

## Level 1 Validation Certificate



This document verifies that the Level 1 Validation process was completed. The session details and audit review outcomes are included here.

*This certificate is required for submission – alongside the Level 1 validated water audit software file – to the California Department of Water Resources.*

Call Date: 8/26/2020

### Water Supplier

---

Supplier Name:  
City of Riverside

Supplier Participants:  
Musa Rayyan, Gisela Lopez, Gregg Tobler, Leonardo Ferrando, Nigora (Nikki) Tuyunbaeva, William Obeid, Kara Swanson, Farid Boushaki, Michael Plinski, Lydia Porras, Jolie Matta, Blake Yamamoto, B. Seinturier

### Key Audit Metrics

---

Data Validity Score:	83	
ILI:	3.14	
Real Loss:	61.24	gal / conn / day
Apparent Loss:	10.02	gal / conn / day
Non-Revenue Water as Percent of Cost of Operating System:	2.7%	

### Validator

---

Validator: Kris Williams,  
Water Systems Optimization

Validator Qualifications: Water Audit Validator Certificate from the AWWA California Nevada Section

### Certification Statement by Validator

---

This water loss audit report has been Level 1 validated per the requirements of California Code of Regulations Title 23, Division 2, Chapter 7 and the California Water Code Section 10608.34.

All recommendations on volume derivation and Data Validity Grades were incorporated into the water audit. ☒

## Level 1 Validation – Water Supplier Confirmation

This document confirms participation in and endorsement of the Level 1 Validation as completed.

*This acknowledgement is required for submission – alongside your Level 1 validated water audit software file – to the California Department of Water Resources.*

Water Supplier Name: City of Riverside – Public Utilities

Water Supplier Public Water System ID: CA3310031

Water Audit Period: Calendar Year 2019

### Water Audit & Water Loss Improvement Steps

*Steps taken in the audit period timeframe to increase data source accuracy, reduce real losses, and/or reduce apparent losses, as informed by the water audit.*

1. Performed annual electronic testing and calibration on key production meters for “Volume from Own Sources” and for “Water Exported” inputs.
2. Provided a detailed method for estimating “Unbilled Unmetered” water.
3. Provided a water customer consumption monthly report for “Billed Metered” water.
4. Provided pressure field data to support the hydraulic model for “Average Operating Pressure”.
5. Provided documentation supporting rate structure reviewed by third-party consultant knowledgeable in M36 methodology.

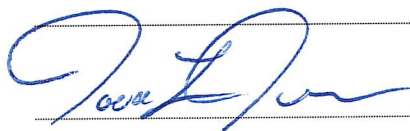
### Certification Statement by Water Supplier Executive:

This water loss audit report meets the requirements of California Code of Regulations Title 23, Division 2, Chapter 7 and the California Water Code Section 10608.34 and has been prepared in accordance with the method adopted by the American Water Works Association, as contained in their manual, *Water Audits and Loss Control Programs, Manual M36, Fourth Edition* and in the Free Water Audit Software version 5.

Executive Name (print): Todd L. Jorgenson

Executive Position: Assistant General Manager - Water

Signature:



Date: 9/29/2020



# AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

American Water Works Association  
Copyright © 2014, All Rights Reserved.

?	Click to access definition
+	Click to add a comment

Water Audit Report for: **Riverside Public Utilities (CA3310031)**  
Reporting Year: **2019**    **1/2019 - 12/2019**

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

**All volumes to be entered as: ACRE-FEET PER YEAR**

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

## WATER SUPPLIED

Volume from own sources:  9  66,731.000 acre-ft/yr  
Water imported:  n/a  acre-ft/yr  
Water exported:  9  6,619.000 acre-ft/yr

## Master Meter and Supply Error Adjustments

Pcnt:  6  -0.70%   acre-ft/yr  
Value:   acre-ft/yr  
Pcnt:  6  -0.20%   acre-ft/yr  
Value:   acre-ft/yr

Enter negative % or value for under-registration  
Enter positive % or value for over-registration

**WATER SUPPLIED:**  **60,569.145** acre-ft/yr

## AUTHORIZED CONSUMPTION

Billed metered:  7  54,786.000 acre-ft/yr  
Billed unmetered:  n/a  acre-ft/yr  
Unbilled metered:  9  86.640 acre-ft/yr  
Unbilled unmetered:  9  99.990 acre-ft/yr

**AUTHORIZED CONSUMPTION:**  **54,972.630** acre-ft/yr

Click here:  ?  
for help using option  
buttons below

Pcnt:   Value:  99.990 acre-ft/yr

Use buttons to select  
percentage of water supplied  
**OR**  
value

## WATER LOSSES (Water Supplied - Authorized Consumption)

**5,596.515** acre-ft/yr

## Apparent Losses

Unauthorized consumption:   151.423 acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:  7  498.339 acre-ft/yr  
Systematic data handling errors:  5  136.965 acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

**Apparent Losses:**  **786.727** acre-ft/yr

Pcnt:  0.25%  Value:  acre-ft/yr

0.90%    acre-ft/yr  
0.25%    acre-ft/yr

## Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:  **4,809.789** acre-ft/yr

**WATER LOSSES:**  **5,596.515** acre-ft/yr

## NON-REVENUE WATER

**NON-REVENUE WATER:**  **5,783.145** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

## SYSTEM DATA

Length of mains:  9  993.6 miles  
Number of active AND inactive service connections:  10  70,118  
Service connection density:   71 conn./mile main

Are customer meters typically located at the curbstop or property line?  Yes

Average length of customer service line:

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:  9  86.1 psi

(length of service line, beyond the property boundary,  
that is the responsibility of the utility)

## COST DATA

Total annual cost of operating water system:  10  \$47,124,070 \$/Year  
Customer retail unit cost (applied to Apparent Losses):  10  \$1.67 \$/100 cubic feet (ccf)  
Variable production cost (applied to Real Losses):  8  \$137.82 \$/acre-ft ☐ Use Customer Retail Unit Cost to value real losses

## WATER AUDIT DATA VALIDITY SCORE:

**\*\*\* YOUR SCORE IS: 83 out of 100 \*\*\***

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

## PRIORITY AREAS FOR ATTENTION:

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

1: Volume from own sources

2: Billed metered

3: Unauthorized consumption



## AWWA Free Water Audit Software: System Attributes and Performance Indicators

WAS v5.0

American Water Works Association.  
Copyright © 2014, All Rights Reserved.Water Audit Report for: **Riverside Public Utilities (CA3310031)**Reporting Year: **2019** **1/2019 - 12/2019****\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 83 out of 100 \*\*\***

### System Attributes:

Apparent Losses:	<b>786.727</b>	acre-ft/yr
+ Real Losses:	<b>4,809.789</b>	acre-ft/yr
= <b>Water Losses:</b>	<b>5,596.515</b>	acre-ft/yr

**? Unavoidable Annual Real Losses (UARL):** **1,533.50** acre-ft/yrAnnual cost of Apparent Losses: **\$572,306**Annual cost of Real Losses: **\$662,885** Valued at **Variable Production Cost**[Return to Reporting Worksheet to change this assumption](#)

### Performance Indicators:

Financial:

Non-revenue water as percent by volume of Water Supplied: **9.5%**Non-revenue water as percent by cost of operating system: **2.7%** Real Losses valued at Variable Production Cost

Operational Efficiency:

Apparent Losses per service connection per day: **10.02** gallons/connection/dayReal Losses per service connection per day: **61.24** gallons/connection/dayReal Losses per length of main per day\*: **N/A**Real Losses per service connection per day per psi pressure: **0.71** gallons/connection/day/psiFrom Above, Real Losses = Current Annual Real Losses (CARL): **4,809.79** acre-feet/year**? Infrastructure Leakage Index (ILI) [CARL/UARL]:** **3.14**

\* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline