



March 20, 2017

Member Customers of GLWA

Regarding: FY 2018 Updated Sewer SHARES

Dear Members:

I wanted to take this opportunity to address GLWA's recommended changes to SHARES that we are using to compute the proposed schedule of wholesale sewer service charges for FY 2018. The process to determine our recommendations has been quite rigorous, and has included detailed technical review and study by GLWA in collaboration with representatives of its Member Customers. The results of that review are documented in several reports and related presentations that are available at the Wholesale Customers page of the GLWA website (glwater.org), many of which are referenced herein. The intent of this letter is to provide an executive summary to the topic in a "frequently asked questions" format. I am hopeful that this approach serves as an efficient introduction to our SHARE recommendations. I encourage interested parties to access and review the supporting reports.

What are SHARES? The term SHARES was developed when GLWA's predecessor entity DWSD (the prior Detroit Water and Sewerage Department) established and implemented the Rate Simplification initiative for the FY 2015 wholesale sewer service charges. The GLWA sewer cost allocation methodology assigns cost responsibility based on the use of the System, and reflects that costs of certain functions (such as industrial waste control and combined sewer overflows) can either be directly assigned to customers or assigned based on a negotiated amount. All other costs are considered "common-to-all" wholesale costs. One of the foundations of that initiative was that each Member Customer's relative responsibility (SHARE) for the costs of common-to-all wholesale service was relatively stable from year to year and could be fixed for multi-year periods.

How are SHARES determined? In general, the methodology acknowledges that certain costs should be proportionally allocated to Member Customers based on the amount of wastewater **volume** they contribute to the system and that other costs should be proportionally allocated to Member Customers based on the amount of wastewater **pollutant loadings** they contribute. GLWA computes the relative volume Share and relative pollutant Share for each Member Customer and then applies the appropriate cost weighting to arrive at the overall SHARE.

$(Volume\ Share * Volume\ Cost\ Pool\ \%) + (Pollutant\ Share * Pollutant\ Cost\ Pool\ \%) = SHARE$

GLWA refers to the resulting SHARE in all caps to designate that it is the consolidated result of evaluating the individual, proportional volume and pollutant contributions.

How does GLWA measure wastewater volumes from each Member Customer?

GLWA constantly monitors wastewater volume contributions and conducts a detailed annual “flow balance” to determine the sources of the wastewater influent that arrives at the Water Resource Recovery Facility (“WRRF”). These annual flow balances establish how much flow is contributed from each Customer, and how much flow cannot be specifically assigned to any individual Customer. Flow not assigned to any specific customer is treated as “common” flow, which is often referred to as “Z” in flow balance reports. Examples of “common” flow include infiltration and inflow of river water along the major interceptors.

Wastewater volumes contributed by the majority of the suburban wholesale Member Customers are measured by master wastewater meters, which establish the specific contributions from each customer. These customers are often referred to as the “M” Customer class in reports summarizing SHARE calculations.

Wastewater volumes contributed by the City of Detroit and certain other Member Customers are estimated via “system meters” and related analyses. These customers are often referred to as the “D+” Customer class in reports summarizing SHARE calculations.

In addition to total volume of wastewater contributions, it is also important to separate the contributed flows into three “flow types” which, based on wastewater sector data, have differential pollutant loadings or “strength of flow” (SOF):

- Sanitary volumes
- Dry Weather Infiltration and Inflow (DWII)
- Wet Weather volumes

GLWA uses meter data and technical evaluations to estimate each Member Customer’s contribution of each of these flow types.

How does GLWA estimate pollutant loadings from each Member Customer? The current methodology is based on industry research. The research supports the conclusion that the relative pollutant loadings carried in DWII and wet weather flows are lower than the relative pollutant loadings carried in sanitary volumes. When this concept was first introduced in 2010 for the FY 2012 sewer service charges, due to the lack of specific available system data at the time, an initial directional SOF adjustment was implemented. For the initial SOF adjustment it was assumed that the strength of both DWII and wet weather flow was 45% of the strength of sanitary flow. These ratios were changed to 33% in the FY 2013 sewer service charges, which is the same factor used in the existing SHARES. The directional adjustments regarding these assumed ratios were developed to support stability in service charges.

These SOF ratios result in a relative pollutant concentration for each flow type, which is further assumed to be uniform across the GLWA system. The methodology then applies these assumptions to the relative flow contributions from each Member Customer to determine the pollutant loadings contributed by each Member Customer.

*(Sanitary flow * Sanitary SOF = Sanitary Loadings) + (DWII flow * DWII SOF = DWII Loadings) + (Wet Weather flow * Wet Weather SOF = Wet Weather Loadings) = **Total Pollutant Loadings***

How does GLWA establish which costs should be allocated based on flow volume and which costs should be allocated based on pollutant loadings? The core philosophy follows industry standards and best practices recognizing cost causation principles. For instance, sewer interceptors and lift stations operate to transport wastewater volumes irrespective of the pollutant loading and the costs associated with these facilities are appropriately allocated based on flow. The biosolids dryer facility and related processes operate in a manner to dispose of solids irrespective of the amount of flow that carried those pollutants to the WRRF, and the costs associated with these facilities are appropriately allocated based on pollutant loadings.

GLWA evaluates detailed operating budgets and fixed asset data to assign operating and capital costs to the flow and pollutant cost pools respectively in alignment with these general principles. In the existing SHARES, approximately 47% of the common-to-all wholesale costs were most appropriately allocated based on volume and 53% based on pollutant loadings.

How were the existing SHARES established? The original SHARES were established by the Board of Water Commissioners (via the Rate Simplification initiative) in November 2013. These original SHARES were based on an evaluation of five years of historical wastewater contributions from customers from FY 2008 through FY 2012. These original SHARES were implemented for the FY 2015 sewer service charges, and were slightly modified for the FY 2016 sewer service charges to reflect the diversion of flows from a portion of Oakland County to the Pontiac Wastewater Plant. These SHARES remain in place for the current (FY 2017) sewer service charges.

Why is GLWA changing SHARES? When the parties agreed to the original SHARES they formally established an initial effective “Charge Period” of 3 years, running from FY 2015 through FY 2017. The agreement established an expectation that SHARES would be adjusted for FY 2018 based on a review of new wastewater contributions to the system. The commitment made at that time included a technical review designed to improve assumptions regarding the strength of flow and the relative assignment of wastewater flows between common and D+ sources.

What did the SHARE update process involve? A team of approximately 30 GLWA and Member Customer representatives (the “Technical Team”) spent almost a year studying wastewater contributions to the GLWA System. The Technical Team’s review focused on:

- Updating flow balance analyses to estimate flow contributions from all Member Customers based on a new four-year data period extending from FY 2013 through FY 2016.
- Detailed analyses designed to allocated flows between the D+ and the common (Z) sources.
- Evaluating the pollutant loadings carried by each of the various flow types. The evaluation included sampling at multiple locations in the GLWA system and research

of national industry publications to establish strength of flow estimates for the four principal pollutant categories used in the GLWA cost allocation methodology:

- BOD – Biochemical Oxygen Demand
- TSS – Total Suspended Solids
- PHOS – Phosphorus
- FOG – Fats, Oils, and Grease
- An examination of the protocol for allocating cost recovery approaches between volume and pollutant loading cost pools.

What did the technical review conclude? The Technical Team’s findings are set forth in a “2016 Sewer Share Assessment Report” dated March 15, 2017. Those findings include:

- Annual wastewater flow contributions for each Member Customer, and for the system in total, and for each flow type, based on data from FYs 2013, 2014, 2015, and 2016.
- An estimate of how much of the contributed wastewater is related to “net non-local, non-revenue (“NNNW”) water, principally related to leakage from GLWA owned water transmission mains.
 - ***The Technical Team opined that these flows (approximately 10 cubic feet per second “cfs” – or about one percent of the total wastewater volume received at the WRRF) should be considered “common flow”.***
- Three different estimated basis of “relative strength” of each pollutant for each flow type. Expressed as a percentage of sanitary strength, the effective relative strength (total for combined pollutants) of DWII ranged from 0.6% to 2.4% and for wet weather ranged from 18% to 27% - although there was a wider variation in the estimates for individual pollutants.
- A conclusion that existing financial reports and asset records were not adequately developed to support material changes in relative allocations of cost to “flow” and individual “pollutant” cost pools, but that the existing allocation approaches and estimates were consistent with industry standards.

How is GLWA applying the results of the technical review? GLWA conducted a detailed review of the Technical Team’s preliminary analyses in order to best understand the findings. Our review enhanced our recognition of the difficulty of evaluating wastewater contributions in our large regional system. The Technical Team conducted a thorough and careful evaluation that utilized the best available information.

The GLWA proposal embraces the Technical Team’s findings and opinions, while recognizing certain undeniable realities, which include:

- Recognizing the limitations of the technology, absolute precision in these types of evaluations is unattainable. There will always be opportunities to pursue “better available and verifiable” information.
- There are evolving operational and theoretical studies either ongoing or about to launch that will provide additional data, and which may result in changing philosophies regarding wastewater cost allocation.

- Full implementation of technical findings without attentiveness to other developments could result in disincentives to support larger current and evolving Regional wastewater management strategies.

The GLWA proposed SHAREs for FY 2018 acknowledge the findings of the Technical Team while implementing the findings in a directionally appropriate manner that recognizes the data limitations, the amount of estimating necessary, and the goal of charge stability. Furthermore, the recommendation supports policies and practices in the region that will optimize system utilization and investment going forward with the strategies outlined for the wastewater master plan. From a technical perspective, the proposed SHAREs honor the effort and are within the range of the industry data, lending additional credibility to the methodology. We believe this approach embraces the spirit of the Rate Simplification initiative, including ease of understanding and moderates charge volatility - while still providing a fair conclusion to the SHARE update process.

GLWA's specific recommendations regarding SHAREs for FY 2018 are set forth in the "FY 2018 SHARE Recommendations" memorandum from The Foster Group, dated February 12, 2017. That document is included as an appendix to the "FY 2018 Cost of Service Study and Service Charge Recommendations" report, which is available the Wholesale Customers page of the GLWA website. These reports contain specific SHARE calculations for each Member Customer.

The GLWA proposal is summarized by these key recommendations:

- ***With respect to the estimated wastewater contributions***, we recommend full acceptance of the Technical Team's findings, with one exception. We have not embraced the Technical Team's recommendation to treat NNNW as common flow, and have included such flow in the originally reported contributed flow for the appropriate Member Customer. We believe that the overall concept of treating this flow as common may be subject to additional review in ongoing technical studies, including the "Units of Service" study that is about to start for the GLWA Water System. Further, we believe assumptions regarding GLWA water transmission main inventory may change materially in the near future, which could alter the technical estimates of "common" flow related to this topic.
- ***With respect to the estimated strength of flow assumptions***, we recommend establishing a policy that sets DWII and wet weather "strength of flow" at percentages of sanitary flow, and that those percentages should be rounded to a 5% increment. This approach acknowledges that absolute precision on this topic is unattainable, reflects a directionally appropriate adjustment, and does not result in an illusion that some level of absolute precision has been attained. We further recommend that a uniform strength of flow assumption be applied ***for all pollutants***. This assumption acknowledges that assignment of costs to individual pollutant category cost pools is not consistent with currently available financial data (*see "cost pools assumptions" below*), and embraces the goals of the Rate Simplification initiative. Based on our review of the Technical Team findings, our approach sets

DWII strength at 5% of sanitary and wet weather strength at 25% of sanitary for all pollutants. *The 5% DWII assumption is the lowest assumption that rounds to a 5% increment and is greater than zero. We do not believe that assuming that DWII is “free of pollutants” is consistent with the Technical Team’s opinions, nor reflects good public policy.*

- ***With respect to volume and pollutant cost pool assumptions***, we have proposed that 50% of the relative GLWA “common-to-all” costs are most appropriately assigned to “volume” cost pool and 50% to the “pollutant” cost pool, without attempting to allocate to individual pollutant (BOD, TSS, PHOS, FOG) categories within the “pollutant” cost pool. Once again, we believe that this recommendation is consistent with the overarching tenets of the Rate Simplification initiative and representative of reasonable estimates of historical financial data. As the GLWA starting balance sheet is finalized, and as audited financial results for GLWA operations are prepared, more refined data with which to specifically assign costs to volume and pollutant cost pools will emerge and can be considered in future SHARE updates.

When will SHARES be updated again? GLWA recommends that the FY 2018 SHARES remain in place for a minimum of three years, pending developments of the Wastewater Master Plan and/or related technical studies. GLWA believes that the Rate Simplification initiative established the Member Customers is most effective when applied to achieve consistency for multi-year periods. Among the developments that will occur during this period are 1) financial initiatives that will result in more robust actual financial data for the cost pools, 2) planning initiatives including modeling and the wastewater master plan update which will result in a clearer understanding of peak flows and pollutant loading effects on individual treatment processes, and 3) Customer Outreach facilitation of a subgroup of the Sewer Charges Work Group that will carefully consider and make recommendations regarding cost allocation methodology changes that will provide a foundational basis for future charges.

I trust that the information provided in this letter provides a basic understanding of GLWA’s recommendations for the FY 2018 sewer service charges, and the process we undertook to arrive at those recommendations. As noted, there is substantial additional technical information available and we are prepared to provide answers to specific questions from our Member Customers.

Respectfully submitted,



Sue F. McCormick
Chief Executive Officer