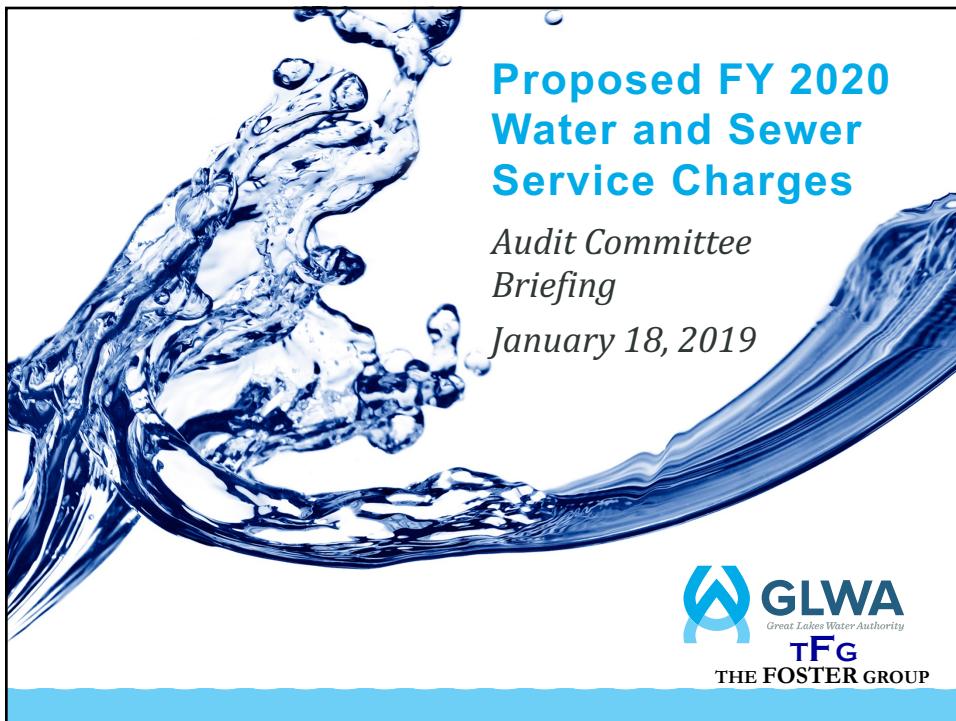
Analysis: The following materials are attached and will be reviewed at the Audit Committee meeting.

- ✓ Report from The Foster Group dated January 16, 2019 re: Preliminary Proposed FY 2020 Budget/Charges Executive Summary
- ✓ Presentation: Proposed FY 2020 Water and Sewer Services Charges

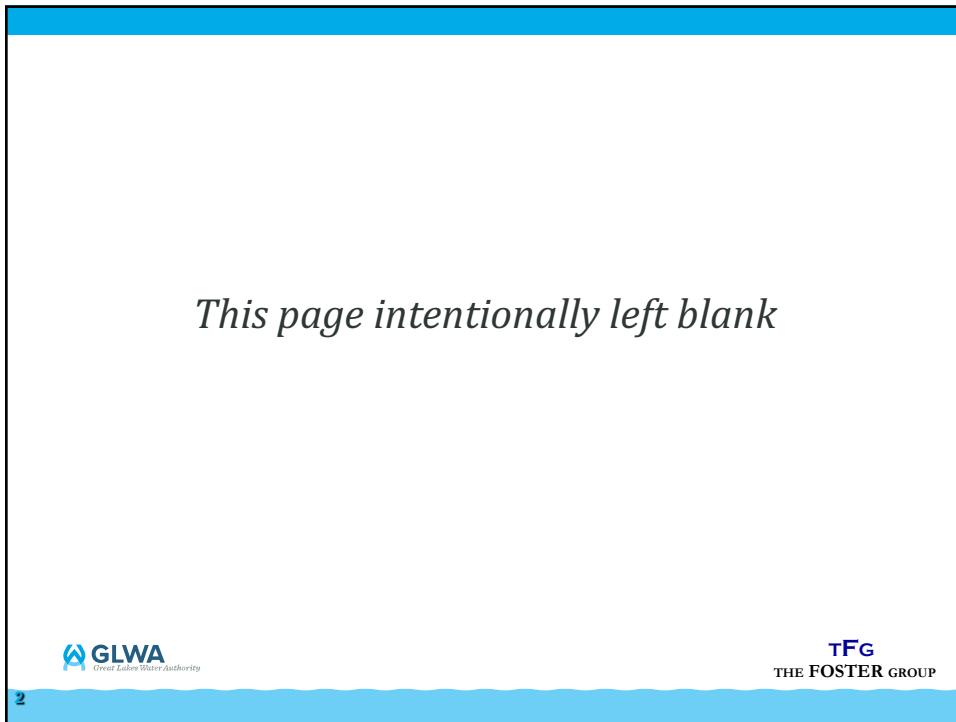
Next steps include the following.

1. Presentation of these materials to the GLWA Board at their meeting on January 23, 2019.
2. Distribution of individual member partner charge worksheets at the Charges Rollout Meeting #4 on Thursday, January 24, 2019.
3. The charge worksheets are also mailed the next day to each member partner community.
4. A public hearing is scheduled for the Board meeting on February 27, 2019 with potential Board action on that date.

Proposed Action: Receive and file.



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Key Takeaways

- The final review of the FY 2020 BUDGET and charges has produced changes
- The FY 2020 BUDGETs represent a **3.5%** (*see below*) increase compared to FY 2019 for both Water and Sewer
 - ✓ Water = **3.1%**
 - ✓ Sewer = **2.7%**
- Projected improved investment earnings offset need to increase Water and Sewer Service Charges
- Overall **average** FY 2020 “System Charge” Adjustments for existing Customers:
 - ✓ Water = **1.6% 0.8%**
 - ✓ Sewer = **2.1% 1.3%**



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Key Takeaways (continued)

- FY 2020 Service Charge impacts on individual Customers vary, and reflect:
 - ✓ *Detailed cost pool analyses of the FY 2020 Budget and capital asset elements;*
 - ✓ *Phase 2 of the Units of Service (UoS) Study for Non Master Metered Customers – Water only;*
 - ✓ *Results of the Contract Alignment (CAP) process for Customer demands – Water only;*
 - ✓ *Recognition of the proposed amendment to the service agreement with OMID – Sewer only;*
 - ✓ *Other refinements*



4



*FY 2020 BUDGET and Revenue
Requirements for Charges
UPDATE*



FY 2020 WATER BUDGET and “System Charge” Adjustments – *What’s New?*

- Slight (~ \$100,000) increase in O&M
 - ✓ *Water quality shared services arrangement*
- \$1.4 million decrease in budgeted debt service
 - ✓ *Defer initial DWRF interest to FY 2021*
- Maintain prior budgeted I&E amount
- Reduces BUDGET increase from **3.5%** to **3.1%**
- Reduces CHARGE increase from **1.6%** to **1.2%**
 - ✓ *New “internal” GLWA Customer results in average Charge increase for existing Customers of 0.8%*



FY 2020 SEWER BUDGET and “System Charge” Adjustments – *What’s New?*

- \$2.2 million reduction in O&M
 - ✓ *Purchased water costs for GLWA sewer facilities*
 - Facilities become internal GLWA Water Customer
- \$1.5 million reduction in O&M
 - ✓ *Recognize pace of certain CSO programs*
- Slight (~ \$100,000) reduction in O&M
 - ✓ *Proposed direct NESPS savings re: OMID Service Agreement*
- Maintain prior budgeted I&E amount
- Reduces BUDGET increase from 3.5% to 2.7%
- Reduces CHARGE increase from 2.1% to 1.3%



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FY 2020 BUDGET and “System Charge” Adjustments

- Average “System Charge Adjustment” for existing Customers is 0.8% for Water and 1.3% for Sewer

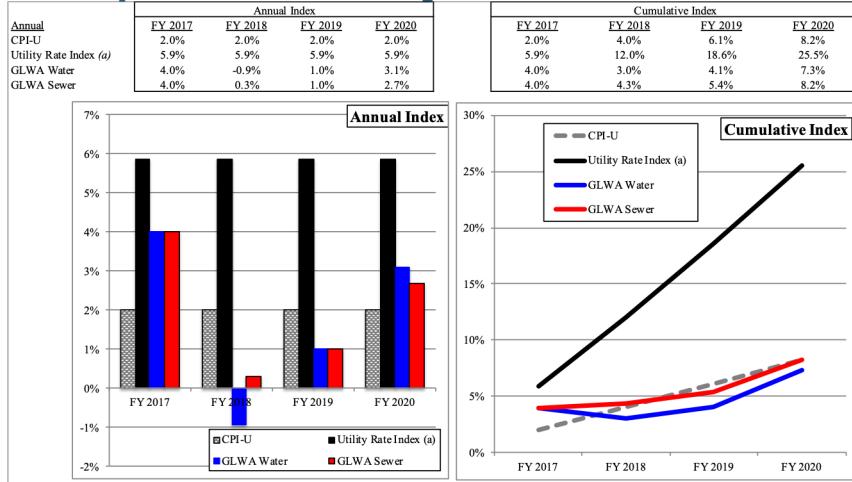
	Water System				Sewer System				Total GLWA			
	FY 2019	FY 2020	Change	% Change	FY 2019	FY 2020	Change	% Change	FY 2019	FY 2020	Change	% Change
1 Annual BUDGET												
1 Operation and Maintenance Expense	121.6	133.5	11.9	9.8%	191.1	188.0	(3.1)	-1.6%	312.6	321.5	8.8	2.8%
2 Master Bond Ordinance Commitments	170.7	174.1	3.4	2.0%	266.9	268.1	1.2	0.5%	437.6	442.3	4.6	1.1%
3 Deposit to I&E (<i>and other reserve</i>) Funds	39.1	34.1	(5.1)	-12.9%	12.2	26.7	14.5	119.7%	51.3	60.8	9.5	18.5%
4 TOTAL BUDGET	331.4	341.7	10.3	3.1%	470.2	482.8	12.7	2.7%	801.6	824.5	22.9	2.9%
<u>Charge Adjustment Illustration</u>												
<u>Proforma Revenue - Existing Charges</u>												
5 Revenue from Charges	328.9	329.7	0.8	-0.2%	470.0	470.2	0.3	-0.1%	799.2	799.9	0.8	-0.1%
6 Investment Earnings & Miscellaneous	3.8	9.1	5.2	-1.6%	4.6	8.7	4.2	-0.9%	8.4	17.8	9.4	-1.2%
7 Expected Bad Debt Expense	(1.4)	(1.2)	0.2	-0.1%	(4.7)	(2.3)	2.4	-0.5%	(6.0)	(3.5)	2.6	-0.3%
8 Net Proforma Revenue Comparison	331.4	337.6	6.2		469.9	476.7	6.8		801.6	814.3	12.7	
9 Adjustment to Address Revenue Variance				-1.9%				-1.4%				-1.6%
10 Adjustment to Address BUDGET Variance (<i>Line 4</i>)				3.1%				2.7%				2.9%
11 Average Charge Adjustment		*		1.2%				1.3%		*		1.3%
<i>* Average Charge Adjustment for Existing Customers</i>												
				0.8%				1.3%				1.1%



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GLWA BUDGET Adjustments Compared to Utility Indices



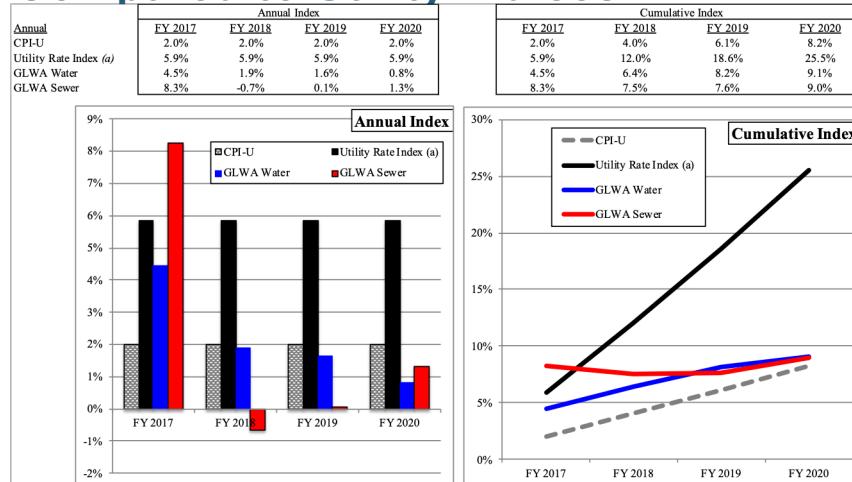
(a) Source: Black & Veatch 50 Largest Cities Rate Survey - 2016 - average 2001-2015



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GLWA CHARGE Adjustments Compared to Utility Indices



(a) Source: Black & Veatch 50 Largest Cities Rate Survey - 2016 - average 2001-2015



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*FY 2020 – FY 2024 Financial
Plan Forecast
UPDATE*



**FY 2020 – FY 2024 Financial Plan Forecast:
What's New?**

- Modifications to the FY 2020 Budget moderately impact future year forecast amounts
- The modifications are not material
- The updated plans will be included in formal proposals



*Preliminary Proposed FY 2020
Charges*



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Issues Impacting Proposed FY 2020 WATER Service Charges

- UoS Study for Non Master Metered (“NMM”) Customers
- Contract Alignment Process (“CAP”)
- Redefined water service to certain GLWA Sewer facilities
- Detailed cost pool analyses



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Issues Impacting Proposed FY 2020 WATER Service Charges – UoS Study

- UoS Phase 1 resulted in significant increases for this class
 - ✓ *1st half of increases were implemented in FY 2019*
 - ✓ *2nd half intended for FY 2020 implementation*
- UoS Phase 2 indicate materially lower units of service (and charges) for the NMM class
 - ✓ *Originally forecasted “Phase 1” benefit to other Customers effectively eliminated by Phase 2 findings*



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Issues Impacting Proposed FY 2020 WATER Service Charges – CAP

- Reduced max day and peak hour demands for 49 Customers
 - ✓ *(Not all via CAP – some new Customer contracts)*
- Lowers revenue requirement allocation to these Customers by ~ \$3.7 million
- Other 39 Customers are proportionally allocated this \$3.7 million



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Issues Impacting Proposed FY 2020 WATER Service Charges – GLWA Facilities

- Facilities will no longer be DWSD Retail Customer
 - ✓ *Appropriate to remove from DWSD UoS*
 - ✓ *Lowers allocated wholesale revenue requirement to Detroit*
 - But Detroit also suffers revenue loss from sales to those facilities
- GLWA Sewer becomes internal Water Customer
 - ✓ *Price established to not impact Suburban Wholesale Water Customers*



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Issues Impacting Proposed FY 2020 WATER Service Charges – Cost Pools

- FY 2020 Cost Allocation review increases portion of revenue requirements related to Transmission Mains
- Costs related to Transmission Mains are allocated to Customers based on their peak hour demand and distance factor
- Customers with relatively high peak hour demands and/or distance factors experience a higher than average charge adjustment than Customers with relatively low peak hour demands and/or distance factors, all else being equal



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Executive Summary FY 2020 Water Charge Adjustments (\$ millions)

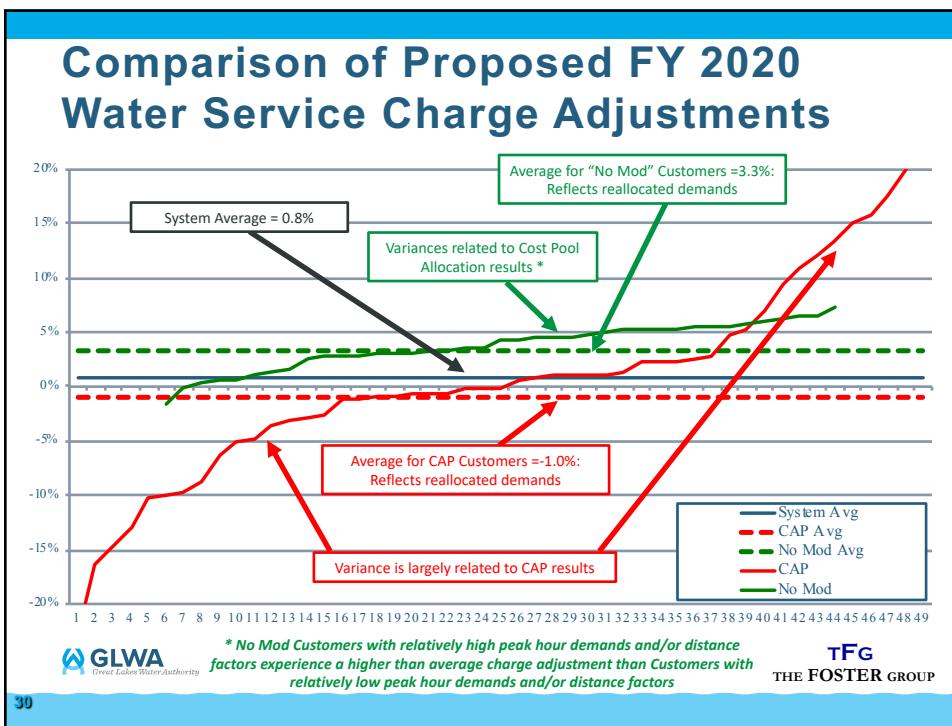
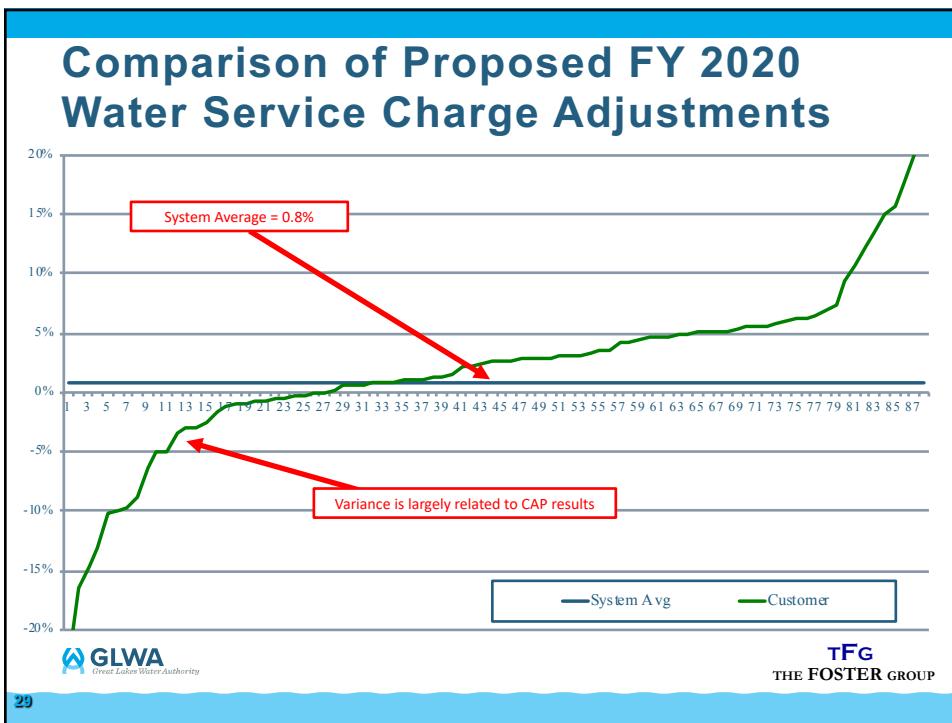
- Proposed charge adjustments vary moderately by major Customer Class

	Customers	Revenue Existing Charges	Allocated Revenue Req't	Charge Increase Variance	Charge Increase % Variance
CAP Suburban Wholesale	49	178.55	176.73	(1.82)	-1.0%
"No Mods" Master Metered Suburban Wholesale	36	119.66	123.62	3.96	3.3%
Non Master Metered Customers	3	31.49	32.05	0.56	1.8%
Internal GLWA (Sewer Facilities)	1		1.44	1.44	NA
Total System	89	329.70	333.84	4.13	1.3%
<i>Total less Internal Customer</i>	<i>88</i>	<i>329.70</i>	<i>332.40</i>	<i>2.69</i>	<i>0.8%</i>



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Issues Impacting Proposed FY 2020 SEWER Service Charges

- Proposed amendment to OMID Service Agreement
- Detailed cost pool analyses
- Lower overall BUDGET requirements
- No “units of service” impact
 - ✓ *No change in SHAREs for FY 2020*



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Issues Impacting Proposed FY 2020 SEWER Service Charges – OMID Agreement

- Proposed amendment would limit GLWA services to NESPS to operating activities
 - ✓ *All capital financing and maintenance activities directly provided by OMID*
- Initial recognition of this new operating scenario will result in:
 - ✓ *Fewer costs allocated directly to OMID, and...*
 - ✓ *More costs allocated to other cost pools, including the “common to all SHAREs” cost pool*
- For purposes of FY 2020 Charges:
 - ✓ *½ of \$11.92 million capital contribution treated as FY 2020 revenues and applicable to FY 2020 revenue req'ts*
 - ✓ *Remainder applicable to FY 2021*



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Issues Impacting Proposed FY 2020 SEWER Service Charges – Cost Pools

- FY 2020 Cost Allocation review critical to establish the revised OMID only cost pool assignments
- Detailed review also had the effect of:
 - ✓ *Decreasing the overall Sewer budget, and*
 - ✓ *Slightly increasing allocation to the Combined Sewer Overflow (“CSO”) cost pool*



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Issues Impacting Proposed FY 2020 SEWER Service Charges – BUDGET

- Lower purchased water costs related to GLWA sewer facilities
 - ✓ *Savings are reflected as “common to all” based on existing SHARES*
- GLWA Sewer becomes internal Water Customer
 - ✓ *Price established to not impact Suburban Wholesale Water Customers*



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Executive Summary FY 2020 Sewer Charge Adjustments (\$ millions)

- Proposed charge adjustments vary moderately by major Customer Class

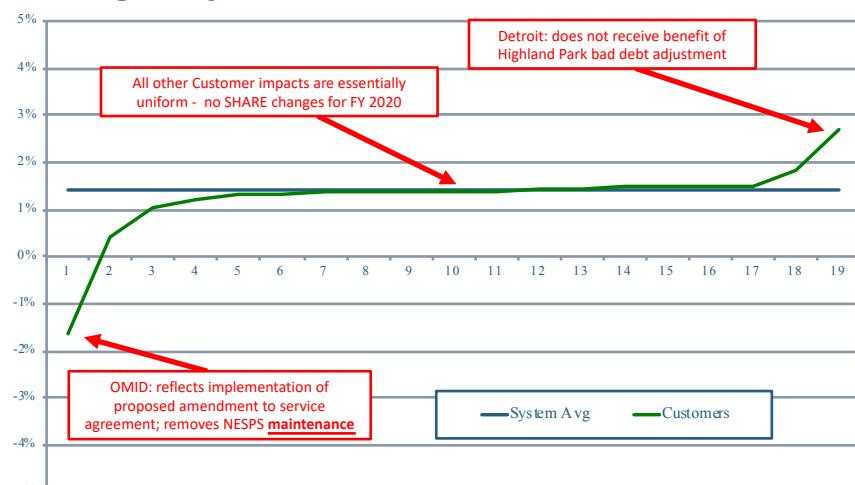
	Revenue Existing Charges	Allocated Revenue Req't	Charge Increase Variance	Charge Increase % Variance
OMID	77.53	76.26	(1.27)	-1.6%
All Other Suburban Wholesale	197.42	200.25	2.83	1.4%
Detroit	181.16	186.05	4.89	2.7%
Industrial Specific Customers	14.10	13.79	(0.31)	-2.2%
Total System	470.21	476.35	6.14	1.3%



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Comparison of Proposed FY 2020 Sewer Service Charge Adjustments



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MEMORANDUM

Preliminary Proposed FY 2020 Budget/Charges
Executive Summary

January 16, 2019

To: Nicolette Bateson

From: Bart Foster

This memorandum is intended to provide an executive summary introduction of our preliminary proposed water and sewer service charges for FY 2020. The preliminary proposed service charges are designed to support the proposed FY 2020 GLWA proposed budgets, and to implement the results of our cost of service study to allocate the revenue requirements in the proposed budgets to GLWA Customers. The format of this discussion follows the format of prior submittals on this topic, which were set forth in memoranda dated December 19, 2018, and reflected the status of the budget request and analysis as of December 18, 2018 and January 2, 2019. Those documents provide background, history, and perspectives which remain pertinent. We'll not repeat that material in this discussion, but rather focus on introducing exhibits supporting the final proposed budgets, summarizing the proposed charges, and discussing the resolution of the open issues referenced in those documents.

We'll first address the proposed budget, then introduce a summary of the preliminary proposed service charges.

Preliminary Proposed FY 2020 Budget

We have reviewed in detail the proposed BUDGET for FY 2020, and have utilized it to establish preliminary cost of service allocations. This final version of the FY 2020 BUDGET reflects ongoing review and modifications over the past two weeks to address certain elements, as discussed herein. In effect, this final version produces a sixth scenario (Scenario "F") that appends the five sequential scenarios presented in the prior memoranda.

As a reminder, here are the scenarios.

- A. Original plan from 2nd year of the FY 2019 Biennial Budget
- B. Updated forecast resulting from the Series 2018 bond sale results
- C. Initial planning level budget targets
- D. Working version of budget as of 12/18/18
- E. Working version of budget as of 1/2/2019
- F. Preliminary Proposed GLWA Budget – 1/16/2019**

The table below presents key metrics for each FY 2020 scenario, and the exhibits to this memorandum provide additional detail¹.

FY 2020 GLWA Budget / Charge Planning Evolution						
	FY 2019 Biennial Budget A	Bond Sale Forecast Update B	Initial Planning Budget C	Working Budget as of 12/18/18 D	Working Budget as of 01/02/19 E	Proposed Budget Rqst 01/16/19 F
Revenue Requirement Increase						
Water Supply System	4.0%	4.0%	3.5%	3.5%	3.5%	3.1%
Sewage Disposal System	4.0%	4.0%	3.5%	3.5%	3.5%	2.7%
Combined Water and Sewer	4.0%	4.0%	3.5%	3.5%	3.5%	2.9%
O&M Budget Increase						
Water Supply System	2.0%	2.0%	2.0%	9.6%	9.7%	9.8%
Sewage Disposal System	2.0%	2.0%	2.0%	0.4%	0.4%	-3.6%
Combined Water and Sewer	2.0%	2.0%	2.0%	4.0%	4.0%	2.8%
Average Charge Increase						
Water Supply System	4.1%	2.1%	1.6%	1.6%	1.6%	1.2%
Sewage Disposal System	4.0%	3.1%	2.6%	2.1%	2.1%	1.3%
Combined Water and Sewer	4.0%	2.7%	2.2%	1.9%	1.9%	1.3%
Planned I&E / Reserve Deposits - \$ millions						
Water Supply System	42.2	45.2	43.5	34.3	34.1	34.1
Sewage Disposal System	20.5	26.8	24.4	27.4	26.7	26.7
Combined Water and Sewer	62.6	71.9	67.9	61.7	60.8	60.8
(a) Establishing an "internal" Water Customer will reduce the adjustment for existing Customers to:						0.8%

As indicated in the exhibit, the final version of the budget request (expressed as Scenario F) results in noteworthy changes compared to the prior Scenario E, as briefly introduced below².

Water Supply System

- A slight increase (\$93,000) in the Water O&M budget, related to a modification in the shared services arrangement with DWSD for water quality sampling activities;
- A \$1.4 million decrease in budgeted debt service;
 - *Based on updated information regarding the approved Drinking Water Revolving Fund projects, it is apparent that any interest payment requirements will be minimal, and we have removed the originally estimated amounts from the budgeted revenue requirements.*
- Maintaining the prior budgeted contributions to the I&E Fund;

¹ See Exhibit Pages 1-3.

² Several of these budget elements also impact proposed water and sewer charges, as discussed in the next section.

- These developments reduce the overall Water BUDGET increase from 3.5% to 3.1%, and reduce the average Water Charge increase from 1.6% to 1.2%.
 - *Further, the establishment of a new “internal” Customer related to how certain GLWA Sewer facilities will be billed for water service will reduced the average Water Charge increase for existing Water Customers to 0.8%.*

Sewage Disposal System

- A reduction of approximately \$2.2 million in the Sewer O&M budget, related to purchased water costs for certain GLWA Sewer facilities;
 - *The facilities in question are served off of GLWA transmission mains but are currently billed by DWSD as full-service retail customer. The budget assumes that this arrangement will cease as of July 1, 2019, and that GLWA Water will invoice GLWA Sewer for internal “wholesale only” costs related to this transaction. This arrangement will result in GLWA Sewer budget savings and impact water cost of service allocations, as introduced later.*
- An additional reduction of \$1.5 million in the Sewer O&M budget, related to combined sewer overflow programs;
 - *Ongoing detailed review indicates that certain of the programs introduced in the FY 2019 Budget are likely to not be complete until FY 2020. This budget modification was made to embrace the commitment to monitor the progress of such programs, and to make modifications to ensure charges reflect anticipated costs for this special cost pool.*
- A slight (\$100,000) reduction in the Sewer O&M budget related to implementation of the proposed amendment to the OMID Service Agreement;
- Maintaining the prior budgeted contributions to the I&E Fund;
- **These developments reduce the overall Sewer BUDGET increase from 3.5% to 2.7%, and reduce the average Sewer Charge increase from 2.1% to 1.3%.**

[Remainder of page intentionally left blank]

The table below compares the operating budget request for Scenarios E and F.

FY 2020 GLWA Budget / Charge Planning O&M Expense Budget Request - \$ millions				
	Working Budget as of 01/02/19	Proposed Budget Rqst 01/16/19	Variance	% Variance
	E	F		
Total GLWA				
Water Operations	67.93	68.02	0.09	0.1%
Sewer Operations	120.69	116.90	(3.79)	-3.1%
Centralized Services	106.91	106.91	-	0.0%
Administrative Services	29.63	29.63	-	0.0%
Total	325.15	321.46	(3.70)	-1.1%
Water Supply System				
Water Operations	67.93	68.02	0.09	0.1%
Sewer Operations	-	-	-	0.0%
Centralized Services	50.66	50.66	-	0.0%
Administrative Services	14.81	14.81	-	0.0%
Total	133.40	133.49	0.09	0.1%
Sewage Disposal System				
Water Operations	-	-	-	0.0%
Sewer Operations	120.69	116.90	(3.79)	-3.1%
Centralized Services	56.26	56.26	-	0.0%
Administrative Services	14.81	14.81	-	0.0%
Total	191.76	187.97	(3.79)	-2.0%

Preliminary Proposed FY 2020 Service Charges

We have allocated the revenue requirements introduced in the prior section to Customers in accordance with the current cost of service methodologies and have prepared proposed charges for each Customer. Our proposed charges will be formally introduced and submitted next week and will be accompanied with a detailed report. Herewith a brief introduction of key elements impacting our proposed charges, followed by some comparative summaries.

Water Supply System

Let's initially define how we're classifying Water Customers for purposes of this discussion.

- Of the 88 existing GLWA Water Customers:
 - 85 are Suburban Wholesale Customers served via Master Meters
 - 49 of these Customers had their FY 2020 contractual max day and peak hour demands impacted by the Contract Alignment Process (“CAP”);

- The other 36 Customers did not have their demands adjusted for this year – and are referred to herein as “NoMod” Customers;
- *The other 3 Customers are not served via Master Meters, and are referred to as the Non Master Metered (“NMM”) Customer Class*
 - Detroit, Dearborn, Highland Park
- There will be a new GLWA “internal” Water Customer, as GLWA Water will bill certain GLWA Sewer facilities directly for water service.

Next, let's introduce key elements impacting FY 2020 Water cost of service allocations.

- The Units of Service (“UoS”) Study for the NMM Customers;
 - *Findings from the first phase of this study resulted in significant charge increases for this class. These increases were partially implemented in the current (FY 2019) water charges, with the understanding that the second – and final - step towards effecting the findings would occur in FY 2020.*
 - *Findings from the second phase of this study resulted in materially lower charges for this class than envisioned in the first phase. The proposed FY 2020 charges fully implement the phase 2 UoS findings.*
 - *The originally forecasted benefit to the other Customers associated with phase 1 findings is effectively eliminated in the FY 2020 charges.*
- The CAP results for those Customers whose demands were modified for FY 2020.
 - *The reduced demands for this class reallocates (all else being equal) approximately \$3.7 million of annual revenue requirement responsibility away from this class to the other classes.*
- Redefined water service to GLWA sewer facilities served via of GLWA transmission mains;
 - *Since these facilities will no longer be reflected as a DWSD retail customer, it is appropriate to remove the related water usage from their units of service established by the UoS study.*
 - *We have done so, which lowers the allocate revenue requirement to Detroit (although Detroit also suffers the revenue loss from the facilities).*
 - *Under this operating scenario, GLWA Sewer becomes an internal GLWA Water Customer, and assumes the units of service associated with the facilities. We have established a wholesale cost that does not impact other Suburban Wholesale Water Customers, although there is a benefit to all Sewer Customers, as discussed below.*
- The impact of the detailed cost pool analyses for the FY 2020 budget, particularly related to Centralized Services activities;

- *The results of these analyses have the general impact of increasing the portion of the revenue requirements related to Transmission Mains, which are allocated to Customers based on their peak hour demand and their distance factor;*
- *As a result, Customers with relatively high peak hour demands and/or distance factors will experience a higher than average charge adjustment than Customers with relatively low peak hour demands and/or distance factors, all else being equal.*

The impact of the proposed water service charges on the major customer classes is summarized in the table below³.

Executive Summary FY 2020 Water Charge Adjustments (\$ millions)					
	<u>Customers</u>	Revenue <u>Existing Charges</u>	Allocated <u>Revenue Req't</u>	Charge <u>Increase Variance</u>	Charge <u>Increase % Variance</u>
CAP Suburban Wholesale	49	178.55	176.73	(1.82)	-1.0%
"No Mods" Master Metered Suburban Wholesale	36	119.66	123.62	3.96	3.3%
Non Master Metered Customers	3	31.49	32.05	0.56	1.8%
Internal GLWA (Sewer Facilities)	1		1.44	1.44	NA
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Total System	89	329.70	333.84	4.13	1.3%
Total less Internal Customer	88	329.70	332.40	2.69	0.8%

Sewage Disposal System

Again, let's start by defining how we're classifying Sewer Customers for purposes of this discussion.

- Oakland Macomb Interceptor District ("OMID"):
 - *Treated separately due to the OMID only cost pool and the implementation of the proposed amendment to the OMID Service Agreement, discussed herein;*
- Non-OMID Suburban Wholesale;
 - *All other Suburban Wholesale Customers;*
- Detroit Customer Class

Here are the key elements impacting FY 2020 Sewer cost of service allocations.

- The proposed amendment to the OMID Service Agreement;

³ See Exhibit Pages 4 through 6 for an illustration of how individual cost of service allocation elements impact each Customer Class in total. These exhibits follow the format for a portion of the individual charge calculation sheets that will be distributed to each Customer next week.

- *The specifics of this proposed amendment are detailed under separate cover. In summary, the proposed amendment would limit services provided to the Northeast Sewer Pump Station (“NESPS”) to operating activities. All capital financing and maintenance activities would be directly provided by OMID;*
- *The initial recognition of this new operating scenario will result in fewer costs allocated directly to OMID, and more costs allocated to other cost pools, including the “common to all SHARES” cost pool;*
- *Our cost of service study and proposed charges implement this arrangement in a manner designed to embrace stability objectives;*
- *For purposes of the FY 2020 Charges, we have assumed that one-half (\$5.92 million) of the total capital contribution of \$11.92 million will be treated as revenue during FY 2020, and will be designed to meet FY 2020 revenue requirements;*
- *We have assumed that the remaining \$5.92 million will be treated similarly for FY 2021.*
- The impact of the detailed cost pool analyses for the FY 2020 budget, particularly related to Centralized Services activities;
 - *These analyses were particularly critical to establish the revised OMID only cost pool assignments mentioned above;*
 - *The results of these analyses have also had the effect of decreasing the overall Sewer budget, and slightly increasing allocation to the Combined Sewer Overflow (“CSO”) cost pool.*
- The reduced revenue requirements related to:
 - *Lower purchased water costs related to the redefined water service to GLWA sewer facilities;*
 - These savings are reflected as “common to all” based on existing SHARES
 - *Reduced CSO program budget;*
 - 83% of these savings accrue to Detroit, and 17% to the Suburban Customers.
- The FY 2020 SHARES are identical to the FY 2019 SHARES, so there is no charge impact of differential units of service.

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The impact of the proposed Sewer service charges on the major customer classes is summarized in the table below.

Executive Summary FY 2020 Sewer Charge Adjustments (<i>\$ millions</i>)				
	Revenue Existing <u>Charges</u>	Allocated Revenue <u>Req't</u>	Charge Increase <u>Variance</u>	Charge Increase <u>% Variance</u>
OMID	77.53	76.26	(1.27)	-1.6%
All Other Suburban Wholesale	197.42	200.25	2.83	1.4%
Detroit	181.16	186.05	4.89	2.7%
Industrial Specific Customers	14.10	13.79	(0.31)	-2.2%
Total System	470.21	476.35	6.14	1.3%

We note that the Suburban Wholesale Sewer Charge adjustments in the above table reflect the lower allocation of bad debt expense associated with Highland Park, and the Detroit adjustments do not. Absent this adjustment, the average charge increase for the “All Other Suburban Wholesale” class would be 2.4%.

We continue diligent review of the proposed charges and preparation of additional materials to present our findings. We are prepared to discuss this matter at your convenience.

FY 2020 GLWA Budget / Charge Worksheet

Water Supply System

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(7)	(9)	(10)	(11)	
	2019 Budget	A Original 2020 Budget/Fcst	B - Updated 2020 from Bond Sale Budget/Fcst	Variance	C - 2020 Planning Target Budget/Fcst	Variance	D - 2020 as of 12/18/18 Budget/Fcst	Variance	E - 2020 as of 1/2/19 Budget/Fcst	Variance	F - 2020 Final Request Budget/Fcst	Variance	
1 Rev Req't Increase			4.0%	4.0%	0.0%	3.5%	-0.5%	3.5%	-0.5%	3.5%	-0.5%	3.1%	-0.9%
2 O&M Budget Increase			2.0%	2.0%	0.0%	2.0%	0.0%	9.6%	7.6%	9.7%	7.7%	9.8%	7.8%
3 Average Charge Increase [see Line 18]			4.1%	2.1%	-1.9%	1.6%	-2.4%	1.6%	-2.5%	1.6%	-2.4%	1.2%	-2.8%
4 Budgeted O&M (a)	121.6	124.0	124.0	0.0	124.0	0.0	133.2	9.3	133.4	9.4	133.5	9.5	
5 Pension Obligation O&M	6.0	6.0	6.0	0.0	6.0	0.0	6.0	0.0	6.0	0.0	6.0	0.0	
6 Total O&M Expense	127.6	130.0	130.0	0.0	130.0	0.0	139.3	9.3	139.4	9.4	139.5	9.5	
7 Debt Service	134.2	141.9	139.0	(3.0)	139.0	(3.0)	139.0	(3.0)	139.0	(3.0)	137.6	(4.4)	
8 MBO Requirements	30.4	30.5	30.5	(0.0)	30.5	(0.0)	30.5	(0.0)	30.5	0.0	30.5	0.0	
9 I&E / Reserve Deposits	39.1	42.2	45.2	3.0	43.5	1.3	34.3	(7.9)	34.1	(8.1)	34.1	(8.1)	
10 Total Gross Revenue Req'ts	331.4	344.7	344.7	0.0	343.0	(1.7)	343.0	(1.7)	343.0	(1.7)	341.7	(3.0)	
11 less: Investment Income	(3.8)	(3.7)	(9.3)	(5.5)	(9.3)	(5.5)	(9.3)	(5.5)	(9.1)	(5.4)	(9.1)	(5.3)	
12 Net Revenue Requirements	327.6	340.9	335.4	(5.5)	333.7	(7.2)	333.7	(7.2)	333.9	(7.0)	332.6	(8.3)	
13 Regional Bad Debt True-Up Adjustment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
14 Accommodation for H/P Bad Debt Expense	1.4	1.4	1.4	0.0	1.4	0.0	1.2	(0.2)	1.2	(0.2)	1.2	(0.2)	
15 Net Rev. Req't. from Charges to Customers	328.9	342.3	336.8	(5.5)	335.1	(7.2)	334.9	(7.4)	335.1	(7.2)	333.8	(8.5)	
16 Revenue - Existing Charges (b)	328.9	328.9	329.7	0.8	329.7	0.8	329.7	0.8	329.7	0.8	329.7	0.8	
17 Additional Charge Revenue Needed	-	13.4	7.1	(6.3)	5.4	(7.9)	5.2	(8.1)	5.4	(8.0)	4.1	(9.3)	
18 Charge Increase (17) / (16)	0.0%	4.1%	2.1%	-1.9%	1.6%	-2.4%	1.6%	-2.5%	1.6%	-2.4%	1.2%	-2.8%	
19 Debt Service Coverage Ratio - Regional	1.53	1.52	1.55	0.03	1.54	0.02	1.47	(0.05)	1.47	(0.05)	1.48	(0.04)	
<u>(a) Budgeted O&M Detail</u>													
20 Water Operations	66.6	67.9	67.9	0.0	67.9	0.0	67.9	(0.0)	67.9	(0.0)	68.0	0.1	
21 Water Allocation of Centralized	42.6	43.5	43.5	0.0	43.5	0.0	50.5	7.0	50.7	7.2	50.7	7.2	
22 Water Allocation of Administrative	12.3	12.6	12.6	0.0	12.6	0.0	14.8	2.2	14.8	2.2	14.8	2.2	
23 Total Water	121.6	124.0	124.0	0.0	124.0	0.0	133.2	9.3	133.4	9.4	133.5	9.5	
24 Water Centralized %	43.0%	43.0%	43.0%	0.0%	43.0%	0.0%	47.2%	4.2%	47.4%	4.3%	47.4%	4.3%	
25 Water Administrative %	43.0%	43.0%	43.0%	0.0%	43.0%	0.0%	50.0%	7.0%	50.0%	7.0%	50.0%	7.0%	
26 (b) Based on Water Sales - m Mcf	13.17	13.17	13.28	0.11	13.28	0.11	13.28	0.11	13.28	0.11	13.28	0.11	

FY 2020 GLWA Budget / Charge Worksheet

Sewage Disposal System

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(7)	(9)	(10)	(11)	
	2019 Budget	A Original 2020 Budget/Fcst	B - Updated 2020 from Bond Sale Budget/Fcst	Variance	C - 2020 Planning Target Budget/Fcst	Variance	D - 2020 as of 12/18/18 Budget/Fcst	Variance	E - 2020 as of 1/2/19 Budget/Fcst	Variance	F - 2020 Final Request Budget/Fcst	Variance	
1 Rev Req't Increase			4.0%	4.0%	0.0%	3.5%	-0.5%	3.5%	-0.5%	3.5%	-0.5%	2.7%	-1.3%
2 O&M Budget Increase			2.0%	2.0%	0.0%	2.0%	0.0%	0.4%	-1.6%	0.4%	-1.6%	-3.6%	-5.6%
3 Average Charge Increase [see Line 18]			4.0%	3.1%	-0.9%	2.6%	-1.4%	2.1%	-1.9%	2.1%	-1.9%	1.3%	-2.7%
4 Budgeted O&M (a)	191.1	194.9	194.9	0.0	194.9	0.0	191.9	(3.0)	191.8	(3.1)	188.0	(6.9)	
5 Pension Obligation O&M	10.8	10.8	10.8	0.0	10.8	0.0	10.8	0.0	10.8	0.0	10.8	0.0	
6 Total O&M Expense	201.9	205.7	205.7	0.0	205.7	0.0	202.7	(3.0)	202.6	(3.1)	198.8	(6.9)	
7 Debt Service	214.6	220.7	214.9	(5.8)	214.9	(5.8)	214.9	(5.8)	215.7	(5.0)	215.7	(5.0)	
8 MBO Requirements	41.5	41.6	41.6	(0.0)	41.6	(0.0)	41.6	(0.0)	41.6	0.0	41.6	0.0	
9 I&E / Reserve Deposits	12.2	20.5	26.8	6.3	24.4	4.0	27.4	7.0	26.7	6.2	26.7	6.2	
10 Total Gross Revenue Req'ts	470.2	488.5	489.0	0.5	486.6	(1.9)	486.6	(1.9)	486.6	(1.9)	482.8	(5.7)	
11 less: Investment Income	(4.6)	(4.1)	(8.8)	(4.7)	(8.8)	(4.7)	(8.8)	(4.7)	(8.7)	(4.6)	(8.7)	(4.6)	
12 Net Revenue Requirements	465.6	484.3	480.1	(4.2)	477.8	(6.6)	477.8	(6.6)	477.9	(6.5)	474.1	(10.3)	
13 Regional Bad Debt True-Up Adjustment	1.9	1.9	1.9	0.0	1.9	0.0	0.0	(1.9)	0.0	(1.9)	0.0	(1.9)	
14 Accommodation for H/P Bad Debt Expense	2.8	2.8	2.8	0.0	2.8	0.0	2.2	(0.6)	2.2	(0.6)	2.3	(0.5)	
15 Net Rev. Req't. from Charges to Customers	470.2	489.0	484.8	(4.2)	482.4	(6.6)	480.0	(9.0)	480.1	(8.9)	476.4	(12.6)	
16 Revenue - Existing Charges	470.2	470.2	470.2	0.0	470.2	0.0	470.2	0.0	470.2	0.0	470.2	0.0	
17 Additional Charge Revenue Needed	-	18.8	14.5	(4.2)	12.2	(6.6)	9.7	(9.0)	9.8	(8.9)	6.1	(12.6)	
18 Charge Increase (17) / (16)	0.0%	4.0%	3.1%	-0.9%	2.6%	-1.4%	2.1%	-1.9%	2.1%	-1.9%	1.3%	-2.7%	
19 Debt Service Coverage Ratio - Regional	1.27	1.30	1.34	0.04	1.33	0.03	1.33	0.03	1.33	0.02	1.33	0.02	
<u>(a) Budgeted O&M Detail</u>													
20 Sewer Operations	118.3	120.7	120.7	0.0	120.7	0.0	120.7	0.0	120.7	0.0	116.9	(3.8)	
21 Sewer Allocation of Centralized	56.4	57.5	57.5	0.0	57.5	0.0	56.4	(1.1)	56.3	(1.3)	56.3	(1.3)	
22 Sewer Allocation of Administrative	16.3	16.7	16.7	0.0	16.7	0.0	14.8	(1.9)	14.8	(1.9)	14.8	(1.9)	
23 Total Sewer	191.1	194.9	194.9	0.0	194.9	0.0	191.9	(3.0)	191.8	(3.1)	188.0	(6.9)	
24 Sewer Centralized %	57.0%	57.0%	57.0%	0.0%	57.0%	0.0%	52.8%	-4.2%	52.6%	-4.3%	52.6%	-4.3%	
25 Sewer Administrative %	57.0%	57.0%	57.0%	0.0%	57.0%	0.0%	50.0%	-7.0%	50.0%	-7.0%	50.0%	-7.0%	

TFG

THE FOSTER GROUP

FY 2020 GLWA Budget / Charge Worksheet

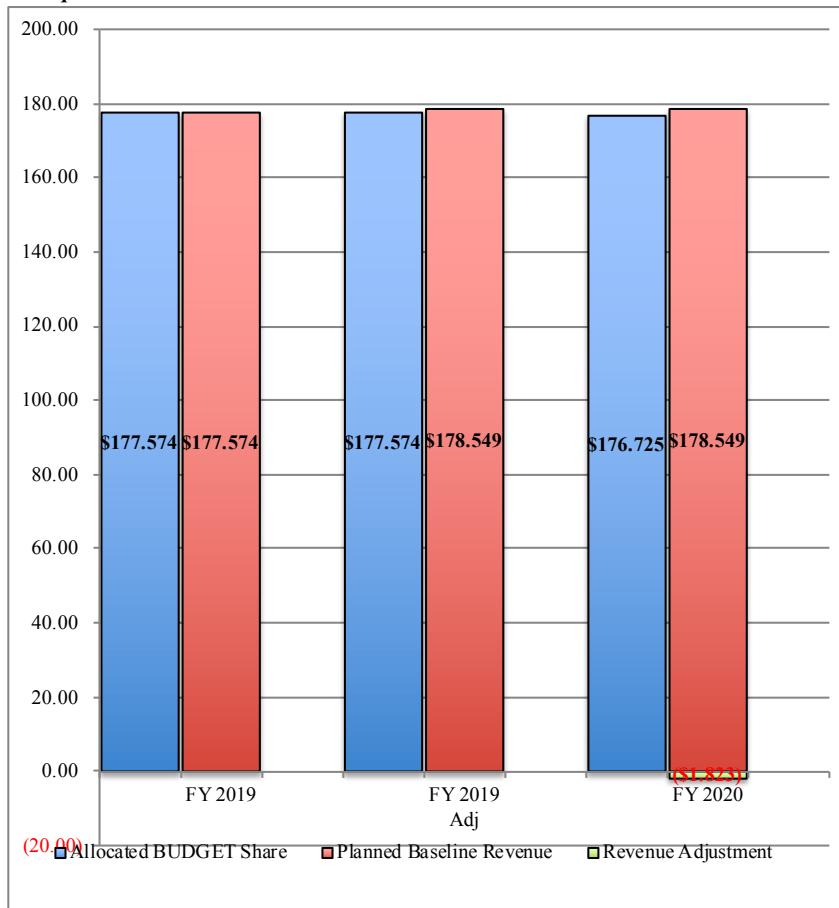
Combined Water and Sewer Systems

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(7)	(9)	(10)	(11)	
	2019 Budget	A Original 2020 Budget/Fcst	B - Updated 2020 from Bond Sale Budget/Fcst	Variance	C - 2020 Planning Target Budget/Fcst	Variance	D - 2020 as of 12/18/18 Budget/Fcst	Variance	E - 2020 as of 1/2/19 Budget/Fcst	Variance	F - 2020 Final Request Budget/Fcst	Variance	
1 Rev Req't Increase			4.0%	4.0%	0.0%	3.5%	-0.5%	3.5%	-0.5%	3.5%	-0.5%	2.9%	-1.1%
2 O&M Budget Increase			2.0%	2.0%	0.0%	2.0%	0.0%	4.0%	2.0%	4.0%	2.0%	2.8%	0.8%
3 Average Charge Increase [see Line 15]			4.0%	2.7%	-1.3%	2.2%	-1.8%	1.9%	-2.1%	1.9%	-2.1%	1.3%	-2.7%
4 Budgeted O&M (a)	312.6	318.9	318.9	0.0	318.9	0.0	325.2	6.3	325.2	6.3	321.5	2.6	
5 Pension Obligation O&M	16.9	16.9	16.9	0.0	16.9	0.0	16.9	0.0	16.9	0.0	16.9	0.0	
6 Total O&M Expense	329.5	335.8	335.8	0.0	335.8	0.0	342.0	6.3	342.0	6.3	338.3	2.6	
7 Debt Service	348.8	362.7	353.9	(8.8)	353.9	(8.8)	353.9	(8.8)	354.7	(8.0)	353.3	(9.4)	
8 MBO Requirements	71.9	72.1	72.0	(0.0)	72.0	(0.0)	72.0	(0.0)	72.1	0.0	72.1	0.0	
9 I&E / Reserve Deposits	51.3	62.6	71.9	9.3	67.9	5.3	61.7	(1.0)	60.8	(1.9)	60.8	(1.9)	
10 Total Gross Revenue Req'ts	801.6	833.1	833.6	0.5	829.6	(3.5)	829.6	(3.5)	829.6	(3.5)	824.5	(8.6)	
11 less: Investment Income	(8.4)	(7.9)	(18.1)	(10.2)	(18.1)	(10.2)	(18.1)	(10.2)	(17.8)	(10.0)	(17.8)	(9.9)	
12 Net Revenue Requirements	793.1	825.3	815.5	(9.7)	811.5	(13.7)	811.5	(13.7)	811.8	(13.5)	806.7	(18.6)	
13 Regional Bad Debt True-Up Adjustment	1.9	1.9	1.9	0.0	1.9	0.0	0.0	(1.9)	0.0	(1.9)	0.0	(1.9)	
14 Accommodation for H/P Bad Debt Expense	4.2	4.2	4.2	0.0	4.2	0.0	3.4	(0.8)	3.4	(0.8)	3.5	(0.7)	
15 Net Rev. Req't. from Charges to Customers	799.2	831.3	821.6	(9.7)	817.6	(13.7)	814.9	(16.4)	815.2	(16.1)	810.2	(21.1)	
16 Revenue - Existing Charges	799.2	799.2	799.9	0.8	799.9	0.8	799.9	0.8	799.9	0.8	799.9	0.8	
17 Additional Charge Revenue Needed	-	32.1	21.6	(10.5)	17.6	(14.5)	15.0	(17.1)	15.2	(16.9)	10.2	(21.9)	
18 Charge Increase (14) / (13)	0.0%	4.0%	2.7%	-1.3%	2.2%	-1.8%	1.9%	-2.1%	1.9%	-2.1%	1.3%	-2.7%	
19 Debt Service Coverage Ratio - Regional	1.37	1.39	1.42	0.04	1.41	0.02	1.39	(0.00)	1.38	(0.00)	1.39	(0.00)	
<u>(a) Budgeted O&M Detail</u>													
20 Water Operations	66.6	67.9	67.9	0.0	67.9	0.0	67.9	(0.0)	67.9	(0.0)	68.0	0.1	
21 Sewer Operations	118.3	120.7	120.7	0.0	120.7	0.0	120.7	0.0	120.7	0.0	116.9	(3.8)	
22 Centralized Services	99.0	101.0	101.0	0.0	101.0	0.0	106.9	5.9	106.9	5.9	106.9	5.9	
23 Administrative Services	28.7	29.3	29.3	0.0	29.3	0.0	29.6	0.4	29.6	0.4	29.6	0.4	
24 Total	312.6	318.9	318.9	0.0	318.9	0.0	325.2	6.3	325.2	6.3	321.5	2.6	

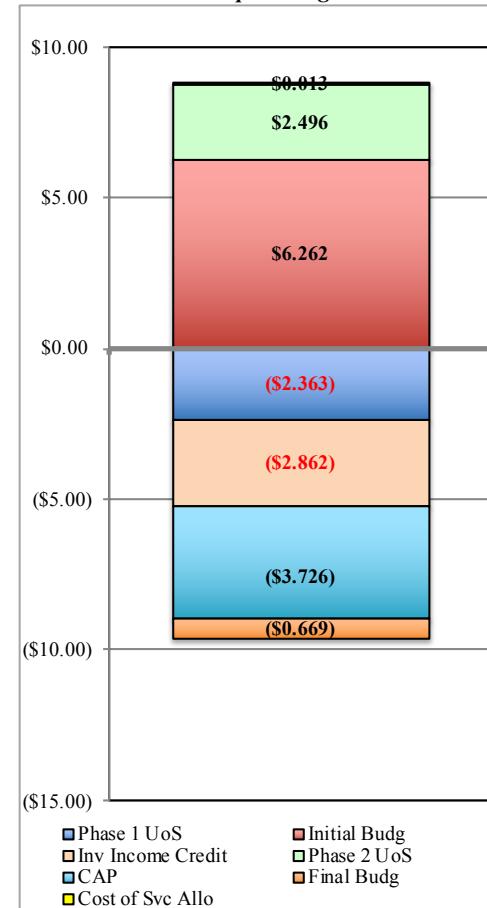
Impact of Wholesale Water Service Charge Proposals
"Unbundling" of Revenue and Unit Cost Adjustment
CAP Modified Demands

	Allocated <u>BUDGET</u> \$	Sales Projection Mcf	Unit Cost \$/Mcf	Variance	
1 Original Allocated FY 2019 BUDGET	177,573,500	8,070,700	22.00		<i>Sales = adjusted 36 mo avg thru 9/2017</i>
2 Revenue Under Adjusted Sales	178,548,600	8,154,840	21.89	-0.5%	<i>Sales = adjusted 36 mo avg thru 9/2018</i>
3 Variance	975,100	84,140			
Adjustments					
4 Anticipated Step #2 of Phase 1 UoS Study for NMM Cus	(2,362,600)	8,154,840	(0.29)	-1.3%	Projected 2nd step of FY 19 UoS for NMM
5 Initial Target FY 2020 BUDGET Adjustment	6,261,600	8,154,840	0.77	3.5%	3.5% BUDGET increase * Ln (1)
6 Investment Income Offset	(2,862,000)	8,154,840	(0.35)	-1.6%	1.6% increased credit * Ln (1)
7 Impact of Phase 2 UoS Study for NMM Customers	2,496,400	8,154,840	0.31	1.4%	Relative Phase 2 UoS Study for NMM
8 Impact of Contract Alignment Process (CAP)	(3,726,300)	8,154,840	(0.46)	-2.1%	Relative Contract Demands - CAP
9 Final FY 2020 BUDGET Modifications	(668,700)	8,154,840	(0.08)	-0.4%	Deferral of SRF Bond Sale
10 Impact of Cost of Service / Cost Pool Allocations	13,300	8,154,840	0.00	0.0%	Consolidate (7)&(8), Cost Pool Allo, etc.
11 Total Adjustments	(848,300)		(0.10)	-0.5%	<i>Ln (11) / Ln (2)</i>
12 Allocated FY 2020 BUDGET	176,725,200	8,154,840	21.67	-1.0%	
13 Ratio of Revised Projected Sales to Original		101.0%			<i>Ln (2) / Ln (1)</i>
14 BUDGET to BUDGET Change (a)	(848,300)	8,154,840	(0.10)	-0.5%	
15 Specific Sales/Revenue Variance	(975,100)	8,154,840	(0.12)	-0.5%	Necessary to adjust to baseline rev req't
16 Net Adjusted Revenue Req'd from Charges	(1,823,400)	8,154,840	(0.22)	-1.0%	Net Charge Impact

Impact Illustration - \$ millions



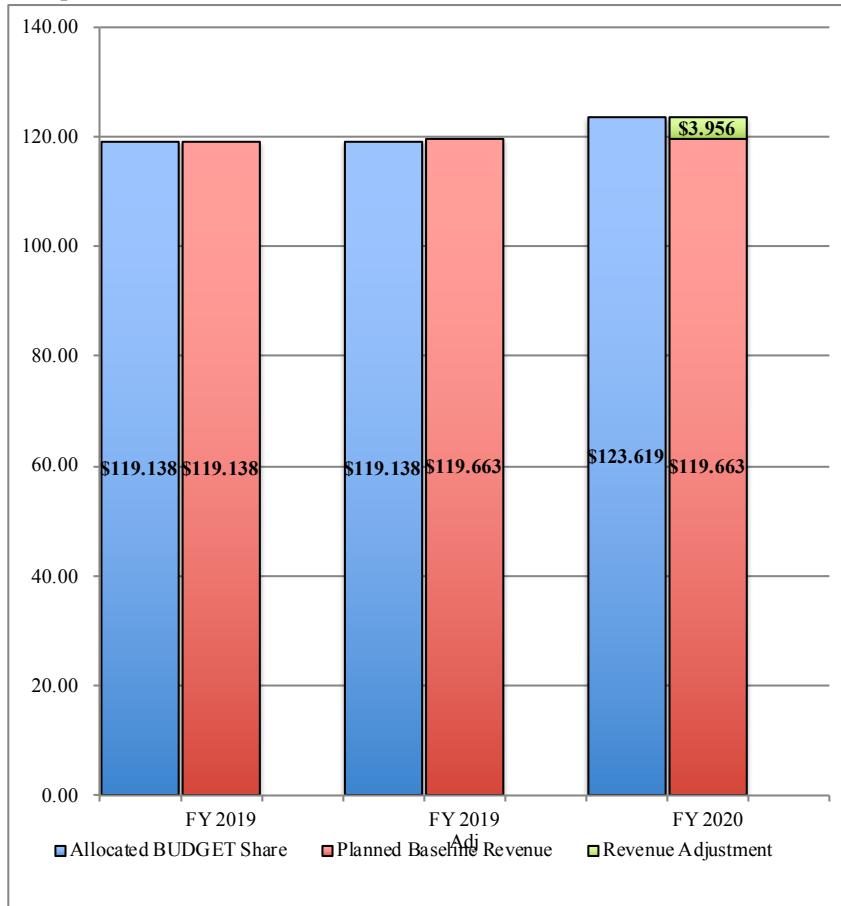
Relative Revenue Req't Change - \$ millions



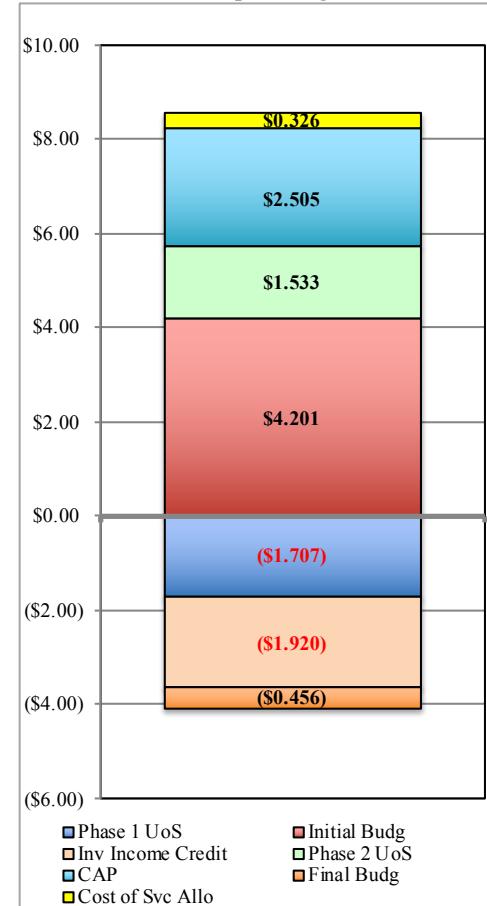
Impact of Wholesale Water Service Charge Proposals
 "Unbundling" of Revenue and Unit Cost Adjustment
 Other Master Metered

	Allocated BUDGET	Sales Projection	Unit Cost	Variance	
	\$	McF	\$/McF		
1 Original Allocated FY 2019 BUDGET	119,138,000	5,101,940	23.35		<i>Sales = adjusted 36 mo avg thru 9/2017</i>
2 Revenue Under Adjusted Sales	119,663,100	5,128,370	23.33	-0.1%	<i>Sales = adjusted 36 mo avg thru 9/2018</i>
3 Variance	525,100	26,430			
Adjustments					
4 Anticipated Step #2 of Phase 1 UoS Study for NMM Cus	(1,707,000)	5,128,370	(0.33)	-1.4%	Projected 2nd step of FY 19 UoS for NMM
5 Initial Target FY 2020 BUDGET Adjustment	4,201,000	5,128,370	0.82	3.5%	3.5% BUDGET increase * Ln (1)
6 Investment Income Offset	(1,920,300)	5,128,370	(0.37)	-1.6%	1.6% increased credit * Ln (1)
7 Impact of Phase 2 UoS Study for NMM Customers	1,532,800	5,128,370	0.30	1.3%	Relative Phase 2 UoS Study for NMM
8 Impact of Contract Alignment Process (CAP)	2,505,300	5,128,370	0.49	2.1%	Relative Contract Demands - CAP
9 Final FY 2020 BUDGET Modifications	(456,000)	5,128,370	(0.09)	-0.4%	Deferral of SRF Bond Sale
10 Impact of Cost of Service / Cost Pool Allocations	325,500	5,128,370	0.06	0.3%	Consolidate (7)&(8), Cost Pool Allo, etc.
11 Total Adjustments	4,481,300		0.87	3.7%	<i>Ln (11) / Ln (2)</i>
12 Allocated FY 2020 BUDGET	123,619,300	5,128,370	24.10	3.3%	
13 Ratio of Revised Projected Sales to Original		100.5%			<i>Ln (2) / Ln (1)</i>
14 BUDGET to BUDGET Change (a)	4,481,300	5,128,370	0.87	3.7%	
15 Specific Sales/Revenue Variance	(525,100)	5,128,370	(0.10)	-0.4%	Necessary to adjust to baseline rev req't
16 Net Adjusted Revenue Req'd from Charges	3,956,200	5,128,370	0.77	3.3%	Net Charge Impact

Impact Illustration - \$ millions



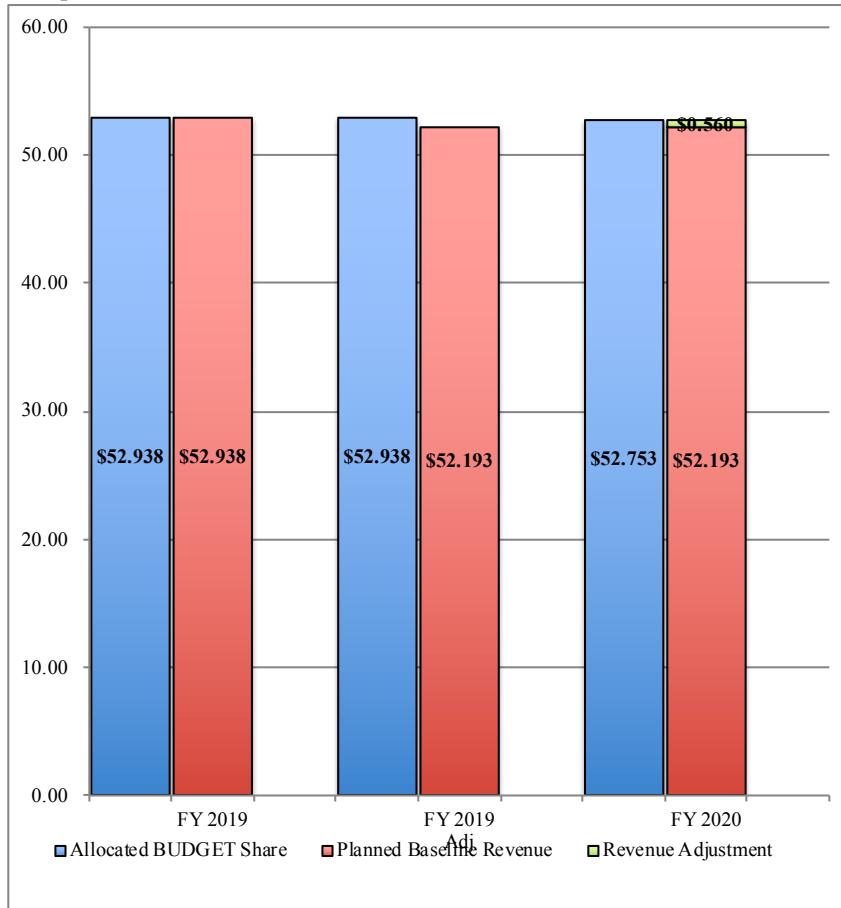
Relative Revenue Req't Change - \$ millions



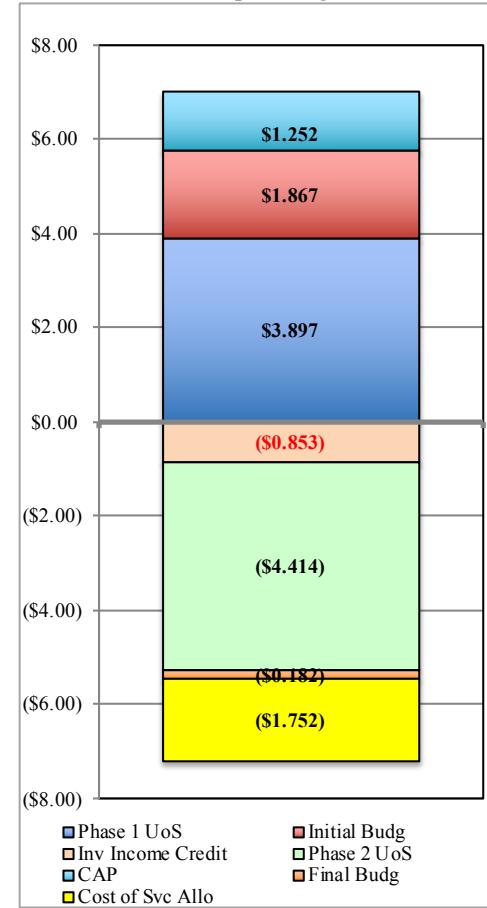
Impact of Wholesale Water Service Charge Proposals
"Unbundling" of Revenue and Unit Cost Adjustment
Non-Master Metered

	Allocated <u>BUDGET</u> \$	Sales Projection Mcf	Unit Cost \$/Mcf	Variance	
1 Original Allocated FY 2019 BUDGET	52,937,900	3,934,500	13.45		<i>Sales = adjusted 36 mo avg thru 9/2017</i>
2 Revenue Under Adjusted Sales	52,192,700	3,791,900	13.76	2.3%	<i>Sales = adjusted 36 mo avg thru 9/2018</i>
3 Variance	(745,200)	(142,600)			
Adjustments					
4 Anticipated Step #2 of Phase 1 UoS Study for NMM Cus	3,897,300	3,791,900	1.03	7.4%	Projected 2nd step of FY 19 UoS for NMM
5 Initial Target FY 2020 BUDGET Adjustment	1,866,700	3,791,900	0.49	3.6%	3.5% BUDGET increase * Ln (1)
6 Investment Income Offset	(853,300)	3,791,900	(0.23)	-1.6%	1.6% increased credit * Ln (1)
7 Impact of Phase 2 UoS Study for NMM Customers	(4,413,700)	3,791,900	(1.16)	-8.5%	Relative Phase 2 UoS Study for NMM
8 Impact of Contract Alignment Process (CAP)	1,252,200	3,791,900	0.33	2.4%	Relative Contract Demands - CAP
9 Final FY 2020 BUDGET Modifications	(182,100)	3,791,900	(0.05)	-0.3%	Deferral of SRF Bond Sale
10 Impact of Cost of Service / Cost Pool Allocations	(1,751,900)	3,791,900	(0.46)	-3.4%	Consolidate (7)&(8), Cost Pool Allo, etc.
11 Total Adjustments	(184,800)		(0.05)	-0.4%	<i>Ln (11) / Ln (2)</i>
12 Allocated FY 2020 BUDGET	52,753,100	3,791,900	13.91	1.1%	
13 Ratio of Revised Projected Sales to Original		96.4%			<i>Ln (2) / Ln (1)</i>
14 BUDGET to BUDGET Change (a)	(184,800)	3,791,900	(0.05)	-0.4%	
15 Specific Sales/Revenue Variance	745,200	3,791,900	0.20	1.4%	Necessary to adjust to baseline rev req't
16 Net Adjusted Revenue Req'd from Charges	560,400	3,791,900	0.15	1.1%	Net Charge Impact

Impact Illustration - \$ millions



Relative Revenue Req't Change - \$ millions





Financial Services Audit Committee Communication

Date: January 18, 2019

To: Great Lakes Water Authority Audit Committee

From: Kathy Smith-Roy, Financial Services Member

Re: General Retirement System Financial Report for Year-end June 30, 2018

Background: The Great Lakes Water Authority's (GLWA) assumed a portion of the legacy pension commitment assigned to the City of Detroit Water & Sewerage Department (DWSD) pursuant to the terms of the regional water and sewer leases. For this reason, GLWA monitors activity related to the City of Detroit General Retirement System (GRS).

Attached are the following reports presented to the GRS Board at its December 5, 2018 meeting:

- ✓ Report letter to those charged with governance for The General Retirement of the City of Detroit for the year ended June 30, 2018 (dated November 26, 2018)
- ✓ Audited Financial Report for The General Retirement System of the City of Detroit (dated November 26, 2018)
- ✓ GASB Statement No. 68 Employer Reporting and Accounting Schedules of Component II, June 30, 2017 (dated July 23, 2018)
- ✓ GASB Statement No 67 and 68 Accounting and Financial Reporting of Pension Plans of Component II June 30, 2018 (dated October 31, 2018)

Highlights/Analysis: The June 30, 2017 Net Pension Liability of the system decreased to \$943.8 million from \$992.9 million as of June 30, 2016 (approximately 5%). In determining the total pension liability as of June 30, 2017, the changes in actuarial assumptions from June 30, 2016 included the following.

1. The long-term expected return on assets was 6.91% net of investment expenses, as of June 30, 2016 (it was 6.75% net of investment and administrative expenses, in the June 30, 2016 funding valuation, as required by the Plan of Adjustment).
2. The Single Discount Rate (SDR) changed to 6.91% from 7.23% when compared to the June 30, 2016 GASB 68 valuation.

**Executive Summary
as of June 30, 2017**

Actuarial Valuation Date	June 30, 2016
Measurement Date of the Net Pension Liability	June 30, 2017
Employer's Fiscal Year Ending Date (Reporting Date)	June 30, 2018
Membership	
Number of	
- Retirees and Beneficiaries	11,926
- Inactive, Nonretired Members	3,588
- Active Members	<u>3,236</u>
- Total	18,750
Covered Payroll	\$ 143,882,722
Net Pension Liability	
Total Pension Liability	\$ 2,910,509,226
Plan Fiduciary Net Position	<u>1,966,728,975</u>
Net Pension Liability	\$ 943,780,251
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	67.57%
Net Pension Liability as a Percentage of Covered Payroll	655.94%
Development of the Single Discount Rate	
Single Discount Rate	6.91%
Long-Term Expected Rate of Investment Return	6.91%
Long-Term Municipal Bond Rate*	3.56%
Last year ending June 30 in the 2018 to 2117 projection period for which projected benefit payments are fully funded	2117
Total Pension Expense	\$ 113,958,599

Source: GASB Statement No. 68 Employer Reporting and Accounting Schedules of Component II, June 30, 2017 (dated July 23, 2018), p 1

- continued -

At June 30, 2017 the DWSD Net Pension Liability decreased to \$254.6 million from \$276.1 million at June 30, 2016 (approximately 7.8% decrease). The following excerpt from the report shows the schedule of changes in Net Pension Liability by unit.

Schedule of Changes in Net Pension Liability and Related Ratios Current Period
Fiscal Year Ended June 30, 2017*

	General	DOT	DWSD	Library	Total
A. Total Pension Liability					
1. Service Cost	\$ -	\$ -	\$ -	\$ -	\$ -
2. Interest on the Total Pension Liability	111,696,826	29,480,676	53,810,904	6,930,830	201,919,236
3. Changes of benefit terms	-	-	-	-	-
4. Difference between expected and actual experience of the Total Pension Liability	(23,006,975)	(5,802,247)	3,370,105	(2,069,263)	(27,508,380)
5. Changes of assumptions	41,844,061	11,022,689	21,554,914	2,504,293	76,925,957
6. Benefit payments, including refunds of employee contributions [^]	(150,490,982)	(36,843,199)	(72,661,992)	(7,253,366)	(267,249,539)
7. Net change in Total Pension Liability	\$ (19,957,070)	\$ (2,142,081)	\$ 6,073,931	\$ 112,494	\$ (15,912,726)
8. Total Pension Liability – Beginning	1,620,153,175	426,176,461	780,603,529	99,488,787	2,926,421,952
9. Total Pension Liability – Ending	\$ 1,600,196,105	\$ 424,034,380	\$ 786,677,460	\$ 99,601,281	\$ 2,910,509,226
B. Plan Fiduciary Net Position					
1. Contributions – employer	\$ 45,388,561	\$ 100,841	\$ 42,900,000	\$ 2,849,000	\$ 91,238,402
2. Contributions – employee	-	-	-	-	-
3. Net investment income	119,411,049	23,970,241	55,209,451	8,305,826	206,896,567
4. Benefit payments, including refunds of employee contributions [^]	(150,490,982)	(36,843,199)	(72,661,992)	(7,253,366)	(267,249,539)
5. Pension Plan Administrative Expense	(5,024,638)	(749,619)	-	(247,580)	(6,021,837)
6. Other	4,567,412	1,436,415	2,125,248	195,000	8,324,075
7. Net change in Plan Fiduciary Net Position	\$ 13,851,402	\$ (12,085,321)	\$ 27,572,707	\$ 3,848,880	\$ 33,187,668
8. Plan Fiduciary Net Position – Beginning	1,108,816,677	240,693,710	504,535,894	79,495,026	1,933,541,307
9. Plan Fiduciary Net Position – Ending	\$ 1,122,668,079	\$ 228,608,389	\$ 532,108,601	\$ 83,343,906	\$ 1,966,728,975
C. Net Pension Liability	\$ 477,528,026	\$ 195,425,991	\$ 254,568,859	\$ 16,257,375	\$ 943,780,251
D. Plan Fiduciary Net Position as a percentage of the Total Pension Liability	70.16%	53.91%	67.64%	83.68%	67.57%
E. Covered-employee payroll	\$ 83,878,095	\$ 25,487,019	\$ 22,864,010	\$ 11,653,598	\$ 143,882,722
F. Net Pension Liability as a percentage of covered-employee payroll	569.31%	766.77%	1113.40%	139.51%	655.94%

*Totals may not add due to rounding.

[^]Includes approximately \$2.9 million of adjusted loan balances that were treated as refunds of ASF contributions.

Source: GASB Statement No. 68 Employer Reporting and Accounting Schedules of Component II, June 30, 2017 (dated July 23, 2018), p 18

On January 24, 2017, the parties agreed that 70.3 percent of the liability was allocable to the GLWA regional operations and 29.7 percent to DWSD and is the basis of allocation for future pension contributions. That net pension liability is further subdivided between the Water System and the Sewer System for each entity.

For the fiscal year ending June 30, 2018 GLWA reported a net pension liability of \$179 million.

The combined administrative expenses for Component I (Hybrid) and Component II (Legacy) plans were \$2.2M for June 30, 2018. The administrative expenses for both plans

was 3.0% of payroll; Component II is allocated 60% of the expenses, a decrease from June 30, 2017 of a 71% allocation.

GLWA tracks the Administrative Charges payments and expenses. At June 30, 2018 the excess/overpayment of administrative charges have accumulated to \$2.1 million. These amounts are included in Prepaid Items and Other Assets in the June 30, 2018 Statement of Net Position for GLWA.

The General Retirement System of the City of Detroit GASB Statement No. 67 Plan Reporting and Accounting Schedules of Component II June 30, 2018 reports a projected decrease in Net Pension Liability to \$832.7 million from \$943.8 million as of June 30, 2017 (approximately 11.8%). For purposes of determining the total pension liability as of June 30, 2018, the changes in actuarial assumptions from June 30, 2017 included the following.

1. The long-term expected return on assets was 7.38% net of investment expenses, as of June 30, 2017 (it was 6.91% net of investment and administrative expenses, in the June 30, 2017 funding valuation, as required by the Plan of Adjustment).
2. The Single Discount Rate (SDR) changed to 7.38% from 6.91% when compared to the June 30, 2017 GASB Statement No. 67 valuation.

The following is an excerpt from the GASB 67 report required supplemental information showing the multi-year schedule of changes in net pension liability including the June 30, 2017 projected net pension liability.

Schedules of Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear

Fiscal year ending June 30,	Ultimately 10 Fiscal Years will be Displayed				
	2018	2017	2016	2015	2014
Total Pension Liability					
Service Cost	\$ -	\$ -	\$ -	\$ -	\$ 32,736,019
Interest on the Total Pension Liability	192,359,745	201,919,236	214,011,164	263,007,329	242,611,073
Benefit Changes	-	-	-	(731,824,895)	(113,311,571)
Difference between Expected and Actual Experience	34,154,327	(27,508,380)	(43,719,112)	24,644,530	-
Assumption Changes	(110,274,515)	76,925,957	90,034,927	(101,559,893)	(271,190,194)
Benefit Payments	(239,301,938)	(242,938,006)	(242,470,451)	(253,217,949)	(253,683,194)
Refunds*	(14,140,692)	(24,311,533)	(49,811,728)	(44,321,041)	(144,050,613)
Net Change in Total Pension Liability	(137,203,073)	(15,912,726)	(31,955,200)	(843,271,919)	(506,888,480)
Total Pension Liability - Beginning	2,910,509,226	2,926,421,952	2,958,377,152	3,801,649,071	4,308,537,551
Total Pension Liability - Ending (a)	\$ 2,773,306,153	\$ 2,910,509,226	\$ 2,926,421,952	\$ 2,958,377,152	\$ 3,801,649,071
Plan Fiduciary Net Position					
Employer Contributions	\$ 68,275,000	\$ 91,238,402	\$ 104,792,657	\$ 189,282,095	\$ 25,126,131
Employee Contributions	-	-	-	609,073	10,241,761
Pension Plan Net Investment Income	155,423,193	206,896,567	(7,865,094)	93,054,978	289,789,607
Benefit Payments	(239,301,938)	(242,938,006)	(242,470,451)	(253,217,949)	(253,683,194)
Refunds*	(14,140,692)	(24,311,533)	(49,811,728)	(44,321,041)	(144,050,613)
Pension Plan Administrative Expense	(3,313,418)	(6,021,837)	(3,742,618)	(7,556,822)	(11,237,767)
Other	6,952,522	8,324,075	1,360,330	138,219,998	-
Net Change in Plan Fiduciary Net Position	(26,105,333)	33,187,668	(197,736,904)	116,070,332	(83,814,075)
Plan Fiduciary Net Position - Beginning	1,966,728,975	1,933,541,307	2,131,278,211	2,015,207,879	2,099,021,954
Plan Fiduciary Net Position - Ending (b)	\$ 1,940,623,642	\$ 1,966,728,975	\$ 1,933,541,307	\$ 2,131,278,211	\$ 2,015,207,879
Net Pension Liability - Ending (a) - (b)	\$ 832,682,511	\$ 943,780,251	\$ 992,880,645	\$ 827,098,941	\$ 1,786,441,192
Plan Fiduciary Net Position as a Percentage					
of Total Pension Liability	69.98 %	67.57 %	66.07 %	72.04 %	53.01 %
Covered-Employee Payroll	\$ 141,454,717	\$ 143,882,722	\$ 200,722,197	\$ 203,507,079	\$ 213,291,083
Net Pension Liability as a Percentage					
of Covered-Employee Payroll	588.66 %	655.94 %	494.65 %	406.42 %	837.56 %
Notes to Schedule:					
N/A					

* For FY 2017, includes approximately \$2.9 million of adjusted loan balances that were treated as refunds of ASF contributions.

A Special Funding Situation may occur if a non-city entity has a legal obligation to contribute directly to the Retirement System. The Net Pension Liability shown here has not been adjusted for any potential funding situation. Our understanding is that the City makes all the employer contributions into the fund, even though the City may receive monies from other entities as a result of the POA.

Source: GASB Statement No 67 and 68 Accounting and Financial Reporting of Pension Plans of Component II June 30, 2018, p 23

Proposed Action: Receive and file report.

Combined Plan for the General Retirement System of the City of Detroit

**Financial Report
with Supplemental Information
June 30, 2018**

Combined Plan for the General Retirement System of the City of Detroit

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Independent Auditor's Report

To the Board of Trustees
Combined Plan for the General Retirement
System of the City of Detroit

Report on the Financial Statements

We have audited the accompanying financial statements of the Combined Plan for the General Retirement System of the City of Detroit (the "Combined Plan") as of and for the year ended June 30, 2018 and the related notes to the financial statements, which collectively comprise the Combined Plan for the General Retirement System of the City of Detroit's basic financial statements, as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Combined Plan for the General Retirement System of the City of Detroit as of June 30, 2018 and the changes in its fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

To the Board of Trustees
Combined Plan for the General Retirement
System of the City of Detroit

Other Matters

Required Supplemental Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and other required supplemental information, as identified in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, which considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplemental information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Supplemental Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Combined Plan for the General Retirement System of the City of Detroit's basic financial statements. The other supplemental information, as identified in the table of contents, is presented for the purpose of additional analysis and is not a required part of the basic financial statements.

The other supplemental information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the other supplemental information is fairly stated in all material respects in relation to the basic financial statements as a whole.

Report on Summarized Comparative Information

We have previously audited the Combined Plan for the General Retirement System of the City of Detroit's June 30, 2017 financial statements, and we expressed an unmodified audit opinion on those audited financial statements in our report dated December 4, 2017. In our opinion, the summarized comparative information presented herein as of and for the year ended June 30, 2017 is consistent, in all material respects, with the audited financial statements from which it has been derived.

Plante & Moran, PLLC

November 26, 2018

Combined Plan for the General Retirement System of the City of Detroit

Management's Discussion and Analysis

Using this Annual Report

This annual report consists of three parts: (1) management's discussion and analysis (this section), (2) the basic financial statements, and (3) the required supplemental information. The financial statements also include notes that explain some of the information in the financial statements and provide more detailed data. The financial statements are followed by sections of required supplemental information that further explain and support the information in the financial statements.

Condensed Financial Information

The table below compares key financial information in a condensed format between the current year and the prior year:

	Fiscal Year Ended	
	2018	2017
Assets		
Liabilities	\$ 2,154,047,497	\$ 2,134,250,056
	105,153,824	92,686,042
Fiduciary Net Position Restricted for Pensions	\$ 2,048,893,673	\$ 2,041,564,014
Additions		
Net investment income	\$ 164,656,382	\$ 215,886,199
Securities lending income:		
Interest and dividends	343,472	482,244
Net unrealized gain on collateralized securities	131,443	62,547
	474,915	544,791
Contributions:		
Employer	82,662,138	109,888,268
Employee	14,140,618	12,795,405
State and foundation contributions	375,000	375,000
	97,177,756	123,058,673
ASF recoupment interest	6,622,392	7,374,918
Other income	1,250,828	1,021,594
	270,182,273	347,886,175
Deductions		
Retirees' pension and annuity benefits	240,328,824	243,895,303
Member refunds and withdrawals	16,132,158	26,158,052
General and administrative expenses	5,485,108	8,670,222
ASF recoupment write-off	906,524	-
	262,852,614	278,723,577
Net Increase in Fiduciary Net Position Restricted for Pensions	\$ 7,329,659	\$ 69,162,598

Combined Plan for the General Retirement System of the City of Detroit

Management's Discussion and Analysis (Continued)

Fund Overview, Membership, and Governance

The General Retirement System of the City of Detroit (DGRS or the "System") consists of defined benefit pension plans and defined contribution plans for the nonuniformed employees of the City of Detroit, Michigan (the "City"), comprised of Component I and Component II, which are memorialized in a document entitled The Combined Plan for the General Retirement System of the City of Detroit, Michigan, made effective July 1, 2014, as amended and restated December 8, 2014 (the "Combined Plan"). This discussion and its accompanying financial statements are primarily concerned with Component I, a new pension plan created by the City effective July 1, 2014 for active nonuniformed employees of the City to earn pension benefits on and after that date (also referred to as the "Hybrid Plan"), and Component II, the legacy pension plan where benefits were earned through June 30, 2014.

As discussed in greater detail below, at the conclusion of the 2014 fiscal year, the City "froze" Component II. The "freeze" of Component II, which was the pension plan that existed as of June 30, 2014, means that no further benefit accruals occurred after that date, and no new employees are allowed to participate as members.

DGRS exists to pay benefits to its members. Members of the System include active nonuniformed city employees, retirees, and their beneficiaries. Active members still employed with the City on and after July 1, 2014 earn service credit that entitles them to receive benefits in the future in Component I, but not in Component II, which, as noted above, has been frozen. Both the employer and municipal plan sponsor for the System, the City, and actively employed members have historically contributed to the System (the employee contributions were voluntary prior to July 1, 2014). Retirees, their beneficiaries, and disabled members are those currently receiving benefits, though the City elected in fiscal year 2015 to transition new disability claims from the benefit program administered by the System to one administered by a third-party insurance carrier.

Component I of DGRS is a newly created plan (effective July 1, 2014), with more active members earning service credit than members eligible to receive or receiving benefits. As of June 30, 2017, there were 5,117 active members, with 200 retirees and 993 terminated plan members entitled to but not yet receiving benefits.

Component II of DGRS is a relatively mature plan in that there are more members receiving current benefits than active members. As of June 30, 2017, in Component II there were 3,025 active members, with 11,834 members receiving benefits and 3,355 terminated plan members entitled to but not yet receiving benefits. On June 30, 2014, the emergency manager of the City of Detroit, Michigan issued Order #30, which froze Component II. After that date, no new employees were allowed to participate in Component II, and benefit accruals for members with respect to service rendered prior to July 1, 2014 were frozen based on the member's years of service, average final compensation, and the pension multiplier formula as of the freeze date. Employees working after July 1, 2014 are now earning service credit in the Hybrid Plan, or Component I.

By way of background, a brief review of the City's migration from the Legacy Plan to the Hybrid Plan is appropriate. On June 30, 2014, the emergency manager of the City of Detroit, Michigan issued Order #30, which froze Component II. After that date, no new employees were allowed to participate in Component II, and benefit accruals for members with respect to service rendered prior to July 1, 2014 were frozen based on the member's years of service, average final compensation, and the pension multiplier formula as of the freeze date. Employees working after July 1, 2014 are now earning service credit in the Hybrid Plan, or Component I. On July 1, 2014, the City first published the Combined Plan with the city clerk. By August 1, 2014, the City completed the payroll information systems project transitions required to allow now-mandatory employee contributions to be contributed to Component I.

On October 19, 2014, the emergency manager issued Order No. 43, which amended and restated the Combined Plan. On December 8, 2014, before leaving office, the emergency manager issued Order No. 44, which again amended and restated the Combined Plan. According to Order No. 44, the latest amendments and restatements to the Combined Plan conformed the Combined Plan terms to the requirements of the City's bankruptcy plan and made clarifying modifications. The Combined Plan is available at DGRS's website, www.rscd.org.

Combined Plan for the General Retirement System of the City of Detroit

Management's Discussion and Analysis (Continued)

In December 2014, DGRS governance was modified as part of the City's bankruptcy plan. DGRS is governed by a board of trustees (the "Board"). Although DGRS' investment management is now the ultimate responsibility of a seven-member investment committee (the "Investment Committee"), the Board maintains its role as the governing board vested with responsibility for the general administration, management, and operation of the System, with which the Investment Committee assists, pursuant to Michigan law.

The Board is composed of 10 members. Five members are elected by the active membership to serve six-year terms. A sixth member is elected by the retiree membership to serve a two-year term. A seventh member is appointed by the mayor of the City of Detroit, Michigan from the citizens of the City to serve a six-year term. The three remaining members serve *ex officio*, these members being the mayor of the City (or designee), the city treasurer, and one representative from the Detroit City Council. Expirations of terms of elected trustees are staggered, while the remaining trustees serve in accordance with their office or as a designee of an office.

The Investment Committee has five independent members appointed to initial terms with staggered expirations, which terms will all eventually become six years. Two additional members, one active and one retired, serve on the Investment Committee based on appointment by the Board. The Investment Committee will be in place through at least December 2034.

The City of Detroit, Michigan's Chapter 9 Bankruptcy Case, the Plan of Adjustment, and Implementation

In March 2013, after the City had endured years of financial difficulty, the governor appointed an emergency manager for the City pursuant to Michigan Public Act 436 of 2012 (PA 436), which is a law that includes the ability for an emergency manager to file a bankruptcy proceeding. In anticipation of that possibility, DGRS had assembled a restructuring team of professional legal, financial, actuarial, and other advisors to assist the System's on-staff professionals with meeting the unknown challenges that could arise if the City filed for bankruptcy protection. At the direction of the board of trustees, the team of DGRS on-staff and other professionals met those challenges, which ultimately revealed themselves as unprecedented in scope and implication for DGRS and its members.

On July 18, 2013, the City filed a petition in the United States Bankruptcy Court for the Eastern District of Michigan (the "Bankruptcy Court") seeking protection from its creditors under Chapter 9 of the United States Bankruptcy Code (the "Chapter 9 Case"). DGRS, one of the City's largest creditors because of its duty to collect employer contributions from the City and the City's delinquency in making required employer contributions as of fiscal year 2013, objected to the City's request for Chapter 9 relief on the basis that Article IX, Section 24 of the Michigan Constitution of 1963 prevented the City from diminishing accrued pension benefits, even in bankruptcy. On December 5, 2013, after a hearing lasting several weeks, the Bankruptcy Court entered an order determining that the City was eligible for Chapter 9 relief and holding that accrued pension benefits could be impaired in bankruptcy despite the language of the Michigan Constitution. DGRS immediately filed an appeal with the United States Court of Appeals for the Sixth Circuit.

The Bankruptcy Court also ordered DGRS and other creditors to mediate their disputes with the City, a process which gained momentum in early 2014. As a result of court-ordered mediation, DGRS supported a proposed settlement of DGRS member pension claims, which was memorialized in the City's Fourth Amended Plan for the Adjustment of Debts of the City of Detroit, filed on May 5, 2014 along with an accompanying Fourth Amended Disclosure Statement (the "Pension Settlement"). On May 12, 2014, the City issued ballots to all DGRS members as claim holders in Class 11 under the City's classification system for its creditors, seeking their approval of the Pension Settlement.

On June 11, 2014, the Board adopted a resolution supporting treatment of the DGRS Class II claim holders as part of the Pension Settlement. DGRS thereafter issued correspondence to its membership in support of the treatment of Class 11 claims. Also in June, the Michigan Legislature adopted legislation, which the governor signed, conditionally approving the State's contribution of \$194.8 million, split between DGRS and the Police and Fire Retirement System of the City of Detroit, to support the resolution of the Chapter 9 Case.

Combined Plan for the General Retirement System of the City of Detroit

Management's Discussion and Analysis (Continued)

In a balloting process that closed on July 11, 2014, the pension claim holders, including DGRS members, were deemed by the Bankruptcy Court to have supported the City's treatment of pension claims in the Pension Settlement. In order to facilitate the orderly flow of information on a timely basis to DGRS members concerning their individual pension claims against the City, the System and its professionals provided material logistical support to the City in connection with the balloting process, without which the City would not have met the deadlines required by the Bankruptcy Court.

Meanwhile, in June 2014, separate and apart from the Chapter 9 Case, the emergency manager directed the City and its professional pension advisors to undertake efforts to prepare documentation and emergency manager orders necessary to freeze the Legacy Plan as of June 30, 2014 and establish the Hybrid Plan effective July 1, 2014. As alluded to earlier, the emergency manager effectuated this action pursuant to authority under PA 436, separate and apart from those pension changes requiring Bankruptcy Court approval. The System and its professionals provided timely cooperation to the City in this effort, without which the City could not have accomplished the active pension transitions it deemed necessary.

In the Chapter 9 Case, the Pension Settlement's terms were carried forward to the Eighth Amended Plan for Adjustment of Debts of the City of Detroit (the "Plan of Adjustment"), filed with the Bankruptcy Court on October 22, 2014. In November 2014, after a confirmation hearing lasting several weeks, the Bankruptcy Court confirmed the Plan of Adjustment, which became effective December 10, 2014. The Pension Settlement, as part of the Plan of Adjustment, compromised pension claims and provided funding support for legacy pension benefit obligations under DGRS Component II from the State of Michigan, the Detroit Institute of Arts, and certain foundation donors.

Those governance changes included establishment of the Investment Committee effective December 10, 2014, which officially marked the beginning of implementation of the Plan of Adjustment, though DGRS had for months already undertaken contingency planning for all of the pension adjustments required by the Pension Settlement. The governance changes also included periodic and interim special reporting requirements for the Board and the Investment Committee to the City, the Foundation for Detroit's Future, and the State of Michigan.

For DGRS, with respect to Component II benefit adjustments, the Pension Settlement (for which benefit levels were and are contingent on other factors, including receipt of outside contributions), provided for a loss of cost of living adjustments, or "escalators" (COLAs), paid after July 1, 2014; a 4.5 percent cut to the remaining accrued pension benefit after the COLA loss; and, for DGRS members who participated in the Annuity Savings Fund plan between 2003 and 2013, subject to certain caps, recoupment of certain amounts of interest deemed by the City to be in "excess" of that which should have been credited to individual ASF accounts, referred to as "ASF Recoupment." ASF Recoupment, like other provisions of the Pension Settlement, was not optional. Most members will pay their ASF Recoupment by a monthly deduction from their future pension benefits for a set term of months, including interest calculated at 6.75 percent. All members were offered a lump-sum cash option, which was limited in the aggregate to \$30 million in member recoupment. The Plan of Adjustment also included the possibility of restoration of certain pension benefit cuts, based on a program for the most financially vulnerable pensioners and beneficiaries through the State of Michigan Treasury Department, as well as a new feature of Component II allowing restoration depending on the System's funding level over time.

Other components of implementation of the Plan of Adjustment proceeded between December 2014 and March 2015 and included dismissal of related litigation proceedings, including DGRS' appeal of the Bankruptcy Court's eligibility determination in the United States Court of Appeals for the Sixth Circuit. The process of implementing the Plan of Adjustment is expected to continue through 2017 and beyond, with monitoring, compliance, and other activity by DGRS, its board of trustees, and its Investment Committee. On December 1, 2014, DGRS provided its retirees and beneficiary members with applications for the Income Stabilization Program (the "ISF Program") established as part of the State Contribution Agreement, another facet of the Pension Settlement. The ISF Program, supported by city funds arising from an unlimited tax general obligation bonds settlement, is intended to ensure that the most financially vulnerable retirees and beneficiaries do not fall below the poverty line as a result of bankruptcy-related pension changes. The ISF Program was implemented on March 1, 2015, along with other bankruptcy-related pension benefit changes.

Combined Plan for the General Retirement System of the City of Detroit

Management's Discussion and Analysis (Continued)

DGRS, with considerable contributions from its executive staff, management, and information technology professionals, in addition to outside professional advisors, successfully implemented the vast majority of pension adjustment required by the Plan of Adjustment in a timely fashion on March 1, 2015.

As of that date, less than three months after the effective date of the Plan of Adjustment, DGRS successfully implemented the vast majority of benefit changes required by the plan, including the ISF Program coordinated in conjunction with the Michigan Department of Treasury. DGRS continues to implement the Plan of Adjustment with ongoing compliance and additional reporting requirements by the Board and the Investment Committee and annual review of benefit levels and essentially provides for a 40-year plan to close the DGRS Legacy Component II underfunded liability. ASF Recoupment, in particular, is a notable facet of the Plan of Adjustment that will continue to be implemented as members apply for Component II pension benefits over time. DGRS met its obligations in fiscal year 2017 concerning implementation of the Plan of Adjustment and continued compliance in fiscal year 2018.

Contributions to the System

Historically, both the City and active employees have made regular contributions to the System, though employee contributions were optional in Component II, essentially before July 1, 2014, though there was a period of transition due to the City's aging information technology infrastructure which meant that voluntary employee contributions to Component II continued through July 2014, and mandatory employee contributions to Component I from active payroll were implemented as of August 1, 2014.

Basic pension and disability benefits in Component II had been funded through employer contributions plus investment earnings on those contributions, but employee contributions are mandatory in Component I. The required employer contributions had been determined by the System's actuaries using the entry age normal cost method, which is still the case. Assumptions used by the actuaries are subject to experience testing every five years, which is also still the case. Effective December 10, 2014, as part of the resolution of the Chapter 9 Case, the investment return assumption and discount rate used by the System's actuary for purposes of determining the System's assets and liabilities for funding purposes was fixed at 6.75 percent through the period ending June 30, 2023. This applies to both Component I and Component II.

Prior to the filing of the Chapter 9 Case, the City's General Fund stopped making payments related to unsecured funded debt and legacy liabilities, including payments to the System for Component II on behalf of most of DGRS' members. Notably, for some segments of DGRS' member population, such as those employees and retirees from the Detroit Library Commission, the Detroit Water and Sewerage Department, and the COBO Authority, employer contributions continued to be remitted to DGRS even after the Chapter 9 Case was filed. These situations led to disputes in the Bankruptcy Court, which were eventually resolved by the Plan of Adjustment.

When the City filed the Chapter 9 Case, obligations owed by the City became potentially subject to compromise in the bankruptcy process. The pension claims of DGRS members were determined by the Bankruptcy Court to be included as unsecured obligations. The City's last General Fund employer contribution before the Chapter 9 Case on behalf of employee and retiree groups not listed above was made on November 30, 2012. During fiscal year 2014, the City did not make any contributions to the System from the General Fund, but the Library, DWSD, and COBO Authority did remit payments. In the Chapter 9 Case, DGRS filed a claim against the City for \$66.6 million as of July 18, 2013, reflecting past due employer contributions with interest for fiscal years 2012 and 2013. This amount did not reflect the full unfunded actuarial accrued liability of the System.

Combined Plan for the General Retirement System of the City of Detroit

Management's Discussion and Analysis (Continued)

Going forward, the obligations for contributions to support Component II of the System through 2023 are determined as fixed amounts by the provisions in the Plan of Adjustment. Pursuant to the Plan of Adjustment, the System is expected to receive contributions of a total of \$718.6 million through fiscal year 2023. The Plan of Adjustment calls for the System to receive \$98.8 million from the State of Michigan; \$428.5 million from DWSD; \$31.7 million from UTGO settlement proceeds; the present value equivalent or actual contribution of \$50 million from the DIA and its foundation donors during a 10-year period ending in 2024; the present value equivalent or actual contribution of \$18.3 million per year from 2025 through 2034 from certain foundations; and \$114.6 million from the other City-related employer contribution sources, such as the General Fund, Detroit Library Commission, and COBO Authority, over a 10-year period covering fiscal year 2014 through fiscal year 2023. After 2023, the City, and various other employer constituents such as the Library, DWSD, and COBO Authority, will retain responsibility for the full funding obligations of Component II of the System, consistent with Michigan law.

The Plan of Adjustment allows for certain of the Legacy Plan funding obligations to DPFRS through 2034 to be met by prepayment of the present value equivalent using a discount rate of 6.75 percent. In fiscal year ended June 30, 2016, a portion of the DIA obligation to make annual \$5 million contributions over 10 years ending in 2034 was prepaid. This present value prepayment resulted in DGRS receiving \$32,511,827 on June 30, 2016 from the DIA, which represents the present value, using a 6.75 percent discount rate, of \$4,625,000 per year for the nine years remaining on that annual \$5,000,000 commitment ending in 2024. Pursuant to the Plan of Adjustment, DGRS still expects to receive the equivalent or actual remaining \$375,000 per year from the DIA for that 10-year period ending in 2024 and did also receive, on June 30, 2016, the amount of \$375,000 in satisfaction of the fiscal year 2016 obligation from the DIA that was not prepaid.

In addition, the City was to remit payments on the UTGO Stub Bonds to the Combined Plan through 2028. In fiscal year 2017, the City of Detroit, Michigan refunded all of its outstanding UTGO Stub Bonds. Upon refunding, the payments to the Combined Plan were accelerated, with a majority of the outstanding balance paid to the Combined Plan in fiscal year 2017; as a result, the Combined Plan received approximately \$7.7 million in the ISP and \$18.3 million in Component II related to this transaction.

With respect to Component I, the Hybrid Plan, nonuniformed employees who are members of DGRS are now required to make mandatory contributions of 4 percent of pay toward their defined benefit pensions earned with the City, and the City contributes an additional 5 percent of pay. The City no longer counts overtime in the calculation of its employer contribution.

The City is also setting aside an additional 0.75 percent of payroll to meet the premium payments required for the disability insurance established with a third-party carrier. DGRS is not administering those third-party carrier-managed disability benefits.

On June 30, 2018, the City met its obligation for Component I employer contributions by contributing \$14,673,644 to DGRS.

Impact of City of Detroit, Michigan Collective Bargaining and Bankruptcy Pension Adjustments

Pursuant to Emergency Manager Order No. 30, the existing Component II defined contribution plan and defined benefit plan were frozen, preventing any future accruals or new members in Component II effective June 30, 2014.

The following changes became effective July 1, 2014, with the advent of Component I:

- The Hybrid Plan defined benefit plan commenced with mandatory contributions of 4 percent of base pay. The City contributes 5 percent of employee base pay, not including overtime.
- A new Hybrid Plan defined contribution plan for the Annuity Savings Fund. Employees may make voluntary Annuity Savings Fund contributions up to 7 percent of total after-tax pay. Interest will be credited at the actual net investment rate of return of DGRS, but will, in no event, be lower than 0 percent or higher than 5.25 percent.
- The Hybrid Plan provides that future duty disability and nonduty disability retirement allowances for members who become disabled after July 1, 2014 move to a commercial insurance program through the City.

Combined Plan for the General Retirement System of the City of Detroit

Management's Discussion and Analysis (Continued)

Benefit Payments

The System exists to pay the benefits that its members have earned pursuant to benefits promised by the City, subject to the Chapter 9 Case benefit adjustments going forward in the Legacy Plan and the new promises in the Hybrid Plan. Benefits are paid monthly. In fiscal year 2018, DGRS paid out \$256.5 million in benefits, consisting of \$240.4 million in benefits to retirees and beneficiaries plus \$16.1 million in refunds of Annuity Savings Fund balances. The benefits and refunds represent approximately 12.5 percent of the net position of the System as of June 30, 2018. Employer, foundation, and employee contributions were \$97.2 million, or 4.7 percent of the net position of the System. The excess of benefits over contributions of \$143.2 million is funded through investment income. The public capital markets represent the primary source of opportunities to earn investment income.

Asset Allocation

The Board and Investment Committee of DGRS believe that the principal determinant of total fund investment performance over long periods of time is asset allocation. The DGRS' asset allocation is built upon the foundation that the obligations of the System to pay the benefits promised to its members are very long-term obligations. Accordingly, the Board and Investment Committee must make investment decisions that it believes will be the most beneficial to the System over many years, not just one or two years.

DGRS has established asset allocation policies that are expected to deliver investment income over a very long period of time to satisfy the obligations to pay the benefits promised to the members of the System. The following is a summary of the DGRS asset allocation policy as of June 30, 2018:

Asset Class	Target Allocation
Global equity	43.00 %
Global fixed income	19.00
Real estate/Real assets	15.00
Private equity	8.00
Hedge funds	5.00
Risk parity	5.00
Diversifying strategies	4.00
Cash	1.00

DGRS asset allocation policies comply with Michigan law.

Investment Results

DGRS calculates investment results on a time-weighted Global Investment Performance Standard (GIPS) basis, unless explicitly stated otherwise. All returns for periods of one year or greater have been annualized.

Total Fund Composite

DGRS total fund composite return for the year was 6.5 percent, net of fees and expenses using a time-weighted methodology. The fund returned 7.2 and 7.7 percent for its three-year and five-year annualized returns, respectively, net of fees and expenses.

DGRS' well-diversified global portfolio performed well across most asset classes. During fiscal year 2018, volatility in the equity markets remained subdued, and the fund's performance was generated by a well-diversified portfolio largely driven by robust global equity returns. Domestic equities led the way with a total return in excess of 14 percent for the fiscal year.

As part of the resolution of the City of Detroit, Michigan's Chapter 9 Bankruptcy Case, the discount rate assumption used to meet current and future benefit obligations was set at 6.75 percent through the period ending June 30, 2023. This discount rate assumption provided in the Chapter 9 Case does not purport to establish an investment return assumption or discount rate for purposes of, or in accordance with, generally accepted accounting principles. Although the fund's return for this year fell below this assumption, the fund's longer-term return expectation, which this assumption is intended to characterize, still exceeds this assumption.

Combined Plan for the General Retirement System of the City of Detroit

Management's Discussion and Analysis (Continued)

Total plan returns, net of fees and expenses, for the recent prior fiscal years ended June 30 are shown below:

2017	14.1%
2016	1.4%
2015	2.6%
2014	14.5%
2013	11.7%
2012	0.1%
2011	19.7%

Money-weighted Rate of Return

GASB Statement No. 67 requires the disclosure of the annual money-weighted rate of return. A money-weighted rate of return (as opposed to the time-weighted rate of return discussed in the previous section) considers both the size and timing of cash flows over the course of the year to determine an internal rate of return (sometimes referred to as IRR). This return is calculated net of expenses and uses cash flows determined on a monthly basis. The DGRS money-weighted rate of return for the year using end-of-the-month cash flows was 6.7 percent.

Requests for Further Information

This financial report is intended to provide a general overview of the System's finances and investment results in relation to actuarial projections. It shows the System's accountability for the money it receives from employer and employee contributions. If you have questions about this report or need additional information, we welcome you to contact the System's office or visit its website at www.rscd.org.

Combined Plan for the General Retirement System of the City of Detroit

Statement of Fiduciary Net Position

June 30, 2018

	Component II Plan (Legacy)		Component I Plan (Hybrid)		Total Combined Plan
	Defined Benefit Fund	Income Stabilization Fund	Defined Benefit Fund		
Assets					
Cash and cash equivalents (Note 3)	\$ 179,460,708	\$ 2,242,414	\$ 26,996,675	\$ 208,699,797	
Investments: (Notes 3 and 4)					
Global equities	934,159,082	5,861,697	36,928,690	976,949,469	
Global fixed income	58,784,379	368,863	2,323,833	61,477,075	
Real estate	302,973,028	1,901,108	11,976,970	316,851,106	
Private equity	90,124,026	565,513	3,562,736	94,252,275	
Diversifying strategies	282,793,072	1,774,481	11,179,228	295,746,781	
Receivables:					
Investment income	736,792	4,623	29,126	770,541	
Contribution (Note 1)	-	-	2,981,384	2,981,384	
Other receivables	203,295	-	4,503	207,798	
ASF recoupment receivable (Note 1)	104,897,544	-	-	104,897,544	
Notes receivable from participants	4,065,350	-	-	4,065,350	
Receivables from investment sales	1,973,216	12,381	78,004	2,063,601	
Cash and investments held as collateral for securities lending: (Note 3)					
Asset-backed securities	9,448,009	59,285	373,494	9,880,788	
Repurchase agreements	29,769,524	186,799	1,176,833	31,133,156	
U.S. corporate floating rate	41,327,035	259,320	1,633,719	43,220,074	
Capital assets - Net (Note 1)	550,317	-	300,441	850,758	
Total assets	2,041,265,377	13,236,484	99,545,636	2,154,047,497	
Liabilities					
Accrued expenses	4,676,119	5,319	169,205	4,850,643	
Payables for investment purchases	14,989,883	94,059	592,572	15,676,514	
Due to the City of Detroit, Michigan	1,381,128	-	-	1,381,128	
Amounts due to broker under securities lending agreements (Note 3)	79,587,805	499,401	3,146,224	83,233,430	
Other liabilities	6,800	-	5,309	12,109	
Total liabilities	100,641,735	598,779	3,913,310	105,153,824	
Net Position - Restricted for pensions	\$ 1,940,623,642	\$ 12,637,705	\$ 95,632,326	\$ 2,048,893,673	

Combined Plan for the General Retirement System of the City of Detroit

Statement of Changes in Fiduciary Net Position

Year Ended June 30, 2018

(with comparative totals for the year ended June 30, 2017)

	Component II Plan (Legacy)		Component I Plan (Hybrid)		Total Combined Plan 2018	2017
	Defined Benefit Fund	Income Stabilization Fund	Defined Benefit Fund			
Additions						
Investment income:						
Interest and dividends	\$ 29,159,206	\$ 174,818	\$ 1,068,680	\$ 30,402,704	\$ 35,058,862	
Net increase in fair value of investments	134,609,725	1,137,884	7,693,500	143,441,109	190,771,837	
Investment-related expenses	(8,801,199)	(52,919)	(333,313)	(9,187,431)	(9,944,500)	
Net investment income	154,967,732	1,259,783	8,428,867	164,656,382	215,886,199	
Securities lending income:						
Interest and dividends	329,774	1,945	11,753	343,472	482,244	
Net unrealized gain on collateralized securities	125,685	789	4,969	131,443	62,547	
Net securities lending income	455,459	2,734	16,722	474,915	544,791	
Contributions:						
Employer	67,900,000	88,494	14,673,644	82,662,138	109,888,268	
Employee	-	-	14,140,618	14,140,618	12,795,405	
Foundation (Note 2)	375,000	-	-	375,000	375,000	
Total contributions	68,275,000	88,494	28,814,262	97,177,756	123,058,673	
ASF recoupment interest (Note 1)	6,622,392	-	-	6,622,392	7,374,918	
Other income	1,236,655	1,737	12,436	1,250,828	1,021,594	
Total additions - Net	231,557,238	1,352,748	37,272,287	270,182,273	347,886,175	
Deductions						
Retirees' pension and annuity benefits	239,301,939	627,758	399,127	240,328,824	243,895,303	
Member refunds and withdrawals	14,140,693	-	1,991,465	16,132,158	26,158,052	
General and administrative expenses	3,313,415	-	2,171,693	5,485,108	8,670,222	
ASF recoupment write-off	906,524	-	-	906,524	-	
Total deductions	257,662,571	627,758	4,562,285	262,852,614	278,723,577	
Net (Decrease) Increase in Net Position Held in Trust	(26,105,333)	724,990	32,710,002	7,329,659	69,162,598	
Net Position Restricted for Pensions - Beginning of year	1,966,728,975	11,912,715	62,922,324	2,041,564,014	1,972,401,416	
Net Position Restricted for Pensions - End of year	<u>\$ 1,940,623,642</u>	<u>\$ 12,637,705</u>	<u>\$ 95,632,326</u>	<u>\$ 2,048,893,673</u>	<u>\$ 2,041,564,014</u>	

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 1 - Significant Accounting Policies

Reporting Entity

The City of Detroit, Michigan (the "City") sponsors the Combined Plan for the General Retirement System of the City of Detroit (the "Combined Plan"), which consists of two single-employer retirement plans, as described below.

Component II

This is the legacy plan that is the original defined benefit plan, which includes a defined benefit component and a defined contribution component. Component II generally applies to benefits accrued by members prior to July 1, 2014. On June 30, 2014, as a result of negotiations between the City and the public employee unions, the existing plan benefit formulas were frozen, and no employees were allowed to earn benefits under the existing plan. The emergency manager issued Order #30 (General Retirement System of the City of Detroit) on June 30, 2014, which put these changes into effect. Except as specifically provided in the Combined Plan, benefits provided under Component II are frozen effective June 30, 2014.

Component II also includes the Income Stabilization Fund. The fund, which is part of Component II only and established as a special plan of adjustment provision, was established for the sole purpose of paying the Income Stabilization Benefits and Income Stabilization Benefits Plus to Eligible Pensioners. A portion of the funds received by the Combined Plan from UTGO Bond Tax Proceeds is credited to the Income Stabilization Fund. The allocation is based on the "Aggregate Payments to Plan Assignees" included in the Eighth Amended Plan for the Adjustment of Debts of the City of Detroit (the "POA"). After 2022, the Investment Committee may recommend to the board that a portion or all of the assets that exceed income stabilization benefits (including Income Stabilization Benefits Plus) to be paid in the future be used to fund regular pension payments.

Nonemployer Contributing Entity within Component II

On September 9, 2014, a memorandum of understanding (the "MOU") was entered into by the emergency manager and mayor of the City of Detroit, Michigan; county executive of each of the charter counties of Wayne and Macomb, Michigan; the County of Oakland, Michigan; and the governor of the State of Michigan. The purpose of the MOU was to establish a framework for the creation of a regional authority (known as Great Lakes Water Authority - GLWA) pursuant to Act 233 of 1955 to operate, control, and improve the regional assets of the water supply system and the sewage disposal system owned by the City.

Pursuant to the MOU, the City of Detroit, Michigan and GLWA entered into two lease agreements: the Regional Water Supply System Lease dated June 12, 2015 and the Regional Sewage Supply System Lease dated June 12, 2015. Under the provisions of the lease agreements, GLWA leases the regional assets of the City for a period of at least 40 years.

Pursuant to the lease agreements, on December 1, 2015, a tri-party agreement between the City of Detroit, Michigan; General Retirement System of the City of Detroit (GRS); and GLWA was signed. Per the POA and Section 4.3 of the lease agreements, GLWA is required to pay a portion of the pension obligation that will be allocable to the Detroit Water and Sewer Department (DWSD). The purpose of the pension reporting agreement is to set forth in determining the funding status for the DWSD pension pool and for GRS to agree to provide GLWA with certain actuarial and other reports to enable GLWA to properly manage and pay its portion of the pension obligation that is allocable to DWSD.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 1 - Significant Accounting Policies (Continued)

Effective January 1, 2016, GLWA was launched. Accordingly, the prior DWSD division was split into two - one representing the ongoing DWSD department, now referenced as DWSD-Retail (DWSD-R), and another to represent the Great Lakes Water Authority (GLWA). In accordance with the pension reporting agreement, the net position and liabilities of DWSD were allocated to DWSD-R and GLWA in accordance with written directions received from DWSD-R and GLWA. Per written directions, GLWA is to be allocated 70.3 percent of the net position and liabilities of DWSD. Because GLWA has no employees or retirees in the Combined Plan, GLWA is considered a nonemployer contributing entity in accordance with GASB Statement No. 67.

The financial statements of the Combined Plan reflect the net position and pension liabilities of the plan as a whole, which includes the portion allocable to GLWA. While the allocation of the net pension liability as of June 30, 2018 has not yet been finalized, GLWA's portion of the total Component II net pension liability of \$944,129,251 at June 30, 2017 was \$178,961,908, with the remainder allocable to the City of Detroit, Michigan and related entities.

Component I

As of July 1, 2014, all current and future employees participate in the new hybrid pension plan, or Component I. Active city employees who participated in the legacy plan will receive the benefits they have earned under the plan through June 30, 2014 plus an additional benefit under the new hybrid plan formula, assuming all vesting requirements are met.

Combined Plan Reporting

The Combined Plan is a separate and independent trust qualified under applicable provisions of the Internal Revenue Code; it is an independent entity (separate and distinct from the employer/plan sponsor) as required by (1) state law and (2) Internal Revenue Code provisions setting forth qualified plan status. The trustees of the Combined Plan have a fiduciary obligation and legal liability for any violations of fiduciary duties as independent trustees. The Combined Plan provides retirement, disability, and survivor benefits to plan members and beneficiaries.

The financial statements for the Combined Plan are also reported in the financial statements of the City of Detroit, Michigan as a pension trust fund. The assets of the pension trust funds include no securities or loans to the City or other related parties.

These financial statements include comparative columns for 2017. Such information is not meant to be a complete presentation in conformity with accounting principles generally accepted in the United States of America. Accordingly, such information should be read in conjunction with the plan's financial statements for the year ended June 30, 2017.

Plan Sponsor Financial Condition - Impact on the Combined Plan

In the past, the City of Detroit, Michigan (the "plan sponsor") has experienced significant financial difficulty and liquidity concerns. As of June 2013, the City had defaulted on approximately \$36 million of pension contributions due to the Combined Plan. During fiscal year 2014, the City did not pay any employer contributions into the Combined Plan, despite the fact that there were actuarially required contributions.

In February 2013, the governor appointed a financial review team, which determined that a local government financial emergency existed in the City. This culminated in bankruptcy proceedings, which the City initiated in July 2013. Part of the federal court's ruling in December 2013 indicated that the bankruptcy status usurped whatever protections may be offered governmental pensions under the Michigan Constitution. On December 10, 2014, the City exited from bankruptcy through confirmation of the Eighth Amended Plan for the Adjustment of Debts of the City of Detroit (the "POA"). The POA specifies certain provisions pertinent to the Legacy and Hybrid plans, including contributions and benefits.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 1 - Significant Accounting Policies (Continued)

In fiscal year 2018, the contributions that were received by the Combined Plan were made in accordance with the provisions of the POA. See Note 10 for significant changes that were implemented by the Combined Plan under the POA.

Summary of Significant Accounting Policies

The following is a summary of the significant accounting policies used by the Combined Plan for the General Retirement System of the City of Detroit.

Accounting and Reporting Principles

The Combined Plan follows accounting principles generally accepted in the United States of America (GAAP) as applicable to governmental units. Accounting and financial reporting pronouncements are promulgated by the Governmental Accounting Standards Board.

Basis of Accounting

The Combined Plan uses the economic resources measurement focus and the full accrual basis of accounting. Revenue is recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of related cash flows. Plan member contributions are recognized in the period in which the contributions are due. Employer contributions are recognized when due pursuant to legal requirements. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan.

Specific Balances and Transactions

Cash and Cash Equivalents

The Combined Plan considers cash on hand, demand deposits, and short-term investments with an original maturity of three months or less when purchased to be cash equivalents.

Investments

Investments are reported at fair value or estimated fair value. Short-term investments are reported at cost, which approximates fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Mortgages are valued on the basis of future principal and interest payments. The fair value of real estate investments is based on periodic appraisals, as well as the judgment of independent real estate advisors and management. Investments that do not have an established market value are reported at estimated fair value as determined by the Combined Plan's management.

Approximately \$81,000,000 or 4 percent of the Combined Plan's net position as of June 30, 2018 does not have a readily determinable market value and has been estimated by management.

Investments for which market quotations are readily available are generally priced by the custodian using nationally recognized pricing services and practices. For investments that do not have readily observable market prices, including but not limited to private equity, public and private real estate, alternatives, and direct loans, management's estimate of their fair value is based on information provided by investment managers, general partners, real estate advisors, and other means. These sources are held to a standard of reasonable care in verifying that the valuations presented reasonably reflect the underlying fair value of the investments. A variety of factors is considered in the valuation process, including the nature of the investment, local market conditions, trading values on public exchanges for comparable investments, and current and projected operating performance. However, due to the inherent uncertainty and the degree of judgment involved in determining fair value for such investments, the values reflected in the financial statements may differ significantly from values that would have been used had a readily determinable market value for the investments existed, and the difference could be material.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 1 - Significant Accounting Policies (Continued)

Contributions Receivable

At June 30, 2018, there was \$2,981,384 in employer contributions receivable. This amount relates to fiscal year 2018 Component I contributions and was paid in July 2018.

As a result of the Plan of Adjustment, payments on the UTGO Stub Bonds were assigned to the Defined Benefit and Income Stabilization Fund of Component II of the Combined Plan. The City was to remit payments on the UTGO Stub Bonds to the Combined Plan through 2028. In fiscal year 2017, the City of Detroit, Michigan refunded all of its outstanding UTGO Stub Bonds. Upon refunding, the payments to the Combined Plan were accelerated, with approximately \$7.7 million (ISF) and \$18.3 million (Component II) received by the Combined Plan in fiscal year 2017.

The remaining balance owed to the Combined Plan, excluding interest, was \$4,250,318 for the Defined Benefit Fund and \$1,793,258 for the Income Stabilization Fund. This amount, which had been recognized as part of employer contributions during the year ended June 30, 2017, was remitted by an escrow agent to the Combined Plan during the year ended June 30, 2018.

ASF Recoupment Receivable - Component II (Legacy)

For members who elected to make employee contributions into the defined contributions-style program, referred to as the annuity saving fund (ASF), between July 1, 2003 and June 30, 2013, the POA called for recoupment of amounts that the City calculated were "excess interest" credited to individual ASF accounts. In 2011, the City Council adopted an ordinance that limited ASF interest credits to the plan's net investment return, with a cap of 7.9 percent and a floor of 0 percent. The POA calculation of "excess interest" applies the interest formula in the 2011 Ordinance to the July 1, 2003 - June 30, 2013 recoupment period, with a 20 percent cap on the highest balance in this given period. The recoupment amount is also capped at 15.5 percent of the monthly pension check. The City offered both a limited lump sum or monthly payment option. Repayment of these excess interest amounts is not optional. As of June 30, 2018, the Combined Plan has approximately \$104.9 million to be collected. The receivable will be collected, with 6.75 percent interest, as a reduction to monthly pension benefits for those with recoupment balances outstanding.

Receivable/Payable from Investment Sales/Purchases

The Combined Plan liquidated investments prior to year end and reported a receivable from investment sales at June 30, 2018 in the amount of \$2,063,601. The proceeds from the sales were received subsequent to year end. In addition, the Combined Plan purchased investments prior to year end and reported a payable from investment purchases at June 30, 2018 in the amount of \$15,676,514. This amount was paid subsequent to year end.

Notes Receivable from Participants

In Component II (Legacy), any active general employee who is or has been a participant in the 1973 defined contribution plan (annuity savings fund) may be eligible for the employee loan program. The minimum amount of the loan was established at \$1,000. The maximum loan is the lesser of 50 percent of the member's account balance in the annuity saving fund or \$10,000. Members can borrow as either a general purpose loan payable in one to five years or a residential loan payable in 1 to 15 years. A member can have only two outstanding loans. The balance of these loans for the year ended June 30, 2018 was \$4,065,350. The balance is measured at the unpaid principal balance plus any accrued but unpaid interest. Participant notes receivable are written off when deemed uncollectible.

Although Component I (Hybrid) allows participant loans, there are none outstanding at June 30, 2018.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 1 - Significant Accounting Policies (Continued)

Capital Assets

Capital assets for the Combined Plan include software, office equipment, and furniture. Depreciation expense is calculated by allocating the net cost of the assets over their estimated useful lives.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of additions and deductions during the reporting period. Actual results could differ from those estimates.

Note 2 - Pension Plan Description

Component II (Legacy Plan) and Component I (Hybrid Plan)

Plan Administration

The Combined Plan's governance was modified in December 2014 as part of the City's bankruptcy plan. The Combined Plan's board of trustees and Investment Committee administer the Combined Plan for the General Retirement System of the City of Detroit Pension Plan - a single-employer defined benefit and defined contribution plan that provides retirement benefits, as well as survivor and disability benefits, for plan members and beneficiaries. Plan members include active employees, retirees, and beneficiaries from various departments within the City of Detroit, Michigan. Benefit terms have been established by contractual agreements between the Combined Plan and the employees' collective bargaining unit, as modified by the POA. Future amendments are subject to the same process. However, pursuant to the POA, pension benefit terms presently expressed in the Combined Plan are not subject to amendment before June 30, 2023, unless an amendment is required to maintain the tax-qualified status of the Combined Plan. The obligation to contribute to and maintain the Combined Plan was established by the City Charter and negotiations with the employees' collective bargaining units.

The board is composed of 10 members. Five members of the board are elected by the active membership to serve six-year terms. One member is elected by the retiree membership to serve a two-year term. One member is appointed by the mayor of the City of Detroit, Michigan from the citizens of the City to serve a six-year term. Three members serve ex-officio, these members being the mayor of the City (or designee), the city treasurer, and one representative from the Detroit City Council. Expirations of terms of elected trustees are staggered.

The Investment Committee has five independent members appointed to initial terms with staggered expirations, which terms will all eventually become six years. Two additional members, two active members, and two retired members serve on the Investment Committee based on appointment by the board. The Investment Committee will be in place through at least December 2034.

Benefits Provided

The Combined Plan provides retirement, disability, and death benefits. Benefit terms had been established by negotiations between the City Council and the employees' collective bargaining unit and subject to amendment by the City Council. Further changes to benefits were provided for under the POA.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 2 - Pension Plan Description (Continued)

Employees Covered by Benefit Terms

The following members were covered by the benefit terms:

	Component II (Legacy Plan)	Component I (Hybrid Plan)
Date of member count	June 30, 2017	June 30, 2017
Inactive plan members or beneficiaries currently receiving benefits	11,834	200
Inactive plan members entitled to but not yet receiving benefits	3,355	933
Active plan members	3,025	5,117
 Total employees covered by the plan	 18,214	 6,250

As of June 30, 2014, Component II has been frozen. As of that date, no new participants were allowed to enter the plan, and no new benefit accruals were allowed for existing participants.

After July 1, 2014, active members will retain existing service credit in the Legacy Plan, but will only earn existing service credit in the new Hybrid Plan.

Contributions

Article 9, Section 24 of the State of Michigan Constitution requires that financial benefits arising on account of employee service rendered in each year be funded during that year. Accordingly, in the past, the Combined Plan had retained an independent actuary to determine the annual contribution. The actuarially determined rate was the estimated amount necessary to finance the costs of benefits earned by plan members during the year, with an additional amount to finance any unfunded accrued liability. However, until 2024, contributions are based on specific provisions in accordance with the Plan of Adjustment.

The City filed for bankruptcy in 2013 and on November 12, 2014, the United States Bankruptcy Court for the Eastern District of Michigan entered an order confirming the Eighth Amended Plan for the Adjustment of Debts of the City of Detroit. Going forward, the obligation for the City to contribute to the Combined Plan will be determined by the provisions in the Eighth Amended Plan for the Adjustment of Debts of the City of Detroit. Please read Note 10 for further information.

Employer and Nonemployer Contributing Entity Contributions

Component II

For Component II, during fiscal year 2018, employer contributions are not actuarially determined, but are determined by the provisions of the POA detailed under Exhibit II.B.3.r.ii.A of the POA. Included within contributions for fiscal year 2018 in Component II are contributions from the Foundation for Detroit's Future (the "Foundation") in the amount of \$375,000 and approximately \$67.9 million of contributions from the City, City-related entities, and GLWA. Employer contributions were also made into the Income Stabilization Fund for \$88,494 from the UTGO Stub Bond proceeds.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 2 - Pension Plan Description (Continued)

Component I

For Component I, during fiscal year 2018, employer contributions are not actuarially determined, but are determined by the provisions of the Combined Plan detailed under Section 9.3 of Component I. Per Section 9.3, commencing on July 1, 2014 and ending on June 30, 2023, the City is required to contribute 5 percent of compensation of active members. A portion of the employer's annual contribution for each plan year, as determined by the City, shall be credited to the Rate Stabilization Fund reserve with the remainder allocated to the Pension Accumulation Fund reserve. During fiscal year 2018, the City and related entities contributed \$14,673,644 into the Hybrid Plan. Beginning in 2024, the employer contributions will be actuarially determined based on the amount necessary to fund the plan on an actuarial basis.

Because there were no actuarially determined contributions for Component I, there is no required schedule of city contributions included within these financial statements.

Employee Contributions

Component II

Contribution requirements of plan members were historically established and amended by the board of trustees in accordance with the City Charter, union contracts, and plan provisions. For the year ended June 30, 2018, there were no employee contributions into Component II, as the plan was frozen as of June 30, 2014.

Component I

Contribution requirements of plan members are established in Sections 9.3 and 10.1 of Component I of the Combined Plan. For the year ended June 30, 2018, the required active member contribution rate for employees was 4.0 percent of annual pay. Additionally, employees can make voluntary contributions of 3 percent, 5 percent, or 7 percent of annual pay. During fiscal year 2018, the plan received mandatory and voluntary employee contributions of \$14,140,618.

Fiscal Responsibility Provision

To safeguard the long-term actuarial and financial integrity of the Combined Plan, in the event the funding level of Component I projected over a five-year period falls below 100 percent, certain remedial actions are required, as set forth in Section 9.5 of Component I of the Combined Plan, including elimination of COLA, transfers from the Rate Stabilization Fund reserve to the Pension Accumulation Fund reserve, and increases in mandatory employee contributions from 4 percent to 5 percent.

In the event the funding level of Component I is projected to fall below 80 percent, additional remedial actions are required, including further increasing the mandatory employee contributions to 6 percent and the potential for reducing the retirement allowance.

Note 3 - Deposits and Investments

The Combined Plan is authorized by Michigan Public Act 314 of 1965, as amended, to invest in certain reverse repurchase agreements, stocks, diversified investment companies, annuity investment contracts, real estate leased to public entities, mortgages, real estate, debt or equity of certain small businesses, certain state and local government obligations, and certain other specified investment vehicles.

The investment policy adopted by the Board is in accordance with Public Act 196 of 1997 and has authorized investments according to Michigan Public Act 314 of 1965, as amended. The Combined Plan's deposits and investment policies are in accordance with statutory authority.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 3 - Deposits and Investments (Continued)

The Combined Plan invests in various investment securities. Investment securities are exposed to various risks, such as interest rate, market, credit risks, and overall market volatility. Due to the level of risk associated with certain investment securities, it is at least reasonably possible that changes in the values of investment securities will occur in the near term and such changes could materially affect the amounts reported on the statement of changes in fiduciary net position.

The Combined Plan's cash and investments are subject to several types of risk, which are examined in more detail below:

Custodial Credit Risk of Bank Deposits

Custodial credit risk is the risk that in the event of a bank failure, the Combined Plan's deposits may not be returned to it. The Combined Plan does not have a deposit policy for custodial credit risk. Approximately \$4.8 million of the Combined Plan's checking account balances was uninsured and uncollateralized at June 30, 2018. The Combined Plan believes that, due to the dollar amounts of cash deposits and the limits of FDIC insurance, it is impractical to insure all deposits. As a result, the Combined Plan evaluates each financial institution with which it deposits funds and assesses the level of risk of each institution; only those institutions with an acceptable estimated risk level are used as depositories.

Interest Rate Risk

Interest rate risk is the risk that the value of investments will decrease as a result of a rise in interest rates. The Combined Plan's investment policy does not restrict investment maturities.

At year end, the Combined Plan had the following investments and maturities:

Investment Type	Fair Value (in thousands)	Less Than 1 Year	1-5 Years	6-10 Years	More Than 10 Years
Domestic fixed income*	\$ 59,887	\$ 59,887	\$ -	\$ -	\$ -
Mutual funds	\$ 182	\$ -	\$ -	\$ -	\$ 182
Total	\$ 60,069	\$ 59,887	\$ -	\$ -	\$ 182

*Not all domestic fixed income are subject to interest rate risk.

Credit Risk

State law limits investments in commercial paper to the top two ratings issued by nationally recognized statistical rating organizations. The Combined Plan has no investment policy that would further limit its investment choices.

At June 30, 2018, the credit quality ratings of debt securities (other than the U.S. government) as rated by Moody's are as follows:

Investment (in thousands)	Aaa	A3	Baa3	Ba1	Ba2	B1	Caa3	NR
Domestic fixed income	\$ 196	\$ 152	\$ 6	\$ 3	\$ 37	\$ 4	\$ 28	\$ 60,865
Mutual funds	\$ -	\$ -	\$ 182	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 196	\$ 152	\$ 188	\$ 3	\$ 37	\$ 4	\$ 28	\$ 60,865

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 3 - Deposits and Investments (Continued)

Foreign Currency Risk

Foreign currency risk is the risk that an investment denominated in the currency of a foreign country could reduce its U.S. dollar value as a result of changes in foreign currency exchange rates. The Combined Plan does not restrict the amount of investments in foreign currency.

The following securities are subject to foreign currency risk:

Currency	Equity	Fixed Income	Cash	Forward Contracts (Including Receivable/Payable)	Net Investment Receivable/(Payable)
Australian Dollar	\$ -	\$ -	\$ 6	\$ -	\$ -
British Pound Sterling	\$ 15,489	\$ 2,411	\$ 11	\$ (2,414)	\$ -
Canadian Dollar	\$ 2,226	\$ -	\$ 2	\$ -	\$ -
Czech Koruna	\$ 1,192	\$ -	\$ -	\$ -	\$ -
Euro Currency Unit	\$ 33,805	\$ 1,425	\$ 275	\$ (1,585)	\$ 118
Hong Kong Dollar	\$ 3,825	\$ -	\$ -	\$ -	\$ -
Indonesian Rupiah	\$ 1,320	\$ -	\$ -	\$ -	\$ -
Japanese Yen	\$ 9,474	\$ -	\$ 10	\$ 500	\$ (500)
Mexican Peso	\$ 2,483	\$ -	\$ 87	\$ (87)	\$ -
New Taiwan Dollar	\$ 9,027	\$ -	\$ -	\$ -	\$ -
Norwegian Krone	\$ 5,582	\$ -	\$ 3	\$ -	\$ -
Polish Zloty	\$ -	\$ -	\$ 12	\$ -	\$ -
Singapore Dollar	\$ 2,169	\$ -	\$ -	\$ -	\$ -
South Korean Won	\$ 4,615	\$ -	\$ -	\$ -	\$ -
Swedish Krona	\$ 2,097	\$ -	\$ -	\$ -	\$ -
Swiss Franc	\$ 3,168	\$ -	\$ 68	\$ -	\$ -
Turkish Lira	\$ 1,815	\$ -	\$ -	\$ -	\$ -
Total	\$ 98,287	\$ 3,836	\$ 474	\$ (3,586)	\$ (382)

Securities Lending

As permitted by state statutes and under the provisions of a Securities Lending Authorization Agreement, the Combined Plan lends securities to broker-dealers and banks for collateral that will be returned for the same securities in the future. The Combined Plan's custodial bank manages the securities lending program and receives cash, government securities, or irrevocable bank letters of credit as collateral. The custodial bank does not have the ability to pledge or sell collateral securities unless the borrower defaults. Borrowers are required to deliver collateral for each loan equal to not less than 102 percent of the market value of the loaned securities.

As of June 30, 2018, the collateral provided was 102.16 percent of the market value of the loaned securities, which is in excess of the required 102 percent.

The Combined Plan did not impose any restrictions during the fiscal year on the amount of loans made on its behalf by the custodial bank. There were no failures by any borrowers to return loaned securities or pay distributions thereon during the fiscal year. Moreover, there were no losses during the fiscal year resulting from a default of the borrowers or custodial bank.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 3 - Deposits and Investments (Continued)

The Combined Plan and the borrower maintain the right to terminate all securities lending transactions on demand. The cash collateral received on each loan was invested, together with the cash collateral of other lenders, in an investment pool. The average duration of such investment pool as of June 30, 2018 was 18.60 days. Because the loans are terminable on demand, their duration did not generally match the duration of the investments made with cash collateral. On June 30, 2018, the Combined Plan had no credit risk exposure to borrowers. The collateral held (at cost) and the fair market value of the underlying securities on loans for the Combined Plan as of June 30, 2018 were \$83,233,430 and \$81,477,265, respectively.

The following represents the balances relating to the securities lending transactions as of June 30, 2018; investments are reported at fair value:

Securities Lent	Underlying Securities
U.S. corporate fixed income	\$ 26,942
U.S. equities	81,043,463
Non-U.S. equities	406,860
Total	\$ 81,477,265

The fair market value of the collateral pool related to securities lending at June 30, 2018 was \$84,234,018. The investments were in asset-backed securities, floating rate notes, and repurchase agreements. Approximately 81 percent of these securities had a duration of less than one year, 14 percent had a duration between one and three years, and 5 percent had a duration over 15 years.

The credit ratings of the securities lending collateral pool held at June 30, 2018 as rated by S&P are as follows:

Ratings	Amount
AAA	\$ 6,080,077
AA	14,662,289
A	26,557,417
CC	2,722,809
D	1,110,812
NR	33,100,614
Total	\$ 84,234,018

Note 4 - Fair Value Measurements

In accordance with GASB Statement No. 72, *Fair Value Measurement and Application*, the notes to the financial statements now include enhanced disclosures about fair value measurement, the level of fair value hierarchy, and valuation techniques.

The Combined Plan categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset. Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; Level 3 inputs are significant unobservable inputs. Investments that are measured at fair value using the net asset value per share (or its equivalent) as a practical expedient are not classified in the fair value hierarchy below.

In instances whereby inputs used to measure fair value fall into different levels in the fair value hierarchy, fair value measurements in their entirety are categorized based on the lowest level input that is significant to the valuation. The Combined Plan's assessment of the significance of particular inputs to these fair value measurements requires judgment and considers factors specific to each asset.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 4 - Fair Value Measurements (Continued)

The Combined Plan has the following recurring fair value measurements as of June 30, 2018:

Assets Measured at Fair Value on a Recurring Basis at June 30, 2018					
	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Balance at June 30, 2018	
Debt securities:					
Privately negotiated debt	\$ -	\$ -	\$ 550,862	\$ 550,862	
Corporate bonds	-	1,039,621	-	1,039,621	
Asset-backed securities	-	9,880,788	-	9,880,788	
Corporate floating rate notes	-	43,220,074	-	43,220,074	
Total debt securities	-	54,140,483	550,862	54,691,345	
Equity securities:					
Common stock	666,817,625	-	-	666,817,625	
Preferred stock	-	178,925	-	178,925	
Total equity securities	666,817,625	178,925	-	666,996,550	
Private equity funds					
Partnership investments	-	-	4,000,000	4,000,000	
Real estate private equity funds	-	-	3,292,000	3,292,000	
Real estate-related investments	-	-	8,000,000	8,000,000	
Total	\$ 666,817,625	\$ 54,319,408	\$ 81,071,072	802,208,105	
Investments measured at NAV:					
International equity fund				330,373,817	
Fixed-income funds				190,536,527	
Global asset allocation				67,114,712	
Hedge funds				90,140,163	
Real estate funds				223,201,990	
Private equity funds				94,802,254	
Total investments measured at NAV				<u>996,169,463</u>	
Total investments measured at fair value				<u>\$ 1,798,377,568</u>	

A total of \$31,133,156 of repurchase agreements that are recorded at amortized cost are not included in the fair value table above.

Debt and equity securities classified in Level 1 are valued using prices quoted in active markets for those securities.

The fair value of preferred stock and debt securities at June 30, 2018 was determined primarily based on Level 2 inputs. The Combined Plan estimates the fair value of these investments using other inputs, such as interest rates and yield curves, that are observable at commonly quoted intervals for identical or similar assets.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 4 - Fair Value Measurements (Continued)

The fair value of the remaining investments at June 30, 2018 was determined primarily based on Level 3 inputs. The Combined Plan estimates the fair value of these investments using the Combined Plan's own pricing estimate methodology, pricing models, discounted cash flow methodologies, or similar techniques taking into account the characteristics of the asset.

The valuation method for investments measured at net asset value (NAV) per share (or its equivalent) is presented in the following table.

Investments in Entities that Calculate Net Asset Value per Share

The Combined Plan holds shares or interests in investment companies whereby the fair value of the investments is measured on a recurring basis using net asset value per share (or its equivalent) of the investment companies as a practical expedient.

As of June 30, 2018, the fair value, unfunded commitments, and redemption rules of those investments are as follows:

	Fair Value	Unfunded Commitments	Redemption Frequency, if Eligible	Redemption Notice Period
International equity funds	\$ 330,373,817	\$ -	Monthly	Up to 30 days
Fixed-income funds	190,536,527	\$ -	Daily	10 business days
Global asset allocation funds	67,114,712	\$ -	Monthly	15 business days
Hedge funds	90,140,163	\$ -	Quarterly	100 days
Real estate funds	223,201,990	1,227,512	Quarterly	90 days
Private equity funds	94,802,254	66,603,551	N/A	N/A
 Total investments measured at NAV	 \$ 996,169,463	 \$ 67,831,063		

Multiple funds are held in each category. For reporting purposes, the redemption frequency and redemption notice period provided are the most restrictive of any of the funds in the category.

The international equity funds class includes investments in funds that invest predominantly in equity securities of non-U.S. companies. The funds invest in developed and emerging market countries and utilize investments across the capitalization spectrum from large to small companies. The fair values of the investments in this class have been estimated using net asset value per share of the investments.

The fixed-income funds class includes investments in funds that invest predominantly in fixed-income instruments in the U.S. and developed and emerging market countries. The funds invest across a diverse group of security types, including government, corporate, and mortgage-backed debt and across the credit quality spectrum of investment grade and high yield. The fair values of the investments in this class have been estimated using net asset value per share of the investments.

The global asset allocation funds class includes investments in funds that are designed to capture growth with less risk than equities by managing a broad opportunity set of asset classes, including, but not limited to, global equities, global bonds, commodities, currencies, and cash. The fair values of the investments in this class have been estimated using net asset value per share of the investments.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 4 - Fair Value Measurements (Continued)

The hedge funds class includes investments in funds that achieve capital appreciation through multimanager and/or multistrategy investments. Within this group of funds, there is exposure to investment strategies, including, but not limited to, credit, event-driven, equity, and relative value. The funds have the ability to invest across all markets and across all asset classes to implement their various strategies. The fair values of the investments in this class have been estimated using net asset value per share of the investments. Approximately 1 percent of the value of the investments in the hedge fund class above are in the process of being liquidated by the fund manager. Distributions from each fund will be received as the underlying investments of the fund are liquidated. It is estimated that the underlying investments of the fund will be liquidated over the next 12 to 18 months.

The real estate funds class includes investments in funds whose objective is to operate a core portfolio of real estate investments predominantly located in the U.S. The funds acquire ownership in underlying investments either through direct real estate ownership or ownership in real estate companies or the equity of real estate investment trusts. The funds predominantly target purchases in office, industrial, retail, or multifamily real estate classes. The fair values of the investments in this class have been estimated using net asset value per share of the investments (or its equivalent).

The private equity funds class is an alternative investment class and consists of investments in companies that are not listed on a public exchange. The General Retirement System of the City of Detroit maintains a diversified portfolio of private equity investments by both style (buyout, turnaround, venture capital, etc.) and vintage year exposure. With its private equity allocation, the General Retirement System of the City of Detroit, seeks to take advantage of the illiquidity premium associated with these private equity investments. The fair values of the investments in this class have been estimated using net asset value per share of the investments (or its equivalents).

Note 5 - Pension Plan Investments - Policy and Rate of Return

Component II (Legacy Plan) and Component I (Hybrid Plan)

Investment Policy

The assets of Component II and I are commingled and invested together, as allowed by the POA. The Combined Plan's policy in regard to the allocation of invested assets is established and may be amended by governance by a majority vote of its members. It is the policy of the governance to pursue an investment strategy that manages risk through the prudent diversification of the portfolio across a broad selection of distinct asset classes. The Combined Plan's investment policy discourages the use of cash equivalents, except for liquidity purposes, and aims to refrain from dramatically shifting asset class allocations over short time spans. The following was the governance's adopted asset allocation policy as of June 30, 2018:

Asset Class	Target Allocation
Global equity	43.00 %
Global fixed income	19.00
Real estate	10.00
Private equity	8.00
Hedge funds	5.00
Global asset allocation/risk parity/real assets (liquid)	14.00
Cash	1.00
Total	100.00 %

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 5 - Pension Plan Investments - Policy and Rate of Return (Continued)

Rate of Return

For the year ended June 30, 2018, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 6.7 percent. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Note 6 - Pension Plan Reserves

Component II (Legacy Plan)

In accordance with Combined Plan for the General Retirement System of the City of Detroit and state law, the following reserves are required to be set aside within the Component II (Legacy) pension plan:

The annuity reserve fund is an accumulation of transfers that is made from the annuity savings fund when an employee retires, becomes disabled, or if a surviving spouse elects an annuity rather than a lump-sum payout of accumulated employee contributions.

The pension reserve fund represents funded pension benefits available for retired members and is funded by actuarially determined transfers from the pension accumulation fund. The transfers from the pension accumulation fund to the pension reserve fund for fiscal year 2018 retirements have not yet been determined.

The employee reserve (Annuity Savings Fund or "ASF") is credited as employee contributions are received throughout the year; ASF maintains a record of the amount contributed by each employee and credits interest annually at a rate approved by the board. During fiscal year 2018, the board approved the interest rate at 1.4 percent. Eligible active members may elect to withdraw their accumulated (annuity) contributions plus investment earnings. Upon retirement, a member can elect to annuitize or receive a lump sum of their accumulated contribution and interest earnings. When an employee retires, becomes disabled, or if a surviving spouse elects an annuity rather than a lump-sum payout of accumulated employee contributions, the balance is transferred to the annuity reserve fund. See Note 10 for disclosure of significant changes to the ASF going forward.

The pension accumulation fund is the fund that will accumulate reserves for the pensions and other benefits payable from the contributions made by the City, including various departments thereof, and certain third parties pursuant to the POA and from which pensions and other benefits will be paid on account of members with prior service credit and transfers, as provided in Section E-18. Contributions to the pension accumulation fund from the effective date of the POA through fiscal year 2023 shall be made only in the amounts and from the sources identified in the POA.

The expense fund is the fund that will be credited with all money provided by the City to pay the administrative expenses of the Combined Plan and from which all the expenses necessary in connection with the administration and operation of the Combined Plan will be paid. At year end, this reserve balance is zero, as all employer contributions were credited to the pension accumulation fund.

The income fund shall be the fund to which all interest, dividends, and other income derived from the investments of Component II of the Combined Plan will be credited. Transfers from the income fund will be made to credit earnings and losses to various reserves of the Combined Plan in accordance with the provisions of Component II of the Combined Plan document. Amounts credited to the income fund in excess of amounts needed to credit earnings and losses of the Combined Plan, as provided in Component II, for any plan year shall be transferred to the pension accumulation fund and used to pay retirement allowances and other benefits on account of members. During fiscal year 2018, the income fund reserve was not utilized, and all investment income was credited to the pension accumulation fund.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 6 - Pension Plan Reserves (Continued)

The balances of the reserve accounts for Component II (excluding the Income Stabilization Fund) as of June 30, 2018 are included in the table below. The reserve balances as of June 30, 2018 shown below do not include the current year transfer amount related to fiscal year 2018 retirements for amounts that are transferred from the pension accumulation fund to the pension reserve fund.

The balances of the reserve accounts at June 30, 2018 are as follows:

	Required Reserve	Amount Funded
Annuity Savings Fund	\$ 108,420,640	\$ 108,420,640
Pension Reserve Fund	1,953,551,198	1,835,845,241
Annuity Reserve Fund	-	(3,642,239)
Pension Accumulation Fund	N/A	-

Component I (Hybrid Plan)

In accordance with the Combined Plan for the General Retirement System of the City of Detroit and state law, the following reserves are required to be set aside within the Component I (Hybrid) pension plan:

The accumulated mandatory employee contribution fund shall be the fund in which shall be accumulated the contributions of members to provide their retirement allowances. Upon the retirement, termination, or death of a member with a vested retirement allowance, the member's accumulated mandatory employee contributions shall be deemed to be part of the pension reserve that shall be used to pay the member's retirement allowance.

The accumulated voluntary employee contribution fund shall be the fund in which shall be accumulated the voluntary after-tax contributions of members together with earnings thereon.

The pension accumulation fund shall be the fund in which shall be accumulated reserves for the retirement allowances and other benefits payable from that portion of the employer's annual contribution that is not credited to the rate stabilization fund and amounts transferred to Component I and from which shall be paid retirement allowances and other benefits on account of members. During fiscal year 2018, all employer contributions were directed by the City into the pension accumulation fund, and no amounts were credited to the rate stabilization fund.

The rate stabilization fund shall be the fund that shall be credited with the employer's annual contributions in excess of the amount of the employer's contribution that is credited to the pension accumulation fund and amounts transferred to Component I, as provided in Section E-16(C) of Component II. See Note 9 for details on the transfer provisions related to transfers between Component II and Component I. During fiscal year 2018, no amounts were credited to the rate stabilization fund. Therefore, this reserve balance is zero.

The medical benefit fund shall be the fund that will be credited with contributions made for the purpose of funding medical benefits. During the year, no such contributions were made and, therefore, this reserve balance is zero.

The expense fund shall be the fund to which will be credited any money provided by the employers to pay the administrative expenses of the Combined Plan and from which certain expenses incurred in connection with the administration and operation of the Combined Plan will be paid. At year end, this reserve balance is zero, as all employer contributions were credited to the pension accumulation fund.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 6 - Pension Plan Reserves (Continued)

The income fund shall be the fund to which all interest, dividends, and other income derived from the investments of Component I of the Combined Plan will be credited. Transfers from the income fund will be made to credit earnings and losses to various reserves of the Combined Plan in accordance with the provisions of Component I of the Combined Plan document. Amounts credited to the income fund in excess of amounts needed to credit earnings and losses of the Combined Plan, as provided in Component I, for any plan year shall be transferred to the pension accumulation fund. During fiscal year 2018, investment income was transferred to other reserve funds and, therefore, this reserve balance at June 30, 2018 remains unfunded.

The balances of the above reserves for Component I that were funded as of June 30, 2018 are as follows:

	Required Reserve	Amount Funded
Accumulated Mandatory Employee Contribution Fund	\$ 28,325,286	\$ 28,325,286
Accumulated Voluntary Employee Contribution Fund	18,854,925	18,854,925
Pension Accumulation Fund	-	48,452,115

Note 7 - Net Pension Liability for Component II (Legacy Plan)

The net pension liability has been measured as of June 30, 2018 and is composed of the following:

Total pension liability	\$ 2,773,306,153
Plan fiduciary net position	1,940,623,642
Net pension liability	<u>\$ 832,682,511</u>
Plan fiduciary net position as a percentage of the total pension liability	69.98 %

Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of June 30, 2017, which used update procedures to roll forward the estimated liability to June 30, 2018. The valuation used the following actuarial assumptions applied to all periods included in the measurement:

Inflation	N/A	
Salary increases	N/A	No inflation assumption or salary increases due to plan freeze as of June 30, 2014
Investment rate of return	7.38%	Net of pension plan investment expense, including inflation

Based on an experience study from 2008-2013 issued in February 2015, the mortality table assumption was based on the RP-2014 Blue Collar Annuitant Table for males and females. The tables are projected to be fully generational, based on the two-dimensional sex-distinct mortality scale MP-2014.

The actuarial assumptions other than mortality and the investment rate of return used in the June 30, 2017 valuation to calculate the total pension liability as of June 30, 2018 were based on the results of an actuarial experience study for the period from 2002-2007.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 7 - Net Pension Liability for Component II (Legacy Plan) (Continued)

Attribution period: As addressed more fully in Note 10, as of June 30, 2014, the plan was frozen such that no new benefit accruals were allowed and no new members could join. Starting July 1, 2014, the participants in this legacy plan (Component II) will now be earning benefits under a newly created defined benefit plan (Component I). GASB Statement No. 67 requires that the service costs of all pensions be attributed through all assumed exit ages through retirement. Neither GASB Statement No. 67 nor any other GASB standard has set forth guidance specifically related to frozen plans with successor plans in place. Absent any guidance to the contrary, due to the status as a frozen plan combined with the fact that individuals are now earning service in a new defined benefit pension plan, the retirement date for the purpose of attribution was assumed to be June 30, 2014 for all members. Therefore, the total pension liability at June 30, 2018 is equal to the present value of projected benefit payments.

Note that the long-term assumed rates of return used for the purpose of the GASB Statement No. 67 valuations were determined in accordance with generally accepted accounting principles. This should not be confused with the provisions in the Plan of Adjustment, which established a 6.75 percent assumed rate of return for the purpose of the various provisions within the plan; the Plan of Adjustment did not attempt to dictate the long-term rate of return to be used for accounting purposes.

Discount Rate

The discount rate used to measure the total pension liability as of June 30, 2018 was 7.38 percent; however, the single discount rate used at the beginning of the year was 6.91 percent. The projection of cash flows used to determine the discount rate assumed that employee contributions will be made at the current contribution rate and that city contributions will be made at rates equal to the difference between actuarially determined contribution rates and the employee rate.

Projected Cash Flows

Based on the above assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current active and inactive employees both at the beginning of the year, as well as at the end of the year. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability. The projection of cash flows used to determine the discount rate assumed that employee contributions will be made at the current contribution rate. Contributions to the Combined Plan are projected to be at the minimum amounts required by the Plan of Adjustment through 2023, followed by actuarially determined contributions beginning in 2024. While no funding policy has been adopted by the City of Detroit, Michigan, the projection of cash flows assumes full funding of contributions such that the plan's net position will be sufficient to make all benefit payments. The Combined Plan believes that the funding practice adopted by the City will be consistent with the underlying objective used in the projection to develop the single discount rate.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 7 - Net Pension Liability for Component II (Legacy Plan) (Continued)

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of geometric real rates of return as of June 30, 2018 for each major asset class included in the pension plan's target asset allocation, as disclosed in the investment footnote, are summarized in the following table:

Asset Class	Long-term Expected Real Rate of Return
Global equity	5.23 %
Global fixed income	3.04
Real assets	4.46
Private equity	7.18
Hedge funds	4.06
Global asset allocation/risk parity/real assets (liquid)	4.30
Cash	0.25

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability, calculated using the discount rate of 7.38 percent, as well as what the net pension liability would be if it were calculated using a discount rate that is 1 percentage point lower (6.38 percent) or 1 percentage point higher (8.38 percent) than the current rate:

	1 Percent Decrease (6.38%)	Current Discount Rate (7.38%)	1 Percent Increase (8.38%)
Net pension liability	\$ 1,077,775,085	\$ 832,682,511	\$ 623,238,266

Note 8 - Net Pension Liability of the City for Component I (Hybrid Plan)

The net pension liability of the City has been measured as of June 30, 2018 based on benefits in force as of that date and is composed of the following:

Total pension liability	\$ 96,879,111
Plan fiduciary net position	\$ 95,632,326
City's net pension liability	<u>\$ 1,246,785</u>
Plan fiduciary net position as a percentage of the total pension liability	98.71 %

June 30, 2018

Note 8 - Net Pension Liability of the City for Component I (Hybrid Plan) (Continued)

Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of June 30, 2017, which used update procedures to roll forward the estimated liability to June 30, 2018. The following are the significant assumptions:

Wage inflation assumption was 2 percent for five years, 2.5 percent for the next five years, and 3 percent thereafter.

The investment rate of return (net of pension plan investment expense, including inflation) applied to the beginning of year total pension liability was 6.91 percent as compared to 7.38 percent, which was the assumed long-term rate of return as of the end of year. The rates were determined in accordance with generally accepted accounting principles. This should not be confused with the provisions in the Plan of Adjustment, which established a 6.75 percent assumed rate of return for the purpose of the various provisions within the plan; the Plan of Adjustment did not attempt to dictate the long-term rate of return to be used for accounting purposes.

Based on an experience study from 2008-2013 issued in February 2015, the mortality table assumption was based on the RP-2014 Blue Collar Annuitant Table for males and females. The tables are projected to be fully generational, based on the two-dimensional sex-distinct mortality scale MP-2014.

Cost of living adjustments: This plan has a postretirement COLA feature known as the Variable Pension Improvement Factor (VPIF) of a 2 percent simple COLA. It can be granted beginning on July 1, 2018 only if the five-year projection shows the plan funded status at 100 percent based upon 6.75 percent future investment return. For the purpose of the total pension liability, the actuary assumed a 0.50 percent simple COLA beginning on July 1, 2018 to model the potential average COLA over time. Had no COLA been assumed, the net pension asset would have been (\$1,851,675). Had the full 2 percent COLA been assumed, the net pension liability would have been \$10,447,252.

There were no changes in benefit provisions during the year affecting the total pension liability.

Other than mortality and the investment rate of return, the actuarial assumptions used in the June 30, 2017 valuation to calculate the total pension liability as of June 30, 2018 were based on the results of an actuarial experience study for the period from 2002-2007 modified as necessary to account for the difference in eligibility of this new plan.

Discount Rate

The discount rate used to measure the total pension liability as of June 30, 2018 was 7.38 percent; however, the single discount rate used at the beginning of the year was 6.91 percent. The projection of cash flows used to determine the discount rate assumed that employee contributions will be made at the current contribution rate and that city contributions will be made at rates equal to the difference between actuarially determined contribution rates and the employee rate.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 8 - Net Pension Liability of the City for Component I (Hybrid Plan) (Continued)

Projected Cash Flows

Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current active and inactive employees both at the beginning of the year as well as at the end of the year. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability. The projection of cash flows used to determine the discount rate assumed that employee contributions will be made at the current contribution rate. Contributions to the Combined Plan are projected to be at the minimum amounts required by the Plan of Adjustment through 2023, followed by actuarially determined contributions beginning in 2024. While no funding policy has been adopted by the City of Detroit, Michigan, the projection of cash flows assumes full funding of contributions such that the plan's net position will be sufficient to make all benefit payments. The Combined Plan believes that the funding practice adopted by the City will be consistent with the underlying objective used in the projection to develop the single discount rate.

The long-term expected rate of return on future pension plan investments is the same as Component II given that the assets are commingled (see Note 7).

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability of the City, calculated using the discount rate of 7.38 percent, as well as what the City's net pension liability would be if it were calculated using a discount rate that is 1 percentage point lower (6.38 percent) or 1 percentage point higher (8.38 percent) than the current rate:

	1 Percent Decrease (6.38%)	Current Discount Rate (7.38%)	1 Percent Increase (8.38%)
Net pension liability of the City	\$ 14,262,376	\$ 1,246,785	\$ (9,322,506)

Note 9 - Commitments

When the Combined Plan enters into various investments, it may not completely fund the entire investment at the beginning. Rather, it enters into commitments to fund remaining capital amounts at certain points in time. At June 30, 2018, the remaining capital funding commitment for the Combined Plan is approximately \$68 million.

In addition, the Combined Plan document setting forth the Legacy Plan (Component II) contains a provision for the transfer of certain excess investment returns to the new Hybrid Plan (Component I). In any plan year during the period beginning on or after July 1, 2014 and ending on June 30, 2023, if the annual rate of return credited to member annuity savings fund accounts is less than the actual rate of return net of expenses of the Plan's invested assets for the second plan year preceding the plan year in which the annual rate of return is credited, the excess earned shall be transferred to the pension accumulation fund maintained under Component I of the Combined Plan and will be used to fund transition costs related to Component I. The transition cost is a measure of the liability that Component I of the Combined Plan has at its inception due to the fact that members in Component I receive vesting and eligibility credit under Component I for service that was earned prior to July 1, 2014 and is otherwise credited to members under Component II. Such transition costs have been calculated by the plan's actuary. Yearly transfers to fund these costs are required in the second year following the year in which the return is earned based on a two-year "lookback," therefore, for example, any transfers based on the plan year ended June 30, 2015 will be calculated and transferred during the plan year ended June 30, 2018. There were no transfers in fiscal year 2018.

June 30, 2018

Note 10 - City of Detroit's Chapter 9 Bankruptcy Plan of Adjustment and Continuing Impact on the Plan

In March 2013, after enduring years of financial difficulty, the City of Detroit, Michigan filed for bankruptcy protection. The Eighth Amended Plan for Adjustment of Debts of the City of Detroit (the "Plan of Adjustment") was filed with the Bankruptcy Court on October 22, 2014. In November 2014, after a confirmation hearing lasting several weeks, the Bankruptcy Court confirmed the Plan of Adjustment (POA), which became effective December 10, 2014.

Legacy Plan (Component II)

The Pension Settlement, as part of the Plan of Adjustment, compromised pension claims and provided funding support for legacy pension benefit obligations under the General Retirement System of the City of Detroit (DGRS or the "System") Component II from the State of Michigan, the Detroit Institute of Arts, and certain foundation donors. The Plan of Adjustment also required certain governance changes for DGRS. Those governance changes included establishment of the Investment Committee effective December 10, 2014, which officially marked the beginning of implementation of the Plan of Adjustment, although DGRS had for months already undertaken contingency planning for all of the pension adjustments. In addition to governance changes, the POA requires of the System, through its board of trustees and Investment Committee, certain periodic and interim reporting obligations to the City, the Foundation for Detroit's Future, and the State of Michigan. Although there were some delays in meeting certain obligations because of new actuarial reporting requirements for governmental systems, which in turn impacted the preparation of the System's audited financial statements, the System believes it has ultimately met its special reporting obligations in fiscal year 2016 and continued to do so in fiscal years 2017 and 2018.

For DGRS, with respect to Component II benefit adjustments, the Pension Settlement (for which benefit levels were and are contingent on other factors, including receipt of outside contributions) provided for:

- A loss of cost of living adjustments, or "escalators" (COLAs), paid after July 1, 2014
- A 4.5 percent cut to the remaining accrued pension benefit after the COLA loss
- For DGRS members who participated in the Annuity Savings Fund plan between 2003 and 2013, subject to certain caps, recoupment of certain amounts of interest deemed by the City to be in "excess" of that which should have been credited to individual ASF accounts, referred to as "ASF Recoupment." ASF Recoupment, like other provisions of the pension settlement, was not optional. Most members will pay their ASF Recoupment by a monthly deduction from their future pension benefits for a set term of months, including interest calculated at 6.75 percent. All members were offered a lump-sum cash option, which was limited in the aggregate to \$30 million in member recoupment. In fiscal year 2016, the Bankruptcy Court approved certain additional members whose application submissions were not timely received to participate in the lump-sum cash option.
- The possibility of restoration of certain pension benefit cuts, based on a program for the most financially vulnerable pensioners and beneficiaries through the State of Michigan Treasury Department, as well as a new feature of Component II allowing restoration depending on the System's funding level over time.

June 30, 2018

Note 10 - City of Detroit's Chapter 9 Bankruptcy Plan of Adjustment and Continuing Impact on the Plan (Continued)

- An Income Stabilization Program (the "ISF Program") was established as part of the State Contribution Agreement, another facet of the Pension Settlement. The ISF Program, supported by city funds arising from an unlimited tax general obligation bonds settlement, is intended to ensure that the most financially vulnerable retirees and beneficiaries do not fall below the poverty line as a result of bankruptcy-related pension changes. Beginning on March 1, 2015, certain DGRS members also received benefit pension cut restoration under the ISF Program administered by DGRS pursuant to the State Contribution Agreement based on eligibility and benefit payments calculated by the State of Michigan. Following the close of the fiscal year ended June 30, 2016, and pursuant to Component II of the Combined Plan and the State Contribution Agreement, the System implemented the first annual ISF Program benefit adjustments effective July 1, 2016.
- The POA also discusses a "restoration plan." Terms of the pension restoration are contained in "Exhibit II.B.3.r.ii.C" of the POA and the terms govern how accrued pensions, including COLA benefits that were reduced as a part of the POA, may be restored over the 30-year period following the Confirmation Order. The Investment Committee will supervise the restoration process in accordance with the restoration plan. The restoration plan shall be deemed a part of Component II. The funding levels have not been attained yet as of June 30, 2018 for the restoration process to initiate.

Going forward, the obligations for contributions to support Component II of the System through 2023 are determined as fixed amounts by the provisions in the Plan of Adjustment. Pursuant to the Plan of Adjustment, the System is expected to receive contributions of a total of \$718.6 million through fiscal year 2023. The Plan of Adjustment calls for the System to receive \$98.8 million from the State of Michigan; \$428.5 million from DWSD; \$31.7 million from UTGO settlement proceeds; the actual or present value equivalent of \$50 million from the DIA and its foundation donors; and \$114.6 million from the other City-related employer contribution sources, such as the General Fund, Detroit Library Commission, and COBO Authority, over a 10-year period covering fiscal year 2014 through fiscal year 2023. Between 2025 and 2034, DGRS will receive \$18.3 million per year from certain foundation donors. After 2023, the City, and various other employer constituents such as the Library, DWSD, and COBO Authority, will retain responsibility for the full funding obligations of Component I of the System, consistent with Michigan law.

In fiscal year 2017, DGRS received from the City, its employer-related contribution sources, and the DIA and its foundation donors all contributions required by the Plan of Adjustment. The City was to remit payments on the UTGO Stub Bonds to the Combined Plan through 2028. In fiscal year 2017, the City of Detroit, Michigan refunded all of its outstanding UTGO Stub Bonds. Upon refunding, the payments to the Combined Plan were accelerated, with a majority of the outstanding balance paid to the Combined Plan in fiscal year 2017; as a result, the Combined Plan received approximately \$9.4 million in the ISF and \$18.3 million in the Component II Defined Benefit Fund related to this transaction.

DGRS continues to implement the POA, which includes ongoing compliance and additional reporting requirements by the board and the Investment Committee, annual review of benefit levels, and essentially provides for a 40-year plan to close the DGRS Legacy Component II underfunded liability. ASF Recoupment, in particular, is a notable facet of the Plan of Adjustment that will continue to be implemented as members apply for Component II pension benefits over time.

Combined Plan for the General Retirement System of the City of Detroit

Notes to Financial Statements

June 30, 2018

Note 11 - City of Detroit Commitment to Future Funding

In anticipation of significant actuarially required contributions commencing in fiscal year 2024, the City, independent of the Combined Plan, has established a Retiree Protection Trust Fund (the "Trust"). The Trust, a permanent irrevocable trust under Section 115 and 414(d) of the Internal Revenue Code, is to receive, maintain, and invest city funds restricted for future deposits to the General Retirement System Plan and the Police and Fire Retirement System Plan as part of an effort to manage and stabilize future required city contributions to the plans. The City has set aside \$103 million for this Trust as of June 30, 2018 for future contributions to the General Retirement System Plan and the Police and Fire Retirement System Plan. Contributions to the Combined Plan will be recognized as the City makes distributions from this independent trust to the Combined Plan.

Required Supplemental Information

Combined Plan for the General Retirement System of the City of Detroit

Schedule of Changes in the Net Pension Liability and Related Ratios (Legacy Plan)

	Last Five Fiscal Years				
	2018	2017	2016	2015	2014
Total Pension Liability					
Service cost	\$ 192,359,745	\$ 201,919,236	\$ 214,011,164	\$ 263,007,329	\$ 32,736,019
Interest	-	-	-	(731,824,895)	242,611,073
Changes in benefit terms	34,154,327	(27,508,380)	(43,719,112)	24,644,530	(113,311,571)
Differences between expected and actual experience	(110,274,515)	76,925,987	90,034,927	(101,559,893)	(271,190,194)
Changes in assumptions	(253,442,630)	(267,249,539)	(292,282,179)	(291,538,990)	(397,733,807)
Benefit payments, including refunds					-
Net Change in Total Pension Liability					
	(137,203,073)	(15,912,726)	(31,955,200)	(843,271,919)	(506,888,480)
Total Pension Liability - Beginning of year	2,910,509,226	2,926,421,952	2,958,377,152	3,801,649,071	4,308,537,551
Total Pension Liability - End of year	\$ 2,773,306,153	\$ 2,910,509,226	\$ 2,926,421,952	\$ 2,958,377,152	\$ 3,801,649,071
Plan Fiduciary Net Position					
Contributions - Employer, State, and Foundation	\$ 68,275,000	\$ 91,238,402	\$ 104,792,657	\$ 189,282,094	\$ 25,126,131
Contributions - Employee	-	-	-	609,073	10,241,761
Net investment income (loss)	155,423,193	206,895,568	(112,450,547)	93,054,981	289,739,607
Administrative expenses	(3,313,418)	(6,021,837)	(3,742,618)	(4,617,194)	(11,237,767)
Benefit payments, including refunds	(253,442,630)	(267,249,539)	(292,282,179)	(297,538,991)	(397,733,807)
Other (includes ASF recoupment)	6,952,522	8,324,074	5,945,783	135,280,369	-
Net Change in Plan Fiduciary Net Position					
	(26,105,333)	33,187,668	(197,735,904)	116,070,332	(83,814,075)
Plan Fiduciary Net Position - Beginning of year	1,966,728,975	1,933,541,307	2,131,278,211	2,015,207,879	2,099,021,954
Plan Fiduciary Net Position - End of year	\$ 1,940,623,642	\$ 1,966,728,975	\$ 1,933,541,307	\$ 2,131,278,211	\$ 2,015,207,879
Net Pension Liability - Ending					
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	69.98 %	67.57 %	66.07 %	72.04 %	53.01 %
Covered Payroll*	\$ 246,173,916	\$ 199,307,987	\$ 185,147,364	\$ 188,210,536	\$ 238,669,871
Net Pension Liability as a Percentage of Covered Employee Payroll	338.25 %	473.53 %	536.27 %	439.45 %	748.50 %

GASB Statement No. 67 was implemented on June 30, 2014 and does not require retroactive implementation. Data will be added as information is available until 10 years of such information is available.

* Covered payroll excludes overtime and longevity pay, which was included as compensation for purposes of determining employer contributions.

See notes to required supplemental information schedules.

Combined Plan for the General Retirement System of the City of Detroit

Required Supplemental Information Schedule of Investment Returns (Legacy and Hybrid Plans)

	Last Five Fiscal Years Years Ended June 30				
	2018	2017	2016	2015	2014*
Annual money-weighted rate of return -					

Net of investment expense 6.70 % 12.60 % 1.10 % 2.40 % 16.30 %

* GASB Statement No. 67 was implemented on June 30, 2014 and does not require retroactive implementation. Data will be added as information is available until 10 years of such information is available.

Fiscal years 2014 and 2015 do not include information related to the Hybrid Plan. The Hybrid Plan was effective July 1, 2014 and for the first year (fiscal year 2015) did not invest in anything other than cash and cash equivalents.

Combined Plan for the General Retirement System of the City of Detroit

Required Supplemental Information Schedule of Pension Contributions (Legacy Plan) Police and Fire Pension System

	Last Ten Fiscal Years Years Ended June 30									
	2018*	2017*	2016*	2015*	2014	2013	2012	2011	2010	2009
Actuarially determined contribution in relation to the actuarially determined contribution	\$ -	\$ -	\$ -	\$ -	\$ 72,643,307	\$ 62,297,432	\$ 64,065,214	\$ 55,138,011	\$ 37,338,960	\$ 41,395,719
Contribution Deficiency	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (47,517,176)	\$ (35,781,650)	\$ -	\$ -	\$ -
Covered Employee Payroll	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 238,669,871	\$ 213,291,089	\$ 257,992,240	\$ 303,379,482	\$ 334,343,506
Contributions as a Percentage of Covered Employee Payroll	- %	- %	- %	- %	10.53 %	12.43 %	24.83 %	18.17 %	11.17 %	11.59 %

* The contributions starting with fiscal year 2015 were determined by the provisions of the POA; the contributions were not actuarially determined and, therefore, not subject to disclosure in accordance with GASB Statement No. 67 within this schedule.

Notes to Schedule of Pension Contributions (Legacy and Hybrid Plans)

Actuarial valuation information relative to the determination of contributions:

N/A - Starting in fiscal year 2015, contributions are not actuarially determined.

See notes to required supplemental information schedules.

Combined Plan for the General Retirement System of the City of Detroit

Required Supplemental Information Schedule of Changes in the City's Net Pension Liability and Related Ratios (Hybrid Plan)

	Last Four Fiscal Years			
	2018	2017	2016	2015
Total Pension Liability				
Service cost	\$ 17,056,732	\$ 18,417,036	\$ 18,302,706	\$ 19,318,576
Interest	5,438,061	4,084,390	2,495,896	695,469
Differences between expected and actual experience	4,546,865	(4,667,487)	(1,263,760)	(1,202,108)
Changes in assumptions	(5,758,189)	2,780,462	2,111,451	-
Voluntary employee contributions	5,302,650	5,043,347	5,213,744	5,775,885
Benefit payments, including refunds	(2,390,592)	(2,134,809)	(2,287,214)	-
Net Change in Total Pension Liability	24,195,527	23,522,939	24,572,823	24,587,822
Total Pension Liability - Beginning of year	72,683,584	49,160,645	24,587,822	-
Total Pension Liability - End of year	<u>\$ 96,879,111</u>	<u>\$ 72,683,584</u>	<u>\$ 49,160,645</u>	<u>\$ 24,587,822</u>
Plan Fiduciary Net Position				
Contributions - Employer	\$ 14,673,644	\$ 9,484,992	\$ 9,048,831	\$ 8,811,369
Mandatory employee contributions	8,837,967	7,752,058	7,345,515	6,970,544
Net investment income (loss)	8,445,590	9,109,732	(76,608)	20,690
Administrative expenses	(2,171,693)	(2,648,385)	(3,094,197)	(1,481,590)
Voluntary employee contributions	5,302,650	5,043,347	5,213,744	5,786,488
Benefit payments, including refunds of mandatory contributions	(1,308,550)	(1,021,847)	(1,031,060)	(10,603)
Benefit payments, and refunds based on voluntary contributions	(1,082,042)	(1,112,962)	(1,256,154)	-
Other income	12,436	61,834	6,586	-
Net Change in Plan Fiduciary Net Position	32,710,002	26,668,769	16,156,657	20,096,898
Plan Fiduciary Net Position - Beginning of year	62,922,324	36,253,555	20,096,898	-
Plan Fiduciary Net Position - End of year	<u>\$ 95,632,326</u>	<u>\$ 62,922,324</u>	<u>\$ 36,253,555</u>	<u>\$ 20,096,898</u>
City's Net Pension Liability - Ending	<u>\$ 1,246,785</u>	<u>\$ 9,761,260</u>	<u>\$ 12,907,090</u>	<u>\$ 4,490,924</u>
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	98.71 %	86.57 %	73.75 %	81.74 %
Covered Payroll	\$ 246,173,916	\$ 199,307,987	\$ 185,147,364	\$ 180,069,852
City's Net Pension Liability as a Percentage of Covered Employee Payroll	0.51 %	4.90 %	6.97 %	2.49 %

Combined Plan for the General Retirement System of the City of Detroit

Notes to Required Supplemental Information Schedules

June 30, 2018

Benefit Changes

Legacy Plan

In 2014, the pension plan was frozen. No new employees are allowed to participate in the plan. All benefits for actives were frozen as of June 30, 2014 based on service and average final compensation accrued as of that date.

In 2015, benefits were reduced by 4.5 percent and the cost of living adjustments were eliminated.

Changes in Assumptions

Legacy Plan

In 2014, amounts reported as changes of assumptions resulted from adjustment of the discount rate from 5.88 percent to 7.2 percent, updating the mortality tables from RP-2000 Combined Table to RP-2014 Blue Collar Mortality Table, and adjustments for longevity and unused sick leave were eliminated.

Legacy and Hybrid Plan

In 2015, amounts reported as changes of assumptions resulted from adjustment of the discount rate from 7.2 percent to 7.61 percent.

In 2016, amounts reported as changes of assumptions resulted from adjustment of the discount rate from 7.61 percent to 7.23 percent.

In 2017, amounts reported as changes of assumptions resulted from adjustment of the discount rate from 7.23 percent to 6.91 percent.

In 2018, amounts reported as changes of assumptions resulted from adjustment of the discount rate from 6.91 percent to 7.38 percent.

Other Supplemental Information

Combined Plan for the General Retirement System of the City of Detroit

Statement of Changes in Fiduciary Net Position by Division - Legacy Defined Benefit Plan
For the Year Ended June 30, 2018

	DWSD Subdivisions						General Retirement System - Divisions			Total - General Retirement System (all Divisions)	
	GLWA	DWSD-R	Total (all DWSD Subdivisions)	General Division	DOT	Library					
\$ 374,072,344	\$ 158,036,257	\$ 532,108,601	\$ 1,122,668,079	\$ 228,608,389	\$ 83,343,906	\$ 1,966,728,975					
Additions:											
Investment income:											
Interest and dividends	5,579,739	2,357,300	7,937,039	16,632,127	3,361,207	1,228,833	29,159,206				
Net increase in fair value of investments	26,404,500	11,155,244	37,559,744	77,437,982	14,152,677	5,459,322	134,609,725				
Net securities lending income	89,341	37,745	127,086	262,016	47,886	18,471	455,459				
Investment related expenses	(1,726,407)	(729,364)	(2,455,771)	(5,063,135)	(925,346)	(356,947)	(8,801,199)				
Net investment income	30,347,173	12,820,925	43,168,098	89,268,990	16,636,424	6,349,679	155,423,191				
Contributions:											
Employer contributions:											
Originating from DWSD:											
Regular pension contribution	30,158,700	12,741,300	42,900,000	-	-	-	-				
Contribution for administrative expenses	(1,757,500)	742,500	2,500,000	2,500,000	-	-	-				
DWSD transfer to General Division for administrative expenses	(1,757,500)	(742,500)	(2,500,000)	(2,500,000)	-	-	-				
Total contributions originating from DWSD	30,158,700	12,741,300	42,900,000	2,500,000	-	-	-				
Contributions from other divisions	-	-	-	20,000,000	-	-	2,500,000				
Total employer contributions	30,158,700	12,741,300	42,900,000	22,500,000	-	-	2,500,000				
Foundation for Detroit's Future											
Total contributions	30,158,700	12,741,300	42,900,000	22,764,999	110,001	-	2,500,000				
ASF recoupment interest	1,411,361	595,265	2,007,626	3,331,221	1,140,872	142,673	6,622,392				
Other income	245,953	103,909	349,862	703,023	136,913	46,857	1,236,655				
Total additions	62,163,187	26,262,399	88,425,586	116,068,233	18,024,210	9,039,209	231,557,238				
Deductions:											
Member refunds and withdrawals											
Retirees' pension and annuity benefits	1,673,079	706,834	2,379,913	6,721,829	4,370,220	668,731	14,140,693				
General and administrative expenses	45,723,162	19,316,888	65,040,060	134,599,205	32,510,777	7,151,897	238,301,939				
ASF Recoupment Write-off	630,213	266,246	896,459	1,891,400	385,145	140,412	3,313,416				
Transfer of general and administrative expenses to General Division	271,286	114,611	385,897	401,597	86,218	32,812	906,524				
Total deductions	(630,213)	(266,246)	(896,459)	(896,459)	-	-	-				
Net Increase (Decrease) in Net Position Held in Trust	47,667,527	20,138,343	67,805,870	144,510,490	37,352,360	7,993,852	257,662,572				
End of Year Net Position Restricted for Pensions - June 30, 2018	\$ 14,495,660	6,124,056	20,619,716	(28,442,257)	(19,328,150)	1,045,357	(26,105,334)				
End of Year Net Position Restricted for Pensions - June 30, 2018	\$ 368,568,004	\$ 164,160,313	\$ 552,728,317	\$ 1,094,225,822	\$ 209,280,239	\$ 84,389,263	\$ 1,940,623,641				

Combined Plan for the General Retirement System of the City of Detroit

Schedule of DWSD/GLWA Contributions Toward Administrative Expenses as Compared to Actual

DWSD/GLWA Allocable Administrative Expenses

For the Year Ended June 30, 2018

	DWSD Division Total	
	GLWA	DWSD-R
Amount Paid in Excess of Administrative Expenses		
Otherwise Allocable - June 30, 2017	\$ 2,091,808	\$ 883,737
DWSD/GLWA contribution for administrative expenses in accordance with plan of adjustment and bankruptcy order	1,757,500	742,500
Administrative expenses otherwise allocable to DWSD/GLWA	(630,213)	(266,246)
Cumulative Amount Paid in Excess of Administrative Expenses		
Otherwise Allocable - June 30, 2018	<u>\$ 3,219,095</u>	<u>\$ 1,359,991</u>

Combined Plan for the General Retirement System of the City of Detroit

Notes to Other Supplemental Information

June 30, 2018

Allocation Between Divisions

The Combined Plan's allocation methodology to allocate fiscal year 2018 activity between the four main divisions (General Division, DOT, DWSD, and Library) is dependent upon each revenue or expense type. Below is a description of the allocation methodology used by the Combined Plan. Where applicable, the allocation methodology outlined in the pension reporting agreement was utilized.

Investment Income - Investment income (including income from securities lending activity) and investment expenses were allocated to the divisions, with the exception of the allocation between DWSD-R and GLWA, based on the net position of each division compared to total net position (excluding the Annuity Savings Fund) as of fiscal year ended June 30, 2017. The investment income and expenses allocated were after adjusting for interest credited to the Annuity Savings Fund.

Administrative Expenses - In accordance with Section 2.3 of the pension reporting agreement, DWSD-R and GLWA's collective allocable share of administrative expenses of approximately \$1.6 million has been allocated to the general division. Correspondingly, the expenses transferred to the general division are offset by a \$2.5 million contribution made by DWSD-R and GLWA, collectively, for administrative expenses, which was credited to the general division. This will occur until 2023, at which point the City and GLWA will mutually determine and resolve whether any aggregate over- or underpayment will impact the obligation of DWSD-R and GLWA to make payments to GRS under the pension reporting agreement.

Contributions - In fiscal year 2018, the Plan received contributions from the divisions and the Foundation for Detroit's Future. The employer contributions were allocated between the divisions according to which division the contribution was received from, with the exception of DWSD-R and GLWA's collective payments of \$45,400,00, which were allocated as outlined in the POA and/or the pension reporting agreement (see below). Of the total payment of \$45,400,000, \$2,500,000 reflects DWSD-R and GLWA's agreed-upon share of administrative expenses which, per the pension reporting agreement, is to be transferred to the credit of the general division. The payment from the Foundation was allocated based on a common understanding from the bankruptcy proceedings, which was ultimately determined by the City of Detroit and agreed to by the other divisions. The Foundation proceeds were allocated solely to the general division and DOT in proportion to their respective net pension liability as determined by the City's actuary as of June 30, 2017.

ASF Recoupment - Revenue from the ASF recoupment was allocated between the divisions, other than between DWSD-R and GLWA, according to the division under which the individual's ASF earnings were originally accumulated and paid out.

Member Refunds, Withdrawals, Retirees' Pension, and Annuity Benefits - These deductions were allocated, other than the allocation between DWSD-R and GLWA, based on the original division from which benefits were being provided and withdrawals were being made.

Allocation between DWSD-R and GLWA - Once the above activity was allocated to the divisions, the DWSD division was further subdivided between DWSD-R and GLWA in accordance with the pension reporting agreement, which stipulated such allocation would be dictated to the Plan by DWSD-R and GLWA. Per those instructions, the Plan allocated the DWSD activity between GLWA (70.3 percent) and DWSD-R (29.7 percent).

November 26, 2018

To the Board of Trustees and
Investment Committee
General Retirement System
of the City of Detroit

We have audited the financial statements of the Combined Plan for the General Retirement System of the City of Detroit (the "Combined Plan") as of and for the year ended June 30, 2018 and have issued our report thereon dated November 26, 2018. Professional standards require that we provide you with the following information related to our audit, which is divided into the following sections:

Section I - Internal Control Related Matters Identified in an Audit

Section II - Required Communications with Those Charged with Governance

Section III - Other Recommendations and Related Information

Section I includes any deficiencies we observed in the Combined Plan's accounting principles or internal control that we believe are significant. Current auditing standards require us to formally communicate annually matters we note about the Combined Plan's accounting policies and internal control. The Combined Plan has been diligent in trying to remedy many of the previously identified internal control deficiencies. Because of its efforts, the number of control issues identified in Section I to this letter has continued to decline.

Section II includes information that current auditing standards require independent auditors to communicate to those individuals charged with governance. We will report this information annually to the board of trustees and investment committee of the Combined Plan.

Section III presents recommendations related to internal control, procedures, and other matters noted during our current year audit. These comments are offered in the interest of helping the Combined Plan in its efforts toward continuous improvement, not just in the areas of internal control and accounting procedures, but also in operational or administrative efficiency and effectiveness.

We would like to take this opportunity to thank the System's staff for the cooperation and courtesy extended to us during our audit. Their assistance and professionalism are invaluable.

This report is intended solely for the use of the board of trustees, the investment committee, and management of the General Retirement System of the City of Detroit and is not intended to be and should not be used by anyone other than these specified parties.

To the Board of Trustees and
Investment Committee
General Retirement System
of the City of Detroit

November 26, 2018

We welcome any questions you may have regarding the following communications, and we would be willing to discuss any of these or other questions that you might have at your convenience.

Very truly yours,

Plante & Moran, PLLC



Michelle M. Watterworth



Ali H. Hijazi

Section I - Internal Control Related Matters Identified in an Audit

In planning and performing our audit of the financial statements of the Combined Plan as of and for the year ended June 30, 2018, in accordance with auditing standards generally accepted in the United States of America, we considered the Combined Plan's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Combined Plan's internal control. Accordingly, we do not express an opinion on the effectiveness of the Combined Plan's internal control.

Our consideration of internal control was for the limited purpose described in the preceding paragraph and was not designed to identify all deficiencies in internal control that might be significant deficiencies or material weaknesses and, therefore, material weaknesses or significant deficiencies may exist that were not identified. However, as discussed below, we identified certain deficiencies in internal control that we consider to be material weaknesses.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis.

A material weakness is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected, on a timely basis.

We consider the following deficiencies in the Combined Plan's internal control to be material weaknesses:

Preparation and Review of Bank/Investment Reconciliations (Repeat Finding)

- The Combined Plan has approximately \$1.3 billion at Bank of New York in various investments, as well as multiple bank accounts at First Independence Bank (FIB) and Huntington Bank (Huntington). At the end of every month, the Combined Plan should be reconciling the amounts at the bank with the amounts recorded in the Combined Plan's general ledger on a timely basis. In addition, the Combined Plan should record activity for the active accounts in the general ledger based on statements from Bank of New York, which reflect fair value of the assets. This will ensure accurate representation of the Combined Plan's financial position throughout the year. While the reconciliations for the FIB and Huntington accounts were performed and reviewed timely each month, the reconciliations for the Bank of New York active investments were only performed beginning with the quarter ended March 31, 2018. Preparation of these reconciliations is imperative to ensure that the transactions recorded by the Combined Plan match the transactions recorded at the bank. Furthermore, timely preparation and review of these reconciliations serves as a key control to ensure that the financial reports generated by the Combined Plan are accurate.

Interest and dividends, realized gains (losses), and unrealized gains (losses) are the three components of investment income. For investments where Bank of New York is the custodian of the Combined Plan's investments, the Combined Plan records the activity using the individual investment statements as the source document. Due to the timing and availability of information provided to Bank of New York, the Combined Plan is currently not able to tie to the custodial bank's reports. The remaining controls are insufficient to validate amounts recorded as investment income. Therefore, the Combined Plan's current controls would not detect an error in posting investment income in the general ledger. It is imperative that the Combined Plan put in place a mechanism to ensure the amounts in the various investment income accounts are appropriate.

Section I - Internal Control Related Matters Identified in an Audit (Continued)

Controls Over the Combined Plan's Census Data and Actuarial Valuation Process (Repeat Finding)

The Combined Plan has to accumulate and transmit voluminous member data to the actuary. The actuary then uses this information to prepare the actuarial valuation, which impacts the calculation of the annual required contribution (ARC) and the actuarial accrued liability (AAL) for funding purposes and, under GASB Statement No. 67, impacts the total pension liability disclosed in your financial statements. It is key that the information that is provided to the actuary is complete and accurate in order to ensure that the funding levels, AAL, and disclosures under GASB Statement No. 67, including the total pension liability, are also accurate.

- **Controls over actuarial reporting:** The Combined Plan provides information on an annual basis to the actuary in order for the actuary to compute the total pension liability under GASB Statement No. 67, as well as the ARC and AAL for funding purposes. The information provided by the Combined Plan includes data for all participants in the Combined Plan, such as pay information, date of birth, date of hire, etc. and enables the actuary to project the present value of future benefit payments. Prior to providing the information to the actuary, the Combined Plan does perform certain tests on the data. While the Combined Plan has taken steps to provide more accurate and complete data, during our testing, we noted several instances of errors in the data or missing data that resulted in incomplete information. The following table lists the issues found during the audit and related recommendations to resolve.

Issue	Recommendation
Frozen Accrued Benefits (Component II) - As Component II is frozen as of June 30, 2014, a calculation of individuals' frozen accrued benefits for active members should be performed and provided to the actuary. The Combined Plan is currently working on completing the calculations to provide to the actuary. As the calculations were not completed before the June 30, 2018 GASB 67 valuation was issued, the actuary is estimating based on average final compensation (AFC) and sick bank data as of June 30, 2014 provided by the Combined Plan.	The Combined Plan should perform the calculations of the final frozen accrued benefits as of June 30, 2014 and provide to the actuary, as this would result in the most accurate calculation of the total pension liability of Component II.
Completeness and Accuracy of Census Data (Components I and II) - Based on our testing, it was noted some members were either improperly included or excluded from the data sent to the actuary. Also, we noted some key employee data was missing for members and demographic information for some members was incorrect.	As the Component I and II census data is retained in the same database, the Combined Plan should have a process in place to accurately determine which members are eligible for each plan. Also, as the Combined Plan obtains a significant amount of data from the City of Detroit, Michigan, we recommend a review of census data prior to sending to the actuary to identify any missing data and work with the City to obtain such data.

Section I - Internal Control Related Matters Identified in an Audit
(Continued)

Issue	Recommendation
Active Pay Amount (Component I) - The actuary uses an active member's current pay in its calculation of determining a member's estimated future benefit. Based on our testing, we noted some discrepancies between the pay information provided to the actuary and pay information from the City.	The Combined Plan should perform sample testing on the data sent to the actuary to ensure it is providing the proper compensation information, as defined in the Plan of Adjustment.
Member Classifications (Components I and II) - During testing, it was noted some members were incorrectly classified between the three statuses (active, deferred, or retired). Incorrect classification leads to inaccurate actuarial calculations being performed on those members.	The Combined Plan should strengthen the process of classifying individuals within the census data. With some of this information derived from data received from the City of Detroit, Michigan, the Combined Plan should work with the City to gain more accurate member status.
Death Audit (Components I and II) - It was noted a death audit was not performed on the deferred members' list sent to the actuary. These issues could lead to the pension liability being misstated due to incomplete or inaccurate information.	We encourage the Combined Plan to put in place more comprehensive procedures to further ensure the accuracy of this census data being used by the actuary.

In addition, based on discussions with the actuary and review of the actuarial valuations, it was noted that significant work is performed on the original census data provided by the Combined Plan that ultimately is used in the valuations. The actuary indicated it needed to make several manual adjustments and assumptions to create data used for the valuation (after conferring with the Combined Plan's staff on any changes to the data). This included removing ineligible individuals and reclassifying individuals between the different statuses (active, deferred, retired). The Combined Plan should implement more comprehensive procedures to provide the actuary complete and accurate data from the onset.

Controls Over the Combined Plan's Information Technology Processes (Repeat Finding)

The Combined Plan has complex modifiable information technology that integrates with the City of Detroit, Michigan's (the "City") various payroll databases. The Combined Plan's IT department is independent of the City and the Combined Plan's other departments. The security provided by the IT system is important to the validity and the accuracy of the data maintained, including the census information provided to the actuary. Although the Combined Plan is currently in the process of modifying the information technology system, we offer the following that the Combined Plan should keep in mind as it continues to fully implement the new ERP system:

- **Use of automated logs:** The Combined Plan uses customized software for a majority of the Combined Plan's needs, which includes the maintaining of the census data and benefits calculation application, which are managed internally by the Combined Plan's IT personnel and can be modified by the IT department. For all changes to that software, there should be an automated log maintained listing those changes, and no single individual should be able to effect a change without proper authorization. Currently, the Combined Plan does have a process to review, authorize, and track changes, but it is not automated and is, therefore, subject to human error and possible circumvention.

Section I - Internal Control Related Matters Identified in an Audit (Continued)

- **Master file changes**: Additionally, it is recommended that the Combined Plan implement processes to ensure that master file changes are documented, authorized, and reviewed. The lack of this documentation could result in unauthorized and undocumented changes that go undetected by the Combined Plan.
- **Segregation of duties**: Segregation of duty controls provide a separation of users with access to program source code and users with the ability to make or implement changes into the production environment. The ability to make or implement program source code changes should be limited to individuals who cannot access and edit source code. The lack of this control could result in inaccurate or unauthorized changes.

Section II - Required Communications with Those Charged with Governance

Our Responsibility Under U.S. Generally Accepted Auditing Standards

As stated in our engagement letter dated July 27, 2018, our responsibility, as described by professional standards, is to express an opinion about whether the financial statements prepared by management with your oversight are fairly presented, in all material respects, in conformity with U.S. generally accepted accounting principles. Our audit of the financial statements does not relieve you or management of your responsibilities. Our responsibility is to plan and perform the audit to obtain reasonable, but not absolute, assurance that the financial statements are free of material misstatement.

As part of our audit, we considered the internal control of the Combined Plan. Such considerations were solely for the purpose of determining our audit procedures and not to provide any assurance concerning such internal control.

We are responsible for communicating significant matters related to the audit that are, in our professional judgment, relevant to your responsibilities in overseeing the financial reporting process. However, we are not required to design procedures specifically to identify such matters.

Planned Scope and Timing of the Audit

We performed the audit according to the planned scope and timing previously communicated to you in our letter about planning matters dated July 27, 2018.

Significant Audit Findings

Qualitative Aspects of Accounting Practices

Management is responsible for the selection and use of appropriate accounting policies. In accordance with the terms of our engagement letter, we will advise management about the appropriateness of accounting policies and their application. The significant accounting policies used by the Combined Plan are described in Note 1 to the financial statements. No new accounting policies were adopted, and the application of existing policies was not changed during year.

We noted no transactions entered into by the Combined Plan during the year for which there is a lack of authoritative guidance or consensus.

There are no significant transactions that have been recognized in the financial statements in a different period than when the transaction occurred.

Accounting estimates are an integral part of the financial statements prepared by management and are based on management's knowledge and experience about past and current events and assumptions about future events. Certain accounting estimates are particularly sensitive because of their significance to the financial statements and because of the possibility that future events affecting them may differ significantly from those expected.

The financial statements include investments valued at approximately \$81,000,000 (4 percent of net position) at June 30, 2018, whose fair values have been estimated by management in the absence of readily determinable market values.

Section II - Required Communications with Those Charged with Governance (Continued)

The valuation of alternative investments constitutes a very sensitive and significant estimate affecting the financial statements. Management uses various means to value the investments, including utilizing a third-party valuation firm, confirmations from the investment managers, periodic appraisals, guidance from real estate advisors, etc. These estimates are very subjective and highly sensitive to change. We believe management's estimates are in accordance with GAAP.

The financial statement disclosures and required supplemental information schedules contain information about the Combined Plan's total pension liability. In order to determine the total pension liability, the actuary must apply certain assumptions, which are highly sensitive to estimation. The most sensitive estimates used in the valuation were as follows:

- Assumed long-term rate of return: For the purpose of GASB Statement No. 67, as of June 30, 2018, the Combined Plan is currently using 7.38 percent for the assumed long-term expected rate of return based on information provided by the Combined Plan's investment advisor combined with calculations performed by the Combined Plan. This assumed rate of return has increased from the 6.91 percent assumption used by the Combined Plan as of June 30, 2017. Nationally, this long-term rate of return assumption has garnered significant public attention, with many being critical of the average return assumption used by plans across the United States, which, according to a February 2018 National Association of State Retirement Administrators (NASRA) study, was 7.36 percent. Nationally, the trend continues to show a continued decline in this assumption, and we believe that trend will continue. We encourage the Combined Plan to continue to be critical of this significant assumption, watch the trends nationally, and re-evaluate the return assumption annually with a critical eye. Please note that this assumption related to the long-term assumed rate of return is for financial reporting purposes only; the plan of adjustment requires that the projected rate of return for funding purposes be 6.75 percent.
- Single discount rate calculation: The calculation of the single discount rate under GASB Statement No. 67, which is calculated using the long-term assumed rate of return as one of many assumptions, is highly sensitive to estimates the actuary makes about future contributions and future benefit payments. Inherent in those assumptions is some subjectivity surrounding the projection of future contributions, since the Combined Plan does not have an explicit written funding policy dictating contributions after 2023. The assumption made in these calculations is that the actuarially assumed contributions will be made at rates sufficient to fund the benefits by amortizing the unfunded liability over a closed 30-year period.
- Accuracy of census data elements: The actuarial valuation relies heavily on the accuracy of the census data provided by the Combined Plan. We tested the accuracy of this data and noted some errors in the data; however, we do not believe the magnitude of these errors would materially impact the results of the valuation. Additionally, the Combined Plan's actuary still has not been provided with the calculations of the frozen accrued benefits for active members, which is key to estimating the total pension liability (TPL) disclosed within these financial statements for Component II. The actuary estimated these amounts in order to determine the TPL. Based on our testing, we believe those estimates, combined with an actuarial adjustment, result in a materially accurate TPL.
- Mortality assumptions: The assumptions about mortality were estimated by the actuary based on the results of an experience study issued in February 2015. Generally, the actuary used the RP-2014 Blue Collar Annuitant Table for males and females, projected on a fully generational basis.

Section II - Required Communications with Those Charged with Governance (Continued)

- Other assumptions: All other assumptions in the actuarial valuation are based on an experience study for the period from 2002-2007. We are aware the Combined Plan has decided to wait and perform the next experience study for the period from July 1, 2015 through June 30, 2020 in order to avoid any results that could be skewed due to the City's bankruptcy.

Disclosure of these assumptions and resultant sensitivity of the discount rate can be found in Notes 7 and 8 to the financial statements.

The disclosures in the financial statements are neutral, consistent, and clear. Certain financial statement disclosures are particularly sensitive because of their significance to financial statement and schedule users. The most sensitive disclosures affecting the financial statements and the schedules are the disclosures related to GASB Statement No. 67, including the actuarial valuation results.

Difficulties Encountered in Performing the Audit

We are required to inform those charged with governance of any serious difficulties encountered in dealing with management related to the performance of the audits. We encountered no significant difficulties in dealing with management in performing and completing our audit.

Disagreements with Management

For the purpose of this letter, professional standards define a disagreement with management as a financial accounting, reporting, or auditing matter, whether or not resolved to our satisfaction, that could be significant to the financial statements or the auditor's report. We are pleased to report that no such disagreements arose during the course of our audit.

Corrected and Uncorrected Misstatements

Professional standards require us to accumulate all known and likely misstatements identified during the audit, other than those that are trivial, and communicate them to the appropriate level of management. We did not detect any misstatements of the financial statements as a result of audit procedures. However, see the attached schedule that summarizes passed disclosures and financial reporting matters of the financial statements. Management has determined that their effects are immaterial, both individually and in the aggregate, to the financial statements taken as a whole.

Significant Findings or Issues

We generally discuss a variety of matters, including the application of accounting principles and auditing standards, business conditions affecting the Combined Plan, and business plans and strategies that may affect the risks of material misstatement, with management each year prior to our retention as the Combined Plan's auditors. However, these discussions occurred in the normal course of our professional relationship, and our responses were not a condition of our retention.

Management Representations

We have requested certain representations from management that are included in the management representation letter dated November 26, 2018.

Section II - Required Communications with Those Charged with Governance (Continued)

Management Consultations with Other Independent Accountants

In some cases, management may decide to consult with other accountants about auditing and accounting matters, similar to obtaining a “second opinion” on certain situations. If a consultation involves application of an accounting principle to the Combined Plan’s financial statements or a determination of the type of auditor’s opinion that may be expressed on those statements, our professional standards require the consulting accountant to check with us to determine that the consultant has all the relevant facts. To our knowledge, there were no such consultations with other accountants.

Attachment

Client: Combined Plan for the General Retirement System of the City of Detroit
 Opinion Unit: Combined Plan
 Y/E: 6/30/2018

SUMMARY OF UNRECORDED POSSIBLE ADJUSTMENTS

The effect of misstatements and classification errors identified would be to increase (decrease) the reported amounts in the financial statement categories identified below:

Ref. #	Description of Misstatement	Current Assets	Long-term Assets	Current Liabilities	Long-term Liabilities	Equity	Revenue	Expenses	Net Income Statement Impact
FACTUAL MISSTATEMENTS:									
A1	None								
JUDGMENTAL ADJUSTMENTS:									
B1	None								
ITEMS UNABLE TO AUDIT:									
C1	Insight investment - Plante & Moran, PLLC is unable to obtain sufficient audit evidence	\$ (4,000,000)	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,000,000 \$ (4,000,000)
	Total	<u>\$ (4,000,000)</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 4,000,000</u>	<u>\$ (4,000,000)</u>

PASSED DISCLOSURES AND FINANCIAL REPORTING MATTERS:

- D1 Money-weighted rate of return, net of investment expenses - The System calculated return is 6.7 percent. We are unable to audit this rate of return.
- D2 The total pension liability, as calculated by the actuary, is based on census information that is either incomplete or inaccurate. The total pension liability would be different had accurate and complete information been provided to the actuary.
- D3 Covered payroll reported in the required supplemental information for the Legacy Plan excludes overtime and longevity pay, which was included as compensation for purposes of determining employer contributions. GASB Statement No. 82 requires reported covered payroll to be the payroll on which contributions to the plan are based.

Section III - Other Recommendations and Related Information

During our audit, we noted areas where we believe there are opportunities for the Combined Plan to further strengthen internal control or to increase operating efficiencies. Our observations on those areas are presented below for your consideration:

- **Contributions Received from the City of Detroit, Michigan (the “City”)**
 - Employee contributions: The Combined Plan receives employee contributions directly from the City. The City deducts the amount from the employee and remits to the Combined Plan periodically. The Combined Plan’s IT department collects data on these contributions to properly track the contributions by individual. Currently, no reconciliation of employee contribution money received from the City and data IT received from the City indicating how much each member contributed is being performed. It is recommended a reconciliation be performed to ensure the Combined Plan is receiving the proper amount of funds, which are being credited to an individual’s account.
 - Employer contributions: We noted the Combined Plan relies on wage information that comes from the City in order to calculate the amount of employer contributions to the Hybrid Plan. The Combined Plan currently uses this wage information to derive pensionable wages and calculates the amount the City owes. The Combined Plan calculates the pensionable wages by utilizing only those payroll codes that would be considered for pensionable wages (i.e., overtime wages should be excluded from pensionable wages). This amount is billed to the City each quarter. The Combined Plan should work with the City to verify the codes that are used to calculate pensionable wages are proper. In addition, the Combined Plan should consider whether independently testing/verifying these pensionable wages would benefit the Combined Plan by further ensuring the base amount on which contributions are calculated is complete and accurate.
- **Information Technology Processes**
 - During our testing, we noted no formal process to disable access for terminated individuals. We recommend the Combined Plan have a formal process for HR to fill out a termination form and send to IT and perform it timely. In addition, all new hires should be timely documented.
 - There currently is no formal process to fill out a production release form. Usually a member of the IT department will inform Ray Tchou to review a production change. Ray is the only individual with the ability to release a production change. We recommend the Combined Plan have a formal policy for individuals to fill out a production form to document change requests.
 - It was noted there are admin user profiles that remained in the system for users no longer employed at the Combined Plan. These profiles have remained active, as staff need to access old files. In addition, we noted duplicate admin user profiles for current employees. We recommend the Combined Plan perform a user profile review and only allow one user profile for each current employee.
- **Benefit Payment Calculations**
 - Pension factors are used in calculating an individual’s pension payment based on age and option selected. Currently, the pension factor used in the calculation of benefit payments is using an old mortality table (1984 table) and an 8 percent rate of return. Pension factors should be updated with a newer mortality table (RP-2014 mortality table is currently being used in the actuarial valuations) and rate of return of 6.75 percent (current rate of return used for funding purposes, as stipulated by the Plan of Adjustment).

The General Retirement System of the City of Detroit

GASB Statement No. 68 Employer Reporting and
Accounting Schedules of Component II

June 30, 2017



July 23, 2018

Board of Trustees
The General Retirement System of the City of Detroit

Dear Board Members:

This report provides information required for the General Retirement System of the City of Detroit in connection with the Governmental Accounting Standards Board (GASB) Statement No. 68 "Employer Reporting for Pension Plans." These calculations have been made on a basis that is consistent with our understanding of this Statement. This information is subject to the System's Auditor's review. Please let us know if the System's Auditor recommends any changes.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of satisfying the requirements of GASB Statement No. 68. The calculation of the plan's liability for this report is not applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement No. 68 may produce significantly different results. In particular, this is not a funding report and nothing in this report should be construed as a funding recommendation. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by System staff, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. This report is based on the valuation date of June 30, 2016. The total pension liability was rolled-forward from the valuation date to the plan year ending June 30, 2017 using generally accepted actuarial principles. The asset information as of June 30, 2017 was provided by the System. This information was checked for internal consistency, but it was not audited by Gabriel, Roeder, Smith & Company. A description of the adjustments made to the data is incorporated in this report (either directly or by reference). GRS is not responsible for the accuracy of the data provided by the Retirement System. This report is based upon estimates of frozen accrued benefits. Final calculations of frozen accrued benefits for active members were not provided. Future measurements based on final calculation of benefit amounts will differ.

At the direction of the System and approval of the System's Auditor, the long-term expected return on assets used to determine the discount rate is 6.91%, net of investment expenses, as of June 30, 2017, down from 7.23%, net of investment expenses, as of June 30, 2016. We have reviewed this assumption based on the System's asset allocation and have determined it to be reasonable for the purpose of the measurement being taken.

The benefit provisions reflected in this valuation for the development of the end of year Total Pension Liability (TPL) are those in effect for Component II as of the end of the plan year on June 30, 2017. We understand that Component I is a separate plan for GASB No. 67 purposes and will, therefore, be disclosed in a separate report.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the System on the measurement date for purposes of GASB Statement No. 68 reporting. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

The signing individuals are independent of the plan sponsor.

This report supplements our GASB Statement No. 67 report dated October 31, 2017. The Total Pension Liability, Plan Fiduciary Net Position, Net Pension Liability, and corresponding schedules are unchanged from the prior report. However, the GASB Statement No. 68 specific schedules (such as Pension Expense, deferred inflows/outflows, proportionate share, etc.) have been added to this report. In addition, we received revised asset information. While the Plan Fiduciary Net Position is not changed, administrative expenses and investment income differ from what was reported for the GASB Statement No. 67 report. As a result, the revenue and expenditure exhibits have been updated.

David T. Kausch and Judith A. Kermans are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

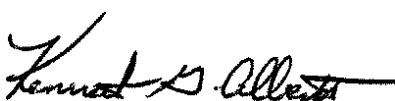
Respectfully submitted,



David T. Kausch, FSA, EA, FCA, MAAA, PhD
Senior Consultant and Chief Actuary



Judith A. Kermans, EA, FCA, MAAA
Senior Consultant and President



Kenneth G. Alberts
Consultant

DTK/JAK/KGA:dj



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SECTION A

EXECUTIVE SUMMARY

Executive Summary as of June 30, 2017

Actuarial Valuation Date	June 30, 2016
Measurement Date of the Net Pension Liability	June 30, 2017
Employer's Fiscal Year Ending Date (Reporting Date)	June 30, 2018

Membership

Number of	
- Retirees and Beneficiaries	11,926
- Inactive, Nonretired Members	3,588
- Active Members	3,236
- Total	18,750
Covered Payroll	\$ 143,882,722

Net Pension Liability

Total Pension Liability	\$ 2,910,509,226
Plan Fiduciary Net Position	1,966,728,975
Net Pension Liability	\$ 943,780,251
Plan Fiduciary Net Position as a Percentage	
of Total Pension Liability	67.57%
Net Pension Liability as a Percentage	
of Covered Payroll	655.94%

Development of the Single Discount Rate

Single Discount Rate	6.91%
Long-Term Expected Rate of Investment Return	6.91%
Long-Term Municipal Bond Rate*	3.56%
Last year ending June 30 in the 2018 to 2117 projection period	
for which projected benefit payments are fully funded	2117
Total Pension Expense	\$ 113,958,599

Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ -	\$ -
Changes in assumptions	-	-
Net difference between projected and actual earnings		
on pension plan investments	118,845,862	86,449,730
Total	\$ 118,845,862	\$ 86,449,730

*Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2017. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax-exempt securities.

Discussion

Changes to the Actuarial Assumptions

For purposes of determining the total pension liability as of June 30, 2017, the following actuarial assumptions were changed/modified from those used in the June 30, 2016 funding valuation:

- At the direction of the System and approval of the Systems' Auditor, the long-term expected return on assets was 6.91% net of investment expenses, as of June 30, 2017 (it was 6.75% net of investment and administrative expenses, in the June 30, 2016 funding valuation, as required by the Plan of Adjustment). The Single Discount Rate (SDR) changed to 6.91% from 7.23% when compared to the June 30, 2016 GASB Statement No. 68 valuation.

All other actuarial assumptions were the same as those used in the June 30, 2016 actuarial valuation (the funding valuation).

Changes to the Benefit Provisions

There were no changes in benefit provisions during the year.

Data Approximations and Assumptions

A description of the data approximations and assumptions used in making this report are included in the June 30, 2016 funding valuation report.

Magnitude of Administrative Expenses

Combined Component I (Hybrid) and Component II (Legacy) administrative expenses for the 2017 fiscal year are approximately 30% higher when compared to the 2016 fiscal year expenses. We understand that this increase is temporary. In addition, ongoing payroll (Component I payroll) has decreased with the departure of GLWA. We will be monitoring actual expenses as a percent of ongoing payroll and may recommend an increase in this assumption in future valuations. For this valuation, we have adjusted the assumption as a percent to prevent the projected dollars from decreasing due to the lower payroll. This brings the expenses as a percent of Component I payroll up from 3.0% to 3.55% due to the lower payroll. In addition, we allocated 71% of the expenses to Component II and 29% to Component I, consistent with this year's allocation as shown in the assets.

Changes from GASB Statement No. 67 Report

This report supplements our GASB Statement No. 67 report dated October 31, 2017. The Total Pension Liability, Plan Fiduciary Net Position, Net Pension Liability, and corresponding schedules are unchanged from the prior report. However, the GASB Statement No. 68 specific schedules (such as Pension Expense, deferred inflows/outflows, proportionate share, etc.) have been added to this report. In addition, we received revised asset information. While the Plan Fiduciary Net Position is not changed, administrative expenses and investment income differ from what was reported for the GASB Statement No. 67 report. As a result, the revenue and expenditure exhibits have been updated.

Accounting Standard

For State and local government employers (as well as certain non-employers) that contribute to a Defined Benefit (DB) pension plan administered through a trust or equivalent arrangement, Governmental Accounting Standards Board (GASB) Statement No. 68 establishes standards for pension accounting and financial reporting. Under GASB Statement No. 68, the employer must account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information is not included in this report if it is not actuarial in nature, such as the notes to the financial statements regarding accounting policies and investments. As a result, the Retirement System and/or plan sponsor is responsible for preparing and disclosing the non-actuarial information needed to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires State and local government employers that contribute to DB pension plans to recognize the net pension liability and the pension expense on their financial statements, along with the related deferred outflows of resources and deferred inflows of resources. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to the General Retirement System of the City of Detroit subsequent to the measurement date of June 30, 2017.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the certain changes in the liability and investment experience.

Development of Employer Proportionate Shares

As instructed, we have developed the proportionate employer shares as follows:

- General, DOT, DWSD, and Library have contribution rates assessed on separate relationships and are therefore accounted for separately under Paragraph 49 of GASB No. 68.
- The component units in the General Division were 1) General City; 2) Parking; and 3) Airport.
- Proportionate shares in the General Division were determined by prorating based on the Total Pension Liability.

Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows of resources and inflows of resources related to pensions.

In addition, GASB Statement No. 68 requires the notes of the financial statements for the employers to include certain additional information, including:

- a description of the types of benefits provided by the plan, as well as automatic or ad hoc COLAs;
- the number and classes of employees covered by the benefit terms;
- for the current year, sources of changes in the net pension liability;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the Single Discount Rate;
- certain information about mortality assumptions and the dates of experience studies;
- the date of the valuation used to determine the total pension liability;
- information about changes of assumptions or other inputs and benefit terms;
- the basis for determining contributions to the plan, including a description of the plan's funding policy, as well as member and employer contribution requirements;
- the total pension liability, fiduciary net position, net pension liability, and the pension plan's fiduciary net position as a percentage of the total pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- a description of the system that administers the pension plan; and
- a description of the terms of the plan's deferred retirement option program (DROP) and the total DROP balance for those members currently participating in the DROP. (The General Retirement System of the City of Detroit does not have a DROP program.)

Required Supplementary Information

The financial statements of employers also include required supplementary information showing the 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- a comparison of actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

While the first two tables may be built prospectively as the information becomes available, sufficient information may currently be available for the third table from prior financial statements.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. For the employer's financial reporting purposes, the net pension liability and pension expense should be measured as of the employer's "measurement date" which may not be earlier than the employer's prior fiscal year-end date. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2016, rolled to the plan year end of June 30, 2017.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.91%; the municipal bond rate is 3.56% (based on the weekly rate closest to but not later than the plan year end of the "20-Bond GO Index" rate from the Bond Buyer Index); and the resulting Single Discount Rate is 6.91%, as of June 30, 2017.

The expected rate of return was provided by the Retirement System and approved by the System's auditor.

Limitation of Assets as a Percent of Total Pension Liability Measurements

This report includes a measure of the plan fiduciary net position as a percent of total pension liability (67.57% as of June 30, 2017). Unless otherwise indicated, with regard to any such measurements presented in this report:

- (1) This measurement is not intended to be a funded ratio or a measure of funded progress.
- (2) This measurement is inappropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations.
- (3) The measurement is inappropriate for assessing the need for or amount of future employer contributions.

Limitations of Project Scope

Actuarial Standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entities to make required contributions when due. Such an evaluation was not within the scope of this project and is not within our area of expertise. Consequently, we have not made such an evaluation.

Benefits as of June 30, 2016

As of the June 30, 2016 census date:

- 1) Frozen Accrued Benefit amounts were not available for active members.

Data provided was used to estimate the impact of the above information. As this data becomes available in the future, the results of our liability calculations may differ.

The reported June 30, 2017 Annuity Savings Fund (ASF) balance included a receivable, computed by the System's auditors, that accounts for future ASF recoupments. We understand this amount was originally determined as of June 30, 2015 and updated to June 30, 2017 in accordance with GAAP accounting.

SECTION B

FINANCIAL STATEMENTS

This information is subject to the System's Auditor's review. Please let us know if the System's Auditor recommends any changes.

Statement of Fiduciary Net Position as of June 30, 2017

Assets

Cash and Cash Equivalents	\$ 108,123,413
Receivables	123,333,387
Investments at Fair Value	1,752,552,204
Cash and Investments held as collateral for securities lending	71,779,248
Capital Assets - Net	<u>267,889</u>
Total Assets	<u>\$ 2,056,056,141</u>

Liabilities

Accounts Payable	\$ 89,327,166
Total Liabilities	<u>\$ 89,327,166</u>

Net Position Restricted for Pensions	<u>\$ 1,966,728,975</u>
---	--------------------------------

ASF Reserve	\$ 120,921,554
Other Reserves	<u>1,845,807,421</u>
Plan Fiduciary Net Position	<u>\$ 1,966,728,975</u>

Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2017

Additions

Contributions	
Employer	\$ 91,238,402
Employee	-
Other	-
Total Contributions	<u>\$ 91,238,402</u>
Investment Income	
Investment Income	\$ 206,896,567
Net Investment Income	<u>\$ 206,896,567</u>
Other Income (Including ASF Interest)^	\$ 8,324,075
Total Additions	<u>\$ 306,459,044</u>

Deductions

Benefit Payments, including Refunds of Employee Contributions*	\$ 267,249,539
Pension Plan Administrative Expense	6,021,837
Other	-
Total Deductions	<u>\$ 273,271,376</u>
Net Increase in Net Position	<u>\$ 33,187,668</u>

Net Position Restricted for Pensions

Beginning of Year	\$ 1,933,541,307
End of Year	<u>\$ 1,966,728,975</u>

[^] Following discussions with the auditor, we understand that for purposes of determining the Pension Expense for GASB Statement No. 68, ASF Interest should be treated as Other Changes in Plan Fiduciary Net Position and recognized immediately.

* Includes approximately \$2.9 million of adjusted loan balances that were treated as refunds of ASF contributions.

Statement of Pension Expense Under GASB Statement No. 68

Fiscal Year Ended June 30, 2017*

A. Expense	General	DOT	DWSD	Library	Total
1. Service Cost	\$ -	\$ -	\$ -	\$ -	\$ -
2. Interest on the Total Pension Liability	111,696,826	29,480,676	53,810,904	6,930,830	201,919,236
3. Current-Period Benefit Changes	-	-	-	-	-
4. Employee Contributions (made negative for addition here)	-	-	-	-	-
5. Projected Earnings on Plan Investments (made negative for addition here)	(76,351,464)	(16,098,747)	(35,478,877)	(5,586,372)	(133,515,460)
6. Pension Plan Administrative Expense	5,024,638	749,619	-	247,580	6,021,837
7. Other Changes in Plan Fiduciary Net Position	(4,567,412)	(1,436,415)	(2,125,248)	(195,000)	(8,324,075)
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	18,837,086	5,220,442	24,925,019	(1,844,278)	47,138,269
9. Recognition of Outflow (Inflow) of Resources due to Assets	8,533,916	(424,293)	(5,680,643)	(1,710,188)	718,792
10. Total Pension Expense	\$ 63,173,590	\$ 17,491,282	\$ 35,451,155	\$ (2,157,428)	\$ 113,958,599

*Totals may not add due to rounding.

Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2017*

A. Outflows (Inflows) of Resources due to Liabilities	General	DOT	DWSD	Library	Total
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$ (23,006,975)	\$ (5,802,247)	\$ 3,370,105	\$ (2,069,263)	\$ (27,508,380)
2. Assumption Changes (gains) or losses	\$ 41,844,061	\$ 11,022,689	\$ 21,554,914	\$ 2,504,293	\$ 76,925,957
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	1.0000	1.0000	1.0000	1.0000	1.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	\$ (23,006,975)	\$ (5,802,247)	\$ 3,370,105	\$ (2,069,263)	\$ (27,508,380)
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$ 41,844,061	\$ 11,022,689	\$ 21,554,914	\$ 2,504,293	\$ 76,925,957
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	\$ 18,837,086	\$ 5,220,442	\$ 24,925,019	\$ 435,030	\$ 49,417,577
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	\$ -	\$ -	\$ -	\$ -	\$ -
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$ -	\$ -	\$ -	\$ -	\$ -
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	\$ -	\$ -	\$ -	\$ -	\$ -
B. Outflows (Inflows) of Resources due to Assets					
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ (43,059,585)	\$ (7,871,494)	\$ (19,730,574)	\$ (2,719,454)	\$ (73,381,107)
2. Recognition period for Assets {in years}	5.0000	5.0000	5.0000	5.0000	5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ (8,611,917)	\$ (1,574,299)	\$ (3,946,115)	\$ (543,891)	\$ (14,676,221)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	\$ (34,447,668)	\$ (6,297,195)	\$ (15,784,459)	\$ (2,175,563)	\$ (58,704,886)

*Totals may not add due to rounding.

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30 General

A. Outflows and Inflows of Resources Due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 41,844,061	\$ 23,006,975	\$ 18,837,086
2. Due to Assets	\$ 24,951,060	\$ 16,417,144	\$ 8,533,916
3. Total	\$ 66,795,121	\$ 39,424,119	\$ 27,371,002

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ 23,006,975	\$ (23,006,975)
2. Assumption Changes	\$ 41,844,061	\$ -	\$ 41,844,061
3. Net Difference between projected and actual earnings on pension plan investments	\$ 24,951,060	\$ 16,417,144	\$ 8,533,916
4. Total	\$ 66,795,121	\$ 39,424,119	\$ 27,371,002

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ -	\$ -
2. Assumption Changes	\$ -	\$ -	\$ -
3. Net Difference between projected and actual earnings on pension plan investments	\$ 68,815,107	\$ 42,252,894	\$ 26,562,213
4. Total	\$ 68,815,107	\$ 42,252,894	\$ 26,562,213

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources	
	General Total	
2018	\$ 8,533,917	
2019	\$ 16,339,145	
2020	\$ 10,301,068	
2021	\$ (8,611,917)	
2022	\$ -	
Thereafter	\$ -	
Total	\$ 26,562,213	

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30 DOT

A. Outflows and Inflows of Resources Due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 11,022,689	\$ 5,802,247	\$ 5,220,442
2. Due to Assets	\$ 5,162,784	\$ 5,587,077	\$ (424,293)
3. Total	\$ 16,185,473	\$ 11,389,324	\$ 4,796,149

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ 5,802,247	\$ (5,802,247)
2. Assumption Changes	\$ 11,022,689	\$ -	\$ 11,022,689
3. Net Difference between projected and actual earnings on pension plan investments	\$ 5,162,784	\$ 5,587,077	\$ (424,293)
4. Total	\$ 16,185,473	\$ 11,389,324	\$ 4,796,149

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ -	\$ -
2. Assumption Changes	\$ -	\$ -	\$ -
3. Net Difference between projected and actual earnings on pension plan investments	\$ 14,158,732	\$ 10,309,975	\$ 3,848,757
4. Total	\$ 14,158,732	\$ 10,309,975	\$ 3,848,757

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2018	\$ (424,295)
2019	\$ 3,588,484
2020	\$ 2,258,866
2021	\$ (1,574,298)
2022	\$ -
Thereafter	\$ -
Total	\$ 3,848,757

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30

DWSD

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 24,925,019	\$ -	\$ 24,925,019
2. Due to Assets	\$ 11,292,804	\$ 16,973,447	\$ (5,680,643)
3. Total	\$ 36,217,823	\$ 16,973,447	\$ 19,244,376

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 3,370,105	\$ -	\$ 3,370,105
2. Assumption Changes	\$ 21,554,914	\$ -	\$ 21,554,914
3. Net Difference between projected and actual earnings on pension plan investments	\$ 11,292,804	\$ 16,973,447	\$ (5,680,643)
4. Total	\$ 36,217,823	\$ 16,973,447	\$ 19,244,376

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ -	\$ -
2. Assumption Changes	\$ -	\$ -	\$ -
3. Net Difference between projected and actual earnings on pension plan investments	\$ 31,090,950	\$ 28,811,792	\$ 2,279,158
4. Total	\$ 31,090,950	\$ 28,811,792	\$ 2,279,158

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2018	\$ (5,680,644)
2019	\$ 7,346,689
2020	\$ 4,559,227
2021	\$ (3,946,114)
2022	\$ -
Thereafter	\$ -
Total	\$ 2,279,158

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30 Library

A. Outflows and Inflows of Resources Due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 2,504,293	\$ 4,348,571	\$ (1,844,278)
2. Due to Assets	\$ 1,733,209	\$ 3,443,397	\$ (1,710,188)
3. Total	\$ 4,237,502	\$ 7,791,968	\$ (3,554,466)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ 2,069,263	\$ (2,069,263)
2. Assumption Changes	\$ 2,504,293	\$ 2,279,308	\$ 224,985
3. Net Difference between projected and actual earnings on pension plan investments	\$ 1,733,209	\$ 3,443,397	\$ (1,710,188)
4. Total	\$ 4,237,502	\$ 7,791,968	\$ (3,554,466)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ -	\$ -
2. Assumption Changes	\$ -	\$ -	\$ -
3. Net Difference between projected and actual earnings on pension plan investments	\$ 4,781,073	\$ 5,075,069	\$ (293,996)
4. Total	\$ 4,781,073	\$ 5,075,069	\$ (293,996)

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2018	\$ (1,710,188)
2019	\$ 1,189,318
2020	\$ 770,764
2021	\$ (543,890)
2022	\$ -
Thereafter	\$ -
Total	\$ (293,996)

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30 Total

A. Outflows and Inflows of Resources Due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 80,296,062	\$ 33,157,793	\$ 47,138,269
2. Due to Assets	\$ 43,139,857	\$ 42,421,065	\$ 718,792
3. Total	\$ 123,435,919	\$ 75,578,858	\$ 47,857,061

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 3,370,105	\$ 30,878,485	\$ (27,508,380)
2. Assumption Changes	\$ 76,925,957	\$ 2,279,308	\$ 74,646,649
3. Net Difference between projected and actual earnings on pension plan investments	\$ 43,139,857	\$ 42,421,065	\$ 718,792
4. Total	\$ 123,435,919	\$ 75,578,858	\$ 47,857,061

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ -	\$ -
2. Assumption Changes	\$ -	\$ -	\$ -
3. Net Difference between projected and actual earnings on pension plan investments	\$ 118,845,862	\$ 86,449,730	\$ 32,396,132
4. Total	\$ 118,845,862	\$ 86,449,730	\$ 32,396,132

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2018	\$ 718,790
2019	\$ 28,463,636
2020	\$ 17,889,925
2021	\$ (14,676,219)
2022	\$ -
Thereafter	\$ -
Total	\$ 32,396,132

**Schedule of Proportionate Employer Share
for Year Ended June 30, 2017
General Subgroup***

Deferred Outflows of Resources									
TPL	Employer	Prop. Share	Net Pension Liability	Net Difference Between Projected and Actual Investment			Changes of Assum.	Changes in Proportion and Differences Between Employer Cont. and Share of Cont.	
				Differences Between Expected and Actual Experience	Earnings on Pension Plan Investments	Changes of Assum.		Changes in Proportion and Differences Between Employer Cont. and Share of Cont.	
\$ 1,574,112,909	General City	98.37%	\$ 469,744,319	\$ -	\$ 67,693,421	\$ -	\$ -	\$ -	\$ 67,693,421
22,562,765	Parking	1.41%	6,733,145	-	970,293	-	-	-	970,293
3,520,431	Airport	0.22%	1,050,562	-	151,393	-	-	-	151,393
\$ 1,600,196,105	Total for All Employers	100.00%	\$ 477,528,026	\$ -	\$ 68,815,107	\$ -	\$ -	\$ -	\$ 68,815,107

Deferred Inflows of Resources							Pension Expense		
Employer	Prop. Share of Plan Pension Expense	Total Deferred Inflows of Resources	Changes in Proportion and Differences Between Employer Contributins and Proportionate Share of Contributions	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributins and Proportionate Share of Contributions			Total Employer Pension Expense		
				Employer Cont. and Share of Cont.	Total Deferred Inflows of Resources	Prop. Share of Plan Pension Expense	Changes in Proportion and Differences Between Employer Contributins and Proportionate Share of Contributions		
General City	\$ -	\$ 41,564,172	\$ -	\$ 41,564,172	\$ 62,143,860	\$ (616,288)	\$ 61,527,572		
Parking	-	595,766	-	595,766	890,748	440,657	1,331,405		
Airport	-	92,956	-	92,956	138,982	175,631	314,613		
Total for All Employers	\$ -	\$ 42,252,894	\$ -	\$ 42,252,894	\$ 63,173,590	\$ -	\$ 63,173,590		

* Totals may not add due to rounding.

**Schedule of Proportionate Employer Share
for Year Ended June 30, 2017
General Subgroup***

Employer	Employer Allocation Percentage	Schedule of Deferred Inflows and Outflows							
		2018	2019	2020	2021	2022	Thereafter	Total	
General City	98.37%	\$ 8,394,814	\$ 16,072,817	\$ 10,133,161	\$ (8,471,543)	\$ -	\$ -	\$ 26,129,249	
Parking	1.41%	120,328	230,382	145,245	(121,428)	-	-	374,527	
Airport	0.22%	18,775	35,946	22,662	(18,946)	-	-	58,437	
TOTAL	100.00%	\$ 8,533,917	\$ 16,339,145	\$ 10,301,068	\$ (8,611,917)	\$ -	\$ -	\$ 26,562,213	

* Totals may not add due to rounding.

**Determination of Employer Contribution Allocation
for Year Ended June 30, 2017**

Employer	General City	Parking	Airport	General Total	DOT	DWSD	Library	Total
Contributions Before General Breakdown				\$45,388,561	\$100,841	\$42,900,000	\$2,849,000	\$91,238,402
General Employer Allocation Percent	98.44%	1.31%	0.25%	100.00%	N/A	N/A	N/A	N/A
Times General Total	\$45,388,561	\$45,388,561	\$45,388,561	\$45,388,561	N/A	N/A	N/A	N/A
Contribution Allocation Dollar	\$44,680,500	\$ 594,590	\$ 113,471	\$45,388,561	\$100,841	\$42,900,000	\$2,849,000	\$91,238,402

Schedule of Changes in Net Pension Liability and Related Ratios Current Period

Fiscal Year Ended June 30, 2017*

	General	DOT	DWSD	Library	Total
A. Total Pension Liability					
1. Service Cost	\$ -	\$ -	\$ -	\$ -	\$ -
2. Interest on the Total Pension Liability	111,696,826	29,480,676	53,810,904	6,930,830	201,919,236
3. Changes of benefit terms	-	-	-	-	-
4. Difference between expected and actual experience of the Total Pension Liability	(23,006,975)	(5,802,247)	3,370,105	(2,069,263)	(27,508,380)
5. Changes of assumptions	41,844,061	11,022,689	21,554,914	2,504,293	76,925,957
6. Benefit payments, including refunds of employee contributions [^]	(150,490,982)	(36,843,199)	(72,661,992)	(7,253,366)	(267,249,539)
7. Net change in Total Pension Liability	\$ (19,957,070)	\$ (2,142,081)	\$ 6,073,931	\$ 112,494	\$ (15,912,726)
8. Total Pension Liability – Beginning	1,620,153,175	426,176,461	780,603,529	99,488,787	2,926,421,952
9. Total Pension Liability – Ending	\$ 1,600,196,105	\$ 424,034,380	\$ 786,677,460	\$ 99,601,281	\$ 2,910,509,226
B. Plan Fiduciary Net Position					
1. Contributions – employer	\$ 45,388,561	\$ 100,841	\$ 42,900,000	\$ 2,849,000	\$ 91,238,402
2. Contributions – employee	-	-	-	-	-
3. Net investment income	119,411,049	23,970,241	55,209,451	8,305,826	206,896,567
4. Benefit payments, including refunds of employee contributions [^]	(150,490,982)	(36,843,199)	(72,661,992)	(7,253,366)	(267,249,539)
5. Pension Plan Administrative Expense	(5,024,638)	(749,619)	-	(247,580)	(6,021,837)
6. Other	4,567,412	1,436,415	2,125,248	195,000	8,324,075
7. Net change in Plan Fiduciary Net Position	\$ 13,851,402	\$ (12,085,321)	\$ 27,572,707	\$ 3,848,880	\$ 33,187,668
8. Plan Fiduciary Net Position – Beginning	1,108,816,677	240,693,710	504,535,894	79,495,026	1,933,541,307
9. Plan Fiduciary Net Position – Ending	\$ 1,122,668,079	\$ 228,608,389	\$ 532,108,601	\$ 83,343,906	\$ 1,966,728,975
C. Net Pension Liability	\$ 477,528,026	\$ 195,425,991	\$ 254,568,859	\$ 16,257,375	\$ 943,780,251
D. Plan Fiduciary Net Position as a percentage of the Total Pension Liability	70.16%	53.91%	67.64%	83.68%	67.57%
E. Covered-employee payroll	\$ 83,878,095	\$ 25,487,019	\$ 22,864,010	\$ 11,653,598	\$ 143,882,722
F. Net Pension Liability as a percentage of covered-employee payroll	569.31%	766.77%	1113.40%	139.51%	655.94%

*Totals may not add due to rounding.

[^]Includes approximately \$2.9 million of adjusted loan balances that were treated as refunds of ASF contributions.

A Special Funding Situation may occur if a non-city entity has a legal obligation to contribute directly to the Retirement System. The Net Pension Liability shown here has not been adjusted for any potential special funding situation.

Schedules of Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios

Multiyear

Ultimately 10 Fiscal Years will be Displayed

Fiscal year ending June 30,

	2017	2016	2015	2014
Total Pension Liability				
Service Cost	\$ -	\$ -	\$ -	\$ 32,736,019
Interest on the Total Pension Liability	201,919,236	214,011,164	263,007,329	242,611,073
Benefit Changes	-	-	(731,824,895)	(113,311,571)
Difference between Expected and Actual Experience	(27,508,380)	(43,719,112)	24,644,530	-
Assumption Changes	76,925,957	90,034,927	(101,559,893)	(271,190,194)
Benefit Payments	(242,938,006)	(242,470,451)	(253,217,949)	(253,683,194)
Refunds*	(24,311,533)	(49,811,728)	(44,321,041)	(144,050,613)
Net Change in Total Pension Liability	(15,912,726)	(31,955,200)	(843,271,919)	(506,888,480)
Total Pension Liability - Beginning	2,926,421,952	2,958,377,152	3,801,649,071	4,308,537,551
Total Pension Liability - Ending (a)	\$ 2,910,509,226	\$ 2,926,421,952	\$ 2,958,377,152	\$ 3,801,649,071
Plan Fiduciary Net Position				
Employer Contributions	\$ 91,238,402	\$ 104,792,657	\$ 189,282,095	\$ 25,126,131
Employee Contributions	-	-	609,073	10,241,761
Pension Plan Net Investment Income	206,896,567	(7,865,094)	93,054,978	289,789,607
Benefit Payments	(242,938,006)	(242,470,451)	(253,217,949)	(253,683,194)
Refunds*	(24,311,533)	(49,811,728)	(44,321,041)	(144,050,613)
Pension Plan Administrative Expense	(6,021,837)	(3,742,618)	(7,556,822)	(11,237,767)
Other	8,324,075	1,360,330	138,219,998	-
Net Change in Plan Fiduciary Net Position	33,187,668	(197,736,904)	116,070,332	(83,814,075)
Plan Fiduciary Net Position - Beginning	1,933,541,307	2,131,278,211	2,015,207,879	2,099,021,954
Plan Fiduciary Net Position - Ending (b)	\$ 1,966,728,975	\$ 1,933,541,307	\$ 2,131,278,211	\$ 2,015,207,879
Net Pension Liability - Ending (a) - (b)	\$ 943,780,251	\$ 992,880,645	\$ 827,098,941	\$ 1,786,441,192
Plan Fiduciary Net Position as a Percentage				
of Total Pension Liability	67.57 %	66.07 %	72.04 %	53.01 %
Covered-Employee Payroll	\$ 143,882,722	\$ 200,722,197	\$ 203,507,079	\$ 213,291,083
Net Pension Liability as a Percentage				
of Covered-Employee Payroll	655.94 %	494.65 %	406.42 %	837.56 %

Notes to Schedule:

N/A

* For FY 2017, includes approximately \$2.9 million of adjusted loan balances that were treated as refunds of ASF contributions.

A Special Funding Situation may occur if a non-city entity has a legal obligation to contribute directly to the Retirement System. The Net Pension Liability shown here has not been adjusted for any potential funding situation. Our understanding is that the City makes all the employer contributions into the fund, even though the City may receive monies from other entities as a result of the POA.

Schedules of Required Supplementary Information

Schedule of the Net Pension Liability Multiyear

Ultimately 10 Fiscal Years will be displayed

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll*	Net Pension Liability as a % of Covered Payroll
2014	\$ 3,801,649,071	\$ 2,015,207,879	\$ 1,786,441,192	53.01%	\$ 213,291,083	837.56%
2015	2,958,377,152	2,131,278,211	827,098,941	72.04%	203,507,079	406.42%
2016	2,926,421,952	1,933,541,307	992,880,645	66.07%	200,722,197	494.65%
2017	2,910,509,226	1,966,728,975	943,780,251	67.57%	143,882,722	655.94%

** Covered payroll shown is the reported payroll on the actuarial valuation date (census date). Actual covered payroll paid during the year was unavailable.*

Schedule of Contributions Multiyear

FY Ending June 30,	Actuarially Determined Contribution	Actual Contribution	Contribution Deficiency (Excess)	Covered Payroll*	Actual Contribution as a % of Covered Payroll
2014	\$80,627,791	\$ 25,126,131	\$55,501,660	\$213,291,083	11.78%
2015	N/A	189,282,095	N/A	203,507,079	93.01%
2016	N/A	104,792,657	N/A	200,722,197	52.21%
2017	N/A	91,238,402	N/A	143,882,722	63.41%

* Covered payroll shown is the reported payroll from the actuarial valuation date (census date). Actual covered payroll paid during the year was unavailable.

Notes to Schedule of Contributions

Contribution Requirement: The expected contributions for fiscal year 2015 and beyond are provided in the POA. Subsequent to the POA, the DIA entered into an agreement to pay part of its contribution requirement to the Detroit General Plan in a single lump sum payment (in 2016). Furthermore, we understand that the City has modified all of its outstanding UTGO Stub Bonds. The current contribution schedule (from Retirement System staff) showing the DIAs and UTGOs future contribution requirements is below:

Fiscal Year	Contribution Source (\$ millions)							Total
	For DWSD Liabilities		For Other Liabilities					
	DWSD	Transfers	UTGO	State	DIA	Other	Transfers from DWSD	
2018	45.4	(2.5)	-	-	0.4	22.5	2.5	68.3
2019	45.4	(2.5)	-	-	0.4	22.5	2.5	68.3
2020	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3
2021	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3
2022	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3
2023	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3

We understand that as of June 30, 2017 the Plan Fiduciary Net Position includes the remaining principal balance receivable on the UTGO bonds. The above schedule recognizes that change.

Beginning with Fiscal Year 2024, employer contributions will be actuarially determined.

Schedule of Investment Returns

This information was not made available to Gabriel, Roeder, Smith & Company for this report.

Single Discount Rate

A Single Discount Rate of 6.91%, net of investment expenses, was used to measure the total pension liability as of June 30, 2017. This Single Discount Rate was based on the expected rate of return on pension plan investments of 6.91% as directed by the System and approved by the System's Auditor. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions ceased as of June 30, 2014, and that employer contributions will be made at rates equal to those set by the final Plan of Adjustment through June 30, 2023 and contributions consistent with PERSIA and the intention to fully fund the System by 2053 as determined in the bankruptcy (POA). Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 6.91%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher.

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

	Current Single Discount		
	1% Decrease	Rate Assumption	1% Increase
	5.91%	6.91%	7.91%
Total Pension Liability (TPL)	\$3,178,865,186	\$2,910,509,226	\$2,682,542,199
Net Position Restricted for Pensions	1,966,728,975	1,966,728,975	1,966,728,975
Net Pension Liability (NPL)	\$1,212,136,211	\$ 943,780,251	\$ 715,813,224

Users of this report should be aware that, in the actuary's judgement, a discount rate of 7.91% would not be a reasonable assumption for funding purposes.

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	11,926
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	3,588
Active Plan Members	3,236
Total Plan Members	18,750

Additional information regarding the plan population may be found in the June 30, 2016 actuarial valuation of the System.

Additional Note

Potential future asset transfers from the Plan to Component I for payment of Transition Costs were not included in this calculation.

SECTION C

SUMMARY OF BENEFITS

Summary of Benefit Provisions Evaluated

Component II Frozen Benefits

All Component II benefits are frozen as of June 30, 2014 based on service and average final compensation accrued as of that date and the provisions of the Detroit General Retirement System as it existed on June 30, 2014. Frozen benefits are further reduced by 4.5% and all future cost-of-living adjustments ("COLA's") were eliminated. Benefits resulting from the Annuity Savings Fund and benefits paid from the Annuity Reserve Fund were subject to a separate reduction described as a "Claw-back." Details of the claw-back provision are complicated and can be found in the Eighth Amended Plan of Adjustment. The benefits evaluated in this report are the frozen reduced benefits after the claw-back. Component II benefits are payable after separation from service, upon meeting the eligibility conditions of the plan as it existed on June 30, 2014, regardless of whether the individual is eligible to receive a Component I benefit at that time.

Our understanding of the June 30, 2014 plan provisions is provided below for completeness. The material below does not have legal standing and is not intended to cover all potential situations that could occur. If there are discrepancies between the description below, and appropriate legal documents, the latter necessarily govern.

Age and Service Pension

Eligibility - Any age (minimum age 55 for non-EMS members hired after 1995) with 30 years of service (25 for EMS members), or age 60 with 10 years of service, or age 65 with 8 years of service.

Annual Amount – EMS Members: Sum of a) a basic pension of \$12 for each of the first 10 years of service, plus b) a pension equal to 2.0% of AFC multiplied by years of service. Maximum benefit is 90% of AFC. **Other Members:** Sum of a) a basic pension of \$12 for each of the first 10 years of service, plus b) a pension equal to the first 10 years of service multiplied by 1.6% of AFC, plus 1.8% of AFC for each year of service greater than 10 years up to 20 years, plus 2.0% of AFC for each year of service greater than 20 years up to 25 years, plus 2.2% of AFC for each year of service greater than 25 years. Future benefit accruals for certain active members (depending on bargaining unit) were reduced to 1.5% of final average compensation per year of service.

Type of Average Final Compensation (AFC) - Highest 3 consecutive years out of the last 10. Pension benefits will not be diminished if compensation is reduced because of a fiscal emergency. Effective July 1, 1999, in computing the AFC, a member shall have the option of adding the value of 25% of unused accrued sick leave to the earnings used in computing the AFC. Longevity is added to AFC in accordance with the following schedule: \$150 after 5 years, \$300 after 10 years, \$450 after 15 years, \$600 after 20 years, and \$750 after 25 years.

Early Retirement

Eligibility - Any age with 25 or more years of service (min. age 55 for members hired after 1995).

Annual Amount - Same as regular retirement but actuarially reduced.

Summary of Benefit Provisions Evaluated (Continued)

Deferred Retirement (Vested Benefit)

Eligibility - Hired prior to 7-1-80: Age 40 with 8 years of service. Hired on or after 7-1-80: Any age with 10 years of service.

Benefit Commencement - APTE hired prior to July 1, 1988: Benefit begins at the age the member would have become eligible for regular retirement if service had continued. **SAAA, Non-Union and lawyers hired prior to June 30, 1986:** Benefit begins at the age the member would have become eligible for regular retirement. **Others:** Benefits based on service rendered by June 30, 1986 begin at the age the member would have become eligible for regular retirement. Benefits based on service rendered after July 1, 1986 begin at age 62.

Annual Amount - Same as regular retirement but based on average final compensation and service at the time of termination.

Duty Disability Retirement

Eligibility - Service related disability before age 60. No service requirement.

Annual Amount - An annuity which is the actuarial equivalent of the accumulated contributions at date of disability plus a pension of two-thirds of average final compensation at time of disability. The maximum annual pension is \$9,000. At the earliest of when the member would have accrued 30 years of service credit (25 for EMS) or age 60, the annuity is recomputed assuming contributions would have continued at a salary level equal to final compensation. The pension is recomputed with additional service credit granted from the date of disability to age 60 (or 30 years of service credit) with no maximum.

Non-Duty Disability Retirement

Eligibility - Disability from any cause before age 60 with 10 or more years of service.

Annual Amount - Computed in the same manner as a regular retirement benefit. Maximum annual pension to age 60 is \$6,000. Benefit is recomputed at age 60 with no maximum.

Duty Death Before Retirement

Eligibility - Death from service related causes. No age or service requirements.

Annual Amount - One-third of final compensation to the surviving spouse for life or until remarriage, plus an equal share of 1/4 of final compensation to each unmarried child under age 18. If there is no eligible spouse, eligible children each receive 1/4 of final compensation; if there are more than 2 such children, each child shares an equal part of 1/2 of final compensation. Maximum total amount for spouse and children is \$9,000 annually. If there is no eligible spouse or children, dependent parents each receive 1/6 of deceased's final compensation, to a total maximum of \$600 annually.

Summary of Benefit Provisions Evaluated (Concluded)

Non-Duty Death Before Retirement

Eligibility - Death-in-service at any age with 15 years of service; or after age 60 with 10 years of service; or after age 65 with 8 years of service.

Annual Amount - To Surviving Spouse: Computed as a regular retirement benefit but reduced in accordance with a 100% joint and survivor election for members with 20 or more years of service. For members with 15 years of service but less than 20, benefit is reduced in accordance with a 50% joint and survivor election. To Dependent Children if no Surviving Spouse: \$9,000 payable to age 19 of the youngest child or for life if child is physically or mentally impaired for members with 20 or more years of service (\$6,000 if less than 20 years of service).

Post-Retirement Cost-of-Living Adjustments

Benefit is increased annually by 2.25% of the **original** pension amount at retirement. Post-retirement cost-of-living increases were eliminated on future accruals for certain active members (depending on bargaining unit).

Member Contributions

Members have the option of choosing one of four contribution amounts: (1) 0%; (2) 3.0% of compensation up to the Social Security wage base, plus 5.0% of compensation in excess of the Social Security wage base; (3) 5.0% of total compensation; or (4) 7.0% of total compensation. Member contributions can be paid as a lump sum or annuitized at retirement to provide an annuity in addition to the pension (which is not affected by the level of member contributions).

SECTION D

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Summary of Assumptions and Methods Used for GASB Actuarial Valuations Adopted by Board of Trustees

All assumptions are estimates of future experience except as noted. The rationale for the assumptions is based on experience studies where noted.

Economic Assumptions

The investment return rate used in making the valuation was 6.91% per year, compounded annually (net after investment expenses) as of June 30, 2017. This assumption was provided by the Retirement System. We determined it to be reasonable when using a 2.50% assumed **price inflation**.

Non-Economic Assumptions

The mortality table used to measure retired life mortality was 100% of the RP-2014 Blue Collar Annuitant Table set-forward 1 year for males and 100% of the RP-2014 Blue Collar Annuitant Table set-forward 1 year for females. Tables were extended below age 50 with a cubic spline to the published Juvenile rates. Pre-retirement mortality is based on the corresponding Employee tables. The tables are projected to be fully generational, based on the 2-dimensional, sex distinct mortality improvement scale MP-2014 (which was published and intended to be used with RP-2014). This table was first used as of June 30, 2014. For disabled members, the same tables are used. The rationale for the mortality assumption is based on the 2008-2013 Mortality Experience Study issued February 4, 2015.

The probabilities of retirement for members eligible to retire are shown on pages 30 and 31. These probabilities were revised for the June 30, 2008 valuation. The rationale is based on the 2002-2007 Experience Study.

The probabilities of separation from service (including *disability*) are shown for sample ages on page 32. These probabilities were revised for the June 30, 2008 valuation. The rationale is based on the 2002-2007 Experience Study.

Single Life Retirement Values
Based on RP-2014 Blue Collar
100% of Male Rates Set-Forward 1 Year
100% of Female Rates Set-Forward 1 Year

Sample Attained Ages in 2016	Future Life Expectancy (years)	
	Males	Females
45	38.40	41.76
50	33.45	36.71
55	28.69	31.82
60	24.17	27.08
65	19.88	22.51
70	15.91	18.21
75	12.29	14.26
80	9.12	10.76

Rationale for assumption is based upon a 2008 to 2013 study of mortality experience dated February 4, 2015.

Probabilities of Age/Service Retirement for Members Eligible to Retire

Retirement Ages	Percent of Eligible Active Members		
	Retiring Within Next Year With Unreduced Benefits		
	EMS	D.O.T.	Others
45	25%		
46	25%		
47	25%		
48	22%		
49	20%		
50	18%	55%	50%
51	15%	50%	50%
52	15%	50%	45%
53	15%	50%	45%
54	15%	55%	40%
55	15%	50%	30%
56	15%	50%	30%
57	15%	50%	30%
58	15%	50%	30%
59	15%	55%	40%
60	40%	40%	25%
61	30%	30%	25%
62	30%	30%	25%
63	30%	30%	25%
64	30%	30%	25%
65	30%	30%	35%
66	30%	30%	30%
67	30%	30%	25%
68	30%	50%	25%
69	30%	50%	25%
70	100%	100%	20%
71			20%
72			20%
73			20%
74			20%
75			20%
76			20%
77			20%
78			20%
79			20%
80			100%
Ref	537	1648	1647

Rationale for assumption is 2002 to 2007 Experience Study. Additional retirement rates for Component I (Hybrid Plan) eligibility are not reflected in this valuation due to materiality.

Probabilities of Early Retirement for Members Eligible for Early Retirement

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year With Reduced Benefits
55	7%
56	8%
57	9%
58	10%
59	12%
60	12%
61	12%
62	12%
63	12%
64	12%
Ref	1649

Rationale for assumption is based upon a 2002 to 2007 Experience Study.

Sample Rates of Separation from Active Employment Before Retirement

Sample Ages	Years of Service	% of Active Members Separating Within Next Year			
		Withdrawal			
		EMS	D.O.T.	Others	
ALL	0	11.00%	18.00%	18.00%	20.00%
		10.00%	16.00%	15.00%	16.00%
		8.00%	14.00%	13.00%	14.00%
		8.00%	11.00%	11.00%	12.00%
		7.00%	9.00%	10.00%	10.00%
	25	6.70%	8.00%	7.60%	7.60%
	30	5.90%	7.60%	7.22%	7.22%
	35	5.20%	5.56%	5.28%	5.28%
	40	4.40%	4.26%	4.05%	4.05%
	45	3.40%	3.69%	3.51%	3.51%
25	50	2.40%	3.50%	3.33%	3.33%
	55	2.00%	3.50%	3.33%	3.33%
	60	0.00%	3.50%	3.33%	3.33%
	Ref	338	143	584	188
		1068	212	212 x 0.95	212 x 0.95

Sample Ages	% of Active Members Becoming Disabled Within Next Year				
	D.O.T.		Others		
	Ordinary	Duty	Ordinary	Duty	
25	0.02%	0.03%	0.01%		0.25%
30	0.05%	0.08%	0.04%		0.29%
35	0.14%	0.21%	0.11%		0.34%
40	0.27%	0.42%	0.21%		0.39%
45	0.51%	0.79%	0.40%		0.45%
50	0.66%	1.03%	0.51%		0.52%
55	0.76%	1.18%	0.59%		0.60%
60	0.86%	1.34%	0.67%		0.70%
Ref	23 x 0.45	23 x 0.70	23 x 0.35	423 x 0.90	

Rationale for assumption is based upon a 2002 to 2007 Experience Study.

Miscellaneous and Technical Assumptions

Benefit Service	Exact Fractional service is used to determine the amount of benefit payable.
Decrement Operation	Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal also do not operate during retirement eligibility.
Decrement Timing	Decrements of all types are assumed to occur mid-year.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and rounded service on the date the decrement is assumed to occur.
Forfeitures	None.
Incidence of Contributions	Contributions are assumed to be received at the middle of the year.
Marriage Assumption	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Normal Form of Benefit	Straight life is the normal form of benefit. Straight life is generally the most valuable under valuation assumptions. Actuarial equivalent factors are based on 7.5% interest and 1984 Group Annuity Mortality table.
Service Credit Accruals	Service accruals stop as of June 30, 2014 for measurement of Component II liabilities. However, future service in Component I may be used to satisfy benefit eligibility requirement in Component II. Members who became duty disabled prior to June 30, 2014 are assumed to get projected service from date of disability to conversion date. Members who become disabled after June 30, 2014 are assumed to get their frozen accrued benefit as of June 30, 2014 at date of conversion.
Administrative Expenses	3.55% of Component I payroll. 71% was allocated to Component II and 29% to Component I.
Sick Leave	As of June 30, 2014, this information was included in the 2014 Average Final Compensation (AFC) amounts.
AFC Adjustment	Reported 2014 AFC amounts were increased by 2.0% for active members due to data discrepancies related to the reported AFC. This adjustment was made based on discussions with System staff and the System's auditor and was checked for reasonableness for the 2016 valuation.
Member Contributions	Member contributions to this Component II plan are assumed to have ceased with the bankruptcy.

Rationale for assumption is based upon a 2002 to 2007 Experience Study, modified as necessary for changes in data or administration.

SECTION E

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate at End of Year

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The Single Discount Rate (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 6.91%; the municipal bond rate is 3.56%; and the resulting Single Discount Rate is 6.91% as of June 30, 2017.

The tables in this section provide background for the development of the Single Discount Rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities). For purposes of determining the discount rate as of June 30, 2016, the employer contributions for the 10-year period ending June 30, 2023 were set by the 8th Amended Plan of Adjustment (POA), as adjusted by subsequent agreements. Subsequent employer contributions were determined by a closed 30-year level principle amortization of any unfunded actuarial accrued liability using 6.91% interest, net of investment expenses, consistent with the 100% funded target by 2053 in the POA and State Law.

Rates of Return: Note that these projections are specifically used to determine the SDR and should not be interpreted as a funding recommendation. The 6.91% rate of return was before administrative expenses. Therefore, the projections assumed that any administrative expenses incurred by the plan will directly increase employer contributions beginning with FY 2024. The rate is net of investment expenses.

Administrative Expenses: For purposes of the projection using a 6.91% rate of return, administrative expenses were assumed to be related to payroll. Payroll was increased by an assumed wage inflation as of June 30, 2014 of 2.00% for 5 years, 2.50% for the next 5 years and 3.00% thereafter. Since benefits are frozen, the wage inflation assumption does not affect anything other than the administrative expenses.

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the SDR. It breaks down the benefit payments into present values for funded and unfunded portions (if any) and shows the equivalent total at the SDR. For purposes of determining the discount rate as of June 30, 2017, the benefit payments reflect the plan provisions in force as of June 30, 2017.

Unfunded Actuarial Accrued Liabilities. Actual employer contributions through June 30, 2023 are set by the POA. The amortization period and method after 2023 has not yet been established by the Board.

Single Discount Rate Development

Projection of Contributions at 6.91%

End of Year

Fiscal Year Ending June 30,	Projected Contributions from Current Employees		Projected Service Cost	Administrative Expense Contributions	Projected UAL Contributions	Projected Total Contributions
2018	\$	-	\$	-	\$ 3,781,169	\$ 64,493,831
2019	-	-	-	-	3,484,253	64,790,747
2020	-	-	-	-	3,221,813	44,953,187
2021	-	-	-	-	3,001,997	45,273,003
2022	-	-	-	-	2,812,694	45,462,306
2023	-	-	-	-	2,646,152	45,628,848
2024	-	-	-	-	2,482,333	101,132,093
2025	-	-	-	-	2,320,342	98,858,020
2026	-	-	-	-	2,169,217	96,583,946
2027	-	-	-	-	2,018,230	94,309,873
2028	-	-	-	-	1,876,325	92,035,799
2029	-	-	-	-	1,743,119	89,761,726
2030	-	-	-	-	1,615,711	87,487,653
2031	-	-	-	-	1,492,994	85,213,579
2032	-	-	-	-	1,375,492	82,939,506
2033	-	-	-	-	1,262,623	80,665,432
2034	-	-	-	-	1,156,746	78,391,359
2035	-	-	-	-	1,058,930	76,117,285
2036	-	-	-	-	968,166	73,843,212
2037	-	-	-	-	882,799	71,569,139
2038	-	-	-	-	803,521	69,295,065
2039	-	-	-	-	730,174	67,020,992
2040	-	-	-	-	662,047	64,746,918
2041	-	-	-	-	599,604	62,472,845
2042	-	-	-	-	541,414	60,198,771
2043	-	-	-	-	486,334	57,924,698
2044	-	-	-	-	433,909	55,650,625
2045	-	-	-	-	383,645	53,376,551
2046	-	-	-	-	334,558	51,102,478
2047	-	-	-	-	287,699	48,828,404
2048	-	-	-	-	245,494	46,554,331
2049	-	-	-	-	207,733	44,280,258
2050	-	-	-	-	173,690	42,006,184
2051	-	-	-	-	142,528	39,732,111
2052	-	-	-	-	114,491	37,458,037
2053	-	-	-	-	90,142	35,183,964
2054	-	-	-	-	69,942	-
2055	-	-	-	-	53,563	-
2056	-	-	-	-	40,061	-
2057	-	-	-	-	28,996	-
2058	-	-	-	-	20,533	-
2059	-	-	-	-	14,337	-
2060	-	-	-	-	9,924	-
2061	-	-	-	-	6,864	-
2062	-	-	-	-	4,746	-
2063	-	-	-	-	3,268	-
2064	-	-	-	-	2,231	-
2065	-	-	-	-	1,517	-
2066	-	-	-	-	1,040	-
2067	-	-	-	-	708	-

Employer contributions as shown may differ substantially from those determined by a funding valuation.

Single Discount Rate Development

Projection of Plan Fiduciary Net Position at 6.91%

End of Year

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected ASF Refund	Projected Administrative Expenses	Projected Investment			Projected Ending Plan Net Position
						(a)	(b)	(c)	(d)
2018	\$ 1,966,728,975	\$ 68,275,000	\$ 248,741,367	\$ 15,450,201	\$ 3,781,169	\$ 127,233,868	\$ 1,894,265,106		
2019	1,894,265,106	68,275,000	247,145,340	15,450,201	3,484,253	122,448,659	1,818,908,971		
2020	1,818,908,971	48,175,000	244,720,591	15,450,201	3,221,813	116,816,004	1,720,507,371		
2021	1,720,507,371	48,275,000	242,024,297	15,450,201	3,001,997	110,293,653	1,618,599,529		
2022	1,618,599,529	48,275,000	239,050,574	15,450,201	2,812,694	103,543,186	1,513,104,246		
2023	1,513,104,246	48,275,000	236,021,160	15,450,201	2,646,152	96,555,600	1,403,817,333		
2024	1,403,817,333	103,614,426	232,776,607	15,450,201	2,482,333	91,203,433	1,347,926,051		
2025	1,347,926,051	101,178,362	229,584,098	15,450,201	2,320,342	87,586,967	1,289,336,739		
2026	1,289,336,739	98,753,163	226,371,596	15,450,201	2,169,217	83,796,003	1,227,894,891		
2027	1,227,894,891	96,328,103	222,512,269	15,450,201	2,018,230	79,841,752	1,164,084,046		
2028	1,164,084,046	93,912,124	218,142,854	-	1,876,325	76,153,983	1,114,130,974		
2029	1,114,130,974	91,504,845	213,343,507	-	1,743,119	72,788,016	1,063,337,208		
2030	1,063,337,208	89,103,364	208,365,762	-	1,615,711	69,370,019	1,011,829,118		
2031	1,011,829,118	86,706,573	203,030,763	-	1,492,994	65,914,798	959,926,732		
2032	959,926,732	84,314,998	197,702,667	-	1,375,492	62,432,097	907,595,669		
2033	907,595,669	81,928,055	191,948,618	-	1,262,623	58,934,246	855,246,729		
2034	855,246,729	79,548,105	185,675,092	-	1,156,746	55,452,807	803,415,804		
2035	803,415,804	77,176,215	179,089,542	-	1,058,930	52,017,764	752,461,311		
2036	752,461,311	74,811,378	172,278,303	-	968,166	48,650,949	702,677,169		
2037	702,677,169	72,451,938	165,281,649	-	882,799	45,371,305	654,335,963		
2038	654,335,963	70,098,586	158,155,349	-	803,521	42,195,772	607,671,450		
2039	607,671,450	67,751,166	150,672,089	-	730,174	39,148,225	563,168,578		
2040	563,168,578	65,408,965	143,090,110	-	662,047	36,253,402	521,078,788		
2041	521,078,788	63,072,449	135,475,368	-	599,604	33,526,435	481,602,700		
2042	481,602,700	60,740,185	127,794,811	-	541,414	30,982,312	444,988,973		
2043	444,988,973	58,411,032	120,146,892	-	486,334	28,634,868	411,401,648		
2044	411,401,648	56,084,534	112,521,157	-	433,909	26,495,796	381,026,911		
2045	381,026,911	53,760,196	104,943,182	-	383,645	24,577,091	354,037,371		
2046	354,037,371	51,437,036	97,479,826	-	334,558	22,888,408	330,548,430		
2047	330,548,430	49,116,103	90,209,007	-	287,699	21,435,077	310,602,904		
2048	310,602,904	46,799,825	83,159,192	-	245,494	20,219,087	294,217,130		
2049	294,217,130	44,487,991	76,380,305	-	207,733	19,239,871	281,356,953		
2050	281,356,953	42,179,874	69,884,847	-	173,690	18,494,646	271,972,937		
2051	271,972,937	39,874,639	63,698,226	-	142,528	17,979,131	265,985,953		
2052	265,985,953	37,572,528	57,843,883	-	114,491	17,687,063	263,287,170		
2053	263,287,170	35,274,106	52,336,787	-	90,142	17,610,412	263,744,759		
2054	263,744,759	69,942	47,179,760	-	69,942	16,621,929	233,186,928		
2055	233,186,928	53,563	42,373,815	-	53,563	14,673,654	205,486,767		
2056	205,486,767	40,061	37,918,150	-	40,061	12,910,945	180,479,562		
2057	180,479,562	28,996	33,808,624	-	28,996	11,322,560	157,993,498		
2058	157,993,498	20,533	30,036,821	-	20,533	9,896,912	137,853,589		
2059	137,853,589	14,337	26,591,303	-	14,337	8,622,299	119,884,585		
2060	119,884,585	9,924	23,458,232	-	9,924	7,487,080	103,913,433		
2061	103,913,433	6,864	20,622,091	-	6,864	6,479,826	89,771,167		
2062	89,771,167	4,746	18,065,923	-	4,746	5,589,436	77,294,680		
2063	77,294,680	3,268	15,771,925	-	3,268	4,805,244	66,327,999		
2064	66,327,999	2,231	13,721,773	-	2,231	4,117,096	56,723,322		
2065	56,723,322	1,517	11,896,968	-	1,517	3,515,407	48,341,761		
2066	48,341,761	1,040	10,279,057	-	1,040	2,991,206	41,053,910		
2067	41,053,910	708	8,849,992	-	708	2,536,165	34,740,082		

Employer contributions as shown may differ substantially from those determined by a funding valuation.

Single Discount Rate Development

Projection of Plan Fiduciary Net Position at 6.91%

End of Year (Concluded)

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected ASF Refund	Projected Administrative Expenses			Projected Investment Earnings at 6.91% (5.25% for ASF)	Projected Ending Plan Net Position
					(a)	(b)	(c)	(d)	(e)
2068	\$ 34,740,082	\$ 475	\$ 7,592,454	\$ -	\$ 475	\$ 2,142,602	\$ 29,290,230		
2069	29,290,230	311	6,490,027	-	311	1,803,470	24,603,673		
2070	24,603,673	197	5,527,308	-	197	1,512,335	20,588,701		
2071	20,588,701	121	4,689,866	-	121	1,263,351	17,162,186		
2072	17,162,186	74	3,964,210	-	74	1,051,231	14,249,207		
2073	14,249,207	45	3,337,863	-	45	871,223	11,782,567		
2074	11,782,567	25	2,799,373	-	25	719,073	9,702,267		
2075	9,702,267	12	2,338,258	-	12	590,989	7,954,998		
2076	7,954,998	4	1,944,969	-	4	483,614	6,493,643		
2077	6,493,643	1	1,610,860	-	1	393,985	5,276,768		
2078	5,276,768	-	1,328,159	-	-	319,503	4,268,112		
2079	4,268,112	-	1,089,965	-	-	257,897	3,436,044		
2080	3,436,044	-	890,178	-	-	207,189	2,753,055		
2081	2,753,055	-	723,421	-	-	165,659	2,195,294		
2082	2,195,294	-	584,974	-	-	131,822	1,742,141		
2083	1,742,141	-	470,692	-	-	104,391	1,375,840		
2084	1,375,840	-	376,904	-	-	82,266	1,081,202		
2085	1,081,202	-	300,366	-	-	64,507	845,343		
2086	845,343	-	238,242	-	-	50,319	657,421		
2087	657,421	-	188,066	-	-	39,039	508,393		
2088	508,393	-	147,732	-	-	30,111	390,772		
2089	390,772	-	115,459	-	-	23,080	298,392		
2090	298,392	-	89,753	-	-	17,570	226,209		
2091	226,209	-	69,363	-	-	13,275	170,121		
2092	170,121	-	53,256	-	-	9,946	126,810		
2093	126,810	-	40,586	-	-	7,384	93,608		
2094	93,608	-	30,668	-	-	5,426	68,366		
2095	68,366	-	22,952	-	-	3,944	49,359		
2096	49,359	-	16,996	-	-	2,833	35,196		
2097	35,196	-	12,438	-	-	2,010	24,768		
2098	24,768	-	8,986	-	-	1,406	17,188		
2099	17,188	-	6,403	-	-	970	11,755		
2100	11,755	-	4,498	-	-	659	7,916		
2101	7,916	-	3,112	-	-	441	5,245		
2102	5,245	-	2,119	-	-	290	3,417		
2103	3,417	-	1,419	-	-	188	2,185		
2104	2,185	-	934	-	-	119	1,370		
2105	1,370	-	603	-	-	74	841		
2106	841	-	382	-	-	45	504		
2107	504	-	236	-	-	27	295		
2108	295	-	142	-	-	16	168		
2109	168	-	83	-	-	9	93		
2110	93	-	48	-	-	5	51		
2111	51	-	26	-	-	3	27		
2112	27	-	14	-	-	1	14		
2113	14	-	8	-	-	1	6		
2114	6	-	4	-	-	0	3		
2115	3	-	2	-	-	0	1		
2116	1	-	1	-	-	0	0		
2117	0	-	-	-	-	0	0		

Employer contributions as shown may differ substantially from those determined by a funding valuation.

Single Discount Rate Development

Present Values of Projected Benefits at 6.91%

End of Year

(Excluding ASF)

Fiscal Year Ending	Projected					Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return	Present Value of Unfunded Benefit Payments using Municipal Bond	Present Value of Benefit Payments using Single Discount
	Beginning Plan Net	Projected Benefit	Funded Portion of Benefit Payments	Payments	Position				
June 30,	(a)	(b)	(c)	(d)	(e)	(f)=(d)*vf^(a-.5)	(g)=(e)*vf^(a-.5)	(h)=(c)/(1+sdr)^(a-.5)	
2018	\$ 1,845,807,421	\$ 248,741,367	\$ 248,741,367	\$	-	\$ 240,568,550	\$ -	\$ 240,568,550	
2019	1,782,845,751	247,145,340	247,145,340		-	223,575,871	-	223,575,871	
2020	1,717,490,682	244,720,591	244,720,591		-	207,073,578	-	207,073,578	
2021	1,629,615,202	242,024,297	242,024,297		-	191,555,583	-	191,555,583	
2022	1,538,786,102	239,050,574	239,050,574		-	176,973,120	-	176,973,120	
2023	1,444,951,195	236,021,160	236,021,160		-	163,436,904	-	163,436,904	
2024	1,347,936,828	232,776,607	232,776,607		-	150,771,825	-	150,771,825	
2025	1,304,962,400	229,584,098	229,584,098		-	139,092,698	-	139,092,698	
2026	1,259,968,078	226,371,596	226,371,596		-	128,282,121	-	128,282,121	
2027	1,212,834,957	222,512,269	222,512,269		-	117,945,081	-	117,945,081	
2028	1,164,084,046	218,142,854	218,142,854		-	108,155,481	-	108,155,481	
2029	1,114,130,974	213,343,507	213,343,507		-	98,939,256	-	98,939,256	
2030	1,063,337,208	208,365,762	208,365,762		-	90,385,182	-	90,385,182	
2031	1,011,829,118	203,030,763	203,030,763		-	82,378,598	-	82,378,598	
2032	959,926,732	197,702,667	197,702,667		-	75,032,039	-	75,032,039	
2033	907,595,669	191,948,618	191,948,618		-	68,139,804	-	68,139,804	
2034	855,246,729	185,675,092	185,675,092		-	61,652,573	-	61,652,573	
2035	803,415,804	179,089,542	179,089,542		-	55,622,366	-	55,622,366	
2036	752,461,311	172,278,303	172,278,303		-	50,048,549	-	50,048,549	
2037	702,677,169	165,281,649	165,281,649		-	44,912,498	-	44,912,498	
2038	654,335,963	158,155,349	158,155,349		-	40,198,341	-	40,198,341	
2039	607,671,450	150,672,089	150,672,089		-	35,821,084	-	35,821,084	
2040	563,168,578	143,090,110	143,090,110		-	31,819,782	-	31,819,782	
2041	521,078,788	135,475,368	135,475,368		-	28,179,261	-	28,179,261	
2042	481,602,700	127,794,811	127,794,811		-	24,863,608	-	24,863,608	
2043	444,988,973	120,146,892	120,146,892		-	21,864,781	-	21,864,781	
2044	411,401,648	112,521,157	112,521,157		-	19,153,514	-	19,153,514	
2045	381,026,911	104,943,182	104,943,182		-	16,708,989	-	16,708,989	
2046	354,037,371	97,479,826	97,479,826		-	14,517,517	-	14,517,517	
2047	330,548,430	90,209,007	90,209,007		-	12,566,351	-	12,566,351	
2048	310,602,904	83,159,192	83,159,192		-	10,835,556	-	10,835,556	
2049	294,217,130	76,380,305	76,380,305		-	9,309,021	-	9,309,021	
2050	281,356,953	69,884,847	69,884,847		-	7,966,862	-	7,966,862	
2051	271,972,937	63,698,226	63,698,226		-	6,792,244	-	6,792,244	
2052	265,985,953	57,843,883	57,843,883		-	5,769,326	-	5,769,326	
2053	263,287,170	52,336,787	52,336,787		-	4,882,659	-	4,882,659	
2054	263,744,759	47,179,760	47,179,760		-	4,117,055	-	4,117,055	
2055	233,186,928	42,373,815	42,373,815		-	3,458,679	-	3,458,679	
2056	205,486,767	37,918,150	37,918,150		-	2,894,953	-	2,894,953	
2057	180,479,562	33,808,624	33,808,624		-	2,414,368	-	2,414,368	
2058	157,993,498	30,036,821	30,036,821		-	2,006,373	-	2,006,373	
2059	137,853,589	26,591,303	26,591,303		-	1,661,418	-	1,661,418	
2060	119,884,585	23,458,232	23,458,232		-	1,370,933	-	1,370,933	
2061	103,913,433	20,622,091	20,622,091		-	1,127,289	-	1,127,289	
2062	89,771,167	18,065,923	18,065,923		-	923,729	-	923,729	
2063	77,294,680	15,771,925	15,771,925		-	754,311	-	754,311	
2064	66,327,999	13,721,773	13,721,773		-	613,844	-	613,844	
2065	56,723,322	11,896,968	11,896,968		-	497,812	-	497,812	
2066	48,341,761	10,279,057	10,279,057		-	402,313	-	402,313	
2067	41,053,910	8,849,992	8,849,992		-	323,993	-	323,993	

Single Discount Rate Development

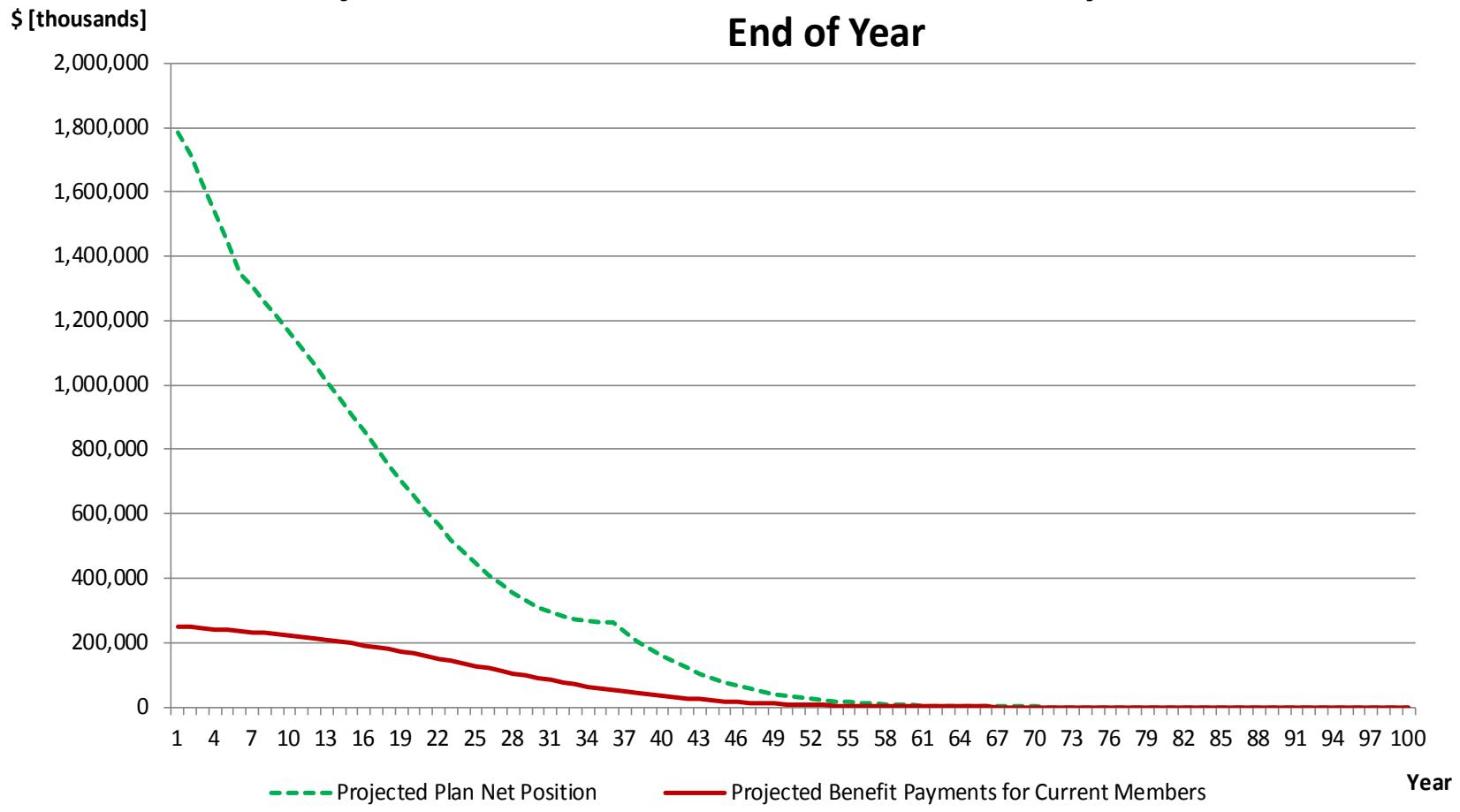
Present Values of Projected Benefits at 6.91%

End of Year

(Excluding ASF) (Concluded)

Fiscal Year Ending June 30,	Projected					Unfunded Portion of Benefit Payments	Present Value of Funded Benefit	Present Value of Unfunded Benefit	Present Value of Benefit
	Beginning Position	Plan Net	Projected Benefit Payments	Funded Portion of Benefit Payments	Payments using Expected Return Rate (v)				
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^((a)-5)	(g)=(e)*vf^(a)-5)	(h)=(c)/(1+sdr)^(a-5)		
2068	\$ 34,740,082	\$ 7,592,454	\$ 7,592,454	\$ -	\$ 259,990	\$ -	\$ 259,990		
2069	29,290,230	6,490,027	6,490,027	-	207,875	-	207,875		
2070	24,603,673	5,527,308	5,527,308	-	165,597	-	165,597		
2071	20,588,701	4,689,866	4,689,866	-	131,426	-	131,426		
2072	17,162,186	3,964,210	3,964,210	-	103,910	-	103,910		
2073	14,249,207	3,337,863	3,337,863	-	81,837	-	81,837		
2074	11,782,567	2,799,373	2,799,373	-	64,199	-	64,199		
2075	9,702,267	2,338,258	2,338,258	-	50,158	-	50,158		
2076	7,954,998	1,944,969	1,944,969	-	39,025	-	39,025		
2077	6,493,643	1,610,860	1,610,860	-	30,232	-	30,232		
2078	5,276,768	1,328,159	1,328,159	-	23,315	-	23,315		
2079	4,268,112	1,089,965	1,089,965	-	17,897	-	17,897		
2080	3,436,044	890,178	890,178	-	13,672	-	13,672		
2081	2,753,055	723,421	723,421	-	10,393	-	10,393		
2082	2,195,294	584,974	584,974	-	7,861	-	7,861		
2083	1,742,141	470,692	470,692	-	5,916	-	5,916		
2084	1,375,840	376,904	376,904	-	4,431	-	4,431		
2085	1,081,202	300,366	300,366	-	3,303	-	3,303		
2086	845,343	238,242	238,242	-	2,451	-	2,451		
2087	657,421	188,066	188,066	-	1,809	-	1,809		
2088	508,393	147,732	147,732	-	1,329	-	1,329		
2089	390,772	115,459	115,459	-	972	-	972		
2090	298,392	89,753	89,753	-	707	-	707		
2091	226,209	69,363	69,363	-	511	-	511		
2092	170,121	53,256	53,256	-	367	-	367		
2093	126,810	40,586	40,586	-	262	-	262		
2094	93,608	30,668	30,668	-	185	-	185		
2095	68,366	22,952	22,952	-	129	-	129		
2096	49,359	16,996	16,996	-	90	-	90		
2097	35,196	12,438	12,438	-	61	-	61		
2098	24,768	8,986	8,986	-	41	-	41		
2099	17,188	6,403	6,403	-	28	-	28		
2100	11,755	4,498	4,498	-	18	-	18		
2101	7,916	3,112	3,112	-	12	-	12		
2102	5,245	2,119	2,119	-	7	-	7		
2103	3,417	1,419	1,419	-	5	-	5		
2104	2,185	934	934	-	3	-	3		
2105	1,370	603	603	-	2	-	2		
2106	841	382	382	-	1	-	1		
2107	504	236	236	-	1	-	1		
2108	295	142	142	-	0	-	0		
2109	168	83	83	-	0	-	0		
2110	93	48	48	-	0	-	0		
2111	51	26	26	-	0	-	0		
2112	27	14	14	-	0	-	0		
2113	14	8	8	-	0	-	0		
2114	6	4	4	-	0	-	0		
2115	3	2	2	-	0	-	0		
2116	1	1	1	-	0	-	0		
2117	0	-	-	-	-	-	-		
					Totals	\$ 2,789,587,672	\$ -	\$ 2,789,587,672	

Projection of Plan Net Position and Benefit Payments at 6.91% End of Year



SECTION F

GLOSSARY OF TERMS

Glossary of Terms

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
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Glossary of Terms

Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be “open” (meaning, reset each year) or “closed” (the number of years remaining will decline each year).
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
Deferred Inflows and Outflows	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically:
	<ol style="list-style-type: none">1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms

Entry Age Actuarial Cost Method (EAN)

The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.

GASB

The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.

Fiduciary Net Position

The fiduciary net position is the value of the assets of the trust.

Long-Term Expected Rate of Return

The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.

Money-Weighted Rate of Return

The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Multiple-Employer Defined Benefit Pension Plan

A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.

Municipal Bond Rate

The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.

Net Pension Liability (NPL)

The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.

Non-Employer Contribution Entities

Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting statement plan members are not considered non-employer contribution entities.

Normal Cost

The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method. Also known as service cost.

The General Retirement System of the City of Detroit

GASB Statement Nos. 67 and 68 Accounting and Financial
Reporting for Pension Plans of Component II

June 30, 2018



October 31, 2018

Board of Trustees
The General Retirement System of the City of Detroit

Dear Board Members:

This report provides information required for the General Retirement System of the City of Detroit in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 "Financial Reporting for Pension Plans" and Statement No. 68 "Employer Reporting for Pension Plans." These calculations have been made on a basis that is consistent with our understanding of this Statement. This information is subject to the System's Auditor's review. Please let us know if the System's Auditor recommends any changes.

Our calculation of the liability associated with the benefits described in this report was performed for the purpose of satisfying the requirements of GASB Statement Nos. 67 and 68. The calculation of the plan's liability for this report is not applicable for funding purposes of the plan. A calculation of the plan's liability for purposes other than satisfying the requirements of GASB Statement Nos. 67 and 68 may produce significantly different results. In particular, this is not a funding report and nothing in this report should be construed as a funding recommendation. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

This report is based upon information, furnished to us by System staff, concerning retirement and ancillary benefits, active members, deferred vested members, retirees and beneficiaries, and financial data. This report is based on the valuation date of June 30, 2017. The total pension liability was rolled-forward from the valuation date to the plan year ending June 30, 2018 using generally accepted actuarial principles. The asset information as of June 30, 2018 was provided by the System. This information was checked for internal consistency, but it was not audited by Gabriel, Roeder, Smith & Company. A description of the adjustments made to the data is incorporated in this report (either directly or by reference). GRS is not responsible for the accuracy of the data provided by the Retirement System. This report is based upon estimates of frozen accrued benefits. Future measurements based on final calculation of benefit amounts will differ.

At the direction of the System and approval of the System's Auditor, the long-term expected return on assets used to determine the discount rate is 7.38%, net of investment expenses, as of June 30, 2018, up from 6.91%, net of investment expenses, as of June 30, 2017. We have reviewed this assumption based on the System's asset allocation and have determined it is not unreasonable for the purpose of the measurement being taken.

The benefit provisions reflected in this valuation for the development of the end of year Total Pension Liability (TPL) are those in effect for Component II as of the end of the plan year on June 30, 2018. We understand that Component I is a separate plan for GASB Nos. 67 and 68 purposes and will, therefore, be disclosed in a separate report.

To the best of our knowledge, the information contained within this report is accurate and fairly represents the actuarial position of the System on the measurement date for purposes of GASB Statement Nos. 67 and 68 reporting. All calculations have been made in conformity with generally accepted actuarial principles and practices as well as with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

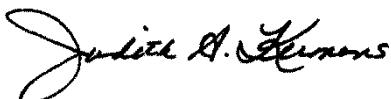
The signing individuals are independent of the plan sponsor.

David T. Kausch and Judith A. Kermans are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

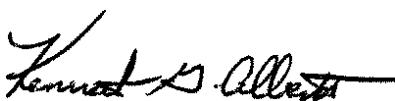
Respectfully submitted,



David T. Kausch, FSA, EA, FCA, MAAA, PhD
Senior Consultant and Chief Actuary



Judith A. Kermans, EA, FCA, MAAA
Senior Consultant and President



Kenneth G. Alberts
Consultant

DTK/JAK/KGA:ah



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SECTION A

EXECUTIVE SUMMARY

Executive Summary as of June 30, 2018

Actuarial Valuation Date	June 30, 2017
Measurement Date of the Net Pension Liability	June 30, 2018
Employer's Fiscal Year Ending Date (Reporting Date)	June 30, 2019

Membership

Number of	
- Retirees and Beneficiaries	11,834
- Inactive, Nonretired Members	3,355
- Active Members	3,025
- Total	18,214
Covered Payroll	\$ 141,454,717

Net Pension Liability

Total Pension Liability	\$ 2,773,306,153
Plan Fiduciary Net Position	1,940,623,642
Net Pension Liability	\$ 832,682,511
Plan Fiduciary Net Position as a Percentage of Total Pension Liability	69.98%
Net Pension Liability as a Percentage of Covered Payroll	588.66%

Development of the Single Discount Rate

Single Discount Rate	7.38%
Long-Term Expected Rate of Investment Return	7.38%
Long-Term Municipal Bond Rate*	3.62%
Last year ending June 30 in the 2019 to 2118 projection period for which projected benefit payments are fully funded	2118

Total Pension Expense	\$ (21,468,726)
-----------------------	-----------------

Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ -	\$ -
Changes in assumptions	- -	- -
Net difference between projected and actual earnings on pension plan investments	75,706,005	64,663,887
Total	<u>\$ 75,706,005</u>	<u>\$ 64,663,887</u>

*Source: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 29, 2018. In describing this index, Fidelity notes that the municipal curves are constructed using option-adjusted analytics of a diverse population of over 10,000 tax-exempt securities.

Discussion

Changes to the Actuarial Assumptions

For purposes of determining the total pension liability as of June 30, 2018, the following actuarial assumptions were changed/modified from those used in the June 30, 2017 funding valuation:

- At the direction of the System and approval of the Systems' Auditor, the long-term expected return on assets was 7.38% net of investment expenses, as of June 30, 2018 (it was 6.75% net of investment and administrative expenses, in the June 30, 2017 funding valuation, as required by the Plan of Adjustment).
- The June 30, 2017 funding valuation included approximately \$5.9 million in liabilities to account for an anticipated excess ASF earnings transfer to Component I expected to occur in the future as a result of FY 2017 investment performance. We have discussed this additional liability with the Plan's auditor who indicated that the excess earnings transfer should not be included as a liability in the GASB 67/68 reports until it actually occurs. As such, the excess earnings transfer is not included as a liability in this report. Please see the funding valuation for more details.

All other actuarial assumptions were the same as those used in the June 30, 2017 actuarial valuation (the funding valuation).

The following assumptions were changed/modified from those used in the June 30, 2017 GASB Statement Nos. 67 and 68 valuations:

- The Single Discount Rate (SDR) changed to 7.38% from 6.91% (coincident with the change in the long-term expected return). While this assumption is not unreasonable, it is important to note that the direction and magnitude of the change is not consistent with the industry trend.

Changes to the Benefit Provisions

There were no changes in benefit provisions during the year.

Data Approximations and Assumptions

A description of the data approximations and assumptions used in making this report are included in the June 30, 2017 funding valuation report.

Magnitude of Administrative Expenses

The Component I (Hybrid) payroll has significantly increased since the last valuation. As a result, for this valuation, we have adjusted the administrative expense as a percent of payroll assumption to bring the assumption in line with current experience. This brought the expenses as a percent of Component I payroll down from 3.55% back to the previous assumption of 3.0%. In addition, we allocated 60% of the expenses to Component II and 40% to Component I, consistent with this year's allocation as shown in the assets.

Development of Employer Proportionate Shares

As instructed, we have developed the proportionate employer shares as follows:

- General, DOT, DWSD, and Library have contribution rates assessed on separate relationships and are therefore accounted for separately under Paragraph 49 of GASB No. 68.
- The component units in the General Division were 1) General City; 2) Parking; and 3) Airport.
- Proportionate shares in the General Division were determined by prorating based on the Total Pension Liability.

Accounting Standard

For pension plans that are administered through trusts or equivalent arrangements, Governmental Accounting Standards Board (GASB) Statement No. 67 establishes standards of financial reporting for separately issued financial reports and specifies the required approach for measuring the pension liability. Similarly, GASB Statement No. 68 establishes standards for state and local government employers (as well as non-employer contributing entities) to account for and disclose the net pension liability, pension expense, and other information associated with providing retirement benefits to their employees (and former employees) on their basic financial statements.

The following discussion provides a summary of the information that is required to be disclosed under these accounting standards. A number of these disclosure items are provided in this report. However, certain information, such as notes regarding accounting policies and investments, is not included in this report and the retirement system and/or plan sponsor will be responsible for preparing and disclosing that information to comply with these accounting standards.

Financial Statements

GASB Statement No. 68 requires state or local governments to recognize the net pension liability and the pension expense on their financial statements. The net pension liability is the difference between the total pension liability and the plan's fiduciary net position. In traditional actuarial terms, this is analogous to the accrued liability less the market value of assets (not the smoothed actuarial value of assets that is often encountered in actuarial valuations performed to determine the employer's contribution requirement).

Paragraph 57 of GASB Statement No. 68 states, "Contributions to the pension plan from the employer subsequent to the measurement date of the collective net pension liability and before the end of the employer's reporting period should be reported as a deferred outflow of resources related to pensions." The information contained in this report does not incorporate any contributions made to the General Retirement System of the City of Detroit subsequent to the measurement date of June 30, 2017.

The pension expense recognized each fiscal year is equal to the change in the net pension liability from the beginning of the year to the end of the year, adjusted for deferred recognition of the certain changes in the liability and investment experience.

Pension plans that prepare their own, stand-alone financial statements are required to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position in accordance with GASB Statement No. 67. The *statement of fiduciary net position* presents the assets and liabilities of the pension plan at the end of the pension plan's reporting period. The *statement of changes in fiduciary net position* presents the additions, such as contributions and investment income, and deductions, such as benefit payments and expenses, and net increase or decrease in the fiduciary net position.

Notes to Financial Statements

GASB Statement No. 68 requires the notes of the employer's financial statements to disclose the total pension expense, the pension plan's liabilities and assets, and deferred outflows and inflows of resources related to pensions.

GASB Statement Nos. 67 and 68 require the notes of the financial statements for the employers and pension plans to include certain additional information. The list of disclosure items should include:

- a description of benefits provided by the plan;
- the type of employees and number of members covered by the pension plan;
- a description of the plan's funding policy, which includes member and employer contribution requirements;
- the pension plan's investment policies;
- the pension plan's fiduciary net position and the net pension liability;
- the net pension liability using a discount rate that is 1% higher and 1% lower than used to calculate the total pension liability and net pension liability for financial reporting purposes;
- significant assumptions and methods used to calculate the total pension liability;
- inputs to the discount rates; and
- certain information about mortality assumptions and the dates of experience studies.

Retirement systems that issue stand-alone financial statements are required to disclose additional information in accordance with GASB Statement No. 67. This information includes:

- the composition of the pension plan's Board and the authority under which benefit terms may be amended;
- a description of how fair value is determined;
- information regarding certain reserves and investments, which include concentrations of investments greater than or equal to 5%, receivables, and insurance contracts excluded from plan assets; and
- annual money-weighted rate of return.

Required Supplementary Information

GASB Statement No. 67 requires a 10-year fiscal history of:

- sources of changes in the net pension liability;
- information about the components of the net pension liability and related ratios, including the pension plan's fiduciary net position as a percentage of the total pension liability, and the net pension liability as a percent of covered-employee payroll; and
- a comparison of the actual employer contributions to the actuarially determined contributions based on the plan's funding policy.

Timing of the Valuation

An actuarial valuation to determine the total pension liability is required to be performed at least every two years. The net pension liability and pension expense should be measured as of the pension plan's fiscal year end (measurement date) on a date that is within the employer's prior fiscal year. If the actuarial valuation used to determine the total pension liability is not calculated as of the measurement date, the total pension liability is required to be rolled forward from the actuarial valuation date to the measurement date.

The total pension liability shown in this report is based on an actuarial valuation performed as of June 30, 2017, rolled to the plan year end of June 30, 2018.

Single Discount Rate

Projected benefit payments are required to be discounted to their actuarial present values using a Single Discount Rate that reflects (1) a long-term expected rate of return on pension plan investments (to the extent that the plan's fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating (which is published by the Federal Reserve) as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.38%; the municipal bond rate is 3.62% (based on the daily rate closest to but not later than the measurement date of the Fidelity "20-Year Municipal GO AA Index"); and the resulting Single Discount Rate is 7.38%.

The expected rate of return was provided by the Retirement System and approved by the System's auditor.

Limitation of Assets as a Percent of Total Pension Liability Measurements

This report includes a measure of the plan fiduciary net position as a percent of total pension liability (69.98% as of June 30, 2018). Unless otherwise indicated, with regard to any such measurements presented in this report:

- (1) This measurement is not intended to be a funded ratio or a measure of funded progress.
- (2) This measurement is inappropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations.
- (3) The measurement is inappropriate for assessing the need for or amount of future employer contributions.

Limitations of Project Scope

Actuarial Standards do not require the actuary to evaluate the ability of the plan sponsor or other contributing entities to make required contributions when due. Such an evaluation was not within the scope of this project and is not within our area of expertise. Consequently, we have not made such an evaluation.

ASF Recoupments

The reported June 30, 2018 assets included a receivable, computed by the System's auditors, that accounts for future ASF recoupments. We understand this amount was originally determined as of June 30, 2015 and updated to June 30, 2017 in accordance with GAAP accounting.

SECTION B

FINANCIAL STATEMENTS

This information is subject to the System's Auditor's review. Please let us know if the System's Auditor recommends any changes.

Statement of Fiduciary Net Position as of June 30, 2018

Assets

Cash and Cash Equivalents	\$ 179,460,709
Receivables	111,876,197
Investments at Fair Value	1,668,833,586
Cash and Investments held as collateral for securities lending	80,544,567
Capital Assets - Net	<u>550,318</u>
Total Assets	<u>\$ 2,041,265,377</u>

Liabilities

Accounts Payable	\$ 100,641,735
Total Liabilities	<u>\$ 100,641,735</u>

Net Position Restricted for Pensions	<u>\$ 1,940,623,642</u>
---	--------------------------------

ASF Reserve	\$ 108,420,640
Other Reserves	<u>1,832,203,002</u>
Plan Fiduciary Net Position	<u>\$ 1,940,623,642</u>

Statement of Changes in Fiduciary Net Position for Year Ended June 30, 2018

Additions

Contributions

Employer	\$ 68,275,000
Employee	-
Other	-
Total Contributions	\$ 68,275,000

Investment Income

Investment Income	\$ 155,423,193
Net Investment Income	\$ 155,423,193
Other Income (Including ASF Interest)^	\$ 7,859,047
Total Additions	\$ 231,557,240

Deductions

Benefit Payments, including Refunds of Employee Contributions	\$ 253,442,630
Pension Plan Administrative Expense	3,313,418
Other	906,525
Total Deductions	\$ 257,662,573
 Net Increase in Net Position	 \$ (26,105,333)

Net Position Restricted for Pensions

Beginning of Year	\$ 1,966,728,975
End of Year	\$ 1,940,623,642

[^] Following discussions with the auditor, we understand that for purposes of determining the Pension Expense for GASB Statement No. 68, ASF Interest should be treated as Other Changes in Plan Fiduciary Net Position and recognized immediately.

Statement of Pension Expense Under GASB Statement No. 68

Fiscal Year Ended June 30, 2018*

A. Expense	General	DOT	DWSD	Library	Total
1. Service Cost	\$ -	\$ -	\$ -	\$ -	\$ -
2. Interest on the Total Pension Liability	105,690,910	28,026,537	52,030,052	6,612,246	192,359,745
3. Current-Period Benefit Changes	-	-	-	-	-
4. Employee Contributions (made negative for addition here)	-	-	-	-	-
5. Projected Earnings on Plan Investments (made negative for addition here)	(73,509,440)	(14,554,264)	(35,989,658)	(5,575,800)	(129,629,162)
6. Pension Plan Administrative Expense	2,787,861	385,145	-	140,412	3,313,418
7. Other Changes in Plan Fiduciary Net Position	(3,632,647)	(1,191,567)	(1,971,590)	(156,718)	(6,952,522)
8. Recognition of Outflow (Inflow) of Resources due to Liabilities	(56,122,083)	15,337,263	(30,819,300)	(4,516,068)	(76,120,188)
9. Recognition of Outflow (Inflow) of Resources due to Assets	5,382,006	(840,727)	(7,116,332)	(1,864,964)	(4,440,017)
10. Total Pension Expense	\$ (19,403,393)	\$ 27,162,387	\$ (23,866,828)	\$ (5,360,892)	\$ (21,468,726)

*Totals may not add due to rounding.

Statement of Outflows and Inflows Arising from Current Reporting Period Fiscal Year Ended June 30, 2018*

A. Outflows (Inflows) of Resources due to Liabilities	General	DOT	DWSD	Library	Total
1. Difference between expected and actual experience of the Total Pension Liability (gains) or losses	\$ 3,041,504	\$ 32,573,900	\$ (456,059)	\$ (1,005,018)	\$ 34,154,327
2. Assumption Changes (gains) or losses	\$ (59,163,587)	\$ (17,236,637)	\$ (30,363,241)	\$ (3,511,050)	\$ (110,274,515)
3. Recognition period for Liabilities: Average of the expected remaining service lives of all employees {in years}	1.0000	1.0000	1.0000	1.0000	1.0000
4. Outflow (Inflow) of Resources to be recognized in the current pension expense for the difference between expected and actual experience of the Total Pension Liability	\$ 3,041,504	\$ 32,573,900	\$ (456,059)	\$ (1,005,018)	\$ 34,154,327
5. Outflow (Inflow) of Resources to be recognized in the current pension expense for Assumption Changes	\$ (59,163,587)	\$ (17,236,637)	\$ (30,363,241)	\$ (3,511,050)	\$ (110,274,515)
6. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Liabilities	<hr/> \$ (56,122,083)	<hr/> \$ 15,337,263	<hr/> \$ (30,819,300)	<hr/> \$ (4,516,068)	<hr/> \$ (76,120,188)
7. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for the difference between expected and actual experience of the Total Pension Liability	\$ -	\$ -	\$ -	\$ -	\$ -
8. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses for Assumption Changes	\$ -	\$ -	\$ -	\$ -	\$ -
9. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Liabilities	<hr/> \$ -	<hr/> \$ -	<hr/> \$ -	<hr/> \$ -	<hr/> \$ -
B. Outflows (Inflows) of Resources due to Assets					
1. Net difference between projected and actual earnings on pension plan investments (gains) or losses	\$ (15,759,553)	\$ (2,082,160)	\$ (7,178,439)	\$ (773,879)	\$ (25,794,031)
2. Recognition period for Assets {in years}	5.0000	5.0000	5.0000	5.0000	5.0000
3. Outflow (Inflow) of Resources to be recognized in the current pension expense due to Assets	\$ (3,151,911)	\$ (416,432)	\$ (1,435,688)	\$ (154,776)	\$ (5,158,806)
4. Deferred Outflow (Inflow) of Resources to be recognized in future pension expenses due to Assets	<hr/> \$ (12,607,642)	<hr/> \$ (1,665,728)	<hr/> \$ (5,742,751)	<hr/> \$ (619,103)	<hr/> \$ (20,635,225)

*Totals may not add due to rounding.

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30 General

A. Outflows and Inflows of Resources Due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 3,041,504	\$ 59,163,587	\$ (56,122,083)
2. Due to Assets	\$ 24,951,060	\$ 19,569,054	\$ 5,382,006
3. Total	\$ 27,992,564	\$ 78,732,641	\$ (50,740,077)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 3,041,504	\$ -	\$ 3,041,504
2. Assumption Changes	\$ -	\$ 59,163,587	\$ (59,163,587)
3. Net Difference between projected and actual earnings on pension plan investments	\$ 24,951,060	\$ 19,569,054	\$ 5,382,006
4. Total	\$ 27,992,564	\$ 78,732,641	\$ (50,740,077)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ -	\$ -
2. Assumption Changes	\$ -	\$ -	\$ -
3. Net Difference between projected and actual earnings on pension plan investments	\$ 43,864,047	\$ 38,443,393	\$ 5,420,654
4. Total	\$ 43,864,047	\$ 38,443,393	\$ 5,420,654

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources	
	General Total	
2019	\$ 13,187,234	
2020	\$ 7,149,157	
2021	\$ (11,763,828)	
2022	\$ (3,151,909)	
2023	\$ -	
Thereafter	\$ -	
Total	\$ 5,420,654	

Recognition of Deferred Outflows and Inflows of Resources

Fiscal Year Ended June 30, 2018

General

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) due to Differences Between Expected and Actual Experience on Liabilities					
2014	0	1.8529	0	0	0.0000
2015	18,703,738	1.0000	0	0	0.0000
2016	(29,429,615)	1.0000	0	0	0.0000
2017	(23,006,975)	1.0000	0	0	0.0000
2018	3,041,504	1.0000	<u>3,041,504</u>	0	0.0000
Total			3,041,504	0	
Deferred Outflow (Inflow) due to Assumption Changes					
2014	(151,154,952)	1.8529	0	0	0.0000
2015	(55,704,947)	1.0000	0	0	0.0000
2016	49,169,719	1.0000	0	0	0.0000
2017	41,844,061	1.0000	0	0	0.0000
2018	(59,163,587)	1.0000	<u>(59,163,587)</u>	0	0.0000
Total			(59,163,587)	0	
Deferred Outflow (Inflow) due to Differences Between Projected and Actual Earnings on Plan Investments					
2014	(39,026,134)	5.0000	(7,805,226)	0	0.0000
2015	30,190,382	5.0000	6,038,076	6,038,078	1.0000
2016	94,564,921	5.0000	18,912,984	37,825,969	2.0000
2017	(43,059,585)	5.0000	(8,611,917)	(25,835,751)	3.0000
2018	(15,759,553)	5.0000	<u>(3,151,911)</u>	<u>(12,607,642)</u>	4.0000
Total			5,382,006	5,420,654	

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30 DOT

A. Outflows and Inflows of Resources Due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 32,573,900	\$ 17,236,637	\$ 15,337,263
2. Due to Assets	\$ 5,162,784	\$ 6,003,511	\$ (840,727)
3. Total	\$ 37,736,684	\$ 23,240,148	\$ 14,496,536

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 32,573,900	\$ -	\$ 32,573,900
2. Assumption Changes	-	\$ 17,236,637	\$ (17,236,637)
3. Net Difference between projected and actual earnings on pension plan investments	\$ 5,162,784	\$ 6,003,511	\$ (840,727)
4. Total	\$ 37,736,684	\$ 23,240,148	\$ 14,496,536

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ -	\$ -
2. Assumption Changes	-	-	-
3. Net Difference between projected and actual earnings on pension plan investments	\$ 8,995,948	\$ 6,388,624	\$ 2,607,324
4. Total	\$ 8,995,948	\$ 6,388,624	\$ 2,607,324

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2019	\$ 3,172,052
2020	\$ 1,842,434
2021	\$ (1,990,730)
2022	\$ (416,432)
2023	\$ -
Thereafter	\$ -
Total	\$ 2,607,324

Recognition of Deferred Outflows and Inflows of Resources

Fiscal Year Ended June 30, 2018

DOT

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) due to Differences Between Expected and Actual Experience on Liabilities					
2014	0	2.1831	0	0	0.0000
2015	12,036,135	1.0000	0	0	0.0000
2016	(3,435,546)	1.0000	0	0	0.0000
2017	(5,802,247)	1.0000	0	0	0.0000
2018	32,573,900	1.0000	<u>32,573,900</u>	0	0.0000
Total			32,573,900	0	
Deferred Outflow (Inflow) due to Assumption Changes					
2014	(34,363,784)	2.1831	0	0	0.0000
2015	(14,340,139)	1.0000	0	0	0.0000
2016	12,849,218	1.0000	0	0	0.0000
2017	11,022,689	1.0000	0	0	0.0000
2018	(17,236,637)	1.0000	<u>(17,236,637)</u>	0	0.0000
Total			(17,236,637)	0	
Deferred Outflow (Inflow) due to Differences Between Projected and Actual Earnings on Plan Investments					
2014	(20,063,892)	5.0000	(4,012,780)	0	0.0000
2015	6,648,084	5.0000	1,329,617	1,329,616	1.0000
2016	19,165,833	5.0000	3,833,167	7,666,332	2.0000
2017	(7,871,494)	5.0000	(1,574,299)	(4,722,896)	3.0000
2018	(2,082,160)	5.0000	<u>(416,432)</u>	(1,665,728)	4.0000
Total			(840,727)	2,607,324	

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30 DWSD

A. Outflows and Inflows of Resources due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ -	\$ 30,819,300	\$ (30,819,300)
2. Due to Assets	\$ 11,292,804	\$ 18,409,136	\$ (7,116,332)
3. Total	\$ 11,292,804	\$ 49,228,436	\$ (37,935,632)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ 456,059	\$ (456,059)
2. Assumption Changes	\$ -	\$ 30,363,241	\$ (30,363,241)
3. Net Difference between projected and actual earnings on pension plan investments	\$ 11,292,804	\$ 18,409,136	\$ (7,116,332)
4. Total	\$ 11,292,804	\$ 49,228,436	\$ (37,935,632)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ -	\$ -
2. Assumption Changes	\$ -	\$ -	\$ -
3. Net Difference between projected and actual earnings on pension plan investments	\$ 19,798,146	\$ 17,581,095	\$ 2,217,051
4. Total	\$ 19,798,146	\$ 17,581,095	\$ 2,217,051

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2019	\$ 5,911,001
2020	\$ 3,123,539
2021	\$ (5,381,802)
2022	\$ (1,435,687)
2023	\$ -
Thereafter	\$ -
Total	\$ 2,217,051

Recognition of Deferred Outflows and Inflows of Resources
Fiscal Year Ended June 30, 2018
DWSD

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) due to Differences Between Expected and Actual Experience on Liabilities					
2014	0	2.8654	0	0	0.0000
2015	(607,587)	1.0000	0	0	0.0000
2016	(7,203,304)	1.0000	0	0	0.0000
2017	3,370,105	1.0000	0	0	0.0000
2018	(456,059)	1.0000	(456,059)	0	0.0000
Total			(456,059)	0	
Deferred Outflow (Inflow) due to Assumption Changes					
2014	(74,737,651)	2.8654	0	0	0.0000
2015	(28,150,723)	1.0000	0	0	0.0000
2016	25,074,531	1.0000	0	0	0.0000
2017	21,554,914	1.0000	0	0	0.0000
2018	(30,363,241)	1.0000	(30,363,241)	0	0.0000
Total			(30,363,241)	0	
Deferred Outflow (Inflow) due to Differences Between Projected and Actual Earnings on Plan Investments					
2014	(65,136,661)	5.0000	(13,027,333)	0	0.0000
2015	13,937,310	5.0000	2,787,462	2,787,462	1.0000
2016	42,526,710	5.0000	8,505,342	17,010,684	2.0000
2017	(19,730,574)	5.0000	(3,946,115)	(11,838,344)	3.0000
2018	(7,178,439)	5.0000	(1,435,688)	(5,742,751)	4.0000
Total			(7,116,332)	2,217,051	

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30 Library

A. Outflows and Inflows of Resources Due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ -	\$ 4,516,068	\$ (4,516,068)
2. Due to Assets	\$ 1,733,209	\$ 3,598,173	\$ (1,864,964)
3. Total	\$ 1,733,209	\$ 8,114,241	\$ (6,381,032)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ 1,005,018	\$ (1,005,018)
2. Assumption Changes	- -	3,511,050	(3,511,050)
3. Net Difference between projected and actual earnings on pension plan investments	\$ 1,733,209	\$ 3,598,173	\$ (1,864,964)
4. Total	\$ 1,733,209	\$ 8,114,241	\$ (6,381,032)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ -	\$ -
2. Assumption Changes	- -	- -	- -
3. Net Difference between projected and actual earnings on pension plan investments	\$ 3,047,864	\$ 2,250,775	\$ 797,089
4. Total	\$ 3,047,864	\$ 2,250,775	\$ 797,089

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2019	\$ 1,034,542
2020	615,988
2021	(698,666)
2022	(154,775)
2023	- -
Thereafter	- -
Total	\$ 797,089

Recognition of Deferred Outflows and Inflows of Resources

Fiscal Year Ended June 30, 2018

Library

Year Established	Initial Amount	Initial Recognition Period	Current Year Recognition	Remaining Recognition	Remaining Recognition Period
Deferred Outflow (Inflow) due to Differences Between Expected and Actual Experience on Liabilities					
2014	0	3.7901	0	0	0.0000
2015	(5,487,755)	1.0000	0	0	0.0000
2016	(3,650,647)	1.0000	0	0	0.0000
2017	(2,069,263)	1.0000	0	0	0.0000
2018	(1,005,018)	1.0000	(1,005,018)	0	0.0000
Total			(1,005,018)	0	
Deferred Outflow (Inflow) due to Assumption Changes					
2014	(10,933,807)	3.7901	0	0	0.0000
2015	(3,364,084)	1.0000	0	0	0.0000
2016	2,941,459	1.0000	0	0	0.0000
2017	2,504,293	1.0000	0	0	0.0000
2018	(3,511,050)	1.0000	(3,511,050)	0	0.0000
Total			(3,511,050)	0	
Deferred Outflow (Inflow) due to Differences Between Projected and Actual Earnings on Plan Investments					
2014	(14,497,530)	5.0000	(2,899,506)	0	0.0000
2015	2,092,765	5.0000	418,553	418,553	1.0000
2016	6,573,279	5.0000	1,314,656	2,629,311	2.0000
2017	(2,719,454)	5.0000	(543,891)	(1,631,672)	3.0000
2018	(773,879)	5.0000	(154,776)	(619,103)	4.0000
Total			(1,864,964)	797,089	

Statement of Outflows and Inflows Arising from Current and Prior Reporting Periods Fiscal Year Ended June 30 Total

A. Outflows and Inflows of Resources Due to Liabilities and Assets to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Due to Liabilities	\$ 35,615,404	\$ 111,735,592	\$ (76,120,188)
2. Due to Assets	\$ 43,139,857	\$ 47,579,874	\$ (4,440,017)
3. Total	\$ 78,755,261	\$ 159,315,466	\$ (80,560,205)

B. Outflows and Inflows of Resources by Source to be Recognized in Current Pension Expense

	Outflows of Resources	Inflows of Resources	Net Outflows of Resources
1. Differences between expected and actual experience	\$ 35,615,404	\$ 1,461,077	\$ 34,154,327
2. Assumption Changes	-	110,274,515	(110,274,515)
3. Net Difference between projected and actual earnings on pension plan investments	\$ 43,139,857	\$ 47,579,874	\$ (4,440,017)
4. Total	\$ 78,755,261	\$ 159,315,466	\$ (80,560,205)

C. Deferred Outflows and Deferred Inflows of Resources by Source to be Recognized in Future Pension Expenses

	Deferred Outflows of Resources	Deferred Inflows of Resources	Net Deferred Outflows of Resources
1. Differences between expected and actual experience	\$ -	\$ -	\$ -
2. Assumption Changes	-	-	-
3. Net Difference between projected and actual earnings on pension plan investments	\$ 75,706,005	\$ 64,663,887	\$ 11,042,118
4. Total	\$ 75,706,005	\$ 64,663,887	\$ 11,042,118

D. Deferred Outflows and Deferred Inflows of Resources by Year to be Recognized in Future Pension Expenses

Year Ending June 30	Net Deferred Outflows of Resources
2019	\$ 23,304,829
2020	\$ 12,731,118
2021	\$ (19,835,026)
2022	\$ (5,158,803)
2023	\$ -
Thereafter	\$ -
Total	\$ 11,042,118

Schedule of Proportionate Employer Share for Year Ended June 30, 2018 General Subgroup*

Deferred Outflows of Resources									
TPL	Employer	Prop. Share	Net Pension Liability	Net Difference		Changes in		Total Deferred	Outflows of
				Differences	Between	Projected and	Proportion and		
				Between	Expected and	Actual	Investment		
				Experience	Actual	Experience	Earnings on	Pension Plan	Investments
							Investments	Assum.	Assum.
\$ 1,484,157,951	General City	98.39%	\$ 407,549,164	\$ -	\$ 43,157,836	\$ -	\$ -	\$ -	\$ 43,157,836
21,118,215	Parking	1.40%	5,799,053	\$ -	614,097	\$ -	\$ -	\$ -	614,097
3,167,732	Airport	0.21%	869,858	\$ -	92,114	\$ -	\$ -	\$ -	92,114
\$ 1,508,443,898	Total for All Employers	100.00%	\$ 414,218,075	\$ -	\$ 43,864,047	\$ -	\$ -	\$ -	\$ 43,864,047

Deferred Inflows of Resources						Pension Expense		
Employer	Experience	Investments	Changes of Assum.	Net Difference		Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Cont. and Share of Cont.		
				Differences	Between	Projected and	Changes in	Proportion and
				Between	Expected and	Actual	Proportion and	Differences
				Investment	Earnings on	Pension Plan	Employer Cont.	Employer
				Investments	Plan Pension	Contributins and	Proportionate	Pension
				Changes of Assum.	Expense	Proportionate	Expense	Expense
General City	\$ -	\$ 37,824,454	\$ -	\$ -	\$ 37,824,454	\$ (19,090,998)	\$ 686,556	\$ (18,404,442)
Parking	-	538,208	-	-	538,208	(271,648)	(478,730)	(750,378)
Airport	-	80,731	-	-	80,731	(40,747)	(207,826)	(248,573)
Total for All Employers	\$ -	\$ 38,443,393	\$ -	\$ -	\$ 38,443,393	\$ (19,403,393)	\$ -	\$ (19,403,393)

* Totals may not add due to rounding.

Schedule of Proportionate Employer Share for Year Ended June 30, 2018 General Subgroup*

Employer	Employer Allocation Percentage	Schedule of Deferred Inflows and Outflows							
		2019	2020	2021	2022	2023	Thereafter	Total	
General City	98.39%	\$ 12,974,920	\$ 7,034,056	\$(11,574,430)	\$ (3,101,163)	\$ -	\$ -	\$ 5,333,381	
Parking	1.40%	184,621	100,088	(164,694)	(44,127)	-	-	75,889	
Airport	0.21%	27,693	15,013	(24,704)	(6,619)	-	-	11,383	
TOTAL	100.00%	\$ 13,187,234	\$ 7,149,157	\$(11,763,828)	\$ (3,151,909)	\$ -	\$ -	\$ 5,420,654	

* Totals may not add due to rounding.

Determination of Employer Contribution Allocation for Year Ended June 30, 2018

Employer	General City	Parking	Airport	General Total	DOT	DWSD	Library	Total
Contributions Before General Breakdown				\$22,764,999	\$110,001	\$42,900,000	\$2,500,000	\$68,275,000
General Employer Allocation Percent	100.00%	0.00%	0.00%	100.00%	N/A	N/A	N/A	N/A
Times General Total	\$22,764,999	\$22,764,999	\$22,764,999	\$22,764,999	N/A	N/A	N/A	N/A
Contribution Allocation Dollar	\$22,764,999	\$ 0	\$ 0	\$22,764,999	\$110,001	\$42,900,000	\$2,500,000	\$68,275,000

We understand that the General contributions should be split between the General component units (General City, Parking, and Airport) according to the above schedule. Please let us know if a different allocation should be used.

SECTION C

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Net Pension Liability and Related Ratios Current Period

Fiscal Year Ended June 30, 2018*

	General	DOT	DWSD	Library	Total
A. Total Pension Liability					
1. Service Cost	\$ -	\$ -	\$ -	\$ -	\$ -
2. Interest on the Total Pension Liability	105,690,910	28,026,537	52,030,052	6,612,246	192,359,745
3. Changes of benefit terms	-	-	-	-	-
4. Difference between expected and actual experience of the Total Pension Liability	3,041,504	32,573,900	(456,059)	(1,005,018)	34,154,327
5. Changes of assumptions	(59,163,587)	(17,236,637)	(30,363,241)	(3,511,050)	(110,274,515)
6. Benefit payments, including refunds of employee contributions [^]	(141,321,034)	(36,880,997)	(67,419,972)	(7,820,627)	(253,442,630)
7. Net change in Total Pension Liability	\$ (91,752,207)	\$ 6,482,803	\$ (46,209,220)	\$ (5,724,449)	\$ (137,203,073)
8. Total Pension Liability – Beginning	1,600,196,105	424,034,380	786,677,460	99,601,281	2,910,509,226
9. Total Pension Liability – Ending	\$ 1,508,443,898	\$ 430,517,183	\$ 740,468,240	\$ 93,876,832	\$ 2,773,306,153
B. Plan Fiduciary Net Position					
1. Contributions – employer	\$ 22,764,999	\$ 110,001	\$ 42,900,000	\$ 2,500,000	\$ 68,275,000
2. Contributions – employee	-	-	-	-	-
3. Net investment income	89,268,993	16,636,424	43,168,097	6,349,679	155,423,193
4. Benefit payments, including refunds of employee contributions	(141,321,034)	(36,880,997)	(67,419,972)	(7,820,627)	(253,442,630)
5. Pension Plan Administrative Expense	(2,787,861)	(385,145)	-	(140,412)	(3,313,418)
6. Other	3,632,647	1,191,567	1,971,590	156,718	6,952,522
7. Net change in Plan Fiduciary Net Position	\$ (28,442,256)	\$ (19,328,150)	\$ 20,619,715	\$ 1,045,358	\$ (26,105,333)
8. Plan Fiduciary Net Position – Beginning	1,122,668,079	228,608,389	532,108,601	83,343,906	1,966,728,975
9. Plan Fiduciary Net Position – Ending	\$ 1,094,225,823	\$ 209,280,239	\$ 552,728,316	\$ 84,389,264	\$ 1,940,623,642
C. Net Pension Liability	\$ 414,218,075	\$ 221,236,944	\$ 187,739,924	\$ 9,487,568	\$ 832,682,511
D. Plan Fiduciary Net Position as a percentage of the Total Pension Liability	72.54%	48.61%	74.65%	89.89%	69.98%
E. Covered-employee payroll	\$ 89,376,945	\$ 23,916,834	\$ 17,305,238	\$ 10,855,700	\$ 141,454,717
F. Net Pension Liability as a percentage of covered-employee payroll	463.45%	925.03%	1084.87%	87.40%	588.66%

*Totals may not add due to rounding.

A Special Funding Situation may occur if a non-city entity has a legal obligation to contribute directly to the Retirement System. The Net Pension Liability shown here has not been adjusted for any potential special funding situation.

Schedules of Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios Multiyear

Ultimately 10 Fiscal Years will be Displayed

Fiscal year ending June 30,	2018	2017	2016	2015	2014
Total Pension Liability					
Service Cost	\$ -	\$ -	\$ -	\$ -	\$ 32,736,019
Interest on the Total Pension Liability	192,359,745	201,919,236	214,011,164	263,007,329	242,611,073
Benefit Changes	-	-	-	(731,824,895)	(113,311,571)
Difference between Expected and Actual Experience	34,154,327	(27,508,380)	(43,719,112)	24,644,530	-
Assumption Changes	(110,274,515)	76,925,957	90,034,927	(101,559,893)	(271,190,194)
Benefit Payments	(239,301,938)	(242,938,006)	(242,470,451)	(253,217,949)	(253,683,194)
Refunds*	(14,140,692)	(24,311,533)	(49,811,728)	(44,321,041)	(144,050,613)
Net Change in Total Pension Liability	(137,203,073)	(15,912,726)	(31,955,200)	(843,271,919)	(506,888,480)
Total Pension Liability - Beginning	2,910,509,226	2,926,421,952	2,958,377,152	3,801,649,071	4,308,537,551
Total Pension Liability - Ending (a)	\$ 2,773,306,153	\$ 2,910,509,226	\$ 2,926,421,952	\$ 2,958,377,152	\$ 3,801,649,071
Plan Fiduciary Net Position					
Employer Contributions	\$ 68,275,000	\$ 91,238,402	\$ 104,792,657	\$ 189,282,095	\$ 25,126,131
Employee Contributions	-	-	-	609,073	10,241,761
Pension Plan Net Investment Income	155,423,193	206,896,567	(7,865,094)	93,054,978	289,789,607
Benefit Payments	(239,301,938)	(242,938,006)	(242,470,451)	(253,217,949)	(253,683,194)
Refunds*	(14,140,692)	(24,311,533)	(49,811,728)	(44,321,041)	(144,050,613)
Pension Plan Administrative Expense	(3,313,418)	(6,021,837)	(3,742,618)	(7,556,822)	(11,237,767)
Other	6,952,522	8,324,075	1,360,330	138,219,998	-
Net Change in Plan Fiduciary Net Position	(26,105,333)	33,187,668	(197,736,904)	116,070,332	(83,814,075)
Plan Fiduciary Net Position - Beginning	1,966,728,975	1,933,541,307	2,131,278,211	2,015,207,879	2,099,021,954
Plan Fiduciary Net Position - Ending (b)	\$ 1,940,623,642	\$ 1,966,728,975	\$ 1,933,541,307	\$ 2,131,278,211	\$ 2,015,207,879
Net Pension Liability - Ending (a) - (b)	\$ 832,682,511	\$ 943,780,251	\$ 992,880,645	\$ 827,098,941	\$ 1,786,441,192
Plan Fiduciary Net Position as a Percentage					
of Total Pension Liability	69.98 %	67.57 %	66.07 %	72.04 %	53.01 %
Covered-Employee Payroll	\$ 141,454,717	\$ 143,882,722	\$ 200,722,197	\$ 203,507,079	\$ 213,291,083
Net Pension Liability as a Percentage					
of Covered-Employee Payroll	588.66 %	655.94 %	494.65 %	406.42 %	837.56 %
Notes to Schedule:					
N/A					

* For FY 2017, includes approximately \$2.9 million of adjusted loan balances that were treated as refunds of ASF contributions.

A Special Funding Situation may occur if a non-city entity has a legal obligation to contribute directly to the Retirement System. The Net Pension Liability shown here has not been adjusted for any potential funding situation. Our understanding is that the City makes all the employer contributions into the fund, even though the City may receive monies from other entities as a result of the POA.

Schedules of Required Supplementary Information

Schedule of the Net Pension Liability Multiyear

Ultimately 10 Fiscal Years will be Displayed

FY Ending June 30,	Total Pension Liability	Plan Net Position	Net Pension Liability	Plan Net Position as a % of Total Pension Liability	Covered Payroll*	Net Pension Liability as a % of Covered Payroll
2014	\$ 3,801,649,071	\$ 2,015,207,879	\$ 1,786,441,192	53.01%	\$ 213,291,083	837.56%
2015	2,958,377,152	2,131,278,211	827,098,941	72.04%	203,507,079	406.42%
2016	2,926,421,952	1,933,541,307	992,880,645	66.07%	200,722,197	494.65%
2017	2,910,509,226	1,966,728,975	943,780,251	67.57%	143,882,722	655.94%
2018	2,773,306,153	1,940,623,642	832,682,511	69.98%	141,454,717	588.66%

** Covered payroll shown is the reported payroll on the actuarial valuation date (census date). Actual covered payroll paid during the year was unavailable.*

Schedule of Contributions Multiyear

FY Ending June 30,	Actuarially Determined		Contribution		Actual Contribution as a % of Covered Payroll	
	Contribution	Actual Contribution	Deficiency (Excess)	Covered Payroll*	Covered Payroll	
2014	\$80,627,791	\$ 25,126,131	\$55,501,660	\$213,291,083	11.78%	
2015	N/A	189,282,095	N/A	203,507,079	93.01%	
2016	N/A	104,792,657	N/A	200,722,197	52.21%	
2017	N/A	91,238,402	N/A	143,882,722	63.41%	
2018	N/A	68,275,000	N/A	141,454,717	48.27%	

* Covered payroll shown is the reported payroll from the actuarial valuation date (census date). Actual covered payroll paid during the year was unavailable.

Notes to Schedule of Contributions

Contribution Requirement: Required contributions to the Plan through FY 2023 are provided in the POA. Certain agreements (as allowed for in the POA) have resulted in some of the contributions being accelerated. The schedule below details our understanding of the remaining contributions required by the POA.

Fiscal Year	Contribution Source (\$ millions)							Total
	For DWSD Liabilities		For Other Liabilities					
	DWSD	Transfers	UTGO	State	DIA	Other	Transfers from DWSD	
2019	45.4	(2.5)	-	-	0.4	22.5	2.5	68.3
2020	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3
2021	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3
2022	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3
2023	45.4	(2.5)	-	-	0.4	2.5	2.5	48.3

We have assumed the contributions outlined above as called for in the POA (with adjustments) will not change. An estimate of the probability of those payments being made was outside the scope of this project, not required by Actuarial Standards, and was not made.

Beginning with Fiscal Year 2024, employer contributions will be actuarially determined.

Schedule of Investment Returns

This information was not made available to Gabriel, Roeder, Smith & Company for this report.

SECTION D

NOTES TO FINANCIAL STATEMENTS

Single Discount Rate

A Single Discount Rate of 7.38%, net of investment expenses, was used to measure the total pension liability as of June 30, 2018. This Single Discount Rate was based on the expected rate of return on pension plan investments of 7.38% as directed by the System and approved by the System's Auditor. The projection of cash flows used to determine this Single Discount Rate assumed that plan member contributions ceased as of June 30, 2014, and that employer contributions will be made at rates equal to those set by the final Plan of Adjustment through June 30, 2023 and contributions consistent with PERSIA and the intention to fully fund the System by 2053 as determined in the bankruptcy (POA). Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Regarding the sensitivity of the net pension liability to changes in the Single Discount Rate, the following presents the plan's net pension liability, calculated using a Single Discount Rate of 7.38%, as well as what the plan's net pension liability would be if it were calculated using a Single Discount Rate that is one percent lower or one percent higher.

Sensitivity of Net Pension Liability to the Single Discount Rate Assumption

	Current Single Discount		
	1% Decrease	Rate Assumption	1% Increase
	6.38%	7.38%	8.38%
Total Pension Liability (TPL)	\$3,018,398,727	\$2,773,306,153	\$2,563,861,908
Net Position Restricted for Pensions	1,940,623,642	1,940,623,642	1,940,623,642
Net Pension Liability (NPL)	\$1,077,775,085	\$ 832,682,511	\$ 623,238,266

Users of this report should be aware that, in the actuary's judgement, a discount rate of 8.38% would not be a reasonable assumption for funding purposes.

Summary of Population Statistics

Inactive Plan Members or Beneficiaries Currently Receiving Benefits	11,834
Inactive Plan Members Entitled to But Not Yet Receiving Benefits	3,355
Active Plan Members	<hr/>
Total Plan Members	18,214

Additional information regarding the plan population may be found in the June 30, 2017 actuarial valuation of the System.

Additional Note

Potential future asset transfers from this Plan to Component I for payment of Transition Costs were not included in this calculation.

SECTION E

SUMMARY OF BENEFITS

Summary of Benefit Provisions Evaluated

Component II Frozen Benefits

All Component II benefits are frozen as of June 30, 2014 based on service and average final compensation accrued as of that date and the provisions of the Detroit General Retirement System as it existed on June 30, 2014. Frozen benefits are further reduced by 4.5% and all future Cost-of-Living Adjustments (“COLAs”) were eliminated. Benefits resulting from the Annuity Savings Fund and benefits paid from the Annuity Reserve Fund were subject to a separate reduction described as a “Claw-back.” Details of the claw-back provision are complicated and can be found in the Eighth Amended Plan of Adjustment. The benefits evaluated in this report are the frozen reduced benefits after the claw-back. Component II benefits are payable after separation from service, upon meeting the eligibility conditions of the plan as it existed on June 30, 2014, regardless of whether the individual is eligible to receive a Component I benefit at that time.

Our understanding of the June 30, 2014 plan provisions is provided below for completeness. The material below does not have legal standing and is not intended to cover all potential situations that could occur. If there are discrepancies between the description below, and appropriate legal documents, the latter necessarily govern.

Age and Service Pension

Eligibility - Any age (minimum age 55 for non-EMS members hired after 1995) with 30 years of service (25 for EMS members), or age 60 with 10 years of service, or age 65 with 8 years of service.

Annual Amount - EMS Members: Sum of a) a basic pension of \$12 for each of the first 10 years of service, plus b) a pension equal to 2.0% of AFC multiplied by years of service. Maximum benefit is 90% of AFC. **Other Members:** Sum of a) a basic pension of \$12 for each of the first 10 years of service, plus b) a pension equal to the first 10 years of service multiplied by 1.6% of AFC, plus 1.8% of AFC for each year of service greater than 10 years up to 20 years, plus 2.0% of AFC for each year of service greater than 20 years up to 25 years, plus 2.2% of AFC for each year of service greater than 25 years. Future benefit accruals for certain active members (depending on bargaining unit) were reduced to 1.5% of final average compensation per year of service.

Type of Average Final Compensation (AFC) - Highest 3 consecutive years out of the last 10. Pension benefits will not be diminished if compensation is reduced because of a fiscal emergency. Effective July 1, 1999, in computing the AFC, a member shall have the option of adding the value of 25% of unused accrued sick leave to the earnings used in computing the AFC. Longevity is added to AFC in accordance with the following schedule: \$150 after 5 years, \$300 after 10 years, \$450 after 15 years, \$600 after 20 years, and \$750 after 25 years.

Early Retirement

Eligibility - Any age with 25 or more years of service (min. age 55 for members hired after 1995).

Annual Amount - Same as regular retirement but actuarially reduced.

Summary of Benefit Provisions Evaluated (Continued)

Deferred Retirement (Vested Benefit)

Eligibility - Hired prior to 7-1-80: Age 40 with 8 years of service. Hired on or after 7-1-80: Any age with 10 years of service.

Benefit Commencement - APTE hired prior to July 1, 1988: Benefit begins at the age the member would have become eligible for regular retirement if service had continued. **SAAA, Non-Union and lawyers hired prior to June 30, 1986:** Benefit begins at the age the member would have become eligible for regular retirement. **Others:** Benefits based on service rendered by June 30, 1986 begin at the age the member would have become eligible for regular retirement. Benefits based on service rendered after July 1, 1986 begin at age 62.

Annual Amount - Same as regular retirement but based on average final compensation and service at the time of termination.

Duty Disability Retirement

Eligibility - Service related disability before eligibility for service retirement prior to July 1, 2014. No service requirement.

Annual Amount - An annuity which is the actuarial equivalent of the accumulated contributions at date of disability plus a pension of two-thirds of average final compensation at time of disability. The maximum annual pension is \$5,700 (\$9,000 for EMS). At the earliest of when the member would have accrued 30 years of service credit (25 for EMS) or age 60, the annuity is recomputed assuming contributions would have continued at a salary level equal to final compensation. The pension is recomputed with additional service credit granted from the date of disability to age 60 (or 30 years of service credit) or June 30, 2014, whichever is earlier.

Non-Duty Disability Retirement

Eligibility - Disability from any cause before age 60 with 10 or more years of service prior to July 1, 2014.

Annual Amount - Computed in the same manner as a regular retirement benefit. Maximum annual pension to age 60 is \$6,000. Benefit is recomputed at age 60 with no maximum.

Duty Death Before Retirement

Eligibility - Death from service related causes. No age or service requirements.

Annual Amount - One-third of final compensation as of June 30, 2014 to the surviving spouse for life or until remarriage, plus an equal share of 1/4 of final compensation to each unmarried child under age 18. If there is no eligible spouse, eligible children each receive 1/4 of final compensation; if there are more than 2 such children, each child shares an equal part of 1/2 of final compensation. Maximum total amount for spouse and children is \$9,000 annually. If there is no eligible spouse or children, dependent parents each receive 1/6 of deceased's final compensation, to a total maximum of \$600 annually.

Summary of Benefit Provisions Evaluated (Concluded)

Non-Duty Death Before Retirement

Eligibility - Death-in-service at any age with 15 years of service; or after age 60 with 10 years of service; or after age 65 with 8 years of service.

Annual Amount - To Surviving Spouse: Computed as a regular retirement benefit but reduced in accordance with a 100% joint and survivor election for members with 20 or more years of service. For members with 15 years of service but less than 20, benefit is reduced in accordance with a 50% joint and survivor election. To Dependent Children if no Surviving Spouse: \$9,000 payable to age 19 of the youngest child or for life if child is physically or mentally impaired for members with 20 or more years of service (\$6,000 if less than 20 years of service).

Post-Retirement Cost-of-Living Adjustments

Benefit is increased annually by 2.25% of the **original** pension amount at retirement. Post-retirement cost-of-living increases were eliminated on future accruals for certain active members (depending on bargaining unit).

Member Contributions

Members had the option of choosing one of four contribution amounts: (1) 0%; (2) 3.0% of compensation up to the Social Security wage base, plus 5.0% of compensation in excess of the Social Security wage base; (3) 5.0% of total compensation; or (4) 7.0% of total compensation. Member contributions can be paid as a lump sum or annuitized at retirement to provide an annuity in addition to the pension (which is not affected by the level of member contributions).

SECTION F

ACTUARIAL COST METHOD AND ACTUARIAL ASSUMPTIONS

Summary of Assumptions and Methods Used for GASB Actuarial Valuations Adopted by Board of Trustees

All assumptions are estimates of future experience except as noted. The rationale for the assumptions is based on experience studies where noted.

Economic Assumptions

The investment return rate used in making the valuation was 7.38% per year, compounded annually (net after investment expenses) as of June 30, 2018. This assumption was provided by the Retirement System.

Price inflation is not directly used in the valuation. For purposes of assessing the reasonability of the investment return assumptions, we assumed price inflation of 2.50% per year.

Non-Economic Assumptions

The mortality table used to measure retired life mortality was 100% of the RP-2014 Blue Collar Annuitant Table set-forward 1 year for males and 100% of the RP-2014 Blue Collar Annuitant Table set-forward 1 year for females. Tables were extended below age 50 with a cubic spline to the published Juvenile rates. Pre-retirement mortality is based on the corresponding Employee tables with corresponding set forward. The tables are projected to be fully generational, based on the 2-dimensional, sex distinct mortality improvement scale MP-2014 (which was published and intended to be used with RP-2014). 75% of all deaths-in-service are assumed to be non-duty related. This table was first used as of June 30, 2014. For disabled members, the same tables are used. The rationale for the mortality assumption is based on the 2008-2013 Mortality Experience Study issued February 4, 2015.

The probabilities of retirement for members eligible to retire are shown on pages 34 and 35. These probabilities were revised for the June 30, 2008 valuation. The rationale is based on the 2002-2007 Experience Study.

The probabilities of separation from service (including *disability*) are shown for sample ages on page 36. These probabilities were revised for the June 30, 2008 valuation. The rationale is based on the 2002-2007 Experience Study.

Single Life Retirement Values
Based on RP-2014 Blue Collar
100% of Male Rates Set-Forward 1 Year
100% of Female Rates Set-Forward 1 Year

Sample Attained Ages in 2017	Future Life Expectancy (years)	
	Men	Women
45	38.51	41.86
50	33.56	36.81
55	28.80	31.91
60	24.26	27.17
65	19.97	22.60
70	15.99	18.30
75	12.37	14.34
80	9.19	10.84

Rationale for assumption is based upon a 2008 to 2013 study of mortality experience dated February 4, 2015.

Probabilities of Age/Service Retirement for Members Eligible to Retire

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year With Unreduced Benefits		
	EMS	D.O.T.	Others
45	25%		
46	25%		
47	25%		
48	22%		
49	20%		
50	18%	55%	50%
51	15%	50%	50%
52	15%	50%	45%
53	15%	50%	45%
54	15%	55%	40%
55	15%	50%	30%
56	15%	50%	30%
57	15%	50%	30%
58	15%	50%	30%
59	15%	55%	40%
60	40%	40%	25%
61	30%	30%	25%
62	30%	30%	25%
63	30%	30%	25%
64	30%	30%	25%
65	30%	30%	35%
66	30%	30%	30%
67	30%	30%	25%
68	30%	50%	25%
69	30%	50%	25%
70	100%	100%	20%
71			20%
72			20%
73			20%
74			20%
75			20%
76			20%
77			20%
78			20%
79			20%
80			100%
Ref	537	1648	1647

Rationale for assumption is 2002 to 2007 Experience Study. Additional retirement rates for Component I (Hybrid Plan) eligibility are not reflected in this valuation due to materiality.

Probabilities of Early Retirement for Members Eligible for Early Retirement

Retirement Ages	Percent of Eligible Active Members Retiring Within Next Year With Reduced Benefits
55	7%
56	8%
57	9%
58	10%
59	12%
60	12%
61	12%
62	12%
63	12%
64	12%
Ref	1649

Rationale for assumption is based upon a 2002 to 2007 Experience Study.

Sample Rates of Separation from Active Employment Before Retirement

Sample Ages	Years of Service	% of Active Members Separating Within Next Year			
		Withdrawal		Others	
		EMS	D.O.T.	Men	Women
ALL	0	11.00%	18.00%	18.00%	20.00%
		10.00%	16.00%	15.00%	16.00%
		8.00%	14.00%	13.00%	14.00%
		8.00%	11.00%	11.00%	12.00%
		7.00%	9.00%	10.00%	10.00%
	5 & Over	6.70%	8.00%	7.60%	7.60%
		5.90%	7.60%	7.22%	7.22%
		5.20%	5.56%	5.28%	5.28%
		4.40%	4.26%	4.05%	4.05%
		3.40%	3.69%	3.51%	3.51%
25	50	2.40%	3.50%	3.33%	3.33%
		2.00%	3.50%	3.33%	3.33%
		0.00%	3.50%	3.33%	3.33%
		338	143	584	188
		1068	212	212 x 0.95	212 x 0.95
Ref					

Sample Ages	% of Active Members Becoming Disabled Within Next Year				
	D.O.T.		Others		
	Ordinary	Duty	Ordinary	Duty	
25	0.02%	0.03%	0.01%	0.25%	
30	0.05%	0.08%	0.04%	0.29%	
35	0.14%	0.21%	0.11%	0.34%	
40	0.27%	0.42%	0.21%	0.39%	
45	0.51%	0.79%	0.40%	0.45%	
50	0.66%	1.03%	0.51%	0.52%	
55	0.76%	1.18%	0.59%	0.60%	
60	0.86%	1.34%	0.67%	0.70%	
Ref	23	x 0.45	23	x 0.70	23 x 0.35
					423 x 0.90

Rationale for assumption is based upon a 2002 to 2007 Experience Study.

Miscellaneous and Technical Assumptions

Benefit Service	Exact Fractional service is used to determine the amount of benefit payable.
Decrement Operation	Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal also do not operate during retirement eligibility.
Decrement Timing	Decrements of all types are assumed to occur mid-year.
Eligibility Testing	Eligibility for benefits is determined based upon the age nearest birthday and rounded service on the date the decrement is assumed to occur.
Forfeitures	None.
Incidence of Contributions	Contributions are assumed to be received at the middle of the year.
Marriage Assumption	100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses for active member valuation purposes.
Normal Form of Benefit	Straight life is the normal form of benefit. The Board adopted assumptions for Actuarial Equivalence to be an 80%/20% unisex blend of RP-2014 mortality (Male/Female) with Blue Collar Adjustment, set ahead 1 year for males and females, projected 11 years with MP-2014, an interest rate of 6.75, and no COLA for optional forms of payment and early retirement reduction. Assumptions for annuitizing member contributions are the same except for using a 60%/40% unisex blend and a 5.25% assumed rated of interest. Prior to that, actuarial equivalent factors were based on 7.5% interest and 1984 Group Annuity Mortality table.
Service Credit Accruals	Service accruals stop as of June 30, 2014 for measurement of Component II liabilities. However, future service in Component I may be used to satisfy benefit eligibility requirement in Component II. Members who became duty disabled prior to June 30, 2014 are assumed to get projected service from date of disability to conversion date. Members who become disabled after June 30, 2014 are assumed to get their frozen accrued benefit as of June 30, 2014 at date of conversion.
Administrative Expenses	3.00% of Component I payroll. 60% was allocated to Component II and 40% to Component I.
Sick Leave	Sick leave banks as of June 30, 2014 were included in the 2014 data file provided by the System.
Member Contributions	Member contributions to this Component II plan are assumed to have ceased with the bankruptcy.

Rationale for assumption is based upon a 2002 to 2007 Experience Study, modified as necessary for changes in data or administration.

SECTION G

CALCULATION OF THE SINGLE DISCOUNT RATE

Calculation of the Single Discount Rate at End of Year

GASB Statement No. 67 includes a specific requirement for the discount rate that is used for the purpose of the measurement of the Total Pension Liability. This rate considers the ability of the fund to meet benefit obligations in the future. To make this determination, employer contributions, employee contributions, benefit payments, expenses and investment returns are projected into the future. The Plan Net Position (assets) in future years can then be determined and compared to its obligation to make benefit payments in those years. As long as assets are projected to be on hand in a future year, the assumed valuation discount rate is used. In years where assets are not projected to be sufficient to meet benefit payments, the use of a municipal bond rate is required, as described in the following paragraph.

The Single Discount Rate (SDR) is equivalent to applying these two rates to the benefits that are projected to be paid during the different time periods. The SDR reflects (1) the long-term expected rate of return on pension plan investments (during the period in which the fiduciary net position is projected to be sufficient to pay benefits) and (2) tax-exempt municipal bond rate based on an index of 20-year general obligation bonds with an average AA credit rating as of the measurement date (to the extent that the contributions for use with the long-term expected rate of return are not met).

For the purpose of this valuation, the expected rate of return on pension plan investments is 7.38%; the municipal bond rate is 3.62%; and the resulting Single Discount Rate is 7.38% as of June 30, 2018.

The tables in this section provide background for the development of the Single Discount Rate.

The **Projection of Contributions** table shows the development of expected contributions in future years. Normal Cost contributions for future hires are not included (nor are their liabilities). For purposes of determining the discount rate as of June 30, 2018, the employer contributions for the 10-year period ending June 30, 2023 were set by the 8th Amended Plan of Adjustment (POA), as adjusted by subsequent agreements. Subsequent employer contributions were determined by a closed 30-year level principle amortization of any unfunded actuarial accrued liability using 7.38% interest, net of investment expenses, consistent with the 100% funded target by 2053 in the POA and State Law.

Rates of Return: Note that these projections are specifically used to determine the SDR and should not be interpreted as a funding recommendation. The 7.38% rate of return was before administrative expenses. Therefore, the projections assumed that any administrative expenses incurred by the plan will directly increase employer contributions beginning with FY 2024. The rate is net of investment expenses.

Administrative Expenses: For purposes of the projection using a 7.38% rate of return, administrative expenses were assumed to be related to payroll. Payroll was increased by an assumed wage inflation as of June 30, 2014 of 2.00% for 5 years, 2.50% for the next 5 years and 3.00% thereafter. Since benefits are frozen, the wage inflation assumption does not affect anything other than the administrative expenses.

The **Projection of Plan Fiduciary Net Position** table shows the development of expected asset levels in future years.

The **Present Values of Projected Benefit Payments** table shows the development of the SDR. It breaks down the benefit payments into present values for funded and unfunded portions (if any) and shows the equivalent total at the SDR. For purposes of determining the discount rate as of June 30, 2018, the benefit payments reflect the plan provisions in force as of June 30, 2018.

Unfunded Actuarial Accrued Liabilities. Actual employer contributions through June 30, 2023 are set by the POA. The amortization period and method after 2023 has not yet been established by the Board.

Single Discount Rate Development

Projection of Contributions

End of Year

Fiscal Year Ending June 30,	Projected Contributions from Current Employees	Projected Service Cost	Administrative Expense Contributions	Projected UAL Contributions	Projected Total Contributions
2019	\$ -	\$ -	\$ 3,497,750	\$ 64,777,250	\$ 68,275,000
2020	-	-	3,205,198	44,969,802	48,175,000
2021	-	-	2,978,270	45,296,730	48,275,000
2022	-	-	2,797,667	45,477,333	48,275,000
2023	-	-	2,653,679	45,621,321	48,275,000
2024	-	-	2,523,794	91,995,705	94,519,499
2025	-	-	2,394,328	89,883,296	92,277,624
2026	-	-	2,271,046	87,770,886	90,041,932
2027	-	-	2,136,186	85,658,477	87,794,663
2028	-	-	2,002,200	83,546,068	85,548,268
2029	-	-	1,879,394	81,433,659	83,313,053
2030	-	-	1,763,090	79,321,250	81,084,340
2031	-	-	1,651,038	77,208,841	78,859,879
2032	-	-	1,543,409	75,096,432	76,639,841
2033	-	-	1,440,290	72,984,022	74,424,312
2034	-	-	1,343,298	70,871,613	72,214,911
2035	-	-	1,253,014	68,759,204	70,012,218
2036	-	-	1,168,223	66,646,795	67,815,018
2037	-	-	1,087,118	64,534,386	65,621,504
2038	-	-	1,010,496	62,421,977	63,432,473
2039	-	-	937,909	60,309,568	61,247,477
2040	-	-	869,402	58,197,158	59,066,560
2041	-	-	805,495	56,084,749	56,890,244
2042	-	-	743,787	53,972,340	54,716,127
2043	-	-	684,084	51,859,931	52,544,015
2044	-	-	626,154	49,747,522	50,373,676
2045	-	-	569,576	47,635,113	48,204,689
2046	-	-	513,384	45,522,703	46,036,087
2047	-	-	455,242	43,410,294	43,865,536
2048	-	-	397,915	41,297,885	41,695,800
2049	-	-	344,761	39,185,476	39,530,237
2050	-	-	295,407	37,073,067	37,368,474
2051	-	-	249,365	34,960,658	35,210,023
2052	-	-	207,080	32,848,249	33,055,329
2053	-	-	169,422	30,735,839	30,905,261
2054	-	-	136,713	-	136,713
2055	-	-	108,597	-	108,597
2056	-	-	84,758	-	84,758
2057	-	-	65,004	-	65,004
2058	-	-	49,105	-	49,105
2059	-	-	36,697	-	36,697
2060	-	-	27,029	-	27,029
2061	-	-	19,455	-	19,455
2062	-	-	13,770	-	13,770
2063	-	-	9,658	-	9,658
2064	-	-	6,740	-	6,740
2065	-	-	4,688	-	4,688
2066	-	-	3,265	-	3,265
2067	-	-	2,275	-	2,275
2068	-	-	1,576	-	1,576

Employer contributions as shown may differ substantially from those determined by a funding valuation.

Single Discount Rate Development

Projection of Plan Fiduciary Net Position

End of Year

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected ASF Refund	Projected Administrative Expenses	Projected Investment		Projected Ending Plan Net Position
						(a)	(b)	(c)
2019	\$ 1,940,623,642	\$ 68,275,000	\$ 247,425,761	\$ 13,852,954	\$ 3,497,750	\$ 133,929,907	\$ 1,878,052,085	
2020	1,878,052,085	48,175,000	245,860,670	13,852,954	3,205,198	128,832,438	1,792,140,701	
2021	1,792,140,701	48,275,000	244,044,462	13,852,954	2,978,270	122,760,852	1,702,300,867	
2022	1,702,300,867	48,275,000	241,542,374	13,852,954	2,797,667	116,428,930	1,608,811,801	
2023	1,608,811,801	48,275,000	238,780,884	13,852,954	2,653,679	109,846,322	1,511,645,607	
2024	1,511,645,607	94,519,499	236,142,414	13,852,954	2,523,794	104,674,530	1,458,320,475	
2025	1,458,320,475	92,277,624	233,407,554	13,852,954	2,394,328	100,996,076	1,401,939,338	
2026	1,401,939,338	90,041,932	230,417,199	13,852,954	2,271,046	97,113,654	1,342,553,726	
2027	1,342,553,726	87,794,663	226,854,858	13,852,954	2,136,186	93,043,183	1,280,547,575	
2028	1,280,547,575	85,548,268	222,812,940	13,852,954	2,002,200	88,810,329	1,216,238,079	
2029	1,216,238,079	83,313,053	218,178,383	-	1,879,394	84,802,302	1,164,295,657	
2030	1,164,295,657	81,084,340	213,375,738	-	1,763,090	81,066,454	1,111,307,623	
2031	1,111,307,623	78,859,879	208,226,668	-	1,651,038	77,265,995	1,057,555,791	
2032	1,057,555,791	76,639,841	202,999,729	-	1,543,409	73,411,991	1,003,064,484	
2033	1,003,064,484	74,424,312	197,403,519	-	1,440,290	69,516,796	948,161,784	
2034	948,161,784	72,214,911	191,223,309	-	1,343,298	65,612,407	893,422,496	
2035	893,422,496	70,012,218	184,602,908	-	1,253,014	61,736,032	839,314,824	
2036	839,314,824	67,815,018	177,747,040	-	1,168,223	57,914,804	786,129,383	
2037	786,129,383	65,621,504	170,623,684	-	1,087,118	54,171,331	734,211,416	
2038	734,211,416	63,432,473	163,346,534	-	1,010,496	50,526,972	683,813,831	
2039	683,813,831	61,247,477	155,788,229	-	937,909	47,005,007	635,340,176	
2040	635,340,176	59,066,560	148,084,401	-	869,402	43,630,302	589,083,236	
2041	589,083,236	56,890,244	140,301,782	-	805,495	40,422,047	545,288,249	
2042	545,288,249	54,716,127	132,410,952	-	743,787	37,399,405	504,249,043	
2043	504,249,043	52,544,015	124,566,334	-	684,084	34,578,466	466,121,106	
2044	466,121,106	50,373,676	116,750,178	-	626,154	31,971,346	431,089,796	
2045	431,089,796	48,204,689	108,973,919	-	569,576	29,591,311	399,342,301	
2046	399,342,301	46,036,087	101,303,908	-	513,384	27,449,772	371,010,868	
2047	371,010,868	43,865,536	93,824,075	-	455,242	25,553,445	346,150,532	
2048	346,150,532	41,695,800	86,562,797	-	397,915	23,905,363	324,790,984	
2049	324,790,984	39,530,237	79,564,674	-	344,761	22,506,103	306,917,889	
2050	306,917,889	37,368,474	72,849,578	-	295,407	21,353,884	292,495,263	
2051	292,495,263	35,210,023	66,442,742	-	249,365	20,445,138	281,458,317	
2052	281,458,317	33,055,329	60,368,802	-	207,080	19,774,190	273,711,954	
2053	273,711,954	30,905,261	54,643,947	-	169,422	19,333,436	269,137,283	
2054	269,137,283	136,713	49,271,834	-	136,713	18,076,562	237,942,011	
2055	237,942,011	108,597	44,257,873	-	108,597	15,956,073	209,640,211	
2056	209,640,211	84,758	39,603,893	-	84,758	14,036,075	184,072,394	
2057	184,072,394	65,004	35,306,401	-	65,004	12,304,925	161,070,918	
2058	161,070,918	49,105	31,357,801	-	49,105	10,750,526	140,463,644	
2059	140,463,644	36,697	27,747,269	-	36,697	9,360,567	122,076,942	
2060	122,076,942	27,029	24,462,320	-	27,029	8,122,685	105,737,306	
2061	105,737,306	19,455	21,487,718	-	19,455	7,024,629	91,274,218	
2062	91,274,218	13,770	18,806,611	-	13,770	6,054,425	78,522,032	
2063	78,522,032	9,658	16,401,060	-	9,658	5,200,499	67,321,471	
2064	67,321,471	6,740	14,252,353	-	6,740	4,451,773	57,520,891	
2065	57,520,891	4,688	12,341,383	-	4,688	3,797,750	48,977,258	
2066	48,977,258	3,265	10,648,913	-	3,265	3,228,571	41,556,916	
2067	41,556,916	2,275	9,155,961	-	2,275	2,735,059	35,136,013	
2068	35,136,013	1,576	7,844,157	-	1,576	2,308,740	29,600,597	

Employer contributions as shown may differ substantially from those determined by a funding valuation.

Single Discount Rate Development

Projection of Plan Fiduciary Net Position

End of Year (Concluded)

Fiscal Year Ending June 30,	Projected Beginning Plan Net Position	Projected Total Contributions	Projected Benefit Payments	Projected ASF Refund	Projected Administrative Expenses	Projected Investment Earnings at 7.38% (5.25% for ASF)			Projected Ending Plan Net Position		
						(a)	(b)	(c)	(d)	(e)	(f)
2069	\$ 29,600,597	\$ 1,082	\$ 6,696,008	\$ -	\$ 1,082	\$ 1,941,839	\$ 24,846,427				
2070	24,846,427	734	5,695,073	-	734	1,627,259	20,778,613				
2071	20,778,613	493	4,825,937	-	493	1,358,554	17,311,230				
2072	17,311,230	329	4,074,194	-	329	1,129,907	14,366,942				
2073	14,366,942	215	3,426,521	-	215	936,092	11,876,513				
2074	11,876,513	137	2,870,705	-	137	772,443	9,778,251				
2075	9,778,251	87	2,395,603	-	87	634,811	8,017,459				
2076	8,017,459	53	1,991,095	-	53	519,525	6,545,889				
2077	6,545,889	31	1,648,041	-	31	423,356	5,321,204				
2078	5,321,204	16	1,358,237	-	16	343,478	4,306,446				
2079	4,306,446	6	1,114,417	-	6	277,426	3,469,454				
2080	3,469,454	2	910,175	-	2	223,058	2,782,337				
2081	2,782,337	-	739,880	-	-	178,521	2,220,977				
2082	2,220,977	-	598,600	-	-	142,213	1,764,591				
2083	1,764,591	-	482,023	-	-	112,757	1,395,324				
2084	1,395,324	-	386,351	-	-	88,972	1,097,945				
2085	1,097,945	-	308,245	-	-	69,857	859,557				
2086	859,557	-	244,798	-	-	54,563	669,322				
2087	669,322	-	193,496	-	-	42,383	518,209				
2088	518,209	-	152,199	-	-	32,728	398,738				
2089	398,738	-	119,100	-	-	25,110	304,749				
2090	304,749	-	92,688	-	-	19,131	231,191				
2091	231,191	-	71,699	-	-	14,463	173,955				
2092	173,955	-	55,090	-	-	10,841	129,707				
2093	129,707	-	42,004	-	-	8,050	95,753				
2094	95,753	-	31,747	-	-	5,916	69,922				
2095	69,922	-	23,758	-	-	4,299	50,463				
2096	50,463	-	17,588	-	-	3,087	35,962				
2097	35,962	-	12,864	-	-	2,188	25,285				
2098	25,285	-	9,286	-	-	1,529	17,529				
2099	17,529	-	6,610	-	-	1,054	11,972				
2100	11,972	-	4,637	-	-	715	8,051				
2101	8,051	-	3,203	-	-	478	5,325				
2102	5,325	-	2,177	-	-	314	3,462				
2103	3,462	-	1,455	-	-	203	2,210				
2104	2,210	-	955	-	-	128	1,384				
2105	1,384	-	615	-	-	80	848				
2106	848	-	389	-	-	48	508				
2107	508	-	240	-	-	29	297				
2108	297	-	144	-	-	17	169				
2109	169	-	85	-	-	9	94				
2110	94	-	48	-	-	5	51				
2111	51	-	27	-	-	3	27				
2112	27	-	15	-	-	1	14				
2113	14	-	8	-	-	1	7				
2114	7	-	4	-	-	0	3				
2115	3	-	2	-	-	0	1				
2116	1	-	1	-	-	0	0				
2117	0	-	0	-	-	0	0				
2118	-	-	-	-	-	0	0				

Employer contributions as shown may differ substantially from those determined by a funding valuation.

Single Discount Rate Development

Present Values of Projected Benefits

End of Year

(Excluding ASF)

Fiscal Year Ending June 30,	Projected				Unfunded Portion of Benefit Payments	Present Value of Funded Benefit Payments using Expected Return Rate (v)	Present Value of Unfunded Benefit Payments using Municipal Bond Rate (vf)	Present Value of Benefit Payments using Single Discount Rate (sdr)
	Beginning Plan Net Position	Projected Benefit Payments	Funded Portion of Benefit Payments	Payments				
(a)	(b)	(c)	(d)	(e)	(f)=(d)*v^(a-.5)	(g)=(e)*vf^(a-.5)	(h)=(c)/(1+sdr)^(a-.5)	
2019	\$ 1,832,203,002	\$ 247,425,761	\$ 247,425,761	\$ -	\$ 238,771,899	\$ -	\$ 238,771,899	
2020	1,778,151,304	245,860,670	245,860,670	-	220,955,065	-	220,955,065	
2021	1,701,207,071	244,044,462	244,044,462	-	204,249,244	-	204,249,244	
2022	1,620,805,163	241,542,374	241,542,374	-	188,261,464	-	188,261,464	
2023	1,537,249,516	238,780,884	238,780,884	-	173,318,235	-	173,318,235	
2024	1,450,538,243	236,142,414	236,142,414	-	159,622,938	-	159,622,938	
2025	1,408,216,917	233,407,554	233,407,554	-	146,930,789	-	146,930,789	
2026	1,363,417,286	230,417,199	230,417,199	-	135,079,485	-	135,079,485	
2027	1,316,221,208	226,854,858	226,854,858	-	123,850,906	-	123,850,906	
2028	1,267,044,542	222,812,940	222,812,940	-	113,283,879	-	113,283,879	
2029	1,216,238,079	218,178,383	218,178,383	-	103,303,735	-	103,303,735	
2030	1,164,295,657	213,375,738	213,375,738	-	94,086,203	-	94,086,203	
2031	1,111,307,623	208,226,668	208,226,668	-	85,505,461	-	85,505,461	
2032	1,057,555,791	202,999,729	202,999,729	-	77,629,996	-	77,629,996	
2033	1,003,064,484	197,403,519	197,403,519	-	70,301,662	-	70,301,662	
2034	948,161,784	191,223,309	191,223,309	-	63,420,277	-	63,420,277	
2035	893,422,496	184,602,908	184,602,908	-	57,016,748	-	57,016,748	
2036	839,314,824	177,747,040	177,747,040	-	51,126,126	-	51,126,126	
2037	786,129,383	170,623,684	170,623,684	-	45,704,233	-	45,704,233	
2038	734,211,416	163,346,534	163,346,534	-	40,747,750	-	40,747,750	
2039	683,813,831	155,788,229	155,788,229	-	36,191,364	-	36,191,364	
2040	635,340,176	148,084,401	148,084,401	-	32,037,323	-	32,037,323	
2041	589,083,236	140,301,782	140,301,782	-	28,267,454	-	28,267,454	
2042	545,288,249	132,410,952	132,410,952	-	24,844,143	-	24,844,143	
2043	504,249,043	124,566,334	124,566,334	-	21,765,938	-	21,765,938	
2044	466,121,106	116,750,178	116,750,178	-	18,998,130	-	18,998,130	
2045	431,089,796	108,973,919	108,973,919	-	16,514,008	-	16,514,008	
2046	399,342,301	101,303,908	101,303,908	-	14,296,598	-	14,296,598	
2047	371,010,868	93,824,075	93,824,075	-	12,330,975	-	12,330,975	
2048	346,150,532	86,562,797	86,562,797	-	10,594,757	-	10,594,757	
2049	324,790,984	79,564,674	79,564,674	-	9,068,941	-	9,068,941	
2050	306,917,889	72,849,578	72,849,578	-	7,732,856	-	7,732,856	
2051	292,495,263	66,442,742	66,442,742	-	6,568,059	-	6,568,059	
2052	281,458,317	60,368,802	60,368,802	-	5,557,490	-	5,557,490	
2053	273,711,954	54,643,947	54,643,947	-	4,684,732	-	4,684,732	
2054	269,137,283	49,271,834	49,271,834	-	3,933,852	-	3,933,852	
2055	237,942,011	44,257,873	44,257,873	-	3,290,686	-	3,290,686	
2056	209,640,211	39,603,893	39,603,893	-	2,742,271	-	2,742,271	
2057	184,072,394	35,306,401	35,306,401	-	2,276,683	-	2,276,683	
2058	161,070,918	31,357,801	31,357,801	-	1,883,091	-	1,883,091	
2059	140,463,644	27,747,269	27,747,269	-	1,551,753	-	1,551,753	
2060	122,076,942	24,462,320	24,462,320	-	1,274,021	-	1,274,021	
2061	105,737,306	21,487,718	21,487,718	-	1,042,187	-	1,042,187	
2062	91,274,218	18,806,611	18,806,611	-	849,459	-	849,459	
2063	78,522,032	16,401,060	16,401,060	-	689,891	-	689,891	
2064	67,321,471	14,252,353	14,252,353	-	558,305	-	558,305	
2065	57,520,891	12,341,383	12,341,383	-	450,221	-	450,221	
2066	48,977,258	10,648,913	10,648,913	-	361,779	-	361,779	
2067	41,556,916	9,155,961	9,155,961	-	289,680	-	289,680	
2068	35,136,013	7,844,157	7,844,157	-	231,120	-	231,120	

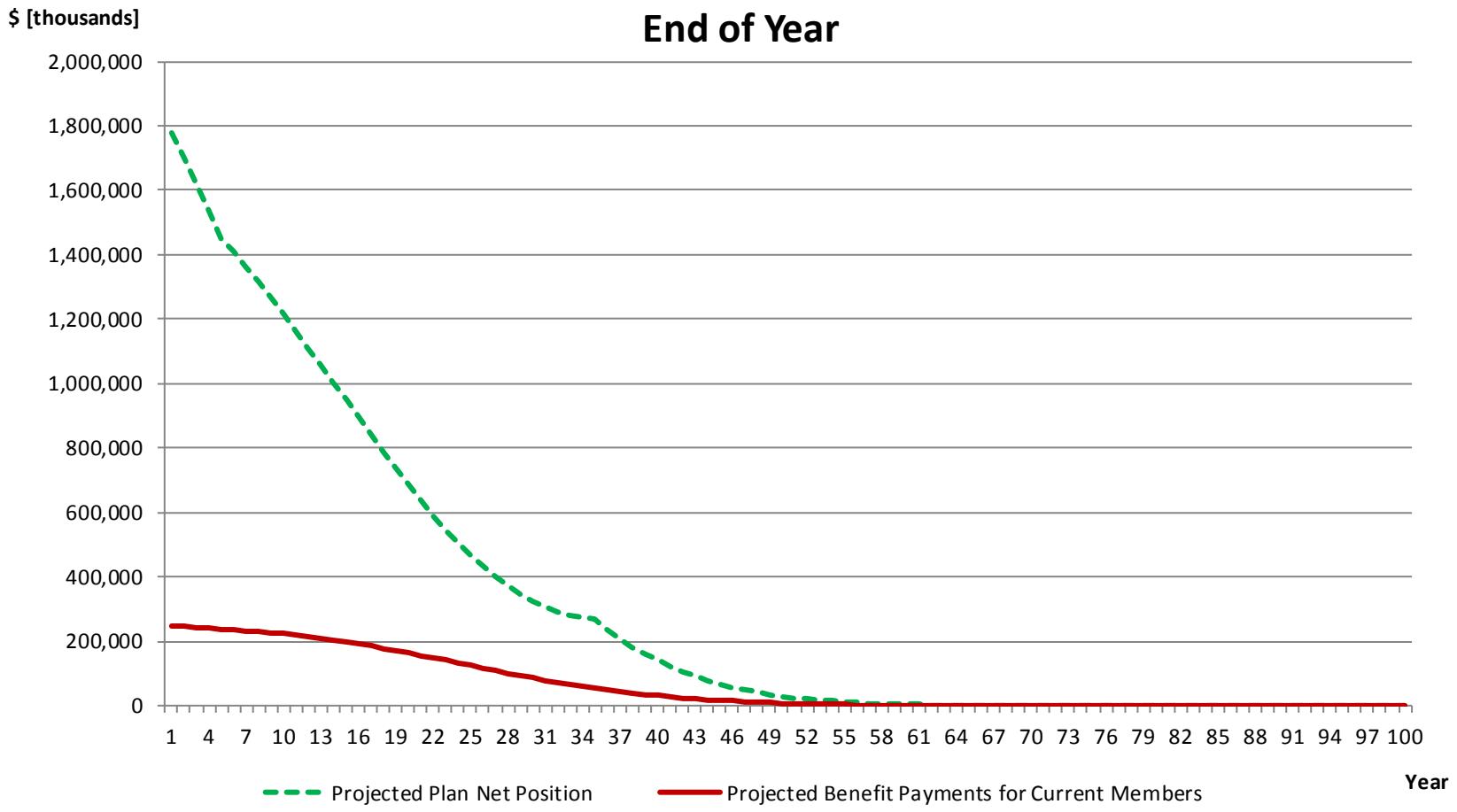
Single Discount Rate Development

Present Values of Projected Benefits

End of Year

(Excluding ASF) (Concluded)

Projection of Plan Net Position and Benefit Payments End of Year



SECTION H

GLOSSARY OF TERMS

Glossary of Terms

Actuarial Accrued Liability (AAL)	The AAL is the difference between the actuarial present value of all benefits and the actuarial value of future normal costs. The definition comes from the fundamental equation of funding which states that the present value of all benefits is the sum of the Actuarial Accrued Liability and the present value of future normal costs. The AAL may also be referred to as "accrued liability" or "actuarial liability."
Actuarial Assumptions	These assumptions are estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and compensation increases. Actuarial assumptions are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (compensation increases, payroll growth, inflation and investment return) consist of an underlying real rate of return plus an assumption for a long-term average rate of inflation.
Accrued Service	Service credited under the system which was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of the pension trust benefits between future normal cost and actuarial accrued liability. The actuarial cost method may also be referred to as the actuarial funding method.
Actuarial Gain (Loss)	The difference in liabilities between actual experience and expected experience during the period between two actuarial valuations is the gain (loss) on the accrued liabilities.
Actuarial Present Value (APV)	The amount of funds currently required to provide a payment or series of payments in the future. The present value is determined by discounting future payments at predetermined rates of interest and probabilities of payment.
Actuarial Valuation	The actuarial valuation report determines, as of the actuarial valuation date, the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions.
Actuarial Valuation Date	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution (ADC) or Annual Required Contribution (ARC)	A calculated contribution into a defined benefit pension plan for the reporting period, most often determined based on the funding policy of the plan. Typically the Actuarially Determined Contribution has a normal cost payment and an amortization payment.

Glossary of Terms

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Glossary of Terms

AFC	Average Final Compensation.
Amortization Payment	The amortization payment is the periodic payment required to pay off an interest-discounted amount with payments of interest and principal.
Amortization Method	The method used to determine the periodic amortization payment may be a level dollar amount, or a level percent of pay amount. The period will typically be expressed in years, and the method will either be "open" (meaning, reset each year) or "closed" (the number of years remaining will decline each year).
APTE	Association of Professional and Technical Employees.
ASF	Annuity Savings Fund.
Cost-of-Living Adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered-Employee Payroll	The payroll of covered employees, which is typically only the pensionable pay and does not include pay above any pay cap.
Deferred Inflows and Outflows	The deferred inflows and outflows of pension resources are amounts used under GASB Statement No. 68 in developing the annual pension expense. Deferred inflows and outflows arise with differences between expected and actual experiences; changes of assumptions. The portion of these amounts not included in pension expense should be included in the deferred inflows or outflows of resources.
DIA	Detroit Institute of Art.
Discount Rate	For GASB purposes, the discount rate is the single rate of return that results in the present value of all projected benefit payments to be equal to the sum of the funded and unfunded projected benefit payments, specifically:
	<ol style="list-style-type: none">1. The benefit payments to be made while the pension plans' fiduciary net position is projected to be greater than the benefit payments that are projected to be made in the period; and2. The present value of the benefit payments not in (1) above, discounted using the municipal bond rate.

Glossary of Terms

D.O.T.	Department of Transportation.
DWSD	Detroit Water and Sewerage Department.
EMS	Emergency Medical Service.
Entry Age Actuarial Cost Method (EAN)	The EAN is a funding method for allocating the costs of the plan between the normal cost and the accrued liability. The actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis (either level dollar or level percent of pay) over the earnings or service of the individual between entry age and assumed exit ages(s). The portion of the actuarial present value allocated to a valuation year is the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is the actuarial accrued liability. The sum of the accrued liability plus the present value of all future normal costs is the present value of all benefits.
GASB	The Governmental Accounting Standards Board is an organization that exists in order to promulgate accounting standards for governmental entities.
GLWA	Great Lakes Water Authority.
Fiduciary Net Position	The fiduciary net position is the value of the assets of the trust.
Long-Term Expected Rate of Return	The long-term rate of return is the expected return to be earned over the entire trust portfolio based on the asset allocation of the portfolio.
Money-Weighted Rate of Return	The money-weighted rate of return is a method of calculating the returns that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.
Multiple-Employer Defined Benefit Pension Plan	A multiple-employer plan is a defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Municipal Bond Rate	The Municipal Bond Rate is the discount rate to be used for those benefit payments that occur after the assets of the trust have been depleted.
Net Pension Liability (NPL)	The NPL is the liability of employers and non-employer contribution entities to plan members for benefits provided through a defined benefit pension plan.

Glossary of Terms

Non-Employer Contribution Entities	Non-employer contribution entities are entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of the GASB Accounting statement plan members are not considered non-employer contribution entities.
Normal Cost	The actuarial present value of the pension trust benefits allocated to the current year by the actuarial cost method. Also known as service cost.
POA	The 8th Amended Plan for the Adjustment of the Debt of the City of Detroit.
SAAA	Senior Accountants, Analysts, and Appraisers Association.
UTGO	Unlimited Tax General Obligation.

October 31, 2018

Mr. David Cetlinski, Executive Director
The General Retirement System of the City of Detroit
One Detroit Center
500 Woodward Avenue, Suite 3000
Detroit, Michigan 48226

Dear Mr. Cetlinski:

Please find enclosed 30 copies of the GASB Statement Nos. 67 and 68 report of the General Retirement System of the City of Detroit.

Sincerely,



Kenneth G. Alberts

KGA:ah
Enclosures

cc: David T. Kausch, GRS
Judith A. Kermans, GRS





Financial Services Audit Committee Communication

Date: January 17, 2019

To: Great Lakes Water Authority Audit Committee

From: Nicolette N. Bateson, CPA, Chief Financial Officer/Treasurer

Re: Proposed Audit Fee Change Order for the FY 2018 Audit and Other Technical Services

Background: The firm of Rehmann Robson was selected as auditors for the Great Lakes Water Authority (GLWA) in January 2017. The contract executed provided for the base fees only which were directly related to the audit for FY 2016, FY 2017, and FY 2018.

Analysis: The audit for FY 2018 was started in October 2018 and completed with the issuance the Comprehensive Annual Financial Report (CAFR) on December 14, 2018 prior to the state of Michigan's submission due date. The audit went smoothly and there were no extraordinary challenges for FY 2018 as there was with the first two audits (such as accounting for the bifurcation and implementing Governmental Accounting Standards Board Statement No. 69, *Government Combinations and Disposals of Government Operations*, for FY 2016 followed by other technical matters and delays to work through to a Memorandum of Understanding for FY 2017). Nevertheless, in completing the CAFR this year, there was a substantial level of rework requested of Rehmann Robson by GLWA in revising and re-revising the various sections and items throughout the report. These changes to the CAFR were in response to investor and rating analyst feedback during the 2018 bond refunding transaction – largely driven by the complexity of the Master Bond Ordinance as well as the combination of DWSD and GLWA financial reports (DWSD was also completing their audit at the same time). These final changes then needed to be reflected in the two separate fund reports which are required for reporting the water and sewer system as separate credits. The Rehmann team incurred an additional 72 hours from December 2, 2018 through December 14, 2018 as a result of these requests. This equals approximately \$15,000 in fees for which a discount has been provided for a request of \$12,500 for additional audit fees for FY 2018 (the original fee for FY 2018 audit is \$203,908). The effective hourly rate is competitive – especially since this impacted the highest level of audit team members.

It should be noted that the GLWA Articles require that the Audit Committee recommend three audit firms to the Board every three years. Staff is presently drafting an auditing services request for proposal for the Audit Committee's review. While the current contract

with Rehmann extends to January 2020, there was no provision for additional services or consultation. With upcoming lease accounting rule changes, member partner contract matters, potential regulatory matters, and other unknown needs, staff is also requesting an allowance of \$50,000 for technical consulting services be added to bridge the gap until a new audit contract through the RFP process is completed. This was originally discussed when Rehmann was selected in 2017, but the conversation focused on the budgeted funds being available which was inadvertently did not carry forward to the executed contract.

Budget Impact: The auditing services account is budgeted at \$450,000 (GL# 5910-5910-884111.000-611200-WS7900). This line item does include other contracted audit services as well as the annual external audit fee and the provision for technical assistance from GLWA's auditors. No budget amendment is required to include the proposed contract amendment.

Proposed Action: Move that the Audit Committee recommends that the Board of Directors of the Great Lakes Water Authority approve a change order for audit services contract with Rehmann Robson in the amount of \$12,500 for the FY 2018 audit and \$50,000 for other technical professional services as needed.



Monthly Financial Report Binder

October 2018

**Presented to the
Great Lakes Water Authority
Audit Committee
on January 18, 2019**

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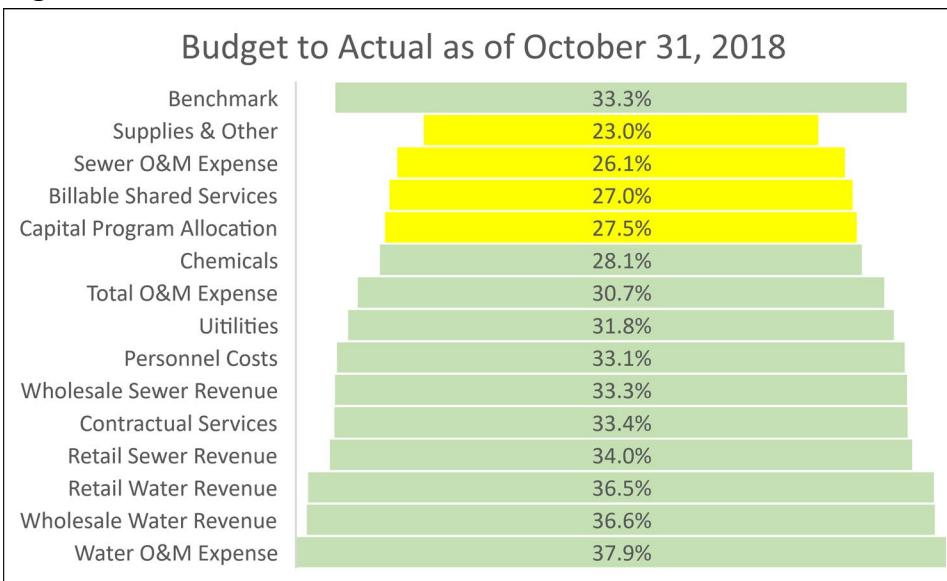
Revenue and Expense Budget to Actual¹ – Pro-rata Benchmark of 33.3%

Categories at +/- 5%:

Supplies & Other is expected as this category has a high number of annual one-time expenses.

Sewer O&M Expenses overall are lower. This is partly due to a project to refined centralized and administrative cost allocations in addition

to the types of maintenance and repair items in the “Supplies & Other” category above.



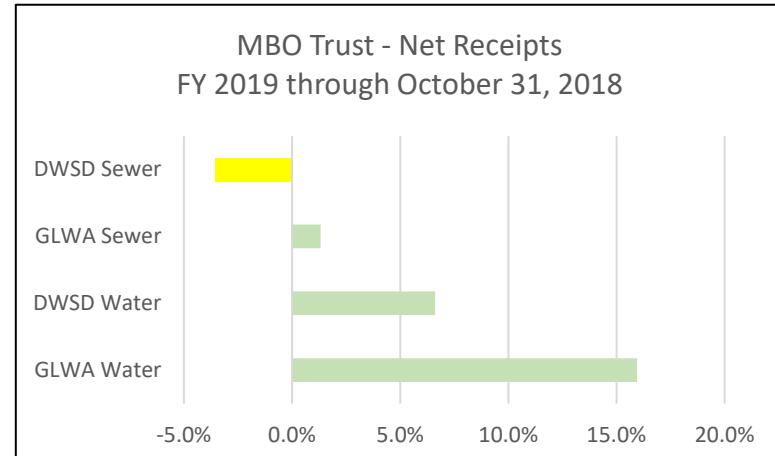
Billable Shared Services and Capital Program Allocation expense tracking has greatly improved in FY 2019 as a result of a new time keeping app. The shared services are based on actual time incurred. Capital programs variance analysis is expanding from cost center to individual level.

Master Bond Ordinance Budgetary Net Receipts

Overall cash flow for both GLWA and DWSD is positive. An area of watch is a shortfall for the DWSD Sewer system of \$3,242,333 or 3.6% of total receipts.

Other Topics

Highland Park’s total receivable balance in \$40.5 million. FY 2019 cash receipts equal \$629,000.



The Pollutant Surcharge past due amounts associated with a services transfer remain outstanding pending receipt of a termination of services agreement (and therefore, confirmation of a termination date) between Wayne County. This impacts three townships impacted (Northville, Canton, and Plymouth).

Questions? Contact the Office of the Chief Financial Officer at CFO@glwater.org

¹ All amounts are GLWA entity-wide unless noted as water, sewer, and/or retail.

Budget to Actual Analysis

The Budget to Actual Analysis report includes the following three sections.

1. Revenue Requirement Budget Basis Analysis
2. Operations Budget – Major Operations & Maintenance Budget Category
3. Operations & Maintenance Budget – Major Budget Categories

Revenue Requirement Budget Basis Analysis

GLWA's annual revenue requirement aligns with a) the basis for calculating customer charges and b) the Master Bond Ordinance flow of funds. The budget basis is not the same as the full accrual basis used for financial reporting although the revenues and operations and maintenance expense are largely reported on an accrual basis. The primary deviation between the revenue requirement basis to financial reporting basis is the treatment of debt service, legacy pension obligations, and lease related activities. The Revenue Requirement Basis is foundational to GLWA's daily operations, financial plan, and of most interest to key stakeholders.

Table 1A – Water Revenue Requirement Budget and Table 1B – Sewer Revenue Requirement Budget presents a year-over-year budget to actual performance report. For both systems there were no budget amendments that changed the totals, therefore, only an “amended” budget column is represented. The revenue requirement budget is accounted for in the operations and maintenance fund for each system. Since this report is for October 2018, the pro-rata benchmark is 33.3% (4 of 12 months of the fiscal year).

Items of key interest discussed below are highlighted in gold on Tables 1A (Water) and 1B (Sewer).

1. For *both* systems, FY 2019 revenues are at or above target and are consistent with the prior year (FY 2018) at the same time.
2. The operations and maintenance (O&M) expense for the *water* system is above the pro-rata benchmark for FY 2019 at 37.9%. Conversely the *sewer* system O&M expenses at 26.1% is less than the pro-rata benchmark. This variance between the funds is partly due to a project in-process to refine centralized and administrative cost allocations. It is likely that this will result in a budget amendment after the December 2018 close.
3. The remaining revenue requirements for *both* systems are generally funded on a 1/12th basis each month in accordance with the Master Bond Ordinance. The debt service amount shown on the table is accounted for on that same basis. In October 2018, the GLWA had a successful bond sale which will provide a positive budget variance for *both* systems. That amendment will be reported in a future month.

4. Overall total revenue requirements for *both* systems are in line with the benchmark. Detailed schedules related to revenues are provided in the *Wholesale Billings, Collections, and Receivables* section of this financial report binder.
5. For the sewer system, the FY 2019 year-to-date revenue requirements exceed revenues by \$8.4 million. This is a timing difference between revenues and revenue requirement (i.e. expenses) which is expected to be reversed by mid-fiscal year.

Table 1A – Water Revenue Requirement Budget (year-over-year)

Water System	FY2018 AMENDED BUDGET	FY 2018 THRU 10/31/2017	Percent Year-to- Date	FY 2019 AMENDED BUDGET	FY 2019 THRU 10/31/2018	Percent Year-to- Date
Revenues						
Wholesale Customer Charges	\$ 310,019,800	\$ 120,976,473	39.0%	\$ 307,382,500	\$ 116,713,693	38.0%
Retail Services Agreement	15,130,600	5,043,532	33.3%	20,181,400	6,775,368	33.6%
Investment Earnings	2,932,900	883,325	30.1%	3,802,300	1,158,458	30.5%
Other Revenues	35,900	78,742	219.3%	34,300	22,738	66.3%
Transfer In	-	112,437	0.0%	-	1,546,311	0.0%
Total Revenues	\$ 328,119,200	\$ 127,094,509	38.7%	\$ 331,400,500	\$ 126,216,568	38.1%
Revenue Requirements						
Operations & Maintenance Expense	\$ 121,562,500	\$ 25,388,209	20.9%	\$ 121,562,600	\$ 46,104,145	37.9%
O&M Legacy Pension	6,048,000	2,016,000	33.3%	6,048,000	2,016,000	33.3%
Debt Service	135,631,200	45,210,400	33.3%	134,214,600	44,738,200	33.3%
Accelerated Legacy Pension	6,268,300	2,089,433	33.3%	6,268,300	2,089,433	33.3%
Extraordinary Repair & Replacement						
Deposit	1,452,500	484,167	33.3%	-	-	0.0%
Lease Payment	22,500,000	7,500,000	33.3%	22,500,000	7,500,000	33.3%
Operating Reserve Deposit	323,700	107,900	33.3%	-	-	0.0%
Water Residential Assistance Program	1,678,600	559,533	33.3%	1,673,400	557,800	33.3%
Improvement & Extension Fund						
Deposit	32,654,400	-	0.0%	39,133,600	-	0.0%
Total Revenue Requirements	\$ 328,119,200	\$ 83,355,642	25.4%	\$ 331,400,500	\$ 103,005,578	31.1%
Net Difference		\$ 43,738,867			\$ 23,210,990	

All amounts are unaudited unless otherwise noted.

Table 1B – Sewer Revenue Requirement Budget (year-over-year)

Sewer System	FY2018 AMENDED BUDGET		FY 2018 THRU 10/31/2017		Percent Year-to-Date	FY 2019 AMENDED BUDGET		FY 2019 THRU 10/31/2018		Percent Year-to-Date
	Revenues	1	2	3	4	5	6	7	8	
Wholesale Customer Charges	\$ 271,429,300	\$ 90,477,200	33.3%	\$ 271,296,300	\$ 91,651,200	33.8%				
Retail Services Agreement	178,969,100	59,656,400	33.3%	181,159,300	61,002,532	33.7%				
Industrial Waste Control Charges	14,452,700	4,777,097	33.1%	15,000,800	3,080,500	20.5%				
Pollutant Surcharges	5,099,000	2,149,994	42.2%	-	2,067,037	0.0%				
Other Revenues	375,819	3,521,041	936.9%	485,200	210,297	43.3%				
Investment Earnings	2,283,800	1,014,759	44.4%	4,085,700	1,835,387	44.9%				
Transfer In	-	16,691	0.0%	-	449,138	0.0%				
Bad Debt Expense Recovery	-	-	0.0%	-	-	0.0%				
Total Revenues	\$ 472,609,719	\$ 161,613,182	34.2%	\$ 472,027,300	\$ 160,296,091	34.0%				
Revenue Requirements										
Operations & Maintenance Expense	\$ 190,988,019	41,146,511	21.5%	\$ 191,079,400	\$ 49,892,303	26.1%				
O&M Legacy Pension	10,824,000	3,608,000	33.3%	10,824,000	3,608,000	33.3%				
Debt Service	205,859,900	68,619,967	33.3%	214,600,700	71,533,567	33.3%				
Accelerated Legacy Pension	11,620,700	3,873,567	33.3%	11,620,700	3,873,567	33.3%				
Extraordinary Repair & Replacement										
Deposit	2,283,100	761,033	33.3%	-	-	0.0%				
Lease Payment	27,500,000	9,166,667	33.3%	27,500,000	9,166,667	33.3%				
Operating Reserve Deposit	341,600	113,867	33.3%	-	-	0.0%				
Water Residential Assistance Program	2,313,700	771,233	33.3%	2,374,100	791,367	33.3%				
Improvement & Extension Fund										
Deposit	20,878,700	6,959,567	33.3%	14,028,400	4,676,133	33.3%				
Operating Transfer Out	-	10,995,752	0.0%	-	25,123,611	0.0%				
Total Revenue Requirements	\$ 472,609,719	\$ 146,016,163	30.9%	\$ 472,027,300	\$ 168,665,214	35.7%				
Net Difference		\$ 15,597,019			\$ (8,369,123)					

Operations & Maintenance Budget – Major Budget Categories

The year-over-year benchmark ratio as of October 31, 2018, is 33.3% (four months). When comparing FY 2019 to FY 2018 in Table 2, it would appear that the spending has increased. This is true in some instances; however, the greater impact is that the Financial Reporting & Accounting Team has implemented a full accrual basis for interim financial statements during FY 2018. This anomaly will decrease as we proceed through FY 2019.

In addition to the four major budget categories, an internal charge cost center for employee benefits is shown in the table below. If the number is positive, it indicates that the internal cost allocation rate charges to other cost centers is not sufficient. A negative number indicates a surplus in the internal cost center. A moderate surplus is preferred as it provides a hedge for mid-year benefit program cost adjustments (premiums adjust on January 1 each year) as well as managing risk as the program is partially self-insured.

Table 2 – Operations & Maintenance Budget – Major Budget Categories

Major Budget Categories	FY2018		Percent Year-to-Date	FY 2019		Percent Year-to-Date
	AMENDED BUDGET	FY 2018 THRU 10/31/2017		AMENDED BUDGET	FY 2019 THRU 10/31/2018	
Water	\$ 73,510,521	\$ 14,095,203	19.2%	\$ 66,596,200	\$ 23,151,267	34.8%
Sewer	124,106,353	24,409,218	19.7%	118,318,900	36,832,592	31.1%
Centralized	82,628,680	21,918,523	26.5%	99,044,500	28,918,919	29.2%
Administrative	32,304,965	7,446,865	23.1%	28,682,900	8,197,620	28.6%
Employee Benefits	-	(1,335,089)	0.0%	-	(1,103,950)	0.0%
Total Revenues	\$ 312,550,519	\$ 66,534,720	21.3%	\$ 312,642,500	\$ 95,996,448	30.7%

Alignment of Operations & Maintenance Budget Priorities – Expense Variance Analysis

The purpose of Table 3 is to evaluate whether the actual spend rate within a category is in alignment with the budget. Given the effort to develop an accurate budget, a variance is a red flag of a *potential* budget amendment or misalignment of priorities.

In total, the O&M expenses are at 30.7% which is reasonably close to the pro-rata benchmark of 33.3%. This positive variance equates to a dollar amount of \$8.2 million. The expense category commentary is provided below for items highlighted on Table 3.

Personnel Costs: The overall category is on target at 33.1% through October 2018.

Utilities: The overall category is slightly lower than the benchmark; coming in at 31.8%. Variances in this category are not unexpected given the seasonality of the operations. In comparing FY 2019 to FY 2018 the expenses appear more in line with the budget in FY 2019. This is due in large part to the month-end closing process improvements implemented during the latter half of FY 2018.

Supplies & Other: This category is lower than the benchmark; coming in at 23.0% through October 2018. An internal review is underway to better understand the causes for this variance. Given that the nature of the items in this category are subject to one-time expenses that do not occur evenly throughout the year, this variance is not a concern at this time.

Contractual Services: The overall category is on target at 33.4% through October 2018.

Chemicals: This category is lower than the benchmark; coming in at 28.1% through October 2018. This variance is not unexpected as usage varies throughout the year. Staff is working on enhancements to future monthly financial reports to correlate spending with operational metrics.

Capital Program Allocation: This category is lower than the benchmark; coming in at 27.5% through October 2018. In July 2018, GLWA launched a time keeping software (including an app), BigTime, to make it easier for team members to report their time spent on direct capital delivery. As we begin the close for December 2018, new processes are being evaluated to better understand and cure the shortfall. An update will be provided next month.

Shared Services: Most of the shared services reimbursement is labor which is also tracked via BigTime in addition to some annual fees for software licensing which do not occur evenly throughout the year. Staff is working to refine service level estimates and the budget with DWSD to evaluate the budgeted amount as we move toward the December 2018 close.

Table 3 – Expense Variance Analysis

Expense Categories Entity-wide	FY2018		Percent Year-to- Date	FY 2019 PRORATED		FY 2019 PRORATED	
	AMENDED BUDGET	FY 2018 THRU 10/31/2017		AMENDED BUDGET	BUDGET (4 MONTHS)	FY 2019 THRU 10/31/2018	Percent Year-to- Date
2.1 Salaries & Wages	\$ 57,113,650	\$ 16,093,252	28.2%	\$ 64,160,400	\$ 21,386,800	\$ 19,695,643	30.7%
2.2 Workforce Development	661,576	156,384	23.6%	740,200	246,733	240,199	32.5%
2.3 Overtime	6,516,629	2,070,830	31.8%	6,756,300	2,252,100	2,471,162	36.6%
2.4 Employee Benefits	20,998,861	7,365,160	35.1%	22,255,300	7,418,433	8,391,163	37.7%
2.5 Transition Services	13,865,178	2,130,367	15.4%	11,189,100	3,729,700	3,102,592	27.7%
2.6 Personnel Transition Adjustment	(1,557,200)	-	0.0%	(2,586,200)	(862,067)	-	0.0%
Personnel Costs	97,598,695	27,815,993	28.5%	102,515,100	34,171,699	33,900,759	33.1%
3.1 Electric	42,324,400	8,754,096	20.7%	42,132,600	14,044,200	14,316,134	34.0%
3.2 Gas	7,029,500	720,612	10.3%	6,854,400	2,284,800	1,722,159	25.1%
3.3 Sewage Service	2,030,487	297,731	14.7%	2,544,000	848,000	668,395	26.3%
3.4 Water Service Utilities	4,587,600	884,071	19.3%	5,781,500	1,927,167	1,492,038	25.8%
	55,971,987	10,656,510	19.0%	57,312,500	19,104,167	18,198,726	31.8%
4.1 Chemicals	13,340,680	4,709,647	35.3%	16,620,900	5,540,300	4,674,541	28.1%
4.2 Supplies & Other	41,771,096	7,310,236	17.5%	36,405,600	12,135,200	8,369,976	23.0%
4.3 Contractual Services	113,680,175	20,346,151	17.9%	106,342,000	35,447,333	35,523,983	33.4%
5.1 Capital Program Allocation	(2,012,930)	(473,232)	23.5%	(4,000,000)	(1,333,333)	(1,101,147)	27.5%
5.2 Shared Services	(10,109,500)	(2,495,497)	24.7%	(9,123,100)	(3,041,033)	(2,466,440)	27.0%
7.0 Unallocated Reserve	2,310,615	-	0.0%	6,569,100	2,189,700	-	0.0%
8.0 Employee Benefits Fund	-	(1,335,089)	0.0%	-	-	(1,103,950)	0.0%
Total Expenses	\$ 312,550,819	\$ 66,534,719	21.3%	\$ 312,642,100	\$ 104,214,033	\$ 95,996,448	30.7%
							\$ 8,217,585

All amounts are unaudited unless otherwise noted.

The Basic Financial Statements report includes the following four tables.

1. Statement of Net Position - All Funds Combined
2. Statement of Revenues, Expenses and Changes in Net Position – All Funds Combined
3. Supplemental Schedule of Operations & Maintenance Expenses -All Funds Combined
4. Supplemental Schedule of Nonoperating Expenses – All Funds Combined

GLWA utilizes four funds daily. At the macro level for financial reporting purposes, GLWA has two primary funds: *Water Fund* and *Sewage Disposal Fund*. These funds represent the combined total of four sub-funds for each system that are used to properly account for sources and uses of funds. Those sub-funds for each system are: *Operations & Maintenance Fund*, *Improvement & Extension Fund*, *Construction Bond Fund*, and *Capital Asset Fund*.

Statement of Net Position – All Funds Combined

Explanatory notes follow the Statement of Net Position shown in Table 1 below.

Table 1 – Statement of Net Position - All Funds Combined
As of October 31, 2018

	Water	Sewage Disposal	Total Business-type Activities	Comparative June 30, 2018
Assets				
Cash (a)	\$ 163,298,000	\$ 152,058,000	\$ 315,356,000	\$ 671,753,000
Investments (a)	402,798,000	299,287,000	702,085,000	343,235,000
Accounts Receivable	114,427,000	108,748,000	223,174,000	191,359,000
Due from Other Funds (b)	-	14,235,000	14,235,000	32,255,000
Other Assets (c)	606,980,000	456,694,000	1,063,674,000	985,888,000
Cash Held FBO DWSD Advance (d)	-	21,942,000	21,942,000	18,468,000
Capital Assets, net of depreciation	1,743,463,000	2,551,857,000	4,295,321,000	4,402,212,000
Construction Work in Process	165,446,000	173,470,000	338,916,000	288,052,000
Total Assets	3,196,412,000	3,778,292,000	6,974,704,000	6,933,222,000
Deferred Inflow (e)	103,926,000	199,419,000	303,345,000	332,992,000
Liabilities				
Liabilities – Short-Term (f)	143,652,000	147,114,000	290,766,000	270,446,000
Due to Other Funds (b)	14,235,000	-	14,235,000	32,255,000
Other Liabilities (g)	2,763,000	6,166,000	8,930,000	8,638,000
Cash Held FBO DWSD (d)	11,211,000	-	11,211,000	8,902,000
Liabilities – Long-Term (h)	3,124,920,000	3,877,235,000	7,002,155,000	6,998,296,000
Total Liabilities	3,296,781,000	4,030,516,000	7,327,297,000	7,318,537,000
Deferred Outflow (e)	70,346,000	63,211,000	133,558,000	126,432,000
Net Position Deficit (i)	\$ (66,789,000)	\$ (116,016,000)	\$ (182,806,000)	\$ (178,755,000)

Totals may be off due to rounding.

In general, the Statement of Net Position reflects a mature organization with no unexpected trends. One item of note as of October 31, 2018 is that there is a decrease in cash since June 30, 2018 which is offset by an increase in investments (highlighted in gold on the table). This is due to the engagement of an active investment management during the current fiscal year; hence the shift from cash to investments.

An ongoing challenge is the Net Position Deficit. The underlying causes took years to build (largely heavy use of debt to finance capital asset investment versus a strategic blend of debt, state revolving funds, and cash). This causes GLWA to have a high debt interest expense. The GLWA is regularly updating the FY 2030 forecast that will guide the path toward a positive Net Position.

Footnotes to Statement of Net Position

- a. *Cash and Investments* include restricted amounts.
- b. *Due from Other Funds* and *Due to Other Funds* is shown at the gross level for sub-fund activity.
- c. *Other Assets* primarily consists of the contractual obligation receivable from DWSD related to reimbursement of bonded indebtedness for local system improvements.
- d. *Cash Held FBO Advance (for benefit of) DWSD* and *Cash Held FBO DWSD* represents the net difference between DWSD retail cash received from customers and net financial commitments as outlined in the Master Bond Ordinance.
- e. *Deferred Inflow* and *Deferred Outflow* relate to financing activity and GLWA's share of the legacy General Retirement System (GRS) pension obligation.
- f. *Liabilities - Short-term* include accounts payable, retainage payable, and certain accrued liabilities. Some items, such as compensated absences and worker's compensation, are reviewed periodically but are only adjusted on an interim basis if there is a material change.
- g. *Other Liabilities* account for the cash receipts set aside for the Budget Stabilization Fund and the Water Residential Assistance Program.
- h. *Liabilities - Long-term* include bonds payable, lease payable, and legacy GRS pension liabilities.
- i. *Net Position Deficit* is defined by the accounting standards as the residual of all other elements presented in a statement of financial position. It is the difference between (a) assets and deferred outflows of resources and (b) liabilities and deferred inflows of resources. A net deficit occurs when the liabilities and deferred inflows exceed assets and deferred outflows. GLWA's net deficit is largely driven by an increase in depreciation expense as a result of the increase in the acquisition valuation approach for recording capital asset values in the opening Statement of Net Position on January 1, 2016. Efforts are underway to evaluate the net operating effect of this matter over the long term.

Statement of Revenues, Expenses and Changes in Net Position – All Funds Combined

This statement, shown in Table 2, is presented in summary format. The accrual basis of revenues and operations and maintenance expense vary from the revenue requirement basis presented in the *Budget to Actual Analysis* section of the October 2018 Financial Report Binder. Prior year ending balances are provided in the June 30, 2018 column as a reference for comparative purposes. Explanatory notes follow this statement.

**Table 2 – Statement of Revenues, Expenses and Changes in Net Position
– All Funds Combined**
For the Four Months ended October 31, 2018

	Water	Percent of Revenue	Sewage Disposal	Percent of Revenue	Total Business-type Activities	Comparative June 30, 2018
Revenue						
Wholesale customer charges	\$ 116,714,000	94.5%	\$ 91,651,000	58.0%	\$ 208,365,000	\$ 592,096,000
Local system charges	6,775,000	5.5%	61,003,000	38.6%	67,778,000	194,100,000
Industrial waste charges	-		3,112,000	2.0%	3,112,000	14,335,000
Other revenue	17,000	0.0%	176,000	0.1%	193,000	4,455,000
Pollutant surcharges	-		2,067,000	1.3%	2,067,000	6,908,000
Bad Debt Recovery	-		-	-	-	-
Total Revenues	\$ 123,506,000	100.0%	\$ 158,009,000	100.0%	\$ 281,515,000	\$ 811,895,000
Operating Expenses						
Operations and Maintenance Expenses	46,041,000	37.3%	49,695,000	31.5%	95,735,000	284,910,000
Depreciation	48,785,000	39.5%	59,787,000	37.8%	108,572,000	331,242,000
Total Operating Expenses	94,826,000	76.8%	109,481,000	69.3%	204,307,000	616,152,000
Operating Income	28,681,000	23.2%	48,527,000	30.7%	77,208,000	195,743,000
Total Nonoperating (Revenue)/Expense	35,035,000	28.4%	46,224,000	29.2%	81,259,000	271,662,000
Increase/(Decrease) in Net Position	(6,354,000)	(5.1%)	2,303,000	1.5%	(4,051,000)	(75,920,000)
Net Position Deficit, Beginning of year	(60,435,000)		(118,319,000)		(178,755,000)	(102,835,000)
Net Position Deficit, End of Year	\$ (66,789,000)		\$ (116,016,000)		\$ (182,806,000)	\$ (178,755,000)

Totals may be off due to rounding.

Water Fund

- ✓ The decrease in Water Fund Net Position is \$6 million.
- ✓ Wholesale water customer charges of \$116.7 million account for 94.5% of Water System revenues.
- ✓ Operating expenses of \$94.8 million represent 76.8% of total operating revenue. Depreciation is the largest operating expense at \$48.7 million or 51.4% of operating expense.
- ✓ Operating income after operating expenses (including depreciation) equals \$28.6 million or 23.2% of operating revenue.
- ✓ The largest category within nonoperating activities is interest expense of \$38.3 million.

Sewage Disposal Fund

- ✓ The increase in Sewer Net Position was \$2.3 million.
- ✓ Wholesale customer charges of \$91.6 million account for 58.0% of Sewer System revenues. Wholesale customer charges are billed one-twelfth each month based on an agreed-upon historical average “share” of each customer’s historical flows which are formally revisited on a periodic basis. The result is no revenue shortfall or overestimation.
- ✓ Local system (DWSD) charges of \$61 million account for 38.6% of total operating revenues. These are also billed at one-twelfth of the annual revenue requirement.
- ✓ Operating expenses of \$109.4 million represent 69.3% of total operating revenue. Depreciation is the largest operating expense at \$59.7 million or 54.6% of total operating expense.
- ✓ Operating income after operating expenses (including depreciation) equals \$46.2 million or 29.2% of operating revenue.
- ✓ The largest category within nonoperating activities is interest expense of \$48.4 million.

Supplemental Schedule of Operations & Maintenance Expenses – All Funds Combined

This Supplemental Schedule of Operations & Maintenance Expenses (O&M) schedule is shown on the next page in Table 3. The accrual basis of operations and maintenance expense may vary from the revenue requirement basis presented in the Budget to Actual Analysis section of the October 2018 Financial Report Binder. Explanatory notes follow this schedule.

**Table 3 – Supplemental Schedule of Operations & Maintenance Expenses
– All Funds Combined**
For the Four Months ended October 31, 2018

Expenditure	Water	Percent of Total	Sewage Disposal System	Percent of Total	Total Business-type Activities	Percent of Total
Chemicals	\$ 1,909,000	4.1%	\$ 2,765,000	5.6%	\$ 4,675,000	4.9%
Contractual services	19,049,000	41.4%	16,422,000	33.0%	35,472,000	37.1%
Personnel						
Salaries & Wages	9,087,000	19.7%	14,003,000	28.2%	23,091,000	24.1%
Overtime	1,388,000	3.0%	1,083,000	2.2%	2,471,000	2.6%
Benefits	3,989,000	8.7%	3,298,000	6.6%	7,287,000	7.6%
Total Personnel	14,465,000	31.4%	18,384,000	37.0%	32,849,000	34.3%
Supplies and other Utilities	3,655,000	7.9%	4,454,000	9.0%	8,109,000	8.5%
Electric	9,789,000	21.3%	4,527,000	9.1%	14,316,000	15.0%
Gas	65,000	0.1%	1,657,000	3.3%	1,722,000	1.8%
Sewage	232,000	0.5%	436,000	0.9%	668,000	0.7%
Water	-	0.0%	1,492,000	3.0%	1,492,000	1.6%
Total Utilities	10,086,000	21.9%	8,113,000	16.3%	18,199,000	19.0%
Capital program allocation	(674,000)	-1.5%	(427,000)	-0.9%	(1,101,000)	-1.2%
Shared services allocation	(2,450,000)	-5.3%	(16,000)	0.0%	(2,466,000)	-2.6%
Operations and Maintenance Expenses	\$ 46,041,000	100.0%	\$ 49,695,000	100.0%	\$ 95,735,000	100.0%

Totals may be off due to rounding.

- ✓ Core expenses for water and sewage disposal systems is utilities (19.0% of total O&M expenses) and chemicals (4.9%).
- ✓ Personnel (34.3%) of total O&M expenses include all salaries, wages, and benefits for employees as well as staff augmentation contracts that fill a vacant position (contractual transition services).
- ✓ Contractual services (37.1%) includes
 - Water System costs of sludge removal and disposal services at the Northeast, Southwest and Springwells Water Treatment Plants (approximately \$3.3 million);
 - Sewage Disposal System costs for the operation and maintenance of the biosolids dryer facility (approximately \$5.0 million); and

- Centralized and administrative contractual costs allocated to both systems for information technology, building maintenance, and other services.

Supplemental Schedule of Nonoperating Expenses – All Funds Combined

The Supplemental Schedule of Nonoperating Expenses – All Funds Combined is shown on Table 4 on the next page. Explanatory notes follow this schedule.

**Table 4 – Supplemental Schedule of Nonoperating Expenses – All Funds Combined
 For the Four Months ended October 31, 2018**

Nonoperating (Revenue)/Expense	Water	Sewage Disposal	Total Business-type Activities	Comparative June 30, 2018
Interest income contractual obligation	\$ (7,615,000)	\$ (5,006,000)	\$ (12,621,000)	\$ (38,857,000)
Investment earnings	(4,376,000)	(3,982,000)	(8,358,000)	(11,396,000)
Other nonoperating revenue	(333,000)	(3,000)	(336,000)	(430,000)
Interest expense				
Bonded debt	38,384,000	45,625,000	84,010,000	255,868,000
Lease obligation	5,912,000	7,226,000	13,138,000	39,702,000
Other obligations	1,656,000	531,000	2,187,000	4,825,000
Total interest expense	45,952,000	53,382,000	99,334,000	300,395,000
Other nonoperating expense	679,000	631,000	1,310,000	1,684,000
Amortization, issuance costs, debt	(461,000)	1,202,000	741,000	(8,684,000)
Amortization, raw water rights	1,189,000	-	1,189,000	2,081,000
(Gain) loss on disposal of capital assets	-	-	-	(2,463,000)
Loss on impairment of capital assets	-	-	-	654,000
Water Residential Assistance Program	-	-	-	3,756,000
Legacy pension expense	-	-	-	24,922,000
Total Nonoperating (Revenue)/Expense	\$ 35,035,000	\$ 46,224,000	\$ 81,259,000	\$ 271,662,000

Totals may be off due to rounding.

- ✓ Interest expense, the largest category of nonoperating expenses, is due to three sources below:
 - Bonded debt;
 - Lease obligation for the regional assets from the City of Detroit; and
 - Other obligations such as an obligation payable to the City of Detroit for an allocation BC Notes related to assumed DWSD liabilities; acquisition of raw water rights related to KWA Pipeline.
- ✓ Interest income on contractual obligation from DWSD.
- ✓ Investment earnings are expected to increase materially from the prior year due to the implementation of an active investment management strategy during the current fiscal year.

Financial Activity Charts

Chart 1 – Capital Outlay

Capital Outlay spend is **\$4,996,829** through October 31, 2018. The expenses in this chart do not reflect any activity in the Capital Improvement Program. The allocation is shown in the chart below.

Capital Outlay Expenses by Department as of October 31, 2018

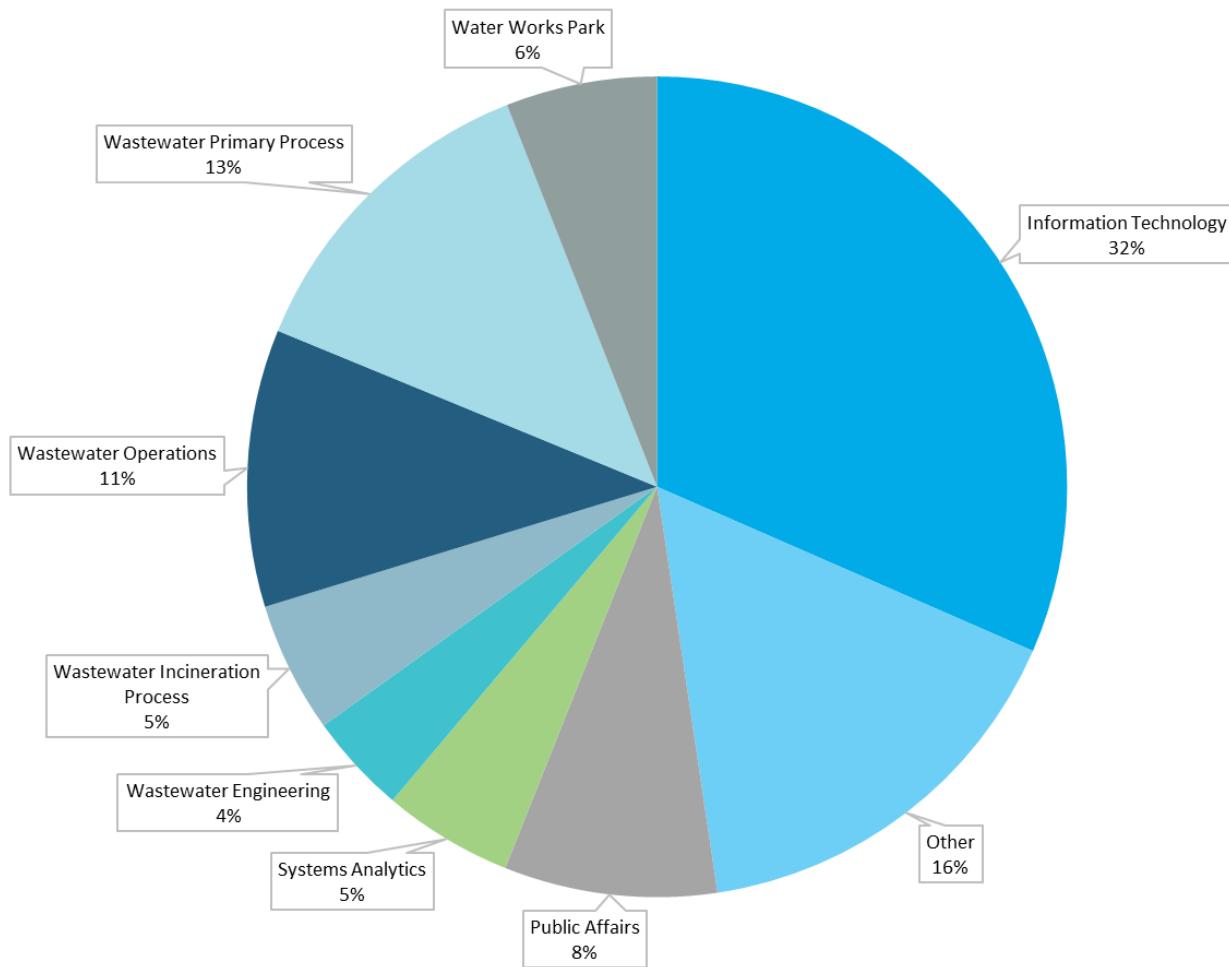
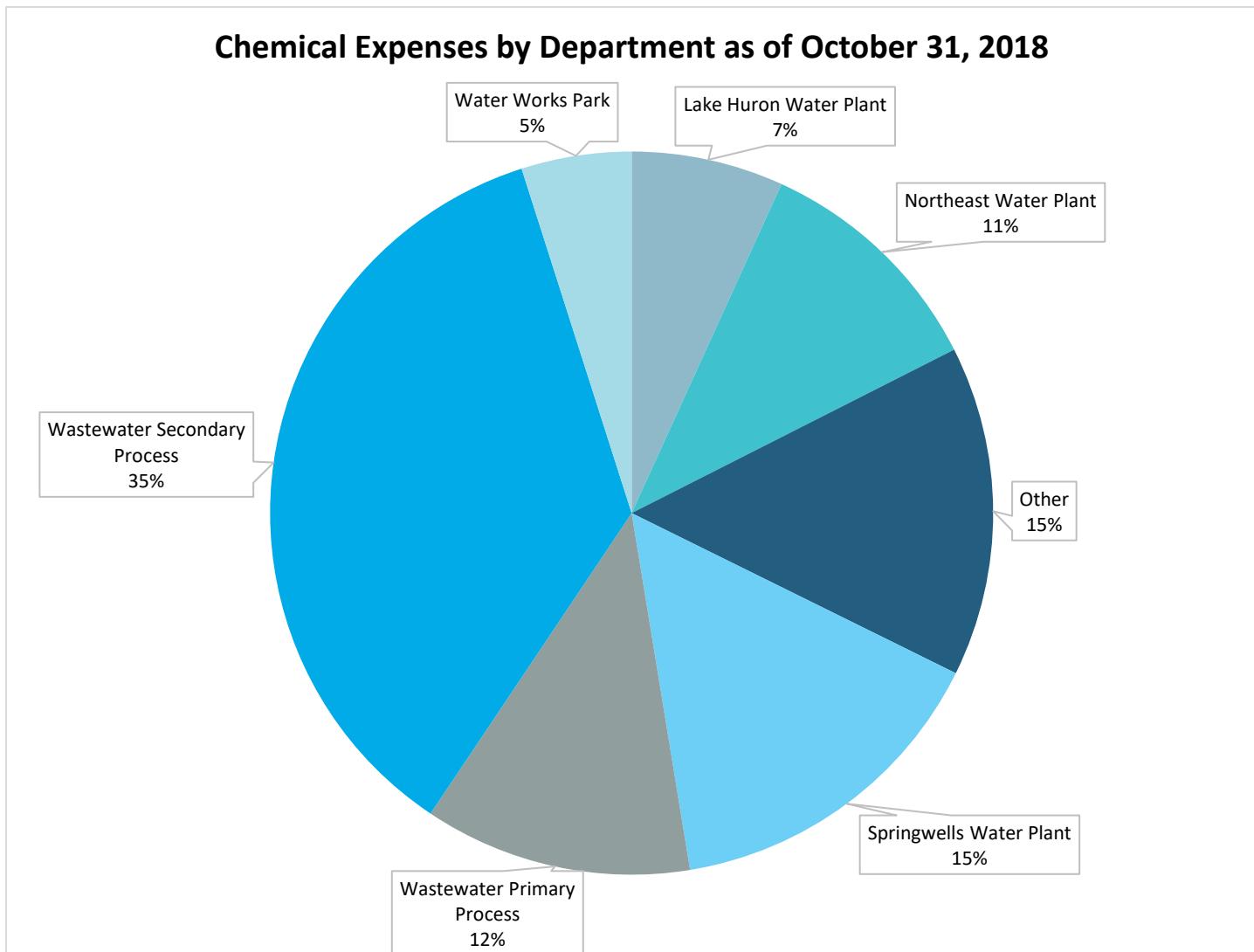


Chart 2 – Chemical Spend

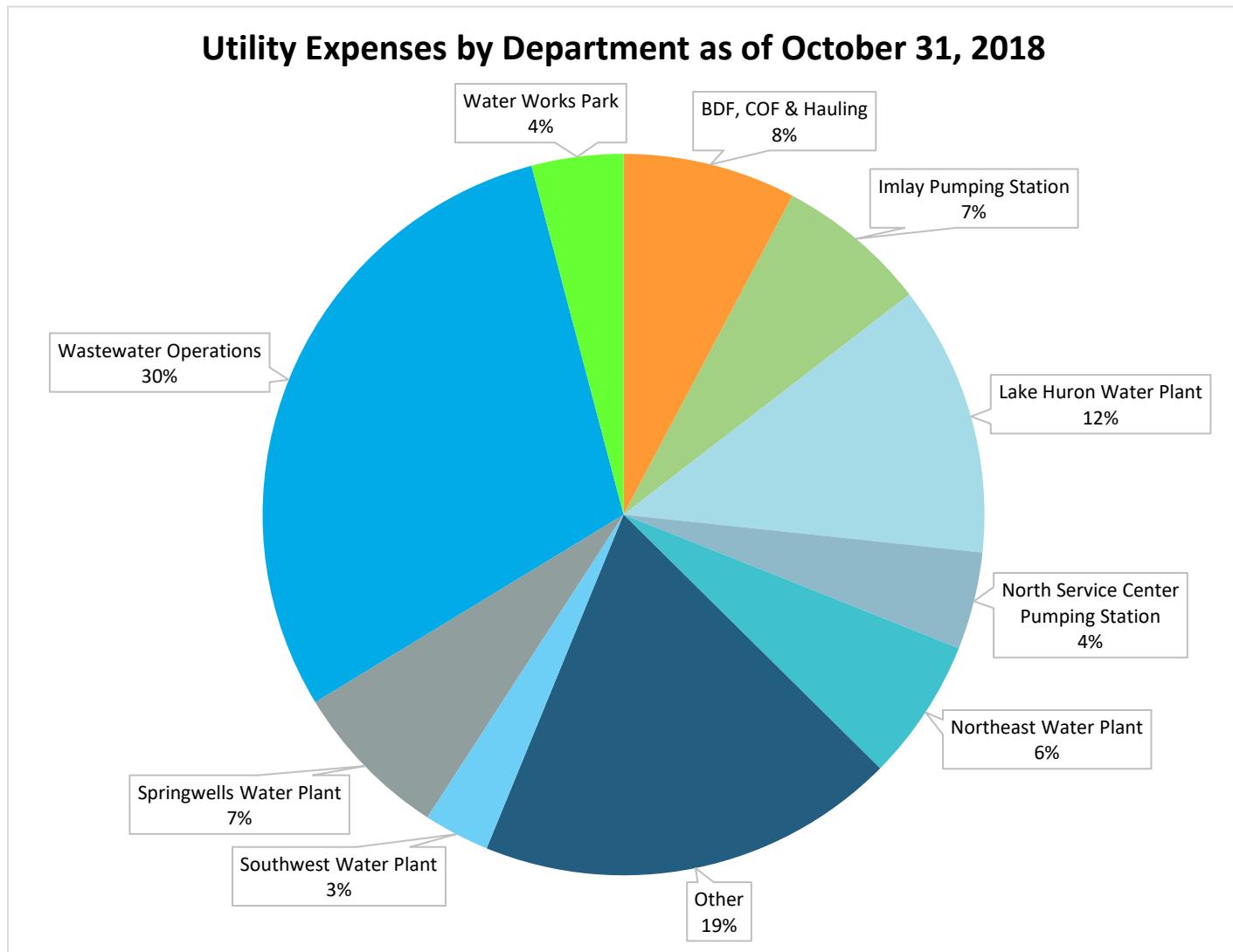
Chemical spend is **\$4,674,541** through October 31, 2018. The allocation is shown in the chart below.



“Other” includes CSO, portions of the Wastewater process and two departments from Water.

Chart 3 – Utility Spend

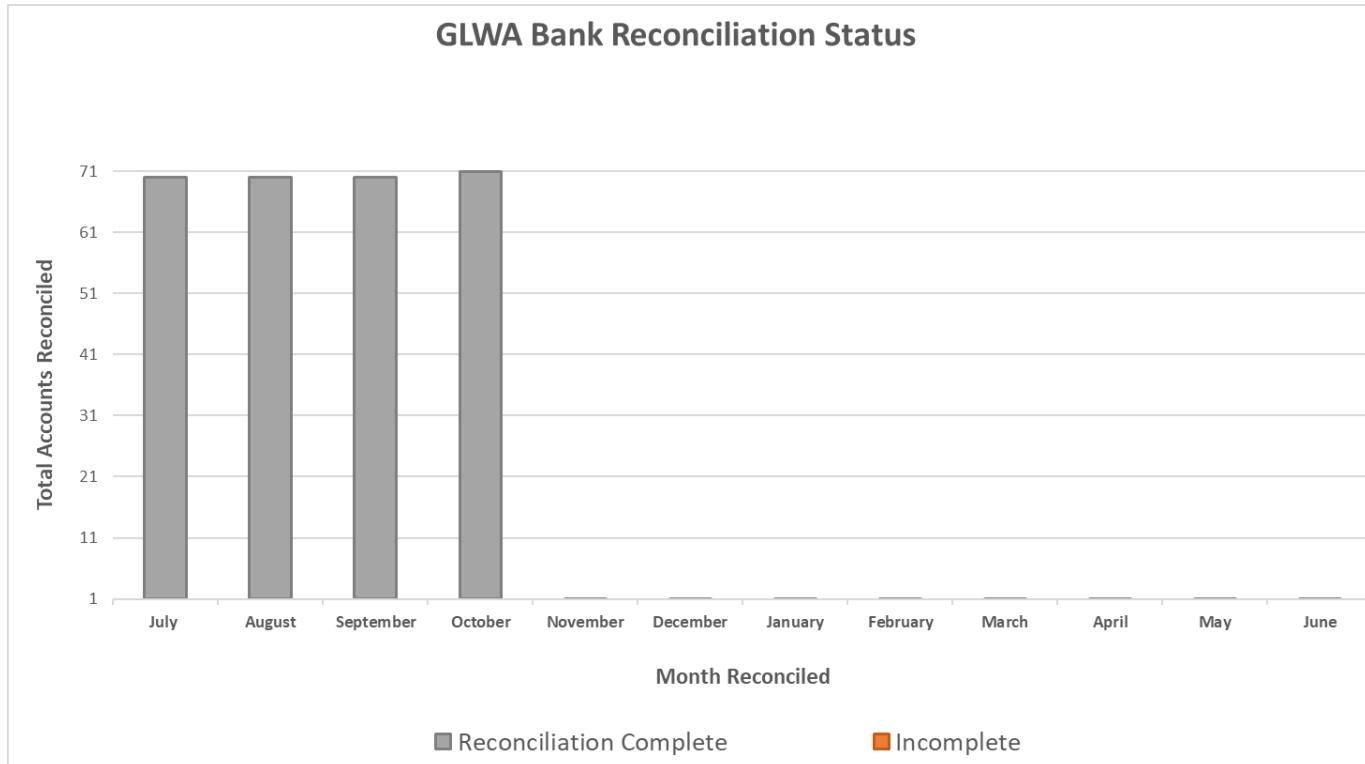
Utility spend is **\$18,198,726** through October 31, 2018. The allocation is shown in the chart below.



Financial Operations KPI

This key performance indicator shown in Chart 1 below provides a measure of the progress made in the month-end close process which includes bank reconciliations completed soon after month end.

Chart 1 – Bank Reconciliation Completion Status



This report includes the following:

1. Master Bond Ordinance (MBO) Required Transfers to Accounts Held by GLWA
2. Master Bond Ordinance (MBO) Required Transfers to Accounts Held by DWSD

MBO Transfers to Accounts Held by GLWA

GLWA Transfers: The Treasury Department completes required MBO transfers on the first business day of each month. Treasury completes these transfers in accordance with the Great Lakes Water Authority (GLWA) and Detroit Water & Sewerage Department (DWSD) budgets as approved and adopted by the GLWA Board of Directors and DWSD Board of Water Commissioners annually.

Monthly transfers for Operations & Maintenance, Pension, and Water Residential Assistance Program (WRAP) are one-twelfth of the annual, budgeted amount. Budget stabilization should not require additional funding due to new, baseline funding levels established as part of the April 2018 Memorandum of Understanding but is included to reflect historical activity. Treasury completes annual Extraordinary Repair & Replacement transfers as directed based on budget and year-end fund status.

Table 1 – GLWA Water Transfers reflects the required transfers for FY 2019 completed through October 1, 2018. The total transfers for FY 2016, FY 2017, and FY 2018 are also included to reflect historical activity. Since January 1, 2016, MBO transfers for Water totaling \$411,261,264 have been transferred to accounts held by GLWA.

Table 2 – GLWA Sewer Transfers reflects the required transfers for FY 2019 completed through October 1, 2018. The total transfers for FY 2016, FY 2017, and FY 2018 are also included to reflect historical activity. Since January 1, 2016, MBO transfers for Sewer totaling \$633,840,760 have been transferred to accounts held by GLWA.

Table 1 – GLWA Water Transfers

WATER							
	Operations & Maintenance	Pension Sub Account	Pension Obligation	WRAP	Budget Stabilization (For Benefit of DWSD)	Extraordinary Repair & Replacement (ER&R)	Total Water
Total FY 2016	\$71,052,000	\$6,037,100	\$10,297,200	\$1,983,300	\$2,326,900	\$606,000	\$92,302,500
Total FY 2017	111,879,600	6,037,200	10,297,200	2,077,200	360,000	-	130,651,200
Total FY 2018	121,562,604	6,048,000	10,695,696	2,159,400	-	-	140,465,700
FY 2019							
July 2018	10,393,475	504,000	891,308	171,683	-	-	11,960,466
August 2018	10,393,475	504,000	891,308	171,683	-	-	11,960,466
September 2018	10,393,475	504,000	891,308	171,683	-	-	11,960,466
October 2018	10,393,475	504,000	891,308	171,683	-	-	11,960,466
Total FY 2019	41,573,900	\$2,016,000	\$3,565,232	\$686,732	\$0	\$0	\$47,841,864
Total Water Since Jan 1 2016	\$346,068,104	\$20,138,300	\$34,855,328	\$6,906,632	\$2,686,900	\$606,000	\$411,261,264

Table 2 – GLWA Sewer Transfers

SEWER							
	Operations & Maintenance	Pension Sub Account	Pension Obligation	WRAP	Budget Stabilization (For Benefit of DWSD)	Extraordinary Repair & Replacement (ER&R)	Total Water
Total FY 2016	\$100,865,600	\$10,838,400	\$14,025,800	\$2,523,400	\$5,591,700	\$779,600	\$134,624,500
Total FY 2017	175,858,800	10,838,400	14,026,800	2,654,400	2,654,400	-	206,032,800
Total FY 2018	191,079,396	10,824,000	14,687,496	2,760,804	-	-	219,351,696
FY 2019							
July 2018	16,093,500	902,000	1,223,958	238,483	-	-	18,457,941
August 2018	16,093,500	902,000	1,223,958	238,483	-	-	18,457,941
September 2018	16,093,500	902,000	1,223,958	238,483	-	-	18,457,941
October 2018	16,093,500	902,000	1,223,958	238,483	-	-	18,457,941
Total FY 2019	\$64,374,000	\$3,608,000	\$4,895,832	\$953,932	\$0	\$0	\$73,831,764
Total Sewer Since Jan 1 2016	\$532,177,796	\$36,108,800	\$47,635,928	\$8,892,536	\$8,246,100	\$779,600	\$633,840,760

MBO Transfers to Accounts Held by DWSD

DWSD Transfers: The Treasury Department completes required MBO transfers on the first business day of each month. Treasury completes these transfers in accordance with the GLWA and DWSD budgets as approved and adopted by the GLWA Board of Directors and DWSD Board of Water Commissioners annually. GLWA Public Finance communicates planned transfers in advance of the first business day of each month and GLWA Treasury sends confirmation of transfers made to DWSD Treasury.

Monthly transfers for Operations & Maintenance and Pension are one-twelfth of the annual, budgeted amount. The annual lease payment, as stated in the Water & Sewer Lease Agreements, is \$22,500,000 for Water and \$27,500,000 for Sewer. The monthly lease transfer is one-twelfth of the amount as stated in the Lease agreements unless otherwise designated by DWSD. Per Section 3.5 of the Lease, the Lease payment may be used for (a) bond principal and interest for Local System Improvements, (b) bond principal and interest for the City's share of common-to-all System Improvements, and (c) Local System improvements.

Table 3 – DWSD Water Transfers reflects the required transfers for FY 2019 completed through October 1, 2018. The total transfers for FY 2016, FY 2017, and FY 2018 are also included to reflect historical activity. For FY 2016, \$2,326,900 of the lease payment was directed to offset a portion of debt service. For FY 2018, a DWSD budget adjustment resulted in a reduction in the lease transfer of \$1,875,000. For FY 2019, \$3,949,200 of the lease payment will be directed to offset a portion of debt service. This offset will be recognized over the year as a reduction in the monthly transfer amount. Since January 1, 2016, MBO transfers for Water totaling \$190,372,604 have been transferred to accounts held by DWSD.

Table 4 – DWSD Sewer Transfers reflects the required transfers for FY 2019 completed through October 1, 2018. The total transfers for FY 2016, FY 2017, and FY 2018 are also included to reflect historical activity. For FY 2016, \$19,991,500 of the lease payment was directed to offset a portion of debt service. For FY 2018, a DWSD budget adjustment resulted in a reduction in the lease transfer of \$9,166,664. For FY 2019, \$4,864,000 of the lease payment will be directed to offset a portion of debt service. This offset will be recognized over the year as a reduction in the monthly transfer amount. Since January 1, 2016, MBO transfers for Sewer totaling \$214,954,028 have been transferred to accounts held by DWSD.

Table 3 – DWSD Water Transfers

WATER					
	Operations &		Lease Payment		
	Maintenance	Pension	(I&E Fund)	Total Water	
Total FY 2016	\$ 26,185,600	\$ 4,262,700	\$ 20,173,100	\$ 50,621,400	
Total FY 2017	\$ 33,596,400	\$ 4,262,400	\$ 22,500,000	\$ 60,358,800	
Total FY 2018	\$ 35,059,704	\$ 4,272,000	\$ 20,625,000	\$ 59,956,704	
FY 2019					
July 2018	\$ 2,957,025	\$ 356,000	\$ 1,545,900	\$ 4,858,925	
August 2018	2,957,025	356,000	1,545,900	4,858,925	
September 2018	2,957,025	356,000	1,545,900	4,858,925	
October 2018	2,957,025	356,000	1,545,900	4,858,925	
Total FY 2019	\$ 11,828,100	\$ 1,424,000	\$ 6,183,600	\$ 19,435,700	
Total Water Since Jan 1 2016	\$ 106,669,804	\$ 14,221,100	\$ 69,481,700	\$ 190,372,604	

Table 4 – DWSD Sewer Transfers

SEWER					
	Operations &		Lease Payment		
	Maintenance	Pension	(I&E Fund)	Total Sewer	
Total FY 2016	\$ 19,774,300	\$ 2,861,800	\$ 7,508,500	\$ 30,144,600	
Total FY 2017	\$ 41,535,600	\$ 2,862,000	\$ 27,500,000	\$ 71,897,600	
Total FY 2018	\$ 60,517,992	\$ 2,856,000	\$ 18,333,336	\$ 81,707,328	
FY 2019					
July 2018	\$ 5,676,792	\$ 238,000	\$ 1,886,333	\$ 7,801,125	
August 2018	5,676,792	238,000	1,886,333	7,801,125	
September 2018	5,676,792	238,000	1,886,333	7,801,125	
October 2018	5,676,792	238,000	1,886,333	7,801,125	
Total FY 2019	\$ 22,707,168	\$ 952,000	\$ 7,545,332	\$ 31,204,500	
Total Sewer Since Jan 1 2016	\$ 144,535,060	\$ 9,531,800	\$ 60,887,168	\$ 214,954,028	

Retail Revenues, Receivables, and Collections: Pursuant to the terms of the lease agreement between the City of Detroit and the Great Lakes Water Authority (GLWA), the Detroit Water & Sewerage Department (DWSD) serves as GLWA's agent for billing activities for the City of Detroit retail customer class. All water and sewer service collections from DWSD customers are deposited in a trust account and are administered in accordance with the GLWA Master Bond Ordinance.

The Monthly Retail Revenues, Receivables, & Collections Report includes the following.

1. DWSD Retail Water Revenue Billings and Collections
2. DWSD Retail Sewer Revenue Billings and Collections
3. DWSD Retail Water & Sewer System Accounts Receivable Aging Report

Note: Wholesale customer revenues are billed by the Great Lakes Water Authority.

DWSD Retail Water Billings and Collections

Retail Billing Basis: DWSD bills retail customers monthly. Customers are billed throughout the month in cycles based on a meter reading schedule beginning with residential accounts and ending with commercial and industrial customers.

Table 1 - DWSD Retail Billings shows the FY 2019 water usage and billed revenue which are provided by DWSD staff. As of October 31, 2018, the DWSD usage was at 99.36% of the budget and billed revenue was at 104.46% of budget.

DWSD Retail Water Collections: The collections represent payments made by DWSD retail customers. These receipts are deposited directly into a lockbox with a trustee for administration of the flow of funds defined by GLWA's Master Bond Ordinance.

Table 2 - Retail Water Collections shows collections by month for the past 12 months compared to collections for the prior year as well as the calculated difference between the periods.

Note: DWSD is working on the additional, billings to collections rolling average report requested by the GLWA Audit Committee at the December 21, 2018 meeting. That will be included in this report when made available by DWSD.

Table 1 – DWSD Retail Water Billings

RETAIL WATER CUSTOMERS									
Month (1)	FY 2019 - Budget/Goal			FY 2019 - Actual			FY 2019 - Variance		
	Volume	Revenue	Unit Revenue	Volume	Revenue (2)	Unit Revenue	Volume	Revenue	
	McF	\$	\$/McF	McF	\$	\$/McF	McF	\$	
July	269,000	9,424,500	35.04	300,613	10,203,409	33.94	31,613	778,909	
August	273,100	9,377,700	34.34	302,476	9,833,149	32.09	29,376	455,449	
September	270,500	8,494,300	31.40	221,531	8,996,692	40.61	(48,969)	502,392	
October	233,800	8,165,900	34.93	215,104	8,010,524	37.24	(18,696)	(155,376)	
November	224,500	7,750,100	34.52						
December	206,500	8,224,900	39.83						
January	226,600	7,978,800	35.21						
February	216,400	7,980,200	36.88						
March	213,300	8,163,900	38.27						
April	223,100	7,856,900	35.22						
May	211,000	9,109,200	43.17						
June	240,200	9,063,600	37.73						
Total	2,808,000	101,590,000	36.18	1,039,724	37,043,774	35.63	(6,676)	1,581,374	
<i>Subtotals ytd</i>	<i>1,046,400</i>	<i>35,462,400</i>	<i>33.89</i>	<i>1,039,724</i>	<i>37,043,774</i>	<i>35.63</i>	<i>(6,676)</i>	<i>1,581,374</i>	
<i>Achievement of Budget</i>				99.36%	104.46%				

(1) Figures are stated as "Service Months"; that is, July figures represent bills issued in August, etc.

(2) Retail Revenues include Miscellaneous Revenues and Penalties

Table 2 – DWSD Retail Water Collections

Water				
Month	Current Year	Prior Year	Variance	Ratio
November	8,049,328	9,433,934	(1,384,606)	-14.68%
December	8,265,636	8,571,649	(306,013)	-3.57%
January	8,066,448	6,744,162	1,322,286	19.61%
February	6,432,245	7,682,509	(1,250,265)	-16.27%
March	8,280,635	8,218,506	62,129	0.76%
April	9,226,675	6,977,199	2,249,477	32.24%
May	8,969,019	8,568,632	400,387	4.67%
June	7,940,939	7,141,568	799,371	11.19%
July	7,375,402	8,357,505	(982,103)	-11.75%
August	8,692,784	9,509,488	(816,704)	-8.59%
September	9,766,449	8,949,906	816,543	9.12%
October	9,015,400	9,528,528	(513,128)	-5.39%
Rolling, 12-Month Total	100,080,960	99,683,586		
Rolling, 12-Month Average	8,340,080	8,306,965		

DWSD Retail Sewer Billings and Collections

Retail billing basis: DWSD bills retail customers monthly. Customers are billed throughout the month in cycles based on a meter reading schedule beginning with residential accounts and ending with commercial and industrial customers.

Table 3 - DWSD Retail Sewer Billings shows the FY 2019 sewer billed revenue which are provided by DWSD staff. As of October 31, 2018, the DWSD usage was at 102.82% of the budget and billed revenue was at 99.32% of budget.

DWSD Retail Sewer Collections: The collections represent payments made by DWSD retail customers. These receipts are deposited directly into a lockbox with a trustee for administration of the flow of funds defined by GLWA's Master Bond Ordinance.

Table 4 – DWSD Retail Sewer Collections shows collections by month for the past 12 months compared to collections for the prior year as well as the calculated difference between the periods.

Note: DWSD is working on the additional, billings to collections rolling average report requested by the GLWA Audit Committee at the December 21, 2018 meeting. That will be included in this report when made available by DWSD.

Table 3 - DWSD Retail Sewer Billings

Month (1)	RETAIL SEWER CUSTOMERS					
	FY 2019 - Budget/Goal		FY 2019 - Actual		FY 2019 - Variance	
	Volume	Revenue	Volume	Revenue (2)	Volume	Revenue
	McF	\$	McF	\$	McF	\$
July	242,100	27,423,400	273,862	27,711,606	31,762	288,206
August	244,200	27,232,200	262,525	27,263,163	18,325	30,963
September	239,600	25,367,500	221,660	25,413,790	(17,940)	46,290
October	211,000	25,177,200	205,267	24,092,209	(5,733)	(1,084,991)
November	197,600	23,861,000				
December	182,400	25,293,500				
January	198,600	24,852,800				
February	191,600	25,329,400				
March	191,000	25,474,500				
April	197,300	24,789,700				
May	187,300	26,205,200				
June	210,300	26,730,700				
Total	2,493,000	307,737,100	963,314	104,480,768	26,414	(719,532)
Subtotals ytd	936,900	105,200,300	963,314	104,480,768	26,414	(719,532)
<i>Achievement of Budget/Goal</i>		102.82%		99.32%		

(1) Figures are stated as "Service Months"; that is, July figures represent bills issued in August, etc.

(2) Retail Revenues include Miscellaneous Revenues and Penalties

Table 4 – DWSD Retail Sewer Collections

Month	Sewer			
	Current Year	Prior Year	Variance	Ratio
November	19,485,270	20,175,379	(690,109)	-3.42%
December	19,522,952	19,500,639	22,313	0.11%
January	18,308,458	16,792,983	1,515,475	9.02%
February	17,495,563	18,149,650	(654,087)	-3.60%
March	23,015,525	18,711,974	4,303,552	23.00%
April	16,159,844	17,219,106	(1,059,262)	-6.15%
May	18,341,298	20,046,357	(1,705,059)	-8.51%
June	27,591,834	18,005,548	9,586,286	53.24%
July	21,461,926	18,582,964	2,878,962	15.49%
August	21,746,714	24,263,141	(2,516,427)	-10.37%
September	23,727,505	21,320,358	2,407,147	11.29%
October	23,938,933	23,786,903	152,030	0.64%
Rolling 12-Month Total	250,795,821	236,555,002		
Rolling, 12-Month Average	20,899,652	19,712,917		

DWSD Retail Water and Sewer Accounts Receivable Aging Report

The DWSD detailed accounts receivable aging is categorized by customer category.

Table 5 is a summary of the total, current and non-current Water and Sewer receivables by category as of October 31, 2018. This now includes pre-bifurcation receivables transferred to DWSD as part of the April 2018 Memorandum of Understanding.

Table 5 – DWSD Retail Accounts Receivable Aging Report – Water & Sewer Combined

Sales Class	# of Accounts	Avg. Balance	Current	> 30 Days	> 60 Days	> 180 Days	Accounts Receivable Balance
Residential	283,423	\$ 299.07	\$ 12,809,069	\$ 7,242,016	\$ 14,722,463	\$ 49,988,859	\$ 84,762,407
				15.1%	8.5%	17.4%	59.0%
							100.0%
Commercial	27,635	1,075.04	8,571,367	3,382,092	6,395,525	11,359,682	29,708,666
				28.9%	11.4%	21.5%	38.2%
							100.0%
Industrial	4,650	2,625.44	3,933,980	1,203,267	2,598,884	4,472,143	12,208,273
				32.2%	9.9%	21.3%	36.6%
							100.0%
Tax Exempt Entities	6,834	1,385.41	2,245,550	1,910,155	1,262,196	4,050,020	9,467,920
				23.7%	20.2%	13.3%	42.8%
							100.0%
Government Entities	7,721	1,386.41	1,234,655	949,242	2,450,126	6,070,466	10,704,489
				11.5%	8.9%	22.9%	56.7%
							100.0%
Subtotal - Active Accounts	330,263	\$ 444.65	\$ 28,794,622	\$ 14,686,773	\$ 27,429,193	\$ 75,941,168	\$ 146,851,756
				19.6%	10.0%	18.7%	51.7%
							100.0%
Inactive Accounts	253,155	61.85	161,663	194,646	996,669	14,304,113	15,657,092
				1.0%	1.2%	6.4%	91.4%
							100.0%
Total	583,418	\$ 278.55	\$ 28,956,285	\$ 14,881,419	\$ 28,425,862	\$ 90,245,281	\$ 162,508,848
<i>% of Total A/R</i>				17.8%	9.2%	17.5%	55.5%
							100.0%
Water Fund	206,836	172.66	\$ 7,123,758	\$ 3,137,751	\$ 5,169,274	\$ 20,281,903	\$ 35,712,686
Sewer Fund	266,369	476.02	\$ 21,832,527	\$ 11,743,668	\$ 23,256,588	\$ 69,963,378	\$ 126,796,162
Total	583,418	\$ 278.55	\$ 28,956,285	\$ 14,881,419	\$ 28,425,862	\$ 90,245,281	\$ 162,508,848

The Monthly Wholesale Billings, Receivables, & Collections Report includes the following.

1. Wholesale Water Billings and Collections
2. Wholesale Sewer Billings and Collections
3. City of Highland Park Billings and Collections
4. Wholesale Water & Sewer Accounts Receivable Aging Report

Wholesale Water Billings and Collections

Wholesale Water Contracts: Great Lakes Water Authority (GLWA) provides wholesale water service to 87 member-partners through a variety of service arrangements.

Service Arrangement Type

Model Contract	81
Emergency	1
Older Contracts	5
Total	87

Note: Services are provided to the Detroit Water & Sewerage Department (DWSD) via a Water and Sewer Services Agreement (WSSA). See the "Retail Revenues, Receivables, and Collections Report" section of this monthly report.

Wholesale Water Billing Basis: Beginning with FY 2016, wholesale water charges were restructured to create a more stable revenue stream by using a historical rolling average to project customer volumes which accounts for 40% of the monthly charges and 60% of the annual customer revenue requirement as a monthly fixed charge.

Table 1 - Wholesale Water Billings shows the FY 2019 water billed usage and revenues. As of October 31, 2018, the billed usage was at 100.99% of budget and billed revenue at 100.92% of budget. Billings and usage from the City of Flint are included as they were assumed in the FY 2019 Budget.

Wholesale Water Collections: The collections represent payments made by wholesale customers. These receipts are deposited directly into a lockbox with a trustee for administration of the flow of funds defined by GLWA's Master Bond Ordinance.

Table 2 - Wholesale Water Collections shows collections by month for the past 12 months compared to collections for the prior year as well as the calculated difference between the periods. Variability in collections in the current year are associated with timing of the billing cycle. Bills for December, February and August were posted later than usual due to holiday conflicts and higher volumes of meter reads requiring review (associated with meter issues and water main breaks). While at times unavoidable, the GLWA billing team is identifying steps to prevent delays wherever possible.

Table 1 – FY 2019 Wholesale Water Billings Report

WHOLESALE WATER CUSTOMERS (2)									
<u>Month (1)</u>	FY 2019 - Budget/Goal			FY 2019 - Actual			FY 2019 - Variance		
	Unit			Unit					
	<u>Volume</u>	<u>Revenue</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>	<u>Revenue</u>	<u>Volume</u>	<u>Revenue</u>	
	<i>Mcf</i>	\$	\$/Mcf	<i>Mcf</i>	\$	\$/Mcf	<i>Mcf</i>	\$	
July	1,632,120	30,347,500	18.59	1,800,256	32,122,653	17.84	168,136	1,775,153	
August	1,518,130	29,405,800	19.37	1,490,896	29,144,135	19.55	(27,234)	(261,665)	
September	1,354,440	27,424,800	20.25	1,333,455	27,129,781	20.35	(20,985)	(295,019)	
October	1,091,580	24,826,000	22.74	1,027,086	24,636,482	23.99	(64,494)	(189,518)	
November	912,260	23,273,500	25.51						
December	1,002,110	23,912,600	23.86						
January	1,019,240	24,133,400	23.68						
February	885,170	23,021,600	26.01						
March	1,000,060	23,933,100	23.93						
April	952,450	23,568,200	24.74						
May	1,116,620	25,296,500	22.65						
June	1,557,060	29,624,900	19.03						
Total	14,041,240	308,767,900	21.99	5,651,693	113,033,052	20.00	55,423	1,028,952	
<i>Subtotals ytd</i>	<i>5,596,270</i>	<i>112,004,100</i>	<i>20.01</i>	<i>5,651,693</i>	<i>113,033,052</i>	<i>20.00</i>	<i>55,423</i>	<i>1,028,952</i>	
<i>Achievement of Budget</i>			100.99%		100.92%				

(1) Figures are stated as "Service Months"; that is, July figures represent bills issued in August, etc. (2) Includes Revenues and Usage from the City of Flint

Table 2 - Wholesale Water Collections

Water					
Month	Current Year	Prior Year	Variance	Ratio	
November	27,261,391	28,016,358	(754,966)	-2.69%	
December	22,125,972	26,654,068	(4,528,095)	-16.99%	
January	32,002,334	23,595,948	8,406,386	35.63%	
February	21,352,903	25,840,517	(4,487,613)	-17.37%	
March	27,715,696	28,339,011	(623,315)	-2.20%	
April	18,489,754	24,583,235	(6,093,480)	-24.79%	
May	30,447,581	22,312,189	8,135,392	36.46%	
June	21,815,013	24,337,730	(2,522,716)	-10.37%	
July	21,923,590	28,138,726	(6,215,136)	-22.09%	
August	31,920,586	25,280,453	6,640,133	26.27%	
September	26,037,313	26,757,992	(728,038)	-2.72%	
October	27,827,722	38,336,777	(10,509,055)	-27.41%	
Rolling 12-Month Total	308,919,856	322,193,002			
Rolling, 12-Month Average	25,743,321	26,849,417			

Note: The high October receipt volume in 2017 was an anomaly due to system outages causing bill delays in July.

Wholesale Sewer Billings and Collections

Wholesale Sewer Contracts: GLWA provides wholesale sewer service to 18 member-partners via multiple service arrangements.

Service Arrangement Type

Model Contract	11
Emergency	0
Older Contracts	7
Total	<u>18</u>

Note: Services are provided to the Detroit Water & Sewerage Department via a Water and Sewer Services Agreement (WSSA). See the "Retail Revenues, Receivables, and Collections Report" section of the monthly report.

Wholesale Sewer Billing Basis: Beginning in FY 2015, the "sewer rate simplification" initiative was applied which provides for a stable revenue stream and predictability for our member partners. Wholesale sewer customers are billed a fixed monthly fee based upon the annual revenue requirement.

Table 3 - Wholesale Sewer Billings shows the FY 2019 sewer billed revenue. Consistent with expectations as a result of sewer rate simplification, billed revenue is at 100.00% of budget through October 31, 2018.

Wholesale Sewer Collections: The collections represent payments made by wholesale customers. These receipts are deposited directly into a lockbox with a trustee for administration of the flow of funds defined by GLWA's Master Bond Ordinance.

Table 4 - Wholesale Sewer Collections shows collections by month for the past 12 months compared to collections for the prior year as well as the calculated difference between the periods. Variability in collections in the current year are associated with timing of the billing cycle.

The shift in wholesale sewer collection patterns is largely attributable to the timing of payments received from one customer. Starting in February 2018, Wayne County's (Rouge Valley, NE Wayne and Wayne County #3) payments were received just after the first of the calendar month for one invoice (showing no collection for the previous month) and the subsequent invoice was paid in the same calendar month. This pattern has continued through September 30, 2018. At no time during this period has Wayne County been over 45 days delinquent in its sewer payments to GLWA. Given the payment amount of \$6.8 million, this produces noticeable swings in collection volumes by month.

Table 3 – FY 2019 Wholesale Sewer Billings Report

WHOLESALE SEWER CUSTOMERS						
Month (1)	FY 2019 - Budget/Goal		FY 2019 - Actual		FY 2019 - Variance	
	Volume (2)	Revenue	Volume (2)	Revenue	Volume (2)	Revenue
	McF	\$	McF	\$	McF	\$
July	N/A	22,912,800	N/A	22,912,800	N/A	-
August	N/A	22,912,800	N/A	22,912,800	N/A	-
September	N/A	22,912,800	N/A	22,912,800	N/A	-
October	N/A	22,912,800	N/A	22,912,800	N/A	-
November	N/A	22,912,800	N/A		N/A	
December	N/A	22,912,800	N/A		N/A	
January	N/A	22,912,800	N/A		N/A	
February	N/A	22,912,800	N/A		N/A	
March	N/A	22,912,800	N/A		N/A	
April	N/A	22,912,800	N/A		N/A	
May	N/A	22,912,800	N/A		N/A	
June	N/A	22,912,800	N/A		N/A	
Total		274,953,600		91,651,200		-
<i>Subtotals ytd</i>		<i>91,651,200</i>		<i>91,651,200</i>		<i>0</i>
<i>Achievement of Budget</i>				<i>100.00%</i>		

(1) Figures are stated as "Service Months"; that is, July figures represent bills issued in August, etc.

(2) Not tracked as part of the wholesale sewer charges

Table 4 - Wholesale Sewer Collections

Sewer				
Month	Current Year	Prior Year	Variance	Ratio
November	22,662,700	22,693,876	(31,176)	-0.14%
December	23,643,400	23,514,100	129,300	0.55%
January	22,057,972	21,835,338	222,634	1.02%
February	30,280,800	21,659,900	8,620,900	39.80%
March	15,552,000	21,878,700	(6,326,700)	-28.92%
April	27,812,417	22,502,725	5,309,692	23.60%
May	15,342,700	21,620,300	(6,277,600)	-29.04%
June	28,810,500	21,645,500	7,165,000	33.10%
July	16,179,117	22,732,006	(6,552,889)	-28.83%
August	28,384,600	21,949,300	6,435,300	29.32%
September	22,672,400	21,040,913	1,631,487	7.75%
October	16,105,200	21,902,800	(5,797,600)	-26.47%
Rolling 12-Month Total	269,503,806	264,975,457		
Rolling, 12-Month Average	22,458,650	22,081,288		

City of Highland Park Billings and Collections

The City of Highland Park is provided water service pursuant to an emergency service basis. Sewer service is provided pursuant to a 1982 amended contract which indicates that the parties are guided in their legal relationship by a Michigan Supreme Court decision from 1949.

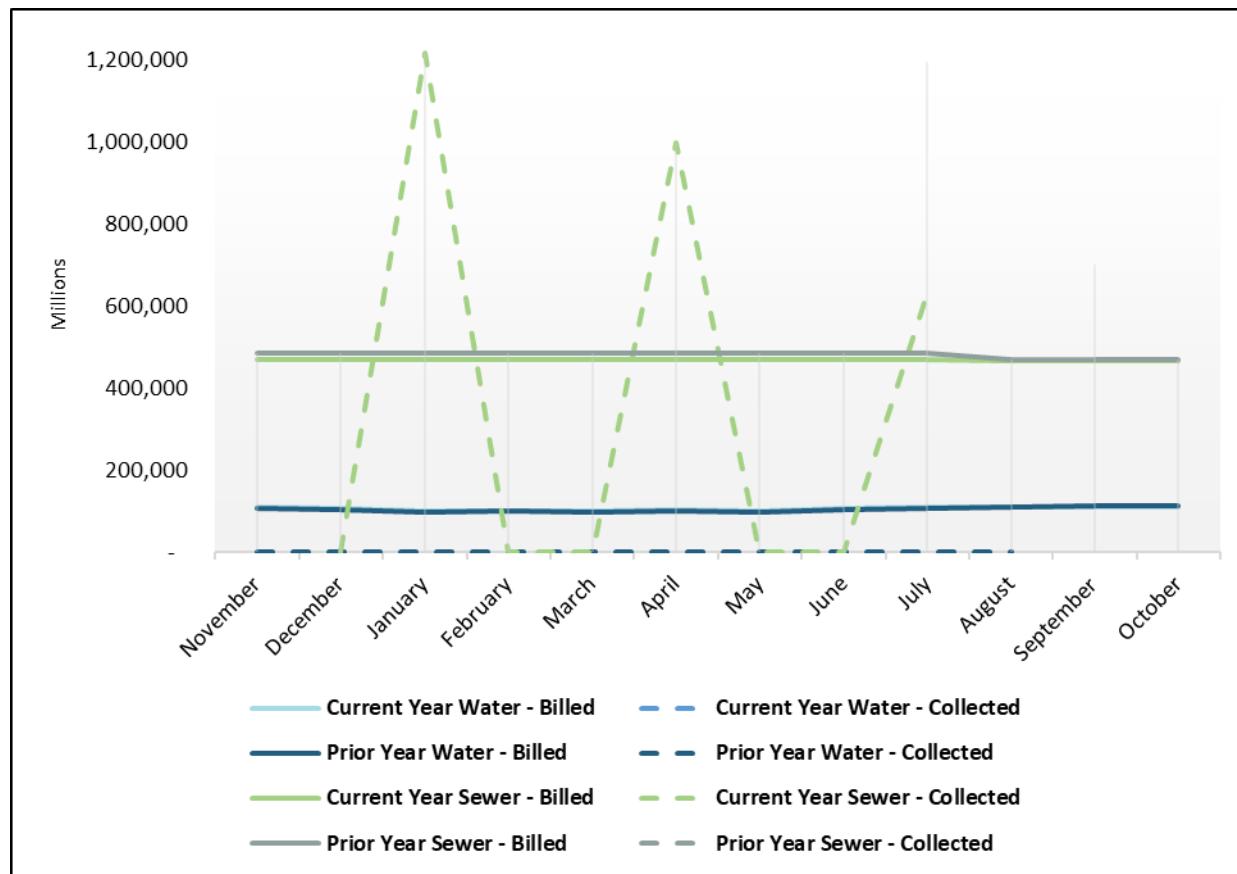
As of October 31, 2018, Highland Park had a delinquent balance of \$40.5 million, including \$32.3 million for wastewater treatment services, \$1.6 million for industrial waste control services, and \$6.6 million for water supply services.

Table 5 - City of Highland Park Billings and Collections Since 2012 provides a life-to-date summary of the billing and collection history for Highland Park from June 30, 2012 to October 31, 2018. Please note the numbers below reflect the month the billing was sent and not the month the service was provided.

Chart 1 - City of Highland Park Billings and Collections – Past Twelve Months is provided to depict Highland Park's most current performance specific to Water and Sewer. Payments received-to-date are applied to Sewer at this time.

Table 5 - City of Highland Park Billings and Collections Since 2012

	Water	Sewer	IWC	Cumulative Total
June 30, 2012 Balance	\$ -	\$ 10,207,956	\$ 852,987	\$ 11,060,943
FY 2013 Billings	485,887	4,987,635	154,444	5,627,966
FY 2013 Payments	(65,652)	(2,206,211)	-	(2,271,863)
June 30, 2013 Balance	\$ 420,235	\$ 12,989,380	\$ 1,007,431	\$ 14,417,046
FY 2014 Billings	1,004,357	6,980,442	161,951	8,146,750
FY 2014 Payments	-	(1,612,633)	-	(1,612,633)
June 30, 2014 Balance	\$ 1,424,592	\$ 18,357,189	\$ 1,169,382	\$ 20,951,163
FY 2015 Billings	1,008,032	5,553,123	165,739	6,726,894
FY 2015 Payments	-	(1,444,623)	-	(1,444,623)
June 30, 2015 Balance	\$ 2,432,625	\$ 22,465,689	\$ 1,335,121	\$ 26,233,435
FY 2016 Billings	1,157,178	5,612,167	106,431	6,875,776
FY 2016 Payments	-	(2,022,335)	-	(2,022,335)
June 30, 2016 Balance	\$ 3,589,803	\$ 26,055,521	\$ 1,441,551	\$ 31,086,875
FY 2017 Billings	1,245,267	5,802,000	101,999	7,149,265
FY 2017 Payments	-	(2,309,186)	-	(2,309,186)
June 30, 2017 Balance	\$ 4,835,070	\$ 29,548,335	\$ 1,543,550	\$ 35,926,954
FY 2018 Billings (12 Months)	1,277,179	5,657,101	80,472	7,014,752
FY 2018 Payments (12 Months)	-	(4,108,108)	-	(4,108,108)
June 30, 2018 Balance	\$ 6,112,248	\$ 31,097,327	\$ 1,624,022	\$ 38,833,597
FY 2019 Billings (4 Months)	437,297	1,873,900	19,528	2,330,726
FY 2019 Payments (4 Months)	-	(629,017)	-	(629,017)
Balance as of October 31, 2018	\$ 6,549,545	\$ 32,342,210	\$ 1,643,551	\$ 40,535,307

Chart 1 - City of Highland Park Water & Sewer Billings and Collections – Past Twelve Months


Note: Current and prior year water billing amounts are very close so the two lines are nearly overlapping when reviewed at this high-level.

Wholesale Water & Sewer Accounts Receivable Aging Report

The detailed accounts receivable aging is in the Appendix to this monthly report. This report reflects the wholesale receivables only and does not include DWSD. (Note: percentages vary from 100% due to rounding.)

Table 6 - Wholesale Accounts Receivable Aging Report Summary is a summary of the total, current and non-current receivables by category as of October 31, 2018.

Table 7 - Wholesale Accounts Receivable Aging Report, Net of Highland Park is the same summary *without* the past due balances for the City of Highland Park.

Table 8 - Wholesale Accounts Receivable Aging Report, Net of Highland Park and WTUA is a summary *without* the past due balances for the City of Highland Park and net of pending credits for certain Western Township Utilities Authority (WTUA). Credits for billed services are pending receipt of a final agreement from Wayne County to effectuate a transfer retroactive to July 1, 2018.

Table 6 - Wholesale Accounts Receivable Aging Report Summary

	Total	Current	46-74 Days	75-104 Days	>105 Days
Water	\$ 47,589,072.67	\$ 40,559,858.44	\$ 807,398.74	\$ 109,567.53	\$ 6,112,247.96
Sewer	\$ 54,150,010.28	\$ 22,275,699.50	\$ 467,900.00	\$ 467,900.00	\$ 30,938,510.78
IWC	\$ 2,970,434.14	\$ 557,639.16	\$ (5,017.87)	\$ 89,862.24	\$ 2,327,950.61
Pollutant Surcharge	\$ 1,322,709.53	\$ 749,176.44	\$ 47,722.42	\$ 202,060.94	\$ 323,749.73
Total	\$ 106,032,226.62	\$ 64,142,373.54	\$ 1,318,003.29	\$ 869,390.71	\$ 39,702,459.08
	100.00%	60.49%	1.24%	0.82%	37.44%

Table 7 - Wholesale Accounts Receivable Aging Report, Net of Highland Park

	Total	Current	46-74 Days	75-104 Days	>105 Days
Water	\$ 41,039,527.43	\$ 40,340,780.09	\$ 698,747.34	\$ -	\$ -
Sewer	\$ 21,807,799.50	\$ 21,807,799.50	\$ -	\$ -	\$ -
IWC	\$ 1,326,883.13	\$ 549,097.06	\$ (5,017.87)	\$ 85,629.38	\$ 697,174.56
Pollutant Surcharge	\$ 1,322,709.53	\$ 749,176.44	\$ 47,722.42	\$ 202,060.94	\$ 323,749.73
Total	\$ 65,496,919.59	\$ 63,446,853.09	\$ 741,451.89	\$ 287,690.32	\$ 1,020,924.29
	100.00%	96.87%	1.13%	0.44%	1.56%

Table 8 - Wholesale Accounts Receivable Aging Report, Net of Highland Park and WTUA

	Total	Current	46-74 Days	75-104 Days	>105 Days
Water	\$ 41,039,527.43	\$ 40,340,780.09	\$ 698,747.34	\$ -	\$ -
Sewer	\$ 21,807,799.50	\$ 21,807,799.50	\$ -	\$ -	\$ -
IWC	\$ 520,593.29	\$ 476,353.54	\$ (5,017.87)	\$ 49,257.62	\$ -
Pollutant Surcharge	\$ 1,322,709.53	\$ 749,176.44	\$ 47,722.42	\$ 202,060.94	\$ 323,749.73
Total	\$ 64,690,629.75	\$ 63,374,109.57	\$ 741,451.89	\$ 251,318.56	\$ 323,749.73
	100.00%	97.96%	1.15%	0.39%	0.50%

Note: The credit balance in the IWC 46-74 day column is due to an overpayment by the City of Wayne, which is resolved in November.

The Monthly Trust Receipts & Disbursements Report includes the following.

1. GLWA Trust Receipts & Disbursements – Net Cash Flows and Receipts
2. DWSD Trust Receipts & Disbursements – Net Cash Flows and Receipts
3. Combined System Trust Receipts & Disbursements – Net Cash Flows

GLWA Trust Receipts & Disbursements

Net Cash Flows and Receipts Basis: The trusts established pursuant to the Master Bond Ordinance (MBO) outline a flow of funds that governs the priority of the application of cash receipts from both the regional wholesale (i.e. Great Lakes Water Authority or GLWA) and local retail (i.e. Detroit Water & Sewerage Department) activities which are further separated by the water system and the sewage disposal system.

This report provides an ongoing status of the net cash flow of both organizations (GLWA and DWSD) to fund their allocated share of Master Bond Ordinance requirements in accordance with the leases for the regional systems. This report begins with the operational effective date of the GLWA on January 1, 2016.

Table 1 – GLWA Net Cash Flows from Trust Receipts & Disbursements provides a summary of cash receipt collections and required MBO transfers by fiscal year as well as a total of all activity for GLWA since inception at January 1, 2016. Fiscal year 2019 reflects four months of activity to date.

Through October 31, 2018 the water fund cash receipts exceeded MBO disbursements by 19% with a ratio of 12% since January 1, 2016. Through October 31, 2018, the sewer fund cash receipts exceeded MBO disbursements by 1% and by a ratio of 3% since January 1, 2016.

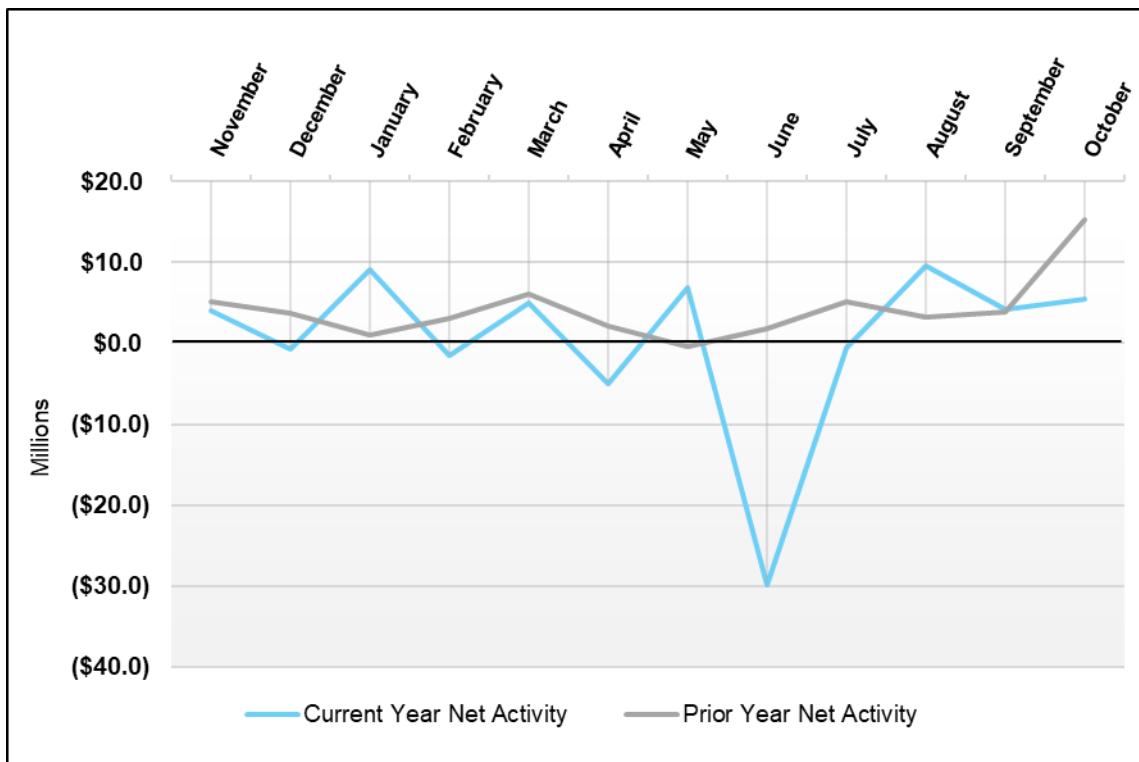
Chart 1 – GLWA 12-Month Net Receipts – Water outlines monthly cash receipt trends across two points of reference for the regional water system—current year and prior year. The black line at the zero highlights the minimum goal for net receipts.

Chart 2 – GLWA 12-Month Net Receipts – Sewer outlines monthly cash receipt trends across two points of reference for the regional sewer system—current year and prior year. The black line at the zero highlights the minimum goal for net receipts.

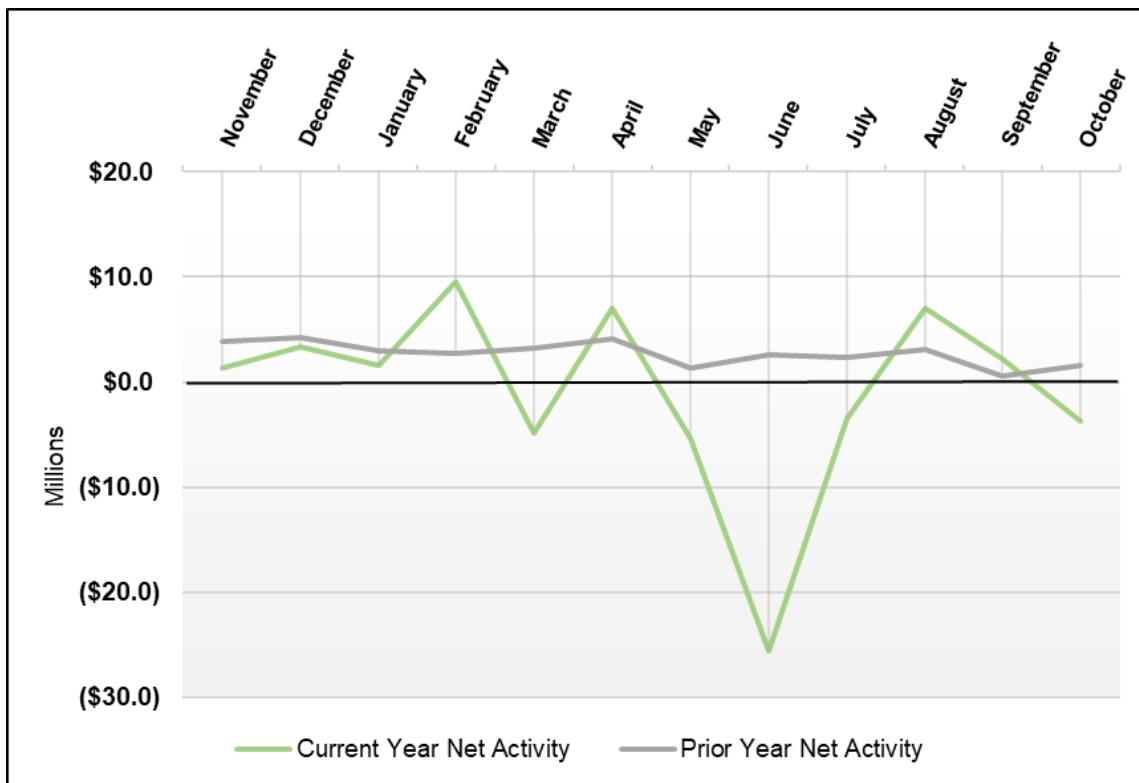
Table 1 – GLWA Net Cash Flows from Trust Receipts & Disbursements

	FY 2016	FY 2017	FY 2018	FY 2019-to-Date	Life-to-Date Total
Water					
1 Receipts	\$ 149,624,282	352,432,096	337,488,663	116,587,803	956,132,844
2 MOU Adjustments	-	-	-	-	-
3 Adjusted Receipts	149,624,282	352,432,096	337,488,663	116,587,803	956,132,844
4 Disbursements	146,191,756	288,268,172	321,841,171	97,981,267	854,282,366
5 Net Receipts	\$ 3,432,526	64,163,924	15,647,492	18,606,536	101,850,478
6 <i>Ratio of Receipts to Disbursements</i>	102%	122%	105%	119%	112%
Sewer					
7 Receipts	\$ 232,310,973	469,205,156	474,946,332	152,303,304	1,328,765,765
8 MOU Adjustments	-	-	-	-	-
9 Adjusted Receipts	232,310,973	469,205,156	474,946,332	152,303,304	1,328,765,765
10 Disbursements	219,471,583	440,859,613	480,278,006	150,290,824	1,290,900,026
11 Net Receipts	\$ 12,839,390	28,345,543	(5,331,674)	2,012,480	37,865,739
12 <i>Ratio of Receipts to Disbursements</i>	106%	106%	99%	101%	103%
Combined					
13 Receipts	\$ 381,935,255	821,637,252	812,434,995	268,891,107	2,284,898,609
14 MOU Adjustments	-	-	-	-	-
15 Adjusted Receipts	381,935,255	821,637,252	812,434,995	268,891,107	2,284,898,609
16 Disbursements	365,663,339	729,127,785	802,119,177	248,272,091	2,145,182,392
17 Net Receipts	\$ 16,271,916	92,509,467	10,315,818	20,619,016	139,716,217
18 <i>Ratio of Receipts to Disbursements</i>	104%	113%	101%	108%	107%

MOU Adjustments applies to DWSD and is shown here for consistency.

Chart 1 – GLWA 12-Month Net Receipts - Water


Note: June 2018 net activity reflects a year-end improvement and extension fund transfer.

Chart 2 – GLWA 12-Month Net Receipts – Sewer


Note: June 2018 net activity reflects a year-end improvement and extension fund transfer.

DWSD Trust Receipts & Disbursements

Net Cash Flows and Receipts Basis: The trusts established pursuant to the Master Bond Ordinance (MBO) outline a flow of funds that governs the priority of the application of cash receipts from both the regional wholesale (i.e. Great Lakes Water Authority or GLWA) and local retail (i.e. Detroit Water & Sewerage Department) activities which are further separated by the water system and the sewage disposal system.

This report provides an ongoing status of the net cash flow of both organizations (GLWA and DWSD) to fund their allocated share of Master Bond Ordinance requirements in accordance with the leases for the regional systems. This report begins with the operational effective date of the GLWA on January 1, 2016.

Table 2 – DWSD Net Cash Flows from Trust Receipts & Disbursements provides a summary of cash receipt collections and required MBO transfers by fiscal year as well as a total of all activity for DWSD since inception at January 1, 2016. Fiscal year 2019 reflects four months of activity to date.

Through October 31, 2018 the local water fund cash receipts exceeded MBO disbursements by 7% with a historical ratio of cash receipts exceeding MBO disbursements at 4% since January 1, 2016.

Through October 31, 2018, the local sewer fund cash receipts fell short of MBO disbursements by -3% with a historic shortfall of -7% since January 1, 2016. DWSD has proposed a long-term plan to address this structural shortfall. The Reconciliation Committee also monitors this balance as part of its quarterly meetings.

Chart 3 – DWSD 12-Month Net Receipts – Water outlines monthly activity trends across two points of reference for the local water system—current year and prior year. The black line at the zero highlights the breakeven goal for net receipts.

Chart 4 – DWSD 12-Month Net Receipts – Sewer outlines monthly activity trends across two points of reference for the local sewer system—current year and prior year. The black line at the zero highlights the breakeven goal for net receipts.

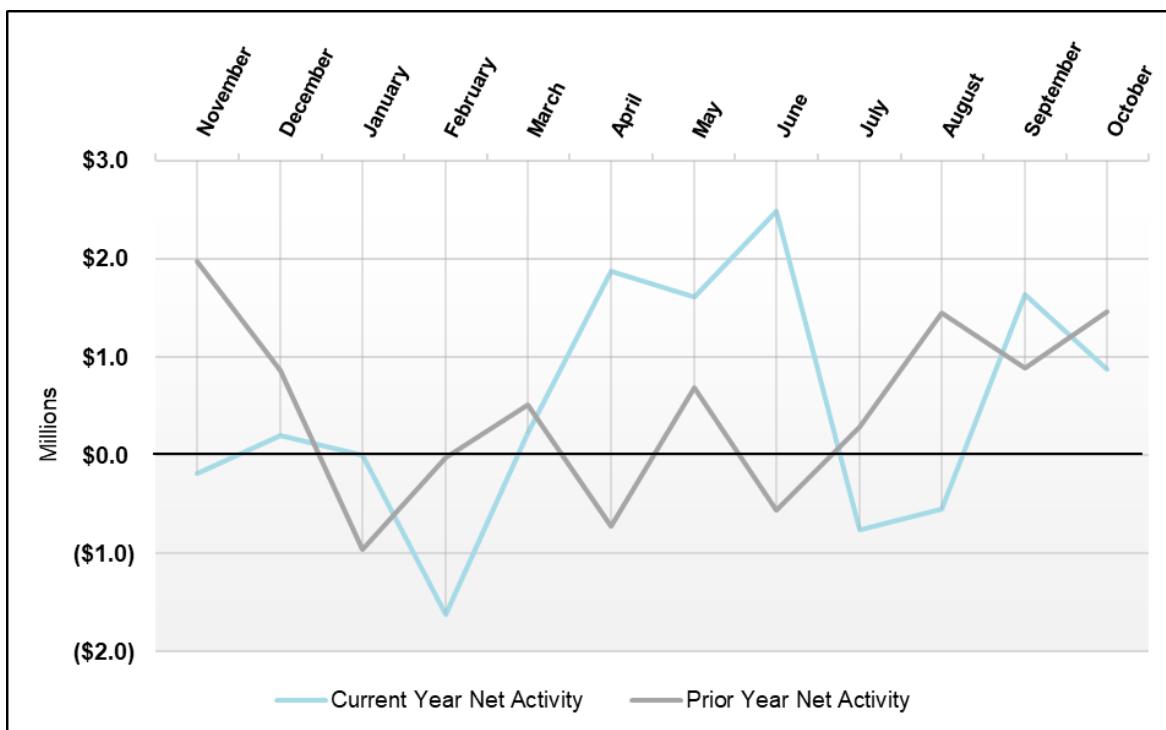
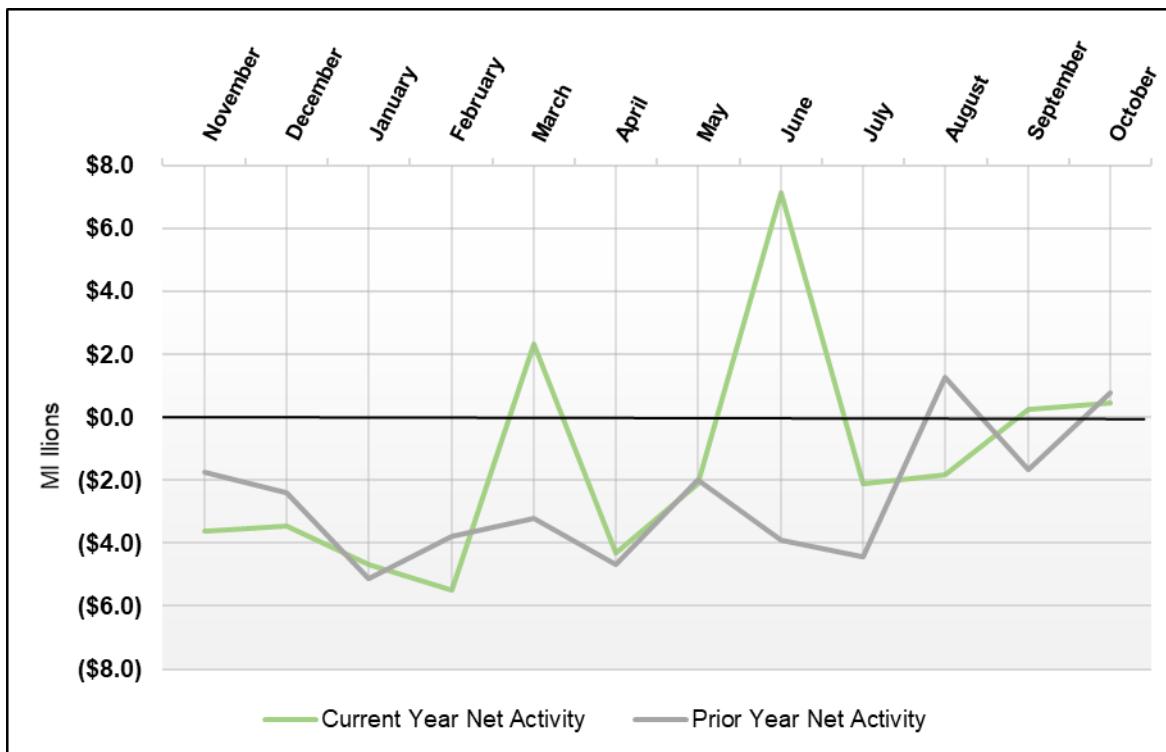
Table 2 – DWSD Net Cash Flows from Trust Receipts & Disbursements

	FY 2016	FY 2017	FY 2018	FY 2019-to-Date	Life-to-Date Total
Water					
1 Receipts	\$ 26,201,881	96,451,105	101,716,017	34,872,158	259,241,161
2 MOU Adjustments	18,446,100	-	-	-	18,446,100
3 Adjusted Receipts	44,647,981	96,451,105	101,716,017	34,872,158	277,687,261
4 Disbursements	47,809,552	93,066,144	93,049,457	32,564,900	266,490,053
5 Net Receipts	\$ (3,161,571)	3,384,961	8,666,560	2,307,258	11,197,208
6 <i>Ratio of Receipts to Disbursements</i>	93%	104%	109%	107%	104%
Sewer					
7 Receipts	\$ 65,256,734	233,723,367	247,975,470	90,995,763	637,951,334
8 MOU Adjustments	55,755,100	-	-	-	55,755,100
9 Adjusted Receipts	121,011,834	233,723,367	247,975,470	90,995,763	693,706,434
10 Disbursements	122,297,300	261,963,973	266,217,825	94,238,096	744,717,194
11 Net Receipts	\$ (1,285,466)	(28,240,606)	(18,242,355)	(3,242,333)	(51,010,760)
12 <i>Ratio of Receipts to Disbursements</i>	99%	89%	93%	97%	93%
Combined					
13 Receipts	\$ 91,458,615	330,174,472	349,691,487	125,867,921	897,192,495
14 MOU Adjustments	74,201,200	-	-	-	74,201,200
15 Adjusted Receipts	165,659,815	330,174,472	349,691,487	125,867,921	971,393,695
16 Disbursements	170,106,852	355,030,117	359,267,282	126,802,996	1,011,207,247
17 Net Receipts	\$ (4,447,037)	(24,855,645)	(9,575,795)	(935,075)	(39,813,552)
18 <i>Ratio of Receipts to Disbursements</i>	97%	93%	97%	99%	96%

Note: The \$29,300,000 for the DWSD loan receivable balance is calculated as follows.

(1,285,466) FY 2016 Shortfall
 (28,240,606) FY 2017 Shortfall
 (29,526,072) Subtotal
 238,264 June IWC not due until July
 (29,287,808) FY 2017 Shortfall-to-Date

 (29,300,000) FY 2017 Shortfall-to-Date, Rounded

Chart 3 – DWSD 12-Month Net Receipts - Water

Chart 4 – DWSD 12-Month Net Receipts – Sewer


Combined System Trust Receipts & Disbursements

Net Cash Flows and Receipts Basis: The trusts established pursuant to the Master Bond Ordinance (MBO) outline a flow of funds that governs the priority of the application of cash receipts from both the regional wholesale (i.e. Great Lakes Water Authority or GLWA) and local retail (i.e. Detroit Water & Sewerage Department) activities which are further separated by the water system and the sewage disposal system.

Table 3 – Combined Net Cash Flows from Trust Receipts & Disbursements

provides a summary of cash receipt collections and required MBO transfers by fiscal year as well as a total of all activity for GLWA since inception at January 1, 2016. Fiscal year 2019 reflects four months of activity to date.

Through October 31, 2018 the combined water system cash receipts exceeded MBO disbursements by 16% with a ratio of 10% since January 1, 2016. Through October 31, 2018, the combined sewer system cash receipts fell short of MBO disbursements by -1% and fell short slightly by a ratio of -1% since January 1, 2016.

Table 3 – Combined Net Cash Flows from Trust Receipts & Disbursements

	FY 2016	FY 2017	FY 2018	FY 2019-to-Date	Life-to-Date Total
Water					
1 Receipts	\$ 175,826,163	\$ 448,883,201	\$ 439,204,680	\$ 151,459,961	1,215,374,005
2 MOU Adjustments	\$ 18,446,100	\$ -	\$ -	\$ -	18,446,100
3 Adjusted Receipts	194,272,263	448,883,201	439,204,680	151,459,961	1,233,820,105
4 Disbursements	194,001,308	381,334,316	414,890,628	130,546,167	1,120,772,419
5 Net Receipts	\$ 270,955	67,548,885	24,314,052	20,913,794	113,047,686
6 <i>Ratio of Receipts to Disbursements</i>	100%	118%	106%	116%	110%
Sewer					
7 Receipts	\$ 297,567,707	\$ 702,928,523	\$ 722,921,802	\$ 243,299,067	1,966,717,099
8 MOU Adjustments	\$ 55,755,100	\$ -	\$ -	\$ -	55,755,100
9 Adjusted Receipts	353,322,807	702,928,523	722,921,802	243,299,067	2,022,472,199
10 Disbursements	341,768,883	702,823,586	746,495,831	244,528,920	2,035,617,220
11 Net Receipts	\$ 11,553,924	\$ 104,937	\$ (23,574,029)	\$ (1,229,853)	(13,145,021)
12 <i>Ratio of Receipts to Disbursements</i>	103%	100%	97%	99%	99%
Combined					
13 Receipts	\$ 473,393,870	\$ 1,151,811,724	\$ 1,162,126,482	\$ 394,759,028	3,182,091,104
14 MOU Adjustments	\$ 74,201,200	\$ -	\$ -	\$ -	74,201,200
15 Adjusted Receipts	547,595,070	1,151,811,724	1,162,126,482	394,759,028	3,256,292,304
16 Disbursements	535,770,191	1,084,157,902	1,161,386,459	375,075,087	3,156,389,639
17 Net Receipts	\$ 11,824,879	\$ 67,653,822	\$ 740,023	\$ 19,683,941	99,902,665
18 <i>Ratio of Receipts to Disbursements</i>	102%	106%	100%	105%	103%

APPENDIX

GLWA Aged Accounts Receivable- WATER ACCOUNTS

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
ALLEN PARK	\$197,925.63	\$197,925.63	\$0.00	\$0.00	\$0.00
ASH TOWNSHIP	\$136,056.92	\$136,056.92	\$0.00	\$0.00	\$0.00
BELLEVILLE	\$25,782.40	\$25,782.40	\$0.00	\$0.00	\$0.00
BERLIN TOWNSHIP	\$62,423.42	\$62,423.42	\$0.00	\$0.00	\$0.00
BROWNSTOWN TOWNSHIP	\$311,773.91	\$311,773.91	\$0.00	\$0.00	\$0.00
BRUCE TOWNSHIP	\$17,048.93	\$17,048.93	\$0.00	\$0.00	\$0.00
BURTCVILLE TOWNSHIP	\$26,376.28	\$26,376.28	\$0.00	\$0.00	\$0.00
CANTON TOWNSHIP	\$847,529.24	\$847,529.24	\$0.00	\$0.00	\$0.00
CENTER LINE	\$38,426.02	\$38,426.02	\$0.00	\$0.00	\$0.00
CHESTERFIELD TOWNSHIP	\$746,298.71	\$746,298.71	\$0.00	\$0.00	\$0.00
FLINT	\$300,072.20	\$300,072.20	\$0.00	\$0.00	\$0.00
CLINTON TOWNSHIP	\$715,645.39	\$715,645.39	\$0.00	\$0.00	\$0.00
COMMERCE TOWNSHIP	\$326,270.22	\$326,270.22	\$0.00	\$0.00	\$0.00
DEARBORN	\$1,835,211.72	\$1,835,211.72	\$0.00	\$0.00	\$0.00
DEARBORN HEIGHTS	\$300,724.56	\$300,724.56	\$0.00	\$0.00	\$0.00
EASTPOINTE	\$386,743.42	\$253,298.08	\$133,445.34	\$0.00	\$0.00
ECORSE	\$128,763.18	\$128,763.18	\$0.00	\$0.00	\$0.00
FARMINGTON	\$85,104.30	\$85,104.30	\$0.00	\$0.00	\$0.00
FARMINGTON HILLS	\$793,901.29	\$793,901.29	\$0.00	\$0.00	\$0.00
FERNDALE	\$78,099.16	\$78,099.16	\$0.00	\$0.00	\$0.00
FLAT ROCK	\$103,880.02	\$103,880.02	\$0.00	\$0.00	\$0.00
FRASER	\$100,297.74	\$100,297.74	\$0.00	\$0.00	\$0.00
GARDEN CITY	\$294,439.18	\$279,938.34	\$14,500.84	\$0.00	\$0.00

GLWA Aged Accounts Receivable- WATER ACCOUNTS

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
GIBRALTAR	\$59,091.06	\$59,091.06	\$0.00	\$0.00	\$0.00
GROSSE ILE TOWNSHIP	\$99,371.46	\$99,371.46	\$0.00	\$0.00	\$0.00
GROSSE POINTE PARK	\$254,434.32	\$254,434.32	\$0.00	\$0.00	\$0.00
GROSSE POINTE SHORES	\$64,636.62	\$64,636.62	\$0.00	\$0.00	\$0.00
GROSSE POINTE WOODS	\$144,919.82	\$144,919.82	\$0.00	\$0.00	\$0.00
HAMTRAMCK	\$120,530.17	\$120,530.17	\$0.00	\$0.00	\$0.00
HARPER WOODS	\$151,519.87	\$151,519.87	\$0.00	\$0.00	\$0.00
HARRISON TWP	\$274,518.53	\$274,518.53	\$0.00	\$0.00	\$0.00
HAZEL PARK	\$59,039.77	\$59,039.77	\$0.00	\$0.00	\$0.00
HIGHLAND PARK	\$6,549,545.24	\$219,078.35	\$108,651.40	\$109,567.53	\$6,112,247.96
HURON TOWNSHIP	\$123,082.94	\$123,082.94	\$0.00	\$0.00	\$0.00
IMLAY CITY	\$116,099.62	\$116,099.62	\$0.00	\$0.00	\$0.00
IMLAY TOWNSHIP	\$1,172.18	\$1,172.18	\$0.00	\$0.00	\$0.00
INKSTER	\$206,124.19	\$206,124.19	\$0.00	\$0.00	\$0.00
KEEGO HARBOR	\$25,843.47	\$25,843.47	\$0.00	\$0.00	\$0.00
LAPEER	\$251,808.23	\$248,828.86	\$2,979.37	\$0.00	\$0.00
LENOX TOWNSHIP	\$6,281.25	\$6,281.25	\$0.00	\$0.00	\$0.00
LINCOLN PARK	\$612,857.55	\$401,872.60	\$210,984.95	\$0.00	\$0.00
LIVONIA	\$2,641,043.85	\$2,641,043.85	\$0.00	\$0.00	\$0.00
MACOMB TWP	\$1,001,791.90	\$1,001,791.90	\$0.00	\$0.00	\$0.00
MADISON HEIGHTS	\$167,012.37	\$167,012.37	\$0.00	\$0.00	\$0.00
MAYFIELD TOWNSHIP	\$5,388.09	\$5,388.09	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- WATER ACCOUNTS

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
MELVINDALE	\$54,361.06	\$54,361.06	\$0.00	\$0.00	\$0.00
NEW HAVEN	\$135,581.76	\$135,581.76	\$0.00	\$0.00	\$0.00
NOCWA	\$4,432,336.81	\$4,432,336.81	\$0.00	\$0.00	\$0.00
NORTHVILLE	\$210,843.61	\$134,444.62	\$76,398.99	\$0.00	\$0.00
NORTHVILLE TOWNSHIP	\$494,927.98	\$494,927.98	\$0.00	\$0.00	\$0.00
NOVI	\$780,032.82	\$780,032.82	\$0.00	\$0.00	\$0.00
OAK PARK	\$113,659.48	\$113,659.48	\$0.00	\$0.00	\$0.00
OAKLAND CO DR COM	\$7,820.84	\$7,820.84	\$0.00	\$0.00	\$0.00
PLYMOUTH	\$94,396.83	\$94,396.83	\$0.00	\$0.00	\$0.00
PLYMOUTH TOWNSHIP	\$380,505.16	\$380,505.16	\$0.00	\$0.00	\$0.00
REDFORD TOWNSHIP	\$255,051.57	\$255,051.57	\$0.00	\$0.00	\$0.00
RIVER ROUGE	\$50,742.47	\$50,742.47	\$0.00	\$0.00	\$0.00
RIVERVIEW	\$78,865.00	\$78,865.00	\$0.00	\$0.00	\$0.00
ROCKWOOD	\$25,581.51	\$25,581.51	\$0.00	\$0.00	\$0.00
ROMEO	\$25,237.01	\$25,237.01	\$0.00	\$0.00	\$0.00
ROMULUS	\$347,454.55	\$347,454.55	\$0.00	\$0.00	\$0.00
ROSEVILLE	\$220,527.27	\$220,527.27	\$0.00	\$0.00	\$0.00
ROYAL OAK TOWNSHIP	\$18,521.13	\$18,521.13	\$0.00	\$0.00	\$0.00
SOCWA	\$4,386,465.47	\$4,386,465.47	\$0.00	\$0.00	\$0.00
SHELBY TOWNSHIP	\$1,258,181.23	\$1,258,181.23	\$0.00	\$0.00	\$0.00
SOUTH ROCKWOOD	\$9,641.78	\$9,641.78	\$0.00	\$0.00	\$0.00
SOUTHGATE	\$371,465.84	\$371,465.84	\$0.00	\$0.00	\$0.00
GREENWOOD TOWNSHIP	\$201,285.88	\$133,552.67	\$67,733.21	\$0.00	\$0.00

GLWA Aged Accounts Receivable- WATER ACCOUNTS

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
ST. CLAIR SHORES	\$460,999.15	\$460,999.15	\$0.00	\$0.00	\$0.00
STERLING HEIGHTS	\$2,738,680.64	\$2,738,680.64	\$0.00	\$0.00	\$0.00
SUMPTER TOWNSHIP	\$58,931.41	\$58,931.41	\$0.00	\$0.00	\$0.00
SYLVAN LAKE	\$20,013.20	\$20,013.20	\$0.00	\$0.00	\$0.00
TAYLOR	\$804,862.77	\$804,862.77	\$0.00	\$0.00	\$0.00
TRENTON	\$386,981.47	\$386,981.47	\$0.00	\$0.00	\$0.00
TROY (SEOC)	\$1,235,000.95	\$1,235,000.95	\$0.00	\$0.00	\$0.00
UTICA	\$52,100.99	\$52,100.99	\$0.00	\$0.00	\$0.00
VAN BUREN TOWNSHIP	\$629,341.24	\$601,865.71	\$27,475.53	\$0.00	\$0.00
VILLAGE OF ALMONT	\$19,500.47	\$19,500.47	\$0.00	\$0.00	\$0.00
WALLED LAKE	\$82,438.10	\$82,438.10	\$0.00	\$0.00	\$0.00
WARREN	\$893,227.16	\$893,227.16	\$0.00	\$0.00	\$0.00
WASHINGTON TOWNSHIP	\$449,066.61	\$449,066.61	\$0.00	\$0.00	\$0.00
WAYNE	\$235,131.63	\$235,131.63	\$0.00	\$0.00	\$0.00
WEST BLOOMFIELD TWP (C-O)	\$2,042,872.88	\$2,042,872.88	\$0.00	\$0.00	\$0.00
WESTLAND	\$1,176,831.91	\$1,176,831.91	\$0.00	\$0.00	\$0.00
WIXOM	\$221,203.18	\$221,203.18	\$0.00	\$0.00	\$0.00
WOODHAVEN	\$455,773.02	\$290,543.91	\$165,229.11	\$0.00	\$0.00
YCUA	\$877,722.49	\$877,722.49	\$0.00	\$0.00	\$0.00
TOTAL WATER ACCOUNTS	\$47,589,072.67	\$40,559,858.44	\$807,398.74	\$109,567.53	\$6,112,247.96

GLWA Aged Accounts Receivable- SEWER ACCOUNTS

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
ALLEN PARK	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CENTER LINE	\$85,599.50	\$85,599.50	\$0.00	\$0.00	\$0.00
DEARBORN	\$1,614,400.00	\$1,614,400.00	\$0.00	\$0.00	\$0.00
FARMINGTON	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE FARMS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE PARK	\$150,100.00	\$150,100.00	\$0.00	\$0.00	\$0.00
HAMTRAMCK	\$330,200.00	\$330,200.00	\$0.00	\$0.00	\$0.00
HARPER WOODS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
HIGHLAND PARK	\$32,342,210.78	\$467,900.00	\$467,900.00	\$467,900.00	\$30,938,510.78
MELVINDALE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
EVERGREEN-FARMINGTON	\$2,881,500.00	\$2,881,500.00	\$0.00	\$0.00	\$0.00
OMID	\$6,458,100.00	\$6,458,100.00	\$0.00	\$0.00	\$0.00
REDFORD TOWNSHIP	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
OAKLAND COUNTY GWK DD	\$3,747,700.00	\$3,747,700.00	\$0.00	\$0.00	\$0.00
WAYNE COUNTY-AREA #3	\$4,100.00	\$4,100.00	\$0.00	\$0.00	\$0.00
WAYNE COUNTY N.E.	\$2,056,000.00	\$2,056,000.00	\$0.00	\$0.00	\$0.00
ROUGE VALLEY	\$4,480,100.00	\$4,480,100.00	\$0.00	\$0.00	\$0.00
TOTAL SEWER ACCOUNTS	\$54,150,010.28	\$22,275,699.50	\$467,900.00	\$467,900.00	\$30,938,510.78

GLWA Aged Accounts Receivable- IWC ACCOUNTS

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
ALLEN PARK	\$648.82	\$648.82	\$0.00	\$0.00	\$0.00
AUBURN HILLS (C-O)	\$20,034.68	\$20,034.68	\$0.00	\$0.00	\$0.00
AUBURN HILLS (E-F)	\$375.19	\$375.19	\$0.00	\$0.00	\$0.00
BERKLEY	\$2,901.33	\$2,901.33	\$0.00	\$0.00	\$0.00
BEVERLY HILLS	\$999.14	\$999.14	\$0.00	\$0.00	\$0.00
BINGHAM FARMS	\$1,066.57	\$1,066.57	\$0.00	\$0.00	\$0.00
BIRMINGHAM (SEOC)	\$16,766.16	\$11,177.44	\$0.00	\$5,588.72	\$0.00
BIRMINGHAM (E-F)	\$2,376.69	\$2,376.69	\$0.00	\$0.00	\$0.00
BLOOMFIELD HILLS	\$1,539.41	\$1,539.41	\$0.00	\$0.00	\$0.00
BLOOMFIELD TOWNSHIP	\$7,251.80	\$7,251.80	\$0.00	\$0.00	\$0.00
CANTON TOWNSHIP	\$422,605.14	\$38,132.92	\$0.00	\$19,066.46	\$365,405.76
CENTER LINE	\$3,683.10	\$3,683.10	\$0.00	\$0.00	\$0.00
DEARBORN	\$36,466.92	\$36,466.92	\$0.00	\$0.00	\$0.00
CITY OF FARMINGTON (E-F)	\$279.12	\$279.12	\$0.00	\$0.00	\$0.00
CITY OF ROCHESTER	\$3,725.23	\$3,725.23	\$0.00	\$0.00	\$0.00
CLARKSTON	\$282.82	\$282.82	\$0.00	\$0.00	\$0.00
CLAWSON	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CLINTON TOWNSHIP	\$25,575.63	\$25,575.63	\$0.00	\$0.00	\$0.00
DEARBORN HEIGHTS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
DETROIT METRO WC AIRPORT	\$106.64	\$106.64	\$0.00	\$0.00	\$0.00
EASTPOINTE	\$19,170.15	\$12,815.06	\$0.00	\$6,355.09	\$0.00
FARMINGTON	\$2,886.83	\$2,886.83	\$0.00	\$0.00	\$0.00
FARMINGTON HILLS	\$24,375.14	\$24,238.27	\$0.00	\$136.87	\$0.00

GLWA Aged Accounts Receivable- IWC ACCOUNTS

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
CITY OF FERNDALE	\$3,581.42	\$3,581.42	\$0.00	\$0.00	\$0.00
FRASER	\$4,960.88	\$4,960.88	\$0.00	\$0.00	\$0.00
GARDEN CITY	\$6,103.24	\$6,103.24	\$0.00	\$0.00	\$0.00
GROSSE POINTE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE FARMS	\$2,088.99	\$2,088.99	\$0.00	\$0.00	\$0.00
GROSSE POINTE PARK	\$1,182.65	\$1,182.65	\$0.00	\$0.00	\$0.00
GROSSE POINTE SHORES	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GROSSE POINTE WOODS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
HAMTRAMCK	\$4,175.13	\$4,175.13	\$0.00	\$0.00	\$0.00
HARPER WOODS	\$1,892.64	\$1,892.64	\$0.00	\$0.00	\$0.00
HARRISON TWP	\$3,138.32	\$3,138.32	\$0.00	\$0.00	\$0.00
HAZEL PARK	\$3,364.08	\$3,364.08	\$0.00	\$0.00	\$0.00
HIGHLAND PARK	\$1,643,551.01	\$8,542.10	\$0.00	\$4,232.86	\$1,630,776.05
HUNTINGTON WOODS	\$286.18	\$286.18	\$0.00	\$0.00	\$0.00
INDEPENDENCE	\$4,772.12	\$4,772.12	\$0.00	\$0.00	\$0.00
INKSTER	\$11,119.74	\$11,119.74	\$0.00	\$0.00	\$0.00
KEEGO HARBOR	\$686.05	\$686.05	\$0.00	\$0.00	\$0.00
LAKE ORION	\$803.30	\$803.30	\$0.00	\$0.00	\$0.00
LATHRUP	\$1,406.81	\$1,406.81	\$0.00	\$0.00	\$0.00
LENOX TOWNSHIP	\$814.23	\$650.72	\$0.00	\$163.51	\$0.00
LIVONIA	\$40,286.02	\$40,286.02	\$0.00	\$0.00	\$0.00
MACOMB TWP	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- IWC ACCOUNTS

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
MADISON HEIGHTS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MELVINDALE	\$3,629.99	\$3,629.99	\$0.00	\$0.00	\$0.00
NEW HAVEN	\$611.43	\$611.43	\$0.00	\$0.00	\$0.00
NORTHVILLE	\$4,321.94	\$4,321.94	\$0.00	\$0.00	\$0.00
NORTHVILLE TOWNSHIP	\$101,409.93	\$9,148.06	\$0.00	\$4,574.03	\$87,687.84
NOVI	\$17,395.28	\$17,395.28	\$0.00	\$0.00	\$0.00
OAK PARK	\$6,783.95	\$6,783.95	\$0.00	\$0.00	\$0.00
OAKLAND TOWNSHIP	\$440.84	\$440.84	\$0.00	\$0.00	\$0.00
ORCHARD LAKE VILLAGE	\$375.09	\$375.09	\$0.00	\$0.00	\$0.00
ORION TOWNSHIP (C-O)	\$5,458.73	\$5,458.73	\$0.00	\$0.00	\$0.00
OXFORD TOWNSHIP	\$1,015.02	\$1,015.02	\$0.00	\$0.00	\$0.00
OXFORD VILLAGE	\$1,259.16	\$1,259.16	\$0.00	\$0.00	\$0.00
PLEASANT RIDGE	\$273.77	\$273.77	\$0.00	\$0.00	\$0.00
PLYMOUTH	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
PLYMOUTH TOWNSHIP	\$282,274.77	\$25,462.54	\$0.00	\$12,731.27	\$244,080.96
REDFORD TOWNSHIP	\$2,020.50	\$2,020.50	\$0.00	\$0.00	\$0.00
CHESTERFIELD TOWNSHIP	\$12,164.91	\$12,164.91	\$0.00	\$0.00	\$0.00
ROCHESTER HILLS	\$18,276.49	\$18,276.49	\$0.00	\$0.00	\$0.00
ROMULUS	\$926.07	\$926.07	\$0.00	\$0.00	\$0.00
ROSEVILLE	\$14,830.15	\$14,830.15	\$0.00	\$0.00	\$0.00
ROYAL OAK	\$13,504.72	\$13,504.72	\$0.00	\$0.00	\$0.00
ROYAL OAK TOWNSHIP	\$880.00	\$880.00	\$0.00	\$0.00	\$0.00
SHELBY TOWNSHIP	\$12,073.37	\$12,073.37	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- IWC ACCOUNTS

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
SOUTHFIELD (E-F)	\$28,416.89	\$28,416.89	\$0.00	\$0.00	\$0.00
SOUTHFIELD (SEOC)	\$3,802.43	\$3,802.43	\$0.00	\$0.00	\$0.00
ST. CLAIR SHORES	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
STERLING HEIGHTS	\$31,167.84	\$31,167.84	\$0.00	\$0.00	\$0.00
TROY (E-F)	\$384.09	\$384.09	\$0.00	\$0.00	\$0.00
TROY (SEOC)	\$37,027.70	\$14.27	\$0.00	\$37,013.43	\$0.00
UTICA	\$1,181.50	\$1,181.50	\$0.00	\$0.00	\$0.00
VAN BUREN TOWNSHIP	\$2,044.19	\$2,044.19	\$0.00	\$0.00	\$0.00
VILLAGE OF FRANKLIN	\$65.69	\$65.69	\$0.00	\$0.00	\$0.00
WASHINGTON TOWNSHIP	\$1,381.10	\$1,381.10	\$0.00	\$0.00	\$0.00
WATERFORD TOWNSHIP	\$12,332.55	\$12,332.55	\$0.00	\$0.00	\$0.00
WAYNE	\$(5,017.87)	\$0.00	\$(5,017.87)	\$0.00	\$0.00
WEST BLOOMFIELD TWP (C-O)	\$944.01	\$944.01	\$0.00	\$0.00	\$0.00
WEST BLOOMFIELD TWP (E-F)	\$6,325.77	\$6,325.77	\$0.00	\$0.00	\$0.00
WESTLAND	\$23,122.82	\$23,122.82	\$0.00	\$0.00	\$0.00
TOTAL IWC ACCOUNTS	\$2,970,434.14	\$557,639.16	\$(5,017.87)	\$89,862.24	\$2,327,950.61

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
3M COMPANY	\$4,989.66	\$4,989.66	\$0.00	\$0.00	\$0.00
A & R PACKING CO., LLC	\$4,408.74	\$4,408.74	\$0.00	\$0.00	\$0.00
AACTRON	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ACADEMY PACKING CO.	\$302.06	\$302.06	\$0.00	\$0.00	\$0.00
ACME RUSTPROOF	\$2.32	\$2.32	\$0.00	\$0.00	\$0.00
ADVANCED RESOURCE RECOVERY	\$604.97	\$604.97	\$0.00	\$0.00	\$0.00
AEVITAS SPECIALITY SERVICES	\$6,392.28	\$6,392.28	\$0.00	\$0.00	\$0.00
ALEXANDER & HORNUNG	\$5,556.29	\$5,556.29	\$0.00	\$0.00	\$0.00
ALEXANDER & HORNUNG	\$24,414.86	\$24,414.86	\$0.00	\$0.00	\$0.00
ALEXANDER & HORNUNG	\$1,386.24	\$1,386.24	\$0.00	\$0.00	\$0.00
ALGAL SCIENTIFIC CORPORATION	\$16,533.05	\$0.00	\$1,392.94	\$1,596.70	\$13,543.41
ALL CHEM CORP, LLC.	\$(105.20)	\$0.00	\$0.00	\$0.00	\$(105.20)
ALPHA STAMPING COMPANY	\$856.07	\$856.07	\$0.00	\$0.00	\$0.00
AMERICAN WASTE TECH INC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ATWATER IN THE PARK	\$57.60	\$57.60	\$0.00	\$0.00	\$0.00
AUTOMOTIVE FINISH	\$7.66	\$7.66	\$0.00	\$0.00	\$0.00
AXLE BREWING COMPANY, LLC	\$174.15	\$174.15	\$0.00	\$0.00	\$0.00
B. NEKTAR MEADERY	\$1.22	\$1.22	\$0.00	\$0.00	\$0.00
BAFFIN BREWING COMPANY	\$528.31	\$0.00	\$0.00	\$0.00	\$528.31
BARON INDUSTRIES	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
BARTZ BAKERY	\$83.86	\$83.86	\$0.00	\$0.00	\$0.00
BASTONE BREWERY	\$51.81	\$51.81	\$0.00	\$0.00	\$0.00
BATCH BREWING COMPANY	\$(263.56)	\$0.00	\$0.00	\$0.00	\$(263.56)

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
BAYS MICHIGAN CORPORATION	\$325.96	\$325.96	\$0.00	\$0.00	\$0.00
BEIRUT BAKERY, INC.	\$(2.12)	\$(2.12)	\$0.00	\$0.00	\$0.00
BETTER MADE SNACK FOOD	\$23,069.05	\$23,069.05	\$0.00	\$0.00	\$0.00
BLACK LOTUS BREWING CO.	\$174.45	\$72.32	\$0.00	\$72.91	\$29.22
BOZEK'S MARKET	\$64.34	\$64.34	\$0.00	\$0.00	\$0.00
BREW DETROIT	\$6,161.96	\$6,161.96	\$0.00	\$0.00	\$0.00
BROADWAY MKT CORNED BEEF	\$(76.29)	\$0.00	\$0.00	\$0.00	\$(76.29)
BROOKS BREWING, LLC.	\$108.92	\$108.92	\$0.00	\$0.00	\$0.00
CANTON BREW WORKS	\$142.63	\$72.32	\$0.00	\$70.31	\$0.00
CAPITAL REPRODUCTIONS	\$1.76	\$1.76	\$0.00	\$0.00	\$0.00
CF BURGER CREAMERY	\$19,267.96	\$19,267.96	\$0.00	\$0.00	\$0.00
CHILANGO'S BAKERY	\$2,078.59	\$55.38	\$23.73	\$20.74	\$1,978.74
CINTAS CORP. - MACOMB TWP.	\$53,517.86	\$53,517.86	\$0.00	\$0.00	\$0.00
CINTAS CORPORATION	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CINTAS CORPORATION	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
CITY LAUNDRY, INC.	\$5.80	\$5.80	\$0.00	\$0.00	\$0.00
CLASSIC CONTAINER CORP.	\$639.64	\$639.64	\$0.00	\$0.00	\$0.00
COCA-COLA REFRESHMENTS USA,	\$4,402.32	\$4,402.32	\$0.00	\$0.00	\$0.00
COSTCO WHOLESALE STORE	\$5,925.01	\$5,925.01	\$0.00	\$0.00	\$0.00
COSTCO WHOLESALE STORE	\$687.07	\$687.07	\$0.00	\$0.00	\$0.00
COSTCO WHOLESALE STORE	\$2,183.40	\$2,183.40	\$0.00	\$0.00	\$0.00
COSTCO WHOLESALE STORE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
COUNTRY FRESH DAIRY CO.	\$33,506.41	\$33,506.41	\$0.00	\$0.00	\$0.00
CROSS CHEMICAL COMPANY, INC.	\$3,701.26	\$2,154.95	\$0.00	\$0.00	\$1,546.31
DARLING INGREDIENTS, INC.	\$6,973.58	\$6,973.58	\$0.00	\$0.00	\$0.00
DAVE'S SAUSAGE FACTORY 2	\$373.49	\$373.49	\$0.00	\$0.00	\$0.00
DEARBORN BREWING	\$37.91	\$37.91	\$0.00	\$0.00	\$0.00
DEARBORN SAUSAGE	\$8,307.37	\$8,307.37	\$0.00	\$0.00	\$0.00
DEARBORN SAUSAGE CO., INC.	\$10,639.00	\$10,639.00	\$0.00	\$0.00	\$0.00
DETROIT BEER	\$117.69	\$117.69	\$0.00	\$0.00	\$0.00
DETROIT LINEN SERVICE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
DETROIT METRO WC AIRPORT	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
DETROIT RIVERTOWN BREWERY CC	\$2,333.81	\$2,333.81	\$0.00	\$0.00	\$0.00
DETROIT SAUSAGES CO INC	\$16.78	\$16.78	\$0.00	\$0.00	\$0.00
DETTRONIC INDUSTRIES, INC.	\$132.28	\$132.28	\$0.00	\$0.00	\$0.00
DIFCO LABORATORIES, INC.	\$22,248.73	\$22,248.73	\$0.00	\$0.00	\$0.00
DIVERSIFIED CHEM TECH. INC.	\$164.29	\$164.29	\$0.00	\$0.00	\$0.00
DOMESTIC UNIFORM RENTAL	\$2,103.65	\$2,103.65	\$0.00	\$0.00	\$0.00
DOMESTIC UNIFORM RENTAL	\$3,219.11	\$3,219.11	\$0.00	\$0.00	\$0.00
E.W. GROBBEL'S SONS, INC.	\$3,250.75	\$3,250.75	\$0.00	\$0.00	\$0.00
EASTERN MARKET BREWING COMP	\$136.78	\$136.78	\$0.00	\$0.00	\$0.00
ENVIROSOLIDS, L.L.C.	\$177,761.09	\$16,440.32	\$0.00	\$161,320.77	\$0.00
EQ DETROIT, INC.	\$426.09	\$426.09	\$0.00	\$0.00	\$0.00
EQ DETROIT, INC.	\$1,901.81	\$1,901.81	\$0.00	\$0.00	\$0.00
EQ DETROIT, INC.	\$(1,238.68)	\$0.00	\$0.00	\$0.00	\$(1,238.68)

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
EQ DETROIT, INC.	\$ (4,580.80)	\$0.00	\$0.00	\$0.00	\$ (4,580.80)
ETON ST BREWERY- GRIFFIN CLP	\$3,719.16	\$3,719.16	\$0.00	\$0.00	\$0.00
EXTRUDE HONE CORPORATION	\$60.40	\$60.40	\$0.00	\$0.00	\$0.00
EXTRUDEHODE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
FARMINGTON BREWING COMPANY	\$68.97	\$68.97	\$0.00	\$0.00	\$0.00
FAYGO BEVERAGES, INC.	\$421,643.57	\$104,526.02	\$38,612.25	\$31,357.72	\$247,147.58
FORD NEW MODEL PROGRAM	\$1,628.21	\$1,628.21	\$0.00	\$0.00	\$0.00
FOUNDERS BREWING COMPANY	\$84.69	\$84.69	\$0.00	\$0.00	\$0.00
FRESH-PAK	\$2,645.18	\$2,645.18	\$0.00	\$0.00	\$0.00
FRESH-PAK	\$8,633.45	\$8,633.45	\$0.00	\$0.00	\$0.00
GENERAL LINEN SUPPLY CO.	\$63,114.40	\$12,222.82	\$6,817.45	\$5,587.17	\$38,486.96
GLOBAL TITANIUM, INC.	\$3,541.00	\$3,541.00	\$0.00	\$0.00	\$0.00
GLOBAL TITANIUM, INC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
GRANITE CITY FOOD & BREWERY	\$111.98	\$111.98	\$0.00	\$0.00	\$0.00
GRANITE CITY FOOD & BREWERY	\$61.44	\$61.44	\$0.00	\$0.00	\$0.00
GRANITE CITY FOOD & BREWERY	\$245.32	\$115.99	\$0.00	\$129.33	\$0.00
GREAT BARABOO BREWING CO.	\$ (2,187.50)	\$0.00	\$0.00	\$0.00	\$ (2,187.50)
HACIENDA MEXICAN FOODS	\$3,329.67	\$0.00	\$543.81	\$649.55	\$2,136.31
HENKEL CORPORATION	\$575.97	\$32.78	\$0.00	\$0.00	\$543.19
HOME STYLE FOOD INC.	\$4,955.67	\$4,955.67	\$0.00	\$0.00	\$0.00
HOOD CLEANERS	\$210.36	\$0.00	\$0.00	\$0.00	\$210.36
HOUGHTON INTERNATIONAL INC.	\$187.93	\$187.93	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
HOUGHTON INTERNATIONAL INC.	\$200.19	\$200.19	\$0.00	\$0.00	\$0.00
HOUGHTON INTERNATIONAL INC.	\$2,859.82	\$2,859.82	\$0.00	\$0.00	\$0.00
HUNTINGTON CLEANERS	\$487.05	\$487.05	\$0.00	\$0.00	\$0.00
INDUSTRIAL METAL COATING	\$612.61	\$612.61	\$0.00	\$0.00	\$0.00
ISLAMIC SLAUGHTER HOUSE	\$1,374.37	\$1,374.37	\$0.00	\$0.00	\$0.00
ITALIAN BUTTER BREAD STICKS	\$9.49	\$9.49	\$0.00	\$0.00	\$0.00
J & G FOOD PRODUCTS, INC.	\$53.15	\$53.15	\$0.00	\$0.00	\$0.00
JAMEX BREWING CO.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
KAR NUT PRODUCTS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
KOWALSKI SAUSAGES, CO.	\$593.37	\$593.37	\$0.00	\$0.00	\$0.00
LA MICOACANA FLOUR TORTILLA	\$610.09	\$610.09	\$0.00	\$0.00	\$0.00
LA MICOACANA FLOUR TORTILLA	\$(10.01)	\$0.00	\$0.00	\$0.00	\$(10.01)
LEAR CORPORATION DBA EAGLE C	\$5,975.88	\$5,975.88	\$0.00	\$0.00	\$0.00
LIBERTY STREET PROD. BREWERY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
LILY'S SEAFOOD GRILL & BREWE	\$55.97	\$55.97	\$0.00	\$0.00	\$0.00
MACDERMID, INC.	\$101.95	\$101.95	\$0.00	\$0.00	\$0.00
MCNICHOLS POLISHING & ANODIZ	\$15.29	\$15.29	\$0.00	\$0.00	\$0.00
MELLO MEATS INC, - KUBISCH S	\$83.92	\$83.92	\$0.00	\$0.00	\$0.00
METROPOLITAN BAKERY	\$610.77	\$610.77	\$0.00	\$0.00	\$0.00
MIBA HYDRA-MECHANICA CORP.	\$231.26	\$231.26	\$0.00	\$0.00	\$0.00
MICHIGAN DAIRY	\$83,832.75	\$83,832.75	\$0.00	\$0.00	\$0.00
MICHIGAN PROD. MACHINING	\$2,095.20	\$2,095.20	\$0.00	\$0.00	\$0.00
MICHIGAN SOY PRODUCTS CO.	\$641.43	\$641.43	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
MIDWEST WIRE PRODUCTS, INC.	\$(2.94)	\$0.00	\$0.00	\$0.00	\$(2.94)
MILANO BAKERY	\$1,003.62	\$1,003.62	\$0.00	\$0.00	\$0.00
MILTON CHILI CO.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
MINNIE MARIE BAKERS, INC	\$3,668.63	\$3,668.63	\$0.00	\$0.00	\$0.00
MISTER UNIFORM & MAT RENTALS	\$80.14	\$80.14	\$0.00	\$0.00	\$0.00
MOTOR CITY BREWING WORKS	\$(23.25)	\$0.00	\$0.00	\$0.00	\$(23.25)
NATIONAL CHILI COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NATIONAL CHILI COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NATIONAL CHILI COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
NORTH CENTER BREWING COMPANY	\$94.69	\$94.69	\$0.00	\$0.00	\$0.00
NORTHERN LAKES SEAFOOD & MEAT	\$76.36	\$76.36	\$0.00	\$0.00	\$0.00
OAKWOOD BAKERY	\$160.58	\$160.58	\$0.00	\$0.00	\$0.00
PELLERITO FOODS INC.	\$2,310.62	\$2,310.62	\$0.00	\$0.00	\$0.00
PEPSI COLA, INC.	\$20,878.29	\$20,878.29	\$0.00	\$0.00	\$0.00
PERSONAL UNIFORM SERVICE, INC	\$33.38	\$33.38	\$0.00	\$0.00	\$0.00
PETRO ENVIRON TECH, INC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
PINE TREE ACRES, INC.	\$31,548.82	\$31,548.82	\$0.00	\$0.00	\$0.00
PLATING SPEC	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
POWER VAC OF MICHIGAN, INC.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
PREMIER PLATING, LLC	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
PRODUCTION SPRING, LLC.	\$797.64	\$797.64	\$0.00	\$0.00	\$0.00
QUALA SERVICES, LLC	\$350.79	\$350.79	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
RAY'S ICE CREAM CO.	\$98.50	\$98.50	\$0.00	\$0.00	\$0.00
RED SPOT PAINT #409139	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
RIVER ROUGE BREWING COMPANY	\$955.66	\$955.66	\$0.00	\$0.00	\$0.00
ROAK BREWING CO. LLC	\$3,487.94	\$691.24	\$0.00	\$823.50	\$1,973.20
ROCHESTER MILLS BEER COMPANY	\$273.14	\$273.14	\$0.00	\$0.00	\$0.00
ROCHESTER MILLS PROD BREWERY	\$2,005.73	\$2,005.73	\$0.00	\$0.00	\$0.00
RTT	\$23,842.21	\$123.61	\$243.03	\$331.65	\$23,143.92
SEAFARER FOODS, INC.	\$58.57	\$58.57	\$0.00	\$0.00	\$0.00
SHERWOOD BREWING COMPANY	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SMITH-WATKINS, LLC	\$787.22	\$787.22	\$0.00	\$0.00	\$0.00
SPRAYTEK, INC.	\$4,105.96	\$21.02	\$14.92	\$24.25	\$4,045.77
SWEETHEART BAKERY, INC.	\$787.51	\$148.58	\$74.29	\$76.34	\$488.30
THE CROWN GROUP-LIVONIA PLAN	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
THE ROYAL OAK BREWERY	\$(1,531.50)	\$0.00	\$0.00	\$0.00	\$(1,531.50)
TOM LAUNDRY CLEANERS	\$34.86	\$34.86	\$0.00	\$0.00	\$0.00
TRAFFIC JAM & SNUG	\$104.44	\$104.44	\$0.00	\$0.00	\$0.00
TURRI'S ITALIAN FOODS	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
TURRI'S ITALIAN FOODS	\$24,900.79	\$24,900.79	\$0.00	\$0.00	\$0.00
U-METCO, INC.	\$2,882.60	\$2,882.60	\$0.00	\$0.00	\$0.00
UNCLE RAYS SNACKS, LLC	\$75,753.55	\$75,753.55	\$0.00	\$0.00	\$0.00
UNCLE RAYS SNACKS, LLC	\$16,350.26	\$16,350.26	\$0.00	\$0.00	\$0.00
UNIQUE LINEN SERVICES, INC.	\$79.16	\$79.16	\$0.00	\$0.00	\$0.00
UNITED FISH DISTRIBUTORS	\$11.90	\$11.90	\$0.00	\$0.00	\$0.00

GLWA Aged Accounts Receivable- POLLUTANT SURCHARGE

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Balances as of 10/31/2018

Customer Name	Total Due	Current	46 - 74 Days	75 - 104 Days	>105 Days
UNITED LINEN SERVICE, LLC.	\$297.02	\$297.02	\$0.00	\$0.00	\$0.00
UNITED MEAT & DELI	\$629.45	\$629.45	\$0.00	\$0.00	\$0.00
US ECOLOGY MICHIGAN	\$(2,032.12)	\$0.00	\$0.00	\$0.00	\$(2,032.12)
US ECOLOGY ROMULUS, INC.	\$6,148.09	\$6,148.09	\$0.00	\$0.00	\$0.00
USHER OIL SERVICES	\$3,940.58	\$3,940.58	\$0.00	\$0.00	\$0.00
VERNDALE PRODUCTS	\$12,536.41	\$12,536.41	\$0.00	\$0.00	\$0.00
VERNDALE PRODUCTS, INC.	\$5,011.59	\$5,011.59	\$0.00	\$0.00	\$0.00
VERNOR FOOD PRODUCTS	\$64.15	\$64.15	\$0.00	\$0.00	\$0.00
WIGLEY'S MEAT PROCESS	\$316.12	\$316.12	\$0.00	\$0.00	\$0.00
WINTER SAUSAGE MFG. CO.	\$858.85	\$858.85	\$0.00	\$0.00	\$0.00
WINTER SAUSAGE MFG. CO.	\$(185.30)	\$(185.30)	\$0.00	\$0.00	\$0.00
WOLVERINE PACKING CO	\$7,177.94	\$7,177.94	\$0.00	\$0.00	\$0.00
WOLVERINE PACKING CO.	\$2,503.81	\$2,503.81	\$0.00	\$0.00	\$0.00
WOODWARD AVENUE BREWERS	\$219.55	\$219.55	\$0.00	\$0.00	\$0.00
TOTAL POLLUTANT SURCHARGE	\$1,322,709.53	\$749,176.44	\$47,722.42	\$202,060.94	\$323,749.73