



# AWWA Free Water Audit Software: Reporting Worksheet

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**Water Audit Report for: Las Cruces Utilities (3511707)**  
Reporting Year: **2020**    1/2020 - 12/2020

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**

----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	+ ?		21,747.000	acre-ft/yr
Water imported:	+ ?	n/a		acre-ft/yr
Water exported:	+ ?	n/a		acre-ft/yr

**Master Meter and Supply Error Adjustments**

Pcnt:	Value:		
+ ?		111.117	acre-ft/yr
+ ?			acre-ft/yr
+ ?			acre-ft/yr

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

**WATER SUPPLIED:**    **21,635.883** acre-ft/yr

**AUTHORIZED CONSUMPTION**

Billed metered:	+ ?	9	19,151.397	acre-ft/yr
Billed unmetered:	+ ?	10	0.000	acre-ft/yr
Unbilled metered:	+ ?	9	13.576	acre-ft/yr
Unbilled unmetered:	+ ?	8	188.130	acre-ft/yr

**AUTHORIZED CONSUMPTION:**    **19,353.103** acre-ft/yr

Click here: ?  
for help using option buttons below

Pcnt:	Value:		
		188.130	acre-ft/yr

Use buttons to select percentage of water supplied OR value

Pcnt:	Value:		
0.25%			acre-ft/yr

1.00%			acre-ft/yr
0.25%			acre-ft/yr

**WATER LOSSES (Water Supplied - Authorized Consumption)**

**2,282.780** acre-ft/yr

**Apparent Losses**

Unauthorized consumption: + ?    **54.090** acre-ft/yr

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

Customer metering inaccuracies:	+ ?	8	193.586	acre-ft/yr
Systematic data handling errors:	+ ?		47.878	acre-ft/yr

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

**Apparent Losses:**    **295.554** acre-ft/yr

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

Real Losses = Water Losses - Apparent Losses:    **1,987.226** acre-ft/yr

**WATER LOSSES:**    **2,282.780** acre-ft/yr

**NON-REVENUE WATER**

**NON-REVENUE WATER:**    **2,484.486** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

**SYSTEM DATA**

Length of mains:	+ ?	8	724.0	miles
Number of active AND inactive service connections:	+ ?	9	39,119	
Service connection density:	?		54	conn./mile main

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

Average length of customer service line: + ?    (length of service line, beyond the property boundary, that is the responsibility of the utility)

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

Average operating pressure: + ?    75.0    psi

**COST DATA**

Total annual cost of operating water system:	+ ?	10	\$17,766,589	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?			
Variable production cost (applied to Real Losses):	+ ?		\$188.12	\$/acre-ft <input checked="" type="checkbox"/> Use Customer Retail Unit Cost to value real losses

**WATER AUDIT DATA VALIDITY SCORE:**

**\*\*\* YOUR SCORE IS: 80 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: Unauthorized consumption
- 3: Systematic data handling errors



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

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**\*\*\* YOUR WATER AUDIT DATA VALIDITY SCORE IS: 80 out of 100 \*\*\***

### System Attributes:

	Apparent Losses:	295.554	acre-ft/yr
+	Real Losses:	1,987.226	acre-ft/yr
=	<b>Water Losses:</b>	<b>2,282.780</b>	acre-ft/yr

? Unavoidable Annual Real Losses (UARL): 822.02 acre-ft/yr

Annual cost of Apparent Losses: \$886,984

Annual cost of Real Losses: \$5,963,848 Valued at **Customer Retail Unit Cost**

Return to Reporting Worksheet to change this assumption

### Performance Indicators:

Financial:	{	Non-revenue water as percent by volume of Water Supplied:	11.5%	
		Non-revenue water as percent by cost of operating system:	42.0%	Real Losses valued at Customer Retail Unit Cost

Operational Efficiency:	{	Apparent Losses per service connection per day:	6.74	gallons/connection/day
		Real Losses per service connection per day:	45.35	gallons/connection/day
		Real Losses per length of main per day*:	N/A	
		Real Losses per service connection per day per psi pressure:	0.60	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): 1,987.23 acre-feet/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]: 2.42

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



## AWWA Free Water Audit Software: User Comments

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Use this worksheet to add comments or notes to explain how an input value was calculated, or to document the sources of the information used.

<b>General Comment:</b>	The AWWA Audit water loss worksheet has been updated (2021) and will require additional system information reviewed and completed to determine system grades. Water Conservation Program will employ subject matter experts in the LCU water system to complete the Audit in 2021.
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Audit Item	Comment
<a href="#">Volume from own sources:</a>	Water was supplied by LCU groundwater wells
<a href="#">Vol. from own sources: Master meter error adjustment:</a>	Based on 2016 audit performed by PureOps of the LCU supply meters. We would qualify for a score of 8 if master meter audits were performed on a more regular basis and annual audits would earn a score of 10. My recommendation is to start a program whereas master meter audits are scheduled bi-annually.
<a href="#">Water imported:</a>	N/A
<a href="#">Water imported: master meter error adjustment:</a>	N/A
<a href="#">Water exported:</a>	N/A
<a href="#">Water exported: master meter error adjustment:</a>	N/A
<a href="#">Billed metered:</a>	All LCU customers' water supply is metered
<a href="#">Billed unmetered:</a>	N/A
<a href="#">Unbilled metered:</a>	Includes 21 water meters used for utilities maintenance and fire fighting training

Audit Item	Comment
<a href="#">Unbilled unmetered:</a>	Includes water used for well start up blow off, utilities line cleaning, unmetered fire training and fire fighting
<a href="#">Unauthorized consumption:</a>	This category is identified as theft of water from meters, and hydrants. We are using the default of .25%, as it is very difficult to determine the consumption of water that is unauthorized under this category. In researching programs used by other NM city's (Albuquerque, Rio Rancho) they also agree and choose the default. A grade of 10 could be obtained if a program was implemented to determine water theft, but would require a FTE in place.
<a href="#">Customer metering inaccuracies:</a>	In 2020 LCU completed the replacement of 75% of its SFR and several commercial meters. Since the replacement process was ongoing, there was no need to test existing meters. However, it is likely some errors resulted from the conversion process, so we have assigned a grade of 8 to this category. The contract with JCI guarantees 1% metering inaccuracies with the replacement of the new Kamstrup meters.
<a href="#">Systematic data handling errors:</a>	The default of .25% was applied for this category, although with the new SMI meters and the automated meter reading system, we do not have an external auditor in place that can determine the value of these errors. My recommendation is to contract an external auditor to perform this task.
<a href="#">Length of mains:</a>	LCU has a comprehensive GIS system that accurately maps the piping system
<a href="#">Number of active AND inactive service connections:</a>	LCU utilizes the MUNIS Enterprise Planning Program (ERP) to account for active and inactive water customers.
<a href="#">Average length of customer service line:</a>	This calculation is auto filled and approximately the length of service lines
<a href="#">Average operating pressure:</a>	Average system pressure is 75 psi
<a href="#">Total annual cost of operating water system:</a>	This information is obtained from the LCU Administrative Services section which compiles revenue data, billing and receivables, etc (Maria Chang, Budget Analyst)
<a href="#">Customer retail unit cost (applied to Apparent Losses):</a>	This calculation is obtained by using the annual summary by class code report provided by Administrative Services (Diana Montoya, Rate Analyst) percent of customers per class multiplied by the rate/1,000 gallons plus the access charge. This calculation includes volumetric and access fee. Reports indicate most SFR water consumption is within the first tier of water use therefore this is the rate that is used.
<a href="#">Variable production cost (applied to Real Losses):</a>	This data is compiled using Munis FLEX CY Report provided by Administrative Services (Diana Montoya, Rate Analyst) Calculation is the expense account actuals total with depreciation deducted and divided by total water diversion in acre feet.