GLWA provides wholesale sewer services throughout Southeast Michigan. GLWA charges these customers according to their individual SHAREs of the system cost. These SHAREs were established through GLWA’s customer outreach process in 2013. GLWA has updated the SHAREs for development of the FY 2018 and FY 2019 charges. This Executive Summary highlights the SHAREs updating process. A detailed report will also be available on the GLWA website.

**VISION STATEMENT:** Through regional collaboration, GLWA strives to be the provider of choice dedicated to efficiently delivering the nation’s best water and sewer services in partnership with our customers.
Challenges in Updating Current Shares

100% FIXED COST ALLOCATED BASED ON TWO COMPONENTS

FY 2015 THROUGH FY 2017 SEWER CHARGES

1 CURRENT STRENGTH OF FLOW ALLOCATION

Determining each customer’s flow proportions:

- Wet Weather (WW)
- Dry Weather Inflow & Infiltration (DWII)
- Sanitary

Wastewater Pollutants (Not allocated individually):
- Total Phosphorus
- Biological Oxygen Demand
- Total Suspended Solids
- Fats, Oil and Grease

Wet Weather and DWII are currently allocated at 1/3 of sanitary strength of flow.

Challenge: Determine more accurate strength-of-flow estimates, especially for Dry Weather Inflow and Infiltration (DWII).

2 CURRENT FLOW VOLUME ALLOCATION

- Common Flow (Z)
- Detroit and Other Unmetered Flow (D+)
- Suburban Metered Flow (M)

Calculated using historical flow data in metered areas and estimates in areas without master meters.

Challenge: Determine more accurate flows, especially for customers without master meters: Detroit, Highland Park, Hamtramck and portions of other cities.
GLWA Sponsors Collaborative Effort to Update SHAREs

Developed and implemented Strength of Flow Sampling Program

Researched national strength of flow studies

Analyzed metered and unmetered flows

Involvement occurred from February to December 2016

The WRRF is also referred to as a wastewater treatment plant

SEWER SHARES UPDATE TEAM

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Chief Planning Officer
PM/Facilitator: Charlie Fleetham,
GLWA Customer Outreach

SHAREs Update Timeline

FEB 2016 | MAR | APR | MAY | JUN | JULY | AUG | SEPT | OCT | NOV | DEC

Developed recommendations and presented to customers

$500,000 REGIONAL SAMPLING

$250,000 MANAGEMENT, ENGINEERING AND FINANCIAL CONSULTING

$100,000 IN STAFF RESOURCES

Involvement occurred from February to December 2016
Updated Strength of Flow Allocation

**CHALLENGE:** Determine more accurate strength-of-flow estimates, especially for DWII.

### SYSTEM SAMPLING PROGRAM
**REPRESENTATIVE OF SERVICE AREA**
**Sanitary and Wet Weather Flow Sampling**
(March 21 – September 6, 2016)

- **18 LOCATIONS**
- **50 DRY WEATHER DAYS (SANITARY)**
- **14 WET WEATHER DAYS (WET WEATHER)**

**OUTCOMES**
- Developed three reasonable strength of flow ratios alternatives.
- Determined all three strength alternatives had similar impact on SHAREs.
- Determined sampling data did not provide consistent strength estimates for wet weather flows.
- Significantly reduced previous DWII and wet weather flow strengths except for wet weather TSS and FOG.
- Customers with higher sanitary component will see a relative increase in SHAREs and customers with higher DWII will see a relative decrease all else being equal.
- Cost to customers for DWII is still substantial; therefore maintaining significant incentive for reduction.

**New Estimates of Strength of Flow Ratios**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SAN</th>
<th>DWII</th>
<th>WW</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
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<td>2.4%</td>
<td>5.3%</td>
</tr>
<tr>
<td>TSS</td>
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</tr>
<tr>
<td>Phosphorus</td>
<td>100%</td>
<td>4%</td>
<td>2.5%</td>
</tr>
<tr>
<td>FOG</td>
<td>100%</td>
<td>0%</td>
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</table>

**CHALLENGE:** Determine more accurate strength-of-flow estimates, especially for DWII.
STABILIZED SUBURBAN FLOWS FY 2013-2016

OUTCOMES
- Validated suburban flow data.
- Refined difference between dry and wet day flows.
- Demonstrated consistency of flows over 4-year period.
- Developed customer 4-year averages for use in SHAREs calculation.
- Increased confidence of metered flows used in other charge calculations enabling more accurate estimation of Common and Detroit flows.
**Updated Flows in Areas Without Master Meters (D+ Areas)**

**CHALLENGE:** Determine more accurate flows, especially for customers without master meters: Detroit, Highland Park, Hamtramck and portions of other cities.

**OUTCOMES**
- Calculated D+ flows based on data rather than subtracting from total flows.
- Improved flow estimates for 2/3 of D+ total flows using local meter data (D+ Direct).
- Developed estimation process, based on D+ Direct data, to use for remaining 1/3 of flow (D+ Incremental) where local meter data is not available.
- Improved flow calculation for total Water Resource Recovery Facility (WRRF) flow.
- Developed more accurate estimate of Common Flow through flow balancing and better estimation of all other flows.
DEVELOPED A BASIS FOR REVISED COMMON FLOW CALCULATION:

\[
\text{WRRF} - \text{M} - \text{D+} = \text{Common Flow}
\]

TOTAL FLOW AT WRRF - SUBURBAN METERED CUSTOMERS - DETROIT AND OTHER UNMETERED

Note: In the FY 2015-2017 SHAREs calculation, D+ was derived from a Common Flow estimate, otherwise known as the Z flow.

Ongoing Task: Review Cost Allocation Based on Strength of Flow

**CHALLENGE:** Examine protocol for cost allocation between flow and strength, based on the 1979 Proposed Sewerage System Rates and Charges Study, to determine if still valid with changing operational protocols.

**COSTS ALLOCATED IN CHARGES**

- **Strength of flow costs** for liquid and solid trains dedicated to removing pollutants to meet permit requirements such as aeration, secondary clarification and sludge treatment and disposal including the new Biosolids Dryer Facility.
- **Flow volume costs** for transporting and pumping flows as well as storing and treating peak flows at the WRRF.

**OUTCOMES**

- Confirmed fundamentals of treatment process have remained consistent since application of strength of flow allocation.
- Concluded pollutant allocation of WRRF components remains a reasonable basis for the next SHAREs Period.
- Customers requested further review, e.g. collaborative cost of service study.
SHAREs Allocation Using Updated Method

**SUMMARY OF UPDATED RESULTS**

- A customer with a higher sanitary component of flow will see a relative increase in their SHARE, while a customer with a higher percentage of DWII will see a relative decrease in their SHARE, all other things being equal.
- SHAREs for Detroit and adjacent areas without master meters are based on validated, more accurate data. Based on current budget estimates, D+ SHAREs **decreased** from 42.7% to ___% and suburban SHAREs **increased** from 57.3% to ___%.
- Based on current budget estimates, the percentage of Common Flow in the system to be distributed across all SHAREs increased from 16.2% to ___% of the total flow into the WRFF.
- Comprehensive and collaborative review of the wastewater cost allocation methodology will be effective for 2 years – FY 2018 and FY 2019.

**NEXT STEPS**

- Continue sampling program on a selective basis.
- Continue analysis of the sources of common inflow and infiltration.
- Develop metering plan within the D+ Incremental area to improve estimates of D+ flow.
- Leverage GLWA Wastewater Master Plan project to get additional needed data.
- WRRF Cost of Service Study