

CORIX[®]

Group of Companies

Community Utilities of Pennsylvania

April 18, 2023

Docket # M-2023-3037451

Please find attached the Annual Water Audit for Community Utilities of PA – Westgate.

Thanks,
Alice



Alice Benton
Community Utilities of Pennsylvania

410-286-5533

Community Utilities of Pennsylvania, Inc.

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AWWA Free Water Audit Software: Worksheet

FWAS v6.0
American Water Works Association
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Water Audit Report for: **Community Utilities of PA - Westgate**
 Audit Year: **2022** | **Jan 01 2022 - Dec 31 2022** | **Calendar**

To access definitions, click the input name To edit water system info: [go to start page](#)
 Click 'n' to add notes Click 'g' to determine data validity grade
 All volumes to be entered as: MILLION GALLONS (US) PER YEAR

WATER SUPPLIED

Water Supplied Error Adjustments
choose entry option:

VOS	Volume from Own Sources: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="n/a"/>	MG/Yr	
WI	Water Imported: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="4"/>	54.397 MG/Yr	<input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="4"/> percent
WE	Water Exported: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="n/a"/>	MG/Yr	

VOSEA
WIEA
WEEA

WATER SUPPLIED: 54.397 MG/Yr

AUTHORIZED CONSUMPTION

BMAC	Billed Metered: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="8"/>	46.698 MG/Yr	
BUAC	Billed Unmetered: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="n/a"/>	MG/Yr	
UMAC	Unbilled Metered: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="n/a"/>	MG/Yr	
UUAC	Unbilled Unmetered: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="8"/>	0.798 MG/Yr	choose entry option: <input type="text" value="custom"/> <input type="text" value="0.798"/> MG/Yr

AUTHORIZED CONSUMPTION: 47.496 MG/Yr

WATER LOSSES

6.901 MG/Yr

Apparent Losses

Default option selected for Systematic Data Handling Errors, with automatic data grading of 3				choose entry option:
SDHE	Systematic Data Handling Errors: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="3"/>	0.117 MG/Yr		<input type="text" value="0.25%"/> default
CMI	Customer Metering Inaccuracies: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="8"/>	0.000 MG/Yr		<input type="text" value="percent"/>
UC	Unauthorized Consumption: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="3"/>	0.117 MG/Yr		<input type="text" value="0.25%"/> default

under-registration

Default option selected for Unauthorized Consumption, with automatic data grading of 3
Apparent Losses: 0.233 MG/Yr

Real Losses

Real Losses: 6.668 MG/Yr

WATER LOSSES: 6.901 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 7.699 MG/Yr

SYSTEM DATA

Lm	Length of mains: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="10"/>	15.0 miles	(including fire hydrant lead lengths)
Nc	Number of service connections: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="10"/>	985	(active and inactive)
	Service connection density: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="66"/>	66	conn./mile main
Are customer meters typically located at the curbside/property line? <input type="text" value="No"/>			
Lp	Average length of (private) customer service line: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="6"/>	45.0 ft	(average distance between property line and meter)
AOP	Average Operating Pressure: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="6"/>	76.0	psi

COST DATA

CRUC	Customer Retail Unit Charge: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="9"/>	\$13.51	\$/1000 gallons (US)
VPC	Variable Production Cost: <input type="text" value="n"/> <input type="text" value="g"/> <input type="text" value="3"/>	\$4,819.05	\$/Million gallons
			Total Annual Operating Cost
			<input type="text" value="\$614,216"/> \$/yr (optional input)

WATER AUDIT DATA VALIDITY TIER:

*** The Water Audit Data Validity Score is in Tier III (51-70). See Dashboard tab for additional outputs. ***

[go to dashboard](#)

A weighted scale for the components of supply, consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION TO IMPROVE DATA VALIDITY:

Based on the information provided, audit reliability can be most improved by addressing the following components:

- 1: Water Imported (WI)
- 2: Variable Production Cost (VPC)
- 3: Billed Metered (BMAC)

KEY PERFORMANCE INDICATOR TARGETS:

OPTIONAL: If targets exist for the operational performance indicators, they can be input below:

Unit Total Losses:	<input type="text"/>	gal/conn/day
Unit Apparent Losses:	<input type="text"/>	gal/conn/day
Unit Real Losses ¹ :	<input type="text"/>	gal/conn/day
Unit Real Losses ² :	<input type="text"/>	gal/mile/day

If entered above by user, targets will display on KPI gauges (see Dashboard)



AWWA Free Water Audit Software v6.0

FWAS v6.0

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This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format and is not meant to take the place of a full-scale, comprehensive water audit format. Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targeting loss reduction levels. This tool contains several separate worksheets. Sheets can be accessed using the tabs at the bottom of the screen, or by clicking the TOC links below.

Table of Contents (TOC)

- Start Page** The current sheet. Enter contact information and basic audit details.
- Worksheet** Enter the required data on this worksheet to calculate the water balance and data grading.
- Interactive Data Grading** Answer questions about operational practices for each audit input, and the data validity grades will automatically populate.
- Dashboard** Review NRW components, performance indicators and graphical outputs to evaluate the results of the audit.
- Notes** Enter notes to explain how values were calculated, document data sources, and related information about data management practices.
- Blank Sheet** By popular demand! A blank sheet. The world is your canvas.
- Water Balance** The values entered in the Worksheet automatically populate the Water Balance.
- Loss Control Planning** Use this sheet to interpret the results of the audit validity score and performance indicators.
- Definitions** Use this sheet to understand the terms used in the audit process.
- Service Connection Diagram** Diagrams depicting possible customer service connection line configurations.
- Acknowledgements** Acknowledgements for development of the AWWA Free Water Audit Software v6.0.

AWWA Web Resources for Water Loss Control

<https://www.awwa.org/Resources-Tools/Resource-Topics/Water-Loss-Control>

Items referenced in the Free Water Audit Software v6.0 on the web:

- Data Grading Matrix v6.0
- Example Water Audit v6.0
- Water Audit Compiler v6.0
- AWWA Reports on Performance Indicators
- M36 Manual

Enter Basic Information

Name of Utility:	Community Utilities of PA - Westgate
Name of Contact Person:	Felix Cardona III
Email:	Felix.Cardona@uiwater.com
Telephone Ext.:	610-317-6145
City/Town/Municipality:	Bethlehem
State / Province:	Pennsylvania (PA)
Country:	USA
Audit Preparation Date:	Mar 22 2023
Audit Year:	2022
Audit Year Label:	Calendar (Fiscal, Calendar, etc)
Audit Period Start Date:	Jan 01 2022
Audit Period End Date:	Dec 31 2022
Volume Reporting Units:	Million gallons (US)
Water System Structure:	Retail
Water Type:	Potable Water
System ID Number:	3480024
Validator Name/ID:	N/A
Validator Email:	
Estimated Total Population Served by Water Utility:	2,465

Key of Input Acronyms *In order of appearance in the Worksheet*

- VOS** Volume from Own Sources
- VOSEA** VOS Error Adjustment
- WI** Water Imported
- WIEA** WI Error Adjustment
- WE** Water Exported
- WEEA** WE Error Adjustment
- BMAC** Billed Metered Authorized Consumption
- BUAC** Billed Unmetered Authorized Consumption
- UMAC** Unbilled Metered Authorized Consumption
- UUAC** Unbilled Unmetered Authorized Consumption
- SDHE** Systematic Data Handling Errors
- CMI** Customer Metering Inaccuracies
- UC** Unauthorized Consumption
- Lm** Length of mains
- Nc** Number of service connections
- Lp** Average length of (private) customer service line
- AOP** Average Operating Pressure
- CRUC** Customer Retail Unit Charge
- VPC** Variable Production Cost

Color Key

User input

Calculated

Optional default

Guidance for the Worksheet

Choosing to enter unit of **percent** or **volume** (applies to VOSEA, WIEA, WEEA, CMI)

choose entry option:

1.00%	percent	or
	volume	25.000

Choosing to enter **default** or **custom input** (applies to UUAC, SDHE, UC)

choose entry option:

0.25%	default	or
	custom	75.000

Guidance for the Interactive Data Grading

Use acronym buttons in IDG header to navigate among inputs. Acronym Key above. White = needs answers, orange = complete, clear = not required. Example below.

VOS	VOSEA	WI	WIEA	WE	WEEA	BMAC	BUAC	UMAC	UUAC
SDHE	CMI	UC	Lm	Nc	Lp	AOP	CRUC	VPC	

After clicking an acronym button, answer all visible questions in the order they're presented, choosing best-fit answer

Grade will populate when all visible questions are complete for an input

The limiting criteria will be labeled along the right. If only 1 limiting criterion is shown, improving on that criterion will achieve a higher data grade. If multiple limiting criteria are shown, improving on *each* limiting criterion is necessary to achieve a higher data grade. A complete inventory of data grading criteria is available in the Data Grading Matrix v6.0 (see web resources)

Limiting

If you have questions or comments regarding this software please contact us at: wlc@awwa.org