

SEWER BILLING AUDIT

NUMBER OF RECOMMENDATIONS



*City of Glendale
Internal Audit*

09.17.2020



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Acknowledgment

Internal Audit would like to thank Glendale Water & Power, Public Works Engineering and City Attorney’s Office personnel for the support and assistance provided to us throughout this project.

For questions regarding the contents of this report, please contact the lead auditor, Ani Antanesyan, Internal Auditor, or Jessie Zhang, Internal Audit Manager at ipa@glendaleca.gov.
This report is also available online at <http://www.glendaleca.gov>.

A. Overview

Key Outcomes

Sewer billing rates established in the NorthStar utility billing system (NorthStar) are based on Council adopted sewer rates. The billing process can be improved with the implementation of stronger controls related to accurate and consistent commercial accounts billing code set-up, timeliness and integrity of Crescenta Valley Water District (CVWD) sewer account water usage data, validity of sewer billing codes for all customer categories, consistent application of Single Family Residential water usage, the update of the Seasonal Sewer Usage Default calculation methodology, and enforcement of user access control security policy to the billing system.

Internal Audit identified seven improvement opportunities that are further described below. PWD and GWP management have reviewed and agreed with all the recommendations and will work together to implement these recommendations within the established timeline as outlined in the Action Plan section of this report.

Impact Dashboard

This table summarizes the applicable value-added categories (total 20) for the seven recommendations based on their priority rankings.

	Value-Added Categories				Innovation Opportunities
	Risk Reduction	Compliance	Cost Saving	Efficiency	
Priority 1 1	1	1	0	1	0
Priority 2 6	6	6	0	5	0
Priority 3 0	0	0	0	0	0

(Definitions of Priority Rankings and Value-added impacts are located at Appendix 1)

B. Action Plan and Target Completion Dates

The action plan and target completion dates are summarized in the table below. Internal Audit will perform quarterly status follow-up to provide assurance that management is taking appropriate and timely corrective action to address audit recommendations.

Ref.	Management Action Plan	Completion Date
Priority 1		
1.	Establish controls to ensure that the sewer strength and associated sewer billing codes are accurately assigned to each business account. <i>Value added: Risk Reduction, Compliance, Efficiency</i>	03/31/2021 ¹
Priority 2		
2.	Establish controls to ensure North American Industry Classification Code System (NAICS) codes selection for each business account is documented, only valid and up-to-date codes are assigned, and NAICS code data entry procedures are clarified. <i>Value added: Risk Reduction, Compliance, Efficiency</i>	03/31/2021
3.	Establish controls to ensure that water usage data received from CVWD is accurate and complete, and billing timeframes are clarified. <i>Value added: Risk Reduction, Compliance, Efficiency</i>	03/31/2021
4.	Establish quality control procedures to ensure that only valid sewer billing codes are assigned to each customer type. <i>Value added: Risk Reduction, Compliance, Efficiency</i>	03/31/2021
5.	Evaluate the current Single Family Residential Seasonal Sewer methodology to determine whether it can be applied more consistently, and reflect a more accurate wintertime water usage for customers. <i>Value added: Risk Reduction, Compliance, Efficiency</i>	09/30/2021 ²
6.	Update the calculation methodology for the Single Family Residential Default Seasonal Sewer by excluding monthly customers, and ensure that methodology changes are approved by Public Works. <i>Value added: Risk Reduction, Compliance, Efficiency</i>	03/31/2021
7.	Enforce security controls over the NorthStar user access to ensure that generic accounts are not used. <i>Value added: Risk Reduction, Compliance</i>	Completed

¹ GWP will require three months to perform account corrections of identified accounts once an updated Sewer Strength Reference Table is provided by PWD.

² GWP will evaluate the feasibility of a more data-driven seasonal sewer methodology once the smart meter system upgrade is complete.

C. Background

In accordance with the Fiscal Year 2020-21 annual work plan, Internal Audit completed the Sewer Billing Audit.

The City of Glendale provides sewer services to approximately 34,000 water meter connections, and 2,300 customers that reside in the Crescenta Valley Water District. Wastewater generated in Glendale is collected and conveyed by the City’s 361 miles of sewer infrastructure. Sewer is treated at either the Hyperion Water Reclamation Plant or at the Los Angeles-Glendale Water Reclamation Plant. Per the FY 2019 Comprehensive Annual Financial Report (CAFR), total Sewer Fund operating revenues were \$25 million.

The Engineering Section within the Public Works Department (PWD) is responsible for overseeing the City’s Wastewater program, coordinating with the City of Los Angeles in the management and joint ownership of the Los Angeles-Glendale Water Reclamation Plant. The Business Services Section within GWP is responsible for sewer billing and providing customer service to utility customers, as well as providing business systems support for utility data, systems and applications.

On October 12, 2015, the City retained HDR Engineering Inc. to perform a Cost of Service Analysis and a wastewater rate study. The wastewater rates were developed with the “pay-for-what-you-use” philosophy, whereby, the total sewer charge is based on water usage multiplied by a given wastewater rate. The wastewater rates adopted by the City Council are as follows:

Exhibit 1: City Council Adopted Wastewater Rates for FY 2019 through FY 2022

	FY 2019	FY 2020	FY 2021	FY 2022
Monthly Flat Fee for Electric Accounts	\$3.93	\$4.21	\$4.36	\$4.49
Single-Family Residential	\$2.10	\$2.25	\$2.33	\$2.40
Multi-Family Residential	\$2.24	\$2.40	\$2.49	\$2.56
Commercial - Low Strength	\$2.38	\$2.54	\$2.64	\$2.72
Commercial - Medium Strength	\$3.45	\$3.70	\$3.83	\$3.95
Commercial - High Strength	\$6.58	\$7.04	\$7.30	\$7.52

Source: City Council Report for Budget Adoption, June 12, 2018

Sewer charges at the City are billed through the NorthStar billing system, and are based on actual water usage for all customer types³ except for the Single Family Residential, which is charged based on winter water usage. Customers are charged a sewer service flat fee and/or usage fee based on whether they have water and/or electric service, as follows:

- Electric accounts without water – only sewer flat fee is charged;
- Water accounts without electric service – only sewer usage fee is charged;

³ Customer types are based on broad categories such as Residential (Single Family Residential, Multi-Family Residential, Condominium Units, etc.), Business (Commercial, Small Business, Industrial, etc.), Government (City of Glendale, Public Authority), and other miscellaneous services and routes.

- Electric and water accounts – both fees are charged.

Single Family Residential Seasonal Sewer and Default Seasonal Sewer

Single Family Residential accounts are billed for sewer charges not based on actual water usage, but based on their water usage during a designated consumption period in wintertime.⁴ Current GWP procedures base the usage charges for these accounts on either a February or March water meter reading. Customers that join subsequent to having any registered water meter readings after March 31 of any given year, are assigned a Default Seasonal Sewer usage, which is an average sewer usage that is calculated based on wintertime water usage for all Single Family Residential accounts from the previous year. GWP applies the Default Seasonal Sewer usage to these accounts, until the following year, when their water meters register their own wintertime readings.

NAICS Codes and Commercial Sewer Strength Assignment

Per the Glendale Municipal Code (GMC), the Director of Public Works may classify commercial and industrial accounts into user group classifications to determine sewer use charges. Currently, PWD uses NAICS codes to represent businesses by a broad industry category, this code is then used to assign a sewer strength of either Low, Medium or High representing the burden that the water flow will have on the sewer system. When new accounts are set-up, GWP staff assign a NAICS code for new businesses based on an oral response from the customer, and by referencing a table provided by Public Works, to determine whether a specific business should be charged at a Low, Medium or High sewer strength; this table will be referred to as the Sewer Strength Reference (SSR) Table in this report.

Crescenta Valley Water District Sewer Accounts

The CVWD has over 2,300 accounts that are served through the City of Glendale's sanitary sewer system, although the water is provided by the CVWD. GWP bills sewer charges for CVWD customers by processing water usage information received from CVWD. CVWD emails GWP a data file for billing at the beginning of every even month that covers usage for the preceding two months. The information is used to process new accounts, perform daily billing, note exceptions and water meter exchanges. These accounts are billed sewer charges at the same rates applicable to City of Glendale customers.

⁴ Wintertime, per the Municipal Code Section 13.40.420 “means the wintertime metered water study period extending between the beginning of December through to the end of March the following year or for any other period to be determined by the director of public works”.

D. Objective, Scope and Methodology

The objective of this audit is to determine whether adequate controls are in place to ensure the sewer fees charged through GWP's NorthStar utility billing system are accurate.

The scope of this audit covers utility billing transactions recorded in Calendar Year (CY) 2019.

In order to accomplish the audit objective, Internal Audit performed the following:

- Interviewed Public Works Engineering and GWP staff to gain an understanding of the sewer billing process.
- Reviewed pertinent City policies & procedures, the citywide fee schedule, City Council adopted sewer rates, industry classification codes and the associated SSR Table, and meter reading schedules.
- Conducted detailed testwork on accuracy of sewer billing, including sewer codes by customer type, sewer codes based on water meter code, validity of NAICS codes, and sewer strength assignment based on NAICS codes.
- Conducted detailed testwork to ensure that the Seasonal Sewer and the Default Seasonal Sewer are accurately calculated for Single Family Residential accounts.
- Performed access control testing on the active NorthStar users to ensure access is granted to authorized users and generic accounts are not assigned.

As a result of these audit procedures performed, seven improvement opportunities were identified and are detailed in the Observations, Recommendations & Management Responses Matrix starting on the following page.

E. Observations, Recommendations, Management Responses Matrix

Ref.	Observation	Recommendation	Management Response
1. Sewer Billing Code Assignment to Business Accounts			
Priority 1	<p>Based on a review of 3,126 active business accounts, the following was noted:</p> <p>a. 342 (11%) accounts had incorrect sewer billing codes based on the assigned NAICS code, as referenced in the SSR Table. Internal Audit performed a fiscal impact analysis covering the period of September 1, 2019 through December 31, 2019 and noted the following:⁵</p> <ul style="list-style-type: none"> ▪ 172 accounts were incorrectly categorized at a lower sewer strength, and resulted in \$36,000 in undercharges to customers. ▪ 138 accounts were incorrectly categorized at a higher sewer strength, and resulted in \$35,800 in overcharges to customers. <p>b. 242 (8%) had NAICS codes that are not listed in the SSR Table; these total to 57 unique invalid codes. As a result, it cannot be determined whether these accounts are being accurately charged for sewer.</p>	<p>GWP and PWD perform the following:</p> <ol style="list-style-type: none"> a. Review the 342 active business accounts and determine whether sewer strength has been accurately assigned based on the SSR Table, and make necessary corrections. b. Review the 242 active business accounts and assign valid NAICS codes, and then ensure that correct sewer billing codes are assigned based on the corrected NAICS codes, and make necessary corrections. c. Establish documented controls to ensure that staff use only valid and PWD authorized NAICS codes in NorthStar. d. Periodically perform quality control procedures to ensure that valid NAICS codes are assigned to business accounts and that the sewer strength assignments follow the SSR Table. 	<p>Agree and will implement by March 31, 2021.</p> <p>GWP will require three months to perform account corrections of identified accounts once an updated SSR Table is provided by PWD.</p>

⁵ The fiscal impact analysis excludes 32 accounts opened in CY 2019. *September 17, 2020*

Ref.	Observation	Recommendation	Management Response
2. Sewer Strength Reference Table Methodology			
Priority 2	<p>Based on inquiries and sample review of business accounts, the following was noted:</p> <ul style="list-style-type: none"> a. The SSR Table provided by PWD does not include a documented methodology. b. PWD and GWP are using industry classification codes from CY 2002, whereas, the Census Bureau has updated versions of these codes from CY 2007, 2012 and 2017. c. GWP staff do not formally verify the NAICS code provided by a business, and there is weak oversight over code assignment. d. One account was noted that had a sewer strength change that was different than the assigned strength per the NAICS code. This change was based on a PWD request and the reason was not documented in NorthStar. <p>In addition, it was noted that 201 (7%) out of 3017 active business accounts excluding the Commercial Master Meter type, had inconsistent application of NAICS codes to the different service charges present on the account.</p>	<p>GWP and PWD perform the following:</p> <ul style="list-style-type: none"> a. PWD establish and document methodology for the assignment of sewer strength based on NAICS codes. b. PWD review and update the current SSR Table to the latest available version, and establish controls to ensure that the latest version of the NAICS codes is used, going forward. c. GWP and PWD establish controls to ensure that NAICS codes assignment to business accounts is consistent, accurate and verified. d. PWD clarify in policies and procedures instances when the sewer strength can deviate from the SSR Table, and whether periodic re-evaluation of sewer strength is necessary. e. GWP clarify in policies and procedures to ensure that updates to NAICS codes are applied to all services on an account, and note instances when it should not be applicable to all charges. 	<p>Agree and will implement by March 31, 2021.</p>

Ref.	Observation	Recommendation	Management Response
3. CVWD Sewer Billing Timeframe and Water Usage Data Integrity			
Priority 2	<p>Based on a review of over 2,300 active CVWD accounts that are billed for sewer charges by the City, the following was noted:</p> <p>a. Per GMC Section 13.40.470, CVWD should submit water usage data of its customers that use the Glendale sewer system within 10 days of their billing date. However, CVWD billing schedule is currently not transmitted to the City, therefore, the timeliness of water usage data cannot be determined. GWP staff have noted that the billing for the CVWD accounts is about one month late when compared to Glendale accounts for the same water usage period.</p> <p>b. The integrity of the water usage data sent from CVWD to the City has not been validated.</p>	<p>PWD work with CVWD to establish the following:</p> <p>a. Create a standard form agreement that can also be applied to any other agencies that use the City’s billing services to enhance the controls over sewer billing timeliness and accuracy. This agreement should address, but not be limited to, the following:</p> <ul style="list-style-type: none"> • Clarify the due date for water usage data and customer account changes, and/or require agency to transmit their billing schedule to the City; • Require agency’s affirmation that the data provided to the City for billing is complete and accurate. <p style="text-align: center;">-and/or-</p> <ul style="list-style-type: none"> • Require agency to provide system audit over water usage data completed by a qualified third party. <p>b. Clarify the City’s right to access the water usage data and the right to audit the agency’s water data systems.</p>	<p>Agree and will implement by March 31, 2021.</p> <p>PWD will work with CVWD to have an agreement in place.</p>

Ref.	Observation	Recommendation	Management Response
4.	Quality Control over Sewer Billing Codes by Customer Type		
Priority 2	<p>Based upon a review of sewer charges in CY 2019 for Single Family Residential, Commercial and Multi-Family accounts, the following mismatches between bill codes and customer types have been identified:</p> <ul style="list-style-type: none"> a. 16 mismatched accounts were identified from the Multi-Family Residential accounts, with 15 being previously corrected by GWP, and one account corrected upon inquiry. b. Seven mismatched accounts were identified from the Commercial customers, with four previously corrected by GWP, and three accounts corrected upon inquiry. c. 222 mismatched accounts from other customer types, such as Multi-Family Master Meter, Commercial Master Meter were also identified and will be reviewed by GWP. <p>In addition, it was noted that 12 accounts should have been billed sewer charges based on their meter type, but had no sewer billing. Upon inquiry, it was determined that the sewer charges were correctly excluded, but the meter types were not updated. GWP has updated these accounts.</p>	<p>GWP perform the following:</p> <ul style="list-style-type: none"> a. Review the 222 accounts with potential incorrect sewer code assignment to account type, and correct any exceptions. b. Establish periodic quality control policies and procedures to timely detect inaccurate sewer billing codes for all existing account types. c. Explore options of creating automated system controls that restrict the selection of invalid sewer billing codes based on customer type, or auto-fill the correct codes upon selection of customer type. d. Establish periodic quality control policies and procedures to determine whether sewer charges are being correctly excluded, and ensure that water meter type is updated upon conversion. 	<p>Agrees and will implement by March 31, 2021.</p>

Ref.	Observation	Recommendation	Management Response
5. Seasonal Sewer Methodology			
Priority 2	<p>Based on a review of the monthly Single Family Residential Seasonal Sewer wintertime period selection methodology, the following were noted:</p> <p>a. There is no consistent methodology for applying wintertime water usage for accounts that are on a monthly billing cycle. Most of these accounts have registered water meter readings in all wintertime months and any of the months can be used to determine the Seasonal Sewer water usage. Currently, GWP staff arbitrarily select a month and the selection of the month changes from year to year.</p> <p>Based on a review of the Single Family Residential Seasonal Sewer wintertime period selection methodology for all accounts, it was noted that:</p> <p>b. As the methodology was developed many years ago when meters were manually read by field crews based on reading cycles, it may be outdated and its accuracy can be improved by utilizing current available digital and real-time water meter data.</p>	<p>GWP and PWD perform the following:</p> <p>a. Evaluate the current methodology for calculating the Seasonal Sewer wintertime water usage for monthly customers and develop and document a methodology that can be consistently applied.</p> <p>b. Evaluate the feasibility of developing a methodology that more accurately reflects wintertime water usage, given the new technology and availability of digital water meter data.</p>	<p>Agrees and will implement by September 30, 2021.</p> <p>GWP will evaluate the feasibility of a more data-driven seasonal sewer methodology once the smart meter system upgrade is complete.</p>

Ref.	Observation	Recommendation	Management Response
6. Default Seasonal Sewer Methodology			
Priority 2	<p>Upon inquiry and review of the current Default Seasonal Sewer calculation methodology and the actual calculation performed by GWP and PWD for FY 2019, it was noted that:</p> <p>The methodology currently combines both monthly and bi-monthly account seasonal sewer usage to arrive at a single default average, although only 70 (0.3%) monthly accounts were identified in the Single Family Residential accounts. This methodology could have resulted in almost a double charge for new monthly customers, although none were identified in the review period.</p> <p>Based on a review of the application of the Default Seasonal Sewer in July 2019, it was noted that the Default Seasonal Sewer usage was applied on July 10 instead of July 1, 2019, this affected eight accounts out of all applicable new accounts that were being billed between July 1 and July 10 and had no wintertime registered water readings. These accounts will be further reviewed by GWP.</p>	<p>GWP and PWD review and clarify the Default Seasonal Sewer policies and procedures to address the following:</p> <ol style="list-style-type: none"> a. Articulate the methodology for calculating the default in the Default Seasonal Sewer Procedures, and ensure that accounts billed on a monthly basis are removed from the default calculation. b. Clarify in the Default Seasonal Sewer Procedures the responsibilities between GWP and PWD to ensure that the seasonal sewer default calculation methodology is approved by PWD. c. Clarify in the Default Seasonal Sewer Procedures that GWP will be responsible for updating Default Seasonal Sewer based on the methodology authorized by PWD. Any changes to methodology must be approved by PWD. d. Review the eight accounts and make necessary adjustments. 	<p>Agrees and will implement by March 31, 2021.</p> <ol style="list-style-type: none"> a.- c. (Completed) GWP and PWD have reviewed and updated the Default Seasonal Sewer policies and procedures to address the recommendations. In addition, the Default Seasonal Sewer usage has been calculated with the exclusion of the monthly accounts for the default that became effective as of July 1, 2020. d. (In process) GWP will review these accounts and work with PWD to determine appropriate action.

Ref.	Observation	Recommendation	Management Response
7. GWP User Access Controls			
Priority 2	<p>GWP's Security Policy does not allow generic user accounts. However, based on a comparison of the NorthStar user access listing and the City's Munis employee listing, one generic account was identified, that was not linked to an individual user. There has not been any log-in activity since the Security Policy was updated to disallow generic account use.</p>	<p>GWP inactivate the generic user account to provide additional controls in order to reduce the risk of unauthorized user access.</p>	<p>Implemented. GWP has inactivated the generic user account.</p>

Appendix 1: Definitions of Priority Rankings and Value-Added Categories

Definitions of Priority Rankings

The priority rankings are assigned by internal auditors based on their professional judgment. They are also agreed to by management based on their evaluation of the alignment with the strategic goals, priorities and available resources. A timeline has been established based on each priority ranking:

- a. **PRIORITY 1** - Critical control weakness that exposes the City to a high degree of combined risks. Priority 1 recommendations should be implemented within **3 months** from the first day of the month following report issuance or sooner if so directed.
- b. **PRIORITY 2** - Less than critical control weakness that exposes the City to a moderate degree of combined risks. Priority 2 recommendations should be implemented within **6 months** from the first day of the month following the report issuance or sooner if so directed.
- c. **PRIORITY 3** - Opportunity for good or better practice for improved efficiency or reduced exposure to combined risks. Priority 3 recommendations should be implemented within **9 months** from the first day of the month following the report issuance or sooner if so directed.

Definitions of Value-Added Categories

The four value-added impact categories are defined based on their impact from the audit recommendations:

- a. **COMPLIANCE** - adherence to laws, regulations, policies, procedures, contracts, or other requirements.
- b. **COST SAVING** - lower the costs related to conducting City business.
- c. **EFFICIENCY** - ability to avoid wasting resources (money or time) in achieving goals.
- d. **RISK REDUCTION** - lower the risks related to strategic, financial, operations and compliance.

In addition, the **INNOVATION OPPORTUNITY** category indicates the assistance and consulting services that may be provided by the Innovation and Performance Team in helping address audit observations.