How Water Loss Audits, Validations and Loans Work Together

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Municipal Water Conservation

Water Loss Audit

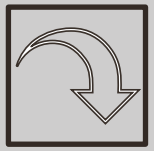
A water audit identifies how much water is lost, where, and how much that lost cost the utility.

The goal is to help the utility select and implement programs to reduce and sustain water losses to better manage the utility as an efficient business for a better return on investment.

It's not just about the repairs…
Data tracking is KEY

Who's Required to Submit a WLA?

Utilities with 3,300 or more connections are required to submit annually



Utilities under 3,300 connections are required to submit every 5 years

All utilities with an active financial obligation to TWDB are required to submit annually by May 1st and be validated annually as of January 1, 2025.

WLA Training is required to be able to submit the Water Loss Audit.

Key Water Loss Audit Sections

Water Utility General Information

Population, Length of Main Lines, Service Connections, and Average Yearly System Operating Pressure

Total System Input Volume

Water produced, purchased, and exported

Authorized Consumption

Billed and unbilled authorized uses from customers and utility

Water Losses Real and Apparent

Meter inaccuracies, systematic data handling, theft and reported breaks and leaks.

Technical Performance Indicators – Real Loss

Can be used as a Benchmark for Utilities after Validation

Line 34 Real Loss Volume = Line 30 (Total Real Losses)

Line 35 UARL Volume = (5.41 * Line 6 + (Line 7b * 0.15)) * 365 * Line 10

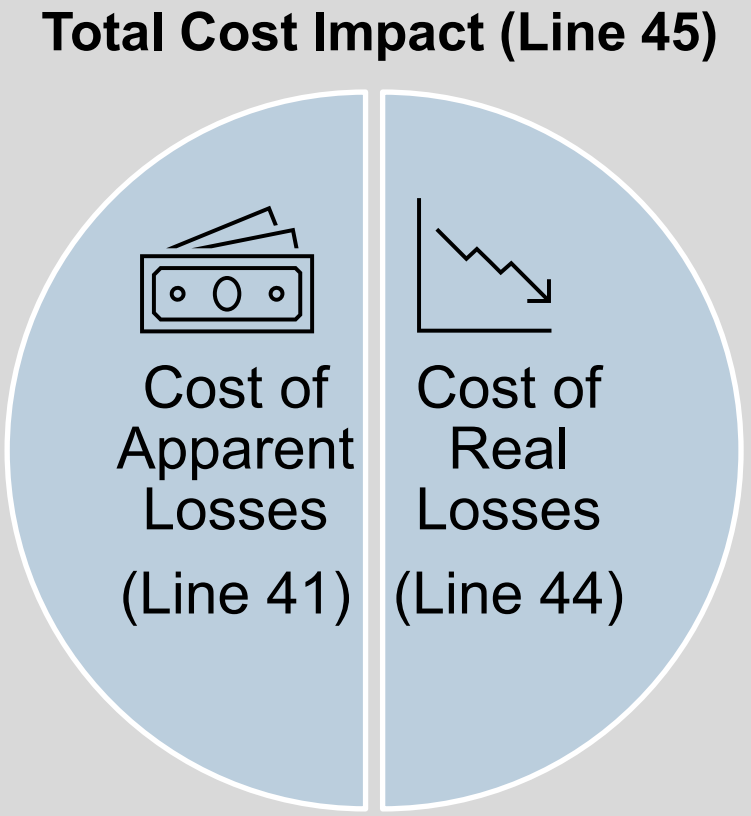
Line 36 Infrastructure Leakage Index = Line 34 / Line 35

Line 37 Real Loss Normalized SC = Line 34 / Line 7b / 365

Line 38 Real Loss Normalized Main Lines = Line 34 / Line 6 / 365

Quantitative measures of key aspects within your water system. Use these indicators to develop history and track your performance from year to year.

Financial Performance Indicators



Line 40 Retail Price of Water (RPW) and Line 43 Variable Production Cost (VPC)

Suggestions of when to Enter a Comment in the Water Loss Audit

- When you have a major event in the audit year that does not represent your system normally (i.e. unauthorized overflow of a water tower) Line 28.
- If you go back in and make a change to your original WLA.
- When you have not utilized the defaults for Lines 20, 25 and 26. Explain that you have confident numbers that exceed the default and the type of data that is tracked. (i.e. Line 20 - Auto flush valve in a planned development that is not built out)

Comments

K Sanders TWDB 10/27/2025 (Enter Comment)

Helpful when reviewing and validating Water Loss Audits

What is a Water Loss Audit Validation?

Evaluates the water system records and system control measures, such as meters accuracy and accurate data tracking to ensure a valid result.

In addition, it ensures there are policy and procedures in place to guide water system employees with tracking mitigating apparent and real water loss.

Who's Required to be Validated?

All utilities with an active financial obligation to TWDB are required to be validated annually until the loan is paid off.

All submitting for a new loan regardless of connections.

In addition, depending on the loan process you may be validated twice in one calendar year.

All audits are to be submitted by May 1st, but when coming in for a loan we highly recommend you submit the most current data as soon as possible.

Who's Required to be in the Validation Meeting?

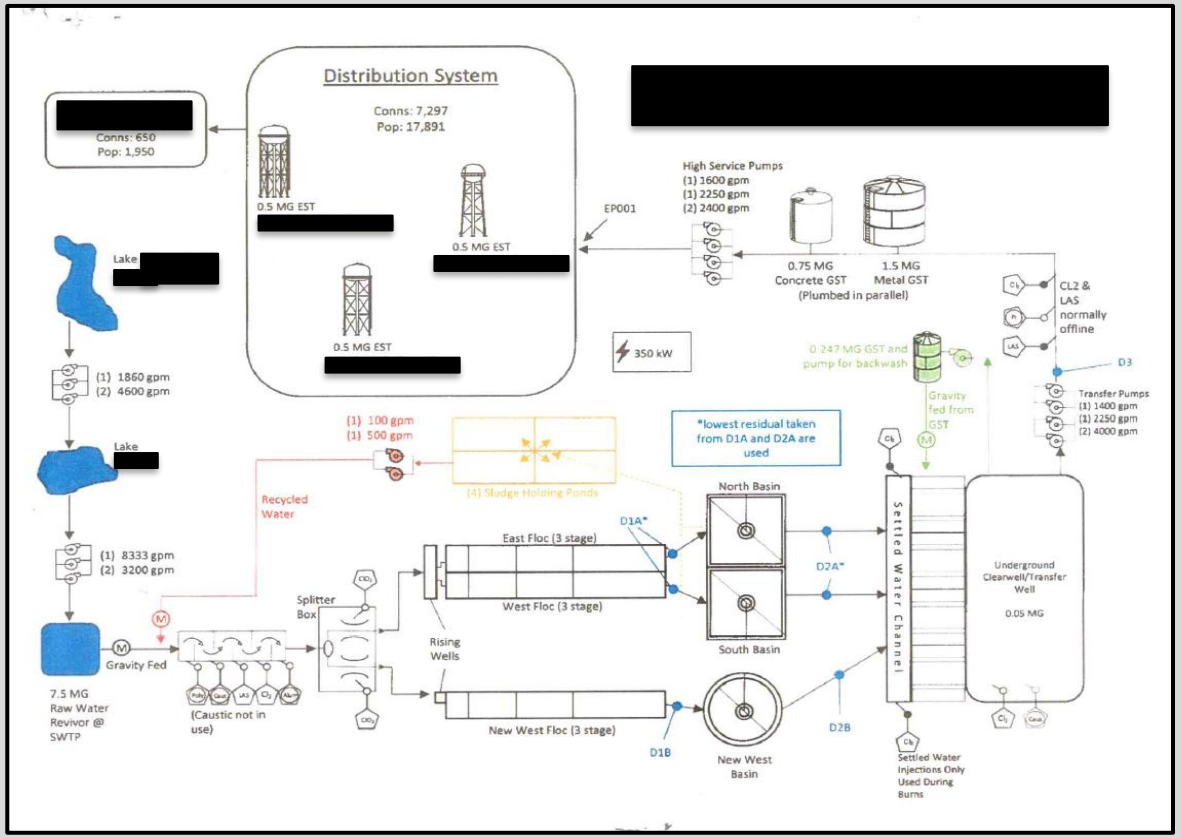
Data Request for Validation

- Do you have a schematic?
- Are you saving your data/reports used to enter your data?
- Do you have your calculation methods written down?

Document Request for Validation

System Schematic

- Well and/or Surface Water Treatment Schematic with Raw and Treated Production Meter locations
- Distribution Map/Pressure Plane Map



PDF version of the schematic is best for the purpose of storage and ease of sharing.

Document Request for Validation

Data Tracking

- Produced, Treated, Wholesale Water and Meter Accuracy
- Billed Meter and Customer Meter Accuracy
- Billed Unmetered
- Unbilled Metered
- Unbilled Unmetered
- Reported Breaks and Leaks

	Total System Input Volume (B)		Authorized Consumption (C)						
Values reported in Gallons	Water Produced	Corrected Input Volume	Billed Metered	Billed Unmetered	Unbilled Unmetered				Total Authorized Consumption
	Operators Report	Production Meter Accuracy (100%)	UB Monthly Billing Report	Bulk Sales	Total from City Use (Vactor, Jetter & Sweeper)	Hydrant Flushing	FD Use	Flushing w/Leak Repairs	
January	87,804,000	87,804,000	53,336,321	74,400	300,000	404,000	12,000	200,000	54,326,721
February	78,120,000	78,120,000	44,039,604	8,600	250,000	404,000	2,000	250,000	44,954,204
March	76,151,000	76,151,000	54,202,424	10,200	520,000	404,000	10,000	750,000	55,896,624
April	73,300,000	73,300,000	52,173,418	8,700	500,000	404,000	2,000	400,000	53,488,118
May	76,022,000	76,022,000	54,770,378	46,300	550,000	404,000	9,000	500,000	56,279,678
June	72,954,000	72,954,000	54,562,000	14,400	400,000	404,000	44,000	500,000	55,924,400
July	81,590,000	81,590,000	54,070,000	13,100	400,000	404,000	17,000	475,000	55,379,100
August	89,008,000	89,008,000	56,872,100	8,800	450,000	404,000	34,000	400,000	58,168,900
September	78,767,000	78,767,000	53,326,300	29,300	500,000	404,000	2,000	400,000	54,661,600
October	89,488,000	89,488,000	57,340,800	-	500,000	404,000	8,000	425,000	58,677,800
November	73,343,000	73,343,000	62,633,905	-	300,000	405,000	3,000	425,000	63,766,905
December	70,662,000	70,662,000	46,833,632	-	300,000	405,000	63,000	425,000	48,026,632
Totals	947,209,000	947,209,000	644,160,882	213,800	4,970,000	4,850,000	206,000	5,150,000	
							UBUM Totals	15,176,000	

Billed Unmetered - bulk water stand out of service October - December

(D)	Apparent Losses (E)				Real Losses (F)		
Water Losses	Customer Meter Accuracy Loss	Systematic Data Handling Discrepancy	Unauthorized Consumption	Total Apparent Losses	Reported Breaks and Leaks	Unreported Loss	Total Real Losses
	Customer Meter Accuracy (99.5%)	Unbilled Consumption on Monthly Billing Report = 867,200 Used Default	TWDB Default Value (.25%)		From City works	Water losses minus Total Apparent Losses minus Reported Breaks	Reported Breaks plus Unreported Loss
33,477,279	53,390	134,200	133,341	320,931		33,156,348	33,156,348
33,165,796	44,084	134,200	110,099	288,383		33,127,413	33,127,413
20,254,376	54,257	134,200	135,506	323,963		20,680,413	20,680,413
19,811,882	52,226	134,200	130,434	316,859		19,895,023	19,895,023
19,742,322	54,825	134,200	136,926	325,951		19,916,371	19,916,371
17,029,600	54,617	134,200	136,405	325,222		17,204,378	17,204,378
26,210,900	54,124	134,200	135,175	323,499		26,362,401	26,362,401
30,839,100	56,929	134,200	142,180	333,309		30,905,791	30,905,791
24,105,400	53,380	134,200	133,316	320,895		24,184,505	24,184,505
30,810,200	57,398	134,200	143,352	334,950		30,900,250	30,900,250
9,576,095	62,697	134,200	156,585	353,481		9,647,614	9,647,614
22,635,368	46,881	134,202	117,084	298,167		22,762,201	22,762,201
	644,806	1,610,402	1,610,402				

Document Request for Validation

Method of Calculation

- Average Operating Pressure
- Retail Price of Water
- Variable Production Cost of Water

AOP

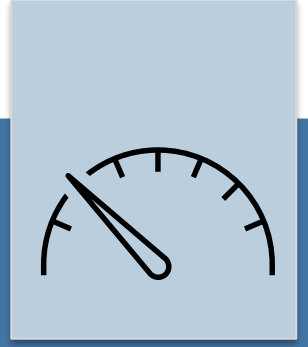
Explain how and where you are you tracking your pressure and provide the calculation for the **Average Operating Pressure**.

RPW

Provide how you calculated the **Retail Price of Water** entered in the WLA and provide the water rate sheet(s) that were utilized during the audit period.

VPC

Provide how you calculated the **Variable Production Cost** and provide the electricity and chemical cost for the audit period.



Water Loss Thresholds

Thresholds were established in 2014, and last update was in 2023.

- **Apparent Loss** (unauthorized consumption, meter inaccuracy, Systematic Data Handling Error data errors)
- **Real Loss** (distribution mains leakage, storage tank overflows and leakage, and leakage at service connections).

Applies only to retail public utilities requesting financial assistance for a water supply project after July 1, 2023:

Apparent Thresholds

- For all water utilities, the apparent loss threshold is a system-specific calculation. The calculation includes a customer meter accuracy limit of 94.7 percent and unauthorized consumption and data handling error volumes at the default value.

Real Loss Thresholds

- For water utilities with a service connection density of 32 or more connections per mile, the real loss threshold is 30 gallons per connection per day.
- For water utilities with a service connection density of less than 32 connections per mile, the real loss threshold is 57 gallons per connection per day.

Service Connection Density = Service connections ÷ Length of Main Lines

Water Loss Waivers

Who needs Waiver? What are some of the Processes? What is a Water Loss Project?

All Utilities requesting financial assistance from TWDB, for a water supply projects, that are exceeding one or both thresholds and Water Loss is not a part of their Project.

Waiver Meeting Discussion on the Process, Waiver Templates, Waiver Review and Types of Water Loss Projects.

Apparent Loss Projects

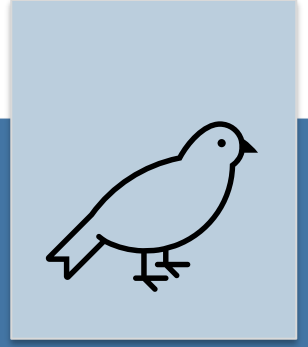
Asset Management Plan ****

Customer Meters - Upgrades, AMR, AMI, Testing

Billing Software Upgrades

Real Loss Projects

Distribution Main Line – Repair or Replacement
Leak Detection – Traditional or Satellite/Aeriel
Pressure Management (SCADA, VFD) ****
Storage Tank – Repair or Replacement
Potable Water Transmission Line Repair or Replacement
Service Line – Repair or Replacement
Water Treatment – Repair or Replacement (Potable Water) ****
System Input Volume Meters – Replacement
Water Loss Study ****
Asset Management Plan ****



Reporting on time when submitting a loan

Early

On Time

Keeping Up to Date

Delinquent

1st Water Use Survey

2nd Water Loss Audit

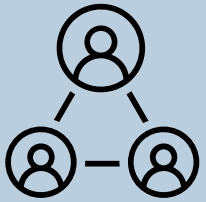
3rd Annual Report

4th Utility Profile

5th Water Conservation Plan

(UP and WCP every 5 years)

Water Conservation Plan is required for entities applying for or currently receiving FINANCIAL ASSISTANCE of greater than $500,000 from the TWDB.



Water Loss Audit Resources and Reporting Contacts

Troubleshooting for negative numbers, guidance, assessment scales, leak detection loan form, WUS and WLA checklist, monthly water loss report, and more:

http://www.twdb.texas.gov/conservation/resources/waterloss-resources.asp

Water Use Survey - 512.463.7952

waterusesurvey@twdb.texas.gov

Water Loss Audit - 512.463.0987

WLA-Group@twdb.texas.gov

Water Conservation Team - 512.475.1639

wcpteam@twdb.texas.gov

All teams rely on each other, and water is no different. We are all on the team of water and must work together to be successful for the future of water for Texas.

Questions?

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Municipal Water Conservation

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